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ESIA for Project Anma

Biodiversity Impact Assessment

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Biodiversity Impact Assessment

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Acronyms and Abbreviations

Name	Description
AWC	Anma Offshore Wind Energy Co., Ltd;
AoI	Area of Influence
AZE	Alliance for Zero Extinction
CHA	Critical Habitat Assessment
CHS	Critical Habitat Screening
CR	Critically Endangered
DD	Data Deficient
DI	Dominance Index
E&S	Environmental and Social
EAAA	Ecologically Appropriate Area of Analyses
EHS	Environmental, Health, and Safety
EIA	Environment Impact Assessment
EN	Endangered
EP	Equator Principle
ERM	ERM Korea Ltd.
g	gram
IAC	Inter Array Cable
IBA	Important Bird and Biodiversity Areas
IBAT	Integrated Biodiversity Assessment Tool
IFC	International Finance Corporation
IPA	Important Plant Areas
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
LC	Least Concern
NT	Near Threatened
ONS	Onshore Substation
OSS	Offshore Substation

PAs	Protected Areas
PS	Performance Standard
UNESCO	United Nations Educational, Scientific and Cultural Organization
VTOL	Vertical Take Off and Landing
VU	Vulnerable
WTG	Wind Turbine Generator
AWC	Anma Offshore Wind Energy Co., Ltd;

1. INTRODUCTION

Anma Offshore Wind Energy Co., Ltd; ("AWC" or the "Project proponent") has commissioned ERM Korea Ltd. (ERM) to undertake Environmental and Social Impact Assessment against the internationally recognised standards (also referred to as the Applicable Standards) for the fixed bottom offshore wind farm comprising Phase 1 with permitted capacity of 224 MW, and Phase 2 with permitted capacity of 308 MW (collectively referred as "Anma Project" or "the Project") on a voluntary basis to prepare for financing of the Project. To incorporate updates based on comments from the Lender's Environmental and Social Advisor (LESA), IA Partners Co., Ltd., a member of INOGEN Alliance (INOGEN) has been engaged to carry out the necessary revisions.

The high-level findings in terms of impacts to biodiversity and the measures to mitigate or avoid those are presented in this report.

1.1 Objective

The objective of this report is to discuss and present the findings of the Project located in Yeonggwang-gun, Jeollanam-do in South Korea. Where applicable, mitigation, or enhancement measures have been designed to avoid, minimise/reduce, and compensate/offset negative impacts to the biodiversity around the Project area.

1.2 Structure Biodiversity Impact Assessment

The remainder of the document is structured as follows:

- Section 1: Introduction;
- Section 2: Project Description;
- Section 3: Applicable Reference Framework;
- Section 4: Project Area Delineation;
- Section 5: Biological Environment Baseline;
- Section 6: Biological Environment Impact Assessment;
- Appendix A: Project Description;
- Appendix B: List of Species from EIA; and
- Appendix C: List of Bird Species from Supplementary Surveys.

2. PROJECT DESCRIPTION

The Project Description, including the project's background (location, milestones, facilities and components, summary of EPC construction activities) is provided in Appendix A.

It has been developed as a standalone document to be read in conjunction with the main ESIA report. This ensures optimal coherence of the information through the updates and revisions.

This assessment is focusing on five (5) major Project components:

- Wind turbine generator (WTGs);
- Offshore substation (OSS);
- Submarine cable: Within this report, when referring to submarine cable, it includes the inter array cable (IAC) and offshore export cable (EXC) as the implications related to physical risks are the same;
- Onshore substation (ONS); and
- Onshore cable.

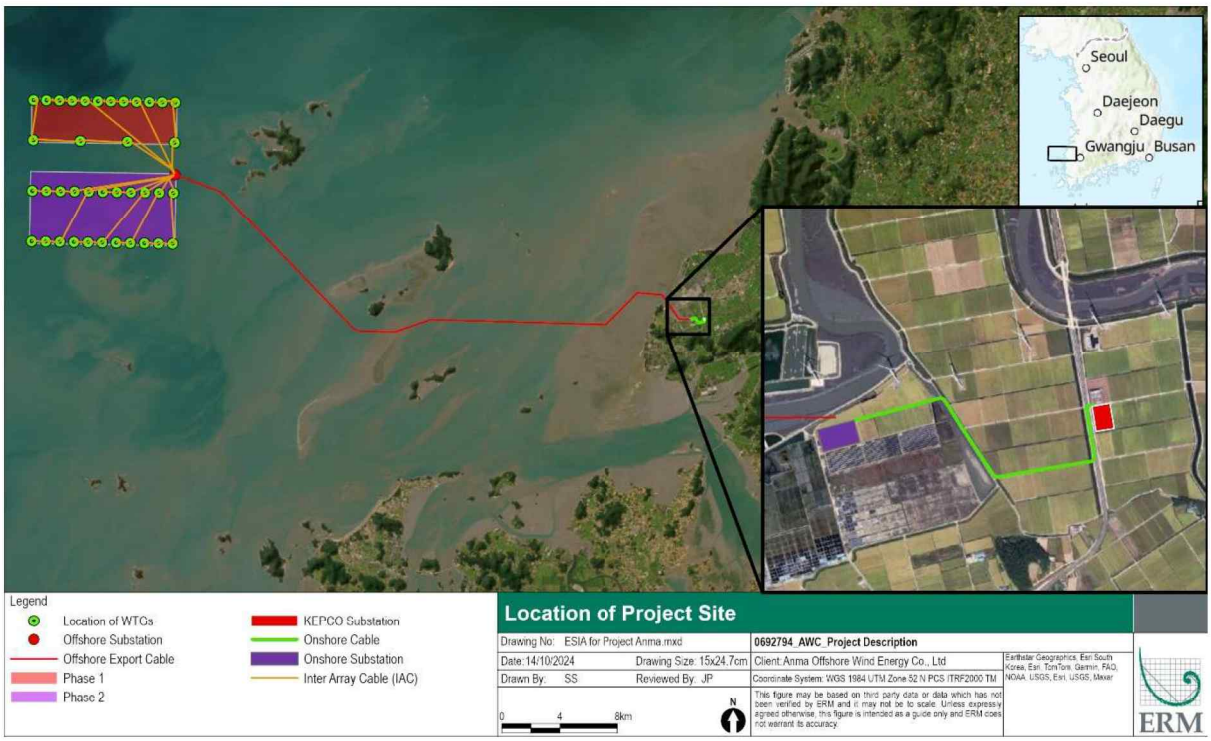


Figure 2-1 Location of Project Site

3. APPLICABLE REFERENCE FRAMEWORK

The internationally recognised standards (the Applicable Standards) that are applicable to this Project are:

- Applicable environmental and social (E&S) national legislature of South Korea;
- International Finance Corporation (IFC) Performance Standards [(PS); (2012)] and Guidance Notes (2019);
- IFC General Environmental, Health, and Safety (EHS) Guideline (2007);
- IFC EHS Guideline for Wind Energy (2015);
- IFC EHS Guideline for Electric Power Transmission and Distribution (2007); and
- Equator Principle (EP) 4 (2020).

4. PROJECT AREA DELINEATION

This chapter provides a comprehensive overview of the existing biological conditions within the Area of Influence (AoI), with a primary focus on resources and receptors that could potentially be affected by the Project. The information presented here is derived from a combination of studies conducted for the local EIA that was conducted from August 2020 to May 2023 including bird tracking surveys, a meticulous desktop review of publicly accessible data in December 2023, and the supplementary baseline surveys from March 2023 to February 2024. These additional surveys are systematically conducted on a monthly basis. Together, these sources of information form the basis for understanding the current biological landscape and potential impacts that may arise from the Project which assist in the delineation of the Project's AoI (as defined in Section 4.2).

4.1 Project Area

The Project area refers to the spatial extents that are used or impacted directly or indirectly for Project facilities and activities across all project phases. This includes the geographic area being used on permanent as well as on temporary basis. The full description of Project facilities and activities is presented in Appendix A. These include the wind farm site boundary, offshore substation, offshore export cable, onshore cable, and the onshore substation.

4.2 Area of Influence

Under the IFC PS (International Finance Corporation Performance Standard) 1, the Area of Influence (AoI) encompasses:

- *i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent;*
- *Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable; and*
- *Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.*

The Project's AoI thereby includes the following:

- The 4 km radius from wind farm area;

- Linear 500 m area on either side of the onshore export cable and onshore substation;
- The Ecologically Appropriate Area of Analysis (EAAA) has been delineated to consider the presence of threatened, restricted-range, migratory, or congregatory species[1], as well as threatened or unique ecosystems. The spatial delineation of the EAAA is based on ecological features, including the screening of species of conservation importance. This EAAA takes into account records of occurrence and likely critical habitat trigger species' habitat requirements.

Table 4-1 Spatial Extent of EAAA

Sr. No.	EAAA[2]	Spatial Extent
	Uninhabited/less habited Offshore Islands	The offshore islands within 50 km of the WTG locations, which provide roosting and nesting habitat to threatened avian species are considered as avian roosting and nesting habitat EAAA.
	Intertidal Mudflat Habitat	Extensive mudflat habitats are located along the coast of the Western Coast of South Korea. These areas are located approximately within 30-40 km from the WTG location. Shoreline of rocky offshore islands within 50 km radius are mostly devoid of mudflats as larger estuaries are absent in the islands and their rocky shorelines are narrow and deep, preventing accumulation of sediment. While the rocky islands provide suitable nesting and roosting habitat for migratory congregatory coastal and oceanic bird species, the intertidal mudflats provide suitable foraging habitat for these birds.
	Rocky Coastal Marine Habitat	Shoreline of offshore islands within 50 km radius are mostly devoid of mudflats as larger estuaries are absent in the islands and this islands rocky shoreline is narrow and deep, preventing accumulation of sediment. So, these rocky offshore islands provide shallow (0-20 m) rocky outcrops that provide suitable marine underwater microhabitat habitat for multiple species. For example, one such species is IUCN Data Deficient (DD) *Sebastes koreanus*.
	Shallow Seascape within 50 km of WTGs	Seascape within 50 km of the Project site varies between 75 m in the far shore areas to 25 m at the offshore WTG locations and gradually levels off with the intertidal mudflats along the west coast of South Korea. This shallow sea section within 50 km is considered as the Shallow Seascape EAAA for nearshore mammals like Narrow-Ridged Finless Porpoise, oceanic birds like Swinhoe's Storm-petrels and multiple IUCN Threatened marine plants, invertebrates, shark, sawfish, and skate species that forage in these shallow waters and use these coastal, silt bearing shallow water as potential nursery

[1] These are cumulatively referred to as Critical Habitat triggers

[2] ERM. 2024. ESIA for Project Anma: Critical Habitat Assessment, October 2024.

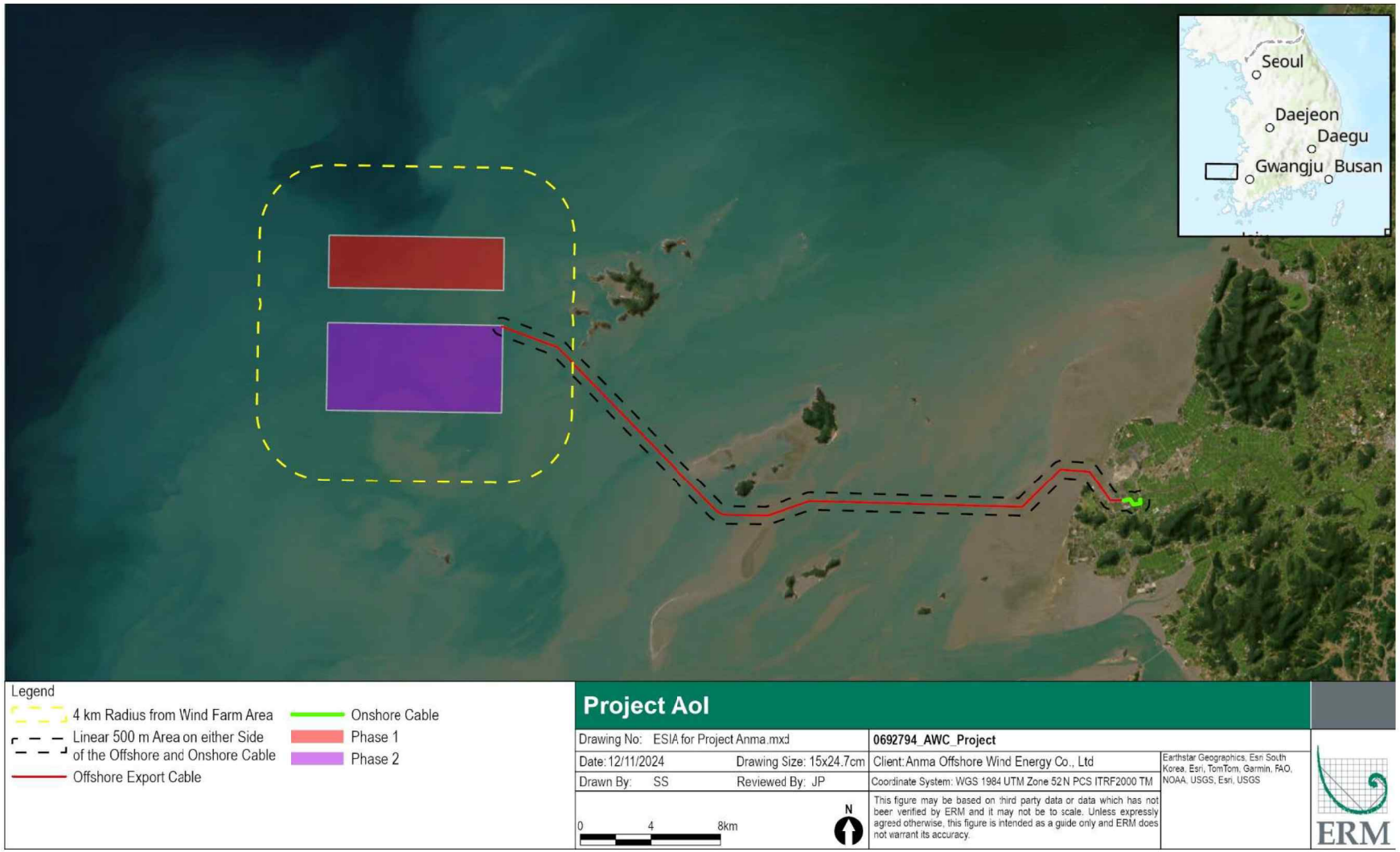


Figure 4-1 Project AoI

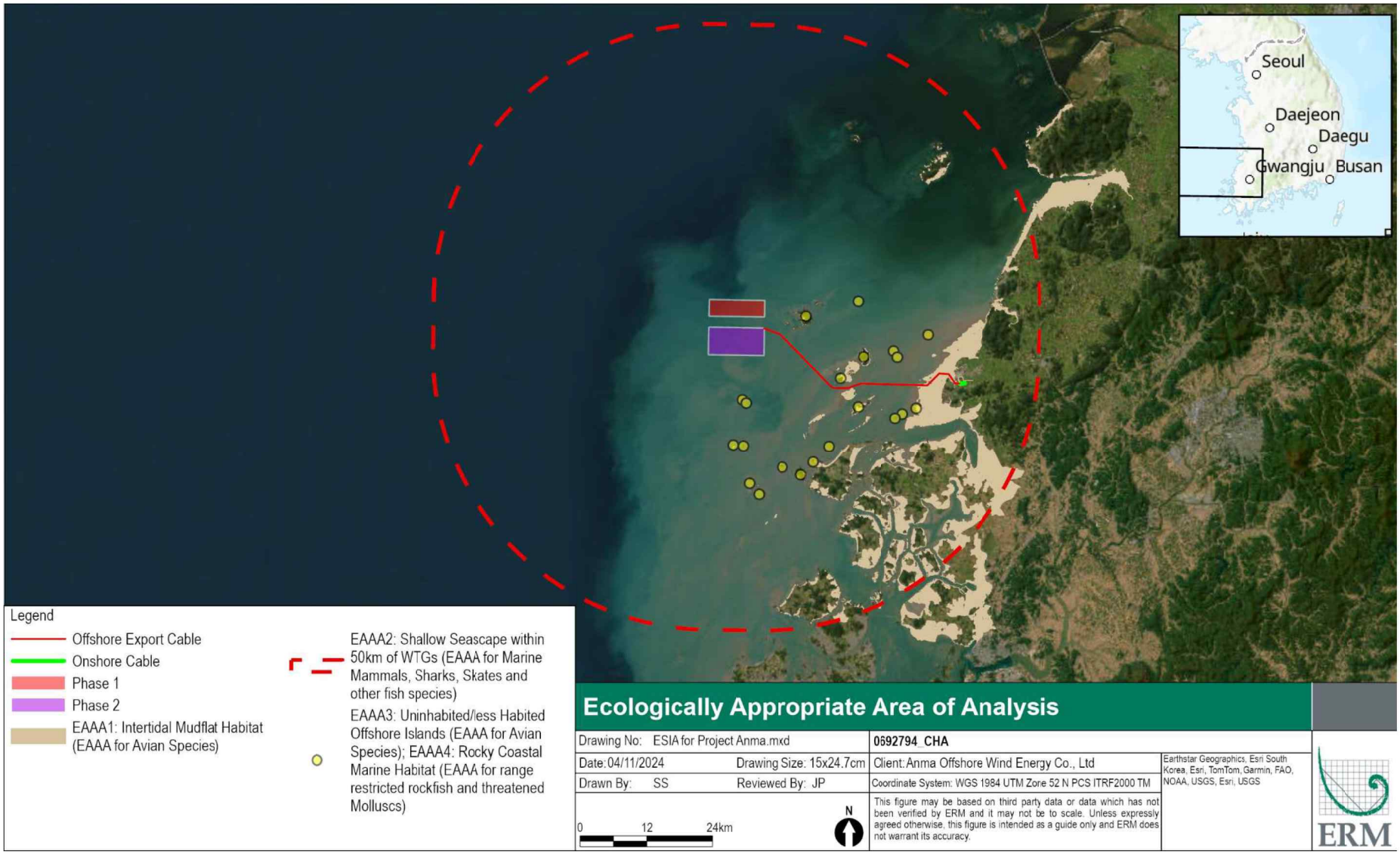


Figure 4-2 A map displaying the spatial extent of the delineated EAAA for the Project

5. BIOLOGICAL ENVIRONMENT BASELINE

5.1 Introduction

This section provides an overview of the baseline conditions in the biodiversity baseline study area, i.e., the Ecologically Appropriate Area of Analysis (EAAA) as depicted on the map that appears in Figure 4-2. Included is a description of the identified legally protected areas and areas with recognized high biodiversity values (Section .4.2), habitats and species that occur in this area, and the important biodiversity values associated with the Project area. Information was compiled and evaluated from desktop studies, field surveys, and consultation with key experts and other stakeholders, to support a comprehensive understanding of the biodiversity values that are present in the EAAA.

Desktop studies considered global biodiversity datasets, as well as published and publicly available information. The Key information sources included:

- The Integrated Biodiversity Assessment Tool (IBAT), which draws from:
- The IUCN (International Union for Conservation of Nature) Red List of Threatened Species;
- Key Biodiversity Area (KBA) database; and
- The World Database on Protected Areas which encompass nationally and internationally recognised sites, including IUCN management categories I-VI, Ramsar Wetlands of International Importance (Ramsar site), legally protected area under Korean regulation, and the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage sites.
- The IUCN Red List of Ecosystems.

Field data has been collected to further inform the understanding of the important biodiversity value within the study area. The survey campaign was conducted during the stage of regulatory Environment Impact Assessment (“EIA”) and a supplementary survey campaign. The surveys to collect field data include:

- Surveys for regulatory Environment Impact Assessment (“EIA”). Detailed survey schedule is as follows in Table 5-1 and Table 5-2;
- Monthly bird survey campaigns across 12 months (March 2023 – February 2024);
- Monthly bat survey campaigns across 12 months (March 2023 – February 2024);
- Monthly marine mammal and reptile survey campaigns across 12 months (March 2023 – February 2024); and
- One (1) herpetofauna (reptiles and amphibians) survey campaign in October 2023 on Imja-do (Island).

Table 5-1 Scope and Time of Surveys

Survey items	Flora and vegetation	Terrestrial fauna				Aquatic fauna	
		Mammals	Birds	Amphibians and reptiles	Land insects	Freshwater fish:	Benthic macroinvertebrate
August 22 – 23, 2022	◉	◉	◉	◉	◉	◉	◉
October 17, 2022	◉	◉	◉	◉	◉	◉	◉
March 2023 – February 2024		◉	◉				
Survey Scope*	Within a 500 meter radius of the project site						

Wide-ranging survey focused on sea birds

Number of Survey	Birds		Survey points	Remarks
1st	12 August 2020 –15 August 2020	(Summer)	St 1~9. (9 areas)	Ships and vehicles use
2nd	7 September 2020 – 8 September 2020 10 September 2020 – 11 September 2020	(Autumn)		
3rd	21 September 2020 – 22 September 2020 24 September 2020 – 25 September 2020	(Autumn)		
4th	7 October 2020 – 10 October 2020	(Autumn)		
5th	20 October 2020 – 23 October 2020	(Autumn)		
6th	4 November 2020 – 5 November 2020 7 November 2020 – 8 November 2020	(Autumn)		
7th	2 February 2021 – 25 February 2021	(Winter)		
EIA Additional Survey (1st)	17 January 2022 – 23 January 2022	(Winter)	Around and inside the planned project site (within 4km radius of offshore areas)	Ships and vehicles use
EIA Additional Survey (2nd)	19 July 2022 – 25 July 2022	(Summer)	Around and inside the planned project site (within 4km radius of offshore areas)	Ships and vehicles use
8th	16 April 2023 – 20 April 2023	(Spring)	St 1~9. (9 areas)	Ships and vehicles use
Supplementary 1st	29 March 2023 – 30 March 2023	(Spring)	Offshore area and Islands(Anma-do)	Ships and vehicles use
Supplementary 2nd	46 April 2023 – 28 April 2023	(Spring)	Offshore area and Islands(Anma-do)	
Supplementary 3rd	29 May 2023 – 31 May 2023	(Spring)	Offshore area and Islands(Anma-do)	
Supplementary 4th	27 June 2023 - 29 June 2023	(Summer)	Offshore area, Islands(Anma-do), and Coastal area(11 points)	
Supplementary 5th	19 July 2023 – 21, 31 July 2023	(Summer)	Offshore area, Islands(Anma-do), and Coastal area(11 points)	
Supplementary 6th	22, 24 August 2023 – 25 August 2023	(Summer)	Offshore area, Islands(Anma-do), and Coastal area(11 points)	
Supplementary 7th	22 September 2023 – 24 September 2023	(Autumn)	Offshore area and Islands(Anma-do)	
Supplementary 8th	11 October 2023 – 13 October 2023	(Autumn)	Offshore area and Islands(Anma-do)	
Supplementary 9th	14 November 2023 – 15, 21 November 2023	(Autumn)	Offshore area and Islands(Anma-do)	
Supplementary 10th	4 December 2023 – 5 December 2023	(Winter)	Offshore area and Islands(Anma-do)	
Supplementary 11th	2 January 2024 – 4 January 2024	(Winter)	Offshore area and Islands(Anma-do)	
Supplementary 12th	23 February 2024 – 25 February 2024	(Winter)	Offshore area and Islands(Anma-do)	

Source: Final EIA

Note:

**: Surrounding Areas of Planned Project Site*

Table 5-2 Schedule of Marine Mammal Surveys

Rounds of Surveys	Survey Schedule	Details
1st Survey	18 Aug 2020 – 20 Aug 2020	Vessel based survey, drone survey, inquiry Survey
2nd Survey	09 Sep 2020 – 11 Sep 2020	Vessel based survey, drone survey, inquiry Survey
3rd Survey	23 Sep 2020 – 25 Sep 2020	Vessel based survey, drone survey
4th Survey	12 Oct 2020 – 13 Oct 2020	Vessel based survey, Drone survey
5th Survey	04 Nov 2020 – 06 Nov 2020	Vessel based survey, Drone survey, Inquiry Survey
6th Survey	24 Nov 2020 – 26 Nov 2020	Vessel based survey, Drone survey, Inquiry Survey
EIA Additional Survey	20 Aug 2022	Vessel based survey, Drone survey, Inquiry Survey
Supplementary 1st	29 Mar 2023 – 30 Mar 2023	Vessel based survey, Passive Acoustic Method
Supplementary 2nd	46 Apr 2023 – 28 Apr 2023	Vessel based survey, Passive Acoustic Method
Supplementary 3rd	29 May 2023 – 31 May 2023	Vessel based survey, Passive Acoustic Method
Supplementary 4th	27 Jun 2023 - 29 Jun 2023	Vessel based survey, Passive Acoustic Method
Supplementary 5th	19 Jul 2023 – 21, 31 Jul 2023	Vessel based survey, Passive Acoustic Method
Supplementary 6th	22, 24 Aug 2023 – 25 Aug 2023	Vessel based survey, Passive Acoustic Method
Supplementary 7th	22 Sep 2023 – 24 Sep 2023	Vessel based survey, Passive Acoustic Method
Supplementary 8th	11 Oct 2023 – 13 Oct 2023	Vessel based survey, Passive Acoustic Method
Supplementary 9th	14 Nov 2023 – 15, 21 Nov 2023	Vessel based survey, Passive Acoustic Method
Supplementary 10th	4 Dec 2023 – 5 Dec 2023	Vessel based survey, Passive Acoustic Method
Supplementary 11th	2 Jan 2024 – 4 Jan 2024	Vessel based survey, Passive Acoustic Method
Supplementary 12th	23 Feb 2024 – 25 Feb 2024	Vessel based survey, Passive Acoustic Method

Critical Habitat Assessment (CHA) was undertaken to identify the presence and extent of the important biodiversity values (i.e. natural habitat-associated values, critical habitat-qualifying values and other values of conservation and/or stakeholder concern) in the EAAA that could result in the categorization of the Project area as critical habitat.

5.2 Legally Protected Areas and Areas with Recognized High Biodiversity Values

Legally Protected Areas (PAs) include areas that are legally designated or officially proposed for biodiversity protection and conservation.

For this assessment, areas with recognized high biodiversity values include KBAs, AZEs, UNESCO World Heritage sites and Ramsar site. These areas are defined as follows:

- **KBA**: Key Biodiversity Areas are sites that contribute significantly to the global persistence of biodiversity and being applicable to terrestrial, freshwater, and marine ecosystems. Sites qualify as global KBAs if they meet one or more of eleven criteria, grouped into the following five categories: threatened biodiversity, geographically restricted biodiversity, ecological integrity, biological processes, and irreplaceability. KBAs typically include:
  - Important Bird and Biodiversity Areas ("IBA") identified by the BirdLife International Partnership;
  - Alliance for Zero Extinction sites ("AZE") containing 95% or more of the remaining population of one or more species listed as Endangered (EN) or Critically Endangered (CR) on the IUCN Red List;
  - KBAs identified through hotspot ecosystem profiles supported by the Critical Ecosystem Partnership Fund; and
  - A small number of other KBAs such as Important Plant Areas ("IPA"), and KBAs covering multiple taxonomic groups in freshwater, marine, and terrestrial systems.
- **UNESCO World Heritage site**: a site selected by UNESCO as having cultural, historic, scientific or other forms of significance. These areas are legally protected by international treaties and demarcated by UNESCO as protected zones; and
- **Ramsar site**: wetlands of 'international importance' identified under the International Convention of Wetlands, called the Ramsar Convention, which is an intergovernmental treaty that provides the framework for the conservation and use of wetlands and their resources.
- **Legally protected area**:

There are four (4) KBAs, one (1) UNESCO World Heritage site and three (3) Ramsar site overlapping with, or located within EAAA defined for the Project. Out of these protected areas that fall into EAAA, only one KBA is overlapping with location of project's component. These are summarized in Table 5-3 and shown on the map in Figure 5-1.

Table 5-3 Internationally Protected Area in the EAAA

Name	Designation	Overlap with a Project's component?	Distance from project footprint and direction	Details
Baeksu tidal flat	KBA	Yes	Overlap of approximately 4 km with the offshore export cable	**Area Coverage**: 22.04 km^2 **Trigger species**: Chinese Egret (*Egretta eulophotes*) Bar-tailed Godwit (*Limosa lapponica*) Far Eastern Curlew *(Numenius madagascariensis)* Black-faced Spoonbill (*Platalea minor*) Nordmann's Greenshank (*Tringa guttifer)*
Hampyeong Bay	KBA	No	8.58 km to the Southeast	**Area Coverage**: 86.19 km^2 **Trigger species** Chinese Egret (*Egretta eulophotes*)
Muan tidal flat	KBA	No	17.05 km to the Southeast	**Area Coverage: 22.04 km2** **Trigger species** Chinese Egret (Egretta eulophotes)
Donglim reservoir	KBA	No	46.56 km to the Northeast	**Area Coverage**: 2.65 km^2 **Trigger species** Baikal Teal (*Anas Formosa*) Mallard (*Anas platyrhynchos*)
Getbol, Korean Tidal Flats	UNESCO World Heritage site	No	19 km to the Southeast	**Area Coverage**: 1,100.86 km^2 The Shinan tidal flat is a place where more than 54,000 water birds of 90 species, including 14 IUCN Red Listed species, visit, making

Name	Designation	Overlap with a Project's component?	Distance from project footprint and direction	Details
				it a tidal flat with high global value
Ungok Wetland	Ramsar site	No	36 km to the Northeast	**Area Coverage**: 1.8 km^2 *Ciconia boyciana* which is Class I endangered wildlife species, and *Falco subbuteo* and *Pitta nympha* which are Class II endangered wildlife species were observed.
Jeungdo tidal flat	Ramsar site	No	44 km to the Northeast	**Area Coverage**: 31.3 km^2 The area supports five species including the *Egretta eulophotes, Anas Formosa, Numenius madagascariensis, Platalea leucorodia*, and *Falco peregrines*.
Muan tidal flat	Ramsar site	No	44 km to the North	**Area Coverage**: 35.89 km^2 Some 49 species of winter waterbirds have been observed, and the site provides habitat to various endangered and rare species such as *Larus saundersi, Platalea minor*, and *Egretta eulophotes*.

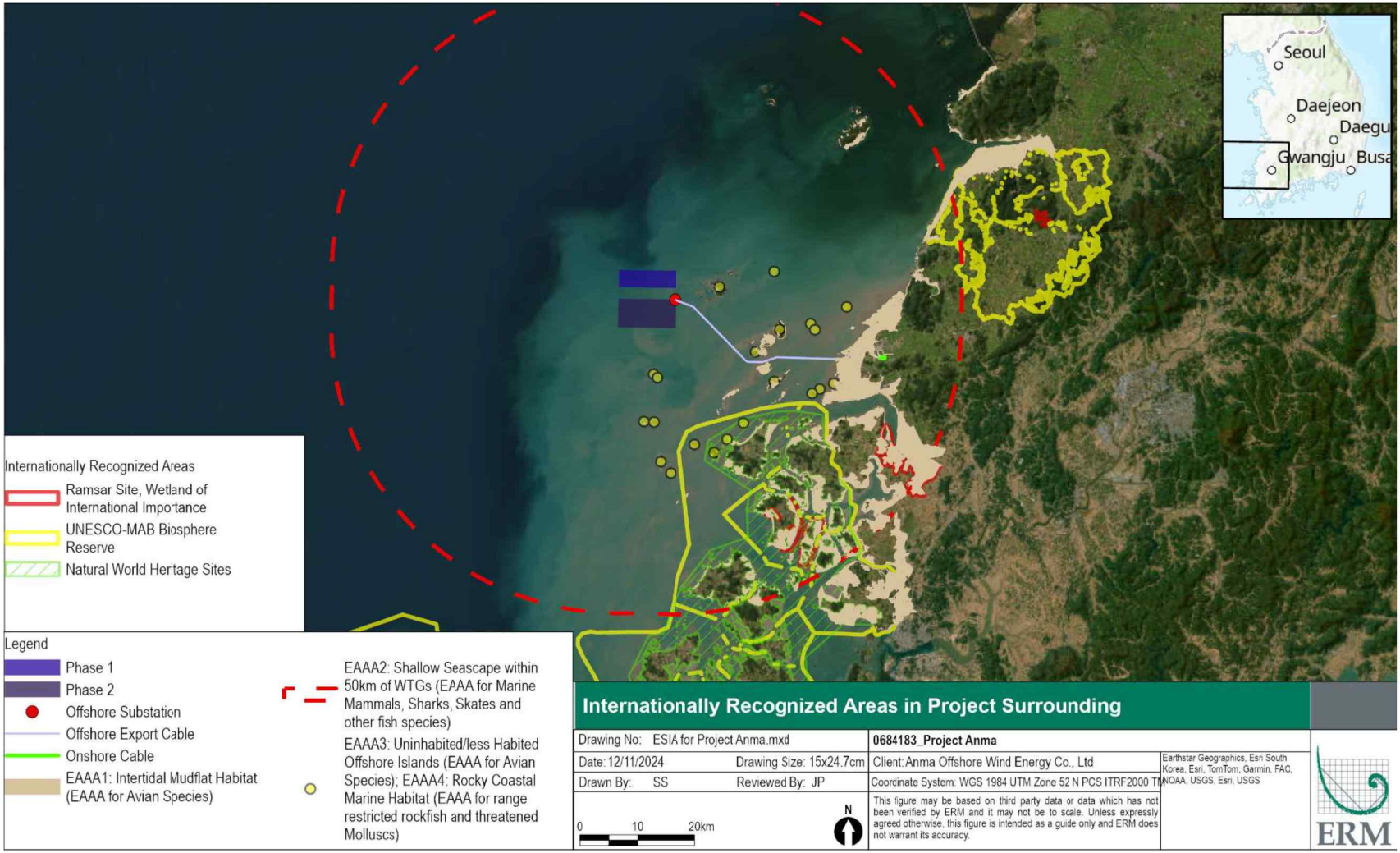


Figure 5-1 Internationally Protected Area in the EAAA

Additionally, there are 146 nationally designated Protected Areas within 50 km of the Project area and one (1), Baeksu tidal flat overlaps with the Project area as indicated in the Figure 5-2.

The majority of the Protected Areas (38) are Catchment Reserve Protection area, while Special Island (24), Natural Monument (18), Wildlife Protection Area (12), Water Source Protection Area (14), Disaster Prevention Reserve (5), Landscape Reserve (8), Wetland Protected Area (8), Forest Genetic Resources Reserve (4), Scenic Site (3), Fishery Resource Conservation Area (2), National Park (2), Provincial Park (3), Ecosystem and Landscape Conservation Area (1), Natural Environment Conservation Area (1), Urban Natural Park Areas (2) and Environment Conservation Marine Area (1) are the next most abundant.

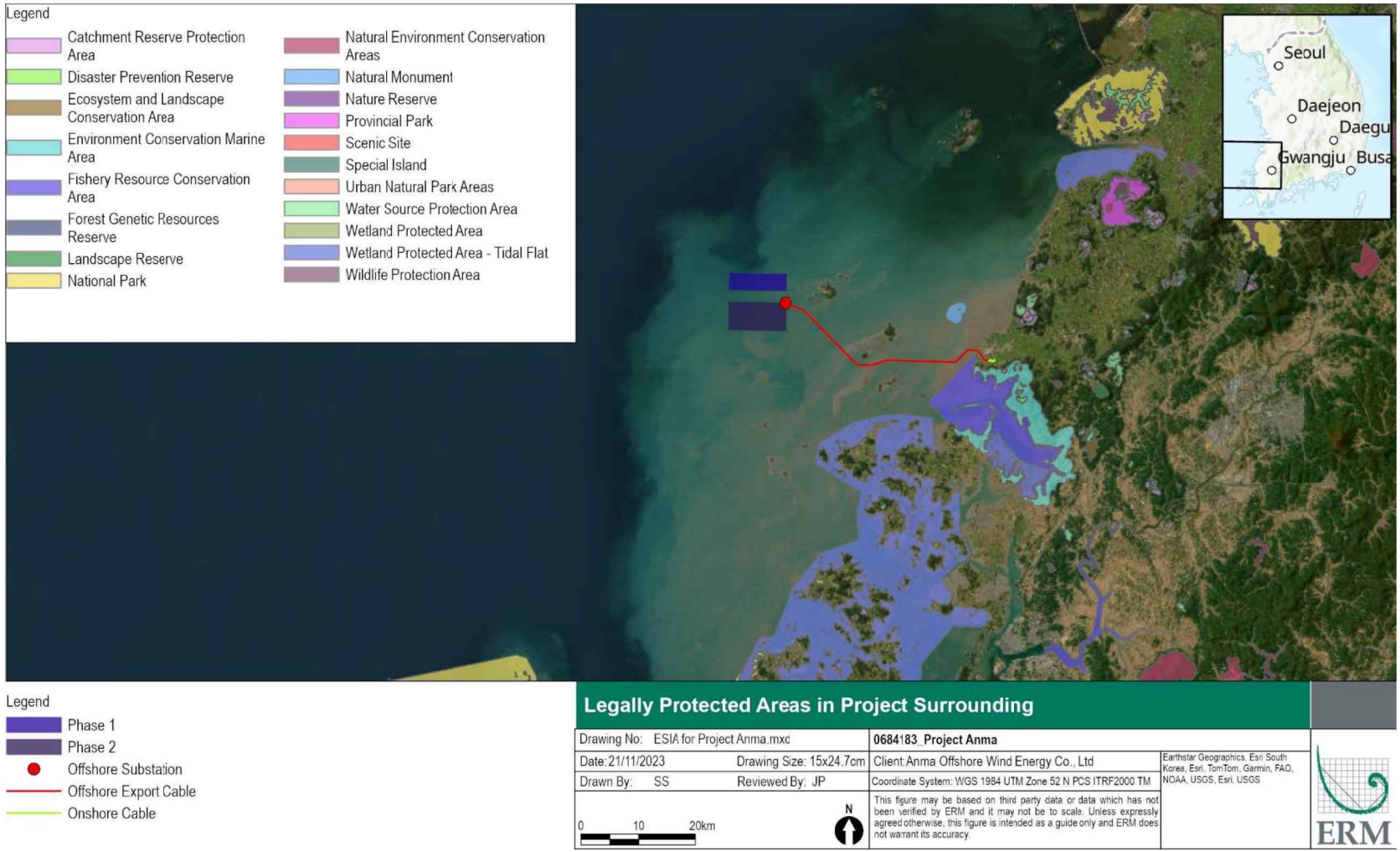
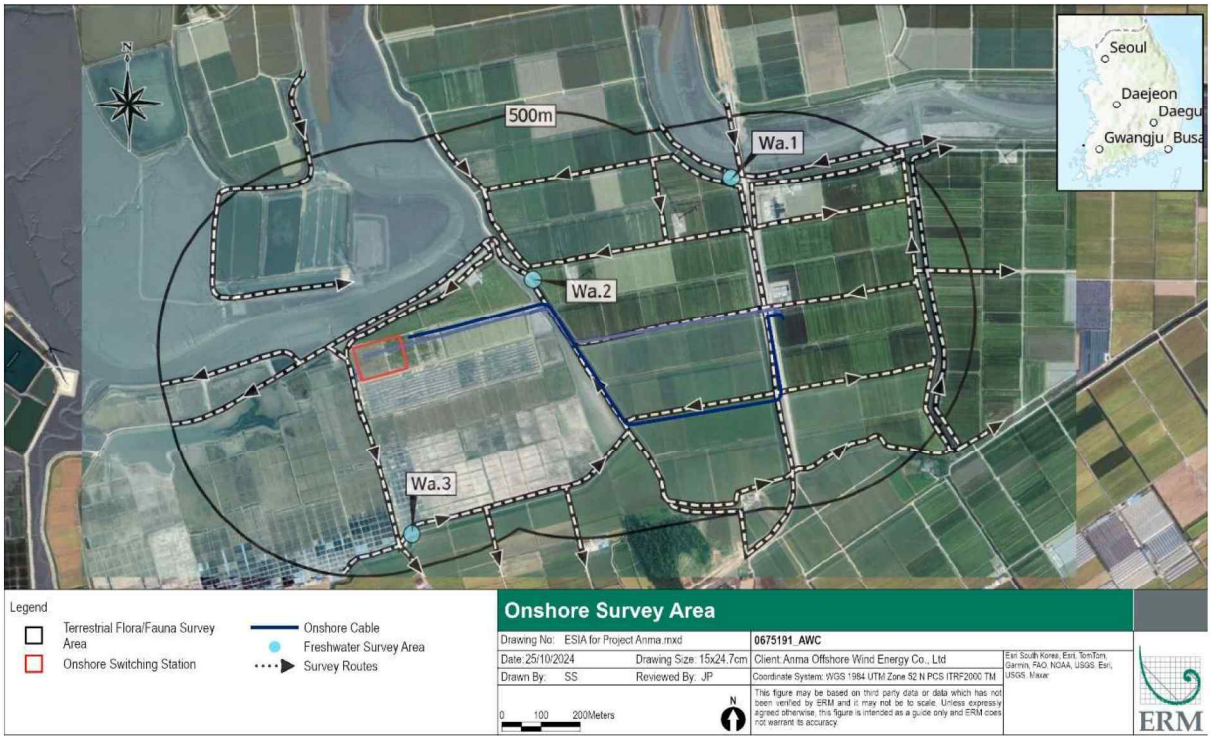


Figure 5-2 Legally Protected Areas

5.3 Flora

Two (2) rounds of flora survey have been conducted in 22 – 23 August 2022 and 17 October 2022, prior to the installation of solar farm infrastructure in the area. While Figure 5-3 reflects the onshore survey area based on the Environmental Impact Assessment (EIA), it does not represent the current land use status, which may include solar power development.

This difference is acknowledged in the context of baseline interpretation. The survey areas, however, were fully inclusive of the Project footprint and thus remain valid for biodiversity baseline purposes. For updated land use conditions, including solar farms, readers are referred to the Cumulative Impact Assessment.



Source: Final EIA
Note: The locations of the onshore substation and onshore cable route outlined during the EIA are not final and have been adjusted. However, the survey area still fully covers the entire project footprint. Additionally, the onshore area modifications have been incorporated into the EIA as part of the 2nd Amendment..

Figure 5-3 Terrestrial Flora Survey Area Methodology

Flora surveys were conducted by walking through the planned target areas and surrounding survey areas. In cases when identifying species on-site was difficult, specimens were collected and identified. For endangered wild species and plants of high conservation value, the GPS coordinates of the occurrence locations were recorded.

Surveys were carried out through on-site inspections and data collection centred around the survey areas.

Before selecting vegetation survey points, an overview of the distribution status of the survey area was obtained, followed by on-site inspections. According to the phytosociological survey method of the Z-M school (Braun-Blanquet, 1964), surveys were conducted using random sampling, considering cardinal directions in relatively uniformly composed habitats.

Based on the results of the vegetation survey, plant communities were classified, and the vertical structure was determined to create a current vegetation map (1/5,000 scale). The distribution of vegetation areas was calculated using a planimeter based on the corresponding vegetation type of the current vegetation map (1/5,000 topographic map).

5.3.1 Survey Findings

The flora survey yielded valuable insights into the botanical composition of the study area. In the initial survey, a meticulous examination identified a diverse array of taxa, comprising a total of 134 classifications. These were distributed across 38 families and 97 genera, encompassing 123 distinct species, along with four (4) subspecies and seven (7) varieties.

Subsequently, in the second survey, an equally thorough survey led to the identification of 123 taxa. These were categorized into 38 families and 92 genera, featuring 112 species, alongside four (4) subspecies and seven (7) varieties.

These encompassed 40 families, 101 genera, and a diverse array of 128 species, complemented by 4 subspecies and 7 varieties.

The distribution of taxa by taxonomic groups showcased a notable predominance of dicotyledons, comprising 106 species (76.3%), followed by monocotyledons with 1 species (0.7%) and gymnosperms with 32 species (23.0%).

Furthermore, the distribution by families revealed intriguing patterns, with Asteraceae, Poaceae, and Fabaceae accounting for significant proportions, at 13.7%, 17.3%, and 10% respectively. This was followed by Rosaceae (3.6%), Cyperaceae (6.5%), Brassicaceae (2.9%), and Apiaceae (2.1%). A notable diversity, constituting 43.9%, fell under the category of 'Others'.

Table 5-4 and Table 5-5 show the list of flora recorded and the species listed by family during the surveys.

Table 5-4 List of Flora

Class/Order	Family	Genus	Species	Subsp.	Variety	Forma	Total
Class *Dicotyledons*	1	1	1	-	-	-	1
Class *Monocotyledons*	-	-	-	-	-	-	-
Subclass *Magnoliidae*	39	100	127	4	7	-	138
Order *Rosales* (*Dicotyledons*)	34	76	98	4	4	-	106
Order *Lily (Monocotyledon)*	5	24	29	-	3	-	32
Total	40	101	128	4	7	-	139

Source: Final EIA

Table 5-5 Occurrences by Family within the Survey Area

Family	Number of Species	Ratio (%)
Asteraceae (Compositae)	19	13.7
Poaceae (Grass family)	24	17.3
Fabaceae (Legume family)	14	10.0
Rosaceae (Rose family)	5	3.6
Cyperaceae (Sedge family)	9	6.5
Brassicaceae (Cruciferous family)	4	2.9
Apiaceae (Umbelliferous family)	3	2.1
Others (Miscellaneous)	61	43.9
Total	139	100.0

Source: Final EIA

Rare Plants Designated by the Korea Forest Service

Based on the on-site survey results, no endangered species designated by the Ministry of Environment were found in the survey area. Similarly, no natural monuments or protected/old trees were identified through the thorough on-site survey. However, a list of rare plants designated by the Korea Forest Service is provided in Table 5-6.

Table 5-6 List of Rare Plants Designated by the Korea Forest Service (Literature Review)

Korea Forest Service, rare plant list Category[3]	Species	IUCN*** (2022-2)	Korean Red List*** (2014)
NT	*Iris ruthenica* Ker Gawl.	-	VU
VU	*Juniperus chinensis* L.	LC	VU
	Ilex cornuta Lindl. & Paxton	LC	-
	Wisteriopsis japonica J.Compton & Schrire	-	-
	Koelreuteria paniculata Laxm.	LC	-
LC	*Thuja orientalis* L.	NT	-
	Commelina communis L.	-	-
	Melothria japonica (Thunb.) Maxim. ex Cogn	-	-
	Lilium distichum Nakai ex Kamib.	-	-
	Tricyrtis macropoda Miq.	-	-
	Pueraria lobata (Willd.) Ohwi	-	-
	Phryma leptostachya L. var. *oblongifolia* Hond	-	-
	Chionanthus retusus Lindl. & Paxton	-	-
DD	*Chloranthus fortunei* (A.Gray) Solm	-	-
	Polygonum bellardii All	-	-

Source
(5th) Nationwide Natural Environmental Survey, Beopsungpo (356104), 2021, Ministry of Environment
(5th) Nationwide Environmental Survey, Gaeum (356141), 2021, Ministry of Environment
(5th) Nationwide Natural Environmental Survey, Pocheon (356142), 2021, Ministry of Environment
Environmental Impact Assessment for Small-scale Solar Power Generation Project at 313-40 Songam-ri, Yeomsan-myeon, Yeonggwang-gun, 2020, Mion Solar Power Plant

Source: Final EIA

*** **International Union for the Conservation of Nature (IUCN) Red List**
Least Concern (LC): Widespread and abundant.
Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

During the initial survey round, two (2) classifications of species with least concern (LC) were identified, namely *Commelina communis* L. and *Pueraria lobata* (Willd.). In the subsequent survey round, one classification of species with least concern (LC) was reaffirmed, specifically *Pueraria lobata* (Willd.).

[3] Korea Forest Service, rare plant list. Available at: https://www.nie.re.kr/nie/main/contents.do?menuNo=200124

Invasive Species

From 1998 to 2020, the Ministry of Environment designated a total of 16 species as ecosystem-disrupting organisms including *Amaranthus retroflexus* and *Impatiens glandulifera*. In response to this designation, various related organizations and universities have been making multifaceted efforts, including monitoring and eradication activities. Table 5-7 shows the list of invasive species identified during literature review around the project area.

The on-site survey results have confirmed the presence of two ecosystem-disrupting classified plants: *Humulus japonicus* and *Lactuca serriola*.

Table 5-7 List of Invasive Plants (Literature Review)

Family	Species
Pine Family	*Humulus japonicus* Sieboid & Zucc.
Aster Family	*Ambrosia artemisiifolia* L.
	Hypochaeris radicata L.
	Lactuca scariola L.
	Solidago altissima L.
Grass Family	*Paspalum distichum* L
	P. distichum var. *indutum* Shinners

Source
(5th) Nationwide Natural Environmental Survey, Beopsungpo (356104), 2021, Ministry of Environment
(5th) Nationwide Environmental Survey, Gaeum (356141), 2021, Ministry of Environment
(5th) Nationwide Natural Environmental Survey, Pocheon (356142), 2021, Ministry of Environment
Environmental Impact Assessment for Small-scale Solar Power Generation Project at 313-40 Songam-ri, Yeomsan-myeon, Yeonggwang-gun, 2020, Mion Solar Power Plant

Source: Final EIA



Source: Final EIA

Figure 5-4 Location of Recorded Invasive Species

5.3.2 Literature Review on Onshore Flora

To complement the results of the field flora surveys, a literature review was undertaken to identify additional terrestrial plant species that may occur within or around the Project area. In this context, the review area includes both the direct development footprint (i.e., offshore wind turbine layout, submarine cable route, onshore substation, and landfall site) and a broader ecological zone within approximately 5–10 km from the Project components. This is consistent with the spatial coverage of national ecological datasets and environmental impact studies conducted in the vicinity.

The literature review included four key sources that are spatially relevant to the Project's Area of Influence (AoI). According to these sources, the number of plant taxa recorded ranged from 126 to 491 per site. No legally protected or endangered plant species were reported in any of the surveys. The species composition reflects vegetation communities typical of lowland coastal and rural environments, including grasslands and cultivated areas. Life forms were primarily dominated by hemicryptophytes (H) and therophytes (Th), which are characteristic of open or disturbed landscapes.

A summary of the key literature-based findings is presented below.

Table 5-8 Summary of Flora Species in Literature Sources

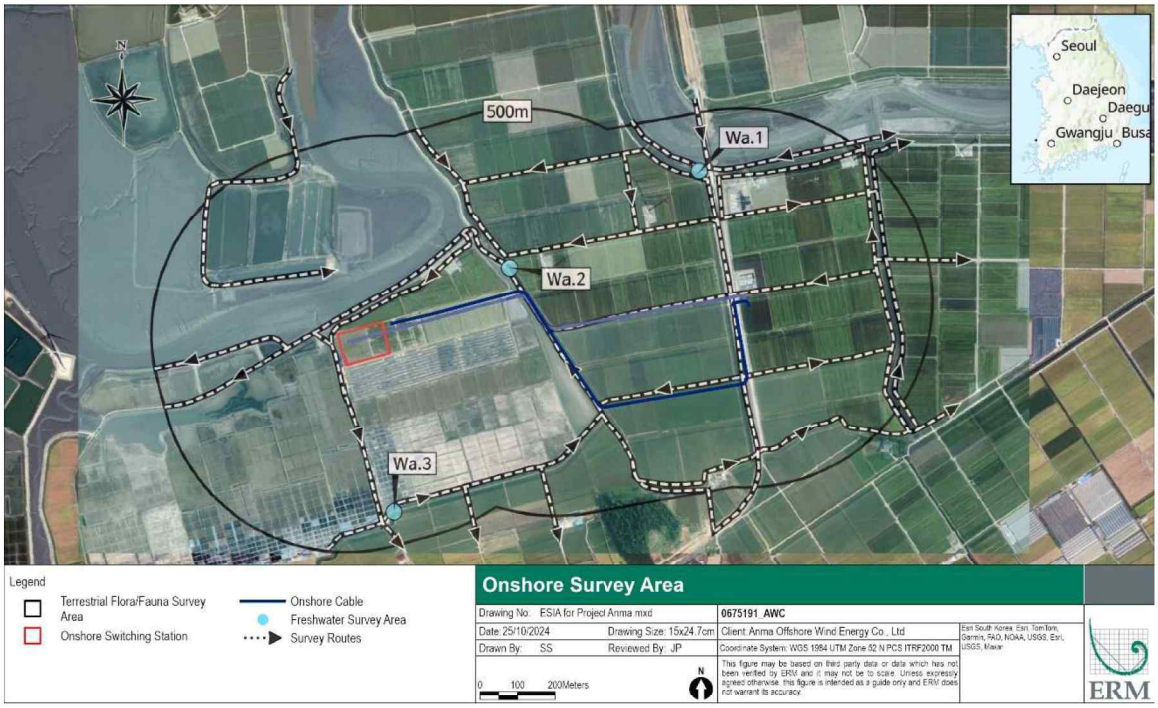
Literature Source	Number of Taxa	Life Form Characteristics	Protected Species
MoE (2021), 5th National Natural Environment Survey – Beopseongpo (356104)	491 taxa (103 families, 316 genera, 440 species, 12 subspecies, 32 varieties, 3 hybrids, 4 cultivars)	Dominated by hemicryptophytes and therophytes	None
MoE (2021), 5th National Natural Environment Survey – Pocheon (356142)	298 taxa (90 families, 231 genera, 272 species, 10 subspecies, 14 varieties, 1 hybrid, 1 cultivar)	Similar open-ground species composition	None
MoE (2020), Small-scale EIA for Songam-ri Solar Development Project	126 taxa (39 families, 102 genera, 121 species, 1 variety)	Typical of coastal rural lowland vegetation	None
MoE (2007), 3rd National Natural Environment Survey – Beopseongpo (356104)	347 taxa (96 families, 243 genera, 306 species, 8 subspecies, 29 varieties, 1 hybrid, 3 cultivars)	Dominated by herbaceous plants	None

These literature results align with the findings of the field survey, indicating that the plant community within and around the Project area is composed primarily of common herbaceous species with low conservation concern. No rare, endemic, or legally protected species were identified in either the literature or field data.

5.4 Terrestrial Fauna (non-avian species)

As specified in Table 5-1, surveys for terrestrial faun have been conducted in August 2022 and October 2022. And the supplementary survey for terrestrial mammals have been conducted in February 2023.

Figure 5-5 shows the area covered for terrestrial fauna during the baseline survey for EIA.



Source: Final EIA
Note: The locations of the onshore substation and onshore cable route outlined during the EIA are not final and have been adjusted. However, the survey area still fully covers the entire project footprint. Additionally, the onshore area modifications have been incorporated into the EIA as part of the 2nd Amendment.

Figure 5-5 Onshore Survey Area for Terrestrial Fauna

5.4.1 Methodologies

Methodology of Terrestrial Mammals Survey

During the traversal of the survey area, a combination of direct visual observations and strategically placed traps were employed on-site to definitively ascertain the presence of various species. Furthermore, meticulous surveys were conducted to assess habitats and delineate the distribution of major activity areas.

Recognizing that numerous mammals exhibit nocturnal behavior, particularly those of medium to large size, indirect indicators such as footprints, excrement, and feeding signs were attentively monitored along the survey routes. This indirect approach proved instrumental in documenting the presence of these species.

Emphasis was placed on the designated target area for survey. However, acknowledging the mobility of the species under scrutiny, the survey extended beyond the immediate target, encompassing the surrounding areas as well. This comprehensive methodology was designed to ensure a thorough and accurate assessment of species presence and activity within the survey area.

Methodology of Herpetofauna Survey

Survey for EIA around Landfall

Field surveys were meticulously conducted to accurately depict the ecological preferences of amphibians, particularly those favoring humid microenvironments such as rock crevices, valleys, open fields, and areas beneath tall trees. Detailed observations were made in open fields, sunlit areas, and around piled stones situated within the survey area. In the event of individual sightings during movement, a systematic approach was adopted, involving photography, capture, and subsequent identification. For species that eluded observation during the field survey period, efforts were made to ascertain their habitat presence through probing.

Supplementary Survey in Imja-do

It is pertinent to highlight that the Project anticipates the installation of a military radar at Imja-do. In line with the comprehensive data collection effort, a herpetofauna survey was undertaken in October 2023 to establish baseline information. Furthermore, Figure 5-6 provides a potential location for the military radar.

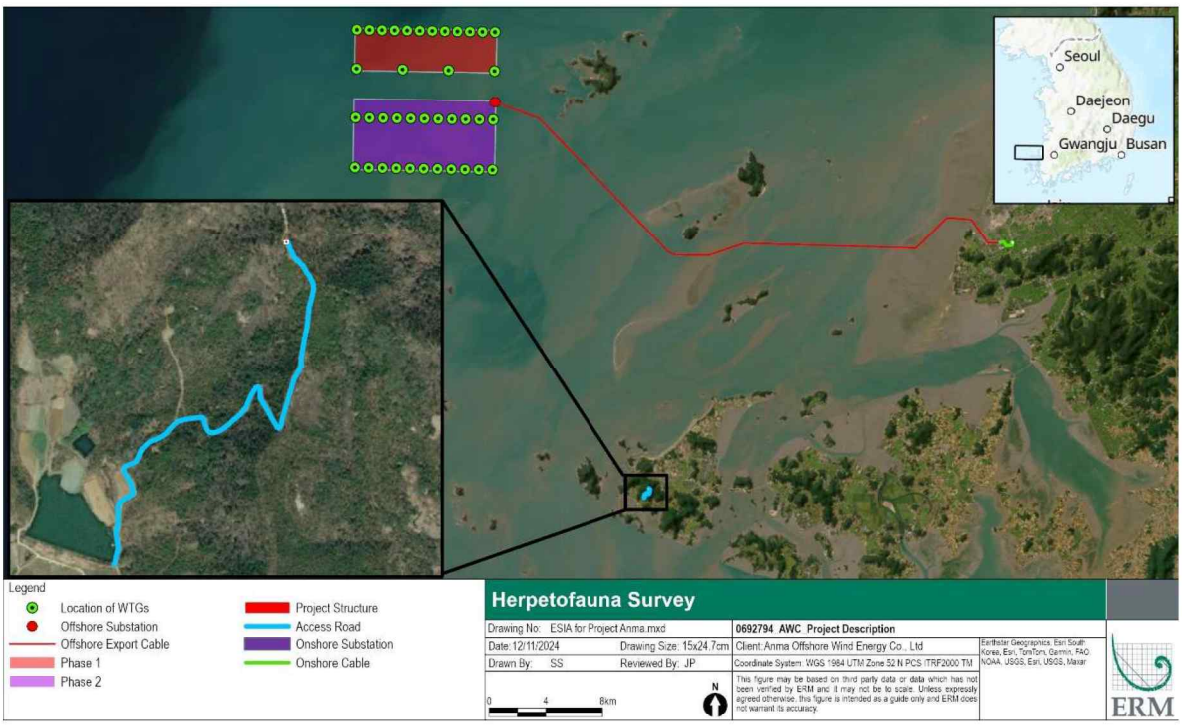


Figure 5-6 Location of Military Radar

The objective of the baseline survey for the expected military radar location is to characterize herpetofauna species, focusing on amphibians and reptiles, particularly those that prefer rocky, crevice-filled, and valley habitats within the designated study area. Visual surveys will be conducted along the access road, recording precise locations and capturing photographs of any observed herpetofauna. The primary emphasis is on amphibians and reptiles, with particular attention to "Endangered" snake species listed on the Korean Red List.

The survey methodology differs between the radar station site and the access road. For the radar station site, a 100-meter radius area was surveyed using a time-constrained intensive search method. Both day and night searches has been conducted, actively seeking reptiles and amphibians. The search involved overturning rocks, fallen logs, and other natural refuges where herpetofaunal species may seek shelter during warmer parts of the day. Each encountered individual has been photographed for identification, and data on geographical position, habitat, and microhabitat has been

recorded. When the calling frogs were detected, their vocalizations were recorded to assist in species identification and to develop a call library.

For the road stretch, a belt transect method was applied, covering a 50-meter width on each side of the road. Multiple randomly selected transects of predetermined length was walked along the road, ensuring all habitat types along the stretch are represented. The length of each transects have been determined during field reconnaissance. Visual encounters of reptile and amphibian individuals were documented, and photographs have been taken for identification. Data recorded for each encountered individual (both live and dead) included the following parameters:

- Species
- Sex (M/F) and Age (juvenile/subadult/mature; when possible)
- Habitat
- Microhabitat
- Geographical position
- Weather conditions
- Type of road surface (rough vs. smooth)
- Status of the specimen (gravid female/male in breeding plumage[4]/bulged belly[5]/injured)
- Presence or absence of gutters/channels along the road
- Presence or absence of horizontal pipes across the roads

The collected data has been analysed to determine the abundance, density and frequency of the encountered species, the likelihood associated with a species occurring on road leading to its subsequent mortality, species that might be impacted from setting up of the radar and so on.

Figure 5-7 provides a detailed representation of the designated survey area for the herpetofauna study.

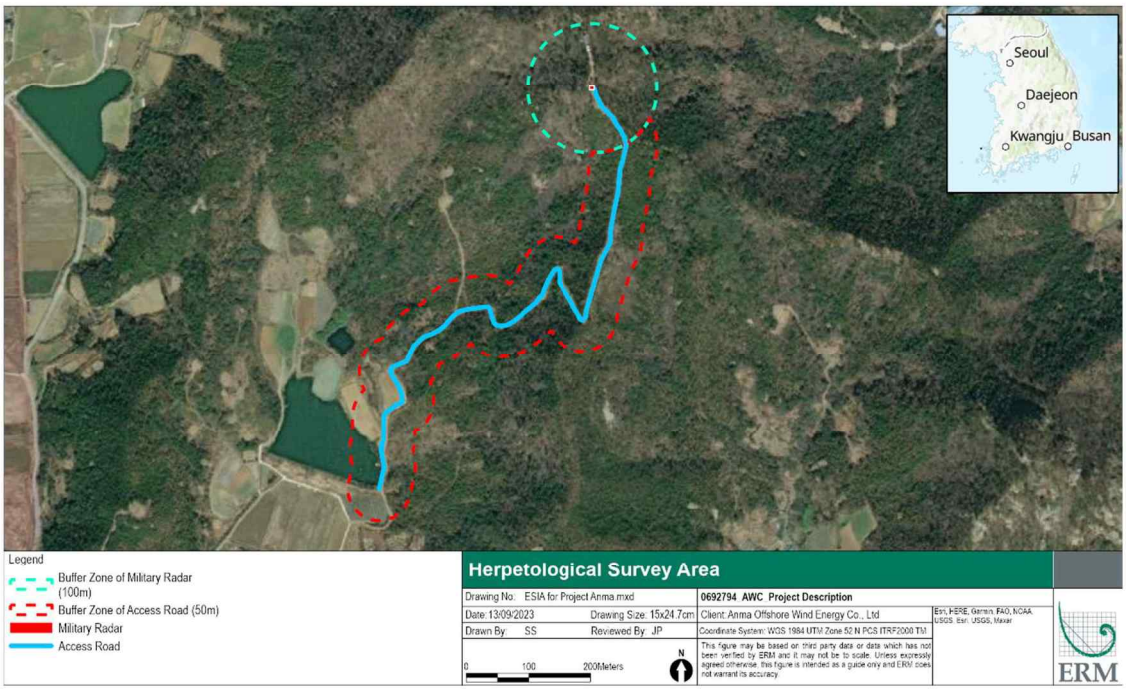


Figure 5-7 Survey Area Herpetofauna

[4] This will largely apply to lizards
[5] To indicate the feeding status

Methodology of Terrestrial Insects Survey

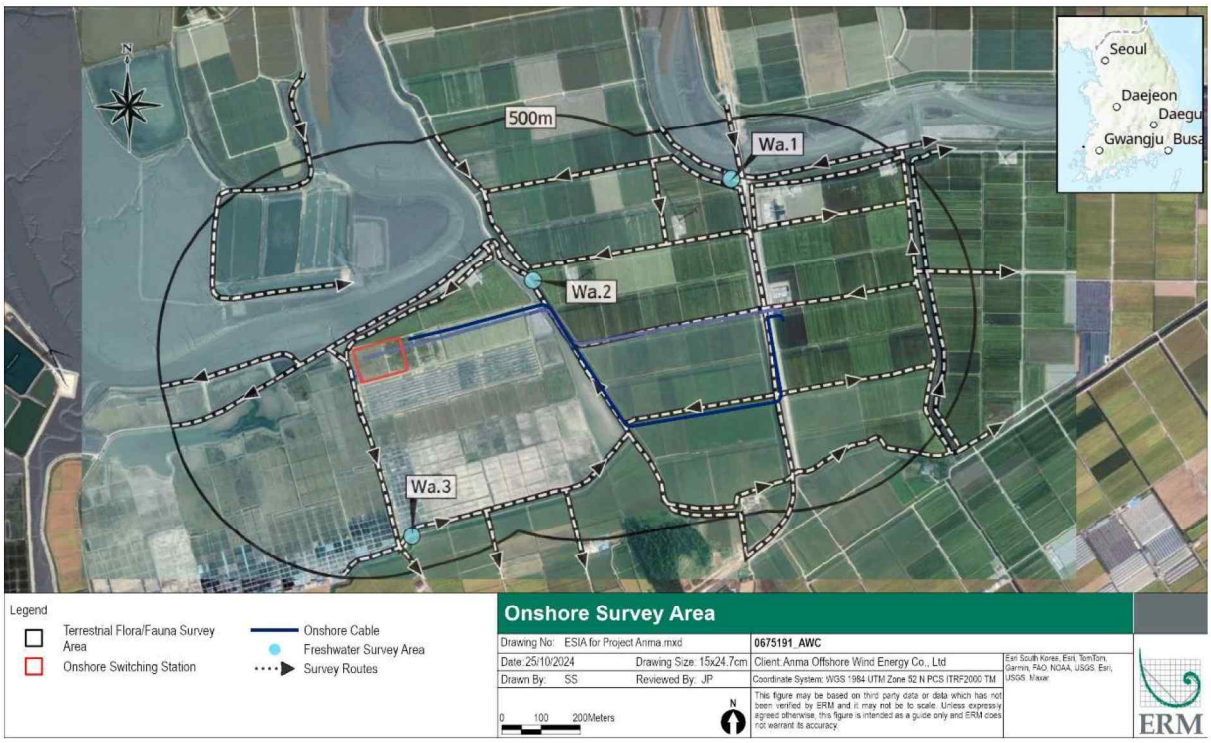
Field surveys were primarily concentrated in significant habitats, encompassing open fields, valleys, and forests. Diverse methods, including sweeping, beating, and visual inspections, were employed to discern species presence based on the distinctive characteristics of the survey area.

Methodology of Aquatic Fauna Survey

In the pursuit of assessing aquatic fauna, freshwater fish were methodically collected utilizing a dip net (4x4 mm) or a cast net (8x8 mm), following a thorough evaluation of the aquatic environment within the survey area. The collected species underwent immediate on-site identification before being released. Individuals posing identification challenges were either fixed in formalin or preserved in an icebox, subsequently transported to the laboratory for detailed classification and identification.

Simultaneously, benthic macroinvertebrates were surveyed at the same locations and during the same timeframes as the fish. Utilizing a Surber net (30x30 cm, mesh size 1 mm) and a kick net, samples were systematically collected, taking into account the nuances of the aquatic environment. The collected species were then preserved in 90% alcohol, transported to the laboratory, and subjected to rigorous classification and identification processes. This comprehensive approach ensured a thorough understanding of the diverse aquatic fauna within the surveyed area.

Figure 5-8 shows the location of survey for aquatic fauna.



Source: Final EIA
Note: The locations of the onshore substation and onshore cable route outlined during the EIA are not final and have been adjusted. However, the survey area still fully covers the entire project footprint. Additionally, the onshore area modifications have been incorporated into the EIA as part of the 2nd Amendment.

Figure 5-8 Terrestrial Flora Survey Area Methodology

5.4.2 Survey Findings

Result of Terrestrial Mammals Surveys

First-round survey results confirmed a total of 8 species belonging to 7 families of mammals in the survey area. These included the *Hydropotes inermis* [VU (IUCN v.2022-2)] (scat, hoofprints, probing),

Sus scrofa [LC (IUCN v.2022-2)] (probing), *Nyctereutes procyonoides* [LC (IUCN v.2022-2)] (scat, probing), *Felis catus* (sighting, probing), *Prionailurus bengalensis* [LC (IUCN v.2022-2)] (scat, probing), *Mogera robusta* [LC (IUCN v.2022-2)] (sighting, probing), *Rattus norvegicus* [LC (IUCN v.2022-2)] (sighting, probing), *Mustela sibirica* [LC (IUCN v.2022-2)] (sighting, probing) and *Mogera robusta* [LC (IUCN v.2022-2)] (burrow marks, probing). Among them, *Prionailurus bengalensis* [LC (IUCN v.2022-2)] (Endangered Wildlife Class II) was found and identified as legally protected species.

Second-round survey results identified a total of 6 species from 5 families of mammals in the survey area. These included the *Hydropotes inermis* (hoofprints, probing), *Nyctereutes procyonoides* (scat, probing), *Felis catus* (sighting, probing), *Prionailurus bengalensis* (scat), *Lutra lutra* (scat), and *Mogera robusta* (burrow marks). Among them *Lutra lutra* (Endangered Wildlife Class I, Natural Monument No. 330) and the *Prionailurus bengalensis* (Endangered Wildlife Class II) were found and identified as legally protected species.

In summary, a total of 9 species from 7 families of mammals were confirmed in the survey area. Among them, *Lutra lutra* (Endangered Wildlife Class I, Natural Monument No. 330) and the *Prionailurus bengalensis* (Endangered Wildlife Class II) were found and identified as legally protected species.

The presence of disturbing factors such as roads, and cultivated areas in the vicinity of the survey area resulted in a low frequency of mammal occurrence. The environment was characterized by extensive cultivated areas and fields, indicating that it is not an area where mammals can find suitable habitats for concealment and foraging.

Table 5-9 The Result of Terrestrial Mammal Surveys

Scientific Name	IUCN*** (2022-2)	Korean Red List*** (2014)	Field Surveys		
			1st	2nd	Total
Hydropotes inermis	VU	-	D,F,Q	F,Q	●
Sus scrofa	LC	-	Q		●
Nyctereutes procyonoides	LC	-	D,Q	D,Q	●
Felis catus	-	-	V,Q	V,Q	●
Prionailurus bengalensis	LC	VU	D,Q	D	●
Lutra lutra	NT	VU		D	●
Mustela sibirica	LC	-	V,Q		●
Rattus norvegicus	LC	-	V,Q		●
Mogera robusta	LC	-	T,Q	T	●
Total			8	6	9

Source: Final EIA
Note:
V: Sighting, D: Scat, F: Hoofprints, T: burrow marks, Q: Probing

***** International Union for the Conservation of Nature (IUCN) Red List**
Least Concern (LC): Widespread and abundant.
Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

Result of Herpetofauna Surveys

In the initial survey round, a total of six species spanning four families of amphibians and reptiles were documented, encompassing *Dryophytes japonicus, Pelophylax nigromaculatus, and Oocatochus rufodorsatus*. Notably, none of the recorded species were identified as legally protected.

The second-round survey yielded three species from two families, including the *Lithobates catesbeianus* and *Rhabdophis tigrinus* species, all of which are not protected.

In the comprehensive survey, a total of six species across four families of amphibians and reptiles were recorded, and none were classified as legally protected.

Information gathered through interviews with residents provided valuable evidence of habitat presence for five species, including *Dryophytes japonica, Lithobates catesbeianus, Pelophylax nigromaculatus, Gloydius brevicaudus,* and *Rhabdophis tigrinus* species.

During on-site observations, amphibians and reptiles were predominantly sighted in cultivated areas and along riverbanks within the survey vicinity. It was noteworthy that neighbouring areas were subject to continuous disturbances stemming from roadways. This observation underscores the influence of surrounding factors on the habitats of these species.

Table 5-10 Result of Herpetofauna Surveys

Scientific Name	IUCN*** (2022-2)	Korean Red List*** (2014)	Field Surveys		
			1st	2nd	Total
Dryophytes japonica	LC	-	A,Q		●
Lithobates catesbeianus	LC	-	S,Q	B	●
Pelophylax nigromaculatus	NT	-	A,B,S	Q	●
Gloydius brevicaudus	LC	-	Q		●
Oocatochus rufodorsatus	LC	-	A		●
Rhabdophis tigrinus	LC	-	A,Q	A,Q	●
Total			6	3	6

Source: Final EIA
Note:
A: Adult, S: Larva, B: Corpse, Q: Probing

*** **International Union for the Conservation of Nature (IUCN) Red List**
Least Concern (LC): Widespread and abundant.
Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

Result of Terrestrial Insects Surveys

In the initial survey round, a notable diversity of terrestrial insects was recorded, with a total of 51 species spanning 24 families identified within the survey area. None of the species identified were classified as legally protected.

The second-round survey yielded 26 species from 16 families of terrestrial insects in the survey area, and none were identified as legally protected.

The comprehensive survey revealed an even greater diversity, with a total of 64 species representing 28 families of terrestrial insects identified in the survey area. No legally protected species were identified among them.

Upon taxonomic analysis based on the on-site survey, the distribution of terrestrial insects by taxonomic order was as follows: Hemiptera (19 species, 29.70%), Lepidoptera (16 species, 25.00%), Orthoptera (8 species, 12.50%), Diptera (7 species, 10.90%), Odonata (6 species, 9.40%), Coleoptera (5 species, 7.80%), Hymenoptera (2 species, 3.10%), and Dictyoptera (1 species, 1.60%).

The predominant composition of the survey area (cultivated lands) limits the likelihood of diverse habitat availability and distribution for various species. This observation underscores the impact of predominant land use on insect diversity in the area.

The result of terrestrial insect is attached in Appendix B.

Result of Aquatic Fauna Surveys

Freshwater fish

Site surveys were conducted on 22 -23 August 2022, and a second round of survey took place on 17 October of the same year. The water system within the survey area is characterized by relatively simple aquatic structures, with limited development of microenvironments such as streams and small ponds, indicating a relatively uncomplicated aquatic ecosystem. The surrounding land use reveals a diverse range of features contributing to various potential pollution sources in the vicinity. The selection of survey sites for aquatic fauna was concentrated on three specific points, anticipated to be directly influenced by the implementation of the project. This targeted approach ensures a focused assessment of potential impacts on aquatic fauna resulting from the project's development.

Table 5-11 Status of Survey Sites

Site1		Status of Upstream	Status of Downstream
River Type	Flatland Stream		
Width (meters)	6~8m		
Water depth (centimeters)	10~80cm		
Riverbed Structure	Mud, Sand, Gravel, Pebbles		
Watershed Environment	Cultivated Land		
Embankment Type	Natural Form		
Site2		**Status of Upstream**	**Status of Downstream**
River Type	Flatland Stream		
Width (meters)	5~7m		
Water depth (centimeters)	30~70cm		
Riverbed Structure	Mud, Sand, Gravel, Pebbles		
Watershed Environment	Cultivated Land		
Embankment Type	Natural Form		
Site3		**Status of Upstream**	**Status of Downstream**
River Type	Flatland Stream		
Width (meters)	5~7m		
Water depth (centimeters)	20~70cm		
Riverbed Structure	Mud, Sand, Gravel, Pebbles		
Watershed Environment	Cultivated Land		
Embankment Type	Natural Form		

Source: Final EIA

In the first survey, a total of 91 individuals representing 9 species of freshwater fish from 4 families were observed within the survey area, and no legally protected species were identified. Similarly, in the second survey, 79 individuals from 8 species, belonging to 4 families, were observed, with no legally protected species identified. In total, 170 individuals from 10 species, spanning 5 families, were recorded in the survey area, and none of these were classified as legally protected.

Cluster analysis indicated *Hemiculter eigenmanni* as the dominant species, comprising 56 individuals (32.94%), followed by *Misgurnus anguillicaudatus* with 34 individuals (20.00%). Calculating the

ecological indices, the dominance index (DI) was determined to be 0.529, species diversity index (H') registered at 2.773, species richness index (R') measured at 1.752, and evenness index (E') recorded as 0.835.

Upon reviewing the distribution of observed fish species by family, it was determined that Cyprinidae exhibited the highest abundance, accounting for 50.00% of the observed species, followed by Gobiidae, comprising 20.00% of the observed species, while Cobitidae, Bagridae and Centrarchidae each constituted 10.00%.

The freshwater fish community within the survey area demonstrates a prevalence of tolerant species, likely attributed to the straightforward benthic structure and limited development of microhabitats like pools and riffles. This resilience equips them to adapt to environmental changes influenced by various pollution sources, including farmlands in the surrounding area. This observation underlines the significant influence of land use on the composition of the freshwater fish community in the surveyed area.

Table 5-12 Result of Freshwater Fish Survey

Scientific Name	IUCN*** (2022-2)	Korean Red List*** (2014)	Field Surveys						Total	Dominance (%)
			1st			2nd				
			St.1	St.2	St.3	St.1	St.2	St.3		
Cyprinus carpio	VU	-	-	2	2	-	2	-	6	3.53
Carassius auratus	LC	-	4	3	5	-	3	3	18	10.59
Pseudorasbora parva	LC	-	-	5	-	9	-	-	14	8.24
Zacco platypus	-	-	-	7	-	-	-	-	7	4.12
Hemiculter eigenmanni	LC	-	12	14	10	-	11	9	56	32.94
Misgurnus anguillicaudatus	LC	-	7	-	4	6	9	8	34	20.00
Pseudobagrus fulvidraco	LC	-	-	2	-	-	-	-	2	1.18
Micropterus salmoides	LC	-	-	-	-	3	-	-	3	1.76
Rhinogobius brunneus	DD	-	5	-	3	3	5	4	20	11.76
Tridentiger brevispinis	LC	-	-	6	-	4	-	-	10	5.88
Total Number of Species			4	7	5	5	5	4	10	
Total Number of Individuals			28	39	24	25	30	24	170	
Species Diversity			1.869	2.495	2.102	2.182	2.075	1.865	2.773	
Species Richness			0.900	1.638	1.259	1.243	1.176	0.944	1.752	
Evenness			0.934	0.889	0.905	0.940	0.894	0.932	0.835	
Dominance			0.679	0.538	0.625	0.600	0.667	0.708	0.529	

Source: Final EIA

***** International Union for the Conservation of Nature (IUCN) Red List**

Least Concern (LC): Widespread and abundant.
Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

Benthic macroinvertebrates

In the first survey, a comprehensive identification effort revealed a total of 11 families and 13 species of benthic macroinvertebrates, amounting to 163 individuals. Notably, no legally protected species were observed during this survey.

The subsequent survey further expanded the understanding, uncovering a broader spectrum with 16 families and 17 species of benthic macroinvertebrates, totalling 184 individuals. Once again, no legally protected species were encountered.

Summarily, a diverse array was catalogued, encompassing 16 families and 18 species of benthic macroinvertebrates in the survey area, totalling 347 individuals. This diversity, however, was influenced by the presence of various pollutants in the surrounding areas, notably agricultural fields, which likely contributed to the observed range of species. The majority of these species exhibited notable resilience in the face of pollution.

In terms of dominance, red-colored Chironomidae was the dominant species, comprising 87 individuals (25.07%), while non-red-colored Chironomidae followed closely as the subdominant species with 39 individuals (11.24%).

On considering the taxonomic composition, non-insects constituted the largest group with 9 species (50.01%), followed by Hemiptera with 4 species (22.21%), Diptera with 3 species (16.66%), and Odonata as well as Coleoptera, each contributing 1 species (5.56%).

The observed distribution of benthic macroinvertebrates was notably influenced by the presence of various pollutants in the surrounding areas, such as agricultural fields. This condition favored the dominance of species with higher pollution tolerance, providing a clear illustration of the ecological impact of anthropogenic activities on benthic communities.

Table 5-13 Result of Benthic Macroinvertebrates Survey

Scientific Name	Field Survey						Total	Dominance (%)
	1st			2nd				
	St.1	St.2	St.3	St.1	St.2	St.3		
Limnodrilus gotoi	-	-	-	2	-	3	5	1.44
Erpobdella sp.	-	-	4	-	-	4	8	2.31
Asellus sp.	5	4	-	5	4	6	24	6.92
Caridina denticulata denticulata	11	7	10	-	-	8	36	10.37
Ischnura asiatica	3	3	-	-	3	-	9	2.59
Sigara substriata	-	6	9	5	4	-	24	6.92
Appasus japonicus	2	-	4	-	3	-	9	2.59
Ranatra chinensis	2	-	2	-	2	2	8	2.31
Ranatra unicolor	3	-	-	-	-	-	3	0.86
Eretes griseus	-	2	2	-	3	-	7	2.02
Chironomidae sp.(W)	9	10	-	11	-	9	39	11.24
Chironomidae sp.(R)	21	11	12	13	15	15	87	25.07
Culicidae sp.	-	-	-	-	3	-	3	0.86
Total Number of Species	9	8	8	9	10	12	18	-
Total Number of Individuals	61	52	50	56	49	79	347	
Species Diversity	2.725	2.821	2.755	2.963	3.03	3.404	3.605	
Species Richness	1.946	1.772	1.789	1.987	2.313	2.517	2.906	

Scientific Name	Field Survey						Total	Dominance (%)
	1st			2nd				
	St.1	St.2	St.3	St.1	St.2	St.3		
Evenness	0.86	0.94	0.918	0.935	0.912	0.949	0.864	

Source: Final EIA

5.4.3 Literature Review on Terrestrial Fauna

In addition to primary field surveys conducted under the National EIA, a desk-based literature review was undertaken to supplement and contextualize the understanding of terrestrial fauna species with potential presence in the Project area. The review covered four major taxonomic groups: terrestrial mammals, herpetofauna (amphibians and reptiles), terrestrial insects, and aquatic fauna (freshwater fish and benthic macroinvertebrates). This review aimed to:

- Identify any legally protected, endangered, or ecologically sensitive species not observed during field surveys but reported in prior studies or databases;
- Assess long-term species presence or habitat usage trends within or near the Project's Area of Influence (AoI);
- Support the assessment of cumulative biodiversity risks and appropriate mitigation measures in line with IFC Performance Standard 6 (PS6).

The literature review included scientific publications, ecological reports, and government biodiversity records. Results are organized by taxonomic group in the subsections below.

Terrestrial Mammals

To complement the field survey results conducted under the National EIA, a literature review was undertaken to assess the potential presence of legally protected terrestrial mammal species in and around the Project area. The review focused on species listed as Endangered Wildlife Class I and II under the Korean Wildlife Protection and Management Act and Natural Monuments designated by the Cultural Heritage Administration of Korea.

According to the literature review, the leopard cat (*Prionailurus bengalensis*), Eurasian otter (*Lutra lutra*), and yellow-throated marten (*Martes flavigula*) were repeatedly reported across several ecological survey sheets that overlapped with the Project's cable route and substation area.[6,7,8,9,10] These species are considered legally protected and are known to inhabit agroforestry edges, riverine corridors, and riparian buffer zones - landscape types that are broadly consistent with areas intersected by the Project's linear infrastructure.

Table 5-14 Summary of Terrestrial Mammal Species Reported in Literature

Literature Source	Area	No. of Species	Key Species	Protected Species
MoE (2007). 3rd National Natural Environment Survey: Chilsan (356103)[6]	Chilsan	6	Korean water deer, raccoon dog, squirrel	None
MoE (2021). 5th National Natural Environment Survey: Beopseongpo (356104)[7]	Beopseongpo	10	Wild boar, badger, water deer	Leopard cat, Eurasian otter, Yellow-throated marten

[6] Ministry of Environment (2007). 3rd National Natural Environment Survey: Chilsan (356103)
[7] Ministry of Environment (2021). 5th National Natural Environment Survey: Beopseongpo (356104)
[8] Ministry of Environment (2021). 5th National Natural Environment Survey: Gaeum (356141)
[9] Ministry of Environment (2021). 5th National Natural Environment Survey: Pocheon (356142)
[10] Mion Solar Power Plant (2020). Small-scale EIA for solar development project in Songam-ri, Yeonggwang-gun

Literature Source	Area	No. of Species	Key Species	Protected Species
MoE (2021). 5th National Natural Environment Survey: Gaeum (356141)[8]	Gaeum	9	Wild boar, raccoon dog	Leopard cat, Eurasian otter
MoE (2021). 5th National Natural Environment Survey: Pocheon (356142)[9]	Pocheon	6	Wild boar, badger	Leopard cat, Eurasian otter, Yellow-throated marten
Mion Solar Power Plant (2020). Small-scale EIA[10]	Songam-ri	5	Water deer, raccoon dog	None

Note: Only protected species such as Prionailurus bengalensis, Lutra lutra, and Martes flavigula were confirmed in the reviewed sources.

Among these species:

- The leopard cat and marten areis known to adapt to fragmented agricultural or field-margin habitats and have been identified in open or semi-open areas near similar land-use types.
- The yellow-throated marten is typically found in dense coniferous forests[11]. Therefore, it is reasonable to infer that its records in the literature were associated with nearby forested habitats, and that the species was not detected during the field survey due to the absence of such habitats within the immediate project footprint
- The Eurasian otter is typically associated with undisturbed river systems and wetland edges, and its potential presence is notable considering the proximity of the Bulgapcheon stream, which flows just north of the Project footprint.

The spatial distribution of these species, as derived from desk-based sources, is illustrated in Figure 5-9. This figure integrates records from multiple national ecological assessments and site-specific evaluations, showing a clear overlap between protected species records and the Project Area of Influence (AoI). These findings are consistent with field surveys conducted as part of the National EIA, which confirmed the presence of Prionailurus bengalensis and Lutra lutra through direct signs (e.g., feces, tracks) during site reconnaissance.

[11] National Institute of Biological Resources (https://species.nibr.go.kr)

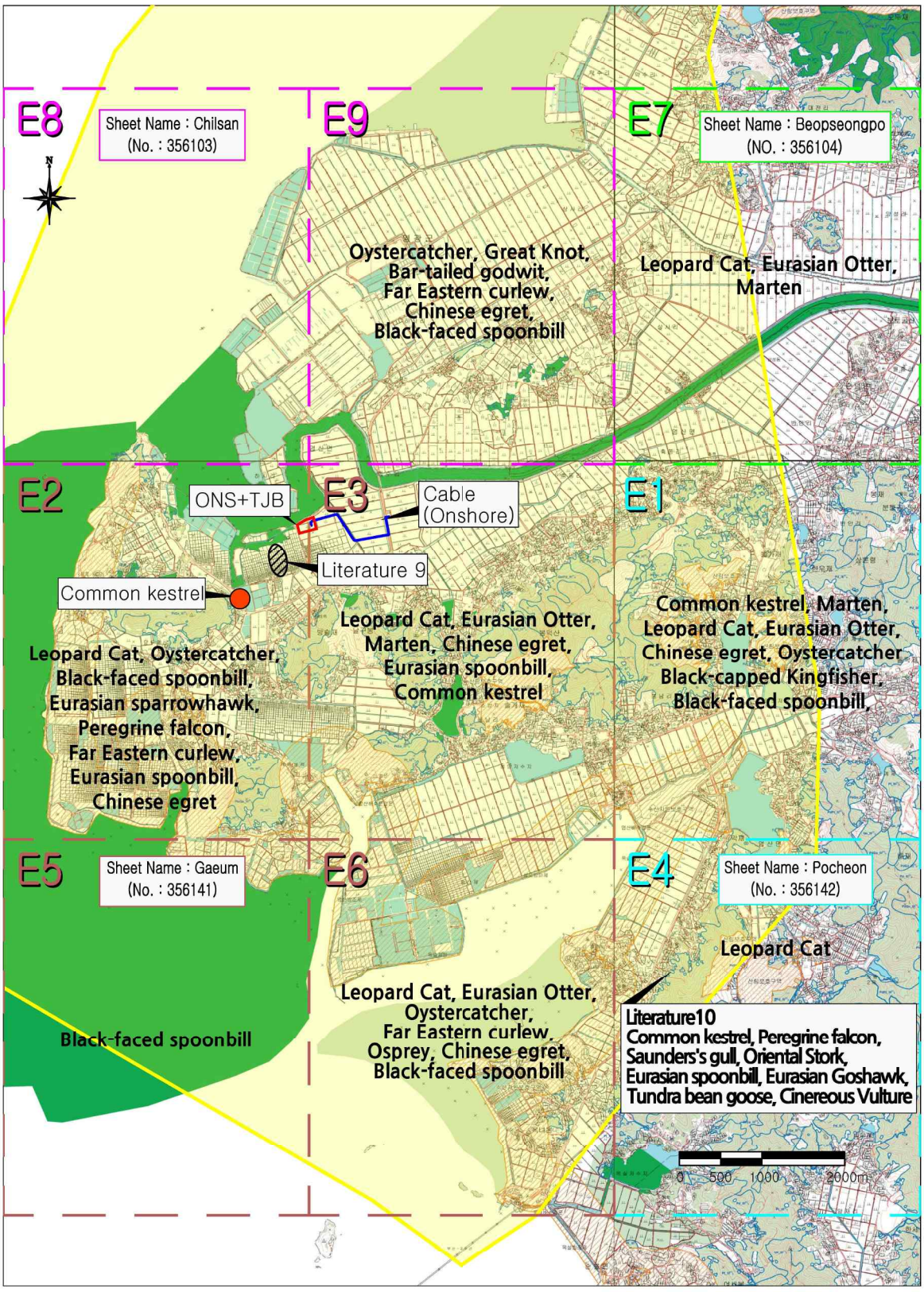


Figure 5-9 Mapped Distribution of Legally Protected Terrestrial Fauna from Literature Review

Given this alignment, mitigation measures to reduce habitat disturbance and to ensure ecological connectivity should be carefully considered in the Project's environmental management planning.

These measures may include preserving riparian buffer zone and adjusting construction schedules to avoid nighttime activities, taking into account the ecological characteristics of nocturnal species.

Herpetofauna

A literature review was conducted to supplement the field survey findings and to identify amphibian and reptile species historically reported in the vicinity of the Project area. The review primarily considered national ecological data and prior small-scale EIAs that included observations in the relevant map sheets intersecting the Project's onshore footprint.

A total of 6 to 14 herpetofauna species were reported across the reviewed sources[6,7,8,9,10]. Frequently recorded species include the Korean salamander(*Hynobius leechii*), Dark-spotted frog(*Pelophylax nigromaculatus*), Japanese tree frog (*Dryophytes japonicus*), Asiatic Toad(*Bufo gargarizans*), Japanese keelback (*Rhabdophis tigrinus*), and the Frog-eating rat snake (*Oocatochus rufodorsatus*). These species are commonly associated with paddy fields, irrigation channels, and edge habitats of lowland forest or shrubland environments.

Table 5-15 Summary of Amphibian and Reptile Species Reported in Literature

Literature Source	Area	No. of Species	Common Species	Protected Species
MoE (2007). 3rd National Natural Environment Survey: Chilsan (356103)[6]	Chilsan	9	Japanese tree frog, Dark-spotted frog, Japanese keelback	None
MoE (2021). 5th National Natural Environment Survey: Beopseongpo (356104)[7]	Beopseongpo	11	Korean salamander, Asiatic Toad, Frog-eating rat snake	None
MoE (2021). 5th National Natural Environment Survey: Gaeum (356141)[8]	Gaeum	13	Korean salamander, Asiatic Toad, Frog-eating rat snake	None
MoE (2021). 5th National Natural Environment Survey: Pocheon (356142)[9]	Pocheon	14	Japanese tree frog, Dark-spotted frog, Frog-eating rat snake	None
Mion Solar Power Plant (2020). Small-scale EIA[10]	Songam-ri	6	Dark-spotted frog, Japanese keelback	None

Note: No amphibian or reptile species of legal conservation status were reported in any of the reviewed literature.

While no amphibians or reptiles of conservation status (e.g., Endangered Wildlife Classes I or II) were recorded in either field or literature surveys, the range and consistency of these generalist species confirm that the Project area lies within their potential habitat range.

The spatial extent of historical records is presented in Figure 5-9, which integrates outputs from multiple government-led natural environment surveys and a prior site-specific impact assessment. These findings suggest that although the Project area does not contain core herpetofauna habitat, it may support movement corridors or edge habitats used seasonally by common species. Preventing habitat severance (e.g., maintaining vegetated ditches and riparian buffers) is recommended to minimize ecological disturbance during construction.

Terrestrial Insects

A literature review was conducted to evaluate the diversity and potential presence of terrestrial insect species within the Project area and its surrounding landscape. This review focused on data from national ecological surveys and previous small-scale impact assessments conducted within map grids overlapping the terrestrial alignment of the Project.

Across the reviewed literature, between 67 and 288 species of insects were recorded, covering 34 to 95 taxonomic families[6,7,8,9,10]. Dominant groups included Hemiptera (true bugs), Lepidoptera (butterflies and moths), Orthoptera (grasshoppers and crickets), and Coleoptera (beetles). These species are typical of disturbed lowland habitats, including agricultural fields, grasslands, and transitional zones along forest edges.

Table 5-16 Summary of Terrestrial Insect Species Reported in Literature

Literature Source	Area	No. of Species	Taxonomic Families	Protected Species
MoE (2007). 3rd National Natural Environment Survey: Chilsan (356103)[6]	Chilsan	71	Hemiptera, Lepidoptera	None
MoE (2021). 5th National Natural Environment Survey: Beopseongpo (356104)[7]	Beopseongpo	225	Orthoptera, Coleoptera	None
MoE (2021). 5th National Natural Environment Survey: Gaeum (356141)[8]	Gaeum	286	Lepidoptera, Coleoptera	None
MoE (2021). 5th National Natural Environment Survey: Pocheon (356142)[9]	Pocheon	288	Hemiptera, Odonata	None
Mion Solar Power Plant (2020). Small-scale EIA[10]	Songam-ri	67	Mixed orders	None

Note: Despite high species diversity, no legally protected insect species were identified.

No protected insect species were identified in any of the literature sources. Nevertheless, the relatively high species richness—particularly in documents associated with Gaeum and Pocheon sheets—suggests that the Project area supports a diverse assemblage of generalist taxa. Many of these species are sensitive to changes in vegetation structure, soil compaction, and chemical inputs.

Although no conservation-critical species were identified, insect diversity contributes to broader ecosystem function, such as pollination and food web support, and therefore should be considered during construction-phase planning.

Aquatic Fauna

A desk-based literature review was conducted to assess the diversity and presence of aquatic fauna within the Project area, specifically focusing on freshwater fish and benthic macroinvertebrates. The review considered national-level ecological surveys and local environmental assessments covering stream systems and lowland basins intersecting the Project's cable route and substation area.

Across the reviewed sources, a total of 1 to 9 freshwater fish species and 9 to 18 benthic macroinvertebrate species were recorded.[6,12,13,14] The most commonly cited fish taxa include Pond loach (*Misgurnus anguillicaudatus*), Goldfish (*Carassius auratus*), Minnow (*Zacco platypus*), and gobies (Rhinogobius spp.). These species are typical of low-gradient agricultural streams and irrigation channels. Among benthic macroinvertebrates, the community was consistently dominated by chironomids (non-biting midges), along with mayflies and aquatic beetles—indicators of tolerant communities frequently found in moderately impacted rural watercourses.

[12] Ministry of Environment (2007). 3rd National Natural Environment Survey: Beopseongpo (356104)
[13] Ministry of Environment (2009). 3rd National Natural Environment Survey: Gaeum (356141)
[14] Ministry of Environment (2009). 3rd National Natural Environment Survey: Pocheon (356142)

Table 5-17 Summary of Aquatic Fauna Species Reported in Literature

Literature Source	Freshwater Fish (No. of species)	Main Fish Species	Macroinvertebrates (No. of species)	Dominant Taxa
MoE (2007). 3rd National Natural Environment Survey: Chilsan (356103)[6]	1	Goby (*Rhinogobius brunneus*)	12	Chironomidae, Ephemeroptera
MoE (2007). 3rd National Natural Environment Survey: Beopseongpo (356104)[7,12]	4	Crucian carp, Zacco	9	Chironomidae
MoE (2009). 3rd National Natural Environment Survey: Gaeum (356141)[8,13]	9	Loach, Goby, Minnow	18	Chironomidae, Beetles
MoE (2009). 3rd National Natural Environment Survey: Pocheon (356142)[9,14]	9	Minnow, Mud loach	11	Mayflies, Chironomidae

Note: No protected aquatic species were reported in any of the literature sources.

No protected aquatic species were reported in the reviewed literature. Nevertheless, the consistency of aquatic community composition across the surveyed documents suggests the Project area supports stable, generalist freshwater ecosystems. To mitigate potential construction-related impacts, best practices such as erosion control, sediment containment, and water quality monitoring are recommended.

5.5 Avifauna

As detailed in Chapter 5.1, two distinct surveys were initiated. The first is an EIA survey, which was carried out from 2020 to 2023 to comprehensively evaluate potential environmental effects. The second is a supplementary survey, launched in March 2023, and completed in February 2024 on a monthly basis. This data collection effort supplements the initial EIA survey, ensuring an assessment of environmental factors.

5.5.1 Methodology

Methodology of Bird Survey for EIA

Terrestrial Bird Surveys

The bird surveys incorporated a multi-faceted approach tailored to comprehensively observe and document avian species within the designated survey areas. This included the utilization of the line road census method, enabling the selection of specific routes for direct bird observation on both sides, whether by walking or driving.

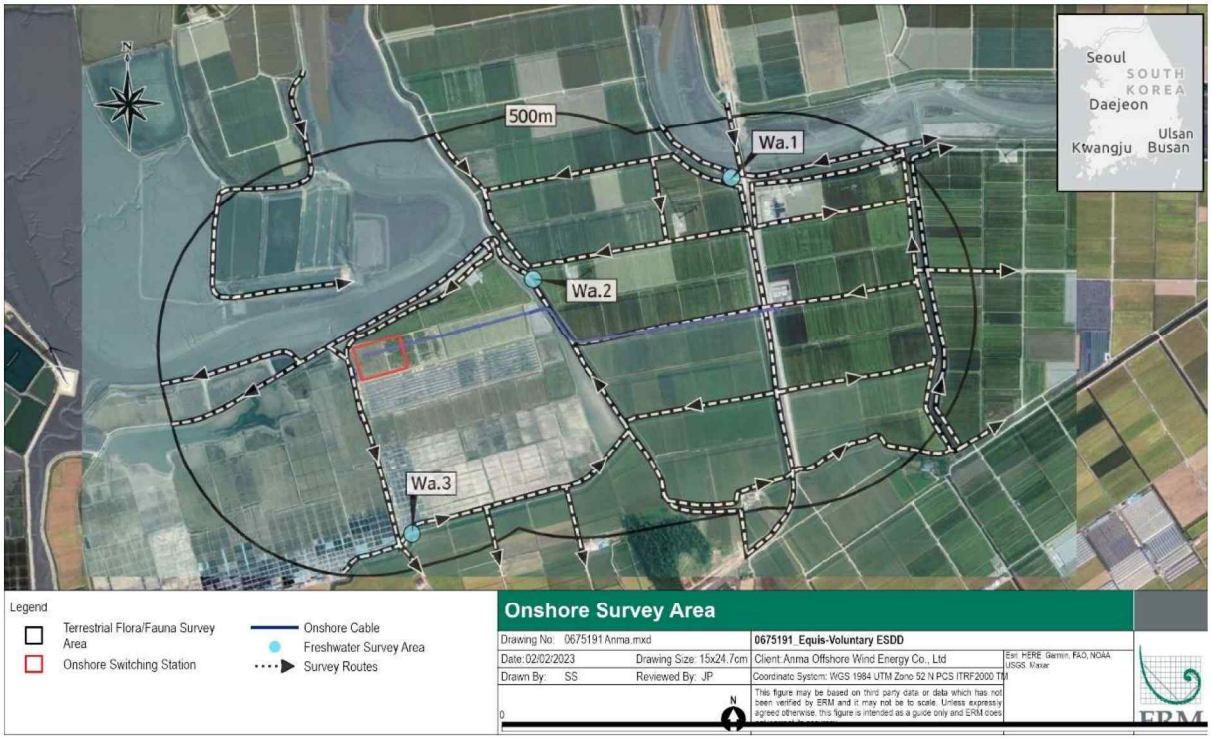
Additionally, the point counts method facilitated stationary observations in areas with optimal visibility for approximately 10 minutes, allowing for the recording of bird types and quantities. To ensure accurate counts, optical aids like telescopes and binoculars were used alongside naked-eye observations.

Surveyors took care to avoid duplicate counts by recording the maximum number of individuals of the same species within the survey area. For species heavily reliant on mud flats, such as shorebirds

including godwits, plovers, black-faced spoonbills, and seagulls, surveys were conducted two hours before and after high tide to account for their habitat fluctuations.

This timing—two hours before and after high tide—was selected to maximize visibility and species identification. In western coastal mudflats, including the survey area, the gradient is shallow and the tidal range extensive. At low tide, birds often forage far from the observer, making visual identification of species and accurate counts difficult. Conducting surveys during the period surrounding high tide ensures that birds remain within visible range on exposed flats or roosts, thereby improving observation accuracy and data quality.

Figure 5-10 displays the area of terrestrial bird surveys conducted during the preparation of EIA.



Source: Final EIA
Note: The locations of the onshore substation and onshore cable route outlined during the EIA are not final and have been adjusted. However, the survey area still fully covers the entire project footprint. Additionally, the onshore area modifications have been incorporated into the EIA as part of the 2nd Amendment.

Figure 5-10 Area of Terrestrial Bird Surveys

Marine Bird Surveys

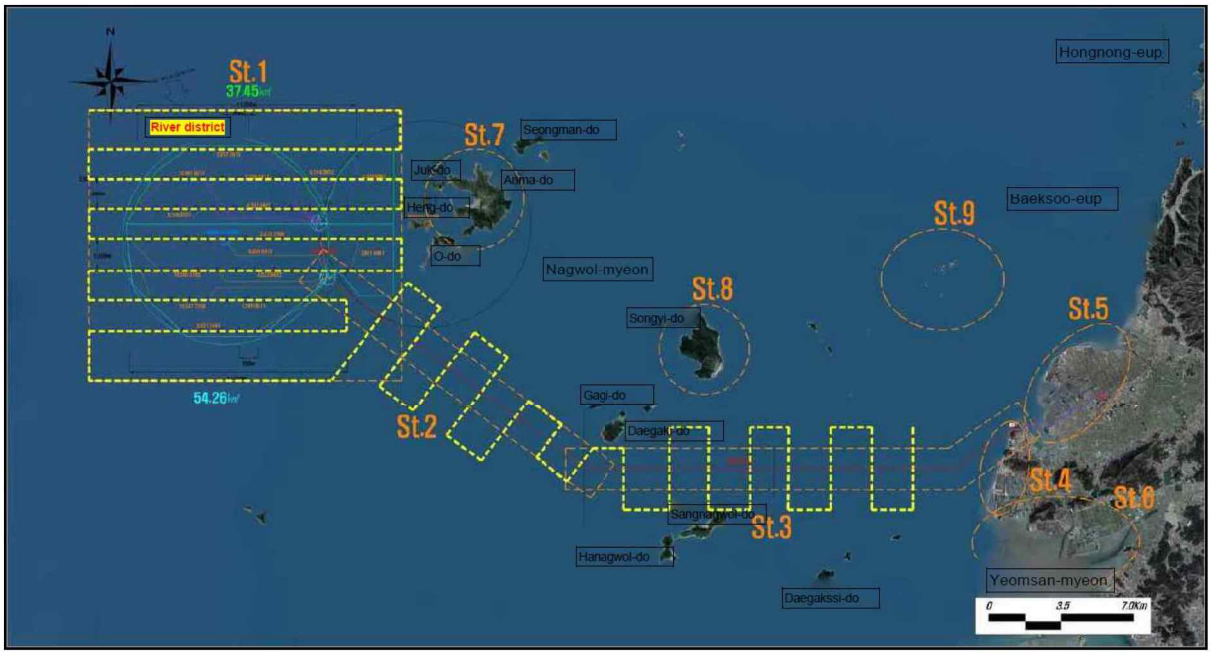
The marine bird surveys encompassed ship-based surveys around the offshore wind farm and the planned submarine cable route, employing a zigzag pattern to cover the area. Surveyors carefully observed bird behavior, emergence, flight patterns, and migration directions. Additionally, island-specific surveys were conducted, considering the potential significance of nearby islands as habitats or stopover sites for avian species. Each island within a region was thoroughly surveyed using a combination of the line road census and point counts methods.

Furthermore, coastal surveys were carried out to assess avian presence near the onshore facilities, including the cable landfall site. At each selected coastal site, point count methods were employed to record bird species and individual abundance, including those observed in tidal flat habitats.

In particular, the area surrounding the landfall site includes the Baeksu tidal flat, which is designated as a KBA. Unlike the terrestrial bird surveys, observations in this area were not limited to high tide conditions but also includes low tide periods.

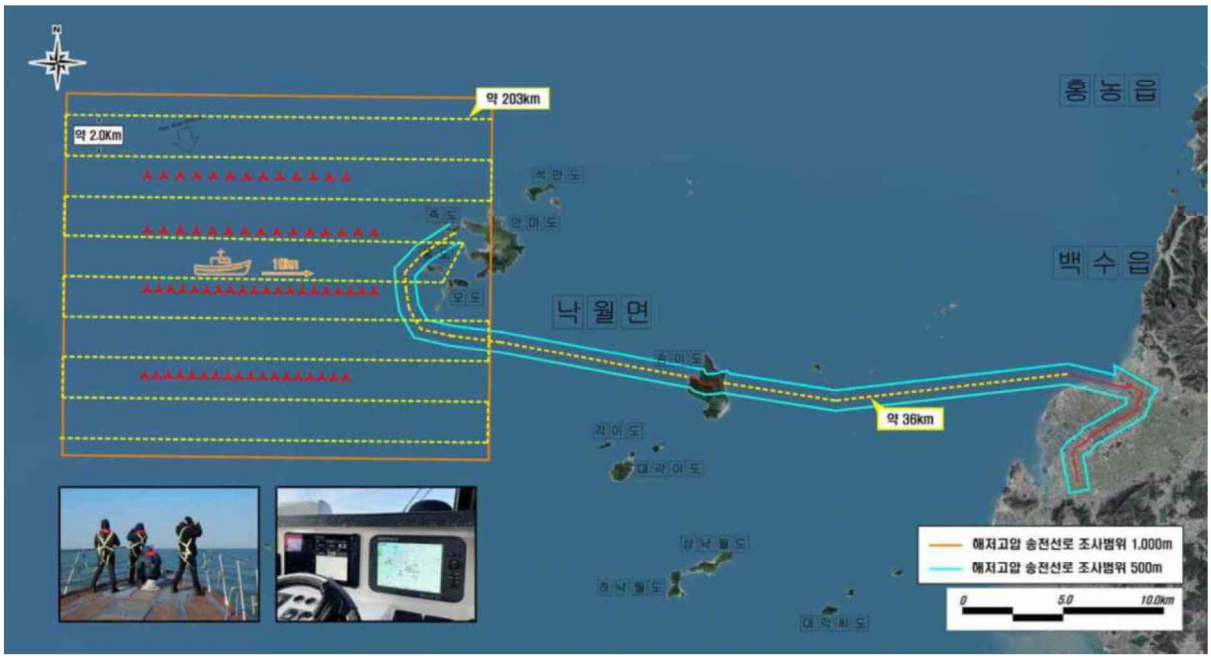
These varied methodologies collectively facilitated a comprehensive and detailed assessment of avian species within the designated survey areas, taking into account their diverse habitats, behavior, and ecological characteristics.

Figure 5-11 and Figure 5-12 show the survey area and routes that were taken for the baseline survey of EIA. These figures reflect the combined results of both the original and additional bird surveys, although the figures themselves are sourced from the Supplementary EIA report.



Source: Supplementary EIA
Note: The WTG location prepared during the EIA is not the final version and it has been changed. Nevertheless, the surveyed area covers the project footprint.

Figure 5-11 Offshore Survey Area and Route (wide-ranging survey focused on birds August 2020 – February 2021, April 2023)



Source: Supplementary EIA
Note: The WTG location prepared during the EIA is not the final version and it has been changed. Nevertheless, the surveyed area covers the project footprint.

Figure 5-12 Offshore Survey Area and Route (wide-ranging survey focused on birds in January 2022 and July 2022)

Bird Tracker Survey

A bird tracker study was conducted to monitor the spatial behavior of Black-tailed gulls (*Larus crassirostris*), which were selected as a focal species due to their local abundance and foraging behavior near offshore structures.

GPS tags were deployed to track individual movement patterns during the breeding and post-breeding seasons. The tracking aimed to assess potential spatial overlap between bird flight paths and the Project's offshore infrastructure. Detailed methods including tagging procedures, equipment specifications, and survey timing are provided in Appendix F

Methodology of Supplementary Bird Survey

The bird survey focuses on seabirds and migratory birds. A systematic line-transect boat survey has been undertaken. The transects provide coverage in the windfarm boundary plus a buffer of radius of 8 km (study area for primary survey). The transect lines follow a pre-designated 206 km long parallel transect layout. During each survey, as the vessel transits the transect lines at a relatively constant speed of 15-18 km/hr, observations have been made by a team of two observers (from a rotating team of three observers) on board.

Data regarding the number of individuals, flight altitude, movement direction, and other behaviors of the observed species were recorded. Distance measurements were conducted using a laser rangefinder (Swarovski EL range 10X42).

The coastal survey recorded the distribution of bird species, population sizes, behavior, and the occurrence of protected species. Observations were conducted using the point counts method, with stationary counts of approximately 10 minutes at locations with optimal visibility. To ensure accurate identification and counting, observers used telescopes, binoculars, and naked-eye observation. The surveys were conducted across a range of tidal states to account for species detectability under different shoreline conditions.

Additionally, offshore islands, particularly the uninhabited and less populated islands along the western coast of South Korea are often found to host roosting and breeding colonies of sea birds. In case of breeding colonies, these islands act as nursing ground for juveniles as well. Anma islands archipelago is located within the study area (i.e., Anma-do, Hoeng-do, Seokman-do and O-do).

These islands have been visited during offshore boat surveys, to gather data regarding occurrence of roosting and nesting seabirds. Data regarding species composition of colonies, presence of nest and onset time of nesting activity, population of individual species etc. have been gathered if mass roosting and nesting activity is observed.

In particular, recognizing the potential of coastal and island areas to function as stopover and staging for migratory birds, the surveys were designed to include not only seabirds but also to assess the presence of migratory species.

Point counts for shore birds in the tidal mudflats under the supplementary survey were conducted during the summer visit. In the actual survey results, more than 100 individuals of species such as the Terek Sandpiper and Kentish Plover were observed, identifying them as dominant species in the area. In particular, the Black-tailed Gull, which is the most commonly observed species in the survey area, is known to breed in large colonies on nearby uninhabited islands during this season[15]. The surveys were conducted to monitor changes in population numbers along the coast in order to understand such large-scale movement patterns.

It should be noted, however, that the original EIA survey already covered all seasons, including migratory and non-breeding periods. As the supplementary survey was designed to complement, not duplicate, existing efforts, additional year-round point counts were not deemed necessary.

Point counts in all 11 selected locations should be carried out once during each of these three above mentioned months.

Figure 5-13 displays the total area of supplementary bird surveys. While most points lie within or adjacent to the Project's defined AoI, certain coastal points, including Point 1, were selected based on their ecological relevance. For example, Point 1 is located near known foraging areas for regionally rare or globally threatened seabird species, such as the Critically Endangered Chinese Crested Tern (*Thalasseus bernsteini*). These points contribute to a broader understanding of bird movement patterns and are important for informing conservation-oriented planning and risk assessment.

[15] Seo et al. 2023. Estimated survival and breeding-site return rates of Black-tailed Gulls (*Larus crassirostris*) on the western coast of Korea

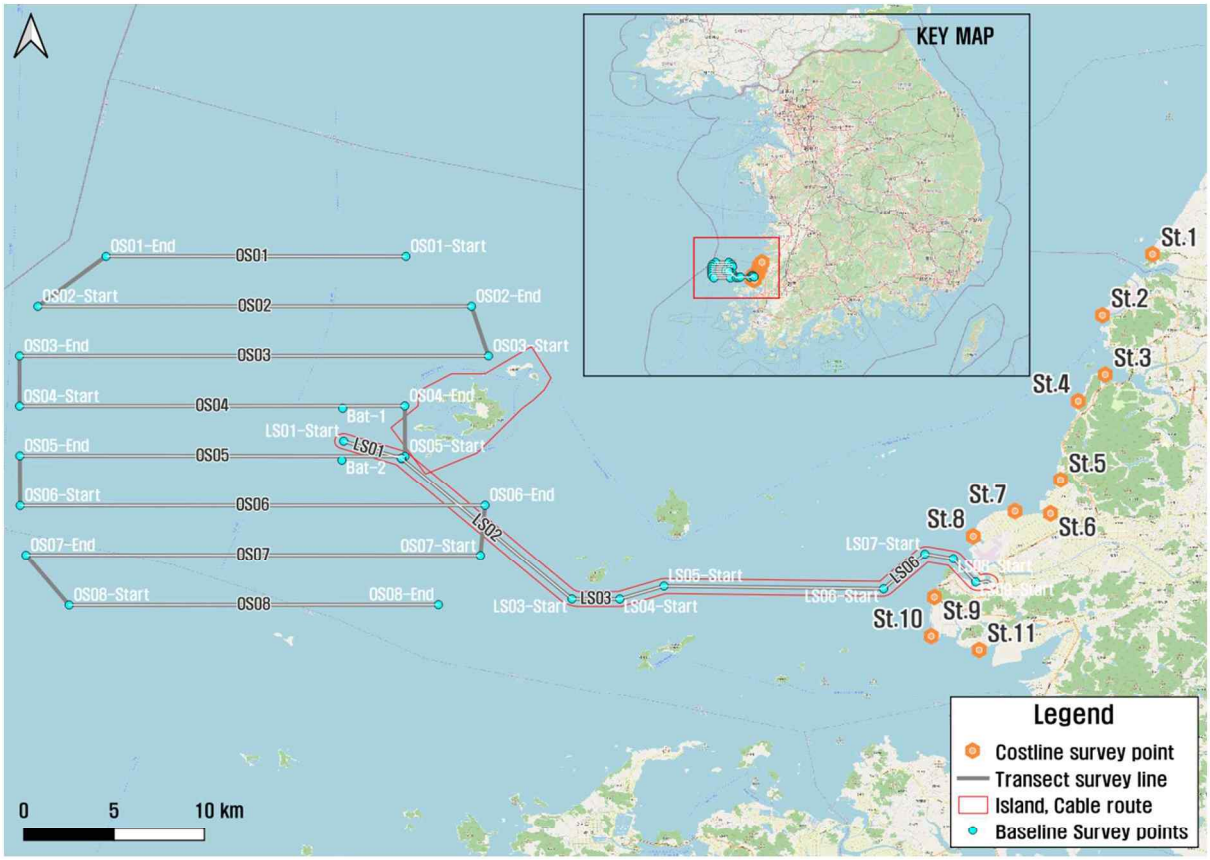


Figure 5-13 The Area of Supplementary Bird Survey

5.5.2 *Findings from EIA Surveys*

Result of Terrestrial Bird Surveys

Based on the comprehensive survey results, it was determined that the survey area is inhabited by a diverse avian population, totalling 1,447 individuals representing 27 families and 50 distinct species. Among these, six species are legally protected, including the Toondra bean goose (Endangered - II), Eurasian spoonbills (Endangered - II, Natural Monument - 205-2), Black-faced spoonbills [EN (IUCN v.2022-2)] (Endangered - Class I, Natural Monument - 205 -1), Eurasian sparrowhawk (Endangered - II, Natural Monument - 323-4), Eurasian hobby (Endangered-Class II), and Common kestrels (Natural Monument - 323-8).

Furthermore, the observed birds exhibited varying migration patterns, with 25 species classified as resident birds (50.00%), 10 species as summer visitors (20.00%), 14 species as winter visitors (28.00%), and 1 species as passage migrant birds (2%). Notably, the sparrow emerged as the dominant species, with 447 individuals (30.89%), followed by parrotbills (178 individuals, 12.30%), herring gulls (98 individuals, 6.77%), and black-tailed gulls (91 individuals, 6.29%).

A comprehensive cluster analysis was performed utilizing the site survey results, revealing a diversity index of 2.78, a richness index of 6.73, and an evenness index of 0.71. These indices collectively indicate a diverse and balanced avian ecosystem within the survey area.

In terms of taxonomic distribution, Passeriformes exhibited the most diverse distribution, comprising 20 species (40.00%). This was followed by Anseriformes with 7 species (14.00%), Ciconiiformes with 6 species (12.00%), Charadriiformes with 5 species (10.00%), Falconiformes with 4 species (8.00%), Piciformes with 2 species (4.00%), and various other orders, each contributing 1 species (2.00%, respectively). This taxonomic breakdown provides valuable insight into the avian diversity and distribution within the surveyed area.

Table 5-18 Occurrence of Legally Protected Terrestrial Bird Species

Scientific name	Common name	Peak Count	Peak Season	Protection Status	
				IUCN Redlist	K-redlist
Anser fabalis	Tundra bean goose	23	Winter	LC	EW2
Platalea leucorodia	Eurasian spoonbill	3	Winter	LC	EW2, NM
Platalea minor	Black-faced spoonbill	1	Summer	EN	EW1, NM, MP
Accipiter nisus	Eurasian sparrowhawk	1	Winter	LC	EW2, NM
Falco Subbuteo	Eurasian hobby	1	Summer	LC	EW2
Falco tinnunculus	Common kestrel	1	Summer	LC	NM

Source: Final EIA
EW: Endangered wildlife, NM: Natural monuments, MP: Marine Protected Species
**** International Union for the Conservation of Nature (IUCN) Red List*
Least Concern (LC): Widespread and abundant.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.

Result of Marine Bird Surveys

Based on the results of eight rounds of field surveys and two supplementary large-scale surveys, the study area is confirmed to support a diverse avian population. A total of 141 species belonging to 43 families were recorded through the core surveys, with an additional 16 species from 11 families (totaling 3,825 individuals) identified during supplementary efforts.

Among these, 17 species are classified as legally protected under national and international conservation designations. These include:

- Chinese Egret (*Egretta eulophotes*) [IUCN VU / EW I / NM]
- Black-faced Spoonbill (*Platalea minor*) [IUCN EN / EW I / NM]
- Great Knot (*Calidris tenuirostris*) [IUCN EN / EW II]
- Eurasian Spoonbill (*Platalea leucorodia*) [IUCN LC / EW II / NM]
- Far Eastern Curlew (*Numenius madagascariensis*) [IUCN EN / EW II / MP]
- Eurasian Oystercatcher (*Haematopus ostralegus*) [IUCN NT / EW II / NM]
- Tundra Bean Goose (*Anser fabalis*) [IUCN LC / EW II]
- Saunders's Gull (*Larus saundersi*) [IUCN VU / EW II]
- Mandarin Duck (*Aix galericulata*) [IUCN LC / NM]
- Common Kestrel (*Falco tinnunculus*) [IUCN LC / NM]
- Peregrine Falcon (*Falco peregrinus*) [IUCN LC / EW I / NM]
- Eurasian Sparrowhawk (*Accipiter nisus*) [IUCN LC / EW II / NM]
- Osprey (*Pandion haliaetus*) [IUCN LC / EW II]
- Chinese Sparrowhawk (*Accipiter soloensis*) [IUCN LC / EW II / NM]
- Chinese Crested Tern (*Thalasseus bernsteini*) [IUCN CR / EW I / MP]
- Eurasian Hobby (*Falco subbuteo*) [IUCN LC / EW II]
- Eurasian Eagle-owl (*Bubo bubo*) [IUCN LC / EW II / NM]

Regarding migration patterns, species were classified as follows: 38 resident species (26.95%), 33 summer visitors (23.40%), 32 winter visitors (22.70%), and 38 passage migrants (26.95%). The most dominant species by count included sparrows, gulls, spoonbills, and curlews, with seasonal and habitat-specific variation observed across the surveyed regions.

Cluster analysis of the site data was not conducted in the supplementary survey; however, the species composition and seasonal richness align closely with the results of the core field surveys. These findings indicate a high degree of ecological continuity and reinforce the significance of the area as part of the migratory corridor along Korea's west coast.

Taxonomically, Passeriformes accounted for the largest proportion, with 58 species (41.13%), followed by Charadriiformes (35 species, 24.82%), Anseriformes (14 species, 9.93%), Ciconiiformes (10 species, 7.09%), and Falconiformes (8 species, 5.67%). Less represented orders included Piciformes (2 species, 1.42%), Pelecaniformes, Coraciiformes, and Procellariiformes (2 species each, 1.42%), with others contributing 1 species each (0.71%).

This taxonomic structure illustrates the broad ecological functionality and diversity of the avian community in the study area.

Table 5-19 Occurrence of Legally Protected on Marine Surveys

Scientific name	Common name	Peak Count	Peak Season	Protection Status	
				IUCN Redlist	K-redlist
Egretta eulophotes	Chinese egret	683	Summer	VU	EW1,NM,MP
Platalea minor	Black-faced spoonbill	217	Autumn	EN	EW1,NM,MP
Calidris tenuirostris	Great Knot	164	Autumn	EN	EW2
Platalea leucorodia	Eurasian spoonbill	31	Autumn	LC	EW2,NM
Numenius madagascariensis	Far Eastern curlew	14	Autumn	EN	EW2,MP
Haematopus ostralegus	Eurasian Oystercatcher	6	Winter	NT	EW2,NM,MP
Anser fabalis	Tundra bean goose	5	Autumn	LC	EW2
Larus saundersi	Saunders's gull	3	Autumn	VU	EW2
Aix galericulata	Mandarin duck	3	Autumn	LC	NM
Falco tinnunculus	Common kestrel	3	Summer	LC	NM
Falco peregrinus	Peregrine falcon	2	Summer	LC	EW2,NM
Accipiter nisus	Eurasian sparrowhawk	2	Autumn	LC	EW2,NM
Pandion haliaetus	Osprey	1	Autumn	LC	EW2
Accipiter soloensis	Chinese Sparrowhawk	1	Summer	LC	EW2,NM
Thalasseus bernsteini	Chinese crested tern	1	Summer	CR	EW1,MP
Falco subbuteo	Eurasian hobby	1	Summer	LC	EW2
Bubo bubo	Eurasian eagle-owl	1	Autumn	LC	EW2,NM

Source: Final EIA
EW: Endangered wildlife, NM: Natural monuments, MP: Marine Protected Species
**** International Union for the Conservation of Nature (IUCN) Red List*
Least Concern (LC): Widespread and abundant.
Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild. During monthly bird surveys conducted from March 2023 to February 2024,

Result of Bird Tracker Survey

The tracking data provided general insight into offshore movement ranges of tagged individuals, including commuting distances and preferred foraging zones. However, no direct spatial overlap between bird movement paths and the Project's wind turbine or cable corridors was identified.

As such, the tracker results were used to support contextual understanding but did not serve as a basis for quantified impact assessment. Detailed tracking maps and individual movement results are presented in Appendix F.

5.5.3 Findings from Supplementary Surveys

Result of Transect Surveys

From March 2023 to February 2024, a comprehensive observation of seabirds revealed the presence of 31 species accounting for a total of 680 individuals at maximum count. The list of recorded birds is provided in Appendix C.

Notably, May marked the breeding season for the Black-tailed Gull (*Larus crassirostris*), resulting in a notable surge in individuals congregating around Anma-do, culminating in the highest count recorded during this month.

As August 2023 arrives, the breeding season for Black-tailed Gulls draws to a close, prompting a substantial migration towards coastal and wintering areas. This transition corresponds with a noticeable decline in the overall population of seabirds. Additionally, given that this period doesn't coincide with the migratory season for passage migrant birds, the reduction in individual counts is particularly pronounced.

From March 2023 to July 2023, there is a notable trend of Black-tailed Gulls (*Larus crassirostris*) predominating in the offshore areas. This is attributed to the proximity of their breeding sites and the significant influence of fishing activities in these regions.

Table 5-20 Total Recorded Species from Transect Surveys

Scientific name	English name	IUCN* (2024-1)	Korean Red List* (2014)	Number of individuals											
				Mar-2023	Apr-2023	May-2023	Jun-2023	Jul-2023	Aug-2023	Sep-2023	Oct-2023	Nov-2023	Dec-2023	Jan-2024	Feb-2024
Ardea alba	Great White Egret	LC	-	1	7	1	-	2	-	-	1	-	-	-	-
Ardea cinerea	Grey Heron	LC	-	3	2	-	-	-	-	-	-	-	-	-	-
Anas zonorhyncha	Eastern Spot-billed Duck	LC	-	-	-	-	-	-	-	-	1	-	-	-	-
Anas sp.	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-
Aythya marila	Greater Scaup	LC	-	-	-	-	-	-	-	-	7	-	-	-	-
Bubulcus ibis	Cattle Egret	LC	-	-	15	-	-	-	-	-	-	-	-	-	-
Calonectris leucomelas	Streaked Shearwater	NT	-	-	-	56	54	-	33	33	1	-	-	-	-
Caprimulgus indicus	Jungle Nightjar	LC	-	-	2	-	-	-	-	-	-	-	-	-	-
Cecropis daurica	Eastern Red-rumped Swallow	LC	-	-	-	9	-	-	-	-	-	-	-	-	-
Egretta garzetta	Little Egret	LC	-	-	-	2	-	-	-	3	-	-	-	-	-
Egretta intermedia	Intermediate Egret	LC	-	-	-	2	-	-	-	-	-	-	-	-	-
Gavia arctica	Arctic Loon	LC	-	-	-	-	-	-	-	-	-	-	-	8	-
Gavia pacifica	Pacific Loon	LC	-	-	-	-	-	-	-	-	-	-	2	1	-

Scientific name	English name	IUCN* (2024-1)	Korean Red List* (2014)	Number of individuals											
				Mar-2023	Apr-2023	May-2023	Jun-2023	Jul-2023	Aug-2023	Sep-2023	Oct-2023	Nov-2023	Dec-2023	Jan-2024	Feb-2024
Gavia stellata	Red-throated Loon	LC	-	1	-	-	-	-	-	-	-	-	-	-	-
Hirundo rustica	Barn Swallow	LC	-	-	1	1	-	-	-	-	-	-	-	-	-
Larus vegae	VegaGull	-	-	4	1	-	-	-	-	1	7	4	7	6	-
Larus canus	Mew Gull	LC	-	-	-	-	-	-	-	-	-	-	-	1	-
Larus mongolicus	Mongolian Gull	-	-	-	-	-	-	-	-	-	7	-	2	-	-
Larus crassirostris	Black-tailed Gull	LC	-	188	123	481	524	340	69	167	680	193	165	52	129
Ninox scutulata	Brown Boobook	LC	-	-	1	-	-	-	-	-	-	-	-	-	-
Tadorna tadorna	Common Shelduck	LC	-	-	-	-	-	-	-	-	-	-	6	-	-
Oceanodroma monorhis	Swinhoe's Storm-petrel	NT	-	-	-	62	1	23	50	-	-	-	-	-	-
Podiceps cristatus	Great Crested Grebe	LC	-	-	-	-	-	-	-	-	-	-	3	-	-
Phalacrocorax sp.	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-
Phalacrocorax capillatus	Japanese Cormorant	LC	-	-	2	-	-	-	-	-	-	-	-	-	-
Phalaropus lobatus	Red-necked Phalarope	LC	-	-	-	7	-	-	131	-	-	-	-	-	-

Scientific name	English name	IUCN* (2024-1)	Korean Red List* (2014)	Number of individuals											
				Mar-2023	Apr-2023	May-2023	Jun-2023	Jul-2023	Aug-2023	Sep-2023	Oct-2023	Nov-2023	Dec-2023	Jan-2024	Feb-2024
Phylloscopus fuscatus	Dusky Warbler	LC	-	-	-	1	-	-	-	-	-	-	-	-	-
Stercorarius parasiticus	Arctic Jaeger	LC	-	-	-	1	-	-	-	-	-	-	-	-	-
Sterna albifrons	Little Tern	LC	-	-	-	-	2	-	-	-	-	-	-	-	-
Sterna hirundo	Common Tern	LC	-	-	-	3	-	-	4	1	-	-	-	-	-
Synthliboramphus antiquus	Ancient Murrelet	LC	-	11	3	25	-	-	-	-	-	-	-	31	53
Sum				208	157	651	581	365	288	205	731	397	185	98	182

Note:

*** International Union for the Conservation of Nature (IUCN) Red List**

Least Concern (LC): Widespread and abundant.

Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.

Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.

Endangered (EN): Considered to be facing a very high risk of extinction in the wild.

Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

*** The values represent unadjusted raw counts from direct field observations. No distance sampling or correction factors were applied.**

Result of Island Surveys

From March 2023 to February 2024, a total of 122 bird species were observed on the islands, amounting to 2,283 individuals (maximum count). The list of recorded birds is provided in Appendix C. The number of species and individuals observed in May was lower compared to March and April. This decline can be attributed to several factors:

First, various species that migrate through Korea's western coast in March and April tend to decrease in numbers after April. This includes families such as Emberizidae, Sylviidae, Sturnidae, and others.

Second, the number of individuals decreases as wintering bird transit to their breeding grounds after March. This phenomenon is especially notable in families like Anatidae and Accipitridae.

In the coastal area, there wasn't a significant change in the number of individuals and species from May to August.

Table 5-21 Species Corresponding to the Korean Red List Based on Island Survey Results

Scientific Name	Common Name	IUCN Red List	Korean Red List	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Accipiter gentilis	Northern Goshawk	LC	VU	-	-	2	-	-	-	-	-	-	-	-	-
Accipiter nisus	Eurasian Sparrowhawk	LC	VU	1	-	2	-	-	-	-	-	-	-	-	3
Accipiter soloensis	Chinese Sparrowhawk	LC	VU	-	-	-	-	5	-	-	-	-	-	-	-
Charadrius placidus	Long-billed Plover	LC	VU	-	-	1	-	-	-	-	-	-	-	-	-
Falco peregrinus	Peregrine Falcon	LC	VU	2	4	2	5	1	3	2	1	1	-	4	-
Falco subbuteo	Eurasian Hobby	LC	VU	-	-	-	-	-	2	-	-	1	7	-	-
Grus monacha	Hooded Crane	VU	VU	-	43	-	-	-	-	-	-	-	-	-	-
Pitta nympha	Fairy Pitta	VU	VU	-	-	-	-	4	-	-	-	-	-	-	-
Terpsiphone atrocaudata	Japanese Paradise-flycatcher	LC	VU	-	-	-	-	-	3	-	-	-	-	-	-

Note:

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Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild

Notably, two species classified as Vulnerable (VU) on the IUCN Red List were directly observed during the island surveys:

- Hooded Crane (*Grus monacha*), with 43 individuals recorded in February 2023, and
- Fairy Pitta (*Pitta nympha*), with 4 individuals recorded in May 2023.

Both species are considered to have high conservation value. The Hooded Crane is known to utilize coastal and wetland stopovers during migration, while the Fairy Pitta depends on intact forested habitats during its breeding period. These findings highlight the ecological importance of the island habitats surveyed and should inform seasonal impact mitigation measures.

Result of Coastal Line Surveys

From June to August 2023, a total of 6,024 individuals representing 51 bird species were recorded through point count surveys conducted at fixed coastal observation points, rather than through vessel-based transects.

During the coastal surveys, a total of eight legally protected species were observed. Among them, the Black-faced Spoonbill (*Platalea minor*), listed as Endangered (EN) on the IUCN Red List, as well as a Grade I Endangered Wildlife species and Natural Monument in Korea, was recorded in numbers exceeding 100 individuals during each monthly survey.

This high abundance is attributed to its status as a summer migratory species, with the tidal flats in the surrounding coastal area serving as important foraging and resting habitats during this period.

Table 5-22 Protected Species from Coastal Line Surveys

	Jun	Jul	Aug	Sum (Maximum)
Species	24	34	31	51
Individuals	4,893	2,338	1,766	6,024
Protected species (Korean Red List)	4	6	5	8

Much like the offshore bird population, the coastal bird population witnessed a decline in the number of individuals from June 2023 to August 2023. While a decline in observed coastal bird numbers was recorded between June and August 2023, this pattern should be interpreted with caution, as the coastal survey was conducted only during the summer season as a supplementary effort. This limited scope was based on previous terrestrial and large-scale avifauna surveys already covering other seasons. The observed decrease in August may reflect local-scale dispersal or post-breeding movement.

Table 5-23 Total Recorded Species from Coastal Line Surveys

Scientific name	English name	IUCN* (2024-1)	Korean Red List*	Number of individuals			
				Jun	Jul	Aug	Sum
Acrocephalus orientalis	Oriental Reed-warbler	LC	-	2	-	-	2
Actitis hypoleucos	Common Sandpiper	LC	-	-	7	-	7
Aix galericulata	Mandarin Duck	LC	-	-	-	4	4
Alcedo atthis	Common Kingfisher	LC	-	-	-	1	1
Anas zonorhyncha	Eastern Spot-billed Duck	LC	-	-	4	-	4
Ardea alba	Great White Egret	LC	-	10	19	79	108
Ardea cinerea	Grey Heron	LC	-	94	165	181	440
Butorides striata	Striated Heron	LC	-	1	-	-	1
Calidris alpina	Dunlin	NT	-	-	2	-	2
Charadrius alexandrinus	Kentish Plover	LC	-	7	220	5	232
Charadrius dubius	Little Ringed Plover	LC	-	-	3	-	3

Cisticola juncidis	Zitting Cisticola	LC	-	-	-	5	5
Columba livia	Rock Dove	LC	-	2	-	-	2
Corvus macrorhynchos	Large-billed Crow	LC	-	5	2	1	8
Cuculus micropterus	Indian Cuckoo	LC	-	1	-	-	1
Cyanopica cyanus	Asian Azure-winged Magpie	LC	-	17	2	3	22
Egretta eulophotes	Chinese Egret	VU	EN	15	15	1	31
Egretta garzetta	Little Egret	LC	-	4	8	9	21
Egretta intermedia	Intermediate Egret	LC	-	-	61	64	125
Eurystomus orientalis	Oriental Dollarbird	LC	-	-	-	2	2
Falco subbuteo	Eurasian Hobby	LC	VU	-	4	1	5
Falco tinnunculus	Common Kestrel	LC	-	1	1	-	2
Haematopus ostralegus	Eurasian Oystercatcher	NT	VU	2	1	-	3
Halcyon coromanda	Ruddy Kingfisher	LC	-	1	-	-	1
Hirundo rustica	Barn Swallow	LC	-	20	23	15	58
Lanius bucephalus	Bull-headed Shrike	LC	-	-	1	1	2
Larus vegae	Vega Gull	LC	-	-	2	-	2
Larus crassirostris	Black-tailed Gull	LC	-	4,500	1,135	845	6,480
Limosa limosa	Black-tailed Godwit	NT	-	-	30	28	58
Limosa lapponica	Bar-tailed Godwit	NT	-	-	-	323	-
Microscelis amaurotis	Brown-eared bulbul	N/A	-	10	3	1	14
Monticola solitarius	Blue Rock-thrush	LC	-	-	-	2	2
Motacilla alba	White Wagtail	LC	-	-	1	1	2
Numenius arquata	Eurasian Curlew	NT	-	-	33	5	38
Numenius madagascariensis	Far Eastern Curlew	EN	VU	-	-	1	1
Numenius phaeopus	Whimbrel	LC	-	-	-	1	1
Oriolus chinensis	Black-naped Oriole	LC	-	2	-	-	2
Paradoxornis webbianus	Vinous-throated parrotbill	-	-	-	4	-	4
Parus major	Great Tit	LC	-	2	-	-	2
Passer montanus	Eurasian Tree Sparrow	LC	-	50	41	45	136
Phalacrocorax carbo	Great Cormorant	LC	-	-	2	-	2

Pica pica	Eurasian Magpie	LC	-	11	19	12	42
Platalea leucorodia	Eurasian Spoonbill	LC	VU	-	1	-	1
Platalea minor	Black-faced Spoonbill	EN	EN	108	148	197	453
Pluvialis squatarola	Grey Plover	VU	-	-	3	-	3
Streptopelia orientalis	Oriental Turtle-dove	LC	-	8	26	12	46
Sturnus cineraceus	White-cheeked Starling	LC	-	20	-	-	20
Tringa nebularia	Common Greenshank	LC	-	-	14	51	65
Tringa ochropus	Green Sandpiper	LC	-	-	-	1	1
Tringa stagnatilis	Marsh Sandpiper	LC	-	-	-	72	72
Tringa totanus	Common Redshank	LC	-	-	15	-	15
Xenus cinereus	Terek Sandpiper	LC	-	-	323	120	443
Sum				4893	2338	1766	8997

Note:

*** International Union for the Conservation of Nature (IUCN) Red List**

Least Concern (LC): Widespread and abundant.
Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

The Black-faced Spoonbill (*Platalea minor*), classified as Endangered (EN) by the IUCN and designated as both a Natural Monument and a Grade I Endangered Wildlife Species in Korea, was recorded multiple times between 2020 and 2023 at observation points located along the coastal areas. These observation points are situated near the planned onshore substation and transmission line in Songam 1-ri. However, no individuals were observed within or directly adjacent to the onshore project footprint. While the nearest individuals were recorded approximately 350–450 meters from the onshore project footprint, but the primary areas of occurrence were located in mudflats situated approximately 1 km to the north and 3.5 km to the south of the Project's offshore export cable route.

5.5.4 Literature Review on Avifauna

Terrestrial Birds

To supplement the findings of field-based avifauna surveys, a desk-based literature review was conducted to identify additional bird species that may occur in or near the Project area. The review encompassed five domestic sources, which reported a range of 40 to 81 species across the study regions.

A total of 18 legally protected species were recorded across all sources. Most protected species identified through the literature review were also observed during field surveys. However, three notable species were reported only in the literature and not recorded in fieldwork:

- Oriental Stork (*Ciconia boyciana*) [EN],
- Black-capped Kingfisher (*Halcyon pileata*) [VU], and
- Cinereous Vulture (*Aegypius monachus*) [NT].

These findings suggest that while the field surveys captured the majority of expected species, some regionally important species with conservation status may occur occasionally or seasonally outside the direct observation period. Table 5-26 below summarizes the literature-based avifauna

Table 5-28 Summary of Terrestrial Birds Reported in Literature

Category	IUCN Redlist	K-redlist	L1[16]	L2[17]	L3[18]	L4[19]	L5[20]
No. of Species	-	-	40	81	68	25	52
No. of Protected Species	-	-	6	10	6	1	8
Anser fabalis	LC	EW2					○
Larus saundersi	VU	EW2					○
Calidris tenuirostris	EN	EW2	○				
Limosa lapponica	NT	EW2	○				
Pandion haliaetus	LC	EW2		○			
Aix galericulata	LC	NM		○	○		
Falco tinnunculus	LC	NM		○	○	○	○
Platalea minor	EN	EW1,NM,MP	○	○	○		
Egretta eulophotes	VU	EW1,NM,MP	○	○	○		
Platalea leucorodia	LC	EW2,NM		○			○
Falco peregrinus	LC	EW2,NM		○			○
Accipiter nisus	LC	EW2,NM		○			
Astur gentilis	NE	EW2,NM					○
Haematopus ostralegus	NT	EW2,NM	○	○	○		
Numenius madagascariensis	EN	EW2,MP	○	○			
Ciconia boyciana	EN	EW1					○
Halcyon pileata	VU	EW2			○		
Aegypius monachus	NT	EW2,NM					○

Note: EW: Endangered wildlife, NM: Natural monuments, MP: Marine Protected Species

*** International Union for the Conservation of Nature (IUCN) Red List**

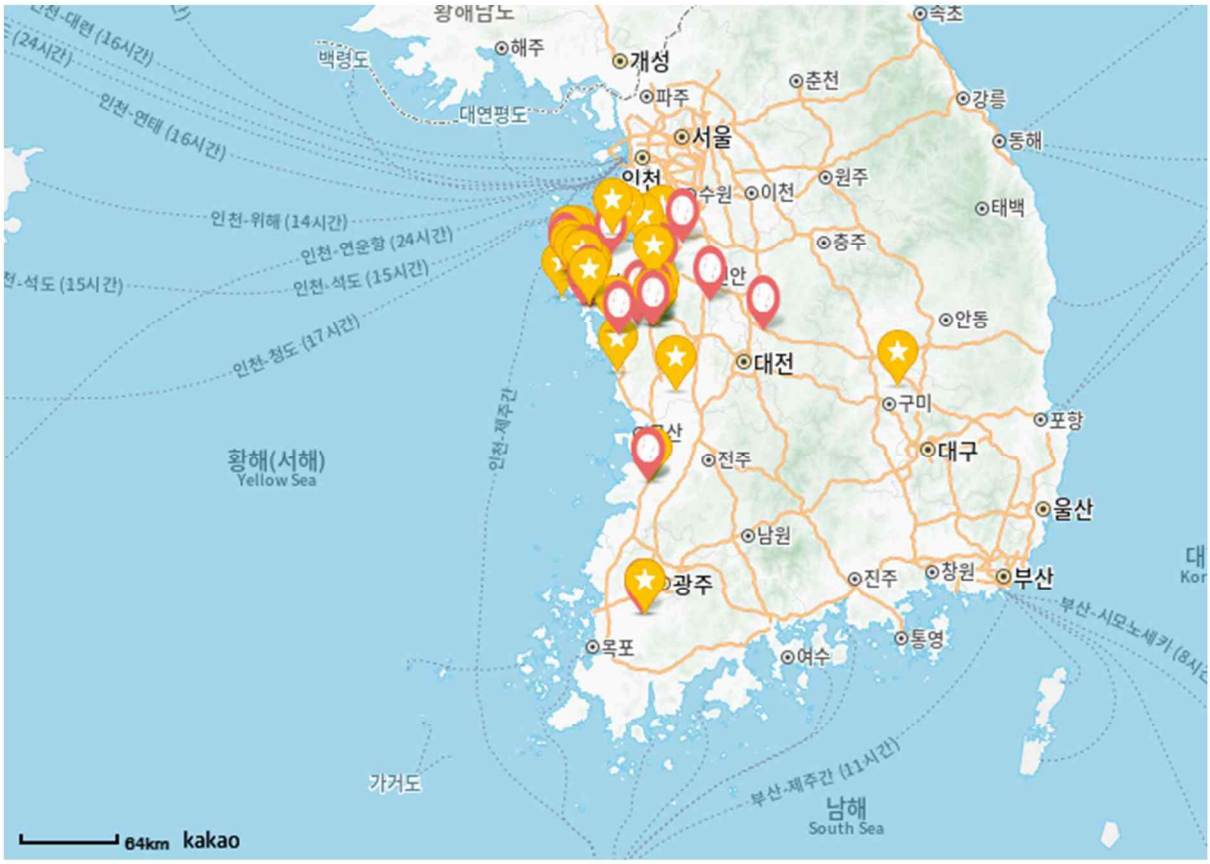
Least Concern (LC): Widespread and abundant.
Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

The Oriental Stork is a winter migratory species in Korea, primarily observed around the Cheonsu Bay area in Chungcheongnam-do[21]. The Black-capped Kingfisher is a summer visitor widely distributed across the country, typically nesting in tree cavities or earthen cliffs[22]. The Cinereous Vulture is a well-

[16] MoE (2017). 4th National Natural Environment Survey(Endangered Wildlife): Chilsan (356103)
[17] MoE (2021). 5th National Natural Environment Survey: Beopseongpo (356104)
[18] MoE (2021). 5th National Natural Environment Survey: Gaeum (356141)
[19] MoE (2021). 5th National Natural Environment Survey: Pocheon (356142)
[20] Mion Solar Power Plant (2020). Small-scale EIA
[21] Stork Ecology Research Institute (https://www.stork.or.kr/)
[22] National Institute of Biological Resources (https://species.nibr.go.kr)

known wintering species in Korea, frequently recorded in inland regions such as Paju and Goseong, and is known to migrate across North Korea, China, and Mongolia.[23]

All three species are primarily associated with inland and coastal habitats and were reported only in literature sources related to terrestrial survey areas. Accordingly, their likelihood of occurrence in the offshore wind farm (OWF) area is considered to be low. (See Figure 5-9 for species observation location)



Source: Institute for Oriental Stork Ecology

Figure 5-14 Distribution Records of the Oriental Stork (*Ciconia boyciana*) in Korea

Migration Routes of Key Protected Species

To supplement field and literature findings, an additional review of global and regional migration data was conducted for key protected bird species with high conservation value and/or high observed abundance. The species selected for this review include the Black-faced Spoonbill (*Platalea minor*), Hooded Crane (*Grus monacha*), Chinese Egret (*Egretta eulophotes*), Eurasian Spoonbill (*Platalea leucorodia*), Saunders's Gull (*Saundersilarus saundersi*), Far Eastern Curlew(*Numenius madagascariensis*), Great Knot(*Calidris tenuirostris*), Grey Plover(*Pluvialis squatarola*) and the Oriental Stork(*Ciconia boyciana*).

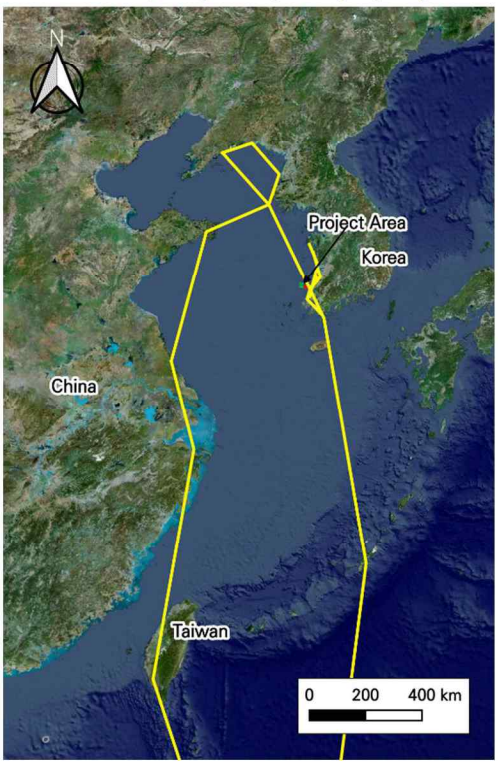
The Eurasian Spoonbill breeds in colder regions such as Mongolia and Manchuria, and winters in South Korea and southern China. In contrast, the Black-faced Spoonbill breeds in Korea, and migrates southward to China, Taiwan, and other regions for the winter. The Chinese Egret is similarly known to migrate further south along the southern coastline than the Black-faced Spoonbill, the specific migration route has been confirmed as follows: in winter, travel along the coastline to their wintering grounds in the Philippines, and on their return journey, they pass through Taiwan and China

[23] https://www.greenpostkorea.co.kr/news/articleView.html?idxno=58034

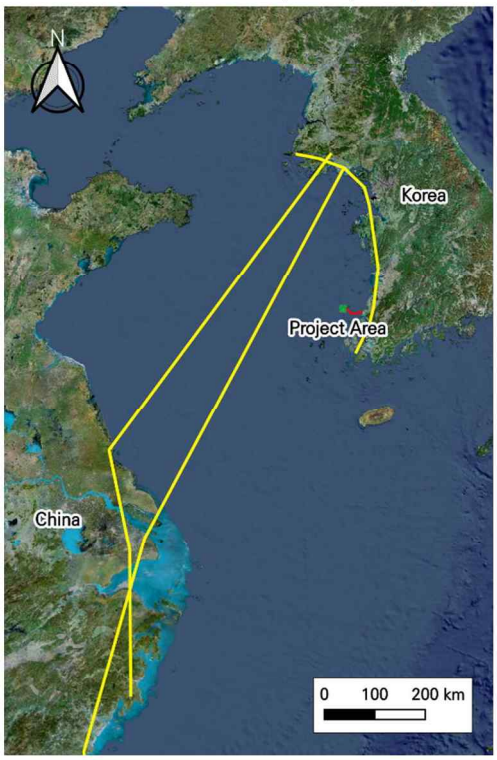
before arriving back in Incheon of Korea. As such, their migratory behavior and geographical ranges differ significantly.

Considering the limitations of previous desktop studies, the likelihood of Black-faced Spoonbill or Eurasian Spoonbill—species known to migrate between southern China and South Korea—passing near the project area is assessed to be very low. However, it cannot be conclusively stated that these species will not use this route at all. Therefore, additional mitigation measures will be considered to ensure that the risk of collision is minimized.

While uncertainty remains to the number of the other birds tracked for the migration routes in the data, most of these species are known to migrate along the western coastline of the Korean Peninsula and are associated with estuarine and intertidal habitats. Based on available information, there is no indication that any major migratory flyway overlaps with the offshore wind farm (OWF) footprint.



Chinese Egret[24][25]



Black-faced Spoonbill[26] [27]

[24] Post-fledging summer home range of juvenile Chinese egrets in Chilsan-do, Seokjun Son et al., 2021

[25] "Endangered species Chinese Egret tracked for two years, revealing its ecological secrets, NIBR, 2021

[26] Study on the Dynamics and Causes of Wild Populations of Endangered Species, National Institute of Ecology, 2023

[27] Animal and Plant Quarantine Agency of Korea, 2016



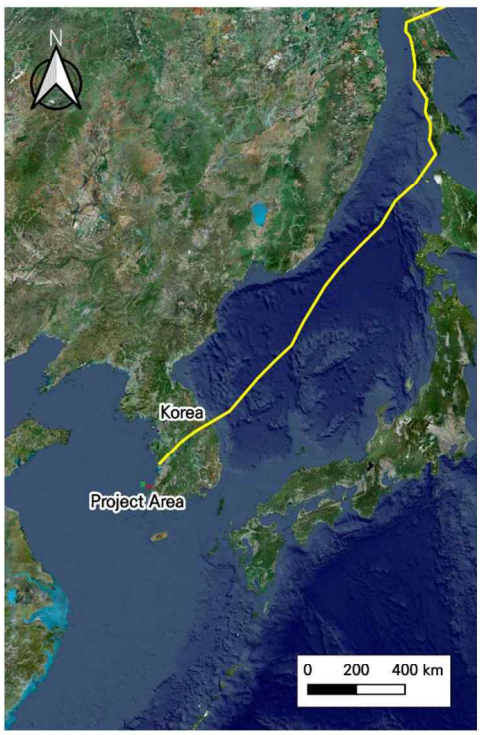
Hooded Crane[28]



Eurasian Spoonbill[29]



Saunders's gull[30]



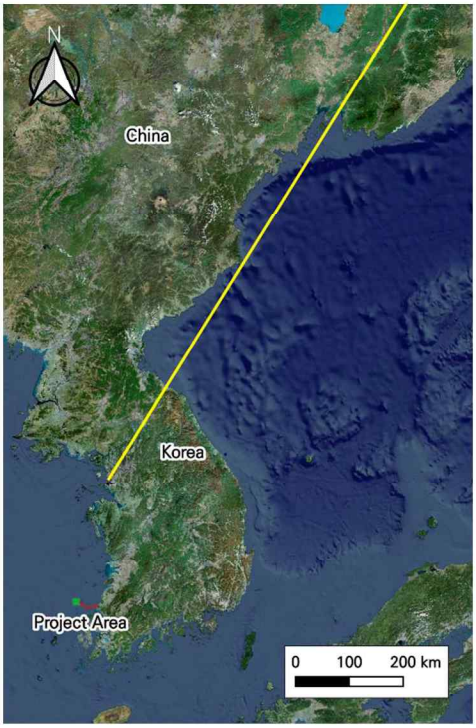
Far Eastern Curlew[31]

[28] Hankyoreh, October 2023. First confirmed 5,000 km migration route of the Hooded Crane that departed Suncheon Bay in March

[29] Xi et al. Avian Research, 2021

[30] The Migration Route Study on the Migratory Birds in Korea, NIBR, 2021

[31] Ministry of Oceans and Fisheries, June 2022. First confirmed migration of the Far Eastern Curlew (Numenius madagascariensis), a marine protected species, from the tidal flats of the West Sea to Siberia



Great Knot[32]



Grey Plover[33]



Oriental Stork[34]

Figure 5-15 Migration Routes of Key Protected Bird Species

[32] Study on the Status of Passage Migratory Bird Stopovers in 2017, NIBR
[33] The Migration Route Study on the Migratory Birds in Korea, NIBR, 2022
[34] 2021, Endangered Species Restoration Center, National Institute of Ecology

The Chinese Crested Tern, listed as Critically Endangered (CR) on the IUCN Red List, is one of the rarest seabirds in the world, with an estimated global population of approximately 150 individuals[35]. Monthly bird surveys conducted from March 2023 to February 2024 recorded no individuals. However, earlier EIA surveys conducted from 2020 to 2023 across 13 sessions recorded only a single individual in July 2022.

This species is known to breed at Yuksan-do and to rest and forage along the Gochang coast, areas that are geographically separated from the Project AoI, where 3 individuals were observed in July 2022[36]. The Gochang coast and Yuksan-do is located to the north of the nearest Project AoI with Yuksan-do being 30km away from the OWF. This geographical seperation between known foraging sites and the Project AoI suggests no regular commuting flights throught the Project AoI and this is further supported with only one individual being observed over 25 surveys sessions between 2020 and 2024 (as outlined in the Section 5.5.2 and 5.5.3). Therefore, the likelihood of regular occurrence in the Project AoI is considered low.

[35] BirdLife International (2023). Thalasseus bernsteini. The IUCN Red List of Threatened Species 2023.

[36] Korean Ministry of Environment (2021). 5th National Natural Environment Survey; National Institute of Biological Resources (2023). Chinese Crested Tern Breeding Monitoring Report.

5.6 Marine Mammal

As detailed in Chapter 5.1, two independent surveys have been conducted. The first survey (the EIA) was conducted between 2020 and 2022 and aimed to evaluate potential impacts on the habitat and the marine mammal species which occur there. The supplementary survey was initiated in March 2023 and has been conducted monthly until February 2024. This additional survey supplements the EIA survey data, thus providing a longer time series of information which allows a better understanding of marine mammals that occur within the study area.

Ideally, marine mammal survey should be designed to provide equal coverage probability, so that simple unbiased abundance estimators can be collected which can then contribute to the assessment of marine mammals within the project area. The project area encompassed Anma-do in Yeonggwang-gun, Jeollanam-do plus surrounding waters, where project impacts are likely to extend.

For the EIA survey campaign, seven rounds of vessel-based and drone surveys, including an additional round, were conducted from August to November 2020, and once more in August 2022. The primary objective of the vessel based survey was to document the occurrence of marine mammals and their preferred habitat type, within a small area within the project study site. The drone surveys were conducted in a restricted coastal area and provided information in surfacing times of some marine mammal species. The survey schedule for each survey type is detailed in Table 5-24 Survey Schedule for EIA.

Table 5-24 Survey Schedule for EIA

Survey	Method	Date
1st	Visual Survey	2020-08-19
	Drone Survey	2020-08-18
		2020-08-19
2nd	Visual Survey	2020-09-10
	Drone Survey	2020-09-09
		2020-09-10
3rd	Visual Survey	2020-09-24
	Drone Survey	2020-09-23
		2020-09-24
		2020-09-25
4th	Visual Survey	2020-10-21
	Drone Survey	2020-10-12
		2020-10-13
5th	Visual Survey	2020-11-15
	Drone Survey	2020-11-04
		2020-11-05
		2020-11-06
6th	Visual Survey	2020-11-25
	Drone Survey	2020-11-24

		2020-11-25
		2020-11-26
EIA Additional survey	Visual Survey	2022-08-20
	Drone Survey	2022-08-20

Source: Final EIA

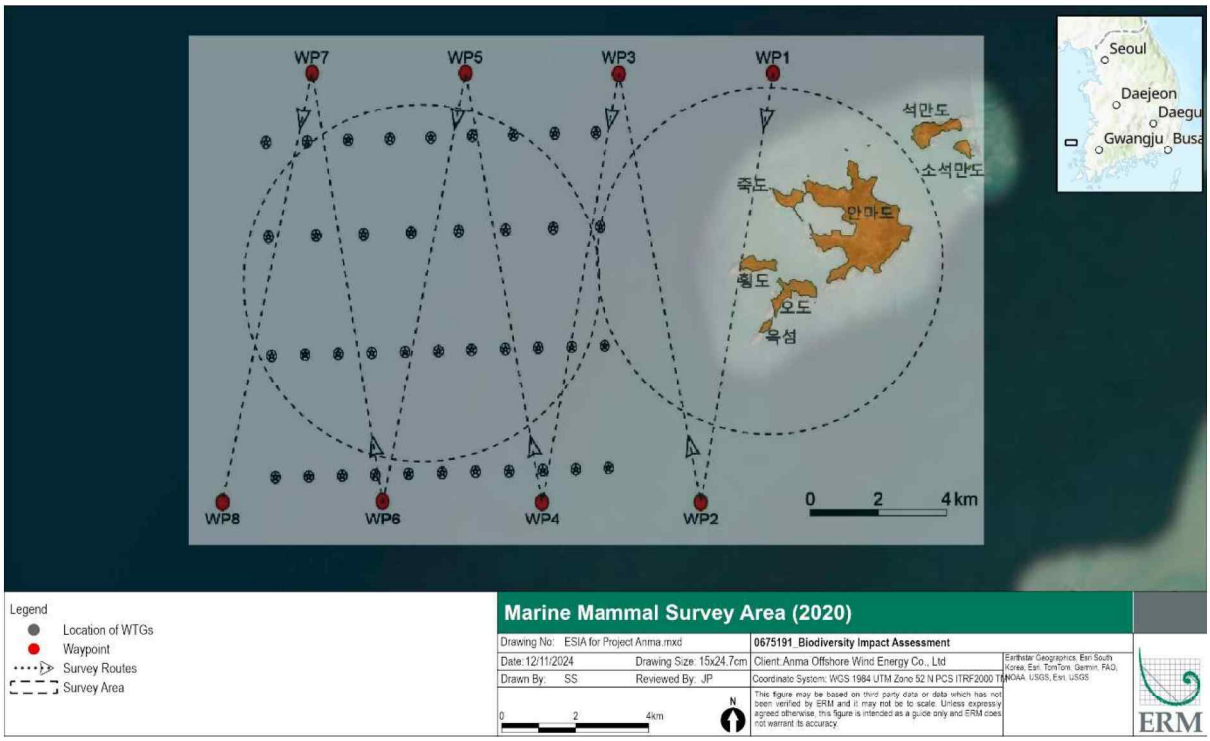
5.6.1 Methodology of Visual Survey for EIA

Visual surveys were conducted to assess the habitat conditions of marine mammals, adhering to the Guidelines for the Survey of Protected Marine Organisms' Habitats (Ministry of Oceans and Fisheries, 2018). Two surveyors were stationed on the upper deck of the survey vessel, equipped with binoculars (7x50). They collectively observed an area within one-third of the horizon and the waterline using the naked eye. Surveyor on the left observed from portside 60 degrees to starboard 20 degrees, while the surveyor on the right observed from starboard 60 degrees to portside 20 degrees, dividing the observation areas.

Observations were focused on the area within 60 degrees of each side of the vessel, assuming the bow is 0 degrees. Observations were also made outside this area. Where marine mammals were sighted, the vessel stopped effort and left the transect line so that more detailed observations could be made. For each sighting, the time, location and group size were noted. Both still and video cameras were used to better identify the species observed and to record group composition and behavior.

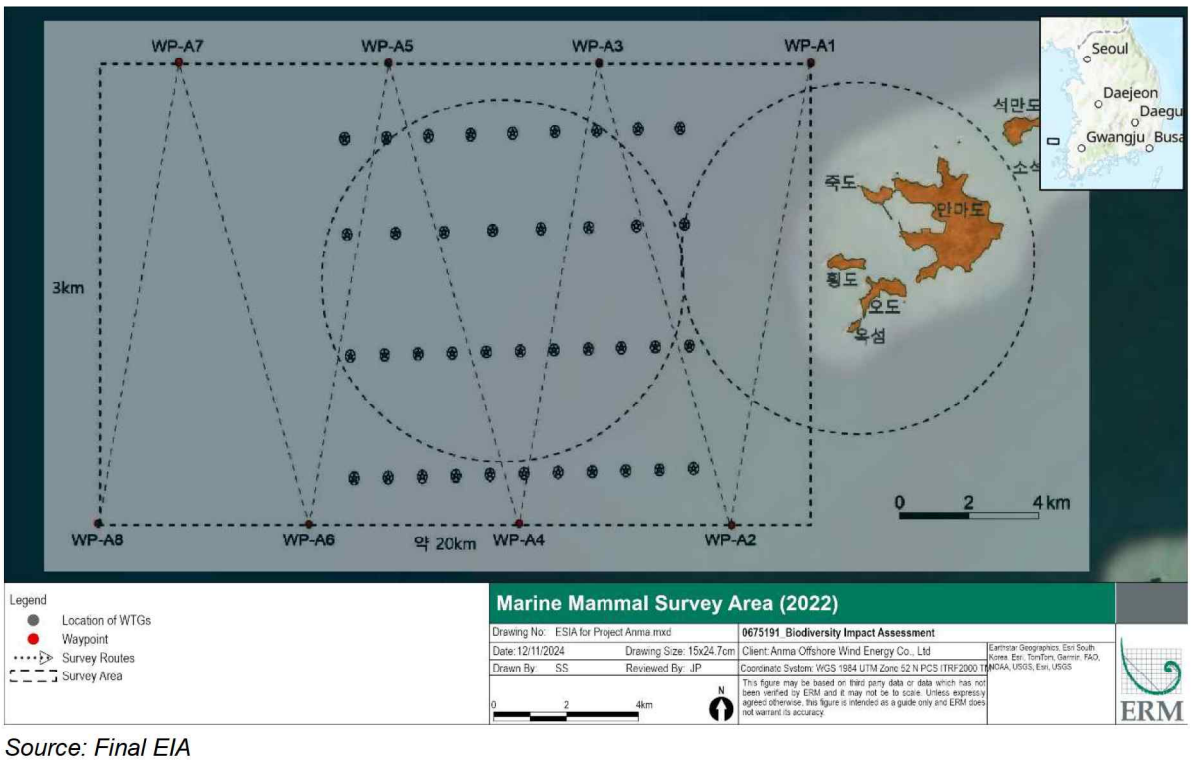
The survey route for visual surveys was designed to encompass the planned WTGs area as well as adjacent areas, covering an approximate distance of 90 kilometres. In 2022, the single survey conducted was approximately 95 kilometres in length. This distance aligns with the maximum coverage achievable by a vessel within a single day's travel.

Figure 5-16 and Figure 5-17 show the survey routes for vessel based surveys conducted in 2020 and 2022, respectively.



Source: Final EIA
Note: The locations of the offshore layout during the EIA are not final and have been adjusted. However, the survey area still fully covers the entire project footprint.

Figure 5-16 The Area of Marine Mammal Surveys (2020)



Source: Final EIA
Note: The locations of the offshore layout during the EIA are not final and have been adjusted. However, the survey area still fully covers the entire project footprint.

Figure 5-17 The Area of Marine Mammal Surveys (2022)

A 5-ton fishing boat was used to conduct the vessel-based surveys. The survey was conducted at a variable speed, ranging between 5 to 10 knots. The surveys were conducted during the high tides whenever possible, which also compromised standard line transect survey protocols.

Table 5-25 Detailed Coordinates

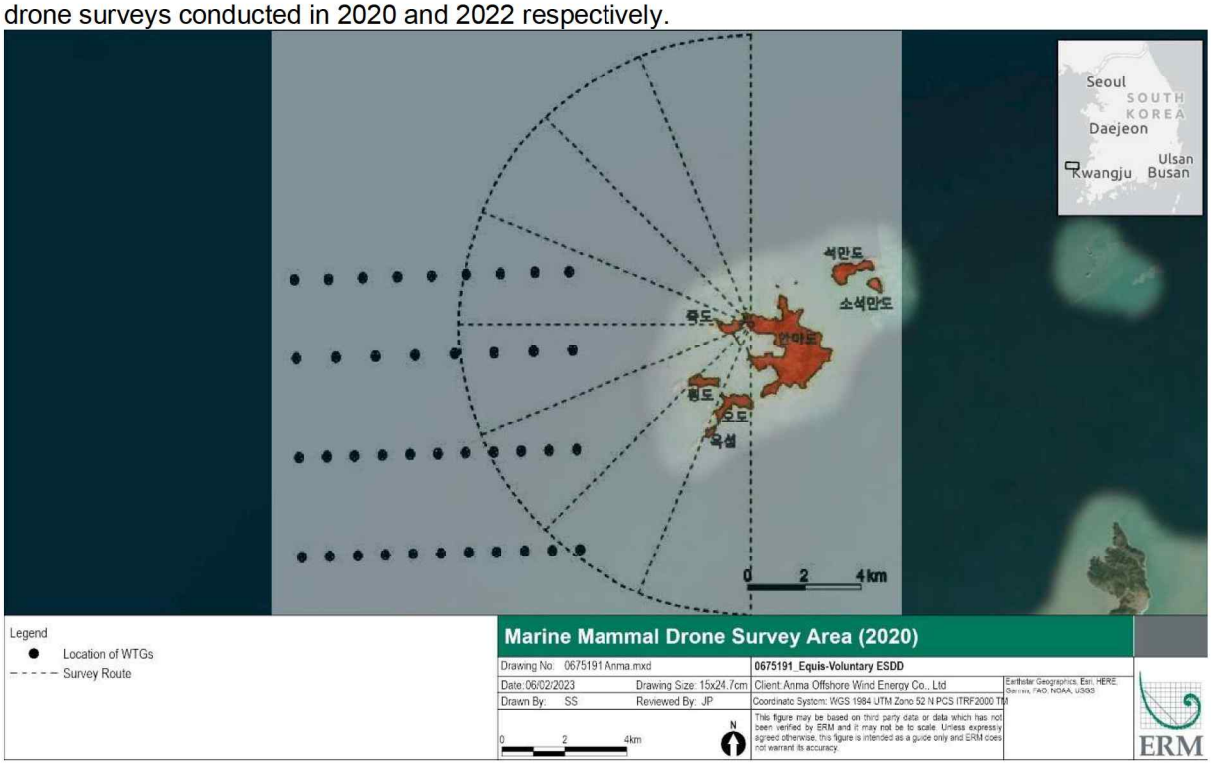
2020	Coordinates		2022 (EIA Additional Survey	Coordinates	
	Latitude	Longitude		Latitude	Longitude
WP1	35°23'20.08 N	125°58'49.64 E	WP-A1	35°23'20.08 N	125°58'49.64 E
WP2	35°17'33.33 N	125°57'30.81 E	WP-A2	35°16'11.70 N	125°57'23.94 E
WP3	35°23'18.54 N	125°56'12.85 E	WP-A3	35°23'19.61 N	125°54'55.27 E
WP4	35°17'35.41 N	125°54'50.16 E	WP-A4	35°16'10.02 N	125°53'29.15 E
WP5	35°23'20.99 N	125°53'33.45 E	WP-A5	35°23'15.93 N	125°50'58.98 E
WP6	35°16'11.97 N	125°52'13.40 E	WP-A6	35°16'4.64 N	125°49'34.01 E
WP7	35°23'19.06 N	125°50'58.65 E	WP-A7	35°23'12.55 N	125°47'4.24 E
WP8	35°16'3.17 N	125°49'19.07 E	WP-A8	35°16'0.80 N	125°45'38.00 E

Source: Final EIA

5.6.2 Methodology of Drone Survey for EIA

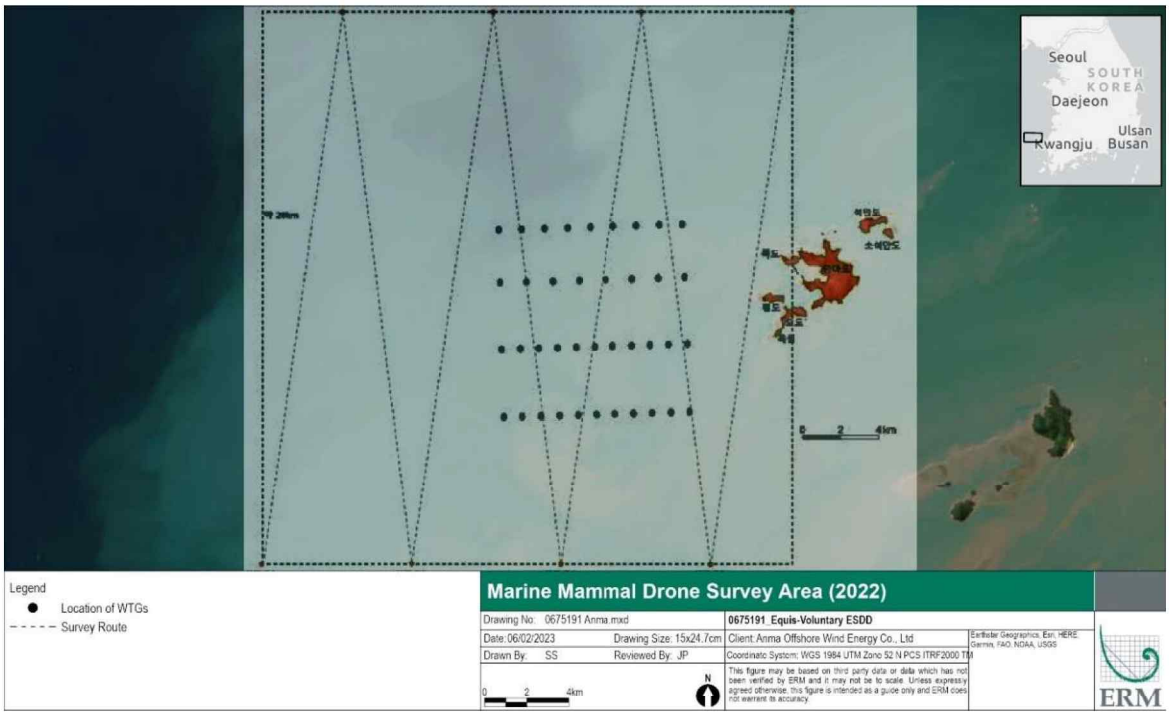
For the EIA, both fixed-wing and rotary-wing unmanned aerial vehicles or 'drones' were used to survey the coastal habitat (the Parrot Disco fixed-wing and DJI Matrice 300 RTK rotary-wing). Drones were flown at an altitude of 30 meters throughout each survey.

Figure 5-18 and Figure 5-19 depict the designated survey routes undertaken for the marine mammal drone surveys conducted in 2020 and 2022 respectively.



Source: Final EIA
Note: The WTG location prepared during the EIA is not the final version and it has been changed. Nevertheless, the surveyed area covers the project footprint.

Figure 5-18 The Area of Drone Survey (2020)



Source: Final EIA
Note: The WTG location prepared during the EIA is not the final version and it has been changed. Nevertheless, the surveyed area covers the project footprint.

Figure 5-19 The Area of Drone Survey (2022)

5.6.3 Methodology of Supplementary Survey

Vessel-based marine mammal surveys have been conducted from March 2023 to February 2024. These surveys were designed to provide equal coverage probability and also collect acoustic data. The survey area includes both the windfarm area and a buffer zone as recommend in best practice guidelines developed in other windfarm survey areas (Perrow 2019). This buffer extends some 8km from the core survey area and encompasses a group of islands, known as a of high occurrence for finless porpoise (*Neophocaena asiaeorientalis sunameri*). The total transect length is approximately 206 km and the distance between the transect lines is 3km. The vessel maintained a consistent speed of 10 knots.

Marine mammal surveys were conducted in parallel with the marine bird surveys, although the teams and data collection protocols were independent of each other, as is best practice in other windfarm assessment areas.

When marine mammals and marine reptiles are sighted, time, GPS coordinates, distance from the vessel, movement direction and other relevant biological information were noted. To facilitate species identification, both still and video imagery were collected.

In addition to visual observations, acoustic data was also collected. The primary purpose of the marine mammal surveys is to document species presence, and to calculate density or abundance parameters if sufficient data is collected. The acoustic data collection is intended to better understand the presence of cryptic species, such as finless porpoise. This was carried out using a Passive Acoustic Monitoring (PAM) device, which was towed while simultaneously conducting visual surveys for marine mammals. The PAM consist of a hydrophone array, towed some 20 m behind the vessel and recorded the noise of marine mammals.

The primary objective of the marine mammal surveys was to document species presence and, where possible, estimate density or abundance. However, during the PAM deployment period, no detections

of marine mammal vocalizations were recorded, suggesting the absence or extremely low activity of acoustically active species within the survey area at the time of monitoring.

The lack of acoustic detections was consistent with visual survey results, indicating low likelihood of significant marine mammal presence in the project area during the monitoring campaign.

The marine mammal surveys include the export cable route connecting from the offshore wind farm (Offshore Substation) to the onshore area (landfall). The export cable route has been surveyed within 500 m distance maximum from the route. Figure 5-20 shows the detailed transect routes for marine mammal surveys.

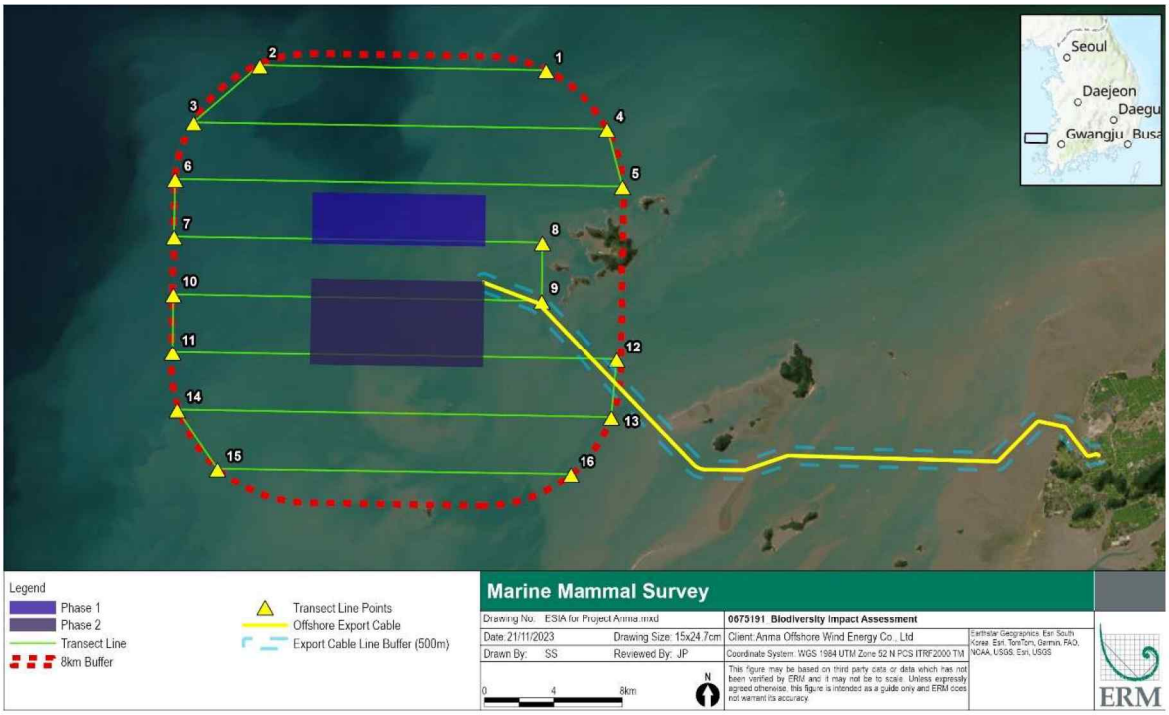


Figure 5-20 Transects Followed for Marine Mammal Survey

5.6.4 Findings from EIA Surveys

The marine mammal surveys conducted during the EIA recorded only finless porpoise. A total of 137 individuals were logged across the six surveys conducted between August and November 2020, and the single survey conducted in August 2022.

Visual surveys recorded seven individuals, whereas the drone surveys recorded 130 individuals. The difference in individuals rate between survey platforms is both a function of survey methodology and the location of the different survey areas; the drone survey repeatedly surveys the same ‘hotspot’ area and the transect lines were overlapping. In addition, finless porpoises are less likely to be disturbed by drone surveys and are easier to spot, when compared to vessel based surveys.

The largest group size, totalling 29 individuals, was recorded during the sixth survey conducted from November 24th to 26th, 2020. In the EIA additional survey of August 2022, 20 sightings of individual porpoise were observed during drone surveys and three porpoises were recorded during the vessel survey. All sightings were approximately 20 kilometres west of Anma-do, within shallow waters near the coastline (noting that effort was also concentrated in this area).

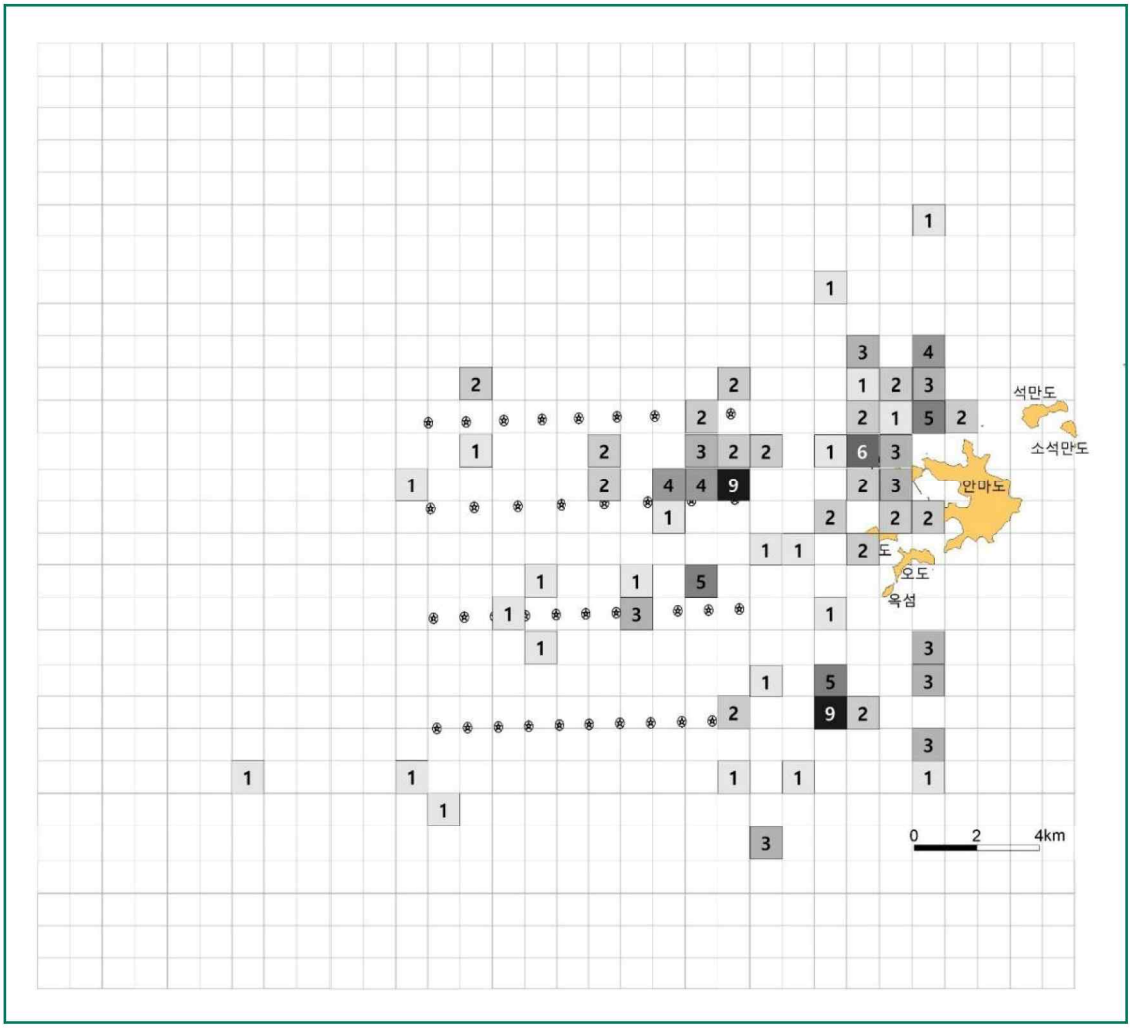
All finless porpoises were recorded in depths of 30 meters or less, with 76% (84 individuals) of sightings occurring in 20 meters.

Table 5-26 provides a record of the finless porpoise sighted and Figure 5-21 maps the finless porpoise sightings collected during the EIA and EIA additional surveys.

Table 5-26 Result of Marine Mammal Survey for EIA

Date	Survey Method	Number of Individuals (Finless porpoise)	Total
1st Survey18 – 20 August 2020	Vessel Visual Survey	1	23
	Drone Survey	22	
2nd Survey 9 – 11 September 2020	Vessel Visual Survey	2	20
	Drone Survey	18	
3rd Survey 23 – 25 September 2020	Vessel Visual Survey	0	9
	Drone Survey	9	
4th Survey 12 – 13 October 2020	Vessel Visual Survey	1	15
	Drone Survey	14	
5th survey 4 – 6 November 2020	Vessel Visual Survey	0	14
	Drone Survey	14	
6th Survey 24 – 26 November 2020	Vessel Visual Survey	0	29
	Drone Survey	29	
EIA Additional Survey 20 August 2022	Vessel Visual Survey	3	27
	Drone Survey	24	
Total		137	

Source: Final EIA



Source: Final EIA
Note: The WTG location prepared during the EIA is not the final version and it has been changed. Nevertheless, the surveyed area covers the project footprint.

Figure 5-21 The Number and the Location of Recorded Finless porpoises

5.6.5 Findings from Supplementary Surveys

Between March 2023 and February 2024, only one species of marine mammal, the Narrow-ridged Finless Porpoise (*Neophocaena asiaeorientalis*) [EN (IUCN 2022-2[37])], which is also designated as a marine protected species, was observed in the survey area.

Excluding visual sightings, no marine mammal clicks or whistles were detected during the PAM surveys; however, underwater noise from the vessel's depth sounder ultrasound, snapping shrimp, and fish was identified.

Based on a survey from March 2023 to February 2024, a total of 33 finless porpoise sightings have been documented, with specific numbers noted for each month. The distribution of sightings is as follows: 9 in March, 4 in April, 9 in May, 3 in July, 2 in August, 3 in October, 2 in December and 1 in February.

No marine mammal sightings were recorded in June, September, November, and January. Table 5-27 summarises the sightings recorded between March 2023 and February 2024.

[37] Wang, J.Y. & Reeves, R. 2017. Neophocaena asiaeorientalis. The IUCN Red List of Threatened Species 2017: e.T41754A50381766. https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T41754A50381766.en. Accessed on 07 October 2024.

Table 5-27 Marine Mammal Sighting Summary (2023-2024)

Number of Species	Common Name	Scientific Name	Mar-2023	Apr-2023	May-2023	Jun-2023	Jul-2023	Aug-2023	Sep-2023	Oct-2023	Nov-2023	Dec-2023	Jan-2024	Feb-2024	Total
Number of observations	Narrow-ridged Finless Porpoise	*Neophocaena asiaeorientalis*	9	4	9	-	3	2	-	3	-	2	-	1	33
Total number of individuals	Narrow-ridged Finless Porpoise	*Neophocaena asiaeorientalis*	17	6	16	-	8	4	-	4	-	2	-	1	58

Figure 5-22 provides a visual representation of the results obtained from the surveys conducted between March 2023 and August 2023. This graphic representation offers a clear overview of the observed marine mammal activity during this period.

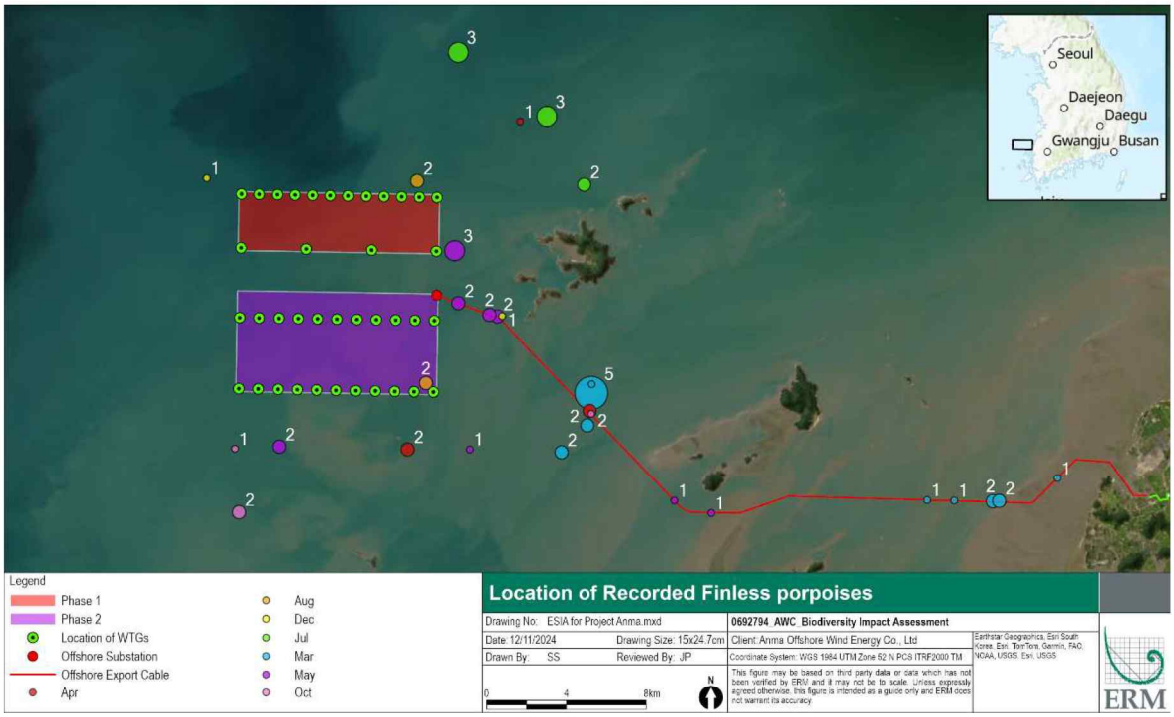


Figure 5-22 The Location of Recorded Finless porpoise

The supplementary bird and habitat surveys were conducted along the offshore export cable alignment, including a 500-meter buffer zone that fully encompassed the Baeksu tidal flat and the adjacent estuarine environment.

This ensured that the survey scope included representative intertidal and estuarine habitat features relevant to the project area.

5.6.6 Literature Review on Marine Mammals

To supplement the primary field surveys conducted as part of the BIA, a review of relevant literature and databases was carried out to provide a broader understanding of marine mammal occurrence in the vicinity of the Project area, particularly focusing on the West Sea (Yellow Sea) region of Korea. A total of seven key sources, including scientific publications, statistical reports, and national marine spatial datasets, were reviewed. The findings collectively indicate that the Narrow-ridged Finless Porpoise (*Neophocaena asiaeorientalis*) is the most prevalent and consistently observed cetacean species in the region, while other species such as minke whale (*Balaenoptera acutorostrata*) and killer whale (*Orcinus orca*) may occasionally occur.

Bycatch and Stranding Records (2011–2017 and 2018–2022)

According to national marine mammal bycatch data collected between 2011 and 2017, *N. asiaeorientalis* accounted for approximately 67.6% of 12,262 bycaught individuals, followed by *Delphinus delphis* (23.8%), *B. acutorostrata* (4.2%), and *Lagenorhynchus obliquidens* (3.1%)[38]. This high rate of incidental catch confirms the widespread distribution of P. phocoena across all coastal areas, particularly in the West and South Seas (see Figure 5-23). A subsequent analysis of data from 2018 to 2022 showed a similar pattern, with *N. asiaeorientalis* representing 99.4% of all recorded bycatches and strandings in the West Sea (see Figure 5-24)[39]. This long-term trend supports the

[38] Lee, S.L. et al. (2018). Characteristics of bycatch of small cetaceans in Korean coastal waters from 2011 to 2017. Korean Journal of Fisheries and Aquatic Sciences.

[39] Lee, J.H. et al. (2023). Estimation of Narrow-ridged Finless Porpoise population in the central West Sea by aerial and vessel-based surveys. National Institute of Fisheries Science.

understanding that the Narrow-ridged Finless Porpoise is the dominant cetacean species in the vicinity of the Project.

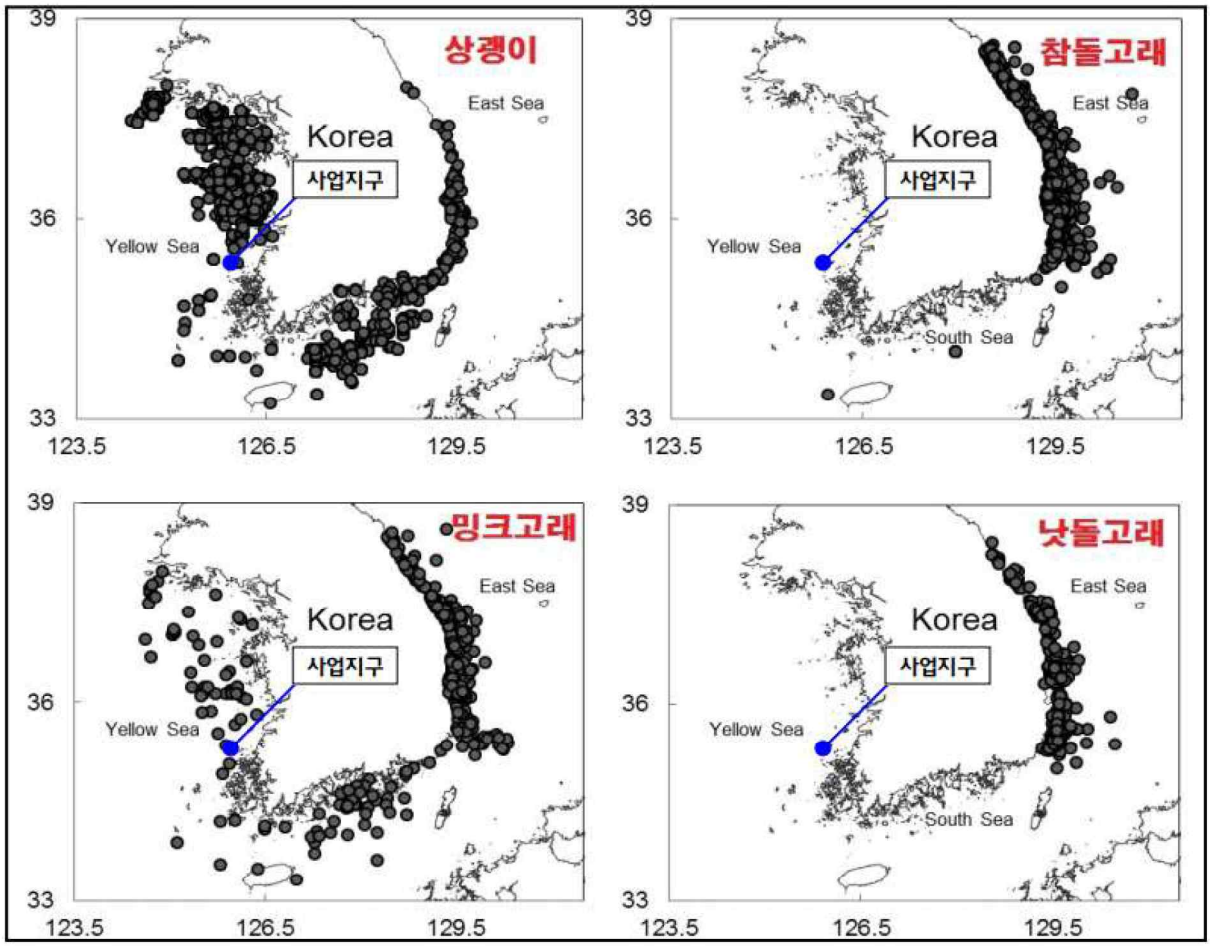


Figure 5-23 Bycatch Distribution of Marine Mammals along Korean Coasts (2011–2017)

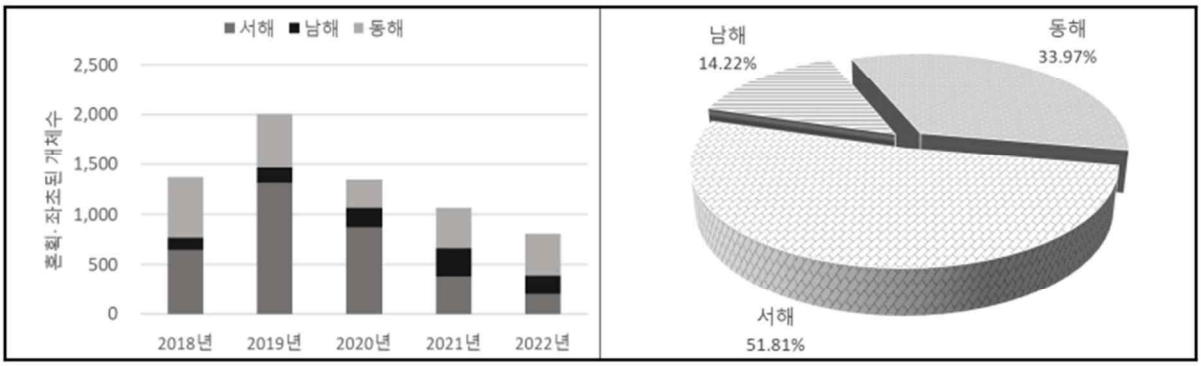


Figure 5-24 Bycatch and Stranding Statistics of Marine Mammals by Region (2018–2022)

Line Transect Surveys and Habitat Preference (2002–2006, 2003–2005)

Historical vessel-based line transect surveys conducted between 2002 and 2006 observed the distribution of *N. asiaeorientalis* primarily along shallow coastal areas, while *B. acutorostrata* was found farther offshore in mid-northern sections of the West Sea (see Figure 5-25)[40].

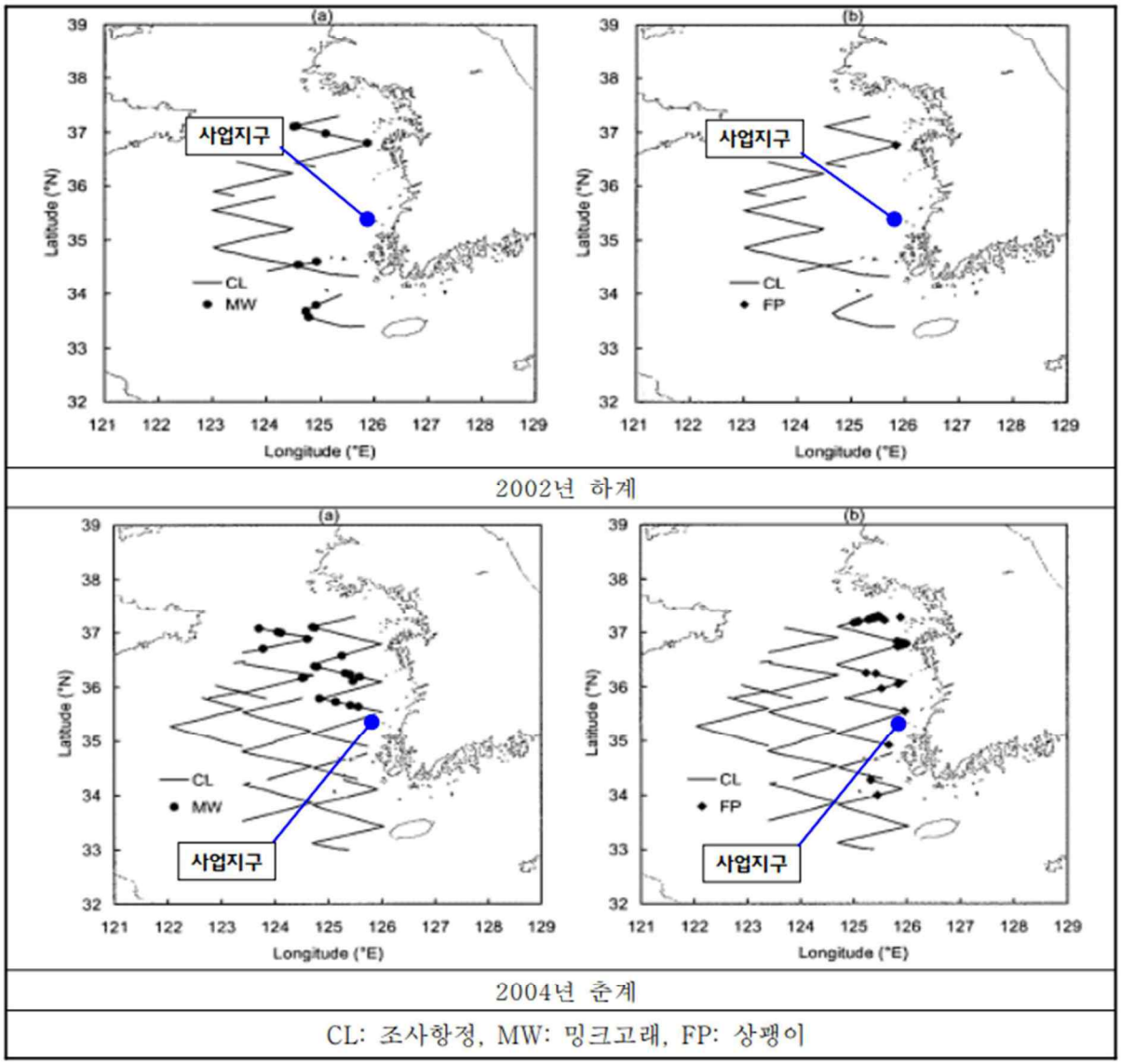


Figure 5-25 Line Transect Survey Results of Marine Mammals in the West Sea (2002–2006)

A separate study from 2003 to 2005 identified detection rates of *N. asiaeorientalis* ranging from 0.0525 to 0.0797 individuals per kilometer, with most sightings occurring 5–15 km offshore in water depths of 10–80 m, which corresponds closely with the location and bathymetry of the Project area (see Figure 5-26)[41].

[40] National Institute of Fisheries Science, Whale Research Center (2007). Ecosystem-based studies on cetaceans in Korean waters.
[41] National Institute of Fisheries Science (2005). Ecological studies of the Narrow-ridged Finless Porpoise (Phocoena phocoena) in the West Sea..

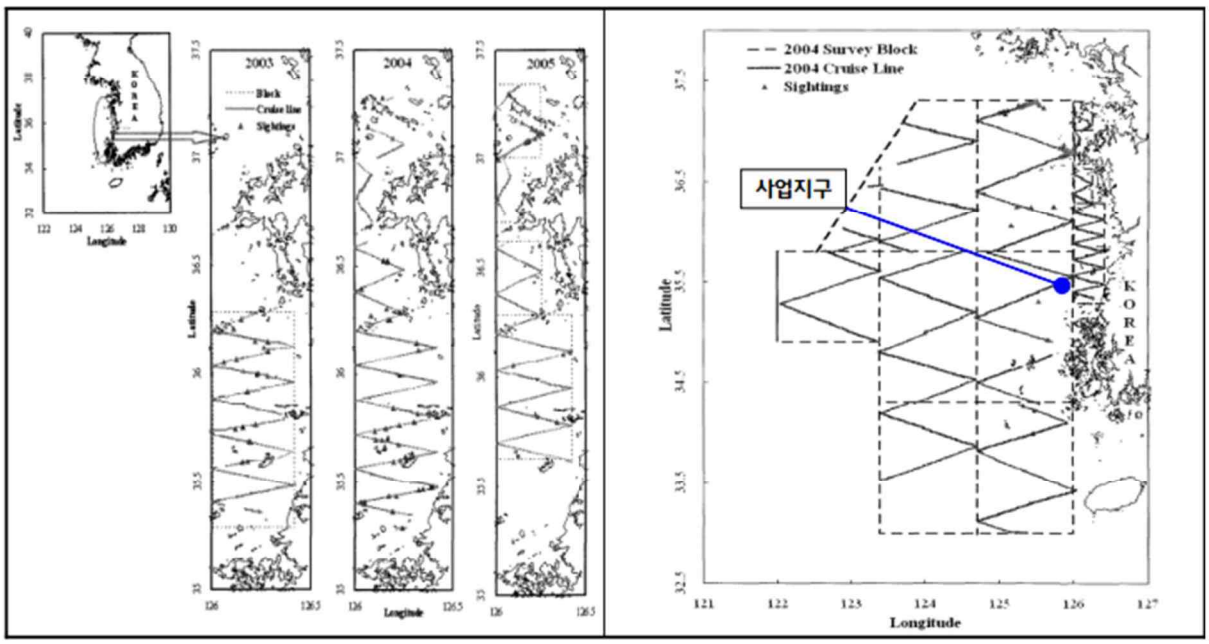


Figure 5-26 Sighting Density of Narrow-ridged Finless Porpoise in the West Sea (2003–2005)

Density Patterns Near the Project Site (2001–2003)

A focused study near the Anma Archipelago from 2001 to 2003 showed that 82% of *N. asiaeorientalis* groups were observed within 15 nautical miles of the shoreline, with a particularly high concentration recorded within 15 miles of Anma Island. (see Figure 5-27)[42].

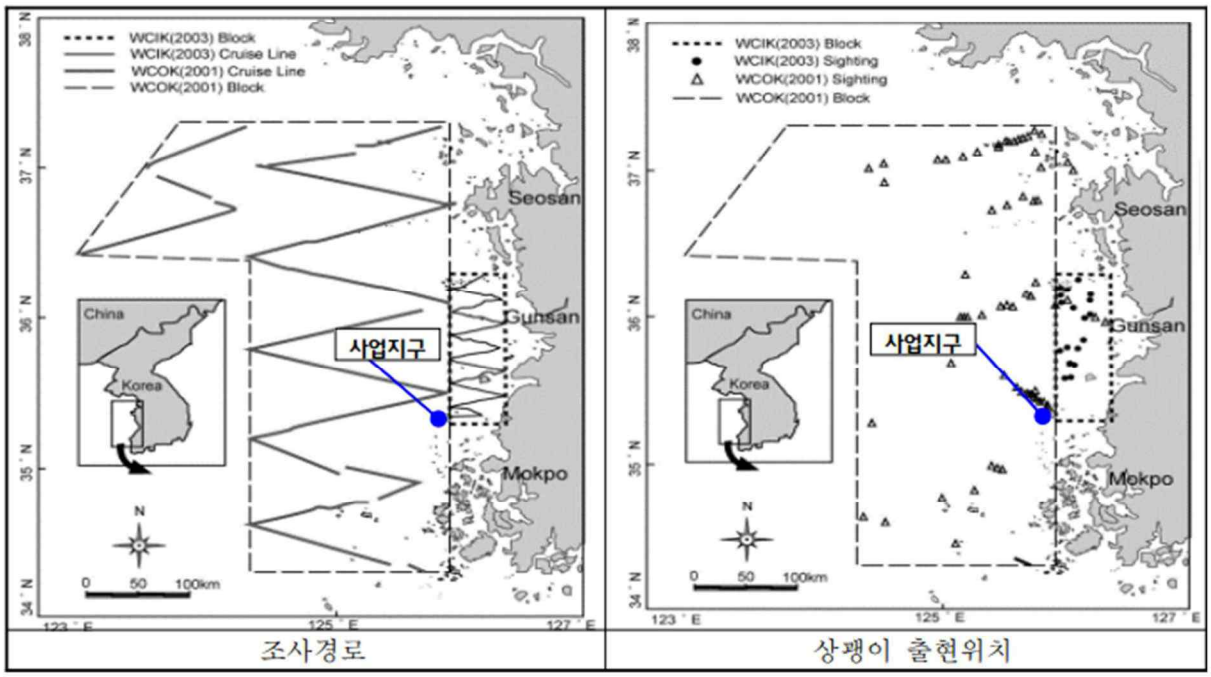


Figure 5-27 Survey Tracks and Sighting Locations of Narrow-ridged Finless Porpoise near Anma Archipelago (2001–2003)

[42] Jang, C.I. et al. (2004). *Distribution and abundance of Narrow-ridged Finless Porpoises in the West Sea of Korea*. Korean Society of Fisheries and Aquatic Science.

Recent Aerial and Vessel-based Surveys (2021–2022)

More recent investigations using combined aerial and vessel-based observations between 2021 and 2022 further confirmed frequent sightings of *N. asiaeorientalis* in the central West Sea, including the area between Anma Island and the Yeonggwang coastline. These surveys recorded a total of 586 individuals, demonstrating persistent seasonal presence across multiple locations within the broader Project AoI (see Figure 5-28 and Figure 5-29).[39]

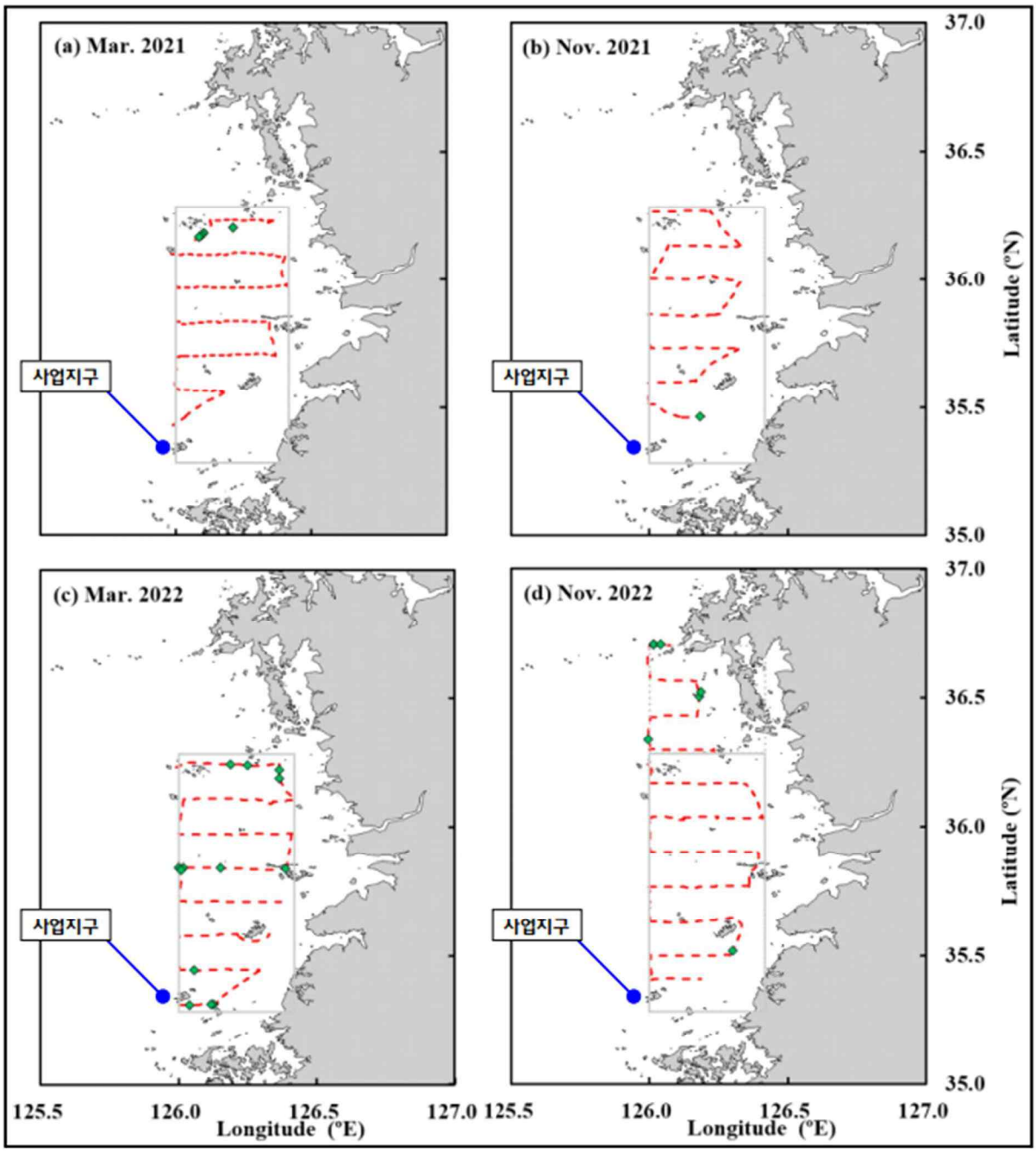


Figure 5-28 Vessel-Based Sighting Records of Narrow-ridged Finless Porpoise (2021–2022)

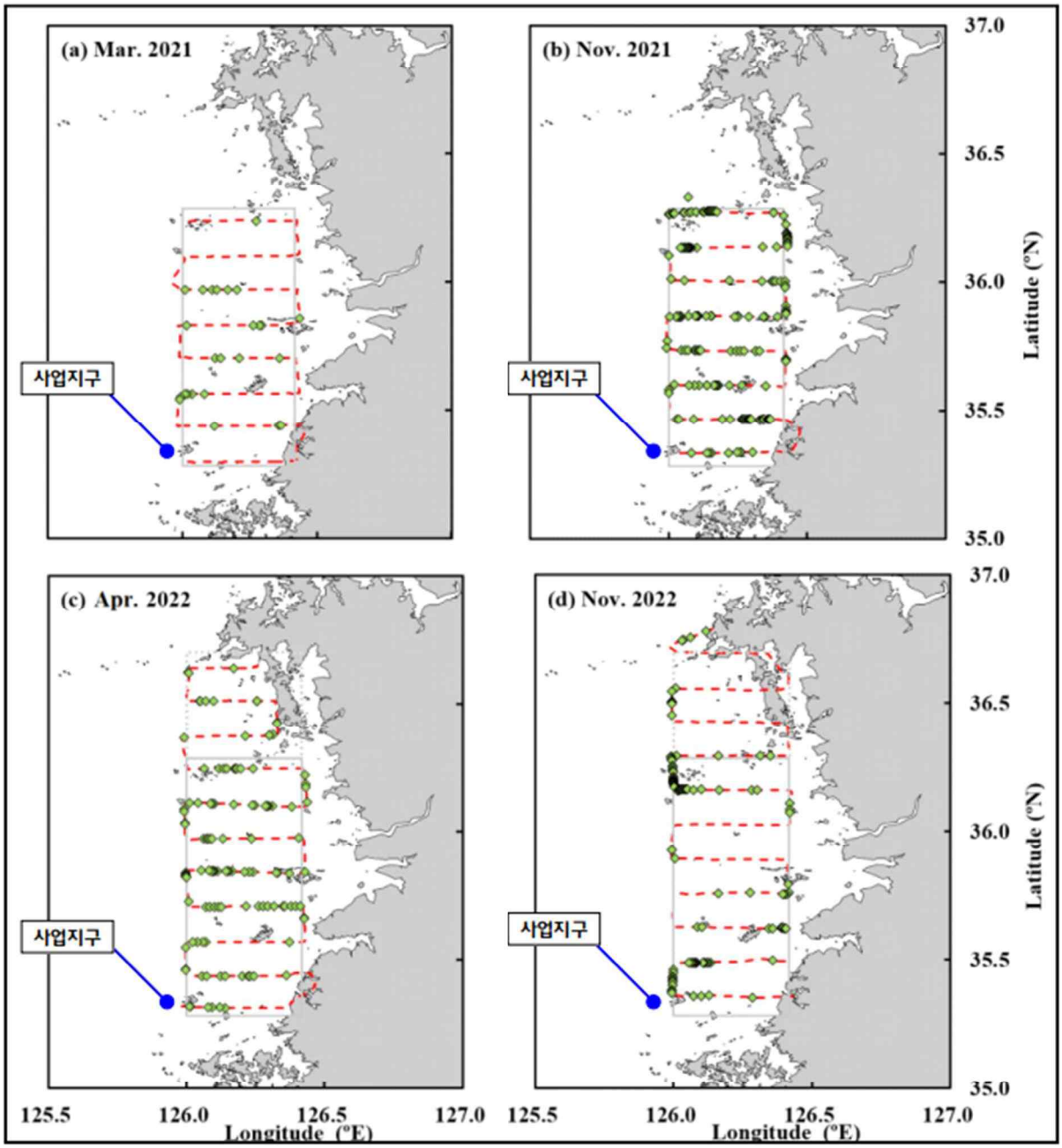


Figure 5-29 Aerial Survey Results of Narrow-ridged Finless Porpoise in the West Sea (2021–2022)

Based on the collective findings, it can be concluded that the Narrow-ridged Finless Porpoise (*N. asiaeorientalis*) is the only marine mammal species likely to be present on a regular basis within the Project AoI. Occasional presence of *Balaenoptera acutorostrata* cannot be ruled out but is likely infrequent. No evidence was found to suggest the regular occurrence of other cetacean or pinniped species. These insights are consistent with the results of field surveys conducted under both the National EIA and its supplementary investigations.

5.7 Bat

Monthly surveys for bat have been conducted from March 2023 to February 2024. This assessment includes 12 rounds of bat surveys.

5.7.1 Methodology

For the bat survey, two specific locations within the wind farm site were selected, denoted as Phase 1 (Latitude: 35°20'54.88"N, Longitude: 125°56'30.68"E) and Phase 2 (Latitude: 35°19'2.79"N, Longitude: 125°56'28.91"E). The survey was conducted using a Song Meter Bats device, capturing bat ultrasounds from one hour prior to sunrise until one hour after sunrise. The placement of the recorder was strategically determined based on minimizing engine noise from the survey vessel, ensuring optimal recording conditions. Survey personnel remained stationed at the survey point throughout the night to oversee data collection.

Subsequently, the recorded audio files were subject to thorough analysis using Kaleidoscope software (Version 5.6.0c). Results obtained were meticulously cross-referenced with bat sonograms for accuracy and validation. This rigorous methodology was employed to ensure precise and reliable data acquisition in the assessment of bat presence and activity within the wind farm site. Figure 5-30 display the locations of the bat surveys.

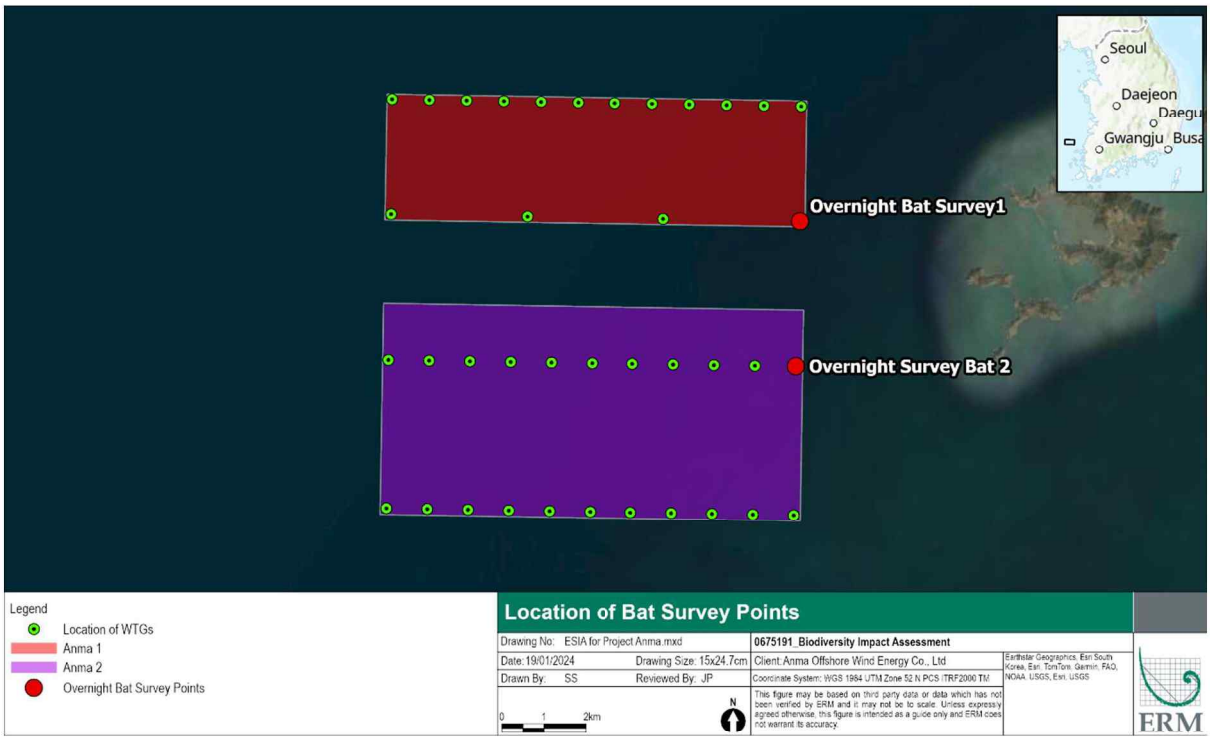


Figure 5-30 Location of Bat Survey

5.7.2 Survey Findings

During the period spanning from March 2023 to February 2024, no bat sightings were recorded at sea. In the analysis data, instances suspected to be related to bats underwent rigorous scrutiny through sonogram verification. However, it was ultimately determined that these instances were attributable to environmental noise rather than bat activity. As such, these records were appropriately categorized as "Noise." This thorough examination ensures the accuracy and reliability of the bat observation data.

5.7.3 Literature Review on Bat

While no bat species were recorded during the 12-month acoustic survey in the Ecological Assessment Area (EAAA), several species of conservation concern are known to occur elsewhere in Korea.

For example, Murina hilgendorfi has been recorded in mid- to high-elevation forest areas such as Mt. Seorak, Mt. Jiri, and Inje County in Gangwon-do[43]; Myotis ikonnikovi has been observed in forested and river-adjacent areas of Yangyang, Jecheon, and Bonghwa Counties[44]; and Miniopterus schreibersii is known to inhabit cave systems and abandoned mines in mountainous regions including Pyeongchang, Muju, and Gongju[45].

These locations are situated in inland and highland regions of Korea, typically over 100 km from the coastal wind farm development site.

Given this spatial separation and the absence of roosting or foraging features within the Project AoI, it is unlikely that the Project would exert any direct or indirect ecological impact on these bat populations.

[43] National Institute of Biological Resources (2018). *Mammals of Korea*; Korea National Park Research Institute (2020). *Monitoring of Forest-Dwelling Mammals in Mt. Jiri and Mt. Seorak*

[44] National Institute of Ecology (2021). *Bat Species Distribution in Forested Watersheds of Korea*

[45] National Institute of Biological Resources (2020). *Assessment of Cave-Dwelling Endangered Species in Korea*; Ministry of Environment R&D Project Report (2019)

5.8 Marine Fish

5.8.1 Methodology

The gillnet (150 m long for each point, cast for 24 hours) survey was conducted at the project site and in the surrounding waters, located 5 km west of Anma Island, Yeonggwang-gun, Jeollanam-do. For marine fish, surveys were carried out in July 2019, October 2019, January 2020, April 2020, August 2020, November 2020, August 2022, and October 2022, for a total of eight surveys.

The use of Beam and Otter trawls was not included in the field methodology, as trawl gear is generally prohibited in Korean nearshore waters, including the project area, under the Fishery Resources Management Act. While Article 26 of the Act allows for exemptions in the case of scientific investigations, it is understood that such exemptions are not granted for the purpose of EIA. Accordingly, the surveys were conducted in compliance with the standard methods prescribed in Korea's national EIA guidelines. It is acknowledged that gillnets have limitations in sampling demersal and cryptic benthic species, which may not be adequately represented in the catch. To address this limitation, a literature review was conducted, drawing on data from the Yeonggwang-gun Fisheries Cooperative and other regional sources. From 2019 to April 2020, the surveys were conducted at two stations (F-1, F-2), while in August and November 2020, as well as in August and October 2022, the surveys were conducted at six stations.

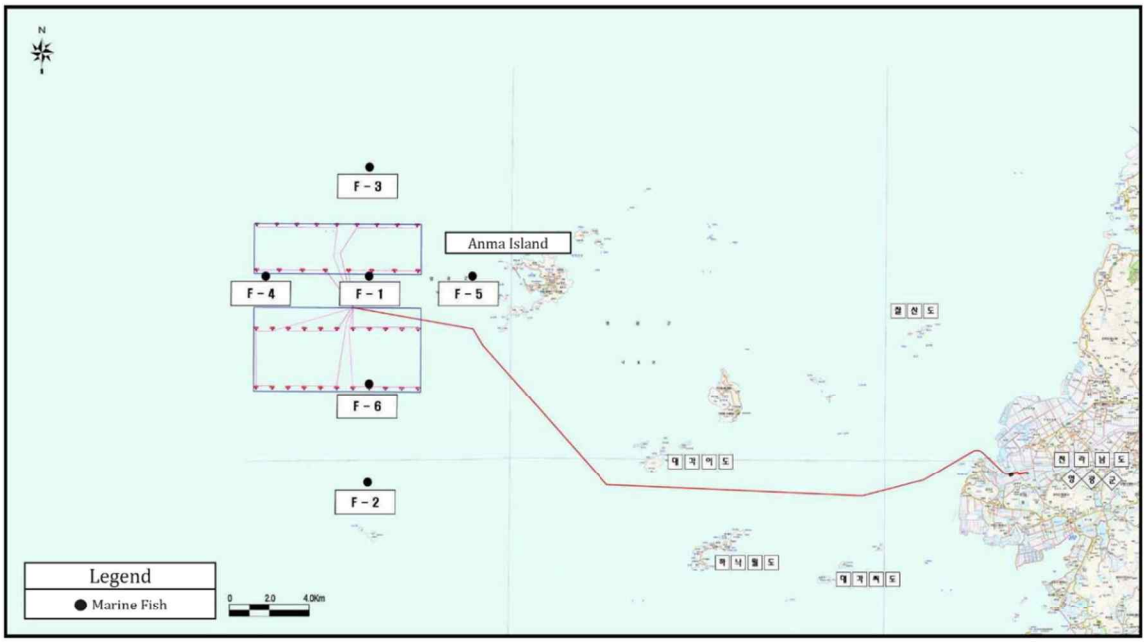
The gillnet survey method was selected in compliance with South Korea's EIA regulations, which provide standardized guidelines for marine fish surveys in impact assessments. Gillnets are widely utilized in regional fisheries assessments and are considered an effective method for evaluating species composition and relative abundance in the project area. While alternative methods such as trawl type nets were not employed as they are illegal to be used under Fishery Resources Management Act, the gillnet methodology aligns with national regulatory requirements and is commonly used for ecological assessments in Korean waters.

Sampling was not conducted at the cable landfall location as the primary objective of the fish survey was to assess marine fish communities in the offshore project footprint, where potential environmental impacts are more significant. The area of landfall is not considered a habitat of significant importance for fish. Although the cable landfall is located at the eastern edge of the broader Baeksu tidal flat system, the area in question consists primarily of a modified shoreline and a dry riverbed adjacent to Songam 1-ri. This zone lies outside of the core intertidal habitats identified under the KBA and is not considered a critical nursery or spawning ground for fish, based on local ecological knowledge and fisheries data. Therefore, it was excluded from the survey area, and any potential impact from landfall works is expected to be minimal and temporary.

While surveys were not conducted along the submarine cable corridor near the landfall location, this area is ecologically distinct from the main offshore project footprint. The landfall area consists primarily very flat topography and minimal water flow, where water tends to remain stagnant due to tidal influence and modified shoreline near Songam 1-ri, which is not recognized as a significant fish habitat based on field characteristics and local ecological understanding. However, as the potential presence of fish species in the area cannot be entirely ruled out, a supplementary literature review was conducted to examine and present information on fish habitat conditions in this area.

The primary impacts on marine fish, including underwater noise, seabed disturbance, and vessel movement, are concentrated offshore, where project activities occur at a greater scale and intensity. In contrast, landfall construction, such as cable installation, will cause only localized and temporary sediment disturbance, which will dissipate naturally over time without lasting ecological consequences. Additionally, coastal fish species are naturally adapted to turbidity fluctuations, making minor increases unlikely to cause significant impacts. Given that offshore wind farm EIAs typically exclude estuarine fish surveys, as major project-related effects occur offshore, the landfall and estuarine areas were excluded from the survey area.

Additionally, a literature review was performed, referencing data from the Yeonggwang-gun Fisheries Cooperative.



Source: Local Environmental Impact Assessment (EIA)

Figure 5-31 Marine Fish Survey Location

5.8.2 Findings from EIA Surveys

According to the gillnet survey results conducted in July 2019, a total of three species of fish were observed, including Red Tongue Sole (*Cynoglossus joyneri*) [LC (IUCN 2024-1)], Bartail Flathead (*Platycephalus indicus*), and Silver Pomfret (*Pampus argenteus*). In the October 2019 survey, three species were also observed, including Red Tongue Sole, Blackmouth Goosefish (*Lophiomus setigerus*) [LC (IUCN 2024-1)], and Silver Pomfret.

The species observed during the gillnet surveys (such as Red Tongue Sole, Bartail Flathead, and Silver Pomfret) are typically associated with sandy or muddy seafloor habitats, which are characteristic of the project area's soft-bottom marine environment. These habitat types are consistent with benthic or demersal ecological preferences commonly targeted by gillnet methods.

Based on data from the Yeonggwang-gun Fisheries Cooperative, from January to December 2019, a total of 41 species of marine fish were sold, with a total sales volume of 6,223,282 kg. Of this, 5,436,448 kg were Yellow Croaker (*Larimichthys polyactis*) [LC (IUCN 2024-1)], accounting for 87.4% of the total sales volume.

In the gillnet survey conducted in January 2020, a total of two species were observed: Tanaka's snailfish (*Liparis tanakai*) and Blackmouth Goosefish. The April 2020 survey recorded three species, including Japanese Spanish Mackerel (*Scomberomorus niphonius*) [NT (IUCN 2024-1)], Tongue Sole (*Semilaevis reliscus rhomaleus*), and Blackmouth Goosefish. In August 2020, three species were observed, including Robust Tonguefish (*Cynoglossus robustus*), Ocellate Spot Skate (*Raja kenojei*), and Bartail Flathead (*Platycephalus indicus*). In November 2020, eight species were observed, including Tanaka's snailfish, Tongue Fish (*Areliscus hollandi*), Blackmouth Goosefish, Ocellate Spot Skate, Olive Flounder (*Paralichthys olivaceus*), Sea Ravens (*Hemitripterus villosus*), Bartail Flathead, and Sharp Tailed Grunt (*Hapalogenys mucronatus*).

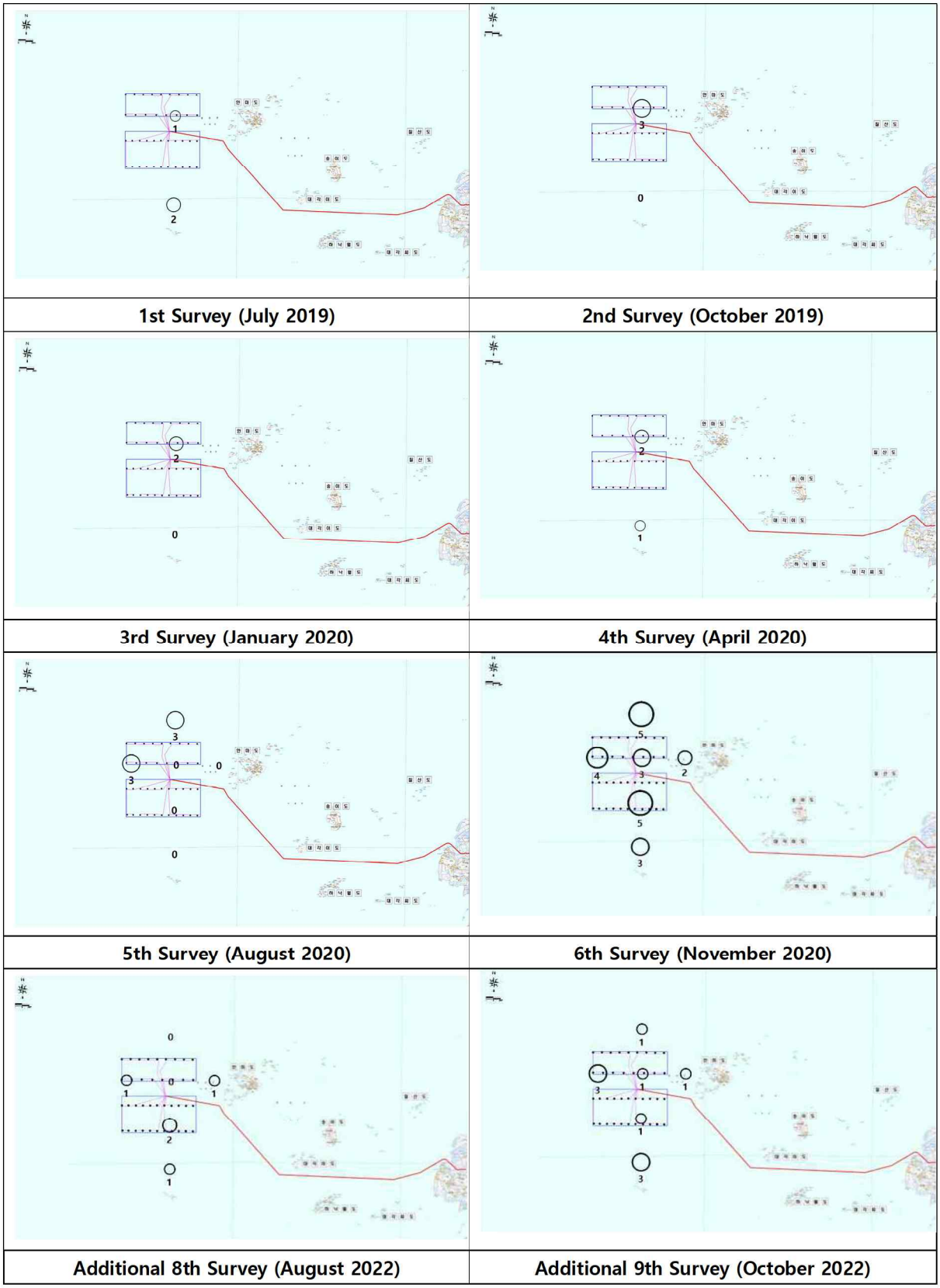
From January to December 2020, the Yeonggwang-gun Fisheries Cooperative reported the sale of 39 species of marine fish, with a total volume of 10,481,808 kg. Of this, 9,683,310 kg were Yellow Croaker, accounting for 92.4% of the total sales.

In 2021, the cooperative recorded the sale of 43 species, with a total volume of 8,812,801 kg. Of this, 7,938,887 kg were Yellow Croaker, making up 90.1% of the total.

According to the gillnet survey results from August 2022, five species of fish were observed, including Red Stingray (*Dasyatis akajei*), Skewband Grunt (*Hapalogenys nitens*), Brown Croaker (*Miichthys miiuy*), Tongue Sole, and Ocellate Spot Skate. In the October 2022 survey, five species were also observed: Red Stingray, Silver Pomfret, Sea Ravens, Red Tongue Sole, and Ocellate Spot Skate.

Additionally, fishery records from the Yeonggwang-gun Fisheries Cooperative were incorporated to supplement the ecological understanding of species likely present in the area, including benthic and commercially important taxa.

For 2021, the cooperative reported the sale of 39 species, with a total sales volume of 2,564,553 kg. Of this, 1,965,074 kg were Yellow Croaker, accounting for 76.6% of the total volume.



Source: Final Environmental Impact Assessment (EIA)

Figure 5-32 Number of Fish Individuals Observed

5.8.3 Literature Review on Fish

To supplement the results of field-based fish surveys, a literature review was conducted focusing on regional fish catch records and nearby project data.

Regional Fish Landings Data

First, commercial fish landing data from the Yeonggwang-gun Fisheries Cooperative between 2019 and 2022 were reviewed to assess marine fish species composition in the broader area. The number of species landed varied slightly by year, ranging from 39 to 43 species. No legally protected fish species were recorded during this period.

In all years reviewed, Redlip croaker (*Larimichthys crocea*) was consistently the dominant species, accounting for the vast majority of total landed biomass. This species is caught primarily using purse seine methods in offshore waters.

Table 5-32 Summary of Fish Reported in NFFC[46]

Year	No. of Species	Leagally Protected Species	Dorminants
2019	41	None	Redlip croaker (87.4%)
2020	39	None	Redlip croaker (92.4%)
2021	43	None	Redlip croaker (90.1%)
2022	39	None	Redlip croaker(76.6%), Largehead hairtail(7.6%)

Supplementary Literature from Adjacent Cable Route Projects

To further reinforce the understanding of nearshore fish communities, survey data from previous ecological assessments, specifically the Environmental Impact Assessment for the Small-scale Solar Power Development Project at 313-40 Songam-ri, Yeomsan-myeon, Yeonggwang-gun (2020), were reviewed to supplement species records in the coastal zone.

The surveys employed different gear types depending on the season, including gillnets, fish traps, and driftnets, and documented between 3 and 13 species per survey event.

Representative species observed include:

- Sea raven (*Hemitripterus villosus*)
- Asian blue crab (*Portunus trituberculatus*)
- Asian paddle crab (*Charybdis japonica*)
- Veined rapa whelk (*Rapana venosa*)

Notably, skate and ray species (family Rajidae) were consistently observed across all sources, regardless of survey method.

Differences in species composition between the field surveys, regional catch data, and literature are attributed to differences in habitat and fishing practices.

For instance, the fishery cooperative data mainly reflect offshore pelagic species collected via purse seine, while nearshore literature surveys conducted in shallower waters commonly recorded crustaceans such as crabs.

[46] NFFC : National Federation of Fisheries Cooperatives (SUHYUP)

Table 5-33 Summary of Fish Reported in Literature[47]

Category	No. of Species	Leagally Protected Species	Major Species	Method
Feb, 2023	3	None	Sea reven	Gillnet
Apr, 2023	6	None	Venined rapa whelk	Gillnet
Jul, 2023	7	None	Asian paddle crab, Asian blue crab	Gillnet
Oct, 2023	11 13	None	Asian blue crab	Gillnet Fish Trap
Aug, 2024	6	None	Asian blue crab	Driftnet

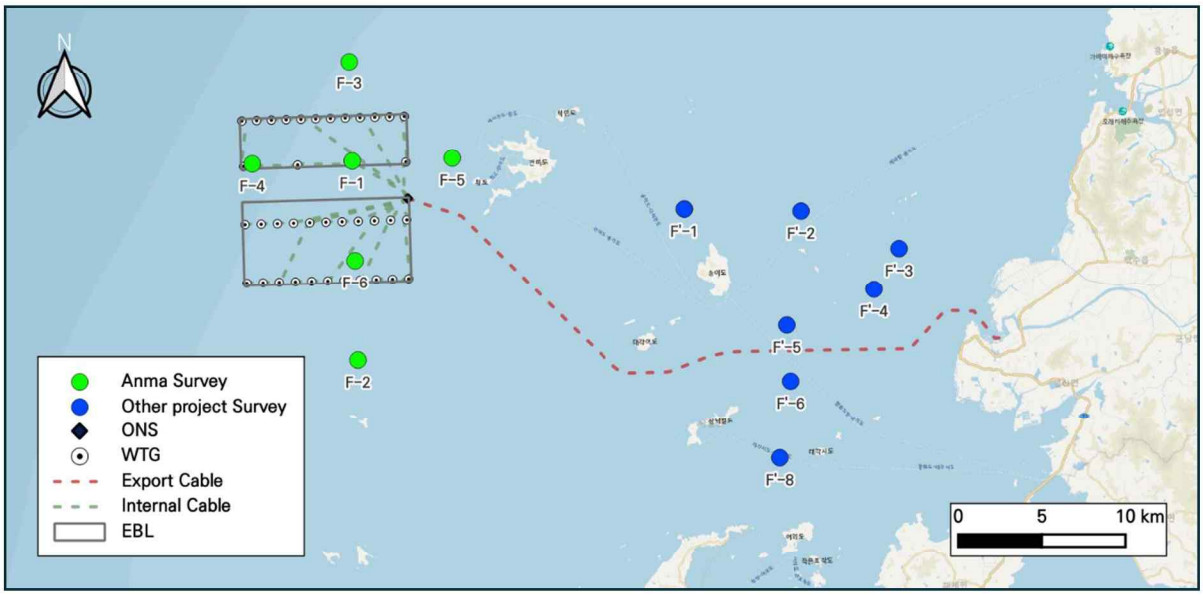


Figure 5-33 Survey Locations Referenced in Literature Review on Marine Fish(OWF and EXC)

Supplementary Literature from Adjacent Landfall area

In order to evaluate the potential presence of fish in the vicinity of the landfall area, results from a literature(2020[48]) survey conducted in the adjacent region were cited and incorporated.

The survey was conducted in areas near piers accessible by boat, and a total of 4 species were identified:

- *Chelon haematocheilus*
- Eel Goby (*Odontamblyopus lacepedii*)
- Dusky Mud Hopper (*Periophthalmus modestus*)
- Spear-like Oriental Goby (*RAcanthogobius hasta*)

Of these, 3 species belonged to the family Gobiidae, except for *Chelon haematocheilus*. Given that Gobiidae are typically associated with tidal flats or river estuaries, it is inferred that the area serves primarily as an intertidal habitat for fish, mainly influenced by tidal exposure.

[47] Other Project EIA report

[48] The 3rd Intensive Survey on Estuarine Ecosystem. 2020. National Institute of Ecology

Separately, to assess the potential presence of juvenile fish, findings from another literature survey conducted in 2024[49] were reviewed. As a result, no juveniles were recorded, supporting the conclusion that the likelihood of juvenile fish inhabiting the area is low.

Table 5-34 Marine Fish Survey Results in Literature(2020)

Scientific name	Common name	IUCN Redlist	K-redlist	Results	Note
No. of Species	-	-	-	4	-
No. of Protected Species	-	-	-	-	-
Chelon haematocheilus	-	NE	-	○	-
Odontamblyopus lacepedii	Eel Goby	LC	-	○	Gobiidae
Periophthalmus modestus	Dusky Mud Hopper	LC	-	○	Gobiidae
Acanthogobius hasta	Spear-like Oriental Goby	LC	-	○	Gobiidae

*** International Union for the Conservation of Nature (IUCN) Red List**
Not Evaluated (NE)
Least Concern (LC): Widespread and abundant.

[49] Small-Scale Environmental Impact Assessment Report for the Solar Power Site Development Project at 5-6 Duwu-ri, Yeomsan-myeon, Yeonggwang-gun (including 9 additional parcels). 2024. Glory Yeonggwang No. 21 Solar Power Plant and one additional site.

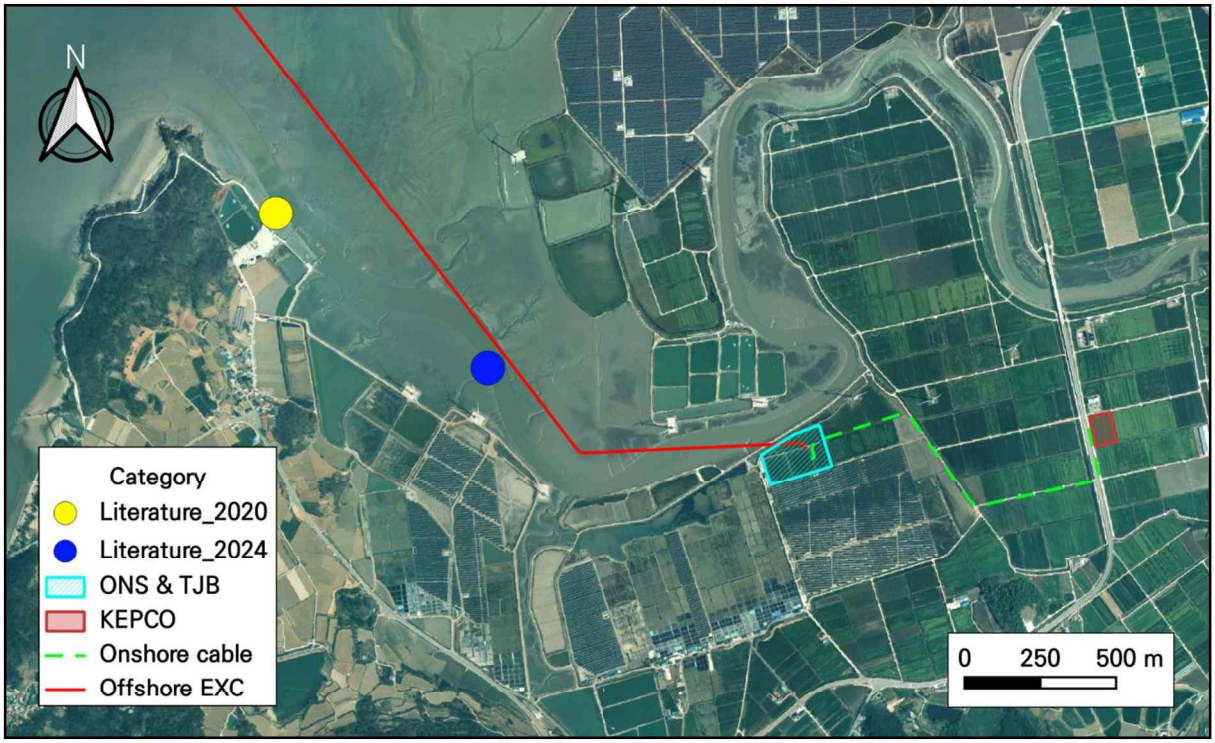


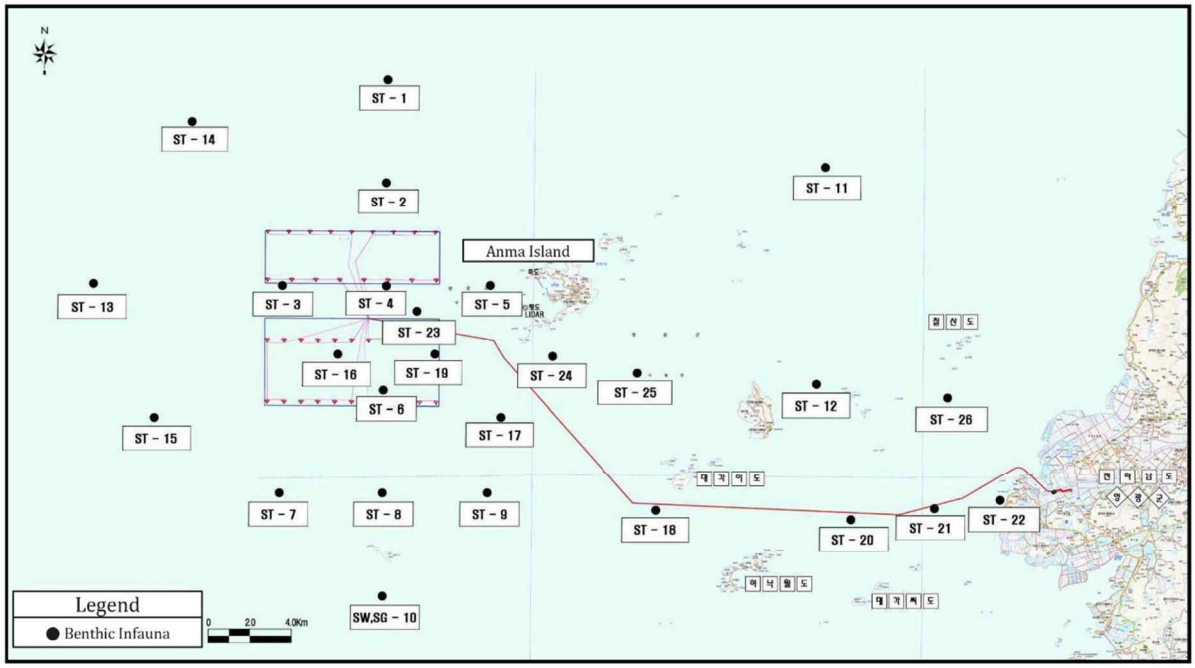
Figure 5-34 Survey Locations Referenced in Literature Review on Marine Fish(Landfall area)

5.9 Benthic Infauna

5.9.1 Methodology

The field survey was conducted at the project site and in the surrounding waters, located 5 km west of Anma Island, Yeonggwang-gun, Jeollanam-do. For benthic infauna, surveys were carried out in July 2019, October 2019, January 2020, April 2020, August 2020, November 2020, December 2021, August 2022, and October 2022, for a total of nine surveys.

From 2019 to April 2020, the surveys were conducted at 12 stations (ST-1 to ST-12). In August and November 2020, surveys were conducted at 22 stations (ST-1 to ST-22). In December 2021, the survey was conducted at 4 stations (ST-23 to ST-26). In August 2022, the survey covered 26 stations (ST-1 to ST-26), and the October 2022 survey was conducted at 22 stations (ST-1 to ST-22).



Source: Final Environmental Impact Assessment (EIA)

Figure 5-34 Benthic Infauna Survey Location

In the 1st to 4th survey periods, a modified Van Veen Grab sampler (sampling area per grab: 0.05m^2) was used to collect samples three times at each station. The recovered sediments were sieved on-site using a 1.0 mm mesh sieve, and the benthic infauna retained in the sieve were preserved in 5% neutral formalin on-site and transported to the laboratory. The collected benthic infauna were then sorted by faunal group, identified to species level as much as possible using an optical microscope and stereomicroscope, and counted.

During the 5th and 6th survey periods, and in additional surveys, a Smith-McIntyre sampler was used to collect subtidal benthic infauna at each station. Two samples of 0.1 m^2 each were taken at each site, and the sediments were sieved on board using a 1.0 mm mesh sieve. The residues were fixed in 10% neutral formalin on-site and then transported to the laboratory. The samples were sorted by taxonomic group and identified to species level. Only complete individuals or those with intact heads were counted to calculate density (individuals/m^2) and biomass (g/m^2) per station.

The classification and identification of subtidal benthic infauna were based primarily on external morphology. For accurate identification, anatomical characteristics, reproductive structures, and other key features of each taxonomic group were examined.

The benthic infauna surveys were conducted in accordance with South Korea's EIA regulations, which define the methodology and scope for ecological assessments. The primary objective of the survey was to assess benthic communities within the offshore project footprint, where potential environmental impacts are expected to be most significant.

Nevertheless, the cable route was surveyed, with sampling conducted at ST-18, ST-20, ST-21, and ST-22. These stations were selected to assess benthic infauna along the proposed cable route, ensuring coverage of both offshore and nearshore environments.

While surveys along the submarine cable route were conducted at nearshore stations (ST-18, ST-20, ST-21, and ST-22), no sampling was carried out directly at the landfall site, which is located on a modified shoreline consisting largely of dry riverbed and artificial embankment near Songam 1-ri.

The area surrounding the landfall site primarily consists of upper intertidal zones that are exposed to the atmosphere except during high tide. Although some tidal channels temporarily retain water, these

areas exhibit high turbidity and lack sufficient water volume to provide viable habitat for fish species. As such, the area is considered unsuitable for fish habitation.

Additionally, due to the shallow water depth, it is not feasible to conduct fish surveys in this region using survey vessels, as interference from vessel propellers and equipment could pose significant risks. Therefore, based on this preliminary ecological understanding, the landfall area is not considered to support fish or juvenile fish habitats.

However, recognizing the extensive exposure of intertidal flats in the area, a supplementary intertidal benthic organism survey was conducted in May 2025. The additional survey was carried out on foot during low tide, targeting five representative transects along the intertidal zone stretching from the landfall site to the transmission cable route.

Each transect was divided into upper, middle, and lower zones, and sampling was conducted using hand corers. When marine species presumed to be legally protected were encountered, additional targeted sampling was undertaken. Furthermore, considering the local predominance of sandy and muddy intertidal habitats, where crabs and polychaetes are likely to occur, sediment samples were collected from suspected burrows to confirm the presence of benthic species within those substrates.

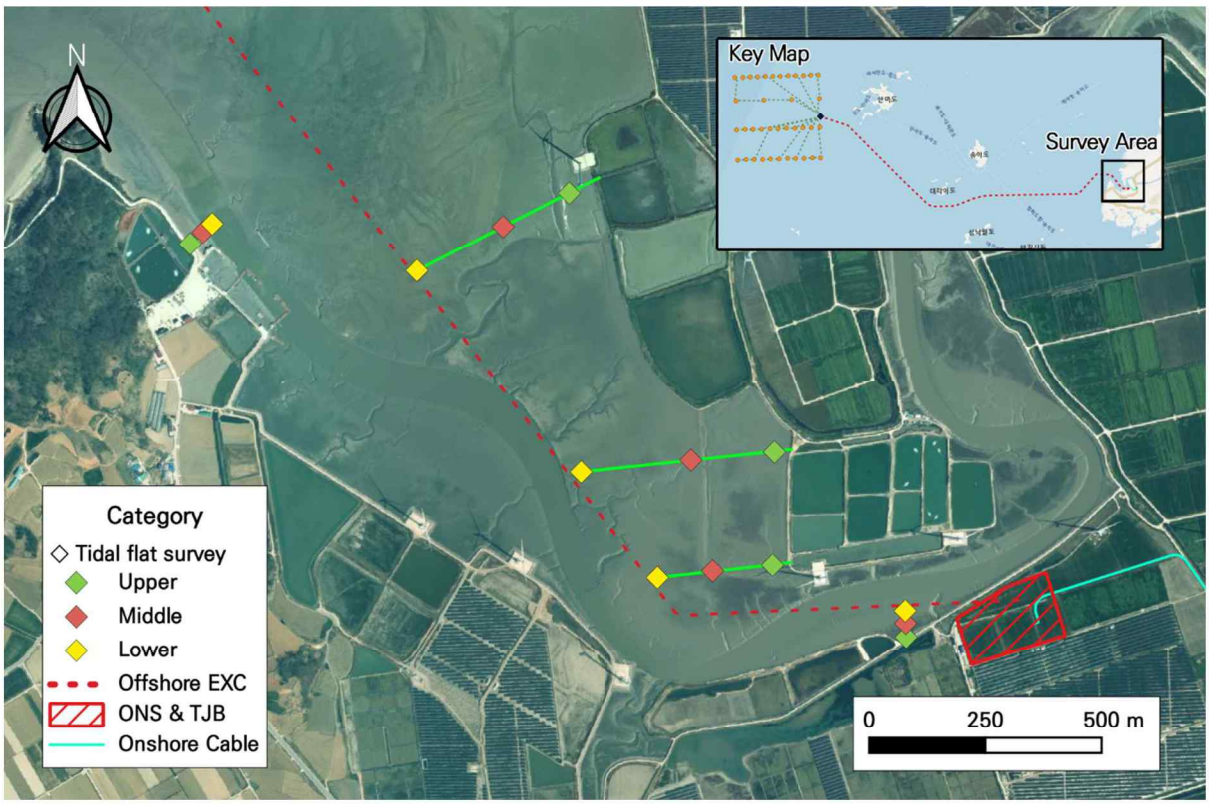


Figure 5-35 Additional Benthic Infauna Survey Location

5.9.2 Findings from EIA Surveys

Findings from OWF Array Area

The seabed sediment composition plays a critical role in shaping the benthic community structure. The particle size analysis conducted during the survey periods indicated that the sediment grain size ranged from 6.0 to 7.0 phi (ϕ), corresponding to fine silt to clay. This sediment type suggests a low-energy depositional environment, which typically supports benthic communities dominated by deposit-feeding organisms such as polychaetes.

Most benthic infauna survey stations (ST-1 to ST-17) were located within the offshore wind farm (OWF) array area. The results from these locations across different seasons showed a consistent

dominance of annelids, particularly polychaetes, across all survey years, with molluscs, arthropods, and echinoderms forming secondary groups.

In the July 2019 survey, a total of 55 species of benthic animals were found in the subtidal zone. Annelids were the dominant taxonomic group, with 40 species (72.7% of the total). Molluscs were the next most common group, with 10 species (18.2%), followed by arthropods with 4 species (7.3%) and echinoderms with 1 species (1.8%).

In the October 2019 survey, a total of 35 species of benthic animals were found. Annelids again made up the largest group, with 21 species (59.9% of the total), followed by molluscs with 10 species (28.6%), arthropods with 3 species (8.6%), and echinoderms with 1 species (2.9%).

In the January 2020 survey, a total of 39 species of benthic animals were identified in the subtidal zone. Annelids were the primary taxonomic group, comprising 19 species (48.7% of the total). This was followed by arthropods with 10 species (25.6%), molluscs with 7 species (17.9%), echinoderms with 1 species (2.6%), and other taxa, each contributing less than 5%.

In the April 2020 survey, a total of 45 species of benthic animals were recorded in the subtidal zone. Annelids were again the dominant group, with 20 species (44.5%). Arthropods followed with 14 species (31.1%), molluscs with 7 species (15.6%), echinoderms with 1 species (2.2%), and other taxa, each representing less than 5%.

In the August 2020 survey, a total of 90 species of benthic animals were found in the subtidal zone. Annelids were the dominant taxonomic group, with 54 species (60.1% of the total). Arthropods followed with 16 species (17.8%), molluscs with 11 species (12.2%), echinoderms with 3 species (3.3%), and other taxa contributing less than 5%.

In the November 2020 survey, a total of 102 species of benthic animals were identified in the subtidal zone. Annelids made up the largest group, with 64 species (62.7% of the total). Arthropods were next with 18 species (17.6%), molluscs with 14 species (13.7%), echinoderms with 2 species (2.0%), and other taxa with less than 5%.

In the December 2021 survey, a total of 32 species of benthic animals were recorded in the subtidal zone. Annelids were the primary taxonomic group, comprising 16 species (50.0% of the total), followed by arthropods with 11 species (36.4%) and molluscs with 3 species (9.4%), while other taxa represented less than 5%.

In the August 2022 survey, a total of 145 species of benthic animals were found. Annelids were the dominant group, with 76 species (52.3% of the total). Arthropods followed with 33 species (22.8%), molluscs with 25 species (17.2%), echinoderms with 4 species (2.8%), and other taxa contributing less than 5%.

In the October 2022 survey, a total of 129 species of benthic animals were observed in the subtidal zone. Annelids were the major taxonomic group, with 73 species (56.5% of the total). This was followed by arthropods with 26 species (20.2%), molluscs with 20 species (15.5%), echinoderms with 3 species (2.3%), and other taxa with less than 5%.

Throughout the survey, no invasive marine species or harmful marine organisms were detected in the OWF area. The strong dominance of polychaetes in soft-bottom, muddy sediments aligns with the physical characteristics of the OWF footprint, confirming the low-energy nature of the habitat and the absence of ecologically sensitive or protected benthic communities in this offshore zone.

Findings from Cable Route and Nearshore Area

To supplement baseline understanding of benthic conditions along the submarine export cable route, nearshore stations ST-18, ST-20, ST-21, and ST-22 were included in the survey scope. These locations are situated closer to the coastline but remain within soft-bottom marine environments.

The findings at these stations were consistent with the OWF area, showing communities dominated by deposit-feeding annelids in muddy to silty sediment. Species diversity and biomass showed no

major differences relative to offshore stations. No rare, sensitive, or protected benthic taxa were observed along the cable route.

The landfall site itself (Songam 1-ri) was not directly sampled, but is located approximately 6 km east of the Baeksu tidal flat and is characterized by a modified shoreline with limited depositional features. Based on local ecological knowledge and coastal morphology, this site is not considered an estuarine habitat or nursery ground for benthic fauna.

To ensure risk screening under IFC Performance Standard 6, the nearshore surveys and sediment analysis have been contextualized spatially, and no sensitive benthic habitats were identified within the direct project footprint, including the cable corridor and landfall zone

Findings from Additional Nearshore Area

A representative intertidal transect survey was conducted in the nearshore area surrounding the landfall site, and a total of four species were recorded.

As a result, no protected species were identified. Most observed individuals were classified as Crab species, with some occurrences of Annelida-Polychaeta also noted. The species composition was relatively simple compared to the survey area, and all observed species were commonly found in tidal flats along the western coast of Korea.

Table 5-34 The Result of Additional Nearshore Surveys

Scientific Name (Genus or Common Name)	IUCN*** (2022-2)	Korean Red List*** (2014)	Field Surveys					
			SB-1	SB-2	SB-3	SB-4	SB-5	Total
Perinereis euiini (Annelida-Polychaeta)	NE	-	-	●	●	●	-	●
Ilyoplax pingi (Crab sp.)	NE	-	-	-	●	●	●	●
Macrophthalmus japonicus (Japanese mud crab)	NE	-	-	●	●	-	-	●
Tubuca arcuate (Bowed fiddler crab)	NE	-	●	●	●	●	-	●
Total			1	3	4	3	1	4

***** International Union for the Conservation of Nature (IUCN) Red List**
Not Evaluated (NE): Has not yet been assessed.

5.9.3 Literature Review on Benthic Infauna

To supplement and validate the findings of field-based benthic infauna surveys, a literature review was conducted using historical ecological data from the same coastal region. Reference data were drawn from benthic assessments carried out during the EIA for the Yeonggwang Offshore Wind Power Development Project (2018–2019)[50]. These datasets represent seasonal surveys conducted using comparable grab sampling methods, with taxonomic classification performed at the species level.

The literature sources reported species richness ranging from 70 to 87 taxa, with sediment density between 165 and 326 individuals per square meter. Dominant taxa included amphipods (*Amphipoda spp., Caprella spp.*), polychaetes such as Lumbrineris cruxensis, Glycinde gurjanovae, and Terebella punctata, and mollusks.

[50] Environmental Impact Assessment for the Yeonggwang Offshore Wind Power Development Project (2018–2019), Yeonggwang County Government

In comparison, field surveys conducted for the current Project between 2019 and 2022 recorded 32 to 145 taxa, with sediment density values ranging from 109 to 672 individuals/m². Polychaetes were consistently the most dominant taxonomic group in both datasets, particularly Sternaspis scutata, Glycera chirori, Lumbrineris longifolia, and Protanthura bidentata.

Notably, several polychaete species, such as Sternaspis scutata and Spiochaetopterus costarum, were repeatedly identified in both literature and field surveys, suggesting environmental continuity and stable sediment conditions. Differences in species richness or abundance between years are likely attributable to seasonal timing and microhabitat variation.

Overall, the comparison shows that the benthic communities identified in the Project area are consistent with regional ecological conditions typical of low-energy soft-bottom marine habitats, and that the field survey results are ecologically representative of the area.

Table 5-35 Comparison of Benthic Infauna Survey Results

Survey Source	Survey Date	No. of Species	Avg. Sediment Density (ind./m²)	Dominant Species (examples)
Literature[50]	Aug 2018	87	326	*Terebella punctata*, Amphipoda spp.
	Nov 2018	71	168	Amphipoda spp., *Glycinde gurjanovae*
	Feb 2019	77	181	*Lumbrineris cruxensis*
	May 2019	70	165	Caprella spp.
Field Survey	Aug 2019–Oct 2022	32–145	109–672	*Sternaspis scutata, Lumbrineris longifolia, Protanthura bidentata*

Source: Literature data (2018–2019) and field surveys (2019–2022) conducted for the OWF Project.

5.10 Marine Reptiles (Sea Turtles)

5.10.1 Methodology

Marine turtle presence was investigated through visual surveys conducted as part of the National EIA, Additional Survey, and Supplementary Survey campaigns. These surveys included vessel-based line transects and coastal observation points. In addition, informal interviews were held with local fishers operating near the Project area to identify incidental sightings or bycatch events. The methodology focused on surface observations; however, as acknowledged under GN10 of IFC Performance Standard 6, literature review and expert consultation were also used to supplement the baseline where field data were limited.

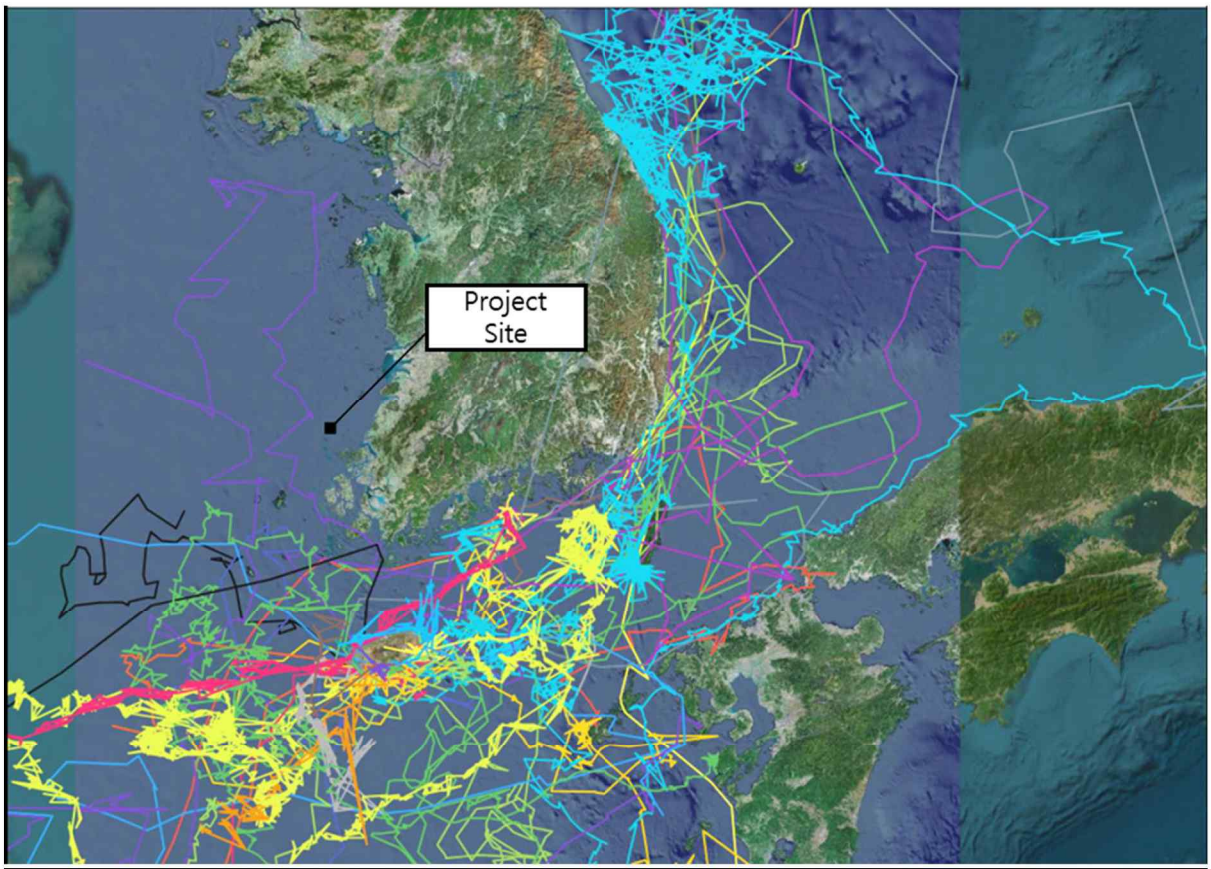
5.10.2 Findings from EIA Surveys

No marine turtles were observed during any of the visual surveys conducted between 2020 and 2024. Additionally, no bycatch events or sightings were reported by fishers during stakeholder engagement activities. However, this absence of observations does not confirm true absence, due to the known limitations of visual survey techniques for detecting submerged species. Studies have shown that the detectability of sea turtles declines significantly beyond 50 meters from an observation point. As such, it is possible that sea turtles were present but remained undetected during the survey periods.

5.10.3 Literature Review on Marine Reptiles

To supplement the limited field observations, literature sources including national satellite tracking data were reviewed. According to the National Marine Biodiversity Institute of Korea (2015–2022), satellite telemetry data are available for 41 sea turtle individuals (including Green, Loggerhead, and Hawksbill turtles) across Korean waters. Most tracked individuals were located in the East and South Seas. Only one individual was recorded in the Yellow Sea, approximately 20 km west of the Project

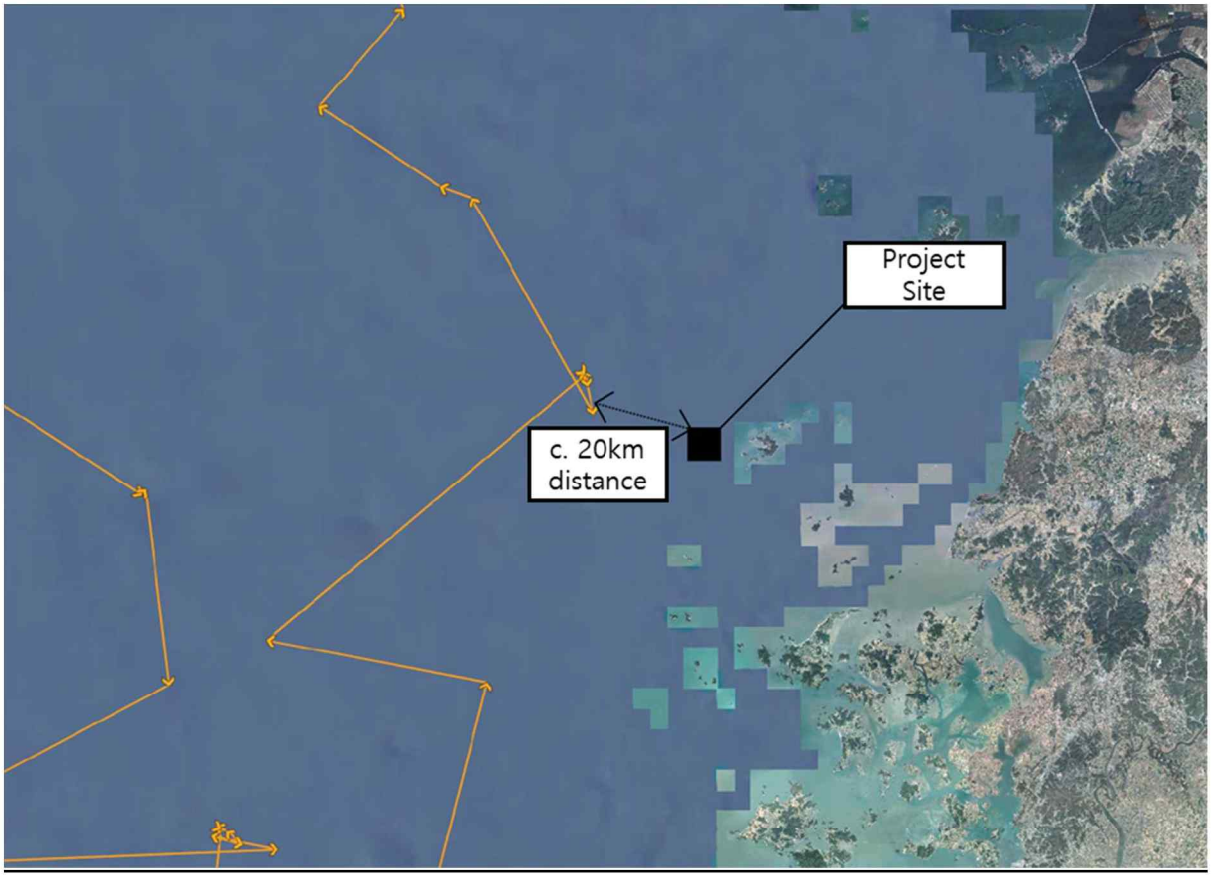
site[51]. This suggests that the likelihood of regular occurrence of sea turtles within the Project's Area of Influence (AoI) is extremely low.



Source: Final EIA

Figure 5-36 Migration Pathway of Green Sea Turtle (Wide Area)

[51] National Marine Biodiversity Institute of Korea - Marine Biodiversity Spatial Information (https://www.mbris.kr/gis/)



Source: Final EIA

Figure 5-37 Migration Pathway of Green Sea Turtle (Near the Project Area)

6. BIODIVERSITY IMPACT ASSESSMENT

6.1 Introduction

Renewable energy projects such wind farms play an important role in moving towards a more sustainable energy sector that can assist with combating the negative impacts of non-renewable energy on global climate (Bennun et al., 2021). However, these 'clean' energy projects can also result in unintended negative impacts and consequences to the environment unless carefully planned and managed. This includes risks and potential impacts to biodiversity, which underpins the resilience and functions of ecosystems and the flow of ecosystem goods and services (Bennun et al., 2021).

Biodiversity impact assessment is the process of determining the types and significance of effects a project will have on biodiversity, and the various components thereof, and is the core of the ESIA process (Hardner et al., 2015). Risks and impacts to biodiversity typically vary according to the project being assessed as well as the context of the receiving environment where the project is located.

It should be noted that certain potential biodiversity impact categories, including hydrological changes, nutrient loading, and pollution, have been screened out from further detailed assessment due to their negligible or insignificant impact on biodiversity. Based on the project's characteristics and site-specific conditions, these impact pathways are not expected to result in meaningful changes to ecosystem structure or function.

Hydrological changes have been screened out as the installation of wind turbine foundations is not anticipated to cause significant alterations to tidal flows or current patterns beyond localized turbulence, which is unlikely to impact marine biodiversity. Similarly, nutrient loading has been excluded as offshore wind farms do not contribute to increased nutrient input into the marine environment, with only minor and temporary sediment resuspension during construction, which is expected to have minimal ecological consequences. Pollution impacts, primarily related to vessel operations and construction activities, have also been screened out as strict environmental management measures will be in place to prevent significant pollution-related effects.

6.2 Approach and Methods

The approach to the assessment of biodiversity impacts was as follows:

Step 1: Defining the Area of Influence (AoI)

The AoI for the project was defined to include the development footprint and any offsite facilities as well as areas beyond the immediate area of effect that could be subjected to indirect impacts (e.g. emissions, noise, water quality issues, etc.).

Step 2: Identification of key ecological receptors and describe biodiversity values

Once the AoI had been defined, the biodiversity 'values' (also termed biodiversity 'features' or 'attributes') and ecological sensitivity of the various environmental receptors were identified (i.e. relates back to key habitats and species identified in the baseline biodiversity assessment).

Step 3: Identification of impacts to biodiversity

Potential project impacts to the key ecological receptors and important biodiversity were identified, including site-specific direct, indirect and induced impacts to biodiversity. The following guidelines were also referred to in identifying and describing biodiversity impacts:

- "Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning" (Hardner et al., 2015[52]); and

[52] Hardner, J., R.E. Gullison, S. Anstee, M. Meyer. (2015). Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning. Prepared for the Multilateral Financing Institutions Biodiversity Working Group. Available online at:

- "Mitigating biodiversity impacts associated with solar and wind energy development: Guidelines for project developers" (Bennun et al., 2021[53]).

Step 4: Assessment of impact significance

Biodiversity impact significance is the product of the value or importance of the biodiversity components that will be impacted and the intensity or magnitude (degree and extent of change) of the impact on those resources, systems and/or components. Some regulators, lenders, or corporate standards will use the term "significant" to refer to a threshold of consequence and/or risk that requires management or may not be acceptable. The approach to impact significance assessment is based on the traditional risk assessment formula which rates the **magnitude of effect** as the realistic 'worst-case' consequence or end-point of a project activity based on the perceived **importance and/or sensitivity** of a particular environmental receptor. Separate assessment matrices for habitat and species have been used for the assessment of impact significance, and these are contained in Table 6-1 and Table 6-2, respectively.

https://publications.iadb.org/publications/english/document/Good-Practices-for-Biodiversity-Inclusive-Impact-Assessment-and-Management-Planning.pdf

[53] Bennun, L., van Bochove, J., Ng, C., Fletcher, C., Wilson, D., Phair, N., Carbone, G. (2021). Mitigating biodiversity impacts associated with solar and wind energy development. Guidelines for project developers. Gland, Switzerland: IUCN and Cambridge, UK: The Biodiversity Consultancy. Available online at: https://portals.iucn.org/library/sites/library/files/documents/2021-004-En.pdf

Table 6-1 Matrix Used to Rate Impact Significance Criteria for Habitat

Habitat Importance / Sensitivity		Magnitude of Effect			
		Negligible	**Small**	**Medium**	**Large**
Negligible	Habitats with negligible interest for biodiversity.	Insignificant	Insignificant	Insignificant	Insignificant
Low	Habitats with no or local designation / recognition; habitats of significance for species of Least Concern (LC) on IUCN RDL of Threatened Species; habitats which are common and widespread within the region, or with low conservation interest based on expert opinion.	Insignificant	Insignificant	Minor	Moderate
Medium	Habitats within nationally designated or recognised areas, habitats of significant importance to globally Vulnerable (VU) Near Threatened (NT), or Data Deficient (DD) species, habitats of significant importance for nationally restricted range species, habitats supporting nationally significant concentrations of migratory species and / or congregatory species, and low value habitats used by species of medium value.	Insignificant	Minor	Moderate	Major
High	Habitats within internationally designated or recognised areas; habitats of significant importance to globally Critically Endangered (CR) or Endangered (EN) species, habitats of significant importance to endemic and/or globally restricted-range species, habitats supporting globally significant concentrations of migratory species and / or congregatory species, highly threatened and/or unique ecosystems, areas associated with key evolutionary species, and low or medium value habitats used by high value species.	Insignificant	Moderate	Major	Critical

Magnitude of Effect definitions for habitat receptors:

Negligible - Effect is within the normal range of natural variation.

Small - Affects only a small area of habitat, such that there is no loss of viability / function of the habitat.

Medium - Affects a sufficient proportion of the habitat that the viability/function of part of the habitat or the entire habitat is reduced, but does not threaten the long-term viability of the habitat or species dependent on it.

Large- Affects the entire habitat or a significant proportion thereof, to the extent that the viability/function of the habitat is threatened.

Table 6-2 Matrix Used to Rate Impact Significance Criteria for Species

Habitat Importance / Sensitivity		Magnitude of Effect			
		Negligible	**Small**	**Medium**	**Large**
Negligible	Species with no specific value or importance attached to them.	Insignificant	Insignificant	Insignificant	Insignificant
Low	Species and sub-species of LC on the IUCN RDL, or not meeting criteria for medium or high value.	Insignificant	Insignificant	Minor	Moderate
Medium	Species listed on IUCN RDL as VU, NT, or DD, species protected under national legislation, nationally restricted-range species, nationally important numbers of migratory, or congregatory species, species not meeting criteria for high value, and species vital to the survival of a medium value species.	Insignificant	Minor	Moderate	Major
High	Species included on the IUCN RDL as CR or EN. Nationally or internationally important populations of Annex II or Annex IV species. Species with restricted ranges or global breeding range for birds of less than 50,000 km2.) Internationally important concentrations of migratory and/or congregatory species, key evolutionary species, and species vital to the survival of a high value species.	Insignificant	Moderate	Major	Critical

Magnitude of Effect definitions for species receptors:

Negligible - Effect is within the normal range of variation for the population of the species.

Small – Effect does not cause a substantial change in the population of the species, or other species dependent on it.

Medium – Effect causes a substantial change in abundance and / or reduction in distribution of a population over one, or more generations, but does not threaten the long-term viability / function of that population, or any population dependent on it.

Large - Affects entire population, or a significant part of it causing a substantial decline in abundance and / or change in and recovery of the population (or another dependent on it) is not possible either at all, or within several generations due to natural recruitment (reproduction, immigration from unaffected areas).

Step 5: Impact mitigation and management measures

Appropriate impact mitigation and management measures are recommended to reduce the magnitude (based on aspects that include the scale, probability and intensity of impact) and thereby reduce the significance of the impact consequence to an environmentally acceptable level where possible. The following best/good practice guidelines were referred to for informing impact management and the suite of mitigation measures recommended:

- "Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning" (Hardner et al., 2015);
- "Environmental, Health, and Safety Guidelines for Wind Energy" (IFC, 2015);
- "Mitigating biodiversity impacts associated with solar and wind energy development: Guidelines for project developers" (Bennun et al., 2021); and
- "A cross-sector guide to implementing the Mitigation Hierarchy" (Ekstrom et al., 2015[54]).

Step 6: Assess residual impacts

The final step is to assess residual impacts, which are those impacts that are likely to persist after taking into account the mitigation and management measures recommended as part of the mitigation strategy for the project, and their likely implementation success.

6.3 Biodiversity Impact Assessment

This section presents an integrated biodiversity impact assessment for offshore project activities in accordance with the requirements of IFC Performance Standard 6. The assessment covers direct, indirect, and residual impacts on marine and coastal species, habitats, and ecosystem services identified during baseline studies.

In addition to underwater noise and suspended sediment, the analysis includes potential impacts related to habitat loss, degradation, fragmentation, overexploitation, invasive alien species, hydrological changes, nutrient loading, and pollution. Potential disturbance to sensitive avian species, including IUCN-listed trigger species, has also been considered in light of seasonal habitat use patterns.

Additional project-related pressures such as electromagnetic fields (EMF) from submarine cables, vessel strike risk to marine mammals, and disturbance to benthic habitats from cable installation have also been screened and addressed in relevant sections, with justifications based on site-specific environmental conditions and scientific literature.

While quantitative assessment has been conducted primarily for underwater noise and suspended sediment, other potential impacts have been screened and evaluated across multiple sections of this ESIA.

- Section 6.1 presents a summary screening of pollution, nutrient loading, hydrological change, and invasive species, based on site-specific conditions.
- Terrestrial and avian habitat impacts are addressed in Sections 5.4 (Terrestrial Fauna) and 5.5 (Avifauna), while coastal and benthic habitat disturbances related to cable installation are discussed in Section 5.9.2.2.
- Invasive alien species are specifically considered in Section 5.10.1, where no observations were reported within the Project AoI.

[54] Ekstrom, J., Bennun, L. and Mitchell, R. (2015). A cross-sector guide for implementing the Mitigation Hierarchy. The Biodiversity Consultancy Ltd with inputs from the IFC (International Finance Corporation). Cambridge, United Kingdom. Available online at: https://www.csbi.org.uk/wp-content/uploads/2017/10/CSBI-Mitigation-Hierarchy-Guide.pdf

- EMF-related impacts on marine organisms are assessed under operational phase risks in Section 6.3.2. Potential vessel strike impacts are discussed qualitatively in Section 6.3.1.4.

These elements collectively support a comprehensive biodiversity risk assessment consistent with the scope and intent of IFC Performance Standard 6.

Assessment Criteria

ERM Impact Assessment standard defines sensitivity of ecological receptors by determining the resource sensitivity for species and habitat separately. The habitat and species impact assessment criteria are given in Table 6-1 and Table 6-2 respectively. The adopted criteria are applicable to all phases of the Project including construction, operations, and decommissioning.

6.3.1 Impacts during the Construction Phase

The primary onshore impacts during the construction phase will result from the construction of the onshore project facilities consisting of the onshore substation and the two circuits, each roughly 1.5 km long, connecting the onshore substation to the KEPCO substation. Construction of these facilities is anticipated to cause impacts ranging from vegetation clearance to loss of habitats. The impacts during the construction phase and the recommended measures to avoid or mitigate those have been described in this section.

Impacts due to Onshore Construction

While the site preparation activities, including vegetation clearance, excavation for ancillary facilities, infrastructure construction, and road building, might lead to habitat loss and degradation, it's important to consider the relatively small scale of onshore construction. The project site is primarily a modified habitat, and the impacts, such as changes to nesting, breeding, foraging, and perching habitats for local wildlife, particularly avian species along the coastline, are expected to be minimal. Additionally, the possibility of invasive species introduction through vehicle movement is a concern, but given the limited scale of the construction, the overall impact on habitats is likely to be negligible.

Embedded Controls

The following mitigation measures from second amendment of EIA may reduce the impact significance on the habitat and species:

It should be noted that AWC has undertaken three rounds of amendment process under Art.33 of EIA Act. with 3 amendments completed as of April 2025. The mitigation measures that AWC is preparing for the amendment with MoE have been included in the table below. The final set of mitigation measures should be considered with the amendments expected to be agreed on.

Table 6-3 Mitigation Measures for Onshore Construction

Aspect	Mitigation Measure
Birds	Avoidance of construction activities, where feasible, during early morning and late evening hours, when birds are most active.
	Avoidance of peak migration periods, where feasible, through adaptive scheduling.
	Bird collision prevention measures will be implemented if colorless transparent glass is to be use in facilities.
Noise and Vibration	Planned to perform and manage the construction works in accordance with the Construction Site Noise and Vibration Management Guideline, Ministry of Environment, December 2006 to minimize the impact of the noise from the construction work.
	The working hours for the construction phase will be managed in such a way that the types of work that produce noise will be avoided during late hours or the time of day when the surrounding area is quiet. The entire work process will be managed to maximize the work performed during the daytime.
	The earth work volume will be planned in an efficient manner for earth cutting and piling to prevent excessive concentration of the deployment of equipment.
	Vehicle speed is to be limited within 20km/h after driver education and blowing horn is strictly prohibited
	Distance between vehicle is to be controlled to minimize the noise/vibration impact from vehicle traffic
	When construction works are performed near facilities that require calmness, caution will be used to minimize the impact on such facilities. Measures will be established focused on the source of noise and vibrations, by using low-vibration equipment as much as possible, minimizing the number of equipment to be deployed for each process, and prior notification, if necessary, to residents when equipment with a louder vibration noise is expected.
	Establish general reduction measures according to the “Noise and vibration Management Guidelines” of construction site
	Avoid construction works at nighttime and inspect construction equipment
	Limit speed, avoid sudden stop and/or acceleration, and idle running of vehicles
Terrestrial / Freshwater Flora and Fauna / Natural Resources	Thorough management and supervision will be carried out to prevent additional damage to neighbouring vegetation other than in the inland sites. Construction related personnel and workers will apply the appropriate speed of construction and will be provided with trainings which have to do with environment protection and conservation to prevent land plants from harvesting, picking and overfishing as much as possible.

	The field survey has identified three (3) types of invasive alien plants. When invasive alien plants are found during construction or operations, the Project will refer to the "Information for the Field Management of Invasive Alien Species in Korea, 2021, MoE" and take appropriate actions to prevent the spread of these species.
	In order to minimize fugitive dust caused by the project, the Project will refer "Dust Scattering Care Manual, 2021, MOE" to minimize its impact.
	Construction work including land clearing and grubbing which cause physical environmental changes will be conducted gradually and successively, allowing small animals to escape and migrate.
	Training regarding wild animal protection will be provided to personnel in construction sites to prevent small- and mid-sized animals from being poached or overfish, and construction will be strictly managed and supervised.
	Measures will be applied to minimize the environmental changes in the habitats and neighbouring areas of inland water animals. Construction management and supervision will be stringent enough to apply reduction measures regarding the river ecological environment as much as possible.
	"Reduction measures about impact on Bulgapcheon and streams. - Minimising construction during the rainy season or heavy rain period - Covering slopes with plastic and non-woven fabrics to minimize soil runoff during the rainy season. - Prioritizing the installation of draining facilities to quickly eliminate rainwater. - Reducing the impact of soil runoff by sprinkling water to roads and dust scattering areas and by operating the wheel washing system.
	Trees and shrubs will be planted around the onshore substation
	Considering the characteristics of nocturnal wildcats, inland construction at night will be minimised, and capturing and overhunting small-sized animals which are prey for wildcats will be prevented. Low noise and low vibration equipment will be utilized as much as possible to mitigate impact on the surroundings.
	Otters moving into the construction site is unlikely, but in order to mitigate the impact on otters during construction, low noise and low vibration equipment will be applied where possible. Unnecessary night work will try to be minimised.
	When areas which hold high conservation values or natural environmental assets are discovered, feedback will be taken from relevant bodies. A separate mitigation plan shall be set through consultations to minimize damage from project implementation.
	Mitigation plan for legally protected species during construction - Effort to avoid rainy seasons when implementing construction, and perform construction at day hours
	Mitigation plan for legally protected species during construction - Use low noise/vibration equipment for construction where practical
	Mitigation plan for legally protected species during construction - Set daily construction plan to minimize the amount of soil runoff: Install temporary drainage and temporary settling basin
	Mitigation plan for legally protected species during construction - If necessary, perform periodic monitoring on the changes in flora and fauna
	Mitigation plan for legally protected species during construction - Plans to minimize dust scattering

	Install wheel and vehicle washing facilities, operate sprinkler trucks on a regular basis Limit construction vehicle speed Remove invasive species upon discovery.

Significance of impact

Birds (Coastal and Migratory) and Terrestrial Fauna

Onshore Substation and associated facilities will lead to loss and/or of modified habitat. The assessment in this section pertains specifically to coastal and nearshore avian receptors, particularly those potentially affected by the onshore substation and cable corridor construction activities located near Songam 1-ri. While the receptor group is avian, the impact drivers are related to terrestrial project components.

A few of the species that utilize or are expected to utilize these habitats, have been recorded from the EIA baseline surveys, and also are likely critical habitat candidate species[55] such as the threatened Chinese Crested Tern [*Thalasseus bernsteini*; CR (IUCN v.2022-2)], Spoon-billed Sandpiper [*Calidris pygmaea*; CR (IUCN v.2024-1)], Black-faced Spoonbill [*Platalea minor*; EN (IUCN v.2024-1)], Far Eastern Curlew [*Numenius madagascariensis*; EN (IUCN v.2024-1)], Oriental Stork [*Ciconia boyciana*; EN (IUCN v.2024-1)], Lesser White-fronted Goose [*Anser erythropus*; VU (IUCN v.2024-1)], Common Pochard [*Aythya ferina*; VU (IUCN v.2024-1)], Sharp-tailed Sandpiper [*Calidris acumianata*; VU (IUCN v.2024-1)] and Saunder's Gull [*Saundersilarus saundersi*; VU (IUCN v.2024-1)] amongst the avian components.

A total of 25 avifauna surveys were conducted between 2020 and 2024 across coastal, island, and offshore transect areas. These surveys did not record the presence of the Spoon-billed Sandpiper (*Calidris pygmaea*; CR [IUCN v.2024-1]), Lesser White-fronted Goose (*Anser erythropus*; VU [IUCN v.2024-1]), Common Pochard (*Aythya ferina*; VU [IUCN v.2024-1]), or Oriental Stork (*Ciconia boyciana*; EN [IUCN v.2024-1]).

However, multiple sightings of IUCN-listed species were recorded, including at least 29 individuals of the Far Eastern Curlew (*Numenius madagascariensis*; EN [IUCN v.2024-1]), Sharp-tailed Sandpiper (*Calidris acuminata*, VU [IUCN v.2024-1]) and Saunders's Gull (*Saundersilarus saundersi*; VU [IUCN v.2024-1]), as documented in the CRM Appendix.

These observations have been incorporated into the assessment of species significance and receptor sensitivity.

Presence of Black-faced Spoonbill [*Platalea minor*; EN (IUCN v.2024-1)] was recorded during coastline survey in the months of June, July and August 2023 with a count of 108, 148 and 197 individuals.

Additionally, during the coastline survey, congregations of various sizes of species including Common Greenshank [*Tringa nebularia*, LC (IUCN v.2024-1)- 51 individuals], Intermediate Egret [*Egretta intermedia*, LC (IUCN v.2024-1)- August 2023-64 individuals], Wood Sandpiper [*Tringa glareola*, LC (IUCN v.2024-1)- August 2023- 72 individuals], Grey Heron [*Ardea cinerea*, LC (IUCN v.2024-1)- August 2023- 181 individuals], Kentish Plover [*Charadrius alexandrines*, LC (IUCN v.2024-1)-July 2023- 220 individuals], Terek Sandpiper [*Xenus cinereus*, LC (IUCN v.2024-1)- July 2023- 323 individuals], Bar-tailed Godwit [*Limosa lapponica*, NT (IUCN v.2024-1)- July 2023-323 individuals], Black-tailed Gull [*Larus crassirostris*, LC (IUCN v.2024-1)- June 2023- 4500 individuals] were recorded.

Although the CR species screened in at the CHA stage were not observed during the EIA surveys, a few of the EN and VU species did occur. After a yearlong avian survey the coastal habitat in the vicinity of Songam 1-ri, where consistent sightings of the Black-faced Spoonbill [*Platalea minor*; EN (IUCN v.2024-1)] were recorded during June, July, and August 2023, has been identified as critical habitat for the species.

[55] ERM. 2024. ESIA for Project Anma: Critical Habitat Assessment dated October 2024.

This area lies adjacent to the planned onshore substation and submarine cable landfall zone, and is characterized by intertidal mudflats used by the species for foraging during the breeding season.

And, Chinese Egret[*Egretta eutophotes*, VU (IUCN v.2024-1)] as a migratory bird, was recorded within the draft offshore export cable area in September 2020, and the area has been identified as Critical Habitat for the species.

Potential impacts to this habitat and species may occur through the following pathways:

- Construction-phase noise and vibration, which may cause behavioral disturbance or displacement from foraging areas;
- Increased human activity and equipment movement, leading to temporary loss of habitat use or increased flight response;
- Sediment runoff or dust deposition, particularly during earthworks near coastal margins, potentially degrading feeding conditions;
- Lighting and visual disturbance, which may interfere with roosting or low-light foraging behavior;
- Temporal habitat fragmentation, due to restricted access to foraging zones during peak activity periods.

As such, the receptor sensitivity has been deemed **High** for both *Platalea minor* and its associated habitat, consistent with the criteria under IFC Performance Standard 6.

The onshore facilities of the project, including the substation and cable landfall, are situated near coastal mudflats regularly used by the Black-faced Spoonbill during the breeding season. However, the physical footprint of these facilities is relatively small and does not directly overlap with the core foraging zones identified during the survey.

The surrounding intertidal area provides ample alternative foraging habitat, and construction activities are expected to result in only temporary and localized disturbance. Therefore, while sensitivity of the species is high, the magnitude of impact is considered small, and no long-term degradation of critical habitat is anticipated.

Further, no natural habitats are anticipated to be lost or impacted, as the land identified for onshore development is a former salt farm. The CHA exercise listed Asian Surf Grass [*Phyllospadix japonicus*; EN (IUCN v.2022-2)], Surf Grass [*Phyllospadix iwatensis*; VU (IUCN v.2022-2)] and *Zostera caespitosa* [VU (IUCN v.2022-2)] as potential critical habitat candidate species however, these were not reported in the baseline EIA surveys along the coastline.

A small colony of Surf Grass (*Phyllospadix iwatensis*) was confirmed near Hoeingdo and Mokseom; however, it does not overlap with the project area, and no impact from suspended sediment dispersion is anticipated.

Additionally, no floral species of conservation significance was recorded onshore (refer to Table 5-4).

The impacts thereby are considered to be negligible enough to cause a substantial change in abundance and/or lead to reduction in distribution ranges of the populations and are thereby deemed not large enough to threaten the long-term viability of threatened species that occur there. The impact magnitude has been deemed **Small** (refer to Table 6-1 and Table 6-2)**.** The impact significance is, thus, deemed as **Moderate** (refer to Table 6-4).

Residual impact significance

The direct and indirect impacts of the onshore construction activities are limited to the construction phase of the Project. However, the lost and degraded habitats, although modified, may take longer

to recover or may be lost permanently. Nonetheless, with proper implementation of the mitigation and avoidance measures, significance of the residual impact may reduce to **Minor** for habitat and species.

Table 6-4 Impact Significance Assessment of Onshore Vegetation Clearance and Habitat Loss/Degradation

Impact	Vegetation Clearance and Habitat Loss/Degradation				
Impact Nature	**Negative**	Positive	Neutral		
Impact Type	**Direct**	Indirect	Induced		
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Extent	Local	Regional	Transboundary		
Impact Scale	Limited to onshore construction area and immediate surrounding				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
Resource/Receptor Sensitivity	Low	Medium	**High**		
Impact Significance	Negligible	Minor	**Moderate**	Major	Critical
	Significance of impact is considered **Medium** for habitats and species				
Residual Magnitude	Positive	Negligible	**Small**	Medium	Large
Residual Impact Significance	Negligible	**Minor**	Major	Critical	
	Significance of impact is considered **Minor** for habitats and species				

Freshwater Fish and Macroinvertebrates

The freshwater community including both fish and macroinvertebrates, within the survey area primarily consists of pollution-tolerant species, influenced by surrounding land use, including farmlands, salt pans, and roads. Baseline surveys confirmed the absence of legally protected species, and the recorded species demonstrated strong adaptability to environmental changes. Given these characteristics, direct impacts on freshwater fauna during the construction phase are not expected. While sediment runoff and airborne dust may temporarily affect Bulgapcheon Stream to the north of the project site, the presence of resilient species and the relatively simple aquatic structure suggest minimal impact.

Furthermore, the onshore transmission line, approximately 1.5 km in length, was strategically routed to avoid significant freshwater habitats. As it does not intersect ecologically sensitive aquatic ecosystems, the likelihood of adverse effects on fish and other aquatic species is negligible. Additionally, the designated onshore development area is predominantly used for rice cultivation, reducing the potential for habitat loss. Considering the absence of sensitive species, the project's limited interaction with freshwater ecosystems, and the resilience of the existing fish community, the overall impact significance is assessed as **Negligible**, with a **Small** magnitude of impact and **Low** receptor sensitivity.

Table 6-5 Impact Significance Assessment of Onshore Vegetation Clearance and Habitat Loss/Degradation

Impact	Vegetation Clearance and Habitat Loss/Degradation				
Impact Nature	**Negative**	Positive	Neutral		
Impact Type	**Direct**	Indirect	Induced		
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Extent	Local	Regional	Transboundary		
Impact Scale	Limited to onshore construction area and immediate surrounding				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
Resource/Receptor Sensitivity	**Low**	Medium	High		
Impact Significance	**Negligible**	Minor	Moderate	Major	Critical
	Significance of impact is considered **Negligible** for habitats and species				
Residual Magnitude	Positive	**Negligible**	Small	Medium	Large
Residual Impact Significance	**Negligible**	Minor	Major	Critical	
	Significance of impact is considered **Negligible** for habitats and species				

Impacts due to Offshore Construction

The Project envisages the erection of 16 and 22 WTGs in Phases I and II respectively. Due to the dispersion of suspended matter, various impacts can be expected, including reduced productivity of suspended organisms, diminished existing abundance, the prevalence of opportunistic species, decreased biodiversity within biological communities, and lowered spawning and hatching rates of fish and shellfish. It is expected that the number of species and habitat density of large benthic animals will decrease in the short term due to damage to the seafloor topography.

In addition, the installation of the offshore export cable may cause temporary disturbance to the seabed and increased turbidity along the corridor during trenching and burial. These activities are expected to result in only short-term and localized impacts.

However, these impacts are anticipated to last only for a short term, as marine mammals have been seen to be tolerant to dredging[56]. As far as impacts from offshore permanent establishments are concerned, studies have shown that marine mammals are relatively frequently present around offshore oil and gas structures[57]. In fact, such structures act like artificial reefs and can support an entire ecosystem[58]. Interestingly, it is revealed that removal of these structures during the decommissioning and the measures used therein are more detrimental to the ecosystem than leaving the structures or having them only partially removed[59]. Similar positive outcome may be expected of offshore wind power project installations. Nonetheless, marine fauna is expected to be affected by

[56] Victoria L. G. Todd, Ian B. Todd, Jane C. Gardiner, Erica C. N. Morrin, Nicola A. MacPherson, Nancy A. DiMarzio, Frank Thomsen, A review of impacts of marine dredging activities on marine mammals, *ICES Journal of Marine Science*, Volume 72, Issue 2, January/February 2015, Pages 328–340, https://doi.org/10.1093/icesjms/fsu187

[57] See Delefosse, M., Rahbek, M. L., Roesen, L., & Clausen, K. T. (2018). Marine mammal sightings around oil and gas installations in the central North Sea. *Journal of the Marine Biological Association of the United Kingdom*, *98*(5), 993-1001. and the references therein

[58] See Fowler, A. M., Jørgensen, A. M., Svendsen, J. C., Macreadie, P. I., Jones, D. O., Boon, A. R., ... & Coolen, J. W. (2018). Environmental benefits of leaving offshore infrastructure in the ocean. *Frontiers in Ecology and the Environment*, *16*(10), 571-578. and the references therein

[59] Viada, S. T., Hammer, R. M., Racca, R., Hannay, D., Thompson, M. J., Balcom, B. J., & Phillips, N. W. (2008). Review of potential impacts to sea turtles from underwater explosive removal of offshore structures. *Environmental impact assessment review*, *28*(4-5), 267-285.

water noise from piling work at least in the initial phases, however, the impacts are envisaged to be of short duration.

Embedded Controls

The following mitigation measures from second amendment of EIA may reduce the impact significance on the habitat and species:

It should be noted that AWC has undertaken three rounds of amendment process under Art.33 of EIA Act. with 3 amendments completed as of April 2025. The mitigation measures that AWC is preparing for the amendment with MoE have been included in the table below. The final set of mitigation measures should be considered with the amendments expected to be agreed on.

Table 6-6 Mitigation Measures for Offshore Construction

Aspect	Mitigation Measure
Birds	Low-noise and low-vibration construction equipment/vehicles will be used to mitigate the impact on the birds' feeding activities.
	The intensity of pile driving activities will be adjusted, and appropriate noise mitigation measures will be implemented to minimise the impact on birds.
	Low-noise construction equipment/machinery will be used during the installation of the WTG to mitigate the impact on birds.
	If the post-EIA results conclude that construction activities are expected to impact bird migration and breeding seasons, additional mitigation measures, such as adjusting construction intensity, will be implemented.
Marine Flora and Fauna Marine Water Quality / Sediments	Suspended sediments (SS) will be visually monitored during the construction phase. If there is a rapid increase in SS, construction will be temporarily suspended, working hours will be restricted, and the construction method will be improved to reduce SS generation and increase retention time to enhance the settling effect. Construction will resume once seawater quality has improved.
	Continuous monitoring during construction and operation (Post EIA Survey) will be conducted by selecting additional survey points, with a focus on the grid connection cable installation section. If impacts on zoobenthos, such as a decrease in biomass near the waters around the underwater cables, are identified, additional mitigation measures will be developed and proposed.
	To reduce oil spills caused by ship-related accidents, measures will be reviewed to secure marine pollution response equipment in compliance with the Marine Environment Management Act. Comprehensive measures against marine accidents will be established, and illegal waste oil discharges by ships will be strictly managed. Additionally, a marine pollution response organisation will be set up, regular prevention training will be provided to relevant personnel, and a coordinated response system will be established in collaboration with related organisations.
	Underwater noise modelling results indicate that injury thresholds for marine mammals are not expected to be exceeded during piling; therefore, use of air bubble curtains or other noise attenuation devices is not required under standard conditions. However, precautionary mitigation (e.g. soft-start procedures, acoustic monitoring, or temporary noise barriers) may be applied if real-time conditions deviate from modelled expectations, in alignment with IFC EHS Guidelines (2015) and PS6.
	Mitigation plan for legally protected species during construction - If necessary, install silt protector
	Observation locations for suspended sediment should include the submarine cable section close to the fishery right areas. And through regular verification process with the Post-EIA survey results, reduction measures against suspended sediment generation shall be applied, if necessary.

	Since the suspended sediment generation during construction may change depending on the construction intensity, continuous monitoring is carried out during construction, and if floating sand increases significantly due to construction, it is planned to reduce the load on suspended sediments by stopping work, shortening working hours, and improving construction methods, and increasing the stagnation time to increase the sedimentation effect, so that work can be carried out after the marine water quality in the area around the project area is improved.
	Concentration of suspended sediment will be surveyed each month
	Continuous management is required to prevent concentration increase by adding analysis items that are previously omitted to analyze sea water quality and suspended sediment. - Add Silicic acid (Si(OH)4-Si), Iron (Fe), and Manganese (Mn) to the analysis items for marine water quality, and add Aluminum (Al), Iron (Fe), Manganese (Mn), and Cobalt (Co) to sediment analysis items.
	Reduction measures against oil spill: Review measures to secure pollution response equipment, establish pollution response system associated with relevant government bodies.
Noise and Vibration	Process management during pile driving - Pre-visual inspection: Visual survey for marine mammals will be conducted by certified Marine Mammal Observers, in accordance with either the nationally/globally certified (e.g. Joint Nature Conservation Committee Marine Mammal Observer Training), within 500 m from the driving points 30 minutes before the alarming sound goes on. - Phased alarming sound: If no marine mammals are detected after preliminary visual survey, driving impact energy will be gradually generated for 10 min to encourage fish and mammals to evaded. - Pile driving: If any marine mammals are not detected during phased alarming, normal driving work will be conducted. - Visual inspection will be continuously carried out during driving. When the work is suspended for a long time, or it is suspended due to difficulty in visual observation/ securing clear view, it is planned to resume the phased alarming process.
	Planned to perform and manage the construction works in accordance with the Construction Site Noise and Vibration Management Guideline, Ministry of Environment, December 2006 to minimize the impact of the noise from the construction work.
	The project site is known to be a habitat for finless porpoises. Therefore, monitoring results such as the expected distribution and numbers will be secured.
	The response from whales to the continuous noise from wind turbine generators must be monitored to obtain information on the evasion and adaptation by the whales and apply such information to mitigation measures.
	It is necessary to establish a plan to mitigate the noise from construction, so that the time of pile driving and equipment used can be adjusted as the project is implemented.
	Check before work to make sure there are no marine mammals around the construction site. If marine mammals appear, stop construction work and commence after the marine mammals are gone.
	The offshore cable section should be added to Post-EIA survey points for underwater noise. The relevant surveys should be conducted on a seasonal basis during operations to monitor the impact on marine life. - Recommend at least 10 points for measurement in accordance with the “Guidelines on the sea area utilization impact assessment report of offshore wind”.

	Establish general reduction measures according to the “Noise and vibration Management Guidelines” of construction site
	Avoid marine mammals and fish by sending warning alarm in advance.
	Underwater noise modelling confirms that injury thresholds will not be exceeded during piling. However, acoustic monitoring will be conducted during construction, and precautionary mitigation (e.g. soft-start procedures, temporary delays) will be applied if unexpected conditions or sensitive species are detected.

Significance of Impact

Birds

Although the primary offshore impacts relate to underwater noise and benthic disturbance, potential disturbance to coastal and marine birds—particularly during migration and foraging—may occur due to increased vessel activity, construction lighting, and human presence around island habitats. However, based on the seasonal bird survey data and the offshore project footprint, such impacts are expected to be limited, temporary, and spatially constrained. Mitigation measures such as low-glare lighting, and monitoring of sensitive island colonies have been proposed accordingly.

In addition, although the offshore project footprint does not intersect any key breeding or roosting areas, potential short-term disturbance to migratory and coastal birds may occur during offshore construction. Construction noise may temporarily displace birds from the vicinity of the works, but they are expected to return once the disturbance subsides. Based on the findings presented in 0, most birds recorded near the Project Area of Influence migrate along the north-south coastal corridor, and therefore significant disruption to flight paths is not anticipated. However, to minimize any potential confusion or collision risk, mitigation measures should be considered to ensure that new offshore structures are visible and recognizable to birds.

To further reduce disturbance during construction, pile driving intensity will be adjusted, and appropriate noise mitigation measures will be implemented to minimize acoustic impacts on birds. Furthermore, if post-EIA monitoring indicates that construction activities coincide with critical migration or breeding seasons, additional mitigation measures such as adjusting construction intensity or timing will be considered.

Although the Project area does not serve as a primary habitat for seabirds, these species may take longer to adapt to environmental changes. To support this adaptation, the installation sequence of offshore wind turbines has been designed to allow birds sufficient time to recognize and avoid new obstacles. Specifically, jacket foundations—approximately 10 meters above sea level—will be installed first and remain in place for a sufficient adaptation period before tower, nacelle, and blade installation proceeds. This phased approach is expected to help birds recognize the installed structures and adjust their flight behavior accordingly. Considering the final turbine structures will exceed 100 meters in height and are widely spaced, this measure is anticipated to reduce potential collision risk and allow for low-impact co-existence with local avifauna.

Considering the localized and temporary nature of potential offshore construction impacts on birds - such as disturbance from vessel movement, construction noise, and lighting - along with the implementation of mitigation measures (e.g. phased turbine installation and restricted construction timing), the magnitude of impact is assessed as **Small**. Given that the project area does not overlap with key avian breeding or roosting habitats but lies adjacent to known foraging grounds for IUCN-listed species such as the Black-faced Spoonbill, the receptor sensitivity is deemed **Medium**. This results in an overall impact significance of **Minor**, which is expected to be reduced to **Negligible** with mitigation.

Table 6-7 Impact Significance Assessment of Construction of Offshore Components for Birds

Impact	Impact on Coastal and Migratory Birds from Offshore Construction Activities				
Impact Nature	Negative		Positive		Neutral
Impact Type	Direct		Indirect		Induced
Impact Duration	Temporary	Short-term	Long-term		Permanent

Impact Extent	Local		Regional		Transboundary
Impact Scale	Limited to construction area and adjacent coastal habitats				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
Resource /Receptor Sensitivity	Low		**Medium**		High
Impact Significance	Negligible	**Minor**		Major	Critical
	Significance of impact is considered **Minor** for habitats and species				
Residual Magnitude	Positive	Negligible	**Small**	Medium	Large
Residual Impact Significance	**Negligible**	Minor		Major	Critical
	Significance of impact is considered **Negligible** for habitats and species				

Marine Mammals

The significance of the impact has been assessed for marine environment which support species of marine mammals associated with the habitats. The only marine mammal recorded during the surveys was the Narrow-ridged Finless Porpoise [*Neophocaena asiaeorientalis*; EN (IUCN v.2024-1)], which was screened in despite not meeting the IFC PS6 Critical Habitat threshold during the CHA, in consideration of the potential presence of unobserved individuals that may inhabit the area and as part of precautionary principle of IFC PS6. Additionally, the CHA process listed several threatened species of marine fishes and plants, which were likely to occur in the waters impacted by the Project activities, however, the likelihood of their occurrence has not been determined, as these species are known to exhibit natural seasonal variability, and broad habitat ranges. Despite comprehensive survey efforts, the species may not have been directly recorded due to their cryptic behavior or transient presence in the project area.

Although there is insufficient data yet to assess the species throughout their range, there is evidence to suggest that the porpoise that inhabit the Korean portion of the Yellow Sea have declined by approximately 70%[60]. This decline provides an index for the un-surveyed portions of the species range, noting that there is no evidence that threats differ substantially between areas. Finless porpoises are particularly susceptible to bycatch and also affected by habitat loss and degradation, boat traffic and pollution. The extensive modification of coastal areas, for human habitation, port and aquaculture development and resource exploitation has severely reduced the quantity and integrity of finless porpoise critical habitat.

Pollution impacts, primarily related to vessel operations and construction activities, have been screened out from further assessment, as significant effects are not expected under the Project's site-specific conditions. This is due to the implementation of strict environmental management measures, including spill prevention protocols. Assessment of pollution-related impacts is therefore considered not necessary except under emergency scenarios such as large-scale fuel spills.

Due to likely presence of the Finless Porpoise and threatened marine fishes and plants, the habitat and species sensitivity is deemed **Medium**. Studies have shown that cetaceans, especially whales, are generally tolerant to noise generated from seismic surveys[61]. To date, there is no evidence available to suggest that seismic pulses cause acute physical damage or damage to the ears of

[60] Park, K. J., An, D.H., Lim, C. W., Lee, T-H. and Kim, D. N. 2012. A mass mortality of the finless porpoise Neophocaena asiaeorientalis at a dike of the Saemangeum Sea: possible effects of unusually low temperatures. . Korean Journal of Fisheries and Aquatic Sciences 45: 723-729.

[61] Weilgart L. (2007). A Brief Review of Known Effects of Noise on Marine Mammals. International Journal of Comparative Psychology, 2007, 20, 159-168

marine mammals[62]. However, temporarily induced shifts in hearing thresholds have been observed in some species at 75 kHz. The maximum noise frequency was expected to be at 600 Hz (or 0.6 kHz), during the initial phases, which is unlikely to have caused permanent physical or behavioral changes to the marine mammals. These discussions suggest that although the marine mammals were exposed to some degree of noise during the initial phases, especially during seismic explorations, the effects are expected to have been of temporary and of relatively benign nature.

However, as seismic surveys are not part of piling operations, geophysical survey activities planned for this project (e.g. for pre- and post-lay cable inspection) are separately addressed in this section as a potential impact source.

There is a study about anecdotal records of turtle entrapment in tail buoys and airgun strings during offshore seismic surveys, however, no links between turtle mortalities or behavioral changes and seismic surveys have been established[63]. At best, the turtles might have experienced some levels of temporary threshold shifts in hearing during the initial phases, however, none of these effects could be deemed to be of permanent nature.

It should be noted, however, that baseline detection of marine turtles through visual surveys is inherently limited, as turtles tend to remain submerged and have low detectability beyond 50 meters from the observation point. A literature-based satellite tracking study referenced in the EIA found that most tracked individuals (n=41) were located in the East and South Seas. Only one individual was recorded in the West Sea, approximately 20 km west of the Project site, suggesting an extremely low likelihood of occurrence within the Project AoI. Nevertheless, the BIA includes a qualitative assessment of potential impacts on marine turtles, consistent with GN10 of IFC PS6, which recommends using literature and consultation in the absence of direct survey data.

Notably, no turtles were observed during the EIA surveys conducted between August 2020 and November 2020, nor during the Additional EIA Survey conducted in August 2022. Furthermore, no turtles were detected in the Supplementary Survey. Additionally, in the stakeholder interviews conducted as part of the EIA, none of the fishers operating near Anma-do reported having directly or indirectly observed sea turtles or experienced bycatch incidents. Therefore, further assessment is not considered necessary.

Additionally, according to the Marine Mammal Underwater Noise Impact Assessment dated November 2024, (refer to Appendix D), the assessment of offshore piling activities indicates that, under current conditions and with the appropriate implementation of mitigation measures, the Project are not expected to have a significant impact on cetacean species. While some localized disturbances may occur during piling events, the overall effect on cetacean populations is deemed Not Significant. Studies by Graham et al. (2019) have shown that behavioral responses in cetaceans diminish as the distance from the noise source increases, and with prolonged exposure over weeks or months, there may be an increased tolerance and habituation to the activity. This finding is particularly relevant to cetacean species during the planned construction period in 2027.

Acoustic sources from geographical survey activities, such as those produced by Multibeam Echosounder (MBES) systems, are not expected to cause significant impacts on marine species. According to ASA S3/SC1.4 TR-2014 sound exposure guidelines for fishes and sea turtles, the recoverable noise exposure threshold for fish is 170 dB rms. Based on underwater noise modelling specific to MBES systems (Applied Acoustics, 2016), sound levels above 160 dB/$\mu Pa^2 \cdot s$ are confined to a very narrow zone near the source. The surrounding sound field attenuates rapidly with distance and depth, as shown in the sound exposure level (SEL) contour map below.

[62] Gordon, J., Gillespie, D., Potter, J., Frantzis, A., Simmonds, M. P., Swift, R., & Thompson, D. (2003). A review of the effects of seismic surveys on marine mammals. *Marine Technology Society Journal*, *37*(4), 16-34.

[63] Nelms, S.E., W.E. Piniak, C.R. Weir, and B.J. Godley (2016). Seismic surveys and marine turtles: An underestimated global threat? Biological conservation, 193: 49-65

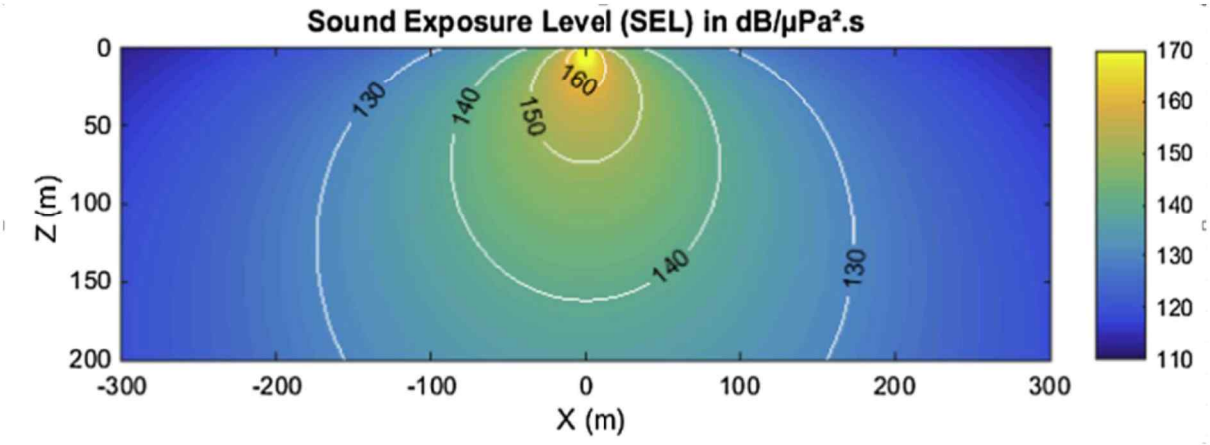


Figure 6-1 Sound Exposure Level (SEL) distribution around a Multibeam Echosounder (MBES) source, modeled in dB/µPa²·s. Source: Applied Acoustics (2016).

Therefore, MBES operations planned (e.g. pre- and post-lay surveys) are not expected to result in injury, mortality, or significant behavioral effects to marine mammals or other sensitive marine fauna.

While the current assessment focuses on noise generated from piling activities, potential impulsive noise associated with geophysical survey methods (e.g., sub-bottom profiling during pre- and post-lay surveys) has not been modelled. This impact has been scoped out from the Underwater Noise Modelling Report, as it is judged to be negligible for the reasons outlined above, in accordance with IFC Performance Standard 6.

In addition to noise impacts, other potential stressors such as habitat disturbance, vessel traffic, and pollution have also been considered. While the Project is expected to result in a small degree of permanent habitat loss due to the physical footprint of WTG foundations, this area represents a very limited portion of the overall offshore wind farm area and is not expected to result in meaningful loss of functional habitat for finless porpoises. No additional loss from scour protection is anticipated, as such installations are not currently planned. Construction activities may also lead to localized and temporary disturbances to finless porpoises; however, these effects are expected to be limited in extent and reversible. Seabed preparation and piling could result in short-term modifications to habitat conditions; however, these effects are expected to be limited in extent and reversible.

Increased vessel traffic during construction may pose a collision risk, particularly in areas of porpoise activity. However, marine mammal observation protocols will reduce the likelihood of direct interactions. Given the relatively low vessel density and the species' known avoidance behavior, the overall risk of vessel strikes is considered low.

Pollution risks primarily include localized reductions in water quality due to suspended sediments and potential vessel emissions. While temporary increases in turbidity may impact foraging efficiency, these effects are expected to be short-lived, with best-practice sediment control measures ensuring rapid recovery. Additionally, spill prevention protocols will be in place to mitigate risks associated with accidental fuel or oil discharges.

Considering the localized and temporary nature of these impacts, along with the implementation of mitigation measures, the magnitude of impact is assessed as **Small**. Given the vulnerability of finless porpoises to cumulative pressures, the receptor sensitivity is deemed **Medium**, resulting in an overall impact significance of **Minor**.

Although the assessment uses the finless porpoise as a representative species due to its confirmed presence, other marine mammals potentially occurring in the Yellow Sea, such as

odontocetes and mysticetes, have also been considered in the context of hearing group classifications. Literature review, stakeholder input, and baseline surveys were used to define the receptor groups, and impact pathways such as underwater noise and vessel traffic are considered applicable to other cetacean species likely to be present.

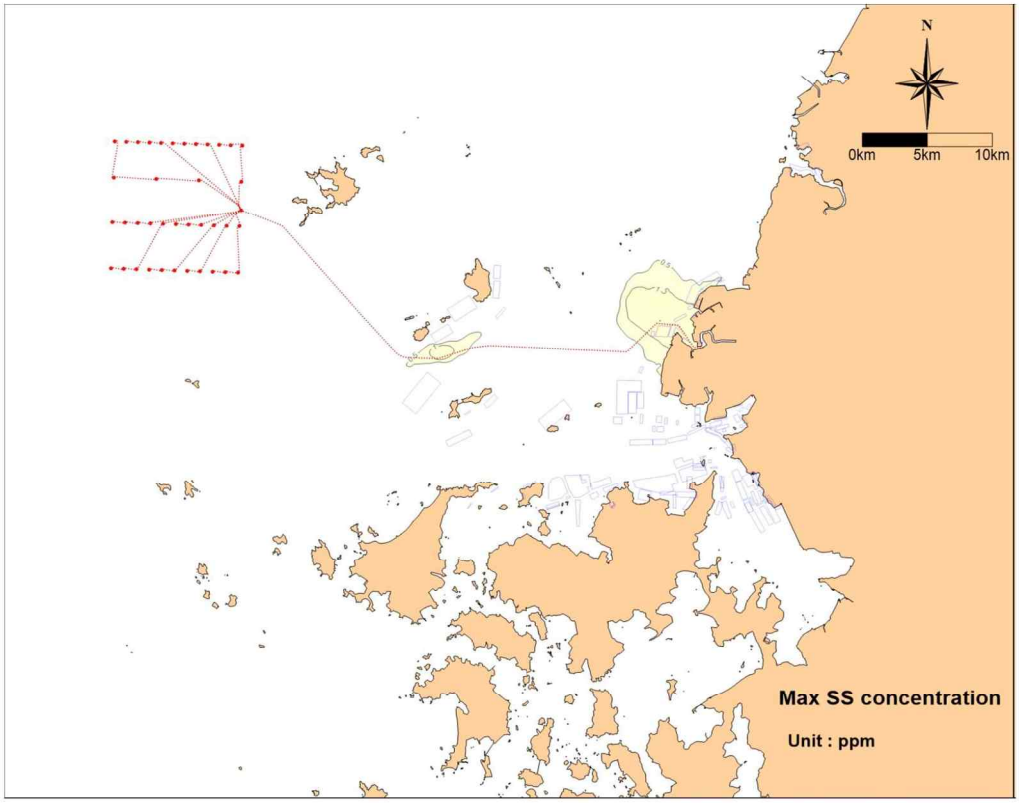
Table 6-8 Impact Significance Assessment of Construction of Offshore Components for Marine Mammals

Impact	Impact on Marine Mammals from Offshore Construction Activities				
Impact Nature	Negative		Positive		Neutral
Impact Type	Direct		Indirect		Induced
Impact Duration	Temporary	Short-term		Long-term	Permanent
Impact Extent	Local		Regional		Transboundary
Impact Scale	Limited to construction area and immediate surrounding				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
Resource /Receptor Sensitivity	Low		**Medium**		High
Impact Significance	Negligible	**Minor**		Major	Critical
	Significance of impact is considered **Minor** for habitats and species				
Residual Magnitude	Positive	Negligible	**Small**	Medium	Large
Residual Impact Significance	**Negligible**	Minor		Major	Critical
	Significance of impact is considered **Negligible** for habitats and species				

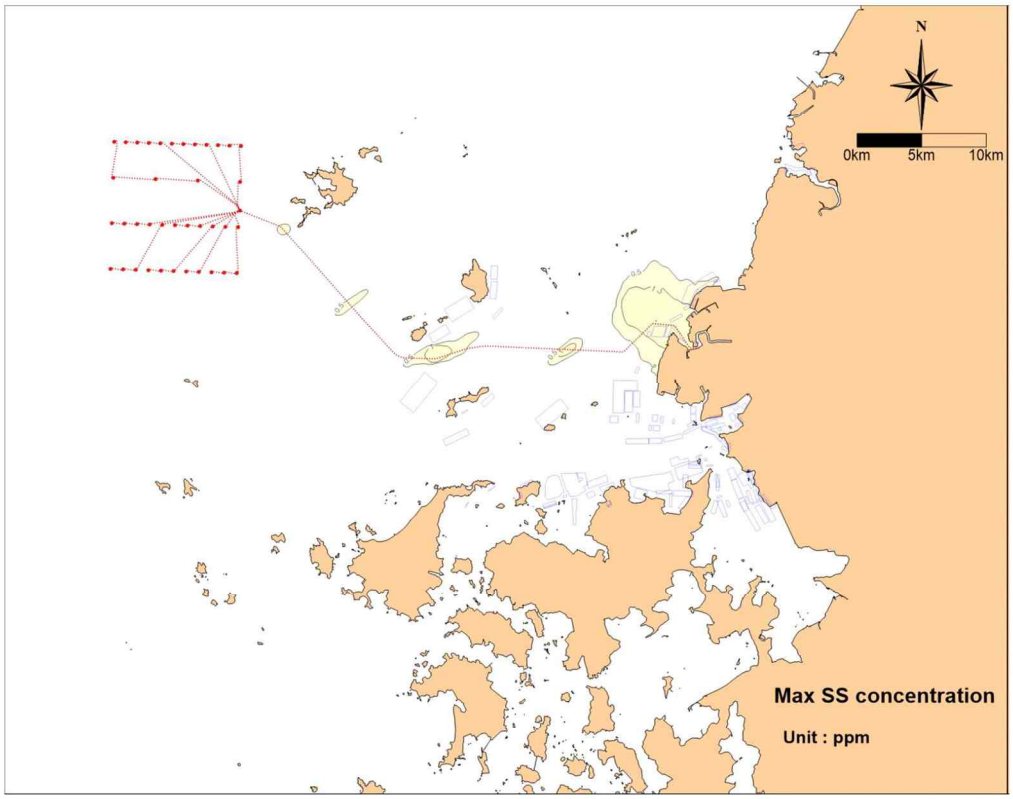
Marine Fish

The sensitivity of marine fish and their habitats to suspended sediment generated during the Project is considered **Low**, with a **Small** magnitude of impact. While most coastal fish species are tolerant to certain levels of suspended sediment due to naturally variability in turbidity, offshore fish species may exhibit differing tolerances based on the typically clearer conditions of their habitats. Accordingly, the assessment distinguishes potential effects based on habitat zone. In both areas, effects are expected to be short-lived. Under a worst-case scenario model using Delft-3D, where potential suspended sediment generation processes for WTG, OSS, IAC, and EXC were assumed to occur simultaneously, suspended sediment generated during piling and cable installation at the offshore WTG locations were predicted to remain below 0.5 mg/L in the bottom layer, resulting in no measurable dispersion beyond the immediate construction footprint. In contrast, limited dispersion was observed only in the nearshore trenching areas, where the maximum predicted area above 1 mg/L was 17.6 km^2 (bottom layer). These findings indicate that impacts from suspended solids at the WTG array are expected to be highly localized and short-term.

Suspended sediment modelling using the Delft-3D model from the regulatory EIA is illustrated in Figure 6-2 Predicted suspended sediment dispersion area from EIAwith a worst-case scenario in which construction activities of WTG, OSS, IAC, EXC occur simultaneously. The results indicated no measurable dispersion of suspended sediments beyond the immediate construction footprint at both surface and bottom layers within the wind farm area. In contrast, measurable increases in suspended sediment concentrations were observed in nearshore areas associated with EXC installation; however, these were limited to 1 mg/L and remained spatially confined near the source, indicating minimal dispersion and a rapid sediment settling environment.



Surface layer



Bottom layer

Figure 6-2 Predicted suspended sediment dispersion area from EIA

The sensitivity of marine fish to underwater noise is considered **Medium,** given the potential for physical injury and auditory damage, with a of **Small** magnitude of impact.

Temporary effects, such as startle responses or increased swimming speeds, may have occurred during initial exploration phases[64] [65]. Nonetheless, certain fish species are known to habituate to continuous noise exposure, suggesting that any adverse effects would likely be short-term and reversible.

Although underwater noise modelling primarily targeted marine mammals due to their higher sensitivity, fish species were also assessed using literature-based evidence, as outlined in Appendix D. Studies indicate that behavioral responses in fish—such as avoidance—are typically short-lived, and most species are unlikely to experience physical injury at the predicted project noise levels. Notably, auditory injury thresholds in fish (e.g., >170 dB re 1 μPa² RMS) are significantly higher than the modelled exposure levels at relevant distances from piling sources[66].

According to regulatory EIA modelling, pile driving with 3.5 m piles may generate a maximum sound pressure level (SPL) of up to 210 dB peak at 10 meters, which exceeds the commonly cited injury threshold of 206 dB peak for fish. However, SPL levels are predicted to drop below injury thresholds at distances beyond 100 meters, indicating a low risk of permanent auditory injury outside this range.

In terms of behavioral effects, laboratory studies have shown that species such as seabass and seabream exhibit an initial decrease in swimming speed immediately following noise exposure, but over 70% of individuals returned to baseline behavior within 4.7 minutes. These findings support the conclusion that short-duration exposure to pile-driving noise results in temporary behavioral responses with rapid recovery and no long-term physiological harm.

Additionally, studies from previous offshore wind projects show that marine fish often display temporary avoidance behavior during construction, but populations typically return to pre-construction levels once piling activities cease. Based on current modelling and scientific literature, long-term adverse impacts on fish populations or marine ecosystems are not anticipated.

Table 6-9 summarizes key findings on piling-related suspended sediment and fish responses.

Table 6-9 Piling-Related SS & Fish Response Summary

Parameter	Value / Finding	Source
Wind Turbine Pile Diameter	3.5 m	Project Design Spec.
Max SS Concentration (Offshore)	Below 0.5 mg/L in bottom layer	EIA SS Modelling
SS Impact Area (1 mg/L threshold)	Not exceeded at offshore WTG locations	EIA SS Modelling
Fish Response to Pile Noise (Lab)	>70% resumed normal swimming speed within 4.7 minutes	Marine Mammal Underwater Noise Modelling Report
Behavioral Effect	Temporary avoidance; no permanent harm observed	Literature-informed assessment[67,68,69,70]

[66] Popper, A. N., et al. (2014). *Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report*. ANSI/ASA S3/SC1.4 TR-2014

[67] Popper, A.N. & Hawkins, A.D. (2019). An overview of fish bioacoustics and the impacts of anthropogenic sounds on fishes. Journal of Fish Biology, 94(5), 692–713. https://doi.org/10.1111/jfb.13948

[68] Hawkins, A.D., Roberts, L. & Cheesman, S. (2014). Responses of free-ranging Atlantic salmon to pile driving sounds. Journal of the Acoustical Society of America, 135(1), 310–316.

[69] Washington State Department of Transportation (WSDOT) (2015). Effects of Pile Driving Sound on Fish Behavior. Research Report WA-RD 891.1. https://www.wsdot.wa.gov/research/reports/fullreports/891-1.pdf

[70] Discovery of Sound in the Sea (DOSITS) – University of Rhode Island. Effects of pile driving on fish. https://dosits.org/animals/effects-of-sound/anthropogenic-sources/pile-driving

Therefore, the significance of impact is considered as **Minor**.

Table 6-10 Impact Significance Assessment of Construction of Offshore Components for Marine Fish

Impact	Impact on Marine Fish from Offshore Construction Activities				
Impact Nature	Negative		Positive		Neutral
Impact Type	Direct		Indirect		Induced
Impact Duration	Temporary	Short-term	Long-term		Permanent
Impact Extent	Local		Regional		Transboundary
Impact Scale	Limited to construction area and immediate surrounding				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
Resource /Receptor Sensitivity	Low		**Medium**		High
Impact Significance	Negligible	**Minor**	Major		Critical
	Significance of impact is considered **Minor** for habitats and species				
Residual Magnitude	Positive	Negligible	**Small**	Medium	Large
Residual Impact Significance	**Negligible**	Minor	Major		Critical
	Significance of impact is considered **Negligible** for habitats and species				

Benthic Organism

Regarding Benthic Organisms, the construction activities of the project, particularly the temporary sedimentation caused by marine dredging, pontoon installation, and temporary sedimentation from suspended solids, may affect benthic organisms inhabiting both rocky intertidal and soft sediment environments. In the case of rocky intertidal benthic organisms, species such as barnacles, snails, and oysters, which dominate the area, are adapted to harsh environmental conditions. In addition to sedimentation, physical habitat loss will occur at the WTG foundation locations. Although scour protection is not planned, the direct footprint of turbine foundations constitutes a permanent alteration to benthic habitat. However, the total area affected is minimal relative to the overall OWF area and is not expected to result in fragmentation or significant loss of ecological function. While sedimentation may temporarily cover rocky substrates, potentially hindering species recovery, these organisms demonstrate significant ecological resilience. As a result, it is expected that they will recover once construction concludes, and the magnitude of impact on rocky intertidal habitats is considered **Small**.

Similarly, for soft sediment intertidal and subtidal benthos, the dispersion of suspended solids into surrounding areas may affect species like polychaetes, bivalves, and echinoderms, which are common in the project area and thrive in silt-dominated environments. Benthic surveys conducted within the OWF area confirmed that dominant soft sediment taxa include polychaetes such as *Lumbrineris longifolia*, *Sternaspis scutata*, and *Protanthura bidentata*. These species are known for high tolerance to sedimentation and organic enrichment, suggesting that soft-bottom benthic communities are relatively resilient to temporary construction-phase disturbances. In the soft sediment intertidal zone near the landfall area, species of Crab sp. were predominantly observed. These crabs inhabit burrows in mudflats and are adapted to environments with high turbidity fluctuations around tidal flats. Although all organisms inhabiting the intertidal zone may experience short-term impacts on feeding activities due to increased sediment levels, these species' ability to recover through larval recruitment minimizes the likelihood of long-term damage. Consequently, the magnitude of impact on these soft sediment habitats is assessed as **Small.**

Marine dredging and pontoon installation may result in localized sediment disturbance and minor modifications to benthic habitat. However, these activities are highly localized and temporary, with dredging confined to specific areas and sediment resettlement expected to occur naturally over time. The presence of pontoons may cause minor shading effects, but given the dynamic nature of the coastal environment, any influence on primary productivity is anticipated to be minimal. Moreover, potential changes in local hydrodynamics due to in-water structures are not expected to result in significant habitat alterations, as benthic communities in the area are naturally adapted to variations in sediment deposition and flow patterns.

In addition, potential pressures such as pollution, introduction of invasive species, and minor hydrodynamic changes have been considered. No invasive species were identified in the OWF area, and pollution risks are controlled under strict management plans.

During the construction and operation phases, the import of materials and equipment from overseas may raise concerns regarding the potential introduction of invasive alien species through the discharge of ballast water.

However, the national legislation enforces strict regulations under the Ballast Water Management Act, which governs the exchange and discharge of ballast water. According to this regulation, ballast water must be discharged at least 200 nautical miles from the territorial baseline, and if discharge is necessary within territorial waters, it must be appropriately treated to eliminate harmful aquatic organisms. Therefore, benthic environment is not expected to undergo structural change due to these factors.

Therefore, the significance of impact is considered as **Negligible**, based on the localized and temporary nature of impacts, limited physical footprint, ecological resilience of benthic communities in the EAAA, and national legislation.

Table 6-11 Impact Significance Assessment of Construction of Offshore Components for Benthic Organism

Impact	Impact on Benthic Organism from Offshore Construction Activities				
Impact Nature	Negative	Positive	Neutral		
Impact Type	Direct	Indirect	Induced		
Impact Duration	Temporary	Short-term	Long-term		Permanent
Impact Extent	Local	Regional	Transboundary		
Impact Scale	Limited to construction area and immediate surrounding				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
Resource /Receptor Sensitivity	**Low**	Medium	High		
Impact Significance	**Negligible**	Minor	Major		Critical
	Significance of impact is considered **Minor** for habitats and species				
Residual Magnitude	Positive	Negligible	**Small**	Medium	Large
Residual Impact Significance	**Negligible**	Minor	Major		Critical
	Significance of impact is considered **Negligible** for habitats and species				

Phytoplankton / Zooplankton

The impact on plankton due to the project is primarily associated with increased suspended sediment concentration and turbidity during the construction phase. Elevated suspended sediments may temporarily reduce light penetration, leading to a decrease in phytoplankton productivity and biomass. Given that phytoplankton serve as a primary food source for

zooplankton, a subsequent reduction in zooplankton abundance could occur. Additionally, increased suspended sediment levels may affect filter-feeding zooplankton by reducing their feeding efficiency, potentially leading to lower growth rates and reproductive output.

The surveys indicate that phytoplankton growth is significantly affected only at high suspended sediment concentrations (e.g., 200–500 mg/L), which exceed the anticipated levels in the project area. Similarly, zooplankton species, particularly copepods such as *Acartia* spp. and *Paracalanus* spp., have demonstrated tolerance to moderate increases in suspended sediment concentrations. While extreme levels (e.g., 500–1,000 mg/L) may impact reproduction and survival in some species, these concentrations are not expected within the project site.

The surveys confirm that the dominant planktonic species in the project area, including diatoms (*Thalassiosira weissflogii, Skeletonema costatum*) and cryptomonads, as well as copepods (*Acartia* spp., *Paracalanus* spp.), are widely distributed in coastal waters and adapted to fluctuating turbidity conditions. Moreover, the anticipated suspended sediment distribution is expected to be temporary and localized, with natural water movement helping to disperse sediments, minimizing prolonged exposure.

Considering the temporary nature of the disturbance, the high resilience of the dominant species, and the natural recovery potential of planktonic communities, the impact magnitude is assessed as **Small**, resource/receptor sensitivity as **Low**, and consequently, the overall impact significance is **Negligible**.

Table 6-12 Impact Significance Assessment of Construction of Offshore Components for Plankton

Impact	Impact on Plankton from Offshore Construction Activities				
Impact Nature	Negative	Positive	Neutral		
Impact Type	Direct	Indirect	Induced		
Impact Duration	Temporary	Short-term	Long-term		Permanent
Impact Extent	Local	Regional	Transboundary		
Impact Scale	Limited to construction area and immediate surrounding				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
Resource /Receptor Sensitivity	**Low**	Medium	High		
Impact Significance	**Negligible**	**Minor**	Major	Critical	
	Significance of impact is considered **Minor** for habitats and species				
Residual Magnitude	Positive	Negligible	**Small**	Medium	Large
Residual Impact Significance	**Negligible**	Minor	Major	Critical	
	Significance of impact is considered **Negligible** for habitats and species				

Microalgae

The impact on macroalgae due to the project is primarily related to increased turbidity and suspended sediment concentration during the construction phase. These factors may temporarily reduce light availability, potentially lowering photosynthetic efficiency and delaying growth. Additionally, suspended sediments may settle on macroalgal surfaces, obstructing respiration and nutrient absorption. Prolonged sediment deposition on substrate surfaces could also hinder the attachment of new spores and affect the growth of existing macroalgal species.

However, the surveys indicate that the dominant macroalgal species in the project area, including brown algae such as *Sargassum* spp., *Ecklonia* spp., and *Ishige okamurae*, as well as red and green

algae such as *Gelidium* spp. and Ulva spp., are widely distributed along the Korean coastline. These species are known to persist year-round and exhibit adaptability to varying environmental conditions, including natural fluctuations in turbidity and sedimentation.

Since no direct marine construction activities will occur within macroalgal habitats, the overall impact on macroalgal communities is expected to be minimal. Considering the temporary nature of the impact, the high resilience of dominant species, and the implementation of mitigation measures, the impact magnitude is assessed as **Small**, resource/receptor sensitivity as **Low**, and consequently, the overall impact significance is **Negligible**.

Table 6-13 Impact Significance Assessment of Construction of Offshore Components for Microalgae

Impact	Impact on Microalgae from Offshore Construction Activities				
Impact Nature	Negative	Positive	Neutral		
Impact Type	Direct	Indirect	Induced		
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Extent	Local	Regional	Transboundary		
Impact Scale	Limited to construction area and immediate surrounding				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
Resource /Receptor Sensitivity	**Low**	Medium	High		
Impact Significance	**Negligible**	**Minor**	Major	Critical	
	Significance of impact is considered **Minor** for habitats and species				
Residual Magnitude	Positive	Negligible	**Small**	Medium	Large
Residual Impact Significance	**Negligible**	Minor	Major	Critical	
	Significance of impact is considered **Negligible** for habitats and species				

Fish Eggs and Larvae

The impact on fish eggs and larvae due to the project is primarily associated with increased suspended sediment concentration during the construction phase. Potential effects include reduced hatching success, impaired growth, gill damage, decreased osmoregulatory capacity, and, in extreme cases, mortality. Additionally, increased turbidity may reduce visual foraging efficiency, limiting the ability of fish larvae to locate prey.

Experimental studies indicate that short-term exposure to suspended sediments has species-specific effects. For example, red seabream (Pagrus major) eggs showed some sensitivity at 100 mg/L, while rockfish (Sebastes schlegelii) exhibited no adverse effects at concentrations up to 200 mg/L. Long-term exposure studies demonstrated that rockfish larvae could tolerate suspended sediment concentrations up to 200 mg/L without survival impacts and up to 100 mg/L without growth inhibition. Similarly, black seabream (*Acanthopagrus schlegelii*) exhibited no significant effects on survival and growth at concentrations up to 400 mg/L.

Field surveys identified dominant fish eggs as anchovy (*Engraulis japonicus*), flatfish (*Paralichthyidae*), and unidentified species, while dominant fish larvae included species such as Japanese halfbeak (*Hyporhamphus sajori*), gobies (*Gobiidae*), bartail flathead (*Platycephalus indicus*), spotted snakeblenny (*Ophidion* spp.), and anchovy. The presence of these species aligns with general spawning trends in Korean coastal waters, where fish eggs and larvae are more abundant in spring and summer, with fewer species present in fall and winter. The relatively low occurrence of fish eggs and larvae during fall and winter, as observed in field surveys, reflects these seasonal variations.

Most identified species are common in turbid coastal waters and are known to tolerate fluctuating suspended sediment levels. Given the temporary nature of increased turbidity, the natural resilience of these species, and their widespread presence in environments with naturally high turbidity, the impact magnitude is assessed as **Small**, resource/receptor sensitivity as **Low**, and consequently, the overall impact significance is **Negligible**. While some spawning species in spring and summer may experience localized and short-term effects, these are not expected to result in significant ecological consequences.

Table 6-14 Impact Significance Assessment of Construction of Offshore Components for Fish Eggs and Larvae

Impact	Impact on Fish Eggs and Larvae from Offshore Construction Activities				
Impact Nature	Negative	Positive	Neutral		
Impact Type	Direct	Indirect	Induced		
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Extent	Local	Regional	Transboundary		
Impact Scale	Limited to construction area and immediate surrounding				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	Medium	Large
Resource /Receptor Sensitivity	**Low**	Medium	High		
Impact Significance	**Negligible**	Minor	Major	Critical	
	Significance of impact is considered **Negligible** for habitats and species				
Residual Magnitude	Positive	Negligible	**Small**	Medium	Large
Residual Impact Significance	**Negligible**	Minor	Major	Critical	
	Significance of impact is considered **Negligible** for habitats and species				

Potential Impacts on Key Biodiversity Area (KBA) due to Offshore Export Cable Installation

The offshore export cable alignment intersects the Baeksu tidal flat, a designated Key Biodiversity Area (KBA) located along the western coastline of Yeonggwang-gun, Jeollanam-do. According to the Critical Habitat Assessment, approximately 4 km of the cable route overlaps with the southern portion of the Baeksu tidal flat. This KBA is internationally recognized for supporting several globally threatened migratory bird species, including the Black-faced Spoonbill (*Platalea minor*), Bar-tailed Godwit (*Limosa lapponica*), Far Eastern Curlew (*Numenius madagascariensis*), and Nordmann's Greenshank (*Tringa guttifer*).

Construction activities such as trenching and vessel movement within or adjacent to intertidal and shallow subtidal zones may result in localized sediment disturbance, increased turbidity, and temporary displacement of birds during critical migration periods.

Embedded Controls

The Project design includes cable burial at approximately 2 meters below the seabed, which minimizes surface disturbance and reduces turbidity generation. The construction corridor will follow a narrow footprint and proceed progressively along the alignment, limiting the duration of disturbance at any single location. Additionally, the site's dynamic tidal regime supports rapid sediment dispersion, further reducing the persistence of water quality impacts. The potential use of silt curtains will be considered to further minimize turbidity during construction. AWC will implement an environmental

monitoring program during in search of any unforeseen impact, in line with commitments under the EIA.

Significance of Impacts

The Baeksu tidal flat KBA is considered a high-sensitivity receptor due to its ecological importance to IUCN-listed migratory bird species. The magnitude of impact from offshore cable installation is expected to be **Medium**, particularly if activities overlap with peak migration periods.

Although the arrival periods of protected species expected to occur in the area vary by species, the Black-faced Spoonbill is known to occur from March to November, the Chinese Egret from April to September, and the Far Eastern Curlew and Grey Plover during March–April and July–August[71]. The offshore cable installation in nearshore areas is planned to take place for 18 days for nearshore in late April and 15 days in August 2027. Burial work is planned to take place for 22 days for the whole export cable route in late September to October. Although construction period can be considered to be short, all species presence is expected to overlap with the construction period.

Therefore, without mitigation, the impact significance is assessed as **Moderate**. With implementation of embedded controls and turbidity control measures, the significance can be reduced to **Minor**.

To reduce the potential impacts of offshore cable installation on the Baeksu tidal flat KBA and its associated migratory bird species, several mitigation measures will be implemented.

During trenching works in or near intertidal areas, turbidity control measures, such as silt curtains or phased trenching methods, will be applied to limit sediment suspension and protect prey availability for shorebirds.

In addition, efforts will be made to avoid cable laying and anchoring activities in high-use foraging zones, as identified through ecological survey data, to minimize direct habitat disturbance.

Finally, the Baeksu tidal flat KBA will be incorporated into the Project's ecological monitoring and adaptive management plan, enabling observation of potential effects and allowing timely corrective actions if required.

Table 6-15 Impact Significance Assessment of Offshore Cable Installation on Baeksu Tidal Flat KBA

Impact	Impact on Baeksu Tidal Flat KBA from Offshore Export Cable Installation				
Impact Nature	Negative		Positive		Neutral
Impact Type	Direct		Indirect		Induced
Impact Duration	Temporary	Short-term		Long-term	Permanent
Impact Extent	Local		Regional		Transboundary
Impact Scale	Limited to offshore cable corridor overlapping ~4 km of KBA				
Frequency	Construction phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	Small	**Medium**	Large
Resource /Receptor Sensitivity	Low		Medium		**High**
Impact Significance	Negligible	Minor	**Moderate**	Major	Critical
	Significance of impact is considered **Moderate** for Baeksu Tidal Flat KBA				
Residual Magnitude	Positive	Negligible	**Small**	Medium	Large
Residual Impact Significance	Negligible	**Minor**		Major	Critical
	Significance of impact is considered **Minor** for Baeksu Tidal Flat KBA				

[71] National Institute of Biological Resources (https://species.nibr.go.kr)

6.3.2 Impacts during the Operations and Maintenance Phase

Marine receptors, such as plankton, benthic organisms, marine algae, fish eggs, and larvae, which are not expected to be significantly impacted during the operational phase, have been screened out. Plankton and benthic organisms remain stable, with turbine foundations potentially enhancing biodiversity. Fish eggs and larvae are not exposed to significant stressors, as operational noise is low in intensity and does not cause substantial habitat disturbance. Additionally, marine algae remain unaffected, as no further seabed disturbances occur post-construction. Additionally, while no routine seabed disturbance is anticipated during operations, it is acknowledged that small-scale activities such as periodic localized dredging for maintenance work may occur. These are expected to be infrequent and spatially confined, and with appropriate environmental management in place, they are not anticipated to result in significant ecological disturbance or biodiversity loss.

Collision risk associated with Rotating Turbines

The rotating turbine blades are one of the major risks for soaring bird species and bats present in and around the wind farm area. Also, the turbines may cause birds to change their behavior such as flight deviation, alternate resource utilization, and displacement from the wind farm area, changing flight heights, etc. This avoidance behavior can affect the energy expenditure of the birds and can lead to decrease energy reserves for foraging, hunting, and breeding and loss of foraging resources, habitats and migration pathways.

Studies suggest that in general, birds tend to avoid wind turbines through evasive movements and changes in space use[72]. Wind turbines may also cause functional habitat loss for soaring birds[73,74]. Displacement of birds due to presence of wind turbines could be a consequence of neophobia, as turbines do not belong to their natural environment[75], or as a consequence of earlier negative experiences, such as birds being caught in the airflow around turbines, or even witnessing fatalities of conspecifics[76] (Marques *et al.*, 2020). This type of displacement is recognized as a distinct impact pathway from collision, as noted in international guidance[77,78], and has been qualitatively considered in the assessment.

Development of the wind turbines in the area has the potential to cause altered behaviors or collision for soaring birds within and in immediate vicinity of the wind farm area. However, species such as cranes and raptors were not recorded during the survey period, and a literature review confirms that their migratory flyways follow inland or coastal corridors well outside the Project AoI. For example, White-naped and Hooded Cranes are known to follow north-south routes along the western Korean peninsula, but do not typically traverse the open sea west of Anma-do[78,79].

[72] May, R. F. (2015). A unifying framework for the underlying mechanisms of avian avoidance of wind turbines. Biological Conservation, 190, 179–187.

[73] Marques AT, Santos CD, Hanssen F, et al. (2020). Wind turbines cause functional habitat loss for migratory soaring birds. J Anim Ecol.;89:93–103.

[74] Diehl, R. H. (2013). The airspace is habitat. Trends in Ecology and Evolution, 28, 377–379.

[75] Walters, K., Kosciuch, K., & Jones, J. (2014). Can the effect of tall structures on birds be isolated from other aspects of development? Wildlife Society Bulletin, 38, 250–256.

[76] Ana Marques (2020). Wind turbines cause functional habitat loss for migratory soaring birds. https://besjournals.onlinelibrary.wiley.com/doi/10.1111/1365-2656.12961

[77] Band, W. (2012). *Using a collision risk model to assess bird collision risks for offshore wind farms.* British Trust for Ornithology (BTO).

[78] Pettersson, J. (2005). The impact of offshore wind farms on bird life in southern Kalmar Sound, Sweden. Report to Swedish Energy Agency.

[79] Hankyoreh Newspaper, 2023: The migratory route of the Hooded Crane follows a north-south path along the western coastline of the Korean Peninsula, and does not typically extend to offshore areas west of Anma-do. https://www.hani.co.kr/arti/area/honam/1114057.html

Boat-based surveys are limited in detecting high-flying birds, and this limitation has been acknowledged in the assessment. Collision risk for soaring birds has therefore been qualitatively considered based on species distribution and flight height, in line with IFC Performance Standard 6.

Research further suggests that in the case of soaring birds, suboptimal soaring conditions due to such factors as avoidance to wind farms may force the birds to delay or suspend migration, or to use flapping flights, which may be energetically unsustainable for most species[80,81]. Similar energetic costs on other migrant and/or breeding species cannot be ruled out. Nonetheless, it is note that no soaring birds were observed during the boat-based survey conducted from March 2023 to February 2024. However, boat surveys are limited in their ability to detect high-flying species such as cranes and raptors. A literature review confirms that the Hooded Crane (*Grus monacha*), while classified as a soaring migrant, typically follows inland and coastal routes along the western Korean peninsula and is unlikely to traverse the offshore waters west of Anma-do.

The analysis of dispersal patterns from the tracked Black-tailed Gull suggests a potential utilization of parts of the study area between July 2022 and January 2023. During this period, the birds exhibit an expansion of their ranges, with increased utilization observed again between March 2023 and May 2023.

In addition to the tracked gull species, two globally Vulnerable (VU) species were recorded during field surveys in the broader coastal and island survey areas: Hooded Crane (Grus monacha), with 43 individuals observed in February 2023, and Fairy Pitta (Pitta nympha), with 4 individuals observed in May 2023. The Hooded Crane was observed flying over inland zones during the migration season, while the Fairy Pitta was recorded in forested habitat within Anma Island during its breeding period. Neither species is known to utilize the offshore environment or exhibit flight behavior within the wind farm area or its immediate vicinity. Accordingly, no collision risk or significant displacement impact is anticipated for these species, and the overall impact significance for both is assessed as negligible.

Given that the Black-faced Spoonbill was observed in intertidal zones around Anma Island, located more than 12 km offshore from the onshore substation and cable corridor, the species is not expected to be affected by land-based construction activities. In addition, the species is not known to utilize open offshore waters, and the turbine array is situated away from known foraging zones. Therefore, no collision or displacement risk is anticipated, and the potential impact is assessed as negligible.

Embedded controls would need to be adopted in the planning and construction stage by designing the wind farm to minimize collision risk.

[80] Newton, I. (2008). Migration ecology of birds. London, UK: Academic Press.

[81] Newton (2008) cited in: Marques, A.T., Santos, C.D., Hanssen, F., Muñoz, A.R., Onrubia, A., Wikelski, M., Moreira, F., Palmeirim, J.M. and Silva, J.P., 2020. Wind turbines cause functional habitat loss for migratory soaring birds. *Journal of Animal Ecology*, *89*(1), pp.93-103.

Embedded Controls

The following mitigation measures from second amendment of EIA may reduce the impact significance on the habitat and species:

It should be noted that AWC has undertaken three rounds of amendment process under Art.33 of EIA Act. with 3 amendments completed as of April 2025. The mitigation measures that AWC is preparing for the amendment with MoE have been included in the table below. The final set of mitigation measures should be considered with the amendments expected to be agreed on.

Table 6-16 Mitigation Measures for Operation

Aspect	Mitigation Measure
Birds	Migratory routes of birds which are confirmed through marine survey are mainly to the land in the East at the areas with buried underwater grid lines. Birds tend to fly mainly to the North or Northwest at the planned sites of the offshore wind farm. Those routes and patterns can be varied depending on species, seasons, and climate. Thus, it is planned to survey birds in project site 6 times per year in a qualitative and quantitative manner.
	Paint that reflects a certain proportion of UV light will be used, allowing bird species sensitive to UV to identify the WTG.
	Bird collision prevention measures will be implemented if colorless transparent glass is to be used in onshore facilities
	To minimise the possibility of bird collisions, equipment such as bird monitoring and deterrent systems will be introduced to monitor and prevent bird collisions. Further technical planning is required to determine specifications, locations, and activation criteria of the deterrent systems, in alignment with the most sensitive periods and species recorded during baseline studies.
	Aviation light and blade colors will be applied in accordance with MoLIT regulations for better visibility and avoidance for birds. When required, additional mitigation measures shall be sought through continuous monitoring per item during post-EIA
	During operation, bird surveys should be conducted more than 6 times per year. This is similar to the frequency of the supplementary bird survey conducted from March 2023 to February 2024 as described in the BIA report After collecting the observation results and analysing the bird collision surveys, if necessary, additional mitigation measures should be prepared.
	The monitoring results regarding bird collision and evasion should be analysed to figure out the birds' patterns of evading the generators and the analysis result should be shared with consultation organizations.
	Take mitigation measures about impact on birds' migration (painting blades, installing speakers and cameras, etc.) Plan to establish a bird collision avoidance system Take reduction measures based on monitoring results
	Plan to prevent the impact on birds (aircraft warning lights, colored blade, etc.). During post-EIA, monitor continuously and if necessary, take additional mitigation measures. Additional bird monitoring planned to establish bird deterrence system
	In operation, birds will be surveyed 6 times a year until 5 years after the completion of construction. - Distribution status caused by changing the habitat environment, legally protected species habitat/appearance and change, birds' migration survey

	in the wind farm and its surrounding areas (accumulation of neighbouring development projects), survey on avian collision by wind turbine, status survey on birds using wind farms (for rest, feeding, evacuation etc.), survey on mitigation measures against avian collision and their operation.
Marine Flora and Fauna	Continuous monitoring during construction and operation (Post EIA) by selecting additional survey points, focusing on grid connection cable installation section, will be conducted. If the impacts on zoobenthos such as decrease in biomass near waters around the underwater cables may be determined, additional reduction measures will be developed and suggested.
	In order to reduce oil spills caused by ship-related accidents, measures will be reviewed to secure marine pollution response equipment in compliance with Marine Environment Management Act. Comprehensive measures against marine accidents will be set up, and illegal spills of waste oil by ships will be strictly managed. Furthermore, marine pollution response organization will be established and regular prevention training for related persons will be provided, and an organic response system will be established with related organization.
	In operation, the response of whales (finless porpoise) to noise generated by wind power will be monitored to understand the evasion and adaptation of whales. It will be reflected in damage reduction measures.
	Foundation structures are expected to perform as artificial reef that can enhance fishery resource
	Establish offshore wind farm monitoring system and operate 24-hour control room to set safety measures for vessel movement
	During operation, marine mammal surveys should be carried out together with the underwater noise survey on a seasonal basis in waters including the cable route buried water as well to find out its impact on the distribution and the activities of marine mammals. Then, if necessary, mitigation measures should be prepared.

Significance of Impacts

Based on the CRM conducted for Black-tailed Gull [*Larus crassirostris,* LC (IUCN v.2024-1), Vega Gull [*Larus vegae*, NE (IUCN v. 2024-1)] and Mallard [*Anas platyrhynchos*,LC (IUCN v. 2024-1)], the three species for which sufficient data within the collision risk height band were available and CRM was undertaken, the overall impact of the proposed offshore wind farm on avian populations is considered Negligible. Although CRM was conducted for three species with confirmed occurrence and flight heights exceeding the turbine blade swept zone, other species such as cranes and raptors have not been modeled, as they were neither observed during the yearlong survey nor expected to traverse the offshore project site based on migratory flyway studies. Literature and expert reviews indicate that soaring species such as the Hooded Crane follow coastal routes along the Korean Peninsula but do not typically pass over the open sea west of Anma-do, where the project is located. Therefore, the risk of collision for these species has been scoped out with justification.

The estimated collision mortalities remain minimal for the abovementioned species, particularly when avoidance rates are considered.

The CRM results for four bird species indicate minimal annual mortality due to the offshore wind farm operation. For the Black-tailed Gull, an estimated 315 individuals may collide annually without avoidance measures, but this reduces to only 6 individuals at a 98% avoidance rate, which is negligible against the global population of 1,100,000. Similarly, for the Great White Egret, the annual collision mortality is projected at 65 individuals without avoidance, decreasing to 1.3 individuals at a 98% avoidance rate, a negligible impact given the species' global population of 2,200,000. The Vega Gull is expected to have a maximum of 7 collisions annually without avoidance, dropping significantly to just 0.14 individuals at a 98% avoidance rate, negligible relative to its global population of 1,220,000. Lastly, for the Mallard, the CRM estimated 83 collisions per year without avoidance, but this figure declines to 1.65 individuals at a 98% avoidance rate, which is insignificant compared to its global population of 19,000,000. Overall, the projected mortalities for all four species are minor, well within the natural population fluctuations. Therefore, the impacts are considered negligible. Detailed CRM analyses and results can be found in the Appendix E.

During the yearlong survey, the EAAA did not show the presence of bats.

As discussed in section 0, the EAAA supports bird congregation and includes species of high conservation concern, Accordingly the sensitivity of species and habitat has been assessed as High.

However, the CRM was limited to three LC or NE species (Black-tailed Gull, Vega Gull, and Mallard) for which sufficient flight data were available. Based on CRM results for three species, the magnitude of impact has been assessed as Low.

This impact rating applies specifically to the modelled species and does not imply that other species of higher conservation status (e.g., VU migratory species) are unaffected. Such species have been addressed through qualitative assessment, and residual risks are discussed in the broader biodiversity impact evaluation in line with IFC PS6.

The overall impact significance has, thus, been assessed as **Moderate**.

To further minimize potential impacts, particularly for gull species identified through CRM as the most at risk due to their frequent presence within the collision risk zone, the Project will also proactively implement additional mitigation measures, including:

- Establishing a 200-meter fishing exclusion zone around the WTGs to prevent vessel activity, which often attracts fish near the turbines. Such activities can lead to large gatherings of birds feeding in the area, increasing the risk of bird collisions with turbine blades. By implementing this exclusion zone, the concentration of fish and bird feeding activities near the turbines can be reduced, minimizing collision risks and contributing to the protection of bird populations."; and

- As part of the embedded design controls, the Project will avoid constructing artificial features that could attract birds for roosting, perching, or feeding, unless they are essential for OWF operations or a future phase of the Project.

Residual impact significance

Proper implementation of suggested mitigation measures and in-built controls may reduce the impacts to some extent and the significance of the residual impact may reduce to **Negligible.** However, complete cessation of mortality may not be expected, and this may affect small and recovering populations of CR species.

Table 6-17 Impact Significance of Collision hazards from Rotating Turbines

Impact	Collision and electrocution hazards from rotating turbines				
Impact Nature	Negative		Positive		Neutral
Impact Type	Direct		Indirect		Induced
Impact Duration	Temporary	Short-term		Long-term	Permanent
Impact Extent	Local		Regional		Transboundary
Impact Scale	Limited to wind farm area				
Frequency	Operation phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	**Medium**	Large
Resource /Receptor Sensitivity	Low		Medium	**High**	
Impact Significance	Negligible	Minor	**Moderate**	Major	Critical
	Significance of impact is considered **Moderate**				
Residual Magnitude	Positive	**Negligible**	Small	Medium	Large
Residual Impact Significance	**Negligible**	Moderate		Major	Critical
	Significance of impact reduced to **Negligible**				

Electromagnetic Field Effect from Submarine Cable

The submarine power cable for the Project will generate Electromagnetic Fields (EMF) as electricity is transmitted between wind turbines and the onshore grid. EMF consists of both electric fields, which are naturally shielded by cable insulation, and magnetic fields, which can propagate through the surrounding environment but attenuate with distance and burial depth.

Embedded Controls

The following mitigation measure from second amendment of EIA may reduce the impact significance on the habitat and species:

It should be noted that AWC has undertaken three rounds of amendment process under Art.33 of EIA Act. with 3 amendments completed as of April 2025. The mitigation measures that AWC is preparing for the amendment with MoE have been included in the table below. The final set of mitigation measures should be considered with the amendments.

- A continuous monitoring program targeting electromagnetic field (EMF) emissions from submarine cables will be implemented during both the construction and operational phases. The program will evaluate EMF intensity, dispersion, and potential behavioural responses of sensitive benthic or electro-sensitive species, such as elasmobranchs.

Significance of Impacts

The potential impact of electromagnetic fields (EMF) generated by the submarine power cable for this project is primarily associated with its interaction with marine organisms that are sensitive to electromagnetic stimuli. The project's submarine cable(IAC 66kV, EXC 230kV) is planned to be buried approximately 2 meters beneath the seabed, which will significantly attenuate the EMF reaching the surrounding marine environment. Given the burial depth and natural seabed sediment, the residual magnetic field strength at the seabed surface is expected to be minimal, and any detectable field is likely to be within the range of natural geomagnetic fluctuations[82].

Certain fish species, particularly elasmobranchs (sharks and rays), and some invertebrates, such as lobsters and mollusks, utilize natural geomagnetic fields for navigation and prey detection. Field surveys in the project area indicate that dominant fish species include commercially important teleost fish (e.g., anchovy, flatfish, and gobies) rather than highly EMF-sensitive elasmobranchs. While some migratory species such as eels and salmon have demonstrated temporary physiological responses to EMF exposure in laboratory studies, they have also been observed to cross submarine cables without significant behavioral disruption in real-world conditions[83]. The project site does not serve as a major migratory corridor for eel species, and thus, any potential impact on these species is expected to be negligible.

The seabed composition at the cable route consists primarily of sand and fine sediment, which will further act as a natural barrier, reducing EMF exposure in the water column. A review of literature[84] on marine organisms' responses to EMF indicates that benthic organisms and fish are capable of adjusting to the magnetic fields up to 37 G, and show initial behavioral responses to electric fields at approximately 0.5 V/m. In a comparable case[85] involving submarine cables with similar voltage levels to this project, studies have shown that a 275kV cable generated a maximum magnetic field of 41 mG and an electric field of 2.3 mV/m, both of which decreased rapidly with distance from the cable.

---

[82] Gill, A., Gloyne-Philips, I., Neal, K., & Kimber, J. (2005). *COWRIE 1.5: The Potential Effects of Electromagnetic Fields Generated by Sub-Sea Power Cables Associated with Offshore Wind Farm Developments on Electrically and Magnetically Sensitive Marine Organisms – A Review*. CMACS

[83] Taormina, B., Bald, J., Want, A., et al. (2018). *A review of potential impacts of submarine power cables on the marine environment*. *Renewable and Sustainable Energy Reviews*, 96, 380–391

[84] Electromagnetic Field Study : Effects of electromagnetic fields on marine species: A literature review, 2010, OregonWaveEnergyTRUST

[85] Revolution Wind Farm Offshore Electric-and Magnetic-Field Assessment, Exponent, March 2021

The submarine cables to be installed in this project are planned to be buried deeper than in the referenced case, and the maximum operating voltage is lower, at up to 230kV. Considering these two factors in light of the referenced studies, the potential impact on marine life from the submarine cable installation in this project is expected to be even lower than in the comparable case.

Given that the project's cable will be installed in a high-energy marine environment with strong tidal currents, any minor electromagnetic influence is expected to be further dissipated by natural water movement.

Table 6-18 EMF prediction results for offshore cables in literature

Category		Max	3m from cable	9.1m from cable
Magnetic field (mG)	275kV	41	13	2.1
	66kV	17	12	1.7
Electric field (mV/m)	275kV	2.3	1.3	0.5
	66kV	1.3	1.1	0.4

Note : This is the predicted EMF result for submarine cables buried at a depth of approximately 1 m

For benthic organisms, including commercially valuable shellfish such as oysters and clams, which dominate the nearshore seabed habitat, no significant impacts are expected, as these species have not demonstrated strong sensitivity to EMF in previous studies[86]. The slow-moving nature of benthic invertebrates and their limited reliance on geomagnetic cues for orientation make them less susceptible to EMF-related disturbances.

The submarine cable installation for this project involves burial at a sufficient depth (circa 2 meters), within a sediment-dominated seabed, which will naturally shield EMF emissions. The project site is not located within a critical migratory pathway for highly EMF-sensitive species, and dominant species in the area are not expected to exhibit significant behavioral or physiological responses to the anticipated EMF levels. Given these factors, the impact magnitude is assessed as **Small**, the resource/receptor sensitivity as **Low**, and the overall impact significance as **Negligible**.

[86] Woodruff, D. L., Cullinan, V. I., Copping, A. E., & Marshall, K. E. (2012). *Effects of Electromagnetic Fields on Fish and Invertebrates: Task 2.1.3: FY 2011 Progress Report*. Pacific Northwest National Laboratory.

Table 6-19 Impact Significance of EMF from Submarine Cable

Impact	EMF effect from Submarine Cable				
Impact Nature	Negative		Positive		Neutral
Impact Type	Direct		Indirect		Induced
Impact Duration	Temporary	Short-term		Long-term	Permanent
Impact Extent	Local		Regional		Transboundary
Impact Scale	Limited to wind farm area				
Frequency	Operation phase				
Likelihood	Likely				
Impact Magnitude	Positive	Negligible	**Small**	**Medium**	Large
Resource /Receptor Sensitivity	**Low**		Medium		**High**
Impact Significance	**Negligible**	Minor	Moderate	Major	Critical
	Significance of impact is considered **Negligible**				
Residual Magnitude	Positive	**Negligible**	Small	Medium	Large
Residual Impact Significance	**Negligible**	Moderate		Major	Critical
	Significance of impact reduced to **Negligible**				

APPENDIX A PROJECT DESCRIPTION



ESIA for Project Anma

Project Description

7 October 2024

Project No.: 06927940692794

The business of sustainability

ERM

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Signature Page

7 October 2024

ESIA for Project Anma

Project Description

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Acronyms and Abbreviations

AWC	Anma Offshore Wind Energy
AZE	Alliance for Zero Extinction
BAP	Biodiversity Action Plan
bgs	below ground surface
CCRA	Climate Change Risk Assessment
CHA	Critical Habitat Assessment
CPS	Cable Protection System
CRM	Collision Risk Modelling
EBL	Electric Business License
E&S	Environmental and Social
EAAF	East Asian–Australasian Flyway
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EP	Equator Principles
EPAP	Equator Principles Action Plan
EPC	Engineering, Procurement and Construction
EPFI	Equator Principles Financial Institutions
ERM	ERM Korea Ltd.
EN	Endangered
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESG	Environmental Social Governance
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESS	Environmental and Social Standards
EXC	Export Cable
FA	Fisheries Act
FDA	Fishery Damage Assessment
FDIA	Fishery Damage Impact Assessment
FOU	Foundation
FTEs	Full Time Employees

GHG	Greenhouse Gas
GIPS	Geotechnical Information Portal System
GIS	Gas Insulated Switchgear
HDD	Horizontal Directional Drilling
H&S	Health and Safety
HR	Human Resources
IAC	Inter Array Cable
IBA	Important Bird Areas
IBAT	Integrated Biodiversity Assessment Tool
ID	Identity
IESC	Independent E&S Consultant
IFC	International Finance Corporation
IPA	Important Plant Areas
ISO	International Organisation for Standardisation
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
KEPCO	Korea Electric Power Corporation
kV	kilovolt
LC	Least Concern
LIDAR	Laser Imaging, Detection And Ranging
LRP	Livelihood Restoration Plan
LURIS	Land Use Regulation Information Service
MEMA	Marine Environment Management Act
MoE	Ministry of Environment
NGIC	National Groundwater Information Center
NGO	Non-Governmental Organisation
OHS	Occupational, Health and Safety
ONS	Onshore Substation
OSS	Offshore Substation
OPPW	Occupancy Permit of Public Waters
PDCA	Plan-Do-Check-Act
PFDIA	Preliminary Fishery Damage Impact Assessment
PS	Performance Standard
PWMRA	Public Waters Management and Reclamation Act

Q	Quarter
RAP	Resettlement Action Plan
SEP	Stakeholder Engagement Plan
SGRE	Siemens Gamesa Renewable Energy
SOP	Standard Operating Procedure
TJB	Transition Joint Bay
TMS	Tele-Monitoring System
VU	Vulnerable
WBG	World Bank Group
WGS	World Geodetic System
WTG	Wind Turbine Generator
XLPE	Cross-linked polyethylene

1. OVERVIEW

The Project consists of two (2) phases - Phase 1 and Phase 2 - corresponding to Electricity Business Licences (EBL 1 and EBL 2). The Project will utilise Siemens Gamesa Renewable Energy's (SGRE) SG DD-236 14.0 MW wind turbine generators (hereinafter as "WTGs"). Phase 1 consists of 16 WTG units with a permitted total capacity of 224 MW and Phase 2 consists of 22 WTG units with a permitted total capacity of 308 MW. The Project's wind turbines area will take up a total area of 80 km^2 of public waters.

The WTGs will be connected via 66kV Inter-Array submarine cables (hereinafter as "IACs" - Phase 1: circa 51 km and Phase 2: circa 69 km) to the Offshore Substation (hereinafter as "OSS") (125°56'32.86"E, 35°19'44.00" N[1]).

230kV export submarine cables (hereinafter as "EXCs") will then be routed to the Onshore Substation (hereinafter as "ONS"). And then, using 154kV onshore cables, electricity will be connected to the West Yeonggwang (or Seoyeonggwang) KEPCO onshore substation operated by KEPCO.

[1] WGS 84

2. PROJECT LOCATION

The area proposed for installation of the Project WTGs (the Site) is situated in the Yellow Sea (or West Sea) West of Anma Island, Yeonggwang-gun, Jeollanam-do, South Korea. The coordinates of the WTGs, as well as the Project location and its surrounding areas are presented in Table 2.1 and Figure 3.1 respectively.

Table 2.1 Coordinate for the WTGs

WTG ID for Phase 1	Coordinate (WGS 84)		WTG ID for Phase 2	Coordinate (WGS 84)	
	Longitude ±dddmmss.ss	**Latitude ±ddmmss.ss**		**Longitude ±dddmmss.ss**	**Latitude ±ddmmss.ss**
A01	125°50'4.5"	35°22'24.1"	C01	125°50'5.1"	35°19'2.58"
A02	125°50'39.6"	35°22'24.1"	C02	125°50'43.46"	35°19'2.59"
A03	125°51'14.7"	35°22'24.1"	C03	125°51'21.86"	35°19'2.63"
A04	125°51'49.7"	35°22'24.0"	C04	125°52'0.23"	35°19'2.63"
A05	125°52'24.8"	35°22'24.0"	C05	125°52'38.63"	35°19'2.65"
A06	125°52'59.9"	35°22'24.0"	C06	125°53'17.03"	35°19'2.68"
A07	125°53'34.9"	35°22'24.0"	C07	125°53'55.39"	35°19'2.7"
A08	125°54'10.0"	35°22'23.9"	C08	125°54'33.79"	35°19'2.72"
A09	125°54'45.1"	35°22'23.9"	C09	125°55'12.15"	35°19'2.73"
A10	125°55'20.1"	35°22'23.8"	C10	125°55'50.55"	35°19'2.75"
A11	125°55'55.2"	35°22'23.8"	C11	125°56'28.91"	35°19'2.79"
A12	125°56'30.3"	35°22'23.8"	D01	125°50'5.56"	35°17'8.65"
B01	125°50'5.4"	35°20'55.2"	D02	125°50'43.94"	35°17'8.59"
B02	125°52'13.8"	35°20'55.2"	D03	125°51'22.33"	35°17'8.56"
B03	125°54'22.3"	35°20'55.0"	D04	125°52'0.67"	35°17'8.53"
B04	125°56'30.7"	35°20'54.9"	D05	125°52'39.05"	35°17'8.49"
			D06	125°53'17.4"	35°17'8.46"
			D07	125°53'55.78"	35°17'8.41"
			D08	125°54'34.17"	35°17'8.4"
			D09	125°55'12.51"	35°17'8.35"
			D10	125°55'50.9"	35°17'8.33"
			D11	125°56'29.24"	35°17'8.27"
Offshore Substation	125°56'32.86"	35°19'44.00"			

Source: AWC dated 18 July 2023

3. PROJECT HISTORY

3.1 Key Milestones

The achieved milestones of the Project have been summarized below:

- October 2017: Installation of a wind condition measuring instrument (Hoeng-do onshore LiDAR) for preparation of electric business license (EBL) for Phase 1;
- April 2019: Acquired EBL for Phase 1;
- May 2019: Installation of wind condition gauge (offshore LiDAR) for preparation of EBL for Phase 2;
- July 2020: Acquired EBL Alteration for Phase 1, and acquired EBL for Phase 2;
- April 2022: Submission of draft Environmental Impact Assessment for Anma Project (hereinafter Draft Regulatory EIA);
- December 2022: Submission of Final Regulatory EIA (updated January 2023);
- June 2023: Submission of Supplementary Regulatory EIA;
- July 2023: Obtained EIA agreement;
- August 2023: Marine Traffic Safety Assessment approved.

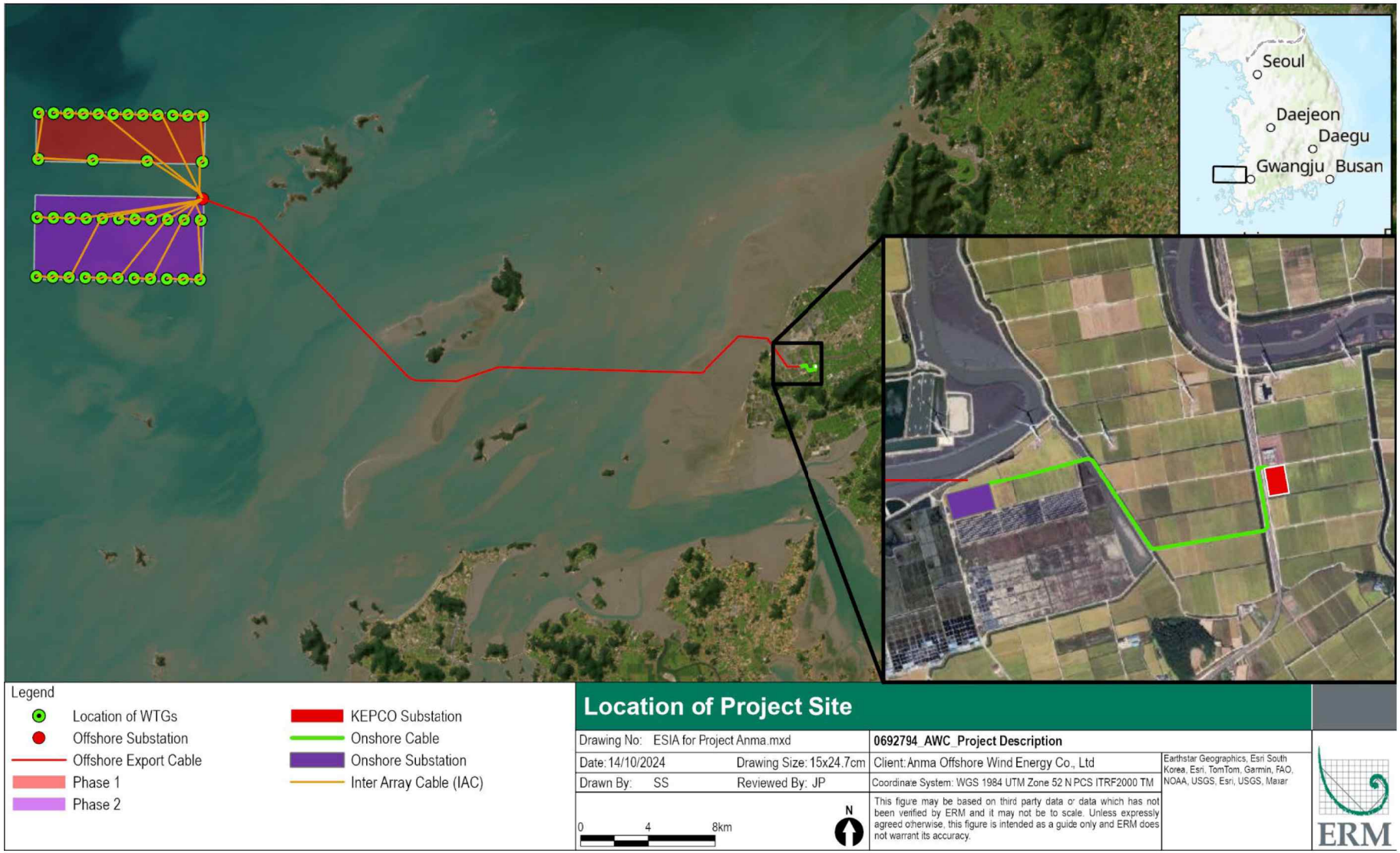
3.2 Versions and Alterations

- Version 1: Draft Regulatory EIA, dated April 2022;
- Version 2: Final Regulatory EIA, dated December 2022 and Supplementary Regulatory EIA, dated June 2023; and
- Version 3: As of August 2023, it is anticipated that the preferred components, layouts and selected construction methods that are incorporated into this ESIA will result in an update process in the EIA and all necessary permits (hereinafter Version 3 AWF).

Table 3.1 History of Project Components

	WTGs numbers & capacity	WTGs type	OSS location & type	IAC location & type	EXC location & type	ONS location & type	Onshore cable location & type	Other
Version 1	528 MW 66 WTGs-8 MW	WinDS8000 Doosan	Juk-do onshore substation	66 kV Phase 1: 43.3 km (3 strands) Phase2: 57.8km (4 strands)	154kV XLPE 800 ㎟ 3-core, (approx. 40.4km)	1508-1 Jisan-ri, Baeksu-eup, Yeonggwang-gun, Jeollanam-do	154kV XLPE 800 ㎟ single core, 12 wires (about 7.6km)	Songi-do overhead line: approx. 1.5 km
Version 2	546 MW 39 WTGs-14 MW	SG DD-236 SIEMENS Gamesa	Offshore substation 125°53'55.2"E 35°19'45.45"N	66 kV Phase 1: approx. 32.0 km Phase2: approx. 36.2 km	154kV XLPE 800 ㎟ 3-cores, (approx. 44.9km)	286-3 Songam-ri, Yeomsan-myeon, Yeonggwang-gun, Jeollanam-do	154kV XLPE 2000 ㎟ single core, (approx. 1.1km × 6 strands)	No overhead line
Version 3	532 MW 38 WTGs-14 MW	No change	Offshore substation 125°56'32.86"E 35°19'44.00"N	66 kV Phase 1: approx. 51 km Phase 2: approx. 69 km	230kV XLPE 3-core Approx.41.6 km route length	No change	154kV XLPE single core Approx. 1.5 km route length	No change

Source: Draft Regulatory EIA /Final and Supplementary Regulatory EIA / Version 3 AWF



Note: Some final designs are still under validation process and thus will be updated in relevant documents later.

Source: Version 3 AWF

Figure 3.1 Location of Project Site

4. PROJECT FACILITIES AND COMPONENTS

The main Project components as per the Final Regulatory EIA is summarized below:

- A wind turbines area divided in 2 areas (i.e. Phase 1 and Phase 2), comprised of 38 WTGs with a permitted total capacity of 532 MW;
- 38 SGRE's SG DD-236 14.0 MW WTGs comprised of the tower, foundation, nacelle, hub, rotor, and rotor blades;
- circa 120 km of 66 kV Inter-Array Cables (total for both Phase 1 and Phase 2);
- One (1) Offshore Substation (converting 66 kV to 230 kV);
- Two circuits, each circa 42 km of 230kV offshore export cable (connecting from Offshore Substation to the mainland);
- A Transition Joint Bay at the landing point, receiving the 230kV offshore export cable;
- Two circuits, circa 150m each of 230kV onshore cable (connecting the Transition Joint Bay to the Onshore Substation);
- One (1) Onshore Substation (converting 230 kV to 154kV);
- Two circuits, each circa 1.5 km of 154 kV onshore cable (connecting from the Onshore Substation to the KEPCO substation being the grid connection point); and
- One (1) Korea Electric Power Corporation (KEPCO) substation (owned and operated by KEPCO).

For clarity:

One circuit of offshore export cable refers to one (1) cable, each with three (3) power conductors within the cable.

One circuit of onshore cable refers to three (3) cables, each with one (1) power conductor within the cable.

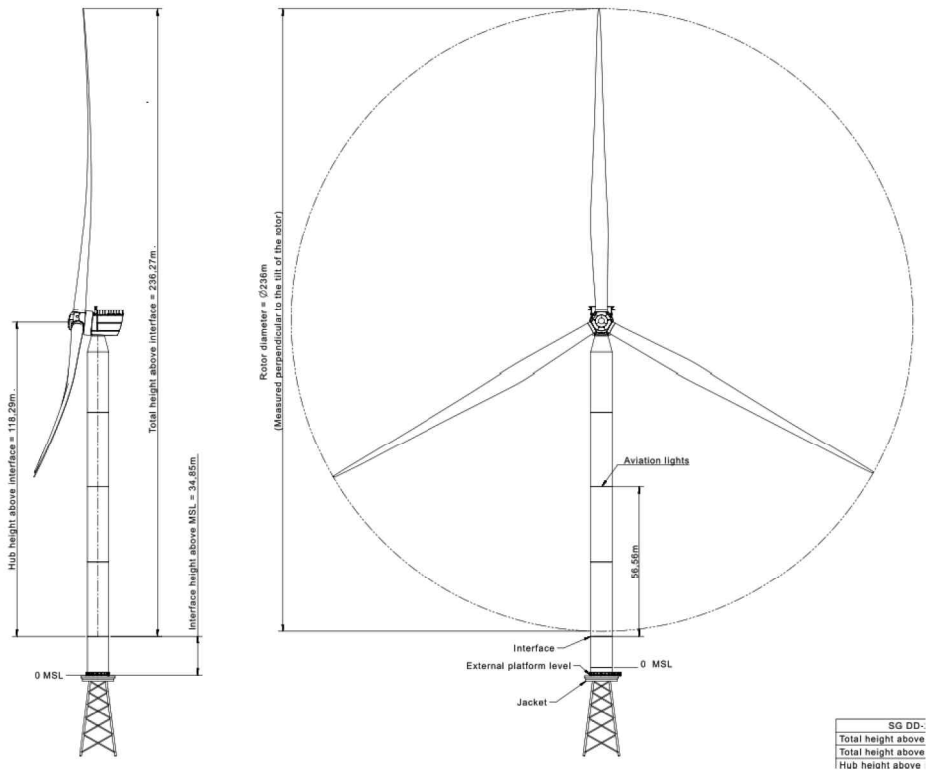
4.1 Wind Turbine Generator

The Version 3 configuration of wind turbines layout has been developed with 38 WTGs of 14 MW nominal capacity. Given the geographical context of the project site within the 'Northeast Asia-Oceania' Migratory Bird Flyway (EAAF) and its proximity to the breeding habitats of various marine bird species (such as Chilsan Island), a decision was made to curtail the number of WTGs and accordingly modify their arrangement. Elaborated information pertaining to the individual WTGs can be found in Table 4.1.

Table 4.1 WTG details

WTG Components	Parameter	Specifications
WTG	Type Class	SG DD-236
ROTOR	Type	3-bladed, horizontal axis
	Position	Upwind
	Diameter (m)	236
	Length of blade (m)	115
	Swept area (m^2)	43,500
TOWER	Type	Cylindrical and tapered tubular
	Hub height (m)	153
	Total height from Mean Sea Level (MSL) (m)	270
OPERATION DATA	Cut in Wind speed (m/s)	3
	Nominal Power (m/s)	at 12
	Cut out wind speed (m/s)	28

Source: Final and Supplementary Regulatory EIA / Version 3



Source: AWC dated 4 August 2023

Figure 4.1 Conceptual Figure of the WTG

4.2 Inter-array Cables (IAC) and Offshore Export Cables (EXC)

The Version 3 design entails all the IAC being concentrated to an Offshore Substation, and then, offshore export cables that directly connects with the mainland. The Version 3 plan is for all the inter array submarine cables to be 66 kV cross linked polyethylene cable (XLPE) submarine cable, the length of which is circa 51 km and 69 km for Phase 1 and Phase 2 respectively, and two (2) circuits of 230kV offshore export cables, each with a length of circa 42 km.

Detailed location of IAC and Offshore EXC are presented above in Figure 3.1.

The IACs will be installed to a target burial depth of between 3.0m to 3.5m, utilising a Jet Trencher for post lay burial operations.

The EXCs will be installed to a target burial depth of between 2.0m to 3.5m, depending on the water depth along the export cable route, where deeper water sections would have a deeper target burial depth. Burial operations for the EXCs will be performed by a Jetting Sled, through simultaneous lay and bury operations.

The EXC will be installed at landfall within a Horizontal Directional Drill (HDD) duct, approximately 120m in length under the sea. Upon exiting the HDD, the EXC will be held in situ via permanent beach clamps which horizontally hang off the cable and permanently secure them in position. The EXC will be terminated externally into a GIS arrangement as fitted to the ONS within a joint bay with land cable connections into the ONS GIS Building alternatively they will be pulled and terminated directly into the ONS GIS.

4.3 Offshore Substation (OSS)

An offshore substation is selected instead of installing it in Juk-do as the final design to avoid civil complaints and to reduce the overall impact to the environmental damage and the fisheries. Compared to the onshore substation, the offshore option will involve fewer external cables, resulting in relatively less environmental and fishing impacts. The opinions on the review of the offshore substation design were collected during the information session for residents as part of Draft Regulatory EIA and are documented therein. Insights and viewpoints concerning the assessment of the offshore substation design were obtained during a resident information session, a pivotal aspect of the Draft Regulatory EIA.

Currently the Offshore Substation is planned to transform the 66kV transmission voltage from the wind turbines into 230kV export transmission voltage. Table 4.2 shows the detail specification and location of OSS.

Detailed location of OSS is presented above in Figure 3.1.

Table 4.2 Offshore Substation Details

Parameter	Specification
Size	Topside: 32 m (Width) x 37 m (Depth) x 30 m (Height) Jacket: 23 m (Bottom Width) x 19 m (Top Width) x 55 m (Height) Pile: 73 m (Depth) x 12 EA
Location	125°56'32.86" E, 35°19'44.00" N

Source: Final Regulatory EIA / Version 3

4.4 Onshore Export Cable

The current landfall is in Yeomsan-myeon, Yeongwang-gun, Jeollanam-do. AWC plans to construct a 154 kV buried onshore cable route from their Onshore Substation to KEPCO onshore substation (West Yeonggwang KEPCO onshore substation). Most of the onshore underground cable route is expected

to be routed along existing roads, or then through rice paddies having been acquired and close other renewable power plants.

4.5 Onshore Substation (ONS)

The power that is generated (690 V) by the WTG will be boosted by the primary boosting transformer (690 V/66 kV) and then transmitted by the IAC (66 kV) to the Offshore Substation. The power will then be directed to the secondary step-up transformer (66 kV/154 kV) at the Offshore Substation, which will be connected to the grid connection point; Seoyeonggwang substation operated by KEPCO.

The AWC Onshore Substation will be in 286-3 Songam-ri, Yeomsan-myeon, Yeonggwang-gun, Jeollanam-do. The area is planned to be 1,550.41 m^2. The station will consist of three (3) buildings which include a substation, an office, and a warehouse. The office will consist of a three-story building, while the substation and warehouse will consist of one-story building each.

Figure 3.1 above shows the detail location of project site for onshore area.

4.6 Military Radar

The Project will install two radars structures upon request of Ministry of Army to compensate the obstruction generated by the WTGs once installed. The details and the localizations of the two structures shall be kept confidential due to the nature of the facilities. One radar shall be operating offshore and one radar shall be operating onshore.

The offshore radar will comprise a foundation and a top-side structure. The foundation type is yet to be determined and the dimensions of the top-side structure is expected to be no greater than 10mx10mx7.5. The construction is expected to start no earlier than Q1 2026. A maximum of 20 staff is estimated at peak time of installation phase and operation shall be unmanned.

The onshore radar will be installed on Imja island in Sinan province. The structure is estimated to comprise a steel tower measuring 5x5x10 meters. The construction is expected to earlier than May 2025 and the duration of the construction shall not exceed 6 months. A maximum of 7 persons shall be estimated during civil works and a maximum of 4 persons during steel tower installation. Operation phase planned to be unmanned.

4.7 Bird Monitoring Radar

As stipulated in the Final Regulatory EIA, a bird monitoring radar is scheduled to be established on Hoeng-do for a duration of one (1) year. The installation of the 2D Terma Scanter-5000 Radar is anticipated. The cabinet housing the monitoring system is approximately 3 meters in height, 3 meters in depth, and 3 meters in width. The antenna's height is estimated to be around 5.5 meters.

The exact placement and specifications of the monitoring equipment are currently pending finalization. Comprehensive details concerning this aspect will be provided at a later stage once they are confirmed.

4.8 Operation and Maintenance (O&M)

The project encompasses two distinct O&M harbour alternatives. One existing facility and one other location are matching the requirements for O&M harbour, however, the location of the O&M harbour is not available before lease contract execution due to high competition risk.

5. SUMMARY ON CONSTRUCTION ACTIVITIES

The purpose of this section is to provide a comprehensive overview of the high-level description of the EPC Package components and the EPC Schedule for the Project.

The EPC Package consists of various components essential for the successful execution of the Project. These components are designed to ensure optimal efficiency and adherence to project requirements. The detailed breakdown of each component, along with its specific role in the Project, is outlined below.

5.1 Foundations (FOU)

5.1.1 Pin-pile

The supplier responsible for the pin-pile has not been determined. The piling process involves several essential steps, including fabrication, transportation, and pile driving. The detailed description of each process involved in the piling work is outlined below:

1. Fabrication of piles;
2. Load out of piles onto vessel or barge;
3. Transport to offshore site; (In parallel prepare noise mitigation measures if required)
4. Upending of piles by installation vessel;
5. Lower piles to ground and wait until self-penetration is reached;
6. Lower hammer on top of pile;
7. Start pile driving activities until target depth is reached; and
8. Once done, lift hammer back to installation vessel, move to next location

Their primary activities are scheduled to commence in the third quarter of 2024, with the peak of their operations anticipated in the second quarter of 2025. At its peak, the estimated number of staff required will be approximately 200, and this period is expected to last for approximately 10 weeks. It is projected that around 10% of the workforce will consist of foreign workers, and the planned worker's accommodation is estimated to accommodate around 100 individuals.

5.1.2 Jacket

Jacket will be installed on the pin-pile after completion of pin-pile installation. The supplier responsible for the fabrication and installation of the windfarm jacket has not been finalized. The installation process of the windfarm jacket can be described as follows:

1. Fabrication of jacket;
2. Load out of Jacket onto vessel or barge;
3. Transport to offshore site lift jacket from barge and insert into pre-installed pin piles;
4. Start grouting to finalize connection between jacket and grout; and
5. Move to next location

The main activities of the Project are scheduled to commence in the fourth quarter of 2024, with the peak of their activities anticipated in the first quarter of 2026. During this peak period, it is estimated that approximately 200 staff members will be involved, and the activity is expected to last for approximately 10 weeks. It is anticipated that around 10% of the workers will be foreign workers.

5.2 Inter Array Cable

Installation of Inter Array Cable (IAC) will commence after completion of jacket installation. The contractor responsible for the installation of IAC has not been finalized. The main activity for the IAC installation is scheduled to begin by mid 2026. The IAC installation will involve the following key activities.

- Site Preparation

1. Preparation of equipment for pull-in at the WTG foundation / OSS Jacket;
2. Pre-lay grapnel run on the seabed following the cable route; and
3. Pre-lay survey.

- Installation

1. Mobilization of installation vessels and crew accommodations;
2. Cable loading from factory onto the installation vessel;
3. Removal of J-tube covers;
4. Cable pull-in (1st Cable End) including Cable Protection System (CPS) installation;
5. Cable surface laying;
6. Cable pull-in (2nd Cable end) including CPS installation;
7. Post lay survey;
8. Post lay burial, with jet trencher;
9. Post lay burial survey;
10. Remedial burial (if necessary only) with a jet trencher;
11. Remedial burial survey; and
12. Installation of rock bags on CPS at the WTG/ OSS (if necessary only).

During the peak period of their activities, which is expected to span from March 2026 to January 2027, the IAC installation team will consist of an estimated total of 100 - 160 staff members. These staff members will be further divided into two main groups. The first group, known as the Office Support / Management Teams, will comprise approximately 20 - 60 staff members. They will be responsible for providing support and managing various aspects of the IAC installation project. For their convenience, these team members will be accommodated in either major cities or locations near / around the port area depending on their function and role.

The second group is the Transport and Installation Vessel Crew, which will consist of approximately 80 - 100 staff members. This group will play a direct and hands-on role in the actual installation of the IAC. During their construction activities at sea, they will be accommodated either on the cable laying vessel (CLV) and a Service Operations Vessel (SOV).

Throughout the peak period, AWC expects that 10 - 30% of the workers in both groups may be foreigners. As the Project progresses and specific roles and requirements become clearer, further details regarding staffing and accommodation arrangements will be finalized and communicated accordingly.

5.3 Offshore Export Cable

Export Cable installation will occur almost in parallel to IAC installation. The contractor responsible for the installation of the offshore export cable has not been determined yet. The preparation of the offshore export cable route (such as HDD and TJB construction) is scheduled to begin in October

2024, with the actual cable installation set to commence in February 2026. The process of offshore export cable installation is described below:

- Site Preparation

1. Construction of HDD;
2. Set up of silt curtains at excavation sites;
3. Excavation of Shore end landing approach;
4. Set up of pre-excavated trench wall stabilisation measures;
5. Set up of cable rollers in the pre-excavated trench;
6. Preparation of equipment for pull-in at the OSS Jacket and at the TJB area at the ONS;
7. Pre-lay grapnel run on the seabed following the cable route; and
8. Pre-lay survey.

- Installation

1. Mobilization of installation vessels with cable storage and cable handling equipment;
2. Laying of cable section 1 of 2, on Circuit 1
    a. Cable loading from factory onto the installation vessel;
    b. Transit of the installation vessel from the factory to the near shore section near the mainland;
    c. Cable shore end landing / beach pull-in (1st Cable End);
    d. Backfilling of pre-excavated trenches of Circuit 1
    e. Simultaneous lay and bury of the cable with a jetting sled towards the OSS;
    f. Lay down of cable end at the middle of the route (near Gagi Island);
    g. Return to the submarine cable factory;
3. Laying of cable section 1 of 2, on Circuit 2
    a. Cable loading from factory onto the installation vessel;
    b. Transit of the installation vessel from the factory to the near shore section near the mainland;
    c. Cable shore end landing / beach pull-in (1st Cable End);
    d. Backfilling of pre-excavated trenches of Circuit 2;
    e. Simultaneous lay and bury of the cable with a jetting sled towards the OSS;
    f. Lay down of cable end at the middle of the route (near Gagi Island);
    g. Return to the submarine cable factory;
4. Laying of cable section 2 of 2, on Circuit 1
    a. Cable loading from factory onto the installation vessel;
    b. Transit of the installation vessel from the factory to the OSS;
    c. Cable pull-in (1st Cable End) at the OSS;
    d. Simultaneous lay and bury of the cable with a jetting sled towards the middle of the route;
    e. Lay down of cable end at the middle of the route (near Gagi Island);
5. Laying of cable section 2 of 2, on Circuit 2
    a. Cable loading from factory onto the installation vessel;

b. Transit of the installation vessel from the factory to the OSS;
c. Cable pull-in (1st Cable End) at the OSS;
d. Simultaneous lay and bury of the cable with a jetting sled towards the middle of the route;
e. Lay down of cable end at the middle of the route (near Gagi Island);

6. Cable joint assembly, deployment and protection of both Circuits 1 and 2 offshore joints;
7. Post installation survey;
8. Remedial burial (if necessary only) with a jet trencher; and
9. Installation of rock bags on CPS at the OSS (if necessary only).

During the peak of construction activities, expected to span from March to November 2026, approximately 170 to 260 staff will be involved in the installation process. These personnel will be divided into two main groups: the Office Support / Management Teams and the Transport and Installation Vessel Crew.

The Office Support / Management Teams, comprising about 20 to 60 staff, will be accommodated either in major cities or near / around the port depending on their function and role. Their primary responsibilities will be overseeing and managing various aspects of the installation, ensuring efficient coordination, and addressing any operational challenges.

On the other hand, the larger portion of the workforce, consisting of approximately 150 to 200 staff, will be the Transport and Installation Vessel Crew. These workers will be accommodated onboard the vessels (Cable Laying Barge, Support Barges, Jointing Jack Up Barge, etc.) during their activities.

5.4 Offshore Substation

The supplier responsible for the installation of offshore substation has not yet been determined. Installation of pin-pile and jacket will commence by end of 2026, and topside installation will follow. The process of offshore substation installation is described below:

1. Fabrication of substation components from outside of Korea (Singapore, Indonesia, or India);
2. Transportation of the assets (jacket, pin piles and topside) to site; and
3. Jacket installation, piling, topside installation and commissioning.

Estimated number of staff during installation and commissioning of Offshore Substation is approximately 12 – 24, 20% of whom are expected to be South Korean nationals, with the remainder foreign passport holders. Peak of their activities is expected to be December 2025 and January 2026 then September and October 2026. And all staff will be accommodating in vessel during their activities.

5.5 Onshore Substation (ONS) & Onshore Cable

The supplier responsible for the installation of onshore substation and Onshore Cable has not yet been determined. Their main construction activities will commence November 2024. The process of Onshore Substation and Export Cable installation are described below:

1. Installation of Onshore Cable between TJB and Onshore Substation;
2. Transmission cable installation between ONS - KEPCO substation;
3. Civil work: piling, foundation etc;
4. Electrical work: mesh grounding;
5. ONS building construction;
6. Electrical system installation;

7. Commissioning; and
8. KEPCO inspection.

The peak of construction activities is expected to be Q1 (construction) and Q3 (installation of electrical system) 2026 with each peak period expected to be 10 weeks respectively. Estimated number of staff during the peak will be approximately 70 - 100 (including vessel crew) who will be accommodated in Yeonggwang or Gwangju during their activities.

5.6 WTG

Siemens Gamesa Renewable Energy has been appointed as the WTG supplier for the Project. Their main construction activities are scheduled to commence around January 2027. The assembly and installation process of WTG are described below:

1. Transport of WTG components to the pre-assembly harbour;
2. Pre-assembly works (e.g. assembly of tower sections final preparation of blades and nacelles);
3. Transport of pre-assembled main components to the offshore windfarm;
4. WTG installation;
5. WTG commissioning and testing; and
6. Hand over to the Operations and Maintenance.

During the peak period of their activities, which is expected to span from Q2 to Q3 2027 (approximately 16 - 25 weeks), Siemens Gamesa Renewable Energy will conduct commissioning and installation processes concurrently. The estimated number of staff during this phase will be around 150 - 170 personnel, which includes the vessel crew. These staff members, predominantly foreigners, will be lodged in general accommodation such as hotels and motels in Mokpo, Gwangju, and the vessels while carrying out their tasks.

5.7 Transition Joint Bay (TJB)

However, it is planned that the transition joint bay installation will be incorporated as part of the Offshore Export Cable installation. The process of transition joint bay installation is described below:

1. Set up access roads, site fencing, site offices, etc;
2. HDD;
3. Excavate TJB Location;
4. Construction of TJB;
5. Install accessories and appliances inside the TJB;
6. Backfill of surrounding location; and
7. Reinstatement of condition (i.e. removal of fencing, site offices, access roads etc.).

During the peak of construction activities, which is expected to last approximately eight (8) weeks, the estimated number of staff will be around 15 to 30 individuals. Most of these staff members are expected to be South Korean nationals. To support their activities, suitable accommodations will be provided in either Yeonggwang or Gwangju.

5.8 Operation and Maintenance (O&M)

For the O&M, there might be modification work to the expected site. The following modification would be anticipated:

Onshore

1. Ground clearing and excavation works;
2. Laying of reinforced concrete (specifically for the warehouse and parking area);
3. Office building and warehouse construction (as per above dimensions);
4. Installation of water, electrical and sewage connectivity, depending on existing infrastructure; and
5. Car parking gravel and road gravel (depending on existing infrastructure).

Offshore

1. Development and re-paving of the existing quayside, including potential excavation and laying of reinforced concrete;
2. Marine dredging and construction of pontoons;
3. Installation of quayside crane;
4. Installation of water, electrical and sewage connectivity, depending on existing infrastructure; and
5. Car parking gravel and road gravel (depending on existing infrastructure).

5.9 Military Radar

The onshore radar tower is expected to have a height of approximately 14 meters and an area of 47.0 m^2. However, due to the confidentiality of military radar operations, specific details regarding the location and specifications will be updated at a later stage once they are finalized.

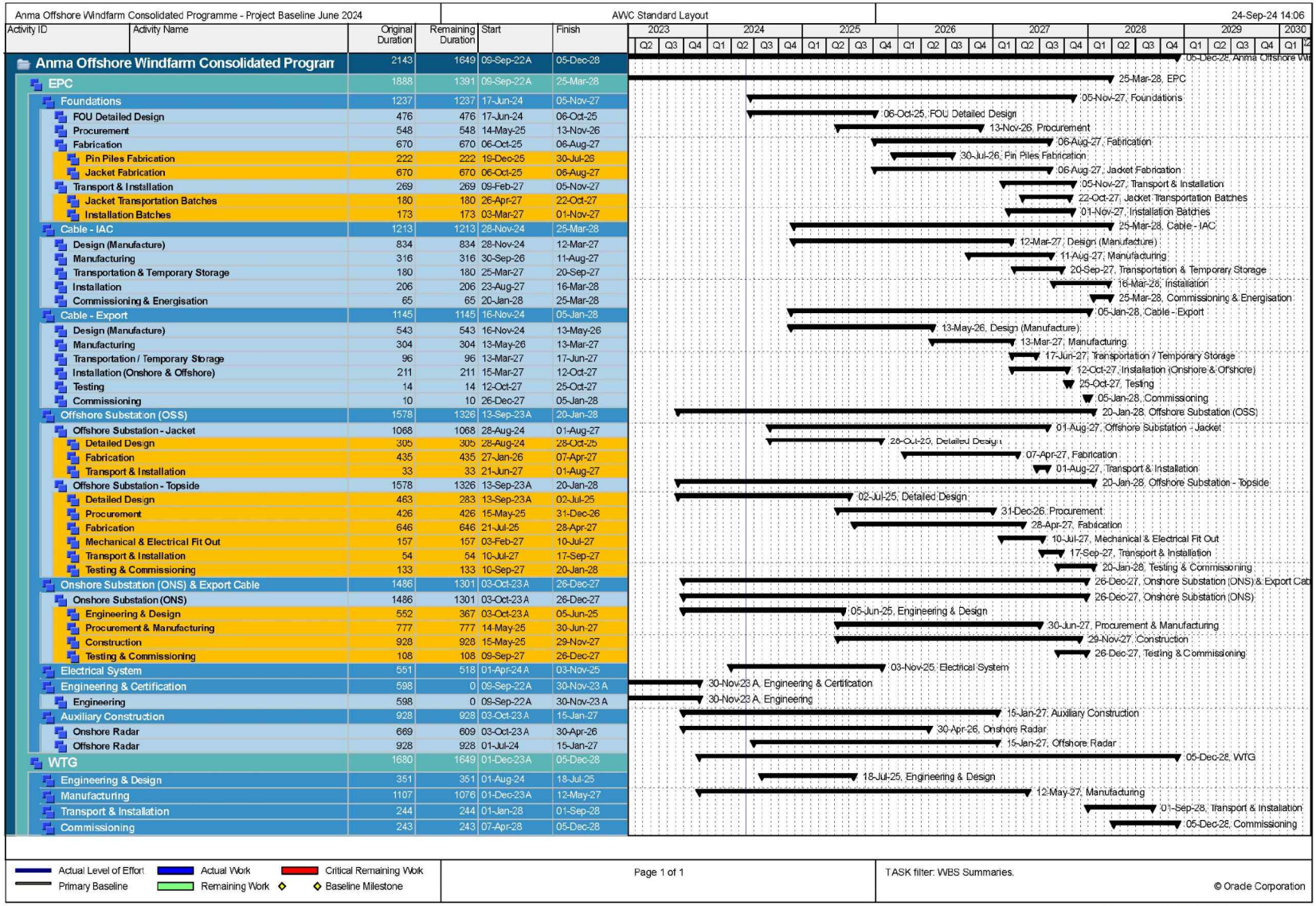
5.10 Bird Monitoring Radar

The installation of the 2D Terma Scanter-5000 Radar is anticipated. The cabinet housing the monitoring system is approximately and maximum 3 meters in height, 3 meters in depth, and 3 meters in width. The antenna's height is estimated to be around 5.5 meters.

The exact placement and specifications of the monitoring equipment are currently pending finalization. Comprehensive details concerning this aspect will be provided at a later stage once they are confirmed.

6. EPC SCHEDULE

Figure 6.1 shows the general EPC schedule planned. The EPC Schedule is a vital component of the Project plan, serving as a comprehensive roadmap that outlines the timeline and sequence of activities for the successful execution of the Project.



Reference: AWC - High Level Execution Schedule (August 2024)

Figure 6.1 Anma Offshore Wind Power Project Master Plan

APPENDIX B LIST OF SPECIES FROM EIA

Result of Terrestrial Insects Surveys

Scientific Name	IUCN*** (2022-2)	Korean Red List (2014)	Field Surveys		
			1st	2nd	Total
Gametis jucunda	-	-	-	○	●
Coccinella (Coccinella) septempunctata	-	-	○	-	●
Harmonia axyridis	-	-	○	○	●
Holotrichia diomphalia	-	-	-	○	●
Mimela splendens	-	-	○	-	●
Tenodera sinensis	-	-	○	-	●
Calliphora lata	-	-	○	-	●
Lucilia illustris	-	-	○	-	●
Sarcophaga melanura	-	-	○	○	●
Eristalis cerealis	-	-	○	-	●
Eristalis tenax	-	-	○	○	●
Metasyrphus nitens	-	-	○	-	●
Gymnosoma rotundata	-	-	○	-	●
Bothrogonia ferruginea	-	-	○	-	●
Cletus punctiger	-	-	○	-	●
Cletus schmidti	-	-	○	-	●
Homoeocerus (Tliponius) unipunctatus	-	-	○	-	●
Hygia (Colpura) lativentris	-	-	○	○	●
Geocoris (Piocoris) varius	-	-	○	-	●
Metochus abbreviatus	-	-	○	-	●
Nysius plebejus	-	-	○	○	●
Aelia fieberi	-	-	-	○	●
Carbula putoni	-	-	○	-	●
Dolycoris baccarum	-	-	-	○	●
Eurydema dominulus	-	-	○	○	●
Eurydema gebleri gebleri	-	-	-	○	●
Lelia decempunctata	-	-	-	○	●
Picromerus lewisi	-	-	○	-	●
Isyndus obscurus obscurus	-	-	○	-	●
Sphedanolestes (Sphedanolestes) impressicollis	-	-	○	○	●
Liorhyssus hyalinus	-	-	○	-	●
Rhopalus (Aeschyntelus) sapporensis	-	-	○	-	●
Apis mellifera	-	-	○	-	●
Formica japonica	-	-	○	-	●
Parnara guttata	-	-	○	-	●
Celastrina argiolus	-	-	○	-	●
Lycaena phlaeas	-	-	○	-	●
Zizeeria maha	-	-	○	-	●
Kaniska canace	-	-	○	-	●
Libythea lepita	-	-	○	-	●
Limenitis doerriesi	-	-	○	-	●
Neptis sappho	-	-	○	-	●

Scientific Name	IUCN*** (2022-2)	Korean Red List (2014)	Field Surveys		
			1st	2nd	Total
Polygonia c-aureum	-	-	○	○	●
Vanessa cardui	LC	-	-	○	●
Vanessa indica	-	-	○	○	●
Ypthima argus	-	-	○	-	●
Papilio xuthus	-	-	○	-	●
Colias erate	-	-	○	○	●
Eurema mandarina	-	-	○	-	●
Pieris rapae	-	-	○	○	●
Salma amica	-	-	-	-	-
Spatulipalpia albistrialis	-	-	-	-	-
Stericta kogii	-	-	-	-	-
Teliphasa albifusa	-	-	-	-	-
Family Saturniidae	-	-	-	-	-
Actias artemis	-	-	-	-	-
Anax parthenope julius	-	-	-	○	●
Crocothemis servilia mariannae	LC	-	○	-	●
Orthetrum melania	LC	-	○	-	●
Sympetrum eroticum	LC	-	○	-	●
Sympetrum infuscatum	LC	-	-	○	●
Platycnemis phyllopoda	LC	-	○	-	●
Oedaleus infernalis	-	-	○	○	●
Trilophidia annulata	-	-	○	-	●
Loxoblemmus arietulus	-	-	-	○	●
Teleogryllus (Brachyteleogryllus) emma	-	-	-	○	●
Hexacentrus japonicus	-	-	-	○	●
Paratlanticus ussuriensis	-	-	○	-	●
Phaneroptera falcata	-	-	-	○	●
Phaneroptera nigroantennata	-	-	○	○	●
Total			51	26	64

Source: Final EIA

***** International Union for the Conservation of Nature (IUCN) Red List**

Least Concern (LC): Widespread and abundant.

Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.

Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.

Endangered (EN): Considered to be facing a very high risk of extinction in the wild.

Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

Results of Terrestrial Bird Survey

Scientific name	IUCN*** (2022-2)	Korean Red List (2014)	Site survey			
			1st	2nd	3rd	Overall
Anas acuta	LC	-	-	-	13	13
Anas crecca	LC	-	-	-	8	8
Anas penelope	LC	-	-	-	16	16
Anas platyrhynchos	LC	-	-	7	17	24
Anas poecilorhyncha	LC	-	11	17	21	49
Anser albifrons	LC	-	-	-	50	50
Anser fabalis	LC	-	-	-	23	23
Larus argentatus	LC	-	27	31	40	98
Larus crassirostris	LC	-	37	24	30	91
Actitis hypoleucos	LC	-	3	3	-	6
Numenius arquata	NT	-	-	2	-	2
Tringa ochropus	LC	-	-	-	3	3
Ardea alba	LC	-	45	-	-	45
Ardea cinerea	LC	-	-	-	9	9
Egretta alba alba	LC	-	-	-	15	15
Egretta garzetta	LC	-	-	2	1	3
Platalea leucorodia	LC	VU	-	-	3	3
Platalea minor	EN	VU	1	-	-	1
Streptopelia orientalis	LC	-	11	14	30	55
Alcedo atthis	LC	-	1	1	-	2
Accipiter nisus	LC	VU	-	-	1	1
Buteo buteo	LC	-	-	-	6	6
Falco subbuteo	LC	VU	1	-	-	1
Falco tinnunculus	LC	-	1	-	-	1
Phasianus colchicus	LC	-	1	2	2	5
Fulica atra	LC	-	-	12	-	12
Corvus macrorhynchos	LC	-	2	4	11	17
Cyanopica cyanea	LC	-	7	-	-	7
Garrulus glandarius	LC	-	-	-	3	3
Pica pica	LC	-	24	11	19	54
Emberiza cioides	LC	-	-	-	2	2
Emberiza elegans	LC	-	-	12	12	24
Carduelis sinica	LC	-	-	-	7	7
Hirundo rustica	LC	-	4	-	-	4
Lanius bucephalus	LC	-	2	1	5	8
Motacilla alba	LC	-	4	-	2	6
Motacilla grandis	LC	-	-	2	-	2
Monticola solitarius	LC	-	-	-	3	3
Phoenicurus auroreus	LC	-	2	4	4	10
Parus major	LC	-	2	-	9	11
Parus palustris	LC	-	-	-	13	13
Passer montanus	LC	-	242	125	80	447

Scientific name	IUCN*** (2022-2)	Korean Red List (2014)	Site survey			
			1st	2nd	3rd	Overall
Microscelis amaurotis	-	-	14	-	21	35
Sturnus cineraceus	LC	-	17	-	17	34
Paradoxornis webbianus	LC	-	49	44	85	178
Turdus eunomus	LC	-	-	-	14	14
Phalacrocorax carbo	LC	-	7	-	13	20
Dendrocopos major	LC	-	-	-	1	1
Picus canus	LC	-	-	1	1	2
Tachybaptus ruficollis	LC	-	-	-	3	3
Total Number of Species			24	20	39	50
Total Number of Individuals			515	319	613	1,447

Source: Supplementary EIA

***** International Union for the Conservation of Nature (IUCN) Red List**

Least Concern (LC): Widespread and abundant.

Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.

Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.

Endangered (EN): Considered to be facing a very high risk of extinction in the wild.

Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

Results of Wide-ranging Bird Survey (1st to 8th)

Scientific Name	IUCN*** (2022-2)	Korean Red List (2014)	St.1	St.2	St.3	St.4	St.5	St.6	St.7	St.8	St.9	Total	Living Type	Remarks
Accipiter nisus (Tickell)	LC	VU	-	-	-	-	-	-	3	1	-	4	Res	Natural Monument, Endangered Wildlife Grade II
Accipiter soloensis (Horsfield)	LC	VU	-	-	-	1	-	-	-	-	-	1	Sv	Natural Monument, Endangered Wildlife Grade II
Acrocephalus bistrigiceps Swinhoe	LC	-	-	-	-	-	-	-	1	-	-	1	Pm	-
Acrocephalus orientalis (Temminck & Schlegel)	LC	-	-	-	-	-	-	-	1	1	-	2	Sv	-
Actitis hypoleucos Linnaeus	LC	-	-	-	-	2	8	35	-	-	-	45	Pm	-
Aegithalos caudatus	LC	-	-	-	-	8	-	-	-	-	-	8	Res	-
Aegithalos caudatus magnus (Clark)	LC	-	-	-	-	66	-	-	100	105	-	271	Res	-
Aix galericulata (Linnaeus)	LC	-	-	-	-	-	-	-	4	-	-	4	Res	Natural Monument
Alcedo atthis	LC	-	-	-	-	-	2	-	-	-	-	2	SV	-
Alcedo atthis Gmelin	-	-	-	-	-	3	8	4	3	-	-	18	Sv	-
Anas acuta Linnaeus	LC	-	-	-	-	-	-	8	-	-	-	8	Wv	-
Anas clypeata Linnaeus	LC	-	-	-	-	-	-	4	-	-	-	4	Wv	-
Anas crecca crecca Linnaeus	LC	-	-	-	-	8	94	225	7	-	-	334	Wv	-
Anas falcata Georgi	NT	-	-	-	-	-	286	59	-	-	-	345	Wv	-
Anas platyrhynchos	LC	-	-	-	-	8	45	46	-	-	-	99	WV	-
Anas platyrhynchos Linnaeus	LC	-	-	-	5	3	143	396	52	-	-	599	Wv	-
Anas poecilorhyncha	LC	-	-	-	-	-	53	-	-	-	-	53	Res	-
Anas poecilorhyncha Swinhoe	-	-	-	-	-	13	117	329	14	4	-	477	Res	-
Anas querquedula Linnaeus	LC	-	-	-	-	-	-	19	-	-	-	19	Wv	-
Anas strepera	LC	-	-	-	-	-	12	-	-	-	-	12	WV	-
Anas strepera Linnaeus	-	-	-	-	-	-	24	4	-	-	-	28	Wv	-
Anser fabalis serrirostris (Latham)	LC	-	-	-	-	1	-	5	-	-	-	6	Wv	Endangered Wildlife Grade II
Anthus hodgsoni	LC	-	-	-	-	13	-	12	11	21	-	57	PM	-
Anthus hodgsoni Richmond	-	-	-	-	-	36	27	80	77	45	-	265	Pm	-
Anthus richardi	LC	-	-	-	-	-	-	-	-	5	-	5	PM	-
Anthus rubescens Temminck & Schlegel	LC	-	-	-	-	-	-	-	-	4	-	4	Wv	-
Ardea alba	LC	-	-	-	-	13	47	16	3	-	-	79	SV	-
Ardea alba alba	-	-	-	-	-	2	62	83	-	-	-	147	Wv	-
Ardea alba modesta (Gray)	-	-	-	-	-	115	735	682	20	3	3	1558	Sv	-
Ardea cinerea	LC	-	-	-	-	17	42	21	-	-	-	80	SV	-
Ardea cinerea Clark	-	-	-	-	-	163	933	1054	63	13	1	2227	Sv	-

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Arenaria interpres (Linnaeus)	LC	-	-	-	-	-	-	57	-	-	-	57	Pm	-
Aythya ferina (Linnaeus)	VU	-	-	-	-	-	9	25	-	-	-	34	Wv	-
Aythya fuligula (Linnaeus)	LC	-	-	-	-	-	7	35	-	-	-	42	Wv	-
Bubo bubo Reichenow	LC	VU	-	-	-	-	1	-	-	-	-	1	Res	Natural Monument, Endangered Wildlife Grade II
Bubulcus ibis	LC	-	1	-	-	-	-	-	1	-	-	2	SV	-
Bubulcus ibis (Boddaert)	-	-	-	-	-	-	-	73	5	-	-	78	Sv	-
Buteo buteo (Temminck & Schlegel)	LC	-	-	-	-	4	2	4	6	2	1	19	Wv	-
Butorides striata (Shrenck)	LC	-	-	-	-	-	-	2	2	-	-	4	Sv	-
Calidris acuminata	VU	-	-	-	-	-	11	-	-	-	-	11	PM	-
Calidris alba (Pallas)	LC	-	-	-	-	-	4	81	-	-	-	85	Pm	-
Calidris alpina (Viellot)	LC	-	-	-	-	-	939	3242	-	-	-	4181	Wv	-
Calidris canutus (Mathews)	NT	-	-	-	-	-	-	24	-	-	-	24	Pm	-
Calidris ruficollis (Pallas)	NT	-	-	-	-	-	197	680	-	-	-	877	Pm	-
Calidris tenuirostris (Horsfield)	EN	-	-	-	-	-	145	353	-	-	-	498	Pm	Endangered Wildlife Grade II
Calonectris leucomelas (Temminck)	NT	-	5	1	-	-	-	-	-	-	-	6	Sv	-
Carduelis sinica	LC	-	-	-	-	11	13	24	12	13	-	73	Res	-
Carduelis sinica (Hartert)	-	-	-	-	-	12	23	52	4	4	-	95	Res	-
Carduelis spinus	LC	-	-	-	-	9	9	21	-	23	-	62	WV	-
Carduelis spinus (Linnaeus)	-	-	-	-	-	44	-	-	-	32	-	76	Wv	-
Cettia diphone borealis	LC	-	-	-	-	-	-	-	7	8	-	15	SV	-
Cettia diphone cantans	-	-	-	-	-	2	-	-	19	15	-	36	Res	-
Charadrius alexandrinus Linnaeus	LC	-	-	-	-	-	490	3154	-	-	-	3644	Res	-
Charadrius dubius	LC	-	-	-	-	-	5	-	-	-	-	5	SV	-
Charadrius mongolus Portenko	LC	-	-	-	-	-	287	2107	-	-	-	2394	Pm	-
Cisticola juncidis (Temminck & Schlegel)	LC	-	-	-	-	6	-	28	6	-	-	40	Sv	-
Corvus corone	LC	-	-	-	2	9	13	-	-	5	-	29	Res	-
Corvus frugilegus Gould	LC	-	-	-	-	-	4	-	-	4	-	8	Wv	-
Corvus macrorhynchos	LC	-	-	-	-	-	13	-	-	-	-	13	Res	-
Corvus macrorhynchos Buturlim	-	-	-	-	-	8	2	2	2	6	-	20	Res	-
Cuculus canorus Heine	LC	-	-	-	-	-	-	-	-	2	-	2	Sv	-
Cyanopica cyanea	LC	-	-	-	-	7	-	-	-	-	-	7	Res	-
Cyanopica cyanea Yamashina	-	-	-	-	-	128	16	14	-	-	-	158	Res	-

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Dendrocopos kizuki (Taka-Tsukasa)	LC	-	-	-	-	19	-	-	-	-	-	19	Res	-
Dendrocopos major (Kuroda)	LC	-	-	-	-	2	-	1	8	7	-	18	Res	-
Egretta alba alba	LC	-	-	-	-	5	13	9	-	-	-	27	WV	-
Egretta eulophotes (Swinhoe)	VU	EN	-	-	-	198	368	189	-	-	39	794	Sv	Natural Monument, Endangered Wildlife Grade I
Egretta garzetta (Linnaeus)	LC	-	-	-	-	27	302	209	8	3	-	549	Sv	-
Egretta intermedia (Linnaeus)	-	-	-	-	-	3	32	43	3	-	-	81	Sv	-
Emberiza chrysophrys Pallas	LC	-	-	-	-	3	-	2	-	14	-	19	Pm	-
Emberiza cioides Moore	LC	-	-	-	-	-	2	-	26	2	-	30	Res	-
Emberiza elegans	LC	-	-	-	-	21	-	-	-	8	-	29	Res	-
Emberiza elegans Temminck	-	-	-	-	-	66	45	91	11	40	-	253	Res	-
Emberiza pusilla	LC	-	-	-	-	-	-	13	14	18	-	45	PM	-
Emberiza pusilla Pallas	-	-	-	-	-	2	-	-	2	2	-	6	Pm	-
Emberiza rustica latifascia Portenko	VU	-	-	-	-	8	-	-	-	-	-	8	Wv	-
Emberiza utila Pallas	-	-	-	-	-	1	-	3	-	6	-	10	Pm	-
Emberiza spodocephala	LC	-	-	-	-	-	-	-	13	34	-	47	PM	-
Emberiza spodocephala Temminck	-	-	-	-	-	5	6	21	35	33	-	100	Pm	-
Eophona migratoria	LC	-	-	-	-	-	-	-	8	24	-	32	SV	-
Eophona migratoria Hartert	-	-	-	-	-	-	-	-	15	16	-	31	Sv	-
Eurystomus orientalis Sharpe	LC	-	-	-	-	4	-	-	-	-	-	4	Sv	-
Falco amurensis Linnaeus	LC	-	-	-	-	-	-	1	-	-	-	1	Pm	-
Falco peregrinus Gmelin	LC	VU	-	-	-	-	-	3	9	-	3	15	Res	Natural Monument, Endangered Wildlife Grade I
Falco subbuteo Linnaeus	LC	VU	-	-	-	1	-	-	1	-	-	2	Sv	Endangered Wildlife Grade II
Falco tinnunculus Horsfield	LC	-	-	-	-	2	10	13	3	-	-	28	Res	Natural Monument
Fringilla montifringilla	LC	-	-	-	-	-	-	-	-	32	-	32	WV	-
Fringilla montifringilla Linnaeus	-	-	-	-	-	74	-	-	266	105	-	445	Wv	-
Fulica atra Linnaeus	LC	-	-	-	-	-	68	245	-	-	-	313	Wv	-
Gallinago gallinago (Linnaeus)	LC	-	-	-	-	-	-	1	-	-	-	1	Pm	-
Garrulus glandarius Eversman	LC	-	-	-	-	10	-	-	-	-	-	10	Res	-
Gavia pacifica Lawrence	LC	-	1	-	-	-	-	-	-	-	-	1	Wv	-
Haematopus ostralegus	NT	VU	-	-	-	-	3	4	-	-	-	7	Res	Natural Monument, Endangered Wildlife Grade II
Haematopus ostralegus Swinhoe	-	-	-	-	-	-	9	5	-	-	-	14	Res	Natural Monument, Endangered Wildlife Grade II
Heteroscelus brevipes (Bieillot)	NT	-	-	-	-	-	104	53	-	-	-	157	Pm	-

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Himantopus himantopus	LC	-	-	-	-	-	2	-	-	-	-	2	SV	-
Himantopus himantopus (Linnaeus)	-	-	-	-	-	-	-	11	-	-	-	11	Sv	-
Hirundo rustica	LC	-	-	-	-	-	12	15	8	-	-	35	SV	-
Hirundo rustica gutturalis Scopoli	-	-	-	-	-	28	-	157	16	21	20	242	Sv	-
Lanius bucephalus	LC	-	-	-	-	-	-	3	-	-	-	3	Res	-
Lanius bucephalus Temminck & Schlegel	LC	-	-	-	-	29	42	42	48	31	-	275	Res	-
Lanius cristatus lucionensis Linnaeus	LC	-	-	-	-	-	-	-	-	2	-	2	Sv	-
Lanius tigrinus Drapiez	LC	-	-	-	-	2	-	-	2	3	-	7	Pm	-
Larus argentatus	LC	-	-	-	-	34	89	-	-	-	-	123	WV	-
Larus argentatus vegae Plamen	-	-	3	20	33	-	434	263	46	22	-	821	Wv	-
Larus mongolicus	LC	-	-	-	-	-	8	35	-	-	-	43	Wv	-
Larus crassirostris	LC	-	43	-	34	78	653	486	48	43	-	1385	Res	-
Larus crassirostris Vieillot	-	-	59	128	181	505	6166	4960	463	904	1	13367	Res	-
Larus heuglini	-	-	-	-	1	-	49	48	-	1	-	99	Wv	-
Larus saundersi (Swinhoe)	VU	EN	-	-	-	-	3	-	-	-	-	3	Wv	Endangered Wildlife Grade II
Larus schistisagus Stejneger	LC	-	-	-	-	-	2	-	-	-	-	2	Wv	-
Limicola falcinellus Dresser	LC	-	-	-	-	-	-	4	-	-	-	4	Pm	-
Limosa lapponica Naumann	NT	-	-	-	-	-	171	99	-	-	-	270	Pm	-
Limosa limosa Gould	NT	-	-	-	-	-	23	34	-	-	-	57	Pm	-
Loxia curvirostra Ridgway	LC	-	-	-	-	-	-	-	-	22	-	22	Wv	-
Mergus merganser Linnaeus	LC	-	-	-	-	-	2	12	2	-	-	16	Wv	-
Microscelis amaurotis	-	-	-	-	-	14	55	35	24	15	-	143	Res	-
Microscelis amaurotis Stejneger	-	-	-	-	-	135	8	30	165	176	-	514	Res	-
Monticola solitarius	LC	-	-	-	4	-	-	-	2	-	-	6	Res	-
Monticola solitarius philippensis (Muller)	-	-	-	-	-	-	8	-	32	28	3	71	Res	-
Motacilla alba	LC	-	-	-	-	-	2	3	-	-	-	5	SV	-
Motacilla alba leucopsis Gould	-	-	-	-	-	4	29	56	11	16	-	116	Sv	-
Motacilla cinerea	LC	-	-	-	-	-	-	-	2	-	-	2	SV	-
Motacilla cinerea (Brehm)	-	-	-	-	-	10	14	23	14	16	-	77	Sv	-
Motacilla lugens Gloger	-	-	-	-	-	-	21	21	9	4	-	55	Wv	-
Muscicapa dauurica Raffles	LC	-	-	-	-	-	-	-	3	-	-	3	Pm	-
Muscicapa griseisticta (Swinhoe)	LC	-	-	-	-	-	-	-	1	2	-	3	Pm	-

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Numenius arquata Brehm	NT	-	-	-	-	-	526	1467	-	-	-	1993	Wv	-
Numenius madagascariensis (Linnaeus)	EN	VU	-	-	-	-	7	22	-	-	-	29	Pm	Endangered Wildlife Grade II
Numenius phaeopus	LC	-	-	-	-	-	2	-	-	-	-	2	PM	-
Numenius phaeopus (Scopoli)	-	-	-	-	-	-	225	581	1	-	-	807	Pm	-
Oceanodroma monorhis (Swinhoe)	NT	-	2	1	-	-	-	-	-	-	-	3	Sv	-
Oriolus chinensis Sharpe	LC	-	-	-	-	10	-	-	-	-	-	10	Sv	-
Pandion haliaetus (Linnaeus)	LC	VU	-	-	-	-	1	1	1	-	-	3	Pm	Endangered Wildlife Grade II
Paradoxornis webbianus	LC	-	-	-	-	43	83	42	-	-	-	168	Res	-
Paradoxornis webbianus (Campbell)	-	-	-	-	-	334	438	872	-	-	-	1644	Res	-
Parus ater	LC	-	-	-	-	3	-	-	-	-	-	3	Res	-
Parus major	LC	-	-	-	-	12	15	21	16	12	-	76	Res	-
Parus palustris	LC	-	-	-	-	6	-	-	-	-	-	6	Res	-
Parus varius	-	-	-	-	-	3	-	-	-	-	-	3	Res	-
Parus ater (Buturlin)	LC	-	-	-	-	7	-	6	-	-	-	13	Res	-
Parus major Temminck & Schlegel	-	-	-	-	-	59	5	31	82	79	-	256	Res	-
Parus palustris (Bianchi)	LC	-	-	-	-	26	-	-	-	-	-	26	Res	-
Parus varius Temminck & Schlegel	-	-	-	-	-	17	-	-	33	33	-	83	Res	-
Parus venustulus	LC	-	-	-	-	-	-	-	-	38	-	38	Vag	-
Passer montanus	LC	-	-	-	-	65	68	72	25	32	-	262	Res	-
Passer montanus Domaniewski	-	-	-	-	-	303	975	1317	78	74	-	2747	Res	-
Pericrocotus divaricatus (Raffles)	LC	-	-	-	-	-	-	-	-	15	-	15	Pm	-
Phalacrocorax capillatus	LC	-	-	-	-	5	35	28	13	-	-	81	Res	-
Phalacrocorax carbo	LC	-	-	-	-	-	12	-	-	-	-	12	Res	-
Phalacrocorax capillatus (Temminck)	-	-	-	-	2	2	95	384	53	4	-	540	Res	-
Phalacrocorax carbo Linnaeus	-	-	-	-	-	-	16	19	-	-	-	35	Res	-
Phasianus colchicus	LC	-	-	-	-	2	-	2	-	4	-	8	Res	-
Phasianus colchicus Buturlin	-	-	-	-	-	32	30	29	-	24	-	115	Res	-
Phoenicurus auroreus	LC	-	-	-	-	4	9	5	-	11	-	29	Res	-
Phoenicurus auroreus (Pallas)	-	-	-	-	-	35	32	37	32	27	-	163	Res	-
Phylloscopus borealis xanthodryas	LC	-	-	-	-	-	-	-	1	-	-	1	Pm	-
Phylloscopus fuscatus	LC	-	-	-	-	-	-	-	1	2	-	3	Pm	-
Phylloscopus inornatus (Blyth)	LC	-	-	-	-	-	-	-	4	10	-	14	Pm	-

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Pica pica	LC	-	-	-	-	24	76	65	11	11	-	187	Res	-
Pica pica Gould	-	-	-	-	-	105	98	140	-	40	-	383	Res	-
Picus canus (Clark)	LC	-	-	-	-	7	-	1	-	-	-	8	Res	-
Platalea leucorodia Linnaeus	LC	VU	-	-	-	-	3	38	-	-	-	41	Wv	Natural Monument, Endangered Wildlife Grade II
Platalea minor	EN	VU	-	-	-	-	42	2	-	-	-	44	SV	Natural Monument, Endangered Wildlife Grade I
Platalea minor Temminck et Schlegel	-	-	-	-	-	9	700	420	-	-	1	1130	Sv	Natural Monument, Endangered Wildlife Grade I
Pluvialis squatarola (Linnaeus)	LC	-	-	-	-	-	184	784	-	-	-	968	Pm	-
Pycnonotus sinensis	LC	-	-	-	-	50	-	-	124	-	-	174	Vag	-
Saxicola torquata	LC	-	-	-	-	-	-	-	-	15	-	15	SV	-
Saxicola torquatus (Parrot)	-	-	-	-	-	-	2	2	12	3	-	19	Pm	-
Streptopelia orientalis	LC	-	-	-	-	32	146	154	-	-	-	332	Res	-
Streptopelia orientalis (Layham)	-	-	2	-	-	159	166	348	125	77	-	877	Res	-
Sturnus cineraceus	LC	-	-	-	-	6	8	9	-	9	-	32	SV	-
Sturnus cineraceus Temminck	-	-	-	-	-	8	-	-	13	11	-	32	Sv	-
Synthliboramphus antiquus (Gmelin)	LC	-	6	-	-	-	-	-	-	-	-	6	Res	-
Tachybaptus ruficollis	LC	-	-	-	-	-	-	5	-	-	-	5	Res	-
Tachybaptus ruficollis (Reichenow)	-	-	-	-	-	5	-	5	3	-	-	13	Wv	-
Tadorna tadorna	LC	-	-	-	-	-	14	595	-	-	-	609	Wv	-
Tringa erythropus (Pallas)	LC	-	-	-	-	-	157	205	-	-	-	362	Pm	-
Tringa nebularia	LC	-	-	-	-	8	-	-	-	-	-	8	PM	-
Tringa nebularia (Gunnerus)	-	-	-	-	-	-	772	556	-	-	-	1328	Pm	-
Tringa ochropus Linnaeus	LC	-	-	-	-	-	4	5	-	-	-	9	Wv	-
Tringa stagnatilis (Bechstein)	LC	-	-	-	-	-	-	8	-	-	-	8	Pm	-
Tringa totanus (Oberholser)	LC	-	-	-	-	-	540	228	-	-	-	768	Pm	-
Turdus eunomus	LC	-	-	-	-	-	7	-	-	8	-	15	WV	-
Turdus pallidus	LC	-	-	-	-	-	-	-	2	3	-	5	Res	-
Turdus eunomus Temminck	LC	-	-	-	-	-	9	-	10	8	-	27	Wv	-
Turdus naumanni Temminck	LC	-	-	-	-	-	-	-	2	-	-	2	Wv	-
Turdus pallidus Gmelin	LC	-	-	-	-	14	-	-	23	26	-	63	Sv	-
Xenus cinereus (Guldenstadt)	LC	-	-	-	-	-	532	1202	-	-	-	1734	Pm	-
Zoothera aurea Holandre	LC	-	-	-	-	2	-	-	2	-	-	4	Sv	-
Zosterops japonicus	LC	-	-	-	-	-	-	-	-	2	-	2	Res	-

Scientific Name	IUCN*** (2022-2)	Korean Red List (2014)	St.1	St.2	St.3	St.4	St.5	St.6	St.7	St.8	St.9	Total	Living Type	Remarks
Zosterops japonicus Temminck & Schlegel	-	-	-	-	-	-	-	-	62	89	-	151	Res	-
Grand Total	-	-	122	150	262	3399	19617	30011	2470	2633	72	58819	-	-

Source: Supplementary EIA
Res: Resident Birds, Wv: Winter Migrants, Sv: Summer Migrants, PM: Passage Migrants, Vag: Vagrants

***** International Union for the Conservation of Nature (IUCN) Red List**

Least Concern (LC): Widespread and abundant.
Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

Results of Wide-ranging Bird Survey (Additional 1st to 2nd)

Scientific Name	IUCN*** (2022-2)	Korean Red List (2014)	1st		2nd		Total	Living Type	Remarks
			St.1	St.2	St.1	St.2			
Gavia pacifica Lawrence	LC	-	2	-	-	-	2	Wv	
Gavia arctica	LC	-	8	-	-	-	8	Wv	
Calonectris leucomelas	NT	-	-	-	7	-	7	Sv	
Phalacrocorax capillatus	LC	-	-	10	-	-	10	Res	
Egretta eulophotes	VU	EN	-	-	-	683	683	Sv	Natural Monument, Endangered Wildlife Grade I
Platalea minor	EN	EN	-	-	-	142	142	Sv	Natural Monument, Endangered Wildlife Grade I
Anas crecca	LC	-	2	-	-	-	2	Wv	
Mergus serrator	LC	-	-	7	-	-	7	Wv	
Oceanodroma monorhis (Swinhoe)	NT	-	-	-	29	-	29	Sv	
Tringa nebularia (Gunnerus)	-	-	-	-	-	2	2	PM	
Larus vegae	-	-	11	6	-	-	17	Wv	
Larus canus	LC	-	1	1	-	-	2	Wv	
Larus crassirostris	LC	-	15	3	903	1,969	2,890	Res	
Thalasseus bernsteini	CR	EN	-	-	-	1	1	Sv	Endangered Wildlife Grade I
Synthliboramphus antiquus	LC	-	20	-	-	-	20	Res	
Monticola solitarius	LC	-	-	-	-	3	3	Res	
Grand Total	-	-	59	27	939	2800	3825	-	-

Source: Supplementary EIA
Res: Resident Birds, Wv: Winter Migrants, Sv: Summer Migrants, PM: Passage Migrants, Vag: Vagrants

***** International Union for the Conservation of Nature (IUCN) Red List**

Least Concern (LC): Widespread and abundant.
Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
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Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

APPENDIX C LIST OF BIRD SPECIES FROM SUPPLEMENTARY SURVEYS

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-03-29	08:38:54	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37286811	126.05562021
2023-03-29	08:44:12	*Phoenicurus auroreus*	1	0	Rest	Daeseokman-do	35.37299281	126.05601691
2023-03-29	08:47:28	*Ardea cinerea*	1	0	Rest	Daeseokman-do	35.37247214	126.05652721
2023-03-29	08:49:55	*Sturnus cineraceus*	26	0	Rest	Daeseokman-do	35.37373308	126.05583470
2023-03-29	08:50:49	*Phalacrocorax capillatus*	1	0	Rest	Daeseokman-do	35.37136243	126.05559057
2023-03-29	08:52:47	*Buteo hemilasius*	1	16.95082312	Move	Daeseokman-do	35.37394726	126.05553691
2023-03-29	09:00:20	*Parus major*	1	0	Rest	Daeseokman-do	35.37413932	126.05320340
2023-03-29	09:07:52	*Larus crassirostris*	1	0	Rest	Daeseokman-do	35.37146004	126.05105239
2023-03-29	09:09:44	*Turdus eunomus*	2	0	Rest	Daeseokman-do	35.37274326	126.05016896
2023-03-29	09:13:26	*Parus major*	13	0	Rest	Daeseokman-do	35.37274292	126.04973042
2023-03-29	09:17:11	*Streptopelia orientalis*	1	0	Rest	Daeseokman-do	35.37242629	126.04916212
2023-03-29	09:21:09	*Luscinia cyanura*	1	0	Rest	Daeseokman-do	35.37215026	126.04803363
2023-03-29	09:23:56	*Parus major*	5	0	Rest	Daeseokman-do	35.37175245	126.04748968
2023-03-29	09:24:02	*Microscelis amaurotis*	3	0	Rest	Daeseokman-do	35.37181740	126.04733542
2023-03-29	09:29:53	*Larus argentatus*	1	0	Rest	Daeseokman-do	35.36775332	126.04980262
2023-03-29	09:30:10	*Phoenicurus auroreus*	1	0	Rest	Daeseokman-do	35.37089700	126.04730932
2023-03-29	09:31:15	*Emberiza elegans*	3	0	Rest	Daeseokman-do	35.37075200	126.04696643
2023-03-29	09:32:08	*Streptopelia orientalis*	3	0	Rest	Daeseokman-do	35.37056352	126.04663369
2023-03-29	09:34:29	*Streptopelia orientalis*	3	0	Rest	Daeseokman-do	35.37030967	126.04603297
2023-03-29	09:35:07	*Lanius bucephalus*	1	0	Rest	Daeseokman-do	35.37022250	126.04592082
2023-03-29	09:37:55	*Parus major*	2	0	Rest	Daeseokman-do	35.36953311	126.04583132
2023-03-29	09:39:08	*Turdus eunomus*	2	0	Rest	Daeseokman-do	35.36928265	126.04542432
2023-03-29	10:03:32	*Parus major*	2	0	Rest	Daeseokman-do	35.37210677	126.04544634
2023-03-29	10:05:36	*Turdus eunomus*	4	0	Rest	Daeseokman-do	35.37212368	126.04636887
2023-03-29	10:09:40	*Emberiza cioides*	2	0	Rest	Daeseokman-do	35.37268935	126.04796740
2023-03-29	10:13:03	*Phoenicurus auroreus*	1	0	Rest	Daeseokman-do	35.37268859	126.04914862
2023-03-29	10:46:27	*Motacilla alba*	2	0	Rest	Daeseokman-do	35.37255911	126.05648395
2023-03-29	11:05:06	*Motacilla alba*	1	0	Rest	Daeseokman-do	35.37317031	126.05694538
2023-03-29	11:07:36	*Podiceps cristatus*	2	0	Rest	Daeseokman-do	35.37274348	126.05830881
2023-03-29	11:11:00	*Emberiza elegans*	5	0	Rest	Daeseokman-do	35.37315247	126.05651108
2023-03-29	11:17:09	*Phalacrocorax capillatus*	13	87.97778845	Move	Daeseokman-do	35.37253199	126.05377120
2023-03-29	12:29:04	*Phalacrocorax capillatus*	1	0	Rest	Daeseokman-do	35.37125070	126.05613561
2023-03-29	12:32:44	*Alcedo atthis*	1	0	Rest	Daeseokman-do	35.37251574	126.05651881
2023-03-29	13:00:05	*Turdus eunomus*	8	0	Rest	Soseokman-do	35.36785313	126.05565533
2023-03-29	13:01:24	*Luscinia cyanura*	1	0	Rest	Soseokman-do	35.36841411	126.05601620
2023-03-29	13:07:46	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36837294	126.05873176
2023-03-29	13:08:29	*Turdus pallidus*	5	0	Rest	Soseokman-do	35.36852540	126.05913377
2023-03-29	13:12:35	*Phalacrocorax capillatus*	2	0	Rest	Soseokman-do	35.36540170	126.06101597
2023-03-29	13:15:53	*Microscelis amaurotis*	4	0	Rest	Soseokman-do	35.36632803	126.05976529
2023-03-29	13:17:24	*Zosterops japonicus*	6	0	Rest	Soseokman-do	35.36630300	126.05994075
2023-03-29	13:20:27	*Sturnus cineraceus*	21	0	Rest	Soseokman-do	35.36534883	126.06015349
2023-03-29	13:22:40	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36583700	126.05946353
2023-03-29	13:24:01	*Parus major*	1	0	Rest	Soseokman-do	35.36620954	126.05929376
2023-03-29	13:25:24	*Parus major*	12	0	Rest	Soseokman-do	35.36628295	126.05913239
2023-03-29	13:27:33	*Microscelis amaurotis*	5	0	Rest	Soseokman-do	35.36669044	126.05875864
2023-03-29	13:27:44	*Parus major*	3	0	Rest	Soseokman-do	35.36669823	126.05880560
2023-03-29	13:30:25	*Microscelis amaurotis*	3	0	Rest	Soseokman-do	35.36737324	126.05823261
2023-03-29	13:38:36	*Saxicola torquatus*	3	0	Rest	Soseokman-do	35.36758758	126.05543113
2023-03-30	16:54:49	*Larus crassirostris*	1	0	Rest	Ok island	35.31452780	125.98868421
2023-03-30	17:04:59	*Buteo hemilasius*	1	0	Rest	O-do	35.32454310	125.99719047
2023-03-30	17:16:26	*Phoenicurus auroreus*	1	0	Rest	O-do	35.32951976	126.00536641
2023-03-30	17:28:14	*Lanius bucephalus*	1	0	Rest	O-do	35.33028301	126.00392886
2023-03-30	17:29:25	*Microscelis amaurotis*	3	0	Rest	O-do	35.33048968	126.00445699
2023-03-30	17:37:01	*Microscelis amaurotis*	2	0	Rest	O-do	35.32961270	126.00186009
2023-03-30	17:42:24	*Phoenicurus auroreus*	1	0	Rest	O-do	35.32888305	126.00140988
2023-03-30	17:48:04	*Microscelis amaurotis*	3	0	Rest	O-do	35.32904361	126.00109053
2023-03-30	17:48:39	*Alcedo atthis*	1	0	Rest	O-do	35.32806219	126.00177766
2023-03-30	17:59:42	*Phalacrocorax carbo*	1	25.36426642	Move	O-do	35.33294614	126.01078460
2023-03-30	18:08:46	*Monticola solitarius*	1	0	Rest	O-do	35.33282871	125.99868940
2023-03-30	18:13:38	*Turdus eunomus*	2	0	Rest	Hyeong-do	35.33618396	125.99664754
2023-03-30	18:20:39	*Emberiza elegans*	2	0	Rest	Hyeong-do	35.33589954	125.99587417
2023-03-30	18:29:38	*Falco peregrinus*	1	74	Move	Hyeong-do	35.33746082	125.99214439
2023-03-30	18:32:00	*Turdus eunomus*	1	0	Rest	Hyeong-do	35.33690918	125.99370437
2023-03-30	18:32:21	*Phoenicurus auroreus*	1	0	Rest	Hyeong-do	35.33653393	125.99391411
2023-03-30	18:49:56	*Phalacrocorax capillatus*	1	0	Rest	Hyeong-do	35.33916565	125.98975251
2023-03-30	18:51:49	*Phalacrocorax capillatus*	14	0	Rest	Hyeong-do	35.33888851	125.98888042
2023-03-30	18:52:15	*Phalacrocorax carbo*	1	0	Rest	Hyeong-do	35.33888851	125.98888042

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-03-29	14:15:43	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34494116	126.00953188
2023-03-29	14:19:42	*Parus major*	2	0	Rest	Anma-do	35.34393892	126.01123731
2023-03-29	14:28:23	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34384284	126.01649939
2023-03-29	14:29:20	*Parus major*	2	0	Rest	Anma-do	35.34420514	126.01625685
2023-03-29	14:30:00	*Zosterops japonicus*	2	0	Rest	Anma-do	35.34450013	126.01689293
2023-03-29	14:33:02	*Emberiza elegans*	3	0	Rest	Anma-do	35.34403212	126.01827413
2023-03-29	14:33:41	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34385697	126.01852303
2023-03-29	14:37:52	*Emberiza rustica*	20	0	Rest	Anma-do	35.34373484	126.01890111
2023-03-29	14:37:58	*Emberiza elegans*	10	0	Rest	Anma-do	35.34384651	126.01904715
2023-03-29	14:41:43	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34424305	126.02068686
2023-03-29	14:43:37	*Turdus pallidus*	1	0	Rest	Anma-do	35.34400657	126.02179343
2023-03-29	14:44:28	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34423850	126.02298014
2023-03-29	14:49:08	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34465287	126.02289367
2023-03-29	14:50:25	*Larus crassirostris*	6	0	Rest	Anma-do	35.34480063	126.01926693
2023-03-29	15:09:07	*Sturnus cineraceus*	22	0	Rest	Anma-do	35.34444017	126.01779768
2023-03-29	15:18:19	*Turdus pallidus*	1	0	Rest	Anma-do	35.34440526	126.01985000
2023-03-29	15:18:30	*Anas poecilorhyncha*	2	0	Rest	Anma-do	35.34514866	126.02050047
2023-03-29	15:18:35	*Anas platyrhynchos*	1	0	Rest	Anma-do	35.34541415	126.02028807
2023-03-29	15:18:48	*Columba livia var. domestica*	1	25	Move	Anma-do	35.34578585	126.02072614
2023-03-29	15:21:39	*Sturnus cineraceus*	1	0	Rest	Anma-do	35.34470529	126.02280802
2023-03-29	15:27:58	*Corvus macrorhynchos*	2	64.86844754	Move	Anma-do	35.34500541	126.02796816
2023-03-29	15:29:33	*Turdus eunomus*	2	0	Rest	Anma-do	35.34474266	126.02436586
2023-03-29	15:30:13	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34496609	126.02436586
2023-03-29	15:33:54	*Sturnus vulgaris*	1	0	Rest	Anma-do	35.34499710	126.02601773
2023-03-29	15:35:30	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34493205	126.02623890
2023-03-29	15:36:33	*Motacilla alba*	1	0	Rest	Anma-do	35.34469787	126.02682434
2023-03-29	15:38:32	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34518864	126.02743598
2023-03-29	15:39:48	*Motacilla alba*	4	0	Rest	Anma-do	35.34556866	126.02691273
2023-03-29	15:42:38	*Emberiza spodocephala*	1	0	Rest	Anma-do	35.34623237	126.02714264
2023-03-29	15:44:19	*Lanius sphenocercus*	1	0	Rest	Anma-do	35.34687554	126.02691816
2023-03-29	15:48:01	*Motacilla alba*	1	0	Rest	Anma-do	35.34803323	126.02725382
2023-03-29	15:51:41	*Sturnus cineraceus*	1	0	Rest	Anma-do	35.34865098	126.02749491
2023-03-29	15:52:29	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34857201	126.02825834
2023-03-29	15:55:22	*Streptopelia orientalis*	1	54.1263249	Move	Anma-do	35.34948893	126.02943120
2023-03-29	15:56:27	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34810719	126.02990578
2023-03-29	15:58:41	*Anas poecilorhyncha*	5	0	Rest	Anma-do	35.34826880	126.03053054
2023-03-29	15:59:06	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34865138	126.03053054
2023-03-29	15:59:16	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.34879233	126.03064128
2023-03-29	16:00:03	*Anas acuta*	3	0	Rest	Anma-do	35.34841982	126.03052047
2023-03-29	16:00:14	*Aythya fuligula*	1	0	Rest	Anma-do	35.34837955	126.03077216
2023-03-29	16:01:56	*Parus major*	4	0	Rest	Anma-do	35.34873696	126.03035893
2023-03-29	16:08:32	*Accipiter nisus*	1	0	Rest	Anma-do	35.34977492	126.02911133
2023-03-29	16:08:43	*Emberiza elegans*	1	0	Rest	Anma-do	35.34921917	126.02993537
2023-03-29	16:15:20	*Accipiter nisus*	1	0	Rest	Anma-do	35.34998727	126.02877131
2023-03-29	16:23:06	*Parus major*	2	0	Rest	Anma-do	35.35071743	126.02778428
2023-03-29	16:28:51	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35170287	126.02612297
2023-03-29	16:29:03	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35162372	126.02592509
2023-03-29	16:33:10	*Corvus macrorhynchos*	2	0	Rest	Anma-do	35.35168968	126.02450035
2023-03-29	16:35:56	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35273254	126.02672213
2023-03-29	16:39:20	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.35300036	126.02722719
2023-03-29	16:42:14	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35357502	126.02709344
2023-03-29	16:45:49	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35458363	126.02566584
2023-03-29	16:47:19	*Fringilla montifringilla*	2	0	Rest	Anma-do	35.35484694	126.02563951
2023-03-29	16:48:51	*Parus major*	2	0	Rest	Anma-do	35.35477096	126.02597896
2023-03-29	16:54:21	*Emberiza elegans*	8	0	Rest	Anma-do	35.35699515	126.02610468
2023-03-29	16:57:43	*Fringilla montifringilla*	2	0	Rest	Anma-do	35.35721757	126.02624973
2023-03-29	17:03:04	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35774084	126.02763870
2023-03-29	17:03:24	*Parus major*	5	0	Rest	Anma-do	35.35783312	126.02765786
2023-03-29	17:03:31	*Turdus naumanni*	2	0	Rest	Anma-do	35.35811091	126.02769299
2023-03-29	17:06:29	*Phoenicurus auroreus*	2	0	Rest	Anma-do	35.35819544	126.02800182
2023-03-29	17:06:55	*Parus major*	5	0	Rest	Anma-do	35.35825930	126.02777831
2023-03-29	17:19:14	*Emberiza elegans*	4	0	Rest	Anma-do	35.35376261	126.02701165
2023-03-29	17:19:26	*Parus major*	4	0	Rest	Anma-do	35.35359478	126.02697035
2023-03-29	17:22:14	*Luscinia cyanura*	1	0	Rest	Anma-do	35.35308046	126.02718633
2023-03-29	17:27:29	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.35204451	126.02590043
2023-03-29	17:28:37	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.35208705	126.02542440
2023-03-29	17:40:08	*Lanius bucephalus*	3	0	Rest	Anma-do	35.34957030	126.02436870

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-03-29	17:45:10	*Motacilla alba*	2	0	Rest	Anma-do	35.34755629	126.02468721
2023-03-29	17:49:03	*Sturnus cineraceus*	2	0	Rest	Anma-do	35.34678126	126.02415137
2023-03-29	17:50:56	*Ardea cinerea*	3	0	Rest	Anma-do	35.34600029	126.02310285
2023-03-29	17:51:29	*Anas platyrhynchos*	4	0	Rest	Anma-do	35.34603336	126.02302568
2023-03-29	17:51:51	*Anas poecilorhyncha*	2	0	Rest	Anma-do	35.34562545	126.02283274
2023-03-29	17:54:33	*Parus major*	11	0	Rest	Anma-do	35.34438163	126.02378402
2023-03-29	17:57:07	*Emberiza elegans*	2	0	Rest	Anma-do	35.34439465	126.02450503
2023-03-29	17:57:23	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34505297	126.02396022
2023-03-29	17:58:20	*Pycnonotus sinensis*	5	0	Rest	Anma-do	35.34285102	126.02401697
2023-03-29	18:01:36	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34275441	126.02311171
2023-03-29	18:06:30	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34343435	126.02533950
2023-03-29	18:07:51	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34263812	126.02612732
2023-03-29	18:09:00	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34324663	126.02723091
2023-03-29	18:09:49	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34185142	126.02737879
2023-03-29	18:15:24	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34076564	126.02856341
2023-03-29	18:20:14	*Turdus pallidus*	1	0	Rest	Anma-do	35.34176540	126.02928254
2023-03-29	18:21:40	*Fringilla montifringilla*	64	0	Rest	Anma-do	35.34247756	126.02921660
2023-03-29	18:21:55	*Microscelis amaurotis*	7	0	Rest	Anma-do	35.34210747	126.02926922
2023-03-29	18:27:04	*Microscelis amaurotis*	10	0	Rest	Anma-do	35.34304888	126.02934770
2023-03-29	18:32:34	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34537344	126.02912655
2023-03-29	18:34:21	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34547085	126.02819181
2023-03-29	18:46:05	*Sturnus cineraceus*	40	0	Rest	Anma-do	35.34560275	126.02772030
2023-03-29	18:47:41	*Sturnus cineraceus*	26	0	Rest	Anma-do	35.34464387	126.02662992
2023-03-30	08:56:30	*Microscelis amaurotis*	8	0	Rest	Anma-do	35.34525889	126.01556868
2023-03-30	09:05:14	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34421393	126.01791573
2023-03-30	09:06:45	*Buteo buteo*	1	24.56021101	Move	Anma-do	35.34415060	126.01921516
2023-03-30	09:08:13	*Monticola solitarius*	1	0	Rest	Anma-do	35.34456164	126.01981426
2023-03-30	0.384872685	*Charadrius placidus*	1	0	Rest	Anma-do	35.3465024	126.0232384
2023-03-30	0.386956019	*Numenius arquata*	1	0	Rest	Anma-do	35.34765174	126.0221312
2023-03-30	09:22:43	*Ardea alba*	1	0	Move	Anma-do	35.34787095	126.02193669
2023-03-30	09:23:48	*Anas platyrhynchos*	2	0	Rest	Anma-do	35.34722258	126.02188806
2023-03-30	09:26:08	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34771203	126.02219086
2023-03-30	09:26:22	*Anas poecilorhyncha*	1	0	Rest	Anma-do	35.34769447	126.02231382
2023-03-30	09:27:25	*Anas clypeata*	1	0	Rest	Anma-do	35.34762420	126.02161118
2023-03-30	09:40:56	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34971846	126.01937561
2023-03-30	09:41:28	*Ardea cinerea*	4	0	Rest	Anma-do	35.35062382	126.01854014
2023-03-30	09:43:27	*Anas platyrhynchos*	10	0	Rest	Anma-do	35.35057195	126.01863894
2023-03-30	09:43:52	*Anas poecilorhyncha*	1	0	Rest	Anma-do	35.35049785	126.01856484
2023-03-30	09:43:59	*Egretta intermedia*	1	0	Rest	Anma-do	35.35052255	126.01841664
2023-03-30	09:44:55	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35260608	126.01927405
2023-03-30	09:45:42	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35289728	126.01653755
2023-03-30	09:45:50	*Microscelis amaurotis*	5	0	Rest	Anma-do	35.35270557	126.01652164
2023-03-30	09:46:39	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35316093	126.01407194
2023-03-30	09:48:08	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35412089	126.01154157
2023-03-30	09:48:28	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35447190	126.01062019
2023-03-30	09:49:07	*Parus major*	2	0	Rest	Anma-do	35.35495452	126.00936974
2023-03-30	09:49:56	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35605141	126.00936974
2023-03-30	09:50:25	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35628025	126.00829497
2023-03-30	09:59:11	*Pycnonotus sinensis*	1	0	Rest	Anma-do	35.35489787	126.00550678
2023-03-30	10:03:24	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.35500056	126.00565362
2023-03-30	10:03:31	*Parus major*	4	0	Rest	Anma-do	35.35505967	126.00564623
2023-03-30	10:04:55	*Phoenicurus auroreus*	4	0	Rest	Anma-do	35.35462115	126.00504872
2023-03-30	10:08:03	*Phoenicurus auroreus*	4	0	Rest	Anma-do	35.35496909	126.00513393
2023-03-30	10:20:50	*Emberiza cioides*	5	0	Rest	Anma-do	35.35431867	126.01089149
2023-03-30	10:22:59	*Parus major*	2	0	Rest	Anma-do	35.35309839	126.01522000
2023-03-30	10:29:27	*Larus crassirostris*	1	0	Rest	Anma-do	35.34701618	126.02318252
2023-03-30	10:35:21	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34420395	126.01844465
2023-03-30	10:35:57	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34413708	126.01677848
2023-03-30	10:38:37	*Parus major*	2	0	Rest	Anma-do	35.34406379	126.01049516
2023-03-30	10:42:55	*Larus crassirostris*	1	0	Rest	Anma-do	35.34823646	126.01085762
2023-03-30	10:50:37	*Parus major*	4	0	Rest	Anma-do	35.34403419	126.01323158
2023-03-30	10:52:55	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34251233	126.01722121
2023-03-30	10:53:13	*Parus major*	1	0	Rest	Anma-do	35.34202210	126.01800557
2023-03-30	10:55:01	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33971344	126.02044212
2023-03-30	10:56:34	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33662540	126.02103670
2023-03-30	10:58:42	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33622155	126.01964992
2023-03-30	11:00:07	*Parus major*	5	0	Rest	Anma-do	35.33553251	126.01913325

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-03-30	11:00:31	*Phoenicurus auroreus*	4	0	Rest	Anma-do	35.33545364	126.01895401
2023-03-30	11:03:37	*Turdus naumanni*	1	0	Rest	Anma-do	35.33519946	126.01751397
2023-03-30	11:05:29	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33496291	126.01742635
2023-03-30	11:05:49	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33434086	126.01744388
2023-03-30	11:06:04	*Turdus naumanni*	6	0	Rest	Anma-do	35.33479645	126.01691820
2023-03-30	11:10:17	*Lanius bucephalus*	1	0	Rest	Anma-do	35.33412183	126.01563907
2023-03-30	11:11:12	*Parus major*	2	0	Rest	Anma-do	35.33401688	126.01558683
2023-03-30	11:14:41	*Phoenicurus auroreus*	2	0	Rest	Anma-do	35.33375776	126.01547455
2023-03-30	11:26:13	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.33640246	126.02037766
2023-03-30	11:28:30	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33689378	126.02183177
2023-03-30	11:31:17	*Parus major*	3	0	Rest	Anma-do	35.33741257	126.02762206
2023-03-30	11:31:57	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.33807237	126.02841096
2023-03-30	12:44:55	*Passer montanus*	2	0	Rest	Anma-do	35.34495571	126.01814782
2023-03-30	13:09:00	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.35010368	126.02626267
2023-03-30	13:13:31	*Buteo buteo*	1	107.7676567	Move	Anma-do	35.34970034	126.02762840
2023-03-30	13:18:05	*Cettia diphone*	2	0	Rest	Anma-do	35.34975210	126.02836595
2023-03-30	13:34:21	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34256449	126.01624939
2023-03-30	13:51:52	*Anas platyrhynchos*	10	0	Rest	Anma-do	35.34667233	126.02251992
2023-03-29	13:21:07	*Accipiter gentilis*	2	115.0176023	Move	Soseokman-do	35.36962074	126.0540786
2023-03-29	13:23:34	*Falco peregrinus*	1	121.5684263	Move	Soseokman-do	35.37002012	126.0528175
2023-03-29	13:26:45	*Buteo hemilasius*	1	137.8215795	Move	Daeseokman-do	35.37456578	126.05470830
2023-04-26	08:27:11	*Motacilla alba*	1	0	Rest	Daeseokman-do	35.37293031	126.05576458
2023-04-26	08:30:16	*Larus crassirostris*	38	0.907525135	Move	Daeseokman-do	35.37288040	126.05586102
2023-04-26	08:36:58	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37399496	126.05670102
2023-04-26	08:45:28	*Turdus hortulorum*	1	0	Rest	Daeseokman-do	35.37472958	126.05430843
2023-04-26	0.366666667	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37505396	126.05272555
2023-04-26	08:49:18	*Phalacrocorax capillatus*	1	6	Move	Daeseokman-do	35.37505396	126.05272555
2023-04-26	08:50:50	*Phalacrocorax capillatus*	2	63.15228822	Move	Daeseokman-do	35.37406249	126.05273106
2023-04-26	08:53:56	*Anthus hodgsoni*	2	0	Rest	Daeseokman-do	35.37348135	126.05184241
2023-04-26	08:59:30	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37211901	126.04999507
2023-04-26	09:04:55	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37258453	126.04834049
2023-04-26	09:07:05	*Corvus macrorhynchos*	1	0	Rest	Daeseokman-do	35.37267737	126.04799740
2023-04-26	09:07:40	*Luscinia cyanura*	1	0	Rest	Daeseokman-do	35.37261305	126.04784276
2023-04-26	09:10:06	*Phylloscopus proregulus*	1	0	Rest	Daeseokman-do	35.37237493	126.04702011
2023-04-26	09:12:34	*Emberiza chrysophrys*	2	0	Rest	Daeseokman-do	35.37239139	126.04693053
2023-04-26	09:16:52	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37122028	126.04531091
2023-04-26	09:29:14	*Emberiza cioides*	7	0	Rest	Daeseokman-do	35.36964128	126.04475213
2023-04-26	09:32:32	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.36903634	126.04555397
2023-04-26	09:33:52	*Lanius bucephalus*	1	0	Rest	Daeseokman-do	35.36980332	126.04606055
2023-04-26	09:35:09	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37066679	126.04642724
2023-04-26	09:57:13	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37264658	126.04945553
2023-04-26	09:57:40	*Emberiza chrysophrys*	4	0	Rest	Daeseokman-do	35.37272427	126.04921421
2023-04-26	10:10:36	*Luscinia cyanura*	2	0	Rest	Daeseokman-do	35.37431792	126.05438644
2023-04-26	10:16:05	*Luscinia cyanura*	5	0	Rest	Daeseokman-do	35.37349303	126.05589190
2023-04-26	10:17:07	*Emberiza spodocephala*	3	0	Rest	Daeseokman-do	35.37335052	126.05596791
2023-04-26	10:19:42	*Larus crassirostris*	2	0	Rest	Daeseokman-do	35.37279247	126.05548468
2023-04-26	11:13:00	*Emberiza chrysophrys*	1	0	Rest	Anma-do	35.34421467	126.01044855
2023-04-26	11:13:40	*Larus crassirostris*	1	0	Rest	Anma-do	35.34486076	126.01066780
2023-04-26	11:15:44	*Emberiza spodocephala*	1	0	Rest	Anma-do	35.34409694	126.01099622
2023-04-26	11:18:18	*Ardea alba*	2	11.70718789	Move	Anma-do	35.34546900	126.01207494
2023-04-26	11:29:07	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34306687	126.01663730
2023-04-26	11:31:31	*Phylloscopus coronatus*	3	0	Rest	Anma-do	35.34317403	126.01678793
2023-04-26	11:33:53	*Emberiza tristrami*	4	0	Rest	Anma-do	35.34260507	126.01723047
2023-04-26	11:34:27	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34267616	126.01723421
2023-04-26	11:34:50	*Zosterops japonicus*	4	0	Rest	Anma-do	35.34259571	126.01729066
2023-04-26	11:35:31	*Phylloscopus inornatus*	3	0	Rest	Anma-do	35.34262905	126.01734071
2023-04-26	11:36:54	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34232372	126.01776616
2023-04-26	11:39:25	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34124486	126.01874967
2023-04-26	11:43:12	*Microscelis amaurotis*	5	0	Rest	Anma-do	35.33999993	126.02048332
2023-04-26	11:45:04	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.33994013	126.02063888
2023-04-26	11:45:40	*Emberiza cioides*	3	0	Rest	Anma-do	35.33985839	126.02064189
2023-04-26	11:46:52	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33981310	126.02091167
2023-04-26	11:49:07	*Emberiza pusilla*	5	0	Rest	Anma-do	35.33971871	126.02065908
2023-04-26	11:52:03	*Luscinia cyanura*	1	0	Rest	Anma-do	35.33823631	126.02098400
2023-04-26	11:54:38	*Falco peregrinus*	1	20	Move	Anma-do	35.33492658	126.02099769
2023-04-26	12:02:17	*Emberiza cioides*	2	0	Rest	Anma-do	35.33430328	126.01567367
2023-04-26	12:14:37	*Luscinia cyanura*	1	0	Rest	Anma-do	35.33647823	126.02098378

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-04-26	12:17:50	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33667743	126.02196026
2023-04-26	12:18:15	*Emberiza chrysophrys*	3	0	Rest	Anma-do	35.33685826	126.02214388
2023-04-26	12:18:54	*Phylloscopus inornatus*	3	0	Rest	Anma-do	35.33698910	126.02226472
2023-04-26	12:20:29	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33724744	126.02240053
2023-04-26	12:20:38	*Ficedula zanthopygia*	1	0	Rest	Anma-do	35.33727727	126.02248706
2023-04-26	12:23:13	*Phylloscopus inornatus*	1	0	Rest	Anma-do	35.33747668	126.02366913
2023-04-26	12:25:35	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33733527	126.02487165
2023-04-26	12:27:02	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33805684	126.02543379
2023-04-26	12:28:42	*Turdus hortulorum*	1	0	Rest	Anma-do	35.33792537	126.02540960
2023-04-26	12:30:14	*Phylloscopus coronatus*	1	0	Rest	Anma-do	35.33801585	126.02625475
2023-04-26	12:42:56	*Anthus hodgsoni*	1	0	Rest	Anma-do	35.33981175	126.03077151
2023-04-26	12:45:16	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33980129	126.03125200
2023-04-26	12:48:08	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34040957	126.03194458
2023-04-26	12:49:15	*Emberiza tristrami*	3	0	Rest	Anma-do	35.34057731	126.03208469
2023-04-26	12:50:57	*Emberiza tristrami*	1	0	Rest	Anma-do	35.34103952	126.03240900
2023-04-26	12:52:54	*Corvus macrorhynchos*	3	37.03545438	Move	Anma-do	35.34237032	126.03286066
2023-04-26	12:57:29	*Zoothera aurea*	1	0	Rest	Anma-do	35.34204233	126.03330502
2023-04-26	12:57:29	*Luscinia cyanura*	1	0	Rest	Anma-do	35.34204233	126.03330502
2023-04-26	13:01:27	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34345797	126.03339018
2023-04-26	13:02:26	*Phylloscopus coronatus*	1	0	Rest	Anma-do	35.34371752	126.03355691
2023-04-26	13:22:41	*Parus venustulus*	1	0	Rest	Anma-do	35.34691535	126.03415684
2023-04-26	13:24:42	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34737098	126.03411007
2023-04-26	13:25:52	*Anthus hodgsoni*	1	0	Rest	Anma-do	35.34751121	126.03397747
2023-04-26	13:29:48	*Turdus hortulorum*	1	0	Rest	Anma-do	35.34827458	126.03380113
2023-04-26	13:31:00	*Emberiza chrysophrys*	2	0	Rest	Anma-do	35.34856843	126.03382108
2023-04-26	13:31:24	*Emberiza spodocephala*	1	0	Rest	Anma-do	35.34861577	126.03379944
2023-04-26	13:32:06	*Emberiza chrysophrys*	7	0	Rest	Anma-do	35.34894077	126.03373414
2023-04-26	13:35:45	*Anthus hodgsoni*	5	0	Rest	Anma-do	35.34994701	126.03358247
2023-04-26	13:39:30	*Anthus hodgsoni*	3	0	Rest	Anma-do	35.35097162	126.03334407
2023-04-26	13:40:39	*Turdus hortulorum*	1	0	Rest	Anma-do	35.35099499	126.03327699
2023-04-26	13:42:44	*Anthus hodgsoni*	4	0	Rest	Anma-do	35.35129039	126.03239685
2023-04-26	13:44:01	*Emberiza pusilla*	9	0	Rest	Anma-do	35.35140413	126.03215687
2023-04-26	13:47:50	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35154907	126.03060446
2023-04-26	13:50:49	*Phylloscopus coronatus*	2	0	Rest	Anma-do	35.35189230	126.02969071
2023-04-26	13:51:59	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35218628	126.02930260
2023-04-26	14:04:07	*Emberiza chrysophrys*	4	0	Rest	Anma-do	35.35297628	126.02723479
2023-04-26	14:06:03	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35349860	126.02692303
2023-04-26	14:08:05	*Luscinia cyanura*	1	0	Rest	Anma-do	35.35421204	126.02659083
2023-04-26	14:10:35	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35507064	126.02557351
2023-04-26	14:10:52	*Luscinia cyanura*	1	0	Rest	Anma-do	35.35515271	126.02551629
2023-04-26	14:15:00	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35703062	126.02611175
2023-04-26	14:24:46	*Phylloscopus inornatus*	1	0	Rest	Anma-do	35.35637944	126.02596918
2023-04-26	14:40:26	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35060320	126.02797011
2023-04-26	14:49:28	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35009281	126.02796703
2023-04-26	14:56:49	*Carduelis spinus*	3	0	Rest	Anma-do	35.34863923	126.02989360
2023-04-26	14:59:05	*Anas poecilorhyncha*	2	0	Rest	Anma-do	35.34825186	126.03076424
2023-04-26	15:00:22	*Anthus hodgsoni*	8	0	Rest	Anma-do	35.34811716	126.03074436
2023-04-26	15:02:32	*Carduelis sinica*	2	0	Rest	Anma-do	35.34846496	126.03091893
2023-04-26	15:03:52	*Emberiza spodocephala*	1	0	Rest	Anma-do	35.34831551	126.03105054
2023-04-26	15:03:52	*Motacilla cinerea*	1	0	Rest	Anma-do	35.34831551	126.03105054
2023-04-26	15:05:19	*Tringa ochropus*	8	0	Rest	Anma-do	35.34841839	126.03115438
2023-04-26	15:20:23	*Passer montanus*	10	0	Rest	Anma-do	35.34389731	126.02734672
2023-04-26	15:22:09	*Passer montanus*	3	0	Rest	Anma-do	35.34422272	126.02696666
2023-04-26	15:34:37	*Passer montanus*	8	0	Rest	Anma-do	35.34451593	126.02404468
2023-04-26	15:37:47	*Larus crassirostris*	1	0	Rest	Anma-do	35.34524428	126.02256132
2023-04-26	15:39:06	*Ardea cinerea*	1	0	Rest	Anma-do	35.34549102	126.02279539
2023-04-26	15:40:11	*Egretta garzetta*	1	0	Rest	Anma-do	35.34606462	126.02308216
2023-04-26	15:43:01	*Charadrius dubius*	1	0	Rest	Anma-do	35.34629237	126.02313276
2023-04-26	15:45:40	*Himantopus himantopus*	1	0	Rest	Anma-do	35.34627340	126.02330779
2023-04-26	15:47:28	*Anas poecilorhyncha*	2	0	Rest	Anma-do	35.34671835	126.02318757
2023-04-26	15:50:00	*Emberiza pusilla*	4	0	Rest	Anma-do	35.34750315	126.02335010
2023-04-26	15:51:19	*Emberiza spodocephala*	1	0	Rest	Anma-do	35.34770811	126.02356347
2023-04-26	15:59:24	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34955320	126.01921845
2023-04-26	16:02:47	*Ardea alba*	1	0	Rest	Anma-do	35.35148438	126.01914070
2023-04-26	16:03:49	*Emberiza spodocephala*	4	0	Rest	Anma-do	35.35182044	126.01969165
2023-04-26	16:08:24	*Emberiza chrysophrys*	2	0	Rest	Anma-do	35.35284578	126.01684224
2023-04-26	16:09:05	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.35300082	126.01634372

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-04-26	16:11:17	*Passer montanus*	3	0	Rest	Anma-do	35.35301076	126.01471647
2023-04-26	16:11:50	*Luscinia cyanura*	1	0	Rest	Anma-do	35.35310545	126.01470098
2023-04-26	16:20:27	*Emberiza chrysophrys*	1	0	Rest	Anma-do	35.35449941	126.01078635
2023-04-26	16:22:40	*Emberiza spodocephala*	1	0	Rest	Anma-do	35.35494623	126.00933228
2023-04-26	16:23:00	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35502527	126.00910222
2023-04-26	16:28:01	*Larus crassirostris*	1	0	Rest	Anma-do	35.35589409	126.00766056
2023-04-26	16:32:27	*Emberiza spodocephala*	2	0	Rest	Anma-do	35.35506650	126.00589273
2023-04-26	16:32:44	*Motacilla cinerea*	2	0	Rest	Anma-do	35.35491701	126.00577134
2023-04-26	16:36:12	*Emberiza spodocephala*	8	0	Rest	Anma-do	35.35496800	126.00525159
2023-04-26	16:37:56	*Luscinia cyanura*	2	0	Rest	Anma-do	35.35533926	126.00566946
2023-04-26	17:05:24	*Falco peregrinus*	1	10	Move	Anma-do	35.35497129	126.00239057
2023-04-26	17:09:50	*Larus crassirostris*	10	0	Rest	Anma-do	35.35000274	126.00673317
2023-04-26	17:12:37	*Upupa epops*	1	0	Rest	Anma-do	35.35527236	126.00400467
2023-04-26	17:16:52	*Emberiza pusilla*	9	0	Rest	Anma-do	35.35556759	126.00529810
2023-04-26	17:52:49	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.35316402	126.01765136
2023-04-26	17:53:05	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35311226	126.01798239
2023-04-26	17:53:05	*Turdus pallidus*	1	0	Rest	Anma-do	35.35311226	126.01798239
2023-04-26	17:57:18	*Phylloscopus inornatus*	1	0	Rest	Anma-do	35.35210487	126.01929956
2023-04-26	18:11:06	*Emberiza spodocephala*	3	0	Rest	Anma-do	35.34776032	126.02353480
2023-04-26	18:23:54	*Passer montanus*	5	0	Rest	Anma-do	35.34464375	126.01840842
2023-04-26	18:27:37	*Larus crassirostris*	4	0	Rest	Anma-do	35.34564318	126.01748054
2023-04-26	09:33:52	*Lanius cristatus*	3	0	Rest	Daeseokman-do	35.36998923	126.04604450
2023-04-27	07:47:10	*Passer montanus*	7	0	Rest	Anma-do	35.34434754	126.02238603
2023-04-27	07:49:39	*Emberiza pusilla*	4	0	Rest	Anma-do	35.34423794	126.02231402
2023-04-27	07:53:17	*Phylloscopus coronatus*	7	0	Rest	Anma-do	35.34406452	126.02024370
2023-04-27	07:55:09	*Emberiza spodocephala*	2	0	Rest	Anma-do	35.34418855	126.01910626
2023-04-27	07:56:51	*Emberiza pusilla*	7	0	Rest	Anma-do	35.34408058	126.01830810
2023-04-27	07:57:13	*Emberiza chrysophrys*	2	0	Rest	Anma-do	35.34415460	126.01819189
2023-04-27	07:58:33	*Emberiza pusilla*	6	0	Rest	Anma-do	35.34407393	126.01740286
2023-04-27	08:11:14	*Phylloscopus coronatus*	1	0	Rest	Anma-do	35.34210675	126.01697040
2023-04-27	08:11:54	*Emberiza spodocephala*	8	0	Rest	Anma-do	35.34205637	126.01722972
2023-04-27	08:13:06	*Emberiza chrysophrys*	7	0	Rest	Anma-do	35.34223703	126.01655445
2023-04-27	08:15:51	*Emberiza spodocephala*	5	0	Rest	Anma-do	35.34148818	126.01537177
2023-04-27	08:20:43	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34127793	126.01247161
2023-04-27	08:21:18	*Emberiza pusilla*	5	0	Rest	Anma-do	35.34143935	126.01203797
2023-04-27	08:25:40	*Emberiza cioides*	3	0	Rest	Anma-do	35.34285852	126.01079577
2023-04-27	08:33:12	*Phylloscopus inornatus*	3	0	Rest	Anma-do	35.34342157	126.01071798
2023-04-27	08:38:00	*Luscinia cyanura*	1	0	Rest	Anma-do	35.34255181	126.01241854
2023-04-27	08:40:19	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34282529	126.01345082
2023-04-27	08:47:53	*Turdus hortulorum*	2	0	Rest	Anma-do	35.34358161	126.01621649
2023-04-27	08:50:42	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34301699	126.01814159
2023-04-27	08:52:39	*Luscinia cyanura*	1	0	Rest	Anma-do	35.34261912	126.01905570
2023-04-27	08:56:29	*Turdus hortulorum*	1	0	Rest	Anma-do	35.34250096	126.02060740
2023-04-27	08:59:32	*Luscinia cyanura*	1	0	Rest	Anma-do	35.34117229	126.02169181
2023-04-27	09:10:50	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34282230	126.02320326
2023-04-27	09:11:00	*Emberiza spodocephala*	6	0	Rest	Anma-do	35.34278886	126.02321926
2023-04-27	09:14:17	*Lanius cristatus*	1	0	Rest	Anma-do	35.34391453	126.02445961
2023-04-27	09:25:53	*Hirundo rustica*	7	0	Rest	Anma-do	35.34502419	126.01779610
2023-04-26	0.358055556	*Larus crassirostris*	1	0	Rest	Soseokman-do	35.36900198	126.05716
2023-04-26	0.360150463	*Anthus rubescens*	2	0	Rest	Soseokman-do	35.368977	126.057323
2023-04-26	0.365694444	*Emberiza chrysophrys*	2	0	Rest	Soseokman-do	35.36866997	126.058593
2023-04-26	0.368159722	*Turdus hortulorum*	1	0	Rest	Soseokman-do	35.36855397	126.058979
2023-04-26	0.369490741	*Microscelis amaurotis*	3	0	Rest	Soseokman-do	35.36825901	126.058988
2023-04-26	0.371875	*Phylloscopus inornatus*	1	0	Rest	Soseokman-do	35.36811803	126.059053
2023-04-26	0.378483796	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.367366	126.059891
2023-04-26	0.380648148	*Saxicola torquatus*	1	0	Rest	Soseokman-do	35.36685303	126.06004
2023-04-26	0.382939815	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36623796	126.059952
2023-04-26	0.385717593	*Streptopelia orientalis*	1	0	Rest	Soseokman-do	35.36538804	126.060231
2023-04-26	0.394479167	*Microscelis amaurotis*	2	0	Rest	Soseokman-do	35.36687298	126.058443
2023-04-26	0.398530093	*Emberiza chrysophrys*	4	0	Rest	Soseokman-do	35.36790303	126.057591
2023-04-26	0.40375	*Monticola solitarius*	1	0	Rest	Soseokman-do	35.36751503	126.055193
2023-04-26	0.407997685	*Falco peregrinus*	1	0	Rest	Soseokman-do	35.36548099	126.058455
2023-04-26	0.408877315	*Falco peregrinus*	1	0	Rest	Soseokman-do	35.36428398	126.059815
2023-04-26	0.40931713	*Larus crassirostris*	3	34.72963553	Move	Soseokman-do	35.36429697	126.060725
2023-04-26	0.422025463	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37303401	126.040825
2023-04-26	0.471238426	*Monticola solitarius*	3	0	Rest	Hyeong-do	35.33642496	125.996779
2023-04-26	0.475462963	*Emberiza chrysophrys*	9	0	Rest	Hyeong-do	35.33672897	125.996885

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-04-26	0.476064815	*Emberiza spodocephala*	10	0	Rest	Hyeong-do	35.33675403	125.99687
2023-04-26	0.481030093	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33740296	125.996945
2023-04-26	0.490127315	*Phoenicurus auroreus*	3	0	Rest	Hyeong-do	35.33687599	125.993265
2023-04-26	0.492638889	*Monticola solitarius*	2	0	Rest	Hyeong-do	35.33676099	125.993113
2023-04-26	0.495532407	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33669997	125.993249
2023-04-26	0.498263889	*Luscinia cyanura*	7	0	Rest	Hyeong-do	35.33648598	125.992771
2023-04-26	0.50125	*Luscinia cyanura*	1	0	Rest	Hyeong-do	35.33611801	125.992023
2023-04-26	0.504328704	*Phylloscopus coronatus*	8	0	Rest	Hyeong-do	35.33603101	125.991909
2023-04-26	0.505752315	*Phylloscopus inornatus*	6	0	Rest	Hyeong-do	35.33593202	125.991676
2023-04-26	0.508009259	*Emberiza chrysophrys*	5	0	Rest	Hyeong-do	35.33577704	125.990944
2023-04-26	0.50974537	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33590998	125.990708
2023-04-26	0.509861111	*Luscinia cyanura*	4	0	Rest	Hyeong-do	35.33592397	125.990704
2023-04-26	0.511145833	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33593001	125.990365
2023-04-26	0.512708333	*Luscinia cyanura*	8	0	Rest	Hyeong-do	35.33578701	125.989947
2023-04-26	0.524479167	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33647098	125.986408
2023-04-26	0.527650463	*Emberiza spodocephala*	1	0	Rest	Hyeong-do	35.33624802	125.986199
2023-04-26	0.537314815	*Emberiza spodocephala*	1	0	Rest	Hyeong-do	35.33731897	125.986789
2023-04-26	0.537326389	*Monticola solitarius*	2	0	Rest	Hyeong-do	35.33731998	125.986787
2023-04-26	0.543634259	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33783698	125.988636
2023-04-26	0.547002315	*Emberiza chrysophrys*	6	0	Rest	Hyeong-do	35.33703399	125.989126
2023-04-26	0.550173611	*Emberiza chrysophrys*	2	0	Rest	Hyeong-do	35.33665303	125.989702
2023-04-26	0.553113426	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33659201	125.990466
2023-04-26	0.553113426	*Emberiza spodocephala*	1	0	Rest	Hyeong-do	35.33659201	125.990466
2023-04-26	0.553113426	*Turdus hortulorum*	1	0	Rest	Hyeong-do	35.33659201	125.990466
2023-04-26	0.565196759	*Luscinia cyanura*	2	0	Rest	Hyeong-do	35.33576698	125.995652
2023-04-26	0.565868056	*Emberiza chrysophrys*	2	0	Rest	Hyeong-do	35.33576899	125.995655
2023-04-26	0.566944444	*Phalacrocorax capillatus*	2	23.27058331	Move	Hyeong-do	35.33579003	125.995693
2023-04-26	0.569293981	*Phylloscopus inornatus*	1	0	Rest	Hyeong-do	35.33563103	125.996345
2023-04-26	0.571215278	*Luscinia cyanura*	1	0	Rest	Hyeong-do	35.33579196	125.996423
2023-04-26	0.572094907	*Emberiza chrysophrys*	3	0	Rest	Hyeong-do	35.3359	125.996455
2023-04-26	0.582511574	*Phalacrocorax capillatus*	3	0	Rest	O-do	35.32931602	126.01283
2023-04-26	0.583414352	*Phalacrocorax capillatus*	2	0	Rest	O-do	35.32669298	126.011301
2023-04-26	0.593287037	*Monticola solitarius*	1	0	Rest	O-do	35.32975196	126.004854
2023-04-26	0.598136574	*Luscinia cyanura*	2	0	Rest	O-do	35.33057003	126.004248
2023-04-26	0.599247685	*Phylloscopus coronatus*	3	0	Rest	O-do	35.33060096	126.004371
2023-04-26	0.6028125	*Phylloscopus coronatus*	3	0	Rest	O-do	35.33075603	126.003704
2023-04-26	0.606608796	*Parus major*	1	0	Rest	O-do	35.33079199	126.003256
2023-04-26	0.608935185	*Emberiza tristrami*	1	0	Rest	O-do	35.33076801	126.003096
2023-04-26	0.609884259	*Luscinia cyanura*	1	0	Rest	O-do	35.33074597	126.0031
2023-04-26	0.6165625	*Luscinia cyanura*	8	0	Rest	O-do	35.33005597	126.001382
2023-04-26	0.619537037	*Emberiza pusilla*	1	0	Rest	O-do	35.32989403	126.001251
2023-04-26	0.621168981	*Microscelis amaurotis*	2	0	Rest	O-do	35.32969404	126.001161
2023-04-26	0.622453704	*Emberiza chrysophrys*	1	0	Rest	O-do	35.32953797	126.001183
2023-04-26	0.624444444	*Microscelis amaurotis*	5	0	Rest	O-do	35.32942104	126.000289
2023-04-26	0.625844907	*Falco peregrinus*	1	57.4906548	Move	O-do	35.32937704	126.000214
2023-04-26	0.630636574	*Microscelis amaurotis*	1	0	Rest	O-do	35.32805697	125.999408
2023-04-26	0.636423611	*Emberiza pusilla*	2	0	Rest	O-do	35.32682198	125.997871
2023-04-26	0.657569444	*Saxicola torquatus*	1	0	Rest	O-do	35.33133999	125.99925
2023-04-26	0.658865741	*Monticola solitarius*	1	0	Rest	O-do	35.33138299	125.998771
2023-04-26	0.664895833	*Emberiza chrysophrys*	5	0	Rest	O-do	35.33134402	126.000268
2023-04-26	0.665763889	*Emberiza tristrami*	1	0	Rest	O-do	35.33130999	126.000344
2023-04-26	0.674351852	*Microscelis amaurotis*	2	0	Rest	O-do	35.33102701	126.003263
2023-04-26	0.674780093	*Emberiza cioides*	3	0	Rest	O-do	35.33103397	126.003262
2023-04-26	0.677060185	*Phylloscopus inornatus*	1	0	Rest	O-do	35.33098402	126.003606
2023-04-26	0.677731481	*Turdus pallidus*	1	0	Rest	O-do	35.33099902	126.003676
2023-04-26	0.688414352	*Luscinia cyanura*	5	0	Rest	O-do	35.330492	126.006625
2023-04-26	0.692395833	*Parus major*	2	0	Rest	O-do	35.33033601	126.008583
2023-04-26	0.692395833	*Phylloscopus inornatus*	4	0	Rest	O-do	35.33033601	126.008583
2023-04-26	0.719351852	*Monticola solitarius*	1	0	Rest	Ok island	35.31971396	125.99577
2023-04-27	0.328530093	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34391402	126.024338
2023-04-27	0.329247685	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34392701	126.024298
2023-04-27	0.334641204	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34263302	126.023138
2023-04-27	0.335405093	*Phylloscopus inornatus*	7	0	Rest	Anma-do	35.34257501	126.023079
2023-04-27	0.356539352	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34296804	126.025475
2023-04-27	0.359027778	*Emberiza spodocephala*	2	0	Rest	Anma-do	35.34289202	126.026214
2023-04-27	0.359710648	*Emberiza spodocephala*	2	0	Rest	Anma-do	35.34279697	126.026407
2023-04-27	0.360416667	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.342602	126.026774

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-04-27	0.362951389	*Corvus macrorhynchos*	1	0	Rest	Anma-do	35.34263603	126.027895
2023-04-27	0.363912037	*Emberiza spodocephala*	6	0	Rest	Anma-do	35.34269596	126.028001
2023-04-27	0.36787037	*Emberiza pusilla*	2	0	Rest	Anma-do	35.34398904	126.027249
2023-04-27	0.368703704	*Hirundo rustica*	1	0	Rest	Anma-do	35.34407403	126.027169
2023-04-27	0.369375	*Hirundo rustica*	4	0	Rest	Anma-do	35.34437201	126.026902
2023-04-27	0.371481481	*Tringa ochropus*	2	0	Rest	Anma-do	35.34528497	126.027111
2023-04-27	0.373668981	*Emberiza spodocephala*	2	0	Rest	Anma-do	35.34666597	126.027014
2023-04-27	0.373981481	*Hirundo rustica*	4	0	Rest	Anma-do	35.34689899	126.026973
2023-04-27	0.375	*Anas poecilorhyncha*	1	0	Rest	Anma-do	35.34702304	126.02696
2023-04-27	0.375636574	*Motacilla lugens*	1	0	Rest	Anma-do	35.347074	126.026957
2023-04-27	0.381006944	*Egretta intermedia*	1	0	Rest	Anma-do	35.34763701	126.028821
2023-04-27	0.38275463	*Emberiza spodocephala*	3	0	Rest	Anma-do	35.34646397	126.028025
2023-04-27	0.383877315	*Emberiza spodocephala*	6	0	Rest	Anma-do	35.34603397	126.027662
2023-04-27	0.385555556	*Motacilla cinerea*	3	0	Rest	Anma-do	35.34637998	126.026004
2023-04-27	0.38662037	*Motacilla citreola*	12	0	Rest	Anma-do	35.34675096	126.025591
2023-04-27	0.38662037	*Emberiza pusilla*	1	0	Rest	Anma-do	35.34675096	126.025591
2023-04-27	0.388993056	*Bubulcus ibis*	1	0	Rest	Anma-do	35.34875298	126.024406
2023-04-27	0.390150463	*Emberiza chrysophrys*	8	0	Rest	Anma-do	35.34835199	126.02352
2023-05-29	13:08:57	*Lanius cristatus cristatus*	1	0	Rest	Soseokman-do	35.36781761	126.05581833
2023-05-29	13:10:12	*Phylloscopus fuscatus*	4	0	Rest	Soseokman-do	35.36776714	126.05576066
2023-05-29	13:12:33	*Phylloscopus xanthodryas*	3	0	Rest	Soseokman-do	35.36907921	126.05638785
2023-05-29	13:14:22	*Phalacrocorax capillatus*	1	1	Move	Soseokman-do	35.37123027	126.05695167
2023-05-29	13:15:28	*Microscelis amaurotis*	2	0	Rest	Soseokman-do	35.36893872	126.05805354
2023-05-29	13:17:26	*Lanius tigrinus*	1	0	Rest	Soseokman-do	35.36931610	126.05792775
2023-05-29	13:26:23	*Butorides striata*	1	0	Rest	Soseokman-do	35.36841459	126.05853574
2023-05-29	13:26:49	*Butorides striata*	2	24.42592917	Move	Soseokman-do	35.36837266	126.05893408
2023-05-29	13:31:02	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36768080	126.05977270
2023-05-29	13:34:46	*Lanius tigrinus*	3	0	Rest	Soseokman-do	35.36688540	126.05995276
2023-05-29	13:37:13	*Muscicapa sibirica*	1	0	Rest	Soseokman-do	35.36640718	126.06012811
2023-05-29	13:49:02	*Turdus pallidus*	2	0	Rest	Soseokman-do	35.36651876	126.05901226
2023-05-29	13:57:09	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36723609	126.05737037
2023-05-29	14:03:22	*Turdus pallidus*	1	0	Rest	Soseokman-do	35.36780996	126.05609511
2023-05-29	14:07:47	*Muscicapa dauurica*	2	0	Rest	Soseokman-do	35.36766649	126.05481986
2023-05-29	14:14:15	*Larus crassirostris*	1	4.270631395	Move	Soseokman-do	35.36943591	126.05445322
2023-05-29	14:23:39	*Larus crassirostris*	1	0	Rest	Daeseokman-do	35.36837923	126.04865561
2023-05-29	14:34:28	*Phalacrocorax capillatus*	1	25	Move	Daeseokman-do	35.37477186	126.04826908
2023-05-29	14:34:50	*Larus crassirostris*	4	0	Rest	Daeseokman-do	35.37417720	126.04892321
2023-05-29	15:26:52	*Lanius tigrinus*	1	0	Rest	Hyeong-do	35.33678685	125.99715062
2023-05-29	15:28:04	*Acrocephalus bistrigiceps*	4	0	Rest	Hyeong-do	35.33723118	125.99651190
2023-05-29	15:32:40	*Anthus hodgsoni*	1	0	Rest	Hyeong-do	35.33762997	125.99640862
2023-05-29	15:36:04	*Lanius tigrinus*	1	0	Rest	Hyeong-do	35.33734669	125.99521254
2023-05-29	15:38:34	*Pitta nympha*	1	0	Rest	Hyeong-do	35.33747325	125.99473275
2023-05-29	15:39:22	*Emberiza cioides*	1	0	Rest	Hyeong-do	35.33731527	125.99478136
2023-05-29	15:43:14	*Phylloscopus xanthodryas*	4	0	Rest	Hyeong-do	35.33701650	125.99333939
2023-05-29	15:46:04	*Falco peregrinus*	1	0	Rest	Hyeong-do	35.33634233	125.99255061
2023-05-29	15:49:20	*Microscelis amaurotis*	4	0	Rest	Hyeong-do	35.33654458	125.99149216
2023-05-29	15:54:51	*Microscelis amaurotis*	4	0	Rest	Daeseokman-do	35.33649064	125.99035955
2023-05-29	15:55:57	*Turdus pallidus*	1	0	Rest	Hyeong-do	35.33657154	125.99004270
2023-05-29	16:07:28	*Lanius tigrinus*	1	0	Rest	Hyeong-do	35.33758166	125.98753480
2023-05-29	16:17:27	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33654915	125.98607772
2023-05-29	16:36:19	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33568069	125.98960946
2023-05-29	17:46:11	*Ardea cinerea*	2	0	Rest	O-do	35.32650715	126.00960345
2023-05-29	17:53:47	*Microscelis amaurotis*	1	0	Rest	O-do	35.32949733	126.00941462
2023-05-29	18:03:41	*Microscelis amaurotis*	2	0	Rest	O-do	35.33060412	126.00664765
2023-05-29	18:04:56	*Phylloscopus fuscatus*	5	0	Rest	O-do	35.33074975	126.00644377
2023-05-29	18:21:15	*Gallinago gallinago*	1	0	Rest	O-do	35.33057500	126.00114282
2023-05-29	18:25:09	*Phylloscopus inornatus*	7	0	Rest	O-do	35.33112839	126.00006516
2023-05-29	18:43:22	*Accipiter soloensis*	1	0	Rest	O-do	35.32614784	125.99776420
2023-05-29	19:13:27	*Microscelis amaurotis*	1	0	Rest	O-do	35.33066238	126.00417193
2023-05-29	13:06:35	*Hirundo rustica*	8	20	Move	Daeseokman-do	35.37231815	126.05604566
2023-05-29	13:13:49	*Muscicapa sibirica*	3	0	Rest	Daeseokman-do	35.37315093	126.05692652
2023-05-29	13:15:03	*Lanius tigrinus*	1	0	Rest	Daeseokman-do	35.37321393	126.05728686
2023-05-29	13:16:53	*Emberiza spodocephala*	2	0	Rest	Daeseokman-do	35.37339047	126.05690273
2023-05-29	0.554780093	*Lanius tigrinus*	3	0	Rest	Daeseokman-do	35.37353079	126.05576580
2023-05-29	13:23:42	*Accipiter soloensis*	1	0	Rest	Daeseokman-do	35.37397892	126.05549955
2023-05-29	13:25:08	*Butorides striata*	1	0	Rest	Daeseokman-do	35.37426819	126.05512670
2023-05-29	13:26:01	*Acrocephalus bistrigiceps*	4	0	Rest	Daeseokman-do	35.37413372	126.05509736

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-05-29	13:34:14	*Lanius cristatus cristatus*	1	0	Rest	Daeseokman-do	35.37373850	126.05221646
2023-05-29	13:39:07	*Anthus gustavi*	1	0	Rest	Daeseokman-do	35.37323132	126.05093997
2023-05-29	13:42:29	*Phylloscopus inornatus*	5	0	Rest	Daeseokman-do	35.37286323	126.04974646
2023-05-29	13:46:13	*Streptopelia orientalis*	2	0	Rest	Daeseokman-do	35.37192574	126.04945240
2023-05-29	13:56:41	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37130859	126.04750612
2023-05-29	14:00:57	*Pitta nympha*	2	0	Rest	Daeseokman-do	35.37159389	126.04747924
2023-05-29	14:11:16	*Phylloscopus fuscatus*	1	0	Rest	Daeseokman-do	35.37206649	126.04866439
2023-05-29	14:20:03	*Bubulcus ibis*	7	0	Rest	Daeseokman-do	35.37245543	126.05134800
2023-05-29	14:24:02	*Monticola solitarius*	6	0	Rest	Daeseokman-do	35.37316264	126.05333702
2023-05-29	14:25:00	*Bubulcus ibis*	1	0	Rest	Daeseokman-do	35.37356609	126.05361672
2023-05-29	14:33:54	*Larus crassirostris*	2	0	Rest	Daeseokman-do	35.37252671	126.05553822
2023-05-29	15:10:14	*Monticola solitarius*	1	0	Rest	Anma-do	35.34783590	126.00827925
2023-05-29	15:12:43	*Larus crassirostris*	4	0	Rest	Anma-do	35.34604761	126.01001075
2023-05-29	15:13:25	*Monticola solitarius*	1	0	Rest	Anma-do	35.34481886	126.00918268
2023-05-29	15:20:36	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34428837	126.01137231
2023-05-29	15:21:59	*Parus major*	2	0	Rest	Anma-do	35.34409103	126.01146339
2023-05-29	15:25:29	*Accipiter soloensis*	1	0	Rest	Anma-do	35.34409103	126.01008201
2023-05-29	15:26:24	*Phylloscopus inornatus*	2	0	Rest	Anma-do	35.34413504	126.01003012
2023-05-29	15:29:00	*Monticola solitarius*	1	0	Rest	Anma-do	35.34310864	126.00978917
2023-05-29	15:34:19	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34129713	126.01245710
2023-05-29	15:43:33	*Accipiter soloensis*	1	63.78949502	Move	Anma-do	35.34226854	126.01695435
2023-05-29	15:44:58	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34210064	126.01739807
2023-05-29	15:46:32	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.34162483	126.01835853
2023-05-29	15:51:10	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34043390	126.02003414
2023-05-29	15:55:50	*Parus major*	1	0	Rest	Anma-do	35.33839824	126.02118353
2023-05-29	15:57:37	*Parus major*	1	0	Rest	Anma-do	35.33734579	126.02128046
2023-05-29	16:03:21	*Emberiza cioides*	1	0	Rest	Anma-do	35.33560093	126.01867703
2023-05-29	16:07:04	*Lanius bucephalus*	1	0	Rest	Anma-do	35.33441626	126.01663596
2023-05-29	16:09:32	*Monticola solitarius*	1	0	Rest	Anma-do	35.33450234	126.01597600
2023-05-29	16:13:54	*Muscicapa sibirica*	1	0	Rest	Anma-do	35.33556401	126.01930448
2023-05-29	16:14:39	*Cuculus canorus*	1	6.908346224	Move	Anma-do	35.33599442	126.01907493
2023-05-29	16:15:52	*Lanius tigrinus*	1	0	Rest	Anma-do	35.33630660	126.01920115
2023-05-29	16:19:20	*Cuculus canorus*	1	0	Rest	Anma-do	35.33657283	126.02073709
2023-05-29	16:22:31	*Muscicapa dauurica*	1	0	Rest	Anma-do	35.33683384	126.02191059
2023-05-29	16:27:17	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.33738729	126.02449337
2023-05-29	16:30:13	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33828665	126.02617679
2023-05-29	16:35:09	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33862929	126.02839767
2023-05-29	16:40:57	*Cuculus poliocephalus*	1	0	Rest	Anma-do	35.34013691	126.03055860
2023-05-29	16:48:08	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34119225	126.03040784
2023-05-29	16:48:47	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.34199632	126.02935250
2023-05-29	16:54:38	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34412279	126.02724887
2023-05-29	16:55:22	*Hirundo rustica*	7	0	Rest	Anma-do	35.34435292	126.02675024
2023-05-29	16:59:01	*Bubulcus ibis*	2	0	Rest	Anma-do	35.34644443	126.02741756
2023-05-29	16:59:14	*Ardea alba*	4	0	Rest	Anma-do	35.34660821	126.02725378
2023-05-29	16:59:36	*Egretta intermedia*	2	0	Rest	Anma-do	35.34656967	126.02742719
2023-05-29	17:00:58	*Oriolus chinensis*	1	0	Rest	Anma-do	35.34657101	126.02685409
2023-05-29	17:02:02	*Motacilla flava*	13	0	Rest	Anma-do	35.34717676	126.02751708
2023-05-29	17:04:52	*Cuculus canorus*	1	0	Rest	Anma-do	35.34957866	126.02673554
2023-05-29	17:06:15	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34886647	126.02753439
2023-05-29	17:06:42	*Egretta garzetta*	3	0	Rest	Anma-do	35.34825442	126.02757264
2023-05-29	17:06:56	*Bubulcus ibis*	4	0	Rest	Anma-do	35.34824677	126.02746554
2023-05-29	17:07:11	*Ardea alba*	3	0	Rest	Anma-do	35.34824677	126.02746554
2023-05-29	17:10:05	*Lanius bucephalus*	2	0	Rest	Anma-do	35.34805551	126.02945469
2023-05-29	17:10:21	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34785659	126.03003613
2023-05-29	17:14:44	*Muscicapa sibirica*	1	0	Rest	Anma-do	35.34816261	126.03008203
2023-05-29	17:15:02	*Pitta nympha*	1	0	Rest	Anma-do	35.34888177	126.03059462
2023-05-29	17:15:15	*Cuculus poliocephalus*	1	0	Rest	Anma-do	35.34877466	126.03029625
2023-05-29	17:22:40	*Cuculus poliocephalus*	1	0	Rest	Anma-do	35.34940576	126.02869221
2023-05-29	17:24:33	*Lanius tigrinus*	1	0	Rest	Anma-do	35.34959407	126.02806844
2023-05-29	17:26:39	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.34979415	126.02759767
2023-05-29	17:28:00	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.35073569	126.02812728
2023-05-29	17:33:29	*Eurystomus orientalis*	1	0	Rest	Anma-do	35.35170077	126.02622066
2023-05-29	17:56:26	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35346615	126.02718574
2023-05-29	17:58:01	*Parus major*	1	0	Rest	Anma-do	35.35308954	126.02717397
2023-05-29	18:11:40	*Apus pacificus*	41	81.66423736	Move	Anma-do	35.35033553	126.02542035
2023-05-29	18:16:17	*Lanius bucephalus*	2	0	Rest	Anma-do	35.34927630	126.02527912
2023-05-29	18:18:27	*Acrocephalus orientalis*	3	0	Rest	Anma-do	35.34905268	126.02466712

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-05-29	18:20:47	*Acrocephalus orientalis*	1	0	Rest	Anma-do	35.34854660	126.02365496
2023-05-29	18:22:42	*Ardea cinerea*	1	0	Rest	Anma-do	35.34789929	126.02309004
2023-05-29	18:23:04	*Larus crassirostris*	4	0	Rest	Anma-do	35.34761683	126.02287819
2023-05-29	18:24:49	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.34848776	126.02174834
2023-05-29	18:25:24	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34801699	126.02138350
2023-05-29	18:32:24	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35041792	126.02020657
2023-05-29	18:34:25	*Parus major*	1	0	Rest	Anma-do	35.35170077	126.01971226
2023-05-29	18:37:46	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35346615	126.01811164
2023-05-29	18:42:02	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35346615	126.01519287
2023-05-29	18:42:13	*Parus major*	1	0	Rest	Anma-do	35.35323077	126.01487510
2023-05-29	18:51:21	*Parus major*	1	0	Rest	Anma-do	35.35326409	126.01196459
2023-05-29	18:52:43	*Emberiza cioides*	1	0	Rest	Anma-do	35.35362377	126.01170301
2023-05-29	18:58:20	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35532012	126.00957145
2023-05-29	19:06:52	*Egretta intermedia*	1	32.43422377	Move	Juk-do	35.35575685	126.00618409
2023-05-29	19:11:18	*Monticola solitarius*	1	0	Rest	Juk-do	35.35501466	126.00583630
2023-05-29	19:11:34	*Streptopelia orientalis*	1	0	Rest	Juk-do	35.35487205	126.00569369
2023-05-29	19:13:59	*Streptopelia orientalis*	1	0	Rest	Juk-do	35.35489922	126.00521154
2023-05-29	19:20:25	*Cettia diphone cantans*	1	0	Rest	Juk-do	35.35414283	126.00416575
2023-05-29	19:21:26	*Cuculus micropterus*	1	0	Rest	Juk-do	35.35438810	126.00406063
2023-05-29	19:32:18	*Monticola solitarius*	1	0	Rest	Juk-do	35.35254899	126.00309809
2023-05-29	19:33:18	*Accipiter soloensis*	1	20	Move	Juk-do	35.35229775	126.00282358
2023-06-27	10:48:51	*Hirundo rustica*	1	0	Rest	Daeseokman-do	35.37287114	126.05659096
2023-06-27	10:57:31	*Larus crassirostris*	8	0	Rest	Daeseokman-do	35.37286924	126.05560776
2023-06-27	11:00:59	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37412965	126.05431213
2023-06-27	11:02:33	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37417386	126.05421718
2023-06-27	11:03:23	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37392524	126.05406262
2023-06-27	11:10:52	*Larus crassirostris*	4	0	Rest	Daeseokman-do	35.37483274	126.05197679
2023-06-27	11:17:42	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37333155	126.05011914
2023-06-27	11:35:15	*Turdus pallidus*	2	0	Rest	Daeseokman-do	35.37266768	126.04810326
2023-06-27	11:39:26	*Phalacrocorax capillatus*	1	20	Move	Daeseokman-do	35.37453201	126.04730374
2023-06-27	11:41:13	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37277702	126.04747910
2023-06-27	11:41:23	*Microscelis amaurotis*	3	0	Rest	Daeseokman-do	35.37271860	126.04683492
2023-06-27	11:51:38	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37162407	126.04734140
2023-06-27	13:09:51	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33622758	125.99701795
2023-06-27	13:11:43	*Microscelis amaurotis*	4	0	Rest	Hyeong-do	35.33625771	125.99662123
2023-06-27	13:21:26	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33796592	125.99617808
2023-06-27	13:23:14	*Emberiza cioides*	1	0	Rest	Hyeong-do	35.33715816	125.99539169
2023-06-27	13:26:50	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33716731	125.99515159
2023-06-27	13:29:20	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33682097	125.99512182
2023-06-27	13:33:01	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33679741	125.99450110
2023-06-27	13:34:45	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33709128	125.99409670
2023-06-27	13:35:49	*Monticola solitarius*	1	0	번식	Hyeong-do	35.33693927	125.99404620
2023-06-27	13:43:11	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33626850	125.99185598
2023-06-27	13:50:09	*Microscelis amaurotis*	4	0	Rest	Hyeong-do	35.33619697	125.99090017
2023-06-27	13:53:56	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33668091	125.98990620
2023-06-27	14:22:54	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33625921	125.98906411
2023-06-27	14:34:06	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33678117	125.99178426
2023-06-27	14:40:29	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33653409	125.99388320
2023-06-27	14:44:43	*Parus major*	2	0	Rest	Hyeong-do	35.33576107	125.99529545
2023-06-27	14:47:19	*Monticola solitarius*	2	0	Rest	Hyeong-do	35.33545101	125.99646513
2023-06-27	14:55:27	*Larus crassirostris*	1	0	Rest	Hyeong-do	35.33596649	125.99757350
2023-06-27	14:59:49	*Monticola solitarius*	2	0	Rest	Hyeong-do	35.33646472	125.99709066
2023-06-27	15:02:41	*Phalacrocorax capillatus*	1	1	Move	Hyeong-do	35.33658880	125.99744658
2023-06-27	10:50:45	*Monticola solitarius*	3	0	Rest	Soseokman-do	35.36908077	126.05638579
2023-06-27	10:52:54	*Monticola solitarius*	3	0	Rest	Soseokman-do	35.36892458	126.05690342
2023-06-27	10:56:26	*Parus major*	1	0	Rest	Soseokman-do	35.36909840	126.05812177
2023-06-27	10:57:08	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36900619	126.05841678
2023-06-27	11:02:32	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36849150	126.05847841
2023-06-27	11:12:04	*Monticola solitarius*	2	0	Rest	Soseokman-do	35.36661449	126.06023282
2023-06-27	11:20:54	*Turdus pallidus*	2	0	Rest	Soseokman-do	35.36576892	126.05928725
2023-06-27	11:29:56	*Parus major*	2	0	Rest	Soseokman-do	35.36699534	126.05820577
2023-06-27	11:36:56	*Parus major*	3	0	Rest	Soseokman-do	35.36806220	126.05707259
2023-06-27	11:43:36	*Turdus pallidus*	1	0	Rest	Soseokman-do	35.36719041	126.05672796
2023-06-27	11:47:08	*Falco tinnunculus*	1	0	Rest	Soseokman-do	35.36770584	126.05570870
2023-06-27	11:50:40	*Phalacrocorax capillatus*	1	0	Rest	Soseokman-do	35.36695045	126.05529188
2023-06-27	11:50:55	*Monticola solitarius*	1	0	Rest	Soseokman-do	35.36723110	126.05552507
2023-06-27	13:20:56	*Microscelis amaurotis*	1	0	Rest	O-do	35.32914936	126.00851503

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-06-27	13:23:34	*Microscelis amaurotis*	3	0	Rest	O-do	35.32973043	126.00838888
2023-06-27	13:23:40	*Parus major*	2	0	Rest	O-do	35.32995580	126.00839744
2023-06-27	13:29:43	*Parus major*	1	0	Rest	O-do	35.33036801	126.00701852
2023-06-27	13:30:47	*Microscelis amaurotis*	1	0	Rest	O-do	35.33006916	126.00626408
2023-06-27	13:40:44	*Monticola solitarius*	1	0	Rest	O-do	35.33035399	126.00381888
2023-06-27	13:43:26	*Turdus pallidus*	2	0	Rest	O-do	35.33054219	126.00338222
2023-06-27	14:04:25	*Monticola solitarius*	1	0	Rest	O-do	35.33085664	125.99871242
2023-06-27	14:15:57	*Microscelis amaurotis*	4	0	Rest	O-do	35.32830132	125.99997764
2023-06-27	14:16:45	*Emberiza cioides*	1	0	Rest	O-do	35.32815220	125.99954072
2023-06-27	14:24:54	*Emberiza cioides*	1	0	Rest	O-do	35.32839889	125.99812796
2023-06-27	14:25:03	*Monticola solitarius*	1	0	Rest	O-do	35.32860899	125.99820547
2023-06-27	14:51:43	*Monticola solitarius*	1	0	Rest	O-do	35.32994956	125.99916547
2023-06-27	15:04:51	*Falco peregrinus*	1	30	Move	O-do	35.32890441	125.99991561
2023-06-27	15:39:29	*Larus crassirostris*	10	0	Rest	Anma-do	35.34990769	126.00889151
2023-06-27	15:40:07	*Monticola solitarius*	1	0	Rest	Anma-do	35.34571584	126.00836916
2023-06-27	15:50:36	*Larus crassirostris*	42	0	Rest	Anma-do	35.34562173	126.01208568
2023-06-27	15:54:19	*Parus major*	1	0	Rest	Anma-do	35.34413087	126.01460438
2023-06-27	0.662719907	*Hirundo rustica*	2	0	Rest	Anma-do	35.34413087	126.01460438
2023-06-27	16:51:41	*Larus crassirostris*	27	0	Rest	Anma-do	35.34485211	126.02003043
2023-06-27	16:58:15	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35070435	126.01977048
2023-06-27	17:00:46	*Monticola solitarius*	1	0	Rest	Anma-do	35.35317074	126.01402412
2023-06-27	17:02:47	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35484442	126.00982472
2023-06-27	17:09:25	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35594964	126.00748343
2023-06-27	17:58:31	*Monticola solitarius*	1	0	Rest	Anma-do	35.35530819	126.00336935
2023-06-27	18:02:38	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.35449918	126.00272772
2023-06-27	18:11:52	*Monticola solitarius*	4	0	Rest	Anma-do	35.35535032	126.00461723
2023-06-27	18:24:15	*Monticola solitarius*	2	0	Rest	Anma-do	35.35638988	126.00743352
2023-06-27	18:26:30	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.35482843	126.00930818
2023-06-27	18:27:45	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35361515	126.01214465
2023-06-27	18:31:52	*Ardea cinerea*	2	0	Rest	Anma-do	35.34520476	126.02284378
2023-06-27	18:32:27	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34801610	126.02196786
2023-06-27	18:35:13	*Ardea cinerea*	3	0	Rest	Anma-do	35.34730935	126.02331510
2023-06-27	18:38:45	*Pycnonotus sinensis*	2	0	Rest	Anma-do	35.34781041	126.02463781
2023-06-27	18:43:16	*Sturnus cineraceus*	9	0	Rest	Anma-do	35.34757837	126.02444140
2023-06-27	18:49:07	*Sturnus cineraceus*	4	0	Rest	Anma-do	35.34836537	126.03003834
2023-06-27	18:55:25	*Passer montanus*	4	0	Rest	Anma-do	35.34373990	126.02772817
2023-06-27	18:56:39	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34165633	126.02831743
2023-06-27	19:01:08	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34125003	126.02790609
2023-06-27	0.795833333	*Falco subbuteo*	1	30	Move	Anma-do	35.34125003	126.02790609
2023-06-27	19:34:14	*Terpsiphone atrocaudata*	3	0	Rest	Anma-do	35.34171342	126.02842608
2023-06-27	19:35:50	*Streptopelia orientalis*	4	0	Rest	Anma-do	35.34321273	126.02692559
2023-06-27	19:36:52	*Passer montanus*	4	0	Rest	Anma-do	35.34390925	126.02559435
2023-06-27	19:38:46	*Falco subbuteo*	1	0	Rest	Anma-do	35.34153874	126.02841586
2023-06-27	19:39:22	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34401603	126.01743137
2023-06-27	19:40:11	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34323871	126.01668833
2023-06-27	19:42:39	*Emberiza cioides*	2	0	Rest	Anma-do	35.34152223	126.01531004
2023-06-27	19:51:04	*Hirundo rustica*	6	0	번식	Anma-do	35.34495006	126.01757535
2023-06-28	07:03:43	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34116026	126.01936204
2023-06-28	07:06:22	*Lanius bucephalus*	1	0	Rest	Anma-do	35.33989944	126.02038562
2023-06-28	07:10:08	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.33634242	126.01967916
2023-06-28	07:11:45	*Parus major*	2	0	번식	Anma-do	35.33547180	126.01870263
2023-06-28	07:20:34	*Falco peregrinus*	2	185.2619767	Move	Anma-do	35.33347837	126.01505418
2023-06-28	07:32:20	*Monticola solitarius*	2	0	Rest	Anma-do	35.33754651	126.02782083
2023-06-28	07:35:31	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34006465	126.02980956
2023-06-28	07:46:54	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34809754	126.02912179
2023-06-28	07:48:47	*Corvus macrorhynchos*	2	0	Rest	Anma-do	35.34315725	126.02744722
2023-06-28	07:48:47	*Lanius bucephalus*	2	0	Rest	Anma-do	35.34315725	126.02744722
2023-06-28	07:59:11	*Cuculus canorus*	1	0	Rest	Anma-do	35.34454244	126.03039659
2023-06-28	08:34:21	*Hirundo rustica*	5	0	Rest	Anma-do	35.34471062	126.02683371
2023-06-28	08:37:23	*Corvus macrorhynchos*	1	0	Rest	Anma-do	35.34974359	126.02475886
2023-06-28	08:49:49	*Parus major*	1	0	Rest	Anma-do	35.35517550	126.02545803
2023-06-28	08:50:12	*Picus canus*	1	0	Rest	Anma-do	35.35495307	126.02577036
2023-06-28	08:58:50	*Parus major*	2	0	Rest	Anma-do	35.35827784	126.02794156
2023-06-28	08:59:54	*Lanius tigrinus*	2	0	Rest	Anma-do	35.35826790	126.02818911
2023-06-28	09:02:38	*Lanius tigrinus*	4	0	Rest	Anma-do	35.35892592	126.02837763
2023-06-28	09:04:58	*Turdus pallidus*	1	0	Rest	Anma-do	35.35931550	126.02866749
2023-06-28	09:10:27	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.35852405	126.02820627

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-06-28	09:17:04	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35682408	126.02618206
2023-06-28	09:21:45	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35461222	126.02611147
2023-06-28	09:34:18	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.34599113	126.02718866
2023-06-28	09:46:40	*Ardea alba*	2	0	Rest	Anma-do	35.34592155	126.02160045
2023-06-28	09:46:40	*Egretta intermedia*	4	0	Rest	Anma-do	35.34592155	126.02160045
2023-06-28	10:01:18	*Actitis hypoleucos*	1	0	Rest	Anma-do	35.34461583	126.02012401
2023-06-28	10:01:18	*Larus crassirostris*	45	0	Rest	Anma-do	35.34461583	126.02012401
2023-06-28	10:17:48	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34278649	126.01851756
2023-06-28	10:23:20	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34210824	126.02073945
2023-06-28	10:29:24	*Parus major*	2	0	Rest	Anma-do	35.34083887	126.02241427
2023-06-28	10:29:47	*Turdus pallidus*	1	0	Rest	Anma-do	35.34063469	126.02274158
2023-06-28	10:37:51	*Parus major*	5	0	Rest	Anma-do	35.33971763	126.02379975
2023-06-28	10:56:22	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.33901465	126.02616796
2023-06-28	11:00:46	*Parus palustris*	1	0	Rest	Anma-do	35.33877360	126.02739918
2023-06-28	11:22:19	*Passer montanus*	6	0	Rest	Anma-do	35.34134355	126.02847326
2023-06-28	11:30:31	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34392081	126.02637271
2023-06-28	0.489583333	*Hirundo rustica*	4	0	번식	Anma-do	35.34392081	126.02637271
2023-06-27	18:02:38	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.35437528	126.00117455
2023-06-29	08:11:19	*Pica pica*	1	0	Rest	Coastal Survey	35.44403794	126.43523545
2023-06-29	08:14:39	*Larus crassirostris*	140	0	Rest	Coastal Survey	35.44606147	126.43503309
2023-06-29	08:14:45	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.44575794	126.43465368
2023-06-29	08:15:18	*Larus crassirostris*	34	0	Rest	Coastal Survey	35.44645277	126.43465368
2023-06-29	08:15:30	*Larus crassirostris*	31	0	Rest	Coastal Survey	35.44174148	126.43306066
2023-06-29	08:15:38	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.44209737	126.43331486
2023-06-29	08:15:45	*Larus crassirostris*	3	0	Rest	Coastal Survey	35.44163980	126.43326402
2023-06-29	08:15:54	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.44553763	126.43492483
2023-06-29	08:16:53	*Hirundo rustica*	4	0	Rest	Coastal Survey	35.44420905	126.43495218
2023-06-29	08:27:11	*Microscelis amaurotis*	2	0	Rest	Coastal Survey	35.43409565	126.43428514
2023-06-29	08:28:08	*Larus crassirostris*	11	0	Rest	Coastal Survey	35.43326603	126.43458102
2023-06-29	08:32:12	*Larus crassirostris*	22	0	Rest	Coastal Survey	35.43279802	126.43881057
2023-06-29	08:32:44	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.43280913	126.43863758
2023-06-29	08:35:34	*Egretta eulophotes*	1	0	Rest	Coastal Survey	35.43597684	126.44263702
2023-06-29	08:38:42	*Passer montanus*	6	0	Rest	Coastal Survey	35.43093744	126.44900357
2023-06-29	08:38:56	*Acrocephalus orientalis*	2	0	Rest	Coastal Survey	35.43073534	126.44897477
2023-06-29	08:39:16	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.42882059	126.44568512
2023-06-29	0.363888889	*Butorides striata*	1	0	Rest	Coastal Survey	35.42882059	126.44568512
2023-06-29	08:47:46	*Halcyon coromanda*	1	0	Rest	Coastal Survey	35.40964083	126.45030318
2023-06-29	08:48:31	*Cuculus micropterus*	1	0	Rest	Coastal Survey	35.40989146	126.45008146
2023-06-29	08:51:43	*Microscelis amaurotis*	3	0	Rest	Coastal Survey	35.41215049	126.42519802
2023-06-29	08:53:09	*Hirundo rustica*	3	0	Rest	Coastal Survey	35.40507895	126.42238224
2023-06-29	08:54:11	*Pica pica*	8	0	Rest	Coastal Survey	35.40341991	126.41564659
2023-06-29	08:59:00	*Larus crassirostris*	86	0	Rest	Coastal Survey	35.40093304	126.40716006
2023-06-29	08:59:21	*Larus crassirostris*	19	0	Rest	Coastal Survey	35.40119772	126.40722000
2023-06-29	08:59:53	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.40105768	126.40727328
2023-06-29	09:00:18	*Larus crassirostris*	21	0	Rest	Coastal Survey	35.39956361	126.40620540
2023-06-29	09:00:29	*Larus crassirostris*	57	0	Rest	Coastal Survey	35.39968363	126.40635393
2023-06-29	09:00:53	*Larus crassirostris*	16	0	Rest	Coastal Survey	35.39951479	126.40631888
2023-06-29	09:01:08	*Larus crassirostris*	7	0	Rest	Coastal Survey	35.39965441	126.40644024
2023-06-29	09:01:35	*Cyanopica cyanus*	4	0	Rest	Coastal Survey	35.39801369	126.40779288
2023-06-29	09:02:59	*Larus crassirostris*	17	0	Rest	Coastal Survey	35.40172034	126.40392889
2023-06-29	09:13:37	*Hirundo rustica*	2	0	Rest	Coastal Survey	35.39585397	126.40786437
2023-06-29	09:15:13	*Larus crassirostris*	9	0	Rest	Coastal Survey	35.39317608	126.40660252
2023-06-29	09:17:56	*Parus major*	2	0	Rest	Coastal Survey	35.38621916	126.41313201
2023-06-29	09:22:11	*Cyanopica cyanus*	2	0	Rest	Coastal Survey	35.38179267	126.42007111
2023-06-29	09:22:32	*Larus crassirostris*	17	0	Rest	Coastal Survey	35.38165274	126.41932017
2023-06-29	09:22:55	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.38146879	126.41931834
2023-06-29	09:23:29	*Passer montanus*	4	0	Rest	Coastal Survey	35.38143385	126.42055313
2023-06-29	09:23:52	*Egretta eulophotes*	1	0	Rest	Coastal Survey	35.38152298	126.41913800
2023-06-29	09:24:14	*Microscelis amaurotis*	1	0	Rest	Coastal Survey	35.37870619	126.41707076
2023-06-29	09:25:04	*Columba livia var. domestica*	2	0	Rest	Coastal Survey	35.37572652	126.41406866
2023-06-29	09:25:16	*Pica pica*	1	0	Rest	Coastal Survey	35.37518781	126.41410432
2023-06-29	09:28:31	*Passer montanus*	5	0	Rest	Coastal Survey	35.36199269	126.41280613
2023-06-29	09:30:26	*Ardea alba*	1	0	Rest	Coastal Survey	35.36293257	126.40563370
2023-06-29	09:30:36	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.36323814	126.40551337
2023-06-29	09:30:54	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.36312076	126.40548847
2023-06-29	09:45:50	*Larus crassirostris*	18	0	Rest	Coastal Survey	35.36894308	126.40438631
2023-06-29	09:46:03	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.36893945	126.40435579

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-06-29	09:59:34	*Microscelis amaurotis*	1	0	Rest	Coastal Survey	35.35826620	126.39437447
2023-06-29	10:03:11	*Larus crassirostris*	25	0	Rest	Coastal Survey	35.35326898	126.38801403
2023-06-29	10:26:51	*Larus crassirostris*	18	0	Rest	Coastal Survey	35.34458646	126.38774310
2023-06-29	10:30:28	*Pica pica*	1	0	Rest	Coastal Survey	35.32805581	126.37931498
2023-06-29	10:31:47	*Passer montanus*	4	0	Rest	Coastal Survey	35.32328905	126.38079047
2023-06-29	10:32:50	*Microscelis amaurotis*	1	0	Rest	Coastal Survey	35.32050991	126.38374751
2023-06-29	10:33:41	*Oriolus chinensis*	1	0	Rest	Coastal Survey	35.31649879	126.38450841
2023-06-29	10:34:24	*Microscelis amaurotis*	1	0	Rest	Coastal Survey	35.31607155	126.38290616
2023-06-29	10:36:45	*Passer montanus*	6	0	Rest	Coastal Survey	35.31124976	126.37816552
2023-06-29	10:37:13	*Oriolus chinensis*	1	0	Rest	Coastal Survey	35.31060100	126.37836567
2023-06-29	10:37:29	*Cyanopica cyanus*	11	0	Rest	Coastal Survey	35.31039047	126.37827181
2023-06-29	10:37:44	*Corvus macrorhynchos*	1	0	Rest	Coastal Survey	35.31036762	126.37820265
2023-06-29	10:40:05	*Passer montanus*	2	0	Rest	Coastal Survey	35.31305443	126.37746695
2023-06-29	10:41:48	*Ardea cinerea*	34	0	Rest	Coastal Survey	35.31479530	126.37581008
2023-06-29	10:41:56	*Platalea minor*	3	0	Rest	Coastal Survey	35.31497541	126.37567744
2023-06-29	10:42:03	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.31473806	126.37549315
2023-06-29	10:44:03	*Corvus macrorhynchos*	4	0	Rest	Coastal Survey	35.31837491	126.37893326
2023-06-29	10:45:47	*Microscelis amaurotis*	1	0	Rest	Coastal Survey	35.31702615	126.37822364
2023-06-29	10:48:20	*Streptopelia orientalis*	2	0	Rest	Coastal Survey	35.31182371	126.37742090
2023-06-29	10:51:27	*Sturnus cineraceus*	20	0	Rest	Coastal Survey	35.30594484	126.37863995
2023-06-29	10:55:06	*Larus crassirostris*	67	0	Rest	Coastal Survey	35.30276164	126.38234382
2023-06-29	11:06:15	*Egretta eulophotes*	5	0	Rest	Coastal Survey	35.30483256	126.37619555
2023-06-29	11:08:00	*Larus crassirostris*	130	0	Rest	Coastal Survey	35.30284280	126.37046187
2023-06-29	11:08:33	*Larus crassirostris*	19	0	Rest	Coastal Survey	35.30263908	126.37065356
2023-06-29	11:15:38	*Larus crassirostris*	21	0	Rest	Coastal Survey	35.29609615	126.38153537
2023-06-29	11:16:44	*Ardea alba*	1	0	Rest	Coastal Survey	35.29280219	126.38205346
2023-06-29	11:16:57	*Larus crassirostris*	17	0	Rest	Coastal Survey	35.29290062	126.38157839
2023-06-29	11:19:00	*Larus crassirostris*	90	16.08675333	Move	Coastal Survey	35.28459687	126.37962261
2023-06-29	11:20:22	*Larus crassirostris*	282	0	Rest	Coastal Survey	35.28451480	126.37889210
2023-06-29	11:21:52	*Larus crassirostris*	25	0	Rest	Coastal Survey	35.28479904	126.37914077
2023-06-29	11:22:29	*Larus crassirostris*	19	0	Rest	Coastal Survey	35.28474749	126.37876952
2023-06-29	11:22:54	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.28454675	126.37856881
2023-06-29	11:25:20	*Larus crassirostris*	45	0	Rest	Coastal Survey	35.28364264	126.37285902
2023-06-29	11:26:01	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.28352895	126.37293549
2023-06-29	11:32:18	*Platalea minor*	5	0	Rest	Coastal Survey	35.28460686	126.37104566
2023-06-29	11:32:26	*Ardea cinerea*	22	0	Rest	Coastal Survey	35.28458989	126.37087488
2023-06-29	11:32:35	*Egretta garzetta*	3	0	Rest	Coastal Survey	35.28468169	126.37090423
2023-06-29	11:37:08	*Platalea minor*	74	0	Rest	Coastal Survey	35.28901065	126.35796928
2023-06-29	11:45:09	*Ardea cinerea*	13	0	Rest	Coastal Survey	35.28252861	126.36644926
2023-06-29	11:46:03	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.28277830	126.36643624
2023-06-29	11:46:25	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.28271644	126.36639577
2023-06-29	11:46:57	*Larus crassirostris*	261	0	Rest	Coastal Survey	35.28285881	126.36635880
2023-06-29	11:47:28	*Platalea minor*	12	0	Rest	Coastal Survey	35.28128040	126.36696137
2023-06-29	11:49:44	*Larus crassirostris*	50	0	Rest	Coastal Survey	35.27927076	126.35307809
2023-06-29	11:50:56	*Larus crassirostris*	79	0	Rest	Coastal Survey	35.27446283	126.34873512
2023-06-29	11:51:30	*Egretta garzetta*	1	0	Rest	Coastal Survey	35.27621529	126.35000558
2023-06-29	11:52:05	*Ardea alba*	6	0	Rest	Coastal Survey	35.27897736	126.34753207
2023-06-29	11:54:34	*Passer montanus*	5	0	Rest	Coastal Survey	35.28568729	126.33955246
2023-06-29	11:58:46	*Charadrius alexandrinus*	5	0	Rest	Coastal Survey	35.28675686	126.35114222
2023-06-29	11:59:37	*Larus crassirostris*	98	0	Rest	Coastal Survey	35.28719429	126.34914105
2023-06-29	12:01:50	*Larus crassirostris*	187	0	Rest	Coastal Survey	35.28600766	126.35205195
2023-06-29	12:02:06	*Larus crassirostris*	21	0	Rest	Coastal Survey	35.28587230	126.35214227
2023-06-29	12:02:18	*Larus crassirostris*	700	0	Rest	Coastal Survey	35.28622409	126.35321619
2023-06-29	12:02:42	*Larus crassirostris*	21	0	Rest	Coastal Survey	35.28611433	126.35326564
2023-06-29	12:02:52	*Larus crassirostris*	57	0	Rest	Coastal Survey	35.28609597	126.35312720
2023-06-29	12:03:08	*Larus crassirostris*	800	0	Rest	Coastal Survey	35.28614930	126.35373405
2023-06-29	12:03:21	*Larus crassirostris*	43	0	Rest	Coastal Survey	35.28609502	126.35374383
2023-06-29	12:03:35	*Larus crassirostris*	400	0	Rest	Coastal Survey	35.28730336	126.35361670
2023-06-29	12:03:51	*Larus crassirostris*	22	0	Rest	Coastal Survey	35.28721696	126.35365612
2023-06-29	12:04:11	*Larus crassirostris*	47	0	Rest	Coastal Survey	35.28722600	126.35357915
2023-06-29	12:04:22	*Larus crassirostris*	67	0	Rest	Coastal Survey	35.28667750	126.35236637
2023-06-29	12:04:37	*Larus crassirostris*	11	0	Rest	Coastal Survey	35.28656773	126.35241582
2023-06-29	12:04:48	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.28659266	126.35224320
2023-06-29	12:09:56	*Ardea cinerea*	5	0	Rest	Coastal Survey	35.28420950	126.35642394
2023-06-29	12:12:51	*Hirundo rustica*	5	0	Rest	Coastal Survey	35.28551018	126.35062490
2023-06-29	12:19:59	*Streptopelia orientalis*	2	0	Rest	Coastal Survey	35.28480935	126.33825873
2023-06-29	12:21:16	*Larus crassirostris*	31	0	Rest	Coastal Survey	35.28283028	126.33401449

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-06-29	12:21:34	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.28290566	126.33406996
2023-06-29	12:22:40	*Charadrius alexandrinus*	1	0	Rest	Coastal Survey	35.28178507	126.33262481
2023-06-29	12:23:32	*Egretta eulophotes*	1	0	Rest	Coastal Survey	35.28212483	126.33217159
2023-06-29	12:27:30	*Charadrius alexandrinus*	1	0	Rest	Coastal Survey	35.27267652	126.32477263
2023-06-29	12:28:08	*Larus crassirostris*	37	0	Rest	Coastal Survey	35.27129403	126.32526925
2023-06-29	12:33:36	*Larus crassirostris*	58	0	Rest	Coastal Survey	35.27143396	126.32679602
2023-06-29	12:35:21	*Egretta eulophotes*	6	0	Rest	Coastal Survey	35.27021546	126.32674760
2023-06-29	12:45:52	*Ardea cinerea*	14	0	Rest	Coastal Survey	35.26931349	126.32911835
2023-06-29	12:46:20	*Ardea alba*	2	0	Rest	Coastal Survey	35.26937668	126.32898479
2023-06-29	12:46:57	*Platalea minor*	5	0	Rest	Coastal Survey	35.26930382	126.32876281
2023-06-29	12:56:01	*Passer montanus*	5	0	Rest	Coastal Survey	35.26403560	126.34042836
2023-06-29	12:56:21	*Larus crassirostris*	78	0	Rest	Coastal Survey	35.26508097	126.33983611
2023-06-29	12:59:52	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.25812443	126.34143700
2023-06-29	13:11:37	*Platalea minor*	8	0	Rest	Coastal Survey	35.23567698	126.30051405
2023-06-29	13:11:45	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.23542876	126.30055514
2023-06-29	13:12:00	*Larus crassirostris*	21	0	Rest	Coastal Survey	35.23527325	126.30061007
2023-06-29	13:12:16	*Larus crassirostris*	15	0	Rest	Coastal Survey	35.23434211	126.30043596
2023-06-29	13:14:53	*Larus crassirostris*	21	0	Rest	Coastal Survey	35.23301830	126.30035131
2023-06-29	13:33:47	*Larus crassirostris*	41	0	Rest	Coastal Survey	35.23013035	126.29982544
2023-06-29	13:34:09	*Haematopus ostralegus*	2	0	Rest	Coastal Survey	35.23010998	126.29957301
2023-06-29	13:36:06	*Falco tinnunculus*	1	0	Rest	Coastal Survey	35.22887523	126.30092167
2023-06-29	13:36:57	*Larus crassirostris*	17	0	Rest	Coastal Survey	35.22760466	126.29958407
2023-06-29	13:38:17	*Streptopelia orientalis*	2	0	Rest	Coastal Survey	35.22163449	126.29926153
2023-06-29	14:02:43	*Larus crassirostris*	3	0	Rest	Coastal Survey	35.21587815	126.29560926
2023-06-29	14:03:43	*Hirundo rustica*	6	0	Rest	Coastal Survey	35.22363033	126.29922463
2023-06-29	14:05:54	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.22131411	126.29848767
2023-06-29	14:14:16	*Passer montanus*	8	0	Rest	Coastal Survey	35.22634574	126.32741363
2023-06-29	14:16:44	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.21995323	126.33482970
2023-06-29	14:17:37	*Egretta eulophotes*	1	0	Rest	Coastal Survey	35.21959855	126.33484907
2023-06-29	14:21:13	*Passer montanus*	5	0	Rest	Coastal Survey	35.21134291	126.33204683
2023-06-29	14:22:27	*Streptopelia orientalis*	2	0	Rest	Coastal Survey	35.20862405	126.33156619
2023-06-29	14:25:54	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.20801146	126.32928661
2023-06-29	14:32:46	*Platalea minor*	1	0	Rest	Coastal Survey	35.20213574	126.32922129
2023-07-19	17:15:00	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33733841	125.99403927
2023-07-19	17:17:28	*Turdus pallidus*	1	0	Rest	Hyeong-do	35.33712583	125.99383029
2023-07-19	17:19:13	*Lanius tigrinus*	1	0	Rest	Hyeong-do	35.33635523	125.99346181
2023-07-19	17:59:54	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33754049	125.98897052
2023-07-19	18:51:54	*Turdus pallidus*	4	0	Rest	Hyeong-do	35.33652763	125.99517976
2023-07-20	07:12:42	*Hirundo rustica*	13	0	Rest	Anma-do	35.34497423	126.01772074
2023-07-20	07:14:29	*Larus crassirostris*	1	0	Rest	Anma-do	35.34558271	126.01938931
2023-07-20	07:16:43	*Larus crassirostris*	23	0	Rest	Anma-do	35.34643514	126.02327318
2023-07-20	07:17:03	*Larus crassirostris*	21	0	Rest	Anma-do	35.34643514	126.02327318
2023-07-20	07:25:00	*Monticola solitarius*	1	0	Rest	Anma-do	35.35193433	126.01950917
2023-07-20	07:26:15	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35289915	126.01675303
2023-07-20	07:27:11	*Parus major*	1	0	Rest	Anma-do	35.35292967	126.01596700
2023-07-20	07:29:14	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35375536	126.01212593
2023-07-20	07:38:16	*Larus crassirostris*	2	0	Rest	Anma-do	35.35595287	126.00773956
2023-07-20	07:40:03	*Motacilla cinerea*	3	0	Rest	Anma-do	35.35577502	126.00847478
2023-07-20	07:48:25	*Monticola solitarius*	3	0	Rest	Anma-do	35.35517903	126.00607422
2023-07-20	07:50:01	*Lanius tigrinus*	1	0	Rest	Anma-do	35.35532153	126.00573005
2023-07-20	07:56:43	*Lanius tigrinus*	2	0	Rest	Anma-do	35.35541537	126.00438802
2023-07-20	08:01:04	*Sturnus cineraceus*	1	0	Rest	Anma-do	35.35530955	126.00339805
2023-07-20	08:01:13	*Monticola solitarius*	1	0	Rest	Anma-do	35.35527116	126.00334340
2023-07-20	08:03:27	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35467880	126.00280408
2023-07-20	08:03:56	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.35439858	126.00266928
2023-07-20	08:06:28	*Emberiza cioides*	1	0	Rest	Anma-do	35.35480296	126.00284036
2023-07-20	08:25:04	*Emberiza cioides*	1	0	Rest	Anma-do	35.35635995	126.00782049
2023-07-20	08:34:26	*Ardea cinerea*	2	0	Rest	Anma-do	35.34716494	126.02315882
2023-07-20	08:35:08	*Passer montanus*	2	0	Rest	Anma-do	35.34706113	126.02356364
2023-07-20	08:40:25	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34827577	126.02863947
2023-07-20	08:50:04	*Ardea cinerea*	3	50	Move	Anma-do	35.34751773	126.03026621
2023-07-20	08:53:28	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.34984685	126.03111252
2023-07-20	08:57:14	*Emberiza cioides*	1	0	Rest	Anma-do	35.35069137	126.02724399
2023-07-20	09:01:55	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35358521	126.02693971
2023-07-20	09:15:11	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.35572625	126.02518432
2023-07-20		*Zosterops japonicus*	3	0	Rest	Anma-do	35.35866396	126.02810141
2023-07-20		*Parus major*	3	0	Rest	Anma-do	35.35849049	126.02804098

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-07-20	09:42:12	*Passer montanus*	3	0	Rest	Anma-do	35.34500282	126.02712714
2023-07-20	09:44:41	*Monticola solitarius*	1	0	Rest	Anma-do	35.34428274	126.02160589
2023-07-20	09:47:27	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34194697	126.01791759
2023-07-20	09:49:40	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34173565	126.01185540
2023-07-20	09:54:07	*Falco peregrinus*	1	80	Rest	Anma-do	35.34307767	126.00994976
2023-07-20	10:03:16	*Monticola solitarius*	1	0	Rest	Anma-do	35.33648375	126.02035122
2023-07-20	10:06:01	*Phalacrocorax capillatus*	2	0	Rest	Anma-do	35.33126955	126.01172494
2023-07-20	10:07:23	*Falco tinnunculus*	1	80	Move	Anma-do	35.33359164	126.01505558
2023-07-20	10:11:13	*Monticola solitarius*	1	0	Rest	Anma-do	35.33710473	126.02461472
2023-07-20	10:16:09	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34144909	126.02859692
2023-07-20	10:17:33	*Passer montanus*	4	0	Rest	Anma-do	35.34416160	126.02707295
2023-07-20	10:20:16	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34394186	126.02445250
2023-07-21	11:37:01	*Turdus pallidus*	1	0	Rest	Soseokman-do	35.36885737	126.05606916
2023-07-21	11:38:43	*Monticola solitarius*	1	0	Rest	Soseokman-do	35.36903266	126.05659631
2023-07-21	11:49:56	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36783925	126.05922354
2023-07-21	12:05:23	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36563370	126.05988924
2023-07-21	12:07:27	*Monticola solitarius*	1	0	Rest	Soseokman-do	35.36523256	126.06019678
2023-07-21	12:24:47	*Parus major*	1	0	Rest	Soseokman-do	35.36796563	126.05814536
2023-07-21	12:34:35	*Turdus pallidus*	1	0		Soseokman-do	35.36801727	126.05721372
2023-07-21	12:55:53	*Hirundo rustica*	6	0		Soseokman-do	35.36785438	126.05595756
2023-07-19	16:00:50	*Monticola solitarius*	2	0	Rest	O-do	35.32855597	125.99906605
2023-07-19	17:47:52	*Monticola solitarius*	1	0	Rest	O-do	35.32923138	126.00015951
2023-07-19	18:08:15	*Monticola solitarius*	3	0	Rest	O-do	35.32988800	126.00070288
2023-07-19	18:25:03	*Monticola solitarius*	1	0	Rest	O-do	35.33142842	126.00242912
2023-07-19	18:27:19	*Parus major*	1	0	Rest	O-do	35.33130296	126.00252065
2023-07-19	18:38:58	*Monticola solitarius*	3	0	Rest	O-do	35.33108026	126.00392321
2023-07-19	18:39:16	*Falco peregrinus*	1	2.233567789	Move	O-do	35.33181802	126.00389300
2023-07-19	18:41:24	*Microscelis amaurotis*	1	0	Rest	O-do	35.33136997	126.00397549
2023-07-19	18:47:16	*Microscelis amaurotis*	1	0	Rest	O-do	35.33057125	126.00553315
2023-07-19	18:52:39	*Microscelis amaurotis*	3	0	Rest	O-do	35.33051289	126.00671776
2023-07-19	19:02:32	*Microscelis amaurotis*	2	0	Rest	O-do	35.33000172	126.00849319
2023-07-19	19:15:03	*Hirundo rustica*	2	0	Rest	O-do	35.33000172	126.00849319
2023-07-19	19:15:03	*Monticola solitarius*	1	0	Rest	O-do	35.32806840	126.00960965
2023-07-20	08:45:33	*Larus crassirostris*	6	0	Rest	Anma-do	35.34573548	126.00982616
2023-07-20	08:49:26	*Larus crassirostris*	192	0	Rest	Anma-do	35.34454179	126.01168008
2023-07-20	08:49:51	*Phalacrocorax capillatus*	1	0	Rest	Anma-do	35.34459965	126.01173779
2023-07-20	08:50:13	*Larus crassirostris*	9	0	Rest	Anma-do	35.34455719	126.01179127
2023-07-20	08:54:52	*Ardea cinerea*	1	0	Rest	Anma-do	35.34453076	126.01158415
2023-07-20	09:12:28	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34424095	126.01146050
2023-07-20	09:15:43	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34416829	126.01376853
2023-07-20	09:20:29	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34403026	126.01620666
2023-07-20	09:21:41	*Pycnonotus sinensis*	1	0	Rest	Anma-do	35.34425977	126.01658745
2023-07-20	09:27:03	*Monticola solitarius*	2	0	Rest	Anma-do	35.34337308	126.01690286
2023-07-20	09:27:34	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.34418896	126.01747695
2023-07-20	09:33:52	*Parus major*	1	0	Rest	Anma-do	35.34432547	126.02083340
2023-07-20	09:34:09	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34404481	126.02071112
2023-07-20	09:34:32	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34429484	126.02002012
2023-07-20	09:48:05	*Larus crassirostris*	9	0	Rest	Anma-do	35.34544318	126.01831035
2023-07-20	09:49:25	*Larus crassirostris*	3	0	Rest	Anma-do	35.34545671	126.01831784
2023-07-20	09:49:51	*Larus crassirostris*	8	0	Rest	Anma-do	35.34543724	126.01836896
2023-07-20	09:51:02	*Larus crassirostris*	18	0	Rest	Anma-do	35.34639516	126.02020672
2023-07-20	09:51:21	*Larus crassirostris*	5	0	Rest	Anma-do	35.34639897	126.02025301
2023-07-20	09:58:24	*Passer montanus*	8	0	Rest	Anma-do	35.34433917	126.02463032
2023-07-20	10:00:15	*Cettia diphone cantans*	1	0	Rest	Anma-do	35.34496336	126.02601094
2023-07-20	10:00:51	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34475660	126.02568523
2023-07-20	10:03:09	*Hirundo rustica*	3	0	Rest	Anma-do	35.34457990	126.02619383
2023-07-20	10:04:32	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34466546	126.02662075
2023-07-20	10:08:26	*Hirundo rustica*	3	0	Rest	Anma-do	35.34428499	126.02704336
2023-07-21	11:30:08	*Larus crassirostris*	28	0	Rest	Daeseokman-do	35.37277091	126.05603770
2023-07-21	11:31:20	*Larus crassirostris*	9	0	Rest	Daeseokman-do	35.37275613	126.05608968
2023-07-21	11:36:44	*Hirundo rustica*	2	0	Rest	Daeseokman-do	35.37309300	126.05637562
2023-07-21	12:09:12	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37198290	126.04950237
2023-07-21	12:51:09	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37280049	126.05549318
2023-07-31	13:16:06	*Larus crassirostris*	62	0	Rest	Coastal Survey	35.19418048	126.32655992
2023-07-31	13:16:28	*Larus crassirostris*	14	0	Rest	Coastal Survey	35.19449239	126.32522420
2023-07-31	13:16:56	*Ardea cinerea*	8	0	Rest	Coastal Survey	35.19453565	126.32753508
2023-07-31	13:17:17	*Ardea alba*	2	0	Rest	Coastal Survey	35.19468588	126.32356342

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-07-31	13:18:26	*Numenius arquata*	18	0	Rest	Coastal Survey	35.19412037	126.32814857
2023-07-31	13:19:08	*Limosa limosa*	24	0	Rest	Coastal Survey	35.19398877	126.32471832
2023-07-31	13:19:20	*Xenus cinereus*	230	0	Rest	Coastal Survey	35.19397463	126.32336431
2023-07-31	13:19:20	*Pluvialis squatarola*	2	0	Rest	Coastal Survey	35.19397463	126.32336431
2023-07-31	13:19:46	*Platalea minor*	5	0	Rest	Coastal Survey	35.19557383	126.32600133
2023-07-31	13:23:02	*Ardea alba*	5	0	Rest	Coastal Survey	35.20654058	126.32705496
2023-07-31	13:28:19	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.20459528	126.33237481
2023-07-31	13:30:53	*Phalacrocorax carbo*	1	0	Rest	Coastal Survey	35.20638553	126.32923277
2023-07-31	13:31:02	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.20560118	126.32862573
2023-07-31	13:32:27	*Passer montanus*	1	0	Rest	Coastal Survey	35.20569876	126.32623371
2023-07-31	13:33:05	*Lanius bucephalus*	1	0	Rest	Coastal Survey	35.20556298	126.32420058
2023-07-31	13:34:56	*Numenius arquata*	11	0	Rest	Coastal Survey	35.20247062	126.31982895
2023-07-31	13:35:06	*Platalea minor*	1	0	Rest	Coastal Survey	35.20252075	126.31967213
2023-07-31	13:35:13	*Larus crassirostris*	3	0	Rest	Coastal Survey	35.20261450	126.31951794
2023-07-31	13:35:30	*Xenus cinereus*	58	0	Rest	Coastal Survey	35.20269310	126.31973583
2023-07-31	13:35:39	*Limosa limosa*	6	0	Rest	Coastal Survey	35.20278901	126.31952849
2023-07-31	13:35:39	*Pluvialis squatarola*	1	0	Rest	Coastal Survey	35.20278901	126.31952849
2023-07-31	13:35:39	*Calidris alpina*	2	0	Rest	Coastal Survey	35.20278901	126.31952849
2023-07-31	13:36:34	*Ardea alba*	6	0	Rest	Coastal Survey	35.20481142	126.32034349
2023-07-31	13:37:59	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.20730971	126.32235965
2023-07-31	13:41:03	*Passer montanus*	5	0	Rest	Coastal Survey	35.20902443	126.33178906
2023-07-31	13:41:18	*Hirundo rustica*	2	0	Rest	Coastal Survey	35.20996353	126.33181933
2023-07-31	13:44:14	*Egretta eulophotes*	2	0	Rest	Coastal Survey	35.21549646	126.33663142
2023-07-31	13:44:33	*Ardea cinerea*	2	0	Rest	Coastal Survey	35.21561649	126.33690517
2023-07-31	13:44:39	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.21606028	126.33621263
2023-07-31	13:45:29	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.21789666	126.33593433
2023-07-31	13:46:42	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.22137990	126.33578434
2023-07-31	13:48:01	*Hirundo rustica*	4	0	Rest	Coastal Survey	35.22637521	126.32764524
2023-07-31	13:50:01	*Hirundo rustica*	6	0	Rest	Coastal Survey	35.22891260	126.31349216
2023-07-31	13:51:35	*Falco subbuteo*	1	73.53557754	Move	Coastal Survey	35.23255619	126.30753702
2023-07-31	13:53:16	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.22671130	126.30567172
2023-07-31	13:54:39	*Passer montanus*	11	0	Rest	Coastal Survey	35.22239046	126.30550394
2023-07-31	13:58:15	*Ardea cinerea*	4	0	Rest	Coastal Survey	35.21110805	126.30653249
2023-07-31	14:06:20	*Pica pica*	1	0	Rest	Coastal Survey	35.22782108	126.30469712
2023-07-31	14:11:35	*Larus crassirostris*	51	0	Rest	Coastal Survey	35.23470016	126.30125617
2023-07-31	14:12:05	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.23471285	126.30119481
2023-07-31	14:12:14	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.23467650	126.30121126
2023-07-31	14:12:41	*Larus argentatus*	1	0	Rest	Coastal Survey	35.23467952	126.30113689
2023-07-31	14:13:38	*Ardea cinerea*	36	0	Rest	Coastal Survey	35.23473063	126.30063056
2023-07-31	14:13:38	*Egretta eulophotes*	2	0	Rest	Coastal Survey	35.23473063	126.30063056
2023-07-31	14:13:48	*Platalea minor*	1	0	Rest	Coastal Survey	35.23470446	126.30064762
2023-07-31	14:13:55	*Egretta garzetta*	2	0	Rest	Coastal Survey	35.23467062	126.30060209
2023-07-31	14:14:10	*Larus crassirostris*	12	0	Rest	Coastal Survey	35.23385882	126.30101290
2023-07-31	14:20:37	*Streptopelia orientalis*	2	0	Rest	Coastal Survey	35.23518536	126.30171110
2023-07-31	14:27:17	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.22889792	126.29998099
2023-07-31	14:28:43	*Larus crassirostris*	29	0	Rest	Coastal Survey	35.22651764	126.29967524
2023-07-31	14:28:58	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.22600322	126.29947117
2023-07-31	14:34:56	*Ardea cinerea*	6	0	Rest	Coastal Survey	35.22479035	126.30015521
2023-07-31	14:35:03	*Egretta eulophotes*	2	0	Rest	Coastal Survey	35.22468301	126.30008680
2023-07-31	14:35:25	*Platalea minor*	8	0	Rest	Coastal Survey	35.22429796	126.30142111
2023-07-31	14:35:25	*Tringa totanus*	2	0	Rest	Coastal Survey	35.22429796	126.30142111
2023-07-31	14:35:25	*Charadrius dubius*	3	0	Rest	Coastal Survey	35.22429796	126.30142111
2023-07-31	14:35:25	*Tringa totanus*	13	0	Rest	Coastal Survey	35.22429796	126.30142111
2023-07-31	14:36:08	*Tringa nebularia*	14	0	Rest	Coastal Survey	35.22446909	126.30141189
2023-07-31	14:36:24	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.22448229	126.30020287
2023-07-31	14:37:53	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.22160968	126.29786257
2023-07-31	14:39:20	*Egretta intermedia*	5	0	Rest	Coastal Survey	35.21977648	126.29973468
2023-07-31	14:39:39	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.21846595	126.29495866
2023-07-31	14:45:21	*Larus crassirostris*	15	0	Rest	Coastal Survey	35.20486041	126.29979226
2023-07-31	14:45:34	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.20495119	126.29929704
2023-07-31	14:50:53	*Falco subbuteo*	3	25	Move	Coastal Survey	35.21071091	126.30202423
2023-07-31	14:51:37	*Paradoxornis webbianus*	4	0	Rest	Coastal Survey	35.21011628	126.30176306
2023-07-31	14:51:56	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.20792685	126.30646016
2023-07-31	15:04:51	*Pica pica*	1	0	Rest	Coastal Survey	35.22879411	126.30475992
2023-07-31	15:07:10	*Ardea alba*	3	0	Rest	Coastal Survey	35.22614294	126.31931324
2023-07-31	15:07:46	*Hirundo rustica*	4	0	Rest	Coastal Survey	35.22596280	126.32386799
2023-07-31	15:09:49	*Passer montanus*	4	0	Rest	Coastal Survey	35.23375215	126.33484439

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-07-31	15:10:02	*Microscelis amaurotis*	1	0	Rest	Coastal Survey	35.23447585	126.33579380
2023-07-31	15:11:58	*Ardea cinerea*	2	0	Rest	Coastal Survey	35.24862434	126.34646502
2023-07-31	15:12:27	*Streptopelia orientalis*	2	0	Rest	Coastal Survey	35.25212905	126.34397706
2023-07-31	15:12:48	*Pica pica*	2	0	Rest	Coastal Survey	35.25667665	126.34299427
2023-07-31	15:13:29	*Passer montanus*	3	0	Rest	Coastal Survey	35.25880568	126.34442788
2023-07-31	15:14:47	*Motacilla alba*	1	0	Rest	Coastal Survey	35.25814844	126.33774698
2023-07-31	15:16:18	*Hirundo rustica*	7	0	Rest	Coastal Survey	35.26204720	126.33343835
2023-07-31	15:17:54	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.26457097	126.32968301
2023-07-31	15:20:33	*Ardea cinerea*	5	0	Rest	Coastal Survey	35.26580353	126.32285640
2023-07-31	15:25:54	*Larus crassirostris*	33	0	Rest	Coastal Survey	35.26745329	126.32045036
2023-07-31	15:26:17	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.26721166	126.31987107
2023-07-31	15:26:46	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.26745166	126.32015972
2023-07-31	15:27:01	*Xenus cinereus*	14	0	Rest	Coastal Survey	35.26697534	126.32023636
2023-07-31	15:27:32	*Charadrius alexandrinus*	18	0	Rest	Coastal Survey	35.26679371	126.31972924
2023-07-31	15:28:16	*Platalea minor*	11	0	Rest	Coastal Survey	35.26439901	126.31778741
2023-07-31	15:28:50	*Larus crassirostris*	113	0	Rest	Coastal Survey	35.26415819	126.31735346
2023-07-31	15:29:03	*Numenius arquata*	4	0	Rest	Coastal Survey	35.26374310	126.31772024
2023-07-31	15:29:22	*Larus crassirostris*	25	0	Rest	Coastal Survey	35.26344228	126.31721414
2023-07-31	15:29:43	*Charadrius alexandrinus*	191	0	Rest	Coastal Survey	35.26296760	126.31758142
2023-07-31	15:30:05	*Haematopus ostralegus*	1	0	Rest	Coastal Survey	35.26379695	126.31670255
2023-07-31	15:30:36	*Xenus cinereus*	21	0	Rest	Coastal Survey	35.26243250	126.31780389
2023-07-31	15:35:58	*Anas poecilorhyncha*	3	0	Rest	Coastal Survey	35.26386385	126.32494509
2023-07-31	15:38:48	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.26546534	126.32994810
2023-07-31	15:40:40	*Egretta intermedia*	3	0	Rest	Coastal Survey	35.26911532	126.33162545
2023-07-31	15:41:47	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.27031592	126.32928210
2023-07-31	15:42:21	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.27004278	126.32632482
2023-07-31	15:43:05	*Larus crassirostris*	25	0	Rest	Coastal Survey	35.27197084	126.32471522
2023-07-31	15:45:17	*Charadrius alexandrinus*	11	0	Rest	Coastal Survey	35.27234474	126.32434047
2023-07-31	15:46:08	*Ardea cinerea*	16	0	Rest	Coastal Survey	35.27488918	126.32438139
2023-07-31	15:46:56	*Ardea cinerea*	5	0	Rest	Coastal Survey	35.27698607	126.32628756
2023-07-31	15:49:10	*Ardea cinerea*	10	0	Rest	Coastal Survey	35.28160127	126.33111825
2023-07-31	15:49:52	*Larus crassirostris*	17	0	Rest	Coastal Survey	35.28287833	126.33245421
2023-07-31	15:51:09	*Pica pica*	1	0	Rest	Coastal Survey	35.28428390	126.33708808
2023-07-31	15:51:23	*Egretta intermedia*	3	0	Rest	Coastal Survey	35.28423497	126.33823299
2023-07-31	15:52:53	*Streptopelia orientalis*	3	0	Rest	Coastal Survey	35.28506696	126.34051861
2023-07-31	15:58:10	*Platalea minor*	72	0	Rest	Coastal Survey	35.28824483	126.35244012
2023-07-31	15:58:26	*Larus crassirostris*	51	0	Rest	Coastal Survey	35.28810029	126.35279051
2023-07-31	15:58:41	*Larus crassirostris*	26	0	Rest	Coastal Survey	35.28833048	126.35275613
2023-07-31	15:59:27	*Platalea minor*	36	0	Rest	Coastal Survey	35.28998320	126.35337509
2023-07-31	15:59:36	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.29027084	126.35337597
2023-07-31	16:00:14	*Larus crassirostris*	221	0	Rest	Coastal Survey	35.28707639	126.35413806
2023-07-31	16:00:35	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.28673128	126.35410192
2023-07-31	16:00:44	*Ardea cinerea*	8	0	Rest	Coastal Survey	35.28660101	126.35450497
2023-07-31	16:00:58	*Ardea cinerea*	11	0	Rest	Coastal Survey	35.28874050	126.34914386
2023-07-31	16:11:03	*Egretta eulophotes*	4	0	Rest	Coastal Survey	35.28427081	126.35311274
2023-07-31	16:11:29	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.28474618	126.35274584
2023-07-31	16:11:58	*Anas poecilorhyncha*	1	0	Rest	Coastal Survey	35.28104959	126.35289248
2023-07-31	16:12:12	*Egretta intermedia*	5	0	Rest	Coastal Survey	35.28038758	126.35310095
2023-07-31	16:12:56	*Egretta intermedia*	15	0	Rest	Coastal Survey	35.27779407	126.35537313
2023-07-31	16:13:26	*Ardea alba*	2	0	Rest	Coastal Survey	35.27608982	126.35880547
2023-07-31	16:13:42	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.27768651	126.35868766
2023-07-31	16:14:17	*Egretta intermedia*	3	0	Rest	Coastal Survey	35.27892925	126.36274308
2023-07-31	16:15:09	*Egretta intermedia*	8	0	Rest	Coastal Survey	35.27742210	126.36537702
2023-07-31	16:18:35	*Passer montanus*	2	0	Rest	Coastal Survey	35.27764796	126.36204940
2023-07-31	16:19:50	*Egretta intermedia*	2	0	Rest	Coastal Survey	35.28093157	126.37850050
2023-07-31	16:20:04	*Pica pica*	3	0	Rest	Coastal Survey	35.28122302	126.37688023
2023-07-31	16:20:40	*Streptopelia orientalis*	12	0	Rest	Coastal Survey	35.28229894	126.37377499
2023-07-31	16:21:48	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.28454949	126.37191455
2023-07-31	16:24:52	*Phalacrocorax carbo*	1	0	Rest	Coastal Survey	35.28399765	126.37262970
2023-07-31	16:25:13	*Falco tinnunculus*	1	0	Rest	Coastal Survey	35.28430296	126.36916617
2023-07-31	16:26:22	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.28499166	126.37034377
2023-07-31	16:26:33	*Platalea minor*	7	0	Rest	Coastal Survey	35.28502667	126.37016825
2023-07-31	16:26:33	*Platalea leucorodia*	1	0	Rest	Coastal Survey	35.28502667	126.37016825
2023-07-31	16:26:43	*Egretta garzetta*	1	0	Rest	Coastal Survey	35.28513558	126.37038647
2023-07-31	16:30:59	*Actitis hypoleucos*	1	0	Rest	Coastal Survey	35.28536718	126.37124310
2023-07-31	16:32:41	*Egretta garzetta*	4	0	Rest	Coastal Survey	35.28801652	126.37148521
2023-07-31	16:32:50	*Egretta intermedia*	5	0	Rest	Coastal Survey	35.28801706	126.37158849

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-07-31	16:32:59	*Egretta eulophotes*	3	0	Rest	Coastal Survey	35.28809089	126.37153628
2023-07-31	16:33:12	*Ardea cinerea*	4	0	Rest	Coastal Survey	35.28809035	126.37143300
2023-07-31	16:34:34	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.28779376	126.37139656
2023-07-31	16:36:04	*Actitis hypoleucos*	6	0	Rest	Coastal Survey	35.28745547	126.36944967
2023-07-31	16:36:15	*Ardea cinerea*	7	0	Rest	Coastal Survey	35.28782468	126.36920151
2023-07-31	16:36:23	*Platalea minor*	2	0	Rest	Coastal Survey	35.28780418	126.36933077
2023-07-31	16:36:32	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.28784941	126.36988558
2023-07-31	16:36:44	*Ardea alba*	1	0	Rest	Coastal Survey	35.28780472	126.36943405
2023-07-31	16:40:05	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.29443740	126.37167462
2023-07-31	16:40:23	*Egretta garzetta*	1	0	Rest	Coastal Survey	35.29408249	126.37280498
2023-07-31	16:40:44	*Egretta intermedia*	5	0	Rest	Coastal Survey	35.29483496	126.37442185
2023-07-31	16:41:17	*Egretta intermedia*	2	0	Rest	Coastal Survey	35.29398668	126.37607854
2023-07-31	16:42:03	*Larus crassirostris*	9	0	Rest	Coastal Survey	35.29460976	126.37885156
2023-07-31	16:43:01	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.29976906	126.38241525
2023-07-31	16:43:22	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.30128522	126.38347644
2023-07-31	16:43:39	*Pica pica*	2	0	Rest	Coastal Survey	35.30269941	126.38222795
2023-07-31	16:46:37	*Platalea minor*	4	0	Rest	Coastal Survey	35.30601176	126.37738908
2023-07-31	16:46:46	*Ardea cinerea*	2	0	Rest	Coastal Survey	35.30598836	126.37722422
2023-07-31	16:47:07	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.30569255	126.37670386
2023-07-31	16:48:23	*Larus crassirostris*	11	0	Rest	Coastal Survey	35.30708340	126.37531783
2023-07-31	16:48:42	*Platalea minor*	1	0	Rest	Coastal Survey	35.30728590	126.37523375
2023-07-31	16:48:56	*Egretta intermedia*	2	0	Rest	Coastal Survey	35.30701363	126.37490576
2023-07-31	16:49:46	*Ardea cinerea*	7	0	Rest	Coastal Survey	35.30554349	126.37403685
2023-07-31	16:50:13	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.30332648	126.37699706
2023-07-31	17:06:40	*Pica pica*	2	0	Rest	Coastal Survey	35.30761539	126.37834184
2023-07-31	17:07:41	*Corvus macrorhynchos*	2	0	Rest	Coastal Survey	35.30926759	126.37795082
2023-07-31	17:13:59	*Pica pica*	1	0	Rest	Coastal Survey	35.33270983	126.38281782
2023-07-31	17:19:06	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.35333868	126.38869174
2023-07-31	17:19:30	*Egretta eulophotes*	1	0	Rest	Coastal Survey	35.35324951	126.38864719
2023-07-31	17:23:12	*Larus crassirostris*	12	0	Rest	Coastal Survey	35.35327841	126.38840098
2023-07-31	17:23:28	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.35327846	126.38841059
2023-07-31	17:40:42	*Larus crassirostris*	34	0	Rest	Coastal Survey	35.36540039	126.40612204
2023-07-31	17:40:51	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.36529742	126.40616870
2023-07-31	17:41:13	*Larus crassirostris*	15	0	Rest	Coastal Survey	35.36614281	126.40666289
2023-07-31	17:41:20	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.36620084	126.40675102
2023-07-31	17:41:53	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.36736044	126.40612071
2023-07-31	17:42:01	*Larus crassirostris*	8	0	Rest	Coastal Survey	35.36741848	126.40620883
2023-07-31	17:42:47	*Larus crassirostris*	31	0	Rest	Coastal Survey	35.37034945	126.40368630
2023-07-31	17:42:58	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.37042837	126.40347744
2023-07-31	17:43:19	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.36898503	126.40424907
2023-07-31	17:43:36	*Egretta eulophotes*	1	0	Rest	Coastal Survey	35.36903086	126.40418947
2023-07-31	17:44:08	*Larus crassirostris*	12	0	Rest	Coastal Survey	35.36906272	126.40217282
2023-07-31	17:54:01	*Larus crassirostris*	12	0	Rest	Coastal Survey	35.36291931	126.40551952
2023-07-31	17:55:39	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.36308087	126.41641625
2023-07-31	17:56:20	*Larus crassirostris*	20	0	Rest	Coastal Survey	35.36640013	126.42224118
2023-07-31	17:56:40	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.36645737	126.42271884
2023-07-31	17:58:03	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.38282493	126.42335388
2023-07-31	17:58:36	*Ardea cinerea*	2	0	Rest	Coastal Survey	35.38190708	126.41772940
2023-07-31	17:58:56	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.38221223	126.41580754
2023-07-31	18:00:31	*Microscelis amaurotis*	1	0	Rest	Coastal Survey	35.38565746	126.41303106
2023-07-31	18:06:06	*Larus crassirostris*	25	0	Rest	Coastal Survey	35.40021927	126.40851224
2023-07-31	18:06:17	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.40024360	126.40871170
2023-07-31	18:06:37	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.40036035	126.40871085
2023-07-31	18:07:42	*Larus crassirostris*	33	0	Rest	Coastal Survey	35.40233131	126.40517510
2023-07-31	18:07:50	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.40262320	126.40517296
2023-07-31	18:08:46	*Larus crassirostris*	37	0	Rest	Coastal Survey	35.39954182	126.40431089
2023-07-31	18:08:54	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.39967915	126.40434710
2023-07-31	18:10:08	*Pica pica*	1	0	Rest	Coastal Survey	35.39752266	126.40783821
2023-07-31	18:22:02	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.40794330	126.41921461
2023-07-31	18:22:41	*Microscelis amaurotis*	1	0	Rest	Coastal Survey	35.40748176	126.42453551
2023-07-31	18:22:55	*Cyanopica cyanus*	2	0	Rest	Coastal Survey	35.40878360	126.42493025
2023-07-31	18:25:50	*Pica pica*	2	0	Rest	Coastal Survey	35.41473284	126.44173084
2023-07-31	18:29:02	*Passer montanus*	4	0	Rest	Coastal Survey	35.42064662	126.45278243
2023-07-31	18:29:41	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.42384075	126.45115238
2023-07-31	18:30:51	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.43083033	126.44746470
2023-07-31	18:32:26	*Pica pica*	3	0	Rest	Coastal Survey	35.43672734	126.45271715
2023-07-31	18:32:57	*Passer montanus*	11	0	Rest	Coastal Survey	35.43796258	126.45355088

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-07-31	18:42:24	*Larus crassirostris*	27	0	Rest	Coastal Survey	35.44427234	126.43475156
2023-07-31	18:42:24	*Larus argentatus*	1	0	Rest	Coastal Survey	35.44427234	126.43475156
2023-07-31	18:43:02	*Larus crassirostris*	18	0	Rest	Coastal Survey	35.44424567	126.43481715
2023-07-31	18:43:22	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.44437005	126.43474108
2023-07-31	18:44:23	*Larus crassirostris*	13	0	Rest	Coastal Survey	35.44830541	126.43157822
2023-07-31	18:45:02	*Larus crassirostris*	15	0	Rest	Coastal Survey	35.44295061	126.43235515
2023-07-31	18:45:18	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.44265903	126.43250802
2023-07-31	18:45:35	*Larus crassirostris*	9	0	Rest	Coastal Survey	35.44042489	126.42929178
2023-07-31	18:46:22	*Larus crassirostris*	17	0	Rest	Coastal Survey	35.43841268	126.42931322
2023-08-22	13:32:18	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.20266840	126.32864613
2023-08-22	13:33:32	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.20210452	126.32822607
2023-08-22	13:34:36	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.20123185	126.32829017
2023-08-22	13:38:47	*Hirundo rustica*	2	0	Rest	Coastal Survey	35.20322228	126.32829999
2023-08-22	13:42:45	*Passer montanus*	2	0	Rest	Coastal Survey	35.20416229	126.32227262
2023-08-22	13:42:56	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.20340537	126.32179094
2023-08-22	13:43:11	*Pica pica*	1	0	Rest	Coastal Survey	35.20401090	126.32155699
2023-08-22	13:44:23	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.20648809	126.32088264
2023-08-22	13:45:19	*Passer montanus*	7	0	Rest	Coastal Survey	35.20809826	126.32148817
2023-08-22	13:47:00	*Streptopelia orientalis*	6	0	Rest	Coastal Survey	35.20802583	126.32552989
2023-08-22	13:47:45	*Passer montanus*	3	0	Rest	Coastal Survey	35.20804851	126.32704883
2023-08-22	13:49:06	*Hirundo rustica*	8	0	Rest	Coastal Survey	35.20926602	126.33109909
2023-08-22	13:51:08	*Motacilla alba*	1	0	Rest	Coastal Survey	35.21026760	126.33214193
2023-08-22	13:52:48	*Egretta intermedia*	3	0	Rest	Coastal Survey	35.21341932	126.33290630
2023-08-22	13:53:01	*Egretta garzetta*	4	0	Rest	Coastal Survey	35.21345224	126.33287338
2023-08-22	13:53:39	*Cyanopica cyanus*	3	0	Rest	Coastal Survey	35.21558825	126.33535821
2023-08-22	13:54:01	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.21527021	126.33638206
2023-08-22	13:54:52	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.21530525	126.33722525
2023-08-22	13:55:38	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.21941708	126.33627967
2023-08-22	13:55:38	*Egretta eulophotes*	1	0	Rest	Coastal Survey	35.21941708	126.33627967
2023-08-22	13:56:22	*Passer montanus*	3	0	Rest	Coastal Survey	35.22175884	126.33443420
2023-08-22	13:58:23	*Hirundo rustica*	5	0	Rest	Coastal Survey	35.22682804	126.32689793
2023-08-22	13:59:19	*Passer montanus*	5	0	Rest	Coastal Survey	35.22703499	126.32161330
2023-08-22	14:01:02	*Pica pica*	1	0	Rest	Coastal Survey	35.23190513	126.30636584
2023-08-22	14:01:50	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.23082734	126.30399485
2023-08-22	14:03:07	*Ardea alba*	1	0	Rest	Coastal Survey	35.23026595	126.30225323
2023-08-22	14:03:34	*Egretta garzetta*	1	0	Rest	Coastal Survey	35.22986137	126.30135978
2023-08-22	14:03:47	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.22995690	126.30140260
2023-08-22	14:04:40	*Pica pica*	2	0	Rest	Coastal Survey	35.22661938	126.30075099
2023-08-22	14:06:00	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.22135351	126.29988055
2023-08-22	14:06:15	*Ardea alba*	1	0	Rest	Coastal Survey	35.22133629	126.29959517
2023-08-22	14:07:42	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.21769295	126.30109214
2023-08-22	14:17:22	*Larus crassirostris*	6	0	Rest	Coastal Survey	35.21233821	126.29712367
2023-08-22	14:18:41	*Xenus cinereus*	24	0	Rest	Coastal Survey	35.21242800	126.29723301
2023-08-22	14:20:23	*Ardea cinerea*	2	0	Rest	Coastal Survey	35.21229663	126.29725395
2023-08-22	14:20:31	*Platalea minor*	8	0	Rest	Coastal Survey	35.21281485	126.29758561
2023-08-22	14:27:20	*Larus crassirostris*	17	0	Rest	Coastal Survey	35.21420347	126.29810703
2023-08-22	14:28:35	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.21804736	126.29976143
2023-08-22	14:29:35	*Ardea cinerea*	2	0	Rest	Coastal Survey	35.22097899	126.29759749
2023-08-22	14:29:44	*Xenus cinereus*	7	0	Rest	Coastal Survey	35.22129283	126.29760478
2023-08-22	14:30:35	*Pica pica*	1	0	Rest	Coastal Survey	35.22330074	126.30000579
2023-08-22	14:31:20	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.22599414	126.29958787
2023-08-22	14:32:03	*Larus crassirostris*	30	0	Rest	Coastal Survey	35.22596882	126.29868051
2023-08-22	14:32:30	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.22577011	126.29865247
2023-08-22	14:32:42	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.22587529	126.29885060
2023-08-22	14:33:21	*Cisticola juncidis*	5	0	Rest	Coastal Survey	35.22686255	126.30096996
2023-08-22	14:37:12	*Pica pica*	1	0	Rest	Coastal Survey	35.23436860	126.30122618
2023-08-22	14:37:55	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.23455718	126.29634456
2023-08-22	14:38:10	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.23469898	126.29633243
2023-08-22	14:40:19	*Pica pica*	1	0	Rest	Coastal Survey	35.23490457	126.30187793
2023-08-22	14:40:54	*Larus crassirostris*	37	0	Rest	Coastal Survey	35.23622391	126.30217810
2023-08-22	14:41:25	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.23573901	126.30143824
2023-08-22	14:52:04	*Pica pica*	1	0	Rest	Coastal Survey	35.23278769	126.30130722
2023-08-22	14:52:25	*Pica pica*	1	0	Rest	Coastal Survey	35.23215347	126.30351379
2023-08-22	14:53:25	*Passer montanus*	4	0	Rest	Coastal Survey	35.22977722	126.30850454
2023-08-22	14:55:46	*Passer montanus*	2	0	Rest	Coastal Survey	35.22647407	126.32829130
2023-08-22	14:56:18	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.22969053	126.32799956
2023-08-22	14:57:42	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.23579303	126.33617453

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-08-22	14:58:37	*Corvus macrorhynchos*	1	0	Rest	Coastal Survey	35.23795487	126.34319623
2023-08-22	15:00:01	*Pica pica*	1	0	Rest	Coastal Survey	35.23775119	126.34272977
2023-08-22	15:01:53	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.25020127	126.34665806
2023-08-22	15:02:01	*Ardea alba*	6	0	Rest	Coastal Survey	35.25061224	126.34686280
2023-08-22	15:02:11	*Ardea alba*	1	0	Rest	Coastal Survey	35.25136025	126.34335261
2023-08-22	15:03:28	*Falco subbuteo*	1	0	Rest	Coastal Survey	35.25862326	126.34415468
2023-08-22	15:06:38	*Passer montanus*	11	0	Rest	Coastal Survey	35.26140116	126.33355693
2023-08-22	15:07:40	*Ardea cinerea*	2	0	Rest	Coastal Survey	35.26272664	126.32879466
2023-08-22	15:10:43	*Passer montanus*	2	0	Rest	Coastal Survey	35.26547059	126.32520931
2023-08-22	15:12:31	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.26539005	126.33025454
2023-08-22	15:12:49	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.26695975	126.33085400
2023-08-22	15:14:48	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.26835102	126.32969063
2023-08-22	15:14:55	*Egretta intermedia*	7	0	Rest	Coastal Survey	35.26831599	126.33017001
2023-08-22	15:16:53	*Larus crassirostris*	40	0	Rest	Coastal Survey	35.26807793	126.32477189
2023-08-22	15:17:29	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.26786753	126.32453968
2023-08-22	15:17:44	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.26776169	126.32481353
2023-08-22	15:18:24	*Charadrius alexandrinus*	2	0	Rest	Coastal Survey	35.27048078	126.32483907
2023-08-22	15:18:55	*Ardea cinerea*	23	0	Rest	Coastal Survey	35.27044357	126.32182477
2023-08-22	15:20:12	*Platalea minor*	14	0	Rest	Coastal Survey	35.27282502	126.32208162
2023-08-22	15:20:26	*Xenus cinereus*	21	0	Rest	Coastal Survey	35.27181180	126.32296526
2023-08-22	15:20:50	*Xenus cinereus*	19	0	Rest	Coastal Survey	35.27006312	126.32245651
2023-08-22	15:24:26	*Larus crassirostris*	14	0	Rest	Coastal Survey	35.27254451	126.32440995
2023-08-22	15:24:42	*Ardea cinerea*	27	0	Rest	Coastal Survey	35.27232823	126.32428331
2023-08-22	15:25:14	*Ardea alba*	3	0	Rest	Coastal Survey	35.27245374	126.32475256
2023-08-22	15:25:58	*Xenus cinereus*	4	0	Rest	Coastal Survey	35.27232788	126.32449979
2023-08-22	15:26:57	*Tringa nebularia*	3	0	Rest	Coastal Survey	35.27246549	126.32454471
2023-08-22	15:31:22	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.27421013	126.32518723
2023-08-22	15:31:41	*Ardea cinerea*	9	0	Rest	Coastal Survey	35.27446773	126.32563544
2023-08-22	15:32:57	*Ardea cinerea*	24	0	Rest	Coastal Survey	35.27610203	126.32675758
2023-08-22	15:34:05	*Tringa nebularia*	3	0	Rest	Coastal Survey	35.27592946	126.32696397
2023-08-22	15:34:16	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.27617049	126.32701603
2023-08-22	15:34:47	*Egretta intermedia*	3	0	Rest	Coastal Survey	35.27601532	126.32711911
2023-08-22	15:35:26	*Ardea cinerea*	14	0	Rest	Coastal Survey	35.27833888	126.32801849
2023-08-22	15:37:05	*Xenus cinereus*	6	0	Rest	Coastal Survey	35.28130853	126.32871761
2023-08-22	15:37:36	*Ardea cinerea*	7	0	Rest	Coastal Survey	35.28165566	126.33108753
2023-08-22	15:39:09	*Platalea minor*	21	0	Rest	Coastal Survey	35.28442000	126.33102624
2023-08-22	15:39:18	*Larus crassirostris*	8	0	Rest	Coastal Survey	35.28415649	126.33117938
2023-08-22	15:39:32	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.28415689	126.33093806
2023-08-22	15:41:32	*Larus crassirostris*	12	0	Rest	Coastal Survey	35.28455207	126.33517507
2023-08-22	15:43:19	*Larus crassirostris*	37	0	Rest	Coastal Survey	35.28734093	126.34047851
2023-08-22	15:46:20	*Larus crassirostris*	144	0	Rest	Coastal Survey	35.28666493	126.35360063
2023-08-22	15:46:36	*Larus crassirostris*	145	0	Rest	Coastal Survey	35.28924475	126.34933019
2023-08-22	15:47:16	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.28931338	126.34960663
2023-08-22	15:47:31	*Larus crassirostris*	7	0	Rest	Coastal Survey	35.28952057	126.34964152
2023-08-22	15:47:45	*Ardea alba*	15	0	Rest	Coastal Survey	35.29031469	126.34985007
2023-08-22	15:47:56	*Egretta intermedia*	7	0	Rest	Coastal Survey	35.29066010	126.34985063
2023-08-22	15:48:30	*Platalea minor*	8	0	Rest	Coastal Survey	35.29045240	126.35012663
2023-08-22	15:49:48	*Platalea minor*	112	0	Rest	Coastal Survey	35.29002978	126.34954372
2023-08-22	15:49:57	*Ardea cinerea*	7	0	Rest	Coastal Survey	35.29020006	126.34960080
2023-08-22	15:50:14	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.29067257	126.35005590
2023-08-22	15:50:27	*Larus crassirostris*	4	0	Rest	Coastal Survey	35.29014212	126.35030112
2023-08-22	15:51:07	*Platalea minor*	21	0	Rest	Coastal Survey	35.28816964	126.35256954
2023-08-22	15:51:42	*Ardea alba*	4	0	Rest	Coastal Survey	35.28727905	126.35309813
2023-08-22	15:52:01	*Larus crassirostris*	12	0	Rest	Coastal Survey	35.28706993	126.35298423
2023-08-22	15:52:21	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.28726055	126.35283307
2023-08-22	15:53:00	*Ardea alba*	7	0	Rest	Coastal Survey	35.28821008	126.35099838
2023-08-22	15:53:22	*Ardea cinerea*	2	0	Rest	Coastal Survey	35.28828527	126.35132032
2023-08-22	15:53:37	*Tringa nebularia*	4	0	Rest	Coastal Survey	35.28845599	126.35111237
2023-08-22	15:53:51	*Charadrius alexandrinus*	3	0	Rest	Coastal Survey	35.28745296	126.35094035
2023-08-22	15:55:22	*Tringa nebularia*	41	0	Rest	Coastal Survey	35.28794561	126.35065720
2023-08-22	15:56:08	*Numenius phaeopus*	1	0	Rest	Coastal Survey	35.28768056	126.35067570
2023-08-22	15:57:29	*Numenius arquata*	5	0	Rest	Coastal Survey	35.28911725	126.35190853
2023-08-22	16:01:06	*Egretta intermedia*	7	0	Rest	Coastal Survey	35.28474749	126.35056919
2023-08-22	16:01:47	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.28251896	126.35164955
2023-08-22	16:02:06	*Egretta intermedia*	9	0	Rest	Coastal Survey	35.28193668	126.35429061
2023-08-22	16:03:48	*Ardea alba*	1	0	Rest	Coastal Survey	35.28105082	126.36033468
2023-08-22	16:04:21	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.28240829	126.36453122

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-08-22	16:07:44	*Ardea cinerea*	2	0	Rest	Coastal Survey	35.28340446	126.37338501
2023-08-22	16:07:52	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.28353240	126.37293536
2023-08-22	16:08:41	*Ardea cinerea*	14	0	Rest	Coastal Survey	35.28493376	126.37001536
2023-08-22	16:08:53	*Ardea alba*	5	0	Rest	Coastal Survey	35.28482049	126.37012046
2023-08-22	16:09:02	*Egretta intermedia*	6	0	Rest	Coastal Survey	35.28486899	126.37018585
2023-08-22	16:09:09	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.28482950	126.37030883
2023-08-22	16:10:41	*Larus crassirostris*	34	0	Rest	Coastal Survey	35.28820501	126.36289410
2023-08-22	16:10:54	*Ardea cinerea*	6	0	Rest	Coastal Survey	35.28833186	126.36305882
2023-08-22	16:10:54	*Xenus cinereus*	1	0	Rest	Coastal Survey	35.28833186	126.36305882
2023-08-22	16:16:14	*Tringa ochropus*	1	0	Rest	Coastal Survey	35.28470802	126.37107459
2023-08-22	16:22:23	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.28759435	126.37077516
2023-08-22	16:22:47	*Aix galericulata*	4	0	Rest	Coastal Survey	35.28752948	126.36947074
2023-08-22	16:24:59	*Numenius madagascariensis*	1	0	Rest	Coastal Survey	35.28751599	126.36929277
2023-08-22	16:25:35	*Limosa limosa*	28	0	Rest	Coastal Survey	35.28759371	126.36937748
2023-08-22	16:26:09	*Tringa stagnatilis*	72	0	Rest	Coastal Survey	35.28766298	126.36950740
2023-08-22	16:28:43	*Egretta intermedia*	1	0	Rest	Coastal Survey	35.29342148	126.37183691
2023-08-22	16:30:11	*Ardea alba*	10	0	Rest	Coastal Survey	35.29545963	126.37446803
2023-08-22	16:31:17	*Egretta intermedia*	13	0	Rest	Coastal Survey	35.29555700	126.37427679
2023-08-22	16:32:22	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.29557268	126.37439061
2023-08-22	16:34:16	*Egretta garzetta*	4	0	Rest	Coastal Survey	35.30139051	126.38319325
2023-08-22	16:34:29	*Egretta intermedia*	2	0	Rest	Coastal Survey	35.30137622	126.38331851
2023-08-22	16:34:45	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.30135913	126.38336101
2023-08-22	16:35:54	*Monticola solitarius*	2	0	Rest	Coastal Survey	35.30553863	126.37800708
2023-08-22	16:37:44	*Platalea minor*	13	0	Rest	Coastal Survey	35.30733842	126.37616623
2023-08-22	16:37:52	*Ardea alba*	18	0	Rest	Coastal Survey	35.30740114	126.37632245
2023-08-22	16:38:01	*Larus crassirostris*	9	0	Rest	Coastal Survey	35.30718376	126.37615044
2023-08-22	16:38:18	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.30707821	126.37601248
2023-08-22	16:38:26	*Ardea cinerea*	17	0	Rest	Coastal Survey	35.30616513	126.37548706
2023-08-22	16:39:32	*Xenus cinereus*	38	0	Rest	Coastal Survey	35.30562619	126.37450623
2023-08-22	16:55:05	*Lanius bucephalus*	1	0	Rest	Coastal Survey	35.30145677	126.38567795
2023-08-22	16:56:45	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.29699341	126.38929590
2023-08-22	17:12:23	*Alcedo atthis*	1	0	Rest	Coastal Survey	35.35350480	126.38803787
2023-08-22	17:30:10	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.36885244	126.40400529
2023-08-22	17:31:15	*Larus crassirostris*	31	0	Rest	Coastal Survey	35.36903446	126.40444020
2023-08-22	17:32:35	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.36901493	126.40432075
2023-08-22	17:32:58	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.37086087	126.40356822
2023-08-22	17:47:54	*Eurystomus orientalis*	1	0	Rest	Coastal Survey	35.36316204	126.40929907
2023-08-22	17:48:12	*Ardea cinerea*	1	0	Rest	Coastal Survey	35.36430629	126.41054280
2023-08-22	17:49:58	*Ardea cinerea*	3	0	Rest	Coastal Survey	35.36740883	126.42205338
2023-08-22	17:51:40	*Microscelis amaurotis*	1	0	Rest	Coastal Survey	35.38285757	126.42314788
2023-08-22	17:52:23	*Ardea alba*	7	0	Rest	Coastal Survey	35.38305538	126.41857839
2023-08-22	17:55:23	*Pica pica*	1	0	Rest	Coastal Survey	35.38818455	126.40898944
2023-08-22	18:01:55	*Larus crassirostris*	10	0	Rest	Coastal Survey	35.40001844	126.40772505
2023-08-22	18:02:14	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.40010941	126.40783741
2023-08-22	18:02:53	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.39869585	126.40587744
2023-08-22	18:02:53	*Larus crassirostris*	1	0	Rest	Coastal Survey	35.39869585	126.40587744
2023-08-22	18:03:08	*Larus crassirostris*	2	0	Rest	Coastal Survey	35.39873984	126.40586286
2023-08-22	18:18:04	*Eurystomus orientalis*	1	0	Rest	Coastal Survey	35.40578976	126.41730151
2023-08-22	18:27:53	*Passer montanus*	2	0	Rest	Coastal Survey	35.41877286	126.47043825
2023-08-22	18:29:56	*Pica pica*	1	0	Rest	Coastal Survey	35.42078258	126.48662314
2023-08-22	18:30:55	*Streptopelia orientalis*	1	0	Rest	Coastal Survey	35.42572979	126.48872422
2023-08-22	18:33:06	*Passer montanus*	4	0	Rest	Coastal Survey	35.44108428	126.48867035
2023-08-22	18:43:01	*Larus crassirostris*	89	0	Rest	Coastal Survey	35.44423922	126.43410143
2023-08-22	18:43:13	*Larus crassirostris*	7	0	Rest	Coastal Survey	35.44381536	126.43405676
2023-08-22	18:43:33	*Larus crassirostris*	10	0	Rest	Coastal Survey	35.44451923	126.43438712
2023-08-22	18:46:48	*Larus crassirostris*	6	0	Rest	Coastal Survey	35.44701472	126.43538206
2023-08-22	18:47:37	*Larus crassirostris*	68	0	Rest	Coastal Survey	35.44717269	126.43574735
2023-08-22	18:47:53	*Larus crassirostris*	5	0	Rest	Coastal Survey	35.44749798	126.43554856
2023-08-25	10:54:58	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36802818	126.05949824
2023-08-25	11:04:35	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36614477	126.05992681
2023-08-25	11:16:05	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36683413	126.05832216
2023-08-25	11:22:48	*Microscelis amaurotis*	3	0	Rest	Soseokman-do	35.36728334	126.05749386
2023-08-25	11:33:17	*Ardea cinerea*	1	0	Rest	Soseokman-do	35.36737293	126.05507526
2023-08-25	11:41:08	*Phalacrocorax carbo*	3	0	Rest	Soseokman-do	35.36531102	126.06102577
2023-08-25	11:46:02	*Phalacrocorax capillatus*	1	0	Rest	Soseokman-do	35.36330819	126.05639754
2023-08-25	07:29:29	*Actitis hypoleucos*	1	0	Rest	Hyeong-do	35.33609911	125.99713016
2023-08-25	07:32:55	*Lanius bucephalus*	1	0	Rest	Hyeong-do	35.33636484	125.99679196

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-08-25	07:40:39	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33669171	125.99693178
2023-08-25	07:42:40	*Alauda arvensis*	1	0	Rest	Hyeong-do	35.33675784	125.99695256
2023-08-25	07:49:18	*Larus crassirostris*	1	0	Rest	Hyeong-do	35.33823231	125.99686791
2023-08-25	07:55:28	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33688816	125.99531388
2023-08-25	07:58:42	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33778151	125.99411835
2023-08-25	08:09:44	*Alauda arvensis*	1	0	Rest	Hyeong-do	35.33648010	125.99236625
2023-08-25	08:11:31	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33643880	125.99212825
2023-08-25	08:11:41	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33666117	125.99167195
2023-08-25	08:22:55	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33662132	125.99028945
2023-08-25	08:26:11	*Picus canus*	1	0	Rest	Hyeong-do	35.33649734	125.98946555
2023-08-25	08:30:02	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33705838	125.98869253
2023-08-25	08:33:03	*Falco peregrinus*	1	0	Rest	Hyeong-do	35.33729002	125.98810255
2023-08-25	08:36:15	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33740550	125.98801816
2023-08-25	08:58:41	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33584378	125.98930204
2023-08-25	09:00:54	*Carduelis sinica*	2	0	Rest	Hyeong-do	35.33537110	125.98944647
2023-08-25	09:03:10	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33539432	125.98941252
2023-08-25	09:04:34	*Muscicapa dauurica*	1	0	Rest	Hyeong-do	35.33547574	125.98943238
2023-08-25	09:18:30	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33603059	125.99179258
2023-08-25	09:20:29	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33619653	125.99236424
2023-08-25	09:22:07	*Lanius bucephalus*	1	0	Rest	Hyeong-do	35.33670525	125.99306595
2023-08-25	09:23:25	*Monticola solitarius*	3	0	Rest	Hyeong-do	35.33684767	125.99296185
2023-08-24	06:04:47	*Passer montanus*	5	0	Rest	Anma-do	35.34496006	126.01778318
2023-08-24	06:07:23	*Larus crassirostris*	1	0		Anma-do	35.34543228	126.01815858
2023-08-24	06:09:53	*Ardea cinerea*	1	0		Anma-do	35.34500507	126.01983058
2023-08-24	06:10:01	*Larus crassirostris*	1	0		Anma-do	35.34498712	126.02032299
2023-08-24	06:12:55	*Ardea cinerea*	1	0		Anma-do	35.34802596	126.02048194
2023-08-24	06:13:05	*Ardea cinerea*	1	0		Anma-do	35.34779832	126.02204955
2023-08-24	06:13:22	*Passer montanus*	5	0		Anma-do	35.34535266	126.02328894
2023-08-24	06:14:53	*Ardea cinerea*	3	0		Anma-do	35.34829697	126.02054412
2023-08-24	06:20:11	*Microscelis amaurotis*	3	0		Anma-do	35.34800553	126.02203025
2023-08-24	06:27:06	*Larus crassirostris*	22	0		Anma-do	35.34959220	126.01605550
2023-08-24	06:27:26	*Larus crassirostris*	3	0		Anma-do	35.34954340	126.01598550
2023-08-24	06:27:46	*Larus crassirostris*	2	0		Anma-do	35.34957736	126.01599380
2023-08-24	06:34:45	*Monticola solitarius*	1	0		Anma-do	35.35636457	126.00762611
2023-08-24	06:41:00	*Monticola solitarius*	2	0		Anma-do	35.35539545	126.00674132
2023-08-24	06:44:08	*Larus crassirostris*	1	0	Rest	Anma-do	35.35452672	126.00651785
2023-08-24	06:50:44	*Monticola solitarius*	2	0		Anma-do	35.35571994	126.00542796
2023-08-24	06:57:29	*Microscelis amaurotis*	1	0		Anma-do	35.35531399	126.00410916
2023-08-24	07:04:37	*Cuculus canorus*	1	0		Anma-do	35.35512844	126.00326794
2023-08-24	07:09:07	*Microscelis amaurotis*	2	0		Anma-do	35.35359575	126.00269067
2023-08-24	07:12:28	*Alauda arvensis*	1	0		Anma-do	35.35450144	126.00320663
2023-08-24	07:27:48	*Alauda arvensis*	1	0		Anma-do	35.35513326	126.00532750
2023-08-24	07:44:05	*Microscelis amaurotis*	2	0		Anma-do	35.35585773	126.00917044
2023-08-24	07:45:52	*Parus major*	3	0		Anma-do	35.35616198	126.00926176
2023-08-24	07:47:44	*Emberiza cioides*	1	0		Anma-do	35.35509224	126.00945230
2023-08-24	07:47:57	*Lanius bucephalus*	1	0		Anma-do	35.35516736	126.00924761
2023-08-24	07:50:41	*Pycnonotus sinensis*	7	0		Anma-do	35.35408768	126.01116451
2023-08-24	07:50:48	*Emberiza cioides*	1	0		Anma-do	35.35406653	126.01121370
2023-08-24	07:52:23	*Microscelis amaurotis*	3	0		Anma-do	35.35331080	126.01228883
2023-08-24	08:07:28	*Hirundo rustica*	2	0		Anma-do	35.34491762	126.01769588
2023-08-24	08:19:40	*Larus crassirostris*	3	0		Anma-do	35.34574570	126.02156908
2023-08-24	08:21:24	*Microscelis amaurotis*	3	0		Anma-do	35.34427949	126.02231774
2023-08-24	08:28:46	*Microscelis amaurotis*	2	0		Anma-do	35.34411831	126.01799403
2023-08-24	08:33:48	*Microscelis amaurotis*	2	0		Anma-do	35.34336439	126.01691265
2023-08-24	08:37:49	*Microscelis amaurotis*	2	0		Anma-do	35.34289878	126.01836997
2023-08-24	08:43:22	*Phylloscopus sp.*	5	0		Anma-do	35.34239427	126.01932290
2023-08-24	08:47:23	*Parus major*	2	0		Anma-do	35.34239187	126.01953939
2023-08-24	08:52:06	*Microscelis amaurotis*	4	0		Anma-do	35.34222668	126.02054443
2023-08-24	09:01:21	*Parus major*	1	0		Anma-do	35.34041686	126.02296272
2023-08-24	09:08:47	*Microscelis amaurotis*	2	0		Anma-do	35.33970797	126.02406342
2023-08-24	09:13:38	*Luscinia cyanura*	1	0		Anma-do	35.33960414	126.02403204
2023-08-24	09:23:56	*Streptopelia orientalis*	1	0		Anma-do	35.33867293	126.02793177
2023-08-24	09:25:03	*Microscelis amaurotis*	2	0		Anma-do	35.33869792	126.02844063
2023-08-24	09:31:56	*Streptopelia orientalis*	1	0		Anma-do	35.34020675	126.03019632
2023-08-24	09:38:52	*Microscelis amaurotis*	2	0		Anma-do	35.34125546	126.02738894
2023-08-24	09:46:11	*Pycnonotus sinensis*	1	0		Anma-do	35.34278403	126.02419272
2023-08-24	09:48:12	*Pycnonotus sinensis*	1	0		Anma-do	35.34357829	126.02402011

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-08-24	09:50:36	*Carduelis sinica*	2	0		Anma-do	35.34481500	126.02397690
2023-08-24	09:52:54	*Passer montanus*	4	0		Anma-do	35.34451042	126.02539042
2023-08-24	09:54:36	*Passer montanus*	3	0		Anma-do	35.34467161	126.02590257
2023-08-24	10:08:25	*Larus crassirostris*	4	0		Anma-do	35.34570747	126.01795656
2023-08-24	10:08:42	*Larus crassirostris*	3	0		Anma-do	35.34575756	126.01796199
2023-08-24	10:08:49	*Larus crassirostris*	1	0	Rest	Anma-do	35.34571818	126.01793249
2023-08-24	10:20:09	*Tringa glareola*	2	0		Anma-do	35.34574719	126.02655842
2023-08-24	10:25:12	*Motacilla cinerea*	1	0		Anma-do	35.34766477	126.02389551
2023-08-24	10:27:00	*Pycnonotus sinensis*	1	0		Anma-do	35.34801122	126.02327508
2023-08-24	10:38:30	*Streptopelia orientalis*	2	0		Anma-do	35.35516183	126.02548108
2023-08-24	10:47:03	*Microscelis amaurotis*	2	0		Anma-do	35.35769284	126.02725323
2023-08-24	10:56:28	*Emberiza cioides*	2	0		Anma-do	35.35838661	126.02781558
2023-08-24	11:03:04	*Dendronanthus indicus*	2	0	Rest	Anma-do	35.35689967	126.02614186
2023-08-24	11:11:49	*Hirundo rustica*	1	0	Rest	Anma-do	35.34929685	126.02549479
2023-08-24	11:14:47	*Passer montanus*	7	0	Rest	Anma-do	35.34803633	126.02956570
2023-08-24	11:18:11	*Ardea cinerea*	1	0	Rest	Anma-do	35.34786169	126.02842506
2023-08-24	11:18:17	*Motacilla cinerea*	1	0	Rest	Anma-do	35.34806746	126.02827471
2023-08-24	11:22:17	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35075959	126.02699813
2023-08-24	11:27:16	*Hirundo rustica*	3	0	Rest	Anma-do	35.34842546	126.03050559
2023-08-24	11:27:24	*Ardea cinerea*	1	0	Rest	Anma-do	35.34842436	126.03122202
2023-08-24	11:30:45	*Carduelis sinica*	1	0	Rest	Anma-do	35.34812668	126.02905266
2023-08-24	11:34:15	*Hirundo rustica*	12	0	Rest	Anma-do	35.34455573	126.02678802
2023-08-24	11:38:20	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34031759	126.02918767
2023-08-24	11:41:16	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33787792	126.02679671
2023-08-24	11:43:50	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.33746370	126.02313780
2023-08-24	11:50:03	*Larus crassirostris*	3	0	Rest	Anma-do	35.33824249	126.01603330
2023-08-24	11:53:21	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33648019	126.02037561
2023-08-24	11:55:45	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33819250	126.02107477
2023-08-24	11:59:29	*Parus major*	2	0	Rest	Anma-do	35.34215067	126.01662583
2023-08-24	12:04:57	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34121869	126.01215695
2023-08-24	12:10:56	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34402687	126.01025455
2023-08-24	12:13:40	*Ardea cinerea*	1	0	Rest	Anma-do	35.34503444	126.01437949
2023-08-24	12:19:13	*Larus crassirostris*	43	0	Rest	Anma-do	35.34690888	126.01870138
2023-08-24	12:19:31	*Larus crassirostris*	17	0	Rest	Anma-do	35.34713922	126.01849329
2023-08-24	12:19:46	*Larus crassirostris*	18	0	Rest	Anma-do	35.34697319	126.01815742
2023-08-24	12:20:39	*Larus crassirostris*	33	0	Rest	Anma-do	35.35012439	126.01754347
2023-08-24	12:20:53	*Larus crassirostris*	11	0	Rest	Anma-do	35.35042906	126.01760288
2023-08-24	12:21:07	*Larus crassirostris*	7	0	Rest	Anma-do	35.35027171	126.01749328
2023-08-25	07:37:54	*Monticola solitarius*	1	0	Rest	O-do	35.32889780	125.99920887
2023-08-25	07:38:39	*Monticola solitarius*	1	0	Rest	O-do	35.32971298	125.99934904
2023-08-25	07:39:33	*Monticola solitarius*	1	0	Rest	O-do	35.32923703	125.99926585
2023-08-25	08:02:42	*Emberiza cioides*	1	0	Rest	O-do	35.32798364	125.99939987
2023-08-25	08:02:57	*Microscelis amaurotis*	1	0	Rest	O-do	35.32812642	125.99932892
2023-08-25	08:07:23	*Emberiza cioides*	1	0	Rest	O-do	35.32757322	125.99867681
2023-08-25	08:09:19	*Microscelis amaurotis*	1	0	Rest	O-do	35.32782694	125.99880875
2023-08-25	08:11:25	*Parus major*	1	0	Rest	O-do	35.32763859	125.99858829
2023-08-25	08:15:28	*Microscelis amaurotis*	2	0	Rest	O-do	35.32707697	125.99805317
2023-08-25	08:44:12	*Monticola solitarius*	1	0	Rest	O-do	35.33108245	125.99977668
2023-08-25	08:46:53	*Monticola solitarius*	1	0	Rest	O-do	35.33118432	125.99998739
2023-08-25	08:54:04	*Microscelis amaurotis*	2	0	Rest	O-do	35.33043319	126.00084619
2023-08-25	09:06:12	*Microscelis amaurotis*	2	0	Rest	O-do	35.33081357	126.00266899
2023-08-25	09:14:40	*Monticola solitarius*	1	0	Rest	O-do	35.33103411	126.00406554
2023-08-25	09:29:34	*Microscelis amaurotis*	1	0	Rest	O-do	35.33037693	126.00714032
2023-08-25	09:37:53	*Parus major*	2	0	Rest	O-do	35.32940765	126.00866663
2023-08-25	10:32:41	*Larus crassirostris*	20	0	Rest	Daeseokman-do	35.37235207	126.05550297
2023-08-25	10:33:16	*Larus crassirostris*	7	0	Rest	Daeseokman-do	35.37234576	126.05554429
2023-08-25	10:33:23	*Larus crassirostris*	1	0	Rest	Daeseokman-do	35.37232948	126.05548797
2023-08-25	10:34:06	*Larus crassirostris*	56	0	Rest	Daeseokman-do	35.37250922	126.05622850
2023-08-25	10:34:30	*Larus crassirostris*	7	0	Rest	Daeseokman-do	35.37246721	126.05623423
2023-08-25	10:37:12	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37283910	126.05663177
2023-08-25	10:39:58	*Anthus rubescens*	1	0	Rest	Daeseokman-do	35.37344446	126.05692051
2023-08-25	11:10:22	*Emberiza cioides*	1	0	Rest	Daeseokman-do	35.37280704	126.04949453
2023-08-25	11:21:24	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37206603	126.04811178
2023-08-25	11:23:25	*Parus major*	2	0	Rest	Daeseokman-do	35.37172513	126.04768595
2023-08-25	11:50:34	*Phalacrocorax capillatus*	1	0	Rest	Daeseokman-do	35.37234536	126.05602579
2023-09-22	09:18:45	*Monticola solitarius*	2	0	Rest	Soseokman-do	35.36811703	126.05588894
2023-09-22	09:21:48	*Motacilla cinerea*	2	0	Rest	Soseokman-do	35.36884033	126.05696093

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-09-22	09:28:07	*Oriolus chinensis*	1	0	Rest	Soseokman-do	35.36872143	126.05819890
2023-09-22	09:31:33	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36809001	126.05870251
2023-09-22	09:38:19	*Turdus pallidus*	1	0	Rest	Soseokman-do	35.36786045	126.05968190
2023-09-22	09:49:30	*Muscicapa griseisticta*	1	0	Rest	Soseokman-do	35.36544566	126.06025280
2023-09-22	09:50:14	*Muscicapa dauurica*	1	0	Rest	Soseokman-do	35.36527122	126.06019251
2023-09-22	09:50:38	*Monticola solitarius*	1	0	Rest	Soseokman-do	35.36534808	126.06040004
2023-09-22	09:53:38	*Muscicapa griseisticta*	1	0	Rest	Soseokman-do	35.36514940	126.06023801
2023-09-22	10:00:00	*Turdus pallidus*	1	0	Rest	Soseokman-do	35.36563468	126.05976555
2023-09-22	10:01:23	*Muscicapa dauurica*	1	0	Rest	Soseokman-do	35.36570390	126.05954573
2023-09-22	10:04:12	*Muscicapa griseisticta*	1	0	Rest	Soseokman-do	35.36629067	126.05915423
2023-09-22	10:12:13	*Microscelis amaurotis*	4	0	Rest	Soseokman-do	35.36672300	126.05714868
2023-09-22	10:15:19	*Turdus pallidus*	1	0	Rest	Soseokman-do	35.36697780	126.05697836
2023-09-22	10:18:53	*Motacilla flava*	4	0	Rest	Soseokman-do	35.36714785	126.05610715
2023-09-22	10:19:38	*Monticola solitarius*	1	0	Rest	Soseokman-do	35.36667875	126.05605517
2023-09-22	10:22:31	*Phalacrocorax carbo*	1	0	Rest	Soseokman-do	35.36763955	126.05474833
2023-09-22	10:30:36	*Phalacrocorax carbo*	1	0	Rest	Soseokman-do	35.36826010	126.05523348
2023-09-22	10:34:13	*Egretta intermedia*	1	0	Rest	Soseokman-do	35.36818006	126.05546815
2023-09-22	10:50:33	*Phalacrocorax carbo*	4	0	Rest	Daeseokman-do	35.37490578	126.05321274
2023-09-22	10:59:11	*Falco peregrinus*	1	100	Move	Daeseokman-do	35.36851302	126.04402478
2023-09-22	11:07:56	*Larus crassirostris*	26	0	Rest	Daeseokman-do	35.37239252	126.05553881
2023-09-22	11:08:24	*Larus crassirostris*	7	0	Rest	Daeseokman-do	35.37233452	126.05552164
2023-09-22	11:08:40	*Larus crassirostris*	4	0	Rest	Daeseokman-do	35.37234296	126.05551699
2023-09-22	11:10:08	*Larus crassirostris*	16	0	Rest	Daeseokman-do	35.37214598	126.05681754
2023-09-22	11:10:47	*Larus crassirostris*	32	0	Rest	Daeseokman-do	35.37217053	126.05685846
2023-09-22	11:11:23	*Phalacrocorax carbo*	2	0	Rest	Daeseokman-do	35.37218393	126.05695140
2023-09-22	11:37:11	*Phalacrocorax carbo*	6	0	Rest	O-do	35.33097441	126.01104373
2023-09-22	11:49:23	*Parus major*	2	0	Rest	Daeseokman-do	35.32865747	126.00910304
2023-09-22	12:02:50	*Microscelis amaurotis*	3	0	Rest	Daeseokman-do	35.32964688	126.00832759
2023-09-22	12:07:54	*Microscelis amaurotis*	3	0	Rest	Daeseokman-do	35.33013323	126.00812520
2023-09-22	12:16:05	*Phylloscopus borealis*	4	0	Rest	Daeseokman-do	35.33015848	126.00758060
2023-09-22	12:18:08	*Microscelis amaurotis*	4	0	Rest	Daeseokman-do	35.33039009	126.00715265
2023-09-22	12:21:38	*Phylloscopus borealis*	1	0	Rest	Daeseokman-do	35.33051329	126.00692788
2023-09-22	12:24:37	*Streptopelia orientalis*	1	0	Rest	Daeseokman-do	35.33052339	126.00621441
2023-09-22	12:26:16	*Parus major*	2	0	Rest	Daeseokman-do	35.33053388	126.00602994
2023-09-22	12:28:22	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.33060142	126.00566379
2023-09-22	12:31:29	*Parus major*	2	0	Rest	Daeseokman-do	35.33062666	126.00496223
2023-09-22	12:34:44	*Parus major*	3	0	Rest	Daeseokman-do	35.33139494	126.00455734
2023-09-22	12:36:04	*Pycnonotus sinensis*	1	0	Rest	Daeseokman-do	35.33163603	126.00389652
2023-09-22	12:51:30	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.33020061	126.00123525
2023-09-22	12:57:21	*Cettia diphone cantans*	2	0	Rest	Daeseokman-do	35.33000838	126.00087227
2023-09-22	13:24:04	*Falco subbuteo*	1	20	Move	Daeseokman-do	35.32871296	126.00001721
2023-09-22	13:51:57	*Monticola solitarius*	2	0	Rest	Daeseokman-do	35.32702796	125.99914200
2023-09-22	14:07:24	*Parus major*	1	0	Rest	Daeseokman-do	35.32818021	126.00099665
2023-09-22	14:07:32	*Monticola solitarius*	3	0	Rest	Daeseokman-do	35.32823807	126.00107140
2023-09-22	14:10:23	*Streptopelia orientalis*	2	0	Rest	Daeseokman-do	35.32867650	126.00155158
2023-09-22	16:08:48	*Ardea cinerea*	9	0	Rest	Anma-do	35.34792069	126.02097238
2023-09-22	16:14:24	*Egretta garzetta*	1	0	Rest	Anma-do	35.34572717	126.02306747
2023-09-22	16:19:39	*Microscelis amaurotis*	8	0	Rest	Anma-do	35.34785536	126.02220604
2023-09-22	16:25:15	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34848762	126.02346312
2023-09-22	16:26:54	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34957606	126.02353280
2023-09-22	16:27:54	*Falco tinnunculus*	1	50	Move	Anma-do	35.34966328	126.02410068
2023-09-22	16:34:31	*Eophona personata*	8	0	Rest	Daeseokman-do	35.34924781	126.02353919
2023-09-22	16:36:50	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.35173966	126.01967228
2023-09-22	16:38:00	*Lanius bucephalus*	1	0	Rest	Daeseokman-do	35.35235470	126.01881477
2023-09-22	16:38:18	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.35296803	126.01819865
2023-09-22	16:39:44	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.35330576	126.01359387
2023-09-22	16:50:20	*Emberiza cioides*	1	0	Rest	Daeseokman-do	35.35510591	126.00579021
2023-09-22	16:53:36	*Lanius bucephalus*	1	0	Rest	Daeseokman-do	35.35533539	126.00562225
2023-09-22	17:03:56	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.35431051	126.00258043
2023-09-22	17:15:49	*Monticola solitarius*	3	0	Rest	Anma-do	35.35618386	126.00763630
2023-09-22	17:26:02	*Phalacrocorax carbo*	1	0	Rest	Anma-do	35.35310758	126.00898767
2023-09-22	17:26:09	*Larus crassirostris*	1	0	Rest	Anma-do	35.35293506	126.00942856
2023-09-22	17:32:47	*Streptopelia orientalis*	2	0	Rest	Anma-do	35.34797407	126.02269520
2023-09-22	17:34:11	*Motacilla alba*	1	0	Rest	Anma-do	35.34800159	126.02451534
2023-09-22	17:35:12	*Alcedo atthis*	1	0	Rest	Anma-do	35.34885222	126.02443806
2023-09-22	17:36:23	*Pycnonotus sinensis*	1	0	Rest	Anma-do	35.34928155	126.02577355
2023-09-22	17:40:02	*Motacilla cinerea*	1	0	Rest	Anma-do	35.35264281	126.02713052

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-09-22	17:42:37	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35497357	126.02568858
2023-09-22	17:50:32	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35027542	126.02666811
2023-09-22	17:54:16	*Tachybaptus ruficollis*	1	0	Rest	Anma-do	35.34830067	126.03037281
2023-09-22	17:55:49	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34716251	126.03023094
2023-09-22	18:02:10	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34194805	126.03088258
2023-09-22	18:02:39	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34214823	126.03027013
2023-09-22	18:07:15	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33765485	126.02702516
2023-09-22	18:14:03	*Monticola solitarius*	1	0	Rest	Anma-do	35.33525038	126.01682552
2023-09-22	18:17:39	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33643324	126.01998603
2023-09-22	18:19:43	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33960755	126.02062011
2023-09-22	18:25:08	*Parus major*	1	0	Rest	Anma-do	35.34346168	126.01038449
2023-09-22	18:33:52	*Larus crassirostris*	35	0	Rest	Anma-do	35.34888144	126.01492536
2023-09-22	18:33:59	*Larus crassirostris*	13	0	Rest	Anma-do	35.34899267	126.01490682
2023-09-22	09:16:15	*Phalacrocorax carbo*	1	0	Rest	Daeseokman-do	35.37222790	126.05713623
2023-09-22	09:20:40	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37282662	126.05682637
2023-09-22	09:38:13	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37231688	126.04992683
2023-09-22	09:40:26	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37258471	126.04928554
2023-09-22	09:41:43	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37213564	126.04947756
2023-09-22	09:54:04	*Muscicapa griseisticta*	1	0	Rest	Daeseokman-do	35.37115758	126.04741587
2023-09-22	09:55:06	*Microscelis amaurotis*	3	0	Rest	Daeseokman-do	35.37145023	126.04749642
2023-09-22	09:58:00	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37086071	126.04717369
2023-09-22	10:06:33	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.36994848	126.04572523
2023-09-22	10:06:50	*Parus major*	1	0	Rest	Daeseokman-do	35.36993938	126.04581166
2023-09-22	10:11:06	*Eurystomus orientalis*	1	0	Rest	Daeseokman-do	35.37054381	126.04529319
2023-09-22	10:33:02	*Microscelis amaurotis*	3	0	Rest	Daeseokman-do	35.37085079	126.04502483
2023-09-22	10:33:51	*Parus major*	2	0	Rest	Daeseokman-do	35.37101447	126.04451935
2023-09-22	10:38:03	*Phylloscopus borealis*	2	0	Rest	Daeseokman-do	35.37086485	126.04433961
2023-09-22	10:55:55	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37259029	126.04899330
2023-09-22	11:46:03	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33598260	125.99721307
2023-09-22	11:56:05	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33684033	125.99627645
2023-09-22	12:10:48	*Muscicapa dauurica*	2	0	Rest	Hyeong-do	35.33644740	125.99511888
2023-09-22	12:14:43	*Phylloscopus borealis*	2	0	Rest	Hyeong-do	35.33644762	125.99504712
2023-09-22	12:18:04	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33666178	125.99485891
2023-09-22	12:29:20	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33636590	125.99217981
2023-09-22	12:34:46	*Phylloscopus borealis*	1	0	Rest	Hyeong-do	35.33612849	125.99136155
2023-09-22	12:42:09	*Parus major*	2	0	Rest	Hyeong-do	35.33663319	125.99081687
2023-09-22	12:45:51	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33665203	125.99023958
2023-09-22	12:47:40	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33656027	125.98981711
2023-09-22	12:51:07	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33707797	125.98914714
2023-09-22	12:56:55	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33767312	125.98812309
2023-09-22	13:03:33	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33756619	125.98750731
2023-09-22	13:11:31	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33706996	125.98793160
2023-09-22	13:25:35	*Parus major*	2	0	Rest	Hyeong-do	35.33644662	125.98915783
2023-09-22	14:06:07	*Phalacrocorax capillatus*	1	0	Rest	Hyeong-do	35.33565345	125.99775008
2023-09-22	14:07:29	*Lanius bucephalus*	1	0	Rest	Hyeong-do	35.33603751	125.99712176
2023-09-22	14:27:05	*Phalacrocorax capillatus*	3	2	Move	Hyeong-do	35.33588490	125.99795916
2023-09-22	15:02:11	*Monticola solitarius*	1	0	Rest	Anma-do	35.34535721	126.00940378
2023-09-22	15:06:27	*Larus crassirostris*	5	0	Rest	Anma-do	35.34503163	126.01128451
2023-09-22	15:08:52	*Monticola solitarius*	1	0	Rest	Anma-do	35.34449050	126.01369353
2023-09-22	15:09:40	*Larus crassirostris*	2	0	Rest	Anma-do	35.34496720	126.01438145
2023-09-22	15:10:07	*Larus crassirostris*	33	0	Rest	Anma-do	35.34509887	126.01427186
2023-09-22	15:10:26	*Larus crassirostris*	1	0	Rest	Anma-do	35.34506600	126.01438081
2023-09-22	15:15:51	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34409974	126.01816389
2023-09-22	15:21:28	*Ardea cinerea*	8	0	Rest	Anma-do	35.34649044	126.02302871
2023-09-22	15:21:45	*Larus crassirostris*	1	0	Rest	Anma-do	35.34602807	126.02295702
2023-09-22	15:22:25	*Alcedo atthis*	1	0	Rest	Anma-do	35.34745712	126.02303373
2023-09-22	15:24:02	*Larus crassirostris*	1	0	Rest	Anma-do	35.34517868	126.02130421
2023-09-22	15:24:34	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34444933	126.01999379
2023-09-22	16:22:36	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34368157	126.01712678
2023-09-22	16:30:55	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34151061	126.02126828
2023-09-22	16:36:40	*Muscicapa dauurica*	2	0	Rest	Anma-do	35.34003776	126.02322664
2023-09-22	16:36:57	*Zosterops japonicus*	3	0	Rest	Anma-do	35.34016715	126.02342384
2023-09-22	16:37:06	*Parus major*	2	0	Rest	Anma-do	35.34014723	126.02345551
2023-09-22	16:42:34	*Phylloscopus borealis*	1	0	Rest	Anma-do	35.33964169	126.02404528
2023-09-22	16:49:39	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33874758	126.02738846
2023-09-22	16:59:07	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34045129	126.03005400
2023-09-22	17:02:07	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34172576	126.02892671

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-09-22	17:04:06	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34201884	126.03022041
2023-09-22	17:14:07	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34520905	126.02789924
2023-09-22	17:17:22	*Zosterops japonicus*	2	0	Rest	Anma-do	35.34579684	126.02875037
2023-09-22	17:25:16	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34783664	126.03049907
2023-09-22	17:26:32	*Tachybaptus ruficollis*	1	0	Rest	Anma-do	35.34834041	126.03058982
2023-09-22	17:27:48	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34850200	126.02997539
2023-09-22	17:31:11	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35002174	126.02887439
2023-09-22	17:33:31	*Oriolus chinensis*	2	0	Rest	Anma-do	35.34912184	126.02839396
2023-09-22	17:33:53	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34921370	126.02833817
2023-09-22	17:35:30	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34925901	126.02820961
2023-09-22	17:37:00	*Oriolus chinensis*	1	0	Rest	Anma-do	35.35058528	126.02842882
2023-09-22	17:37:09	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34933387	126.02763862
2023-09-22	17:39:10	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35028684	126.02798455
2023-09-22	17:39:52	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34990593	126.02691707
2023-09-22	17:50:27	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34971175	126.02479754
2023-09-22	18:14:28	*Motacilla cinerea*	2	0	Rest	Anma-do	35.34448091	126.02240248
2023-09-22	18:20:23	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34464120	126.01858050
2023-09-22	18:43:18	*Monticola solitarius*	1	0	Rest	Anma-do	35.34498751	126.01750321
2023-10-11	08:49:53	*Anthus rubescens*	1	0	Rest	Soseokman-do	35.36907298	126.05665540
2023-10-11	08:50:44	*Falco tinnunculus*	1	30	Move	Soseokman-do	35.36895822	126.05686605
2023-10-11	08:54:18	*Monticola solitarius*	3	0	Rest	Soseokman-do	35.36960021	126.05762756
2023-10-11	08:58:10	*Monticola solitarius*	1	0	Rest	Soseokman-do	35.36870028	126.05828255
2023-10-11	09:13:57	*Anthus rubescens*	1	0	Rest	Soseokman-do	35.36620781	126.05981230
2023-10-11	09:20:18	*Parus major*	3	0	Rest	Soseokman-do	35.36584424	126.06025044
2023-10-11	09:41:15	*Microscelis amaurotis*	5	0	Rest	Soseokman-do	35.36778588	126.05728916
2023-10-11	09:48:58	*Monticola solitarius*	1	0	Rest	Soseokman-do	35.36797148	126.05531280
2023-10-11	09:53:35	*Actitis hypoleucos*	3	0	Rest	Soseokman-do	35.36756748	126.05464181
2023-10-11	09:55:02	*Ardea cinerea*	1	0	Rest	Soseokman-do	35.36662421	126.05644152
2023-10-11	09:55:37	*Ardea alba*	1	0	Rest	Soseokman-do	35.36596015	126.05818130
2023-10-11	09:56:56	*Phalacrocorax capillatus*	1	0	Rest	Soseokman-do	35.36465470	126.06019852
2023-10-11	10:01:41	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37263861	126.05752371
2023-10-11	10:04:25	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37546875	126.05384516
2023-10-11	10:05:13	*Buteo buteo*	1	0	Rest	Daeseokman-do	35.37479238	126.05259141
2023-10-11	10:08:59	*Phalacrocorax capillatus*	1	0	Rest	Daeseokman-do	35.37410512	126.04258013
2023-10-11	10:10:51	*Phalacrocorax capillatus*	1	0	Rest	Daeseokman-do	35.37220871	126.04164936
2023-10-11	10:14:11	*Phalacrocorax capillatus*	2	0	Rest	Daeseokman-do	35.36759561	126.04578469
2023-10-11	11:08:47	*Zosterops japonicus*	2	0	Rest	O-do	35.32922884	126.00839817
2023-10-11	11:09:52	*Microscelis amaurotis*	1	0	Rest	O-do	35.32939272	126.00875830
2023-10-11	0.465277778	*Lanius bucephalus*	1	0	Rest	O-do	35.32939272	126.00875830
2023-10-11	11:27:32	*Microscelis amaurotis*	2	0	Rest	O-do	35.33040034	126.00706467
2023-10-11	11:28:32	*Parus major*	5	0	Rest	O-do	35.33057306	126.00683255
2023-10-11	11:30:27	*Microscelis amaurotis*	3	0	Rest	O-do	35.33020495	126.00673872
2023-10-11	11:31:34	*Monticola solitarius*	1	0	Rest	O-do	35.33025143	126.00673656
2023-10-11	11:37:46	*Microscelis amaurotis*	2	0	Rest	O-do	35.33039679	126.00560966
2023-10-11	11:45:02	*Microscelis amaurotis*	2	0	Rest	O-do	35.33131005	126.00361741
2023-10-11	11:50:41	*Monticola solitarius*	3	0	Rest	O-do	35.33083647	126.00396511
2023-10-11	12:05:10	*Anthus rubescens*	2	0	Rest	O-do	35.33066027	126.00046241
2023-10-11	12:10:47	*Streptopelia orientalis*	2	0	Rest	O-do	35.33093036	125.99981321
2023-10-11	12:17:32	*Monticola solitarius*	1	0	Rest	O-do	35.33205978	125.99853223
2023-10-11	12:57:52	*Saxicola torquatus*	1	0	Rest	O-do	35.32785925	125.99866490
2023-10-11	15:27:52	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34412291	126.01811810
2023-10-11	15:32:52	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34327557	126.01653985
2023-10-11	15:37:08	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34349896	126.01734662
2023-10-11	15:40:10	*Corvus macrorhynchos*	1	0	Rest	Anma-do	35.34294168	126.01833779
2023-10-11	15:42:36	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34283063	126.01907008
2023-10-11	15:52:55	*Falco subbuteo*	2	40	Move	Anma-do	35.34340011	126.02051652
2023-10-11	15:58:52	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34125545	126.02164480
2023-10-11	16:00:39	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34091878	126.02197927
2023-10-11	16:03:44	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34083771	126.02225366
2023-10-11	16:04:30	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34090748	126.02231699
2023-10-11	16:13:39	*Zosterops japonicus*	7	0	Rest	Anma-do	35.33973128	126.02362580
2023-10-11	16:16:00	*Parus venustulus*	5	0	Rest	Anma-do	35.33998131	126.02355671
2023-10-11	16:21:56	*Parus venustulus*	4	0	Rest	Anma-do	35.33974173	126.02389502
2023-10-11	16:28:28	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33927780	126.02504238
2023-10-11	16:49:25	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.33899393	126.03033990
2023-10-11	16:55:11	*Carduelis sinica*	34	0	Rest	Anma-do	35.34047436	126.02890080
2023-10-11	16:57:38	*Falco subbuteo*	1	50	Move	Anma-do	35.33947307	126.02805225

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-10-11	17:05:01	*Pycnonotus sinensis*	2	0	Rest	Anma-do	35.34288350	126.02782233
2023-10-11	17:05:17	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34288136	126.02785646
2023-10-11	17:12:42	*Passer montanus*	8	0	Rest	Anma-do	35.34510094	126.02732182
2023-10-11	17:15:40	*Saxicola torquatus*	1	0	Rest	Anma-do	35.34605081	126.02709438
2023-10-11	17:17:06	*Fringilla montifringilla*	23	0	Rest	Anma-do	35.34631593	126.02684151
2023-10-11	0.723611111	*Saxicola torquatus*	1	0	Rest	Anma-do	35.34631593	126.02684151
2023-10-11	17:34:26	*Motacilla alba*	2	0	Rest	Anma-do	35.34576611	126.02318061
2023-10-11	17:52:51	*Ardea cinerea*	1	0	Rest	Anma-do	35.34644895	126.02538959
2023-10-11	08:49:19	*Motacilla lugens*	1	0	Rest	Daeseokman-do	35.37301923	126.05569590
2023-10-11	08:50:37	*Larus crassirostris*	42	0	Rest	Daeseokman-do	35.37243558	126.05620030
2023-10-11	08:52:01	*Larus crassirostris*	3	0	Rest	Daeseokman-do	35.37243862	126.05617330
2023-10-11	08:52:28	*Larus crassirostris*	15	0	Rest	Daeseokman-do	35.37259423	126.05590679
2023-10-11	08:52:53	*Larus crassirostris*	3	0	Rest	Daeseokman-do	35.37259970	126.05594736
2023-10-11	08:53:08	*Larus argentatus*	1	0	Rest	Daeseokman-do	35.37263214	126.05589989
2023-10-11	08:53:36	*Larus crassirostris*	33	0	Rest	Daeseokman-do	35.37239981	126.05554285
2023-10-11	08:54:08	*Larus crassirostris*	8	0	Rest	Daeseokman-do	35.37241059	126.05551943
2023-10-11	08:55:28	*Larus crassirostris*	2	0	Rest	Daeseokman-do	35.37242269	126.05555087
2023-10-11	08:58:57	*Anthus rubescens*	3	0	Rest	Daeseokman-do	35.37363975	126.05720045
2023-10-11	09:01:59	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37312787	126.05666011
2023-10-11	09:08:07	*Lanius bucephalus*	1	0	Rest	Daeseokman-do	35.37355750	126.05498014
2023-10-11	09:16:04	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37437980	126.05403117
2023-10-11	09:26:30	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37241471	126.05024802
2023-10-11	09:27:50	*Falco amurensis*	2	0	Rest	Daeseokman-do	35.37208356	126.05021319
2023-10-11	09:28:38	*Microscelis amaurotis*	3	0	Rest	Daeseokman-do	35.37223051	126.05038317
2023-10-11	09:31:43	*Falco amurensis*	1	100	Move	Daeseokman-do	35.37307621	126.04992880
2023-10-11	09:39:22	*Phalacrocorax carbo*	1	0	Rest	Daeseokman-do	35.37420855	126.05065881
2023-10-11	09:46:55	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37238554	126.04763080
2023-10-11	09:52:45	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37198271	126.04690409
2023-10-11	09:55:48	*Parus major*	3	0	Rest	Daeseokman-do	35.37168100	126.04646266
2023-10-11	10:01:23	*Parus major*	4	0	Rest	Daeseokman-do	35.37223673	126.04643689
2023-10-11	10:02:41	*Microscelis amaurotis*	5	0	Rest	Daeseokman-do	35.37224095	126.04667408
2023-10-11	10:28:51	*Ardea cinerea*	1	0	Rest	Daeseokman-do	35.37224947	126.05660047
2023-10-11	11:08:03	*Falco subbuteo*	1	160	Move	Hyeong-do	35.33695893	125.99648613
2023-10-11	11:14:20	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33663134	125.99595831
2023-10-11	11:19:17	*Lanius bucephalus*	1	0	Rest	Hyeong-do	35.33684202	125.99480815
2023-10-11	11:22:10	*Lanius bucephalus*	1	0	Rest	Hyeong-do	35.33634262	125.99451842
2023-10-11	11:24:37	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33674579	125.99421699
2023-10-11	11:25:49	*Streptopelia orientalis*	1	0	Rest	Hyeong-do	35.33696140	125.99403408
2023-10-11	11:29:30	*Anthus rubescens*	1	0	Rest	Hyeong-do	35.33677682	125.99373061
2023-10-11	11:32:10	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33636895	125.99273027
2023-10-11	11:52:14	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33652426	125.99005882
2023-10-11	11:59:04	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33667656	125.98927786
2023-10-11	12:03:26	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33755426	125.98880341
2023-10-11	12:16:31	*Anthus rubescens*	2	0	Rest	Hyeong-do	35.33623616	125.98855482
2023-10-11	12:41:46	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33608303	125.99185417
2023-10-11	14:43:44	*Motacilla lugens*	3	0	Rest	Anma-do	35.34560378	126.02327719
2023-10-11	14:45:35	*Ardea cinerea*	1	0	Rest	Anma-do	35.34792323	126.02339753
2023-10-11	14:46:32	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34820974	126.02143924
2023-10-11	14:51:53	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35396894	126.01141405
2023-10-11	14:53:11	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35542420	126.00907973
2023-10-11	14:54:11	*Monticola solitarius*	1	0	Rest	Anma-do	35.35629418	126.00801733
2023-10-11	15:00:56	*Microscelis amaurotis*	1	0	Rest	Juk-do	35.35487928	126.00560081
2023-10-11	15:02:40	*Monticola solitarius*	1	0	Rest	Juk-do	35.35471946	126.00511435
2023-10-11	15:04:40	*Microscelis amaurotis*	2	0	Rest	Juk-do	35.35519425	126.00571603
2023-10-11	15:04:52	*Monticola solitarius*	1	0	Rest	Juk-do	35.35519557	126.00566458
2023-10-11	15:17:27	*Microscelis amaurotis*	1	0	Rest	Juk-do	35.35514421	126.00394455
2023-10-11	15:21:54	*Falco subbuteo*	1	90	Move	Juk-do	35.35287200	126.00511609
2023-10-11	15:50:08	*Monticola solitarius*	1	0	Rest	Anma-do	35.35467918	126.00995171
2023-10-11	15:52:56	*Falco tinnunculus*	1	150	Move	Anma-do	35.35340840	126.01305627
2023-10-11	15:57:26	*Falco subbuteo*	1	150	Move	Anma-do	35.35352152	126.01325991
2023-10-11	15:58:04	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35320492	126.01451123
2023-10-11	16:05:29	*Alcedo atthis*	1	0	Rest	Anma-do	35.34796585	126.02341884
2023-10-11	16:06:45	*Motacilla alba*	2	0	Rest	Anma-do	35.34756479	126.02374240
2023-10-11	16:09:32	*Saxicola torquatus*	1	0	Rest	Anma-do	35.34847022	126.02447450
2023-10-11	16:12:22	*Saxicola torquatus*	1	0	Rest	Anma-do	35.34899649	126.02452913
2023-10-11	16:14:59	*Acrocephalus orientalis*	2	0	Rest	Anma-do	35.34896006	126.02514973
2023-10-11	16:17:34	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35128938	126.02538370

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-10-11	16:18:39	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35205264	126.02595197
2023-10-11	16:20:26	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35318006	126.02680000
2023-10-11	16:31:36	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35067791	126.02691708
2023-10-11	16:48:11	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34250841	126.02863503
2023-10-11	16:49:37	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34035987	126.02955323
2023-10-11	16:53:43	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.33816068	126.02590851
2023-10-11	16:55:31	*Ardea alba*	1	0	Rest	Anma-do	35.33379136	126.02911035
2023-10-11	16:56:37	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33706010	126.02408901
2023-10-11	16:59:57	*Lanius bucephalus*	1	0	Rest	Anma-do	35.33654209	126.02163825
2023-10-11	17:10:01	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.33827305	126.02078698
2023-10-11	17:10:57	*Falco subbuteo*	1	80	Move	Anma-do	35.33854778	126.02066526
2023-10-11	17:14:03	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34208524	126.01799783
2023-10-11	17:14:28	*Monticola solitarius*	1	0	Rest	Anma-do	35.34080673	126.01516439
2023-10-11	17:15:51	*Monticola solitarius*	1	0	Rest	Anma-do	35.34160863	126.01615989
2023-10-11	17:19:31	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34343922	126.01043873
2023-10-11	17:22:44	*Monticola solitarius*	1	0	Rest	Anma-do	35.34684386	126.00859673
2023-10-11	17:27:00	*Phalacrocorax carbo*	2	0	Rest	Anma-do	35.34525308	126.01422280
2023-10-11	17:31:07	*Parus major*	1	0	Rest	Anma-do	35.34420549	126.02178450
2023-10-11	17:33:03	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34561731	126.02411405
2023-10-11	17:41:51	*Egretta intermedia*	1	0	Rest	Anma-do	35.34543922	126.01889149
2023-10-11	17:43:02	*Larus crassirostris*	13	0	Rest	Anma-do	35.34552931	126.01851188
2023-10-11	17:43:20	*Larus crassirostris*	1	0	Rest	Anma-do	35.34548250	126.01851472
2023-10-11	17:44:57	*Ardea cinerea*	4	0	Rest	Anma-do	35.34649355	126.01938068
2023-10-11	17:45:25	*Ardea alba*	1	0	Rest	Anma-do	35.34765164	126.01986457
2023-10-11	17:46:25	*Larus crassirostris*	15	0	Rest	Anma-do	35.34697747	126.01986563
2023-10-11	17:46:41	*Larus crassirostris*	2	0	Rest	Anma-do	35.34681114	126.01979529
2023-10-11	17:47:22	*Larus crassirostris*	175	0	Rest	Anma-do	35.34728234	126.01973522
2023-10-11	18:02:45	*Motacilla alba*	3	0	Rest	Anma-do	35.34490900	126.01777829
2023-11-14	07:21:40	*Ardea cinerea*	2	0	Rest	Anma-do	35.34506402	126.00952761
2023-11-14	07:22:36	*Phalacrocorax carbo*	2	0	Rest	Anma-do	35.34507348	126.00960206
2023-11-14	07:32:55	*Parus major*	2	0	Rest	Anma-do	35.34427131	126.01571945
2023-11-14	07:35:09	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34410947	126.01753293
2023-11-14	07:39:25	*Corvus macrorhynchos*	2	0	Rest	Anma-do	35.34394090	126.02078980
2023-11-14	07:43:55	*Sturnus cineraceus*	1	0	Rest	Anma-do	35.34517945	126.02311388
2023-11-14	07:46:57	*Buteo buteo*	1	0	Rest	Anma-do	35.34897869	126.02154515
2023-11-14	07:49:42	*Sturnus cineraceus*	2	0	Rest	Anma-do	35.34687849	126.02607180
2023-11-14	07:50:47	*Sturnus vulgaris*	4	0	Rest	Anma-do	35.34762184	126.02450181
2023-11-14	09:39:52	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34791345	126.02335254
2023-11-14	09:44:36	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34808077	126.02171493
2023-11-14	09:48:31	*Emberiza elegans*	4	0	Rest	Anma-do	35.34906656	126.01914053
2023-11-14	09:49:22	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34914076	126.01909125
2023-11-14	09:53:53	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35064271	126.01980267
2023-11-14	09:54:40	*Loxia curvirostra*	24	0	Rest	Anma-do	35.35259917	126.01990798
2023-11-14	10:02:55	*Phoenicurus auroreus*	2	0	Rest	Anma-do	35.35259173	126.01637504
2023-11-14	10:03:47	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35255839	126.01584584
2023-11-14	10:06:51	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35326956	126.01345893
2023-11-14	10:08:22	*Parus ater*	5	0	Rest	Anma-do	35.35354103	126.01277898
2023-11-14	10:09:16	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.35300785	126.01247288
2023-11-14	10:10:23	*Anthus hodgsoni*	4	0	Rest	Anma-do	35.35377119	126.01224221
2023-11-14	10:12:05	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35377119	126.01224221
2023-11-14	10:12:17	*Parus major*	2	0	Rest	Anma-do	35.35366769	126.01214458
2023-11-14	10:15:37	*Anas platyrhynchos*	27	0	Rest	Anma-do	35.35295732	126.01000414
2023-11-14	10:22:03	*Monticola solitarius*	1	0	Rest	Anma-do	35.35593597	126.00760888
2023-11-14	10:25:36	*Ardea cinerea*	1	0	Rest	Anma-do	35.35471840	126.00631177
2023-11-14	10:27:46	*Buteo buteo*	1	100	Move	Anma-do	35.35463367	126.00401077
2023-11-14	10:28:28	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35493980	126.00560026
2023-11-14	10:49:52	*Falco peregrinus*	1	5	Move	Anma-do	35.35509539	126.00185993
2023-11-14	11:10:25	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35591223	126.00834597
2023-11-14	11:18:46	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.35322805	126.01235847
2023-11-14	11:23:26	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.35280794	126.01602693
2023-11-14	11:35:58	*Ardea cinerea*	1	0	Rest	Anma-do	35.34619031	126.02238017
2023-11-14	11:36:33	*Phalacrocorax carbo*	1	0	Rest	Anma-do	35.34634415	126.01967867
2023-11-14	11:40:05	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34776562	126.02336626
2023-11-14	11:40:56	*Corvus macrorhynchos*	2	0	Rest	Anma-do	35.34836897	126.02366650
2023-11-14	11:41:57	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34870092	126.02358511
2023-11-14	11:44:15	*Pycnonotus sinensis*	7	0	Rest	Anma-do	35.34928862	126.02327224
2023-11-14	11:44:15	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34928862	126.02327224

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-11-14	11:45:00	*Falco tinnunculus*	1	0	Rest	Anma-do	35.34884756	126.02435300
2023-11-14	11:48:18	*Buteo buteo*	1	80	Move	Anma-do	35.35369174	126.02477247
2023-11-14	11:59:25	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34822477	126.02554551
2023-11-14	11:59:45	*Sturnus cineraceus*	2	0	Rest	Anma-do	35.34808833	126.02541379
2023-11-14	12:05:51	*Microscelis amaurotis*	5	0	Rest	Anma-do	35.34970753	126.02449525
2023-11-14	12:09:00	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35040764	126.02497377
2023-11-14	12:21:58	*Parus major*	4	0	Rest	Anma-do	35.35262351	126.02748306
2023-11-14	0.515972222	*Phylloscopus sp.*	1	0	Rest	Anma-do	35.35262351	126.02748306
2023-11-14	0.51875	*Parus ater*	1	0	Rest	Anma-do	35.35304676	126.02725199
2023-11-14	0.519444444	*Regulus regulus*	1	0	Rest	Anma-do	35.35304676	126.02725199
2023-11-14	12:30:35	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.35304676	126.02725199
2023-11-14	0.521527778	*Aegithalos caudatus*	1	0	Rest	Anma-do	35.35304676	126.02725199
2023-11-14	12:32:35	*Parus ater*	5	0	Rest	Anma-do	35.35272214	126.02777308
2023-11-14	12:38:16	*Regulus regulus*	4	0	Rest	Anma-do	35.35309433	126.02747117
2023-11-14	12:39:42	*Microscelis amaurotis*	5	0	Rest	Anma-do	35.35304291	126.02702616
2023-11-14	12:44:23	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.35474229	126.02566717
2023-11-14	12:46:42	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35580045	126.02517743
2023-11-14	12:49:25	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.35711761	126.02631505
2023-11-14	12:59:39	*Parus ater*	6	0	Rest	Anma-do	35.35400293	126.02695405
2023-11-14	13:12:55	*Buteo buteo*	1	0	Rest	Anma-do	35.35032614	126.02765225
2023-11-14	13:14:25	*Streptopelia orientalis*	4	0	Rest	Anma-do	35.34974242	126.02795436
2023-11-14	13:18:58	*Anas platyrhynchos*	5	0	Rest	Anma-do	35.34830171	126.03052041
2023-11-14	13:20:10	*Ardea cinerea*	1	0	Rest	Anma-do	35.34857826	126.03029828
2023-11-14	13:20:19	*Microscelis amaurotis*	5	0	Rest	Anma-do	35.34820250	126.03012539
2023-11-14	13:23:30	*Anthus hodgsoni*	1	0	Rest	Anma-do	35.34656870	126.02964493
2023-11-14	13:28:07	*Anthus hodgsoni*	1	0	Rest	Anma-do	35.34583234	126.02718245
2023-11-14	13:30:52	*Phoenicurus auroreus*	2	0	Rest	Anma-do	35.34474325	126.02640257
2023-11-14	13:41:27	*Monticola solitarius*	1	0	Rest	Anma-do	35.34444436	126.02579578
2023-11-14	13:50:09	*Ardea cinerea*	1	30	Move	Anma-do	35.34222478	126.02607218
2023-11-14	13:54:47	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34268916	126.02756895
2023-11-14	14:00:14	*Emberiza cioides*	2	0	Rest	Anma-do	35.34159957	126.02696634
2023-11-14	14:05:16	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34090370	126.02939265
2023-11-14	14:05:31	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.34062692	126.02894706
2023-11-14	14:13:49	*Microscelis amaurotis*	7	0	Rest	Anma-do	35.33823059	126.02870697
2023-11-14	14:18:30	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.33789187	126.02574964
2023-11-14	14:23:26	*Streptopelia orientalis*	2	0	Rest	Anma-do	35.33689135	126.02432942
2023-11-14	14:36:40	*Emberiza rustica*	5	0	Rest	Anma-do	35.33639144	126.01985957
2023-11-14	14:38:48	*Parus ater*	4	0	Rest	Anma-do	35.33513678	126.01926352
2023-11-14	14:39:29	*Emberiza elegans*	2	0	Rest	Anma-do	35.33512027	126.01911741
2023-11-14	14:41:17	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.33555133	126.01823304
2023-11-14	14:47:29	*Phalacrocorax carbo*	2	0	Rest	Anma-do	35.33324290	126.01395582
2023-11-14	14:59:34	*Emberiza elegans*	1	0	Rest	Anma-do	35.33775779	126.02180148
2023-11-14	15:01:43	*Pycnonotus sinensis*	1	0	Rest	Anma-do	35.33831732	126.02160816
2023-11-14	15:02:01	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.33831732	126.02160816
2023-11-14	15:02:17	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33801830	126.02153265
2023-11-14	15:07:59	*Falco tinnunculus*	1	0	Rest	Anma-do	35.34188720	126.01792775
2023-11-14	15:13:19	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34245772	126.01730746
2023-11-14	15:22:14	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34432460	126.02057105
2023-11-14	15:22:22	*Emberiza rustica*	2	0	Rest	Anma-do	35.34391479	126.02056843
2023-11-14	16:05:19	*Ardea cinerea*	12	0	Rest	Anma-do	35.34794117	126.02051865
2023-11-14	16:05:32	*Anas poecilorhyncha*	5	0	Rest	Anma-do	35.34764552	126.02046628
2023-11-14	16:05:32	*Anas platyrhynchos*	19	0	Rest	Anma-do	35.34764552	126.02046628
2023-11-14	16:05:32	*Phalacrocorax carbo*	1	0	Rest	Anma-do	35.34764552	126.02046628
2023-11-15	07:52:08	*Buteo buteo*	1	0	Rest	Daeseokman-do	35.37385080	126.05542784
2023-11-15	07:59:55	*Emberiza pallasi*	5	0	Rest	Daeseokman-do	35.37349977	126.05615403
2023-11-15	08:23:57	*Buteo buteo*	1	0	Rest	Daeseokman-do	35.37216651	126.05020248
2023-11-15	08:28:06	*Phoenicurus auroreus*	1	0	Rest	Daeseokman-do	35.37283769	126.05055172
2023-11-15	08:29:50	*Phalacrocorax carbo*	1	0	Rest	Daeseokman-do	35.37220414	126.05255549
2023-11-15	08:35:07	*Lanius bucephalus*	1	0	Rest	Daeseokman-do	35.37148523	126.04938656
2023-11-15	08:43:14	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37326754	126.04804116
2023-11-15	09:28:43	*Microscelis amaurotis*	5	0	Rest	Soseokman-do	35.36758826	126.05523512
2023-11-15	09:29:48	*Phoenicurus auroreus*	1	0	Rest	Soseokman-do	35.36783641	126.05531236
2023-11-15	09:35:11	*Falco peregrinus*	1	30	Move	Soseokman-do	35.36875685	126.05820540
2023-11-15	09:40:19	*Turdus eunomus*	2	0	Rest	Soseokman-do	35.36828156	126.05772536
2023-11-15	0.403472222	*Turdus naumanni*	1	0	Rest	Soseokman-do	35.36873191	126.05759863
2023-11-15	09:41:59	*Phoenicurus auroreus*	1	0	Rest	Soseokman-do	35.36873191	126.05759863
2023-11-15	09:44:23	*Buteo buteo*	1	100	Move	Soseokman-do	35.36919557	126.05768820

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-11-15	09:44:54	*Turdus eunomus*	3	0	Rest	Soseokman-do	35.36885478	126.05761303
2023-11-15	09:44:54	*Turdus naumanni*	3	0	Rest	Soseokman-do	35.36885478	126.05761303
2023-11-15	09:46:21	*Emberiza elegans*	4	0	Rest	Soseokman-do	35.36877765	126.05768106
2023-11-15	09:48:43	*Loxia curvirostra*	22	0	Rest	Soseokman-do	35.36845354	126.05806403
2023-11-15	09:53:19	*Microscelis amaurotis*	3	0	Rest	Soseokman-do	35.36800471	126.05672208
2023-11-15	09:56:16	*Carpodacus roseus*	2	0	Rest	Soseokman-do	35.36763443	126.05635966
2023-11-15	09:57:18	*Carpodacus roseus*	3	0	Rest	Soseokman-do	35.36765642	126.05635440
2023-11-15	10:00:40	*Falco tinnunculus*	1	80	Move	Soseokman-do	35.36981251	126.05433263
2023-11-15	10:02:53	*Phoenicurus auroreus*	1	0	Rest	Soseokman-do	35.36846366	126.05615679
2023-11-15	10:04:34	*Phalacrocorax carbo*	1	0	Rest	Soseokman-do	35.36719653	126.05498032
2023-11-15	10:55:33	*Microscelis amaurotis*	2	0	Rest	O-do	35.33202677	126.00350976
2023-11-15	10:58:58	*Emberiza spodocephala*	2	0	Rest	O-do	35.33136513	126.00493052
2023-11-15	11:11:33	*Microscelis amaurotis*	6	0	Rest	O-do	35.33096446	126.00684680
2023-11-15	11:12:34	*Parus major*	2	0	Rest	O-do	35.33094680	126.00686557
2023-11-15	11:16:33	*Falco tinnunculus*	1	0	Rest	O-do	35.33177568	126.00612166
2023-11-15	11:32:28	*Lanius bucephalus*	1	0	Rest	O-do	35.33087948	126.00297619
2023-11-15	11:36:31	*Saxicola torquatus*	1	0	Rest	O-do	35.32999555	126.00189066
2023-11-15	11:40:21	*Saxicola torquatus*	1	0	Rest	O-do	35.33038015	126.00153096
2023-11-15	11:44:50	*Microscelis amaurotis*	2	0	Rest	O-do	35.33043679	126.00056995
2023-11-15	11:47:16	*Parus ater*	4	0	Rest	O-do	35.32995802	126.00070508
2023-11-15	12:05:32	*Phalacrocorax carbo*	7	0	Rest	O-do	35.33407308	125.99757768
2023-11-15	12:17:35	*Buteo buteo*	1	80	Move	Hyeong-do	35.33580205	125.99648216
2023-11-15	12:21:44	*Parus ater*	3	0	Rest	Hyeong-do	35.33569208	125.99519415
2023-11-15	12:22:06	*Parus major*	1	0	Rest	Hyeong-do	35.33575595	125.99506459
2023-11-15	12:22:28	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33579785	125.99491171
2023-11-15	12:27:59	*Circus cyaneus*	1	80	Move	Hyeong-do	35.33647695	125.99362603
2023-11-15	12:33:34	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33588966	125.99126131
2023-11-15	12:33:52	*Emberiza elegans*	4	0	Rest	Hyeong-do	35.33575401	125.99070829
2023-11-15	12:34:06	*Parus ater*	4	0	Rest	Hyeong-do	35.33578734	125.99065475
2023-11-15	12:34:32	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33582723	125.99077272
2023-11-15	12:34:32	*Falco peregrinus*	1	0	Rest	Hyeong-do	35.33582723	125.99077272
2023-11-15	12:38:55	*Streptopelia orientalis*	1	0	Rest	Hyeong-do	35.33586062	125.99001008
2023-11-15	13:01:53	*Lanius bucephalus*	1	0	Rest	Hyeong-do	35.33719003	125.99274614
2023-11-14	14:45:47	*Emberiza rustica*	1	0	Rest	Anma-do	35.34403188	126.01667934
2023-11-14	14:45:47	*Microscelis amaurotis*	6	0	Rest	Anma-do	35.34403188	126.01667934
2023-11-14	14:48:22	*Phoenicurus auroreus*	2	0	Rest	Anma-do	35.34419860	126.01562614
2023-11-14	14:51:05	*Microscelis amaurotis*	5	0	Rest	Anma-do	35.34410898	126.01487280
2023-11-14	14:52:04	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34402858	126.01464104
2023-11-14	14:56:44	*Fringilla montifringilla*	5	0	Rest	Anma-do	35.34438945	126.01281787
2023-11-14	14:59:49	*Emberiza elegans*	1	0	Rest	Anma-do	35.34433708	126.01275635
2023-11-14	14:59:49	*Parus major*	1	0	Rest	Anma-do	35.34433708	126.01275635
2023-11-14	14:59:49	*Emberiza rustica*	1	0	Rest	Anma-do	35.34433708	126.01275635
2023-11-14	15:02:13	*Parus major*	6	0	Rest	Anma-do	35.34406694	126.01178941
2023-11-14	15:03:32	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34381253	126.01159332
2023-11-14	15:04:17	*Emberiza rustica*	10	0	Rest	Anma-do	35.34373425	126.01151486
2023-11-14	15:08:00	*Emberiza elegans*	9	0	Rest	Anma-do	35.34373417	126.01138261
2023-11-14	15:08:11	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34381851	126.01118003
2023-11-14	15:10:22	*Parus ater*	3	0	Rest	Anma-do	35.34391464	126.01099932
2023-11-14	15:13:38	*Fringilla montifringilla*	1	0	Rest	Anma-do	35.34392387	126.01096462
2023-11-14	15:14:04	*Loxia curvirostra*	4	0	Rest	Anma-do	35.34391784	126.01097457
2023-11-14	15:18:51	*Falco tinnunculus*	1	0	Rest	Anma-do	35.34411273	126.00983047
2023-11-14	15:22:27	*Emberiza cioides*	11	0	Rest	Anma-do	35.34426937	126.00949294
2023-11-14	15:26:36	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34340440	126.01039469
2023-11-14	15:29:47	*Parus major*	1	0	Rest	Anma-do	35.34252716	126.01112494
2023-11-14	15:31:35	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34194107	126.01186215
2023-11-14	15:40:55	*Parus major*	1	0	Rest	Anma-do	35.34169734	126.01530546
2023-11-14	15:44:17	*Microscelis amaurotis*	7	0	Rest	Anma-do	35.34219175	126.01555196
2023-11-14	15:49:59	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34210403	126.01772593
2023-11-14	15:54:03	*Falco peregrinus*	1	0	Rest	Anma-do	35.34335336	126.01651334
2023-12-04	09:04:55	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34407874	126.01091745
2023-12-04	09:06:05	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34409790	126.01098198
2023-12-04	09:10:01	*Parus ater*	3	0	Rest	Anma-do	35.34425587	126.01391146
2023-12-04	09:13:44	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34404002	126.01661692
2023-12-04	09:19:02	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.34416583	126.02093940
2023-12-04	09:21:05	*Ardea cinerea*	1	0	Rest	Anma-do	35.34489044	126.02218339
2023-12-04	09:23:33	*Phalacrocorax carbo*	1	0	Rest	Anma-do	35.34563962	126.02043904
2023-12-04	09:24:39	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34399590	126.01989113

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-12-04	09:24:53	*Ardea cinerea*	1	0	Rest	Anma-do	35.34470035	126.01996940
2023-12-04	09:58:52	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34422545	126.02201195
2023-12-04	10:00:29	*Emberiza elegans*	4	0	Rest	Anma-do	35.34420456	126.02111860
2023-12-04	10:01:13	*Zosterops japonicus*	5	0	Rest	Anma-do	35.34437208	126.02128041
2023-12-04	10:09:56	*Parus major*	1	0	Rest	Anma-do	35.34261102	126.01716806
2023-12-04	10:14:30	*Zosterops japonicus*	6	0	Rest	Anma-do	35.34089263	126.01955739
2023-12-04	10:18:37	*Zosterops japonicus*	4	0	Rest	Anma-do	35.33862652	126.02135895
2023-12-04	10:19:19	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33813877	126.02108524
2023-12-04	10:20:52	*Emberiza elegans*	7	0	Rest	Anma-do	35.33768725	126.02156022
2023-12-04	10:26:02	*Buteo buteo*	1	20	Move	Anma-do	35.33548445	126.01945805
2023-12-04	10:34:22	*Parus major*	4	0	Rest	Anma-do	35.33412572	126.01557950
2023-12-04	10:35:29	*Emberiza cioides*	2	0	Rest	Anma-do	35.33409991	126.01556021
2023-12-04	10:43:37	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.33674441	126.02169299
2023-12-04	10:46:52	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.33728862	126.02389424
2023-12-04	10:49:02	*Lanius bucephalus*	1	0	Rest	Anma-do	35.33716253	126.02478517
2023-12-04	10:58:13	*Emberiza elegans*	5	0	Rest	Anma-do	35.34016469	126.03003476
2023-12-04	11:03:05	*Emberiza elegans*	3	0	Rest	Anma-do	35.34090694	126.02750430
2023-12-04	11:04:59	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34177311	126.02697299
2023-12-04	11:05:58	*Parus ater*	4	0	Rest	Anma-do	35.34196431	126.02678991
2023-12-04	11:17:13	*Passer montanus*	3	0	Rest	Anma-do	35.34597186	126.02752961
2023-12-04	11:22:56	*Ardea cinerea*	1	0	Rest	Anma-do	35.34791903	126.03052221
2023-12-04	11:23:25	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34866234	126.03074611
2023-12-04	11:24:02	*Accipiter nisus*	1	0	Rest	Anma-do	35.34883007	126.03098093
2023-12-04	11:26:02	*Anas crecca*	3	0	Rest	Anma-do	35.34868470	126.03031002
2023-12-04	11:29:22	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34919925	126.02830037
2023-12-04	11:30:31	*Falco tinnunculus*	1	0	Rest	Anma-do	35.34937797	126.02739158
2023-12-04	11:39:00	*Corvus macrorhynchos*	1	0	Rest	Anma-do	35.35211016	126.02625572
2023-12-04	11:42:55	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35282973	126.02748875
2023-12-04	11:43:25	*Parus ater*	3	0	Rest	Anma-do	35.35284946	126.02748142
2023-12-04	11:44:10	*Buteo buteo*	1	30	Move	Anma-do	35.35192726	126.02710256
2023-12-04	11:55:46	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.35630922	126.02597062
2023-12-04	11:56:23	*Parus major*	1	0	Rest	Anma-do	35.35675981	126.02592045
2023-12-04	11:56:32	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35664668	126.02563316
2023-12-04	11:59:44	*Parus major*	2	0	Rest	Anma-do	35.35703596	126.02626063
2023-12-04	12:11:58	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35171094	126.02590611
2023-12-04	12:12:13	*Parus ater*	4	0	Rest	Anma-do	35.35256074	126.02608740
2023-12-04	12:16:34	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35095886	126.02530625
2023-12-04	12:18:30	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34828908	126.02541889
2023-12-04	12:20:05	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34887828	126.02553220
2023-12-04	12:20:30	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34878763	126.02586079
2023-12-04	12:26:24	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34776902	126.02379529
2023-12-04	12:27:30	*Buteo buteo*	1	0	Rest	Anma-do	35.34841477	126.02231475
2023-12-04	12:29:16	*Motacilla lugens*	2	0	Rest	Anma-do	35.34799739	126.02346857
2023-12-04	12:31:20	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34792823	126.02243585
2023-12-04	12:32:42	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34836881	126.02189152
2023-12-04	12:36:47	*Parus major*	4	0	Rest	Anma-do	35.34865087	126.01986744
2023-12-04	12:39:48	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34975019	126.01957779
2023-12-04	12:41:38	*Parus major*	1	0	Rest	Anma-do	35.35079332	126.01999587
2023-12-04	12:45:38	*Parus ater*	2	0	Rest	Anma-do	35.35278760	126.01890037
2023-12-04	12:46:12	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35280008	126.01845085
2023-12-04	12:47:55	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35316340	126.01746313
2023-12-04	12:49:06	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35318920	126.01677692
2023-12-04	12:51:54	*Falco tinnunculus*	1	0	Rest	Anma-do	35.35530285	126.01431796
2023-12-04	13:04:34	*Turdus pallidus*	1	0	Rest	Anma-do	35.35331445	126.01259283
2023-12-04	13:06:44	*Emberiza elegans*	4	0	Rest	Anma-do	35.35343766	126.01219650
2023-12-04	13:06:55	*Parus ater*	2	0	Rest	Anma-do	35.35343751	126.01219221
2023-12-04	13:11:24	*Parus major*	1	0	Rest	Anma-do	35.35460862	126.01077525
2023-12-04	13:11:30	*Parus ater*	3	0	Rest	Anma-do	35.35460862	126.01077525
2023-12-04	13:11:35	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35460862	126.01077525
2023-12-04	13:15:01	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35602357	126.00968815
2023-12-04	13:17:22	*Ardea cinerea*	2	0	Rest	Anma-do	35.35567271	126.00793384
2023-12-04	13:23:51	*Monticola solitarius*	1	0	Rest	Anma-do	35.35611570	126.00725710
2023-12-04	13:26:44	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.35525962	126.00619262
2023-12-04	13:30:49	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35533085	126.00549560
2023-12-04	13:44:45	*Emberiza elegans*	2	0	Rest	Anma-do	35.35542292	126.00312759
2023-12-04	13:47:38	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.35451864	126.00243427
2023-12-04	14:28:59	*Ardea cinerea*	1	0	Rest	Anma-do	35.35119784	126.01826656

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-12-04	14:29:05	*Anas platyrhynchos*	6	0	Rest	Anma-do	35.35142482	126.01762562
2023-12-04	14:38:11	*Turdus naumanni*	1	0	Rest	Anma-do	35.34939349	126.01944752
2023-12-04	14:43:23	*Emberiza elegans*	2	0	Rest	Anma-do	35.34838039	126.02211547
2023-12-04	14:46:16	*Anas platyrhynchos*	9	0	Rest	Anma-do	35.34669595	126.02217182
2023-12-04	14:46:23	*Ardea cinerea*	1	0	Rest	Anma-do	35.34693031	126.02205353
2023-12-04	14:48:59	*Motacilla lugens*	1	0	Rest	Anma-do	35.34591488	126.02334408
2023-12-04	15:18:06	*Anas poecilorhyncha*	2	0	Rest	Anma-do	35.34513456	126.01875966
2023-12-04	15:18:13	*Ardea cinerea*	1	0	Rest	Anma-do	35.34535199	126.01862083
2023-12-04	15:20:38	*Monticola solitarius*	1	0	Rest	Anma-do	35.34556123	126.01807943
2023-12-04	15:22:52	*Motacilla lugens*	1	0	Rest	Anma-do	35.34544577	126.01674358
2023-12-04	15:36:34	*Phalacrocorax capillatus*	4	0	Rest	Anma-do	35.34513143	126.01427386
2023-12-04	15:38:50	*Anas poecilorhyncha*	4	0	Rest	Anma-do	35.34510287	126.01370609
2023-12-04	15:41:53	*Dendrocopos major*	1	0	Rest	Anma-do	35.34397685	126.01208861
2023-12-04	15:42:18	*Microscelis amaurotis*	4	0	Rest	Anma-do	35.34396040	126.01189399
2023-12-04	15:57:29	*Falco tinnunculus*	1	20	Move	Anma-do	35.34203834	126.00962510
2023-12-04	16:03:05	*Emberiza cioides*	1	0	Rest	Anma-do	35.34169976	126.01264675
2023-12-04	16:07:34	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34117003	126.01543098
2023-12-04	16:09:16	*Parus major*	7	0	Rest	Anma-do	35.34253843	126.01540438
2023-12-04	16:10:12	*Emberiza elegans*	4	0	Rest	Anma-do	35.34260559	126.01553979
2023-12-04	16:11:29	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34220231	126.01651950
2023-12-05	07:45:25	*Falco tinnunculus*	1	0	Rest	Hyeong-do	35.33631233	125.99657975
2023-12-05	07:54:37	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33673132	125.99499647
2023-12-05	07:56:04	*Zosterops japonicus*	4	0	Rest	Hyeong-do	35.33649193	125.99501209
2023-12-05	08:01:41	*Turdus naumanni*	1	0	Rest	Hyeong-do	35.33643407	125.99288800
2023-12-05	08:03:03	*Lanius bucephalus*	1	0	Rest	Hyeong-do	35.33661083	125.99256039
2023-12-05	08:05:52	*Streptopelia orientalis*	1	0	Rest	Hyeong-do	35.33641238	125.99163733
2023-12-05	08:07:46	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33600358	125.99111000
2023-12-05	08:10:24	*Parus ater*	5	0	Rest	Hyeong-do	35.33685849	125.99071508
2023-12-05	08:14:01	*Certhia familiaris*	1	0	Rest	Hyeong-do	35.33645419	125.98989680
2023-12-05	08:28:04	*Parus ater*	7	0	Rest	Hyeong-do	35.33596565	125.99066576
2023-12-05	08:30:06	*Turdus pallidus*	1	0	Rest	Hyeong-do	35.33582822	125.99124059
2023-12-05	08:30:44	*Emberiza elegans*	4	0	Rest	Hyeong-do	35.33579285	125.99121954
2023-12-05	08:36:03	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33648680	125.99377492
2023-12-05	08:38:08	*Emberiza elegans*	5	0	Rest	Hyeong-do	35.33613556	125.99466768
2023-12-05	08:46:27	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33596244	125.99713837
2023-12-05	08:54:25	*Microscelis amaurotis*	1	0	Rest	O-do	35.33191019	126.00201732
2023-12-05	08:57:45	*Lanius bucephalus*	1	0	Rest	O-do	35.33126039	126.00283931
2023-12-05	09:01:33	*Microscelis amaurotis*	2	0	Rest	O-do	35.33182050	126.00404233
2023-12-05	09:04:44	*Parus major*	2	0	Rest	O-do	35.33136951	126.00481551
2023-12-05	09:05:26	*Eophona migratoria*	4	0	Rest	O-do	35.33112503	126.00471410
2023-12-05	09:07:11	*Emberiza rustica*	4	0	Rest	O-do	35.33109784	126.00527737
2023-12-05	09:08:36	*Parus major*	5	0	Rest	O-do	35.33147292	126.00549249
2023-12-05	09:11:52	*Microscelis amaurotis*	1	0	Rest	O-do	35.33152051	126.00665255
2023-12-05	09:16:34	*Phoenicurus auroreus*	1	0	Rest	O-do	35.33107340	126.00738305
2023-12-05	09:19:21	*Microscelis amaurotis*	3	0	Rest	O-do	35.33046603	126.00746346
2023-12-05	09:36:16	*Microscelis amaurotis*	1	0	Rest	O-do	35.33047141	126.00181868
2023-12-05	09:37:33	*Accipiter nisus*	1	40	Move	O-do	35.32969186	126.00202124
2023-12-05	09:46:51	*Microscelis amaurotis*	1	0	Rest	O-do	35.32973167	126.00021193
2023-12-05	09:56:23	*Buteo buteo*	1	30	Move	O-do	35.33063459	126.00298590
2023-12-05	10:11:00	*Phalacrocorax capillatus*	2	0	Rest	O-do	35.33032276	126.01104242
2023-12-05	10:29:47	*Buteo buteo*	3	40	Move	Daeseokman-do	35.37315910	126.05228397
2023-12-05	10:30:18	*Corvus macrorhynchos*	1	0	Rest	Daeseokman-do	35.37334957	126.05501254
2023-12-05	10:36:59	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37297678	126.05622231
2023-12-05	10:38:10	*Emberiza rustica*	4	0	Rest	Daeseokman-do	35.37340345	126.05651121
2023-12-05	10:47:24	*Larus crassirostris*	4	0	Rest	Daeseokman-do	35.37565410	126.05645183
2023-12-05	10:47:42	*Larus argentatus*	5	0	Rest	Daeseokman-do	35.37565410	126.05645183
2023-12-05	10:47:57	*Phalacrocorax capillatus*	1	0	Rest	Daeseokman-do	35.37577605	126.05625941
2023-12-05	10:54:03	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37428046	126.05403113
2023-12-05	10:54:18	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37482662	126.05436685
2023-12-05	10:55:10	*Emberiza cioides*	3	0	Rest	Daeseokman-do	35.37458637	126.05464938
2023-12-05	11:13:24	*Carpodacus roseus*	4	0	Rest	Daeseokman-do	35.37246928	126.04878615
2023-12-05	11:20:29	*Microscelis amaurotis*	1	0	Rest	Daeseokman-do	35.37179255	126.04724253
2023-12-05	11:24:19	*Turdus eunomus*	3	0	Rest	Daeseokman-do	35.37190722	126.04638057
2023-12-05	11:27:04	*Turdus eunomus*	3	0	Rest	Daeseokman-do	35.37187448	126.04597168
2023-12-05	11:50:03	*Phoenicurus auroreus*	1	0	Rest	Daeseokman-do	35.37333541	126.05288731
2023-12-05	12:15:29	*Accipiter nisus*	1	0	Rest	Soseokman-do	35.36821258	126.05550748
2023-12-05	12:15:49	*Microscelis amaurotis*	5	0	Rest	Soseokman-do	35.36809449	126.05550331

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2023-12-05	12:23:37	*Microscelis amaurotis*	3	0	Rest	Soseokman-do	35.36914028	126.05792509
2024-01-03	08:09:28	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33650439	125.99576490
2024-01-03	08:17:07	*Larus crassirostris*	1	0	Rest	Hyeong-do	35.33834577	125.99038038
2024-01-03	08:18:01	*Lanius bucephalus*	1	0	Rest	Hyeong-do	35.33607890	125.99273884
2024-01-03	08:22:51	*Certhia familiaris*	1	0	Rest	Hyeong-do	35.33637657	125.99118180
2024-01-03	08:23:26	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33607890	125.99097572
2024-01-03	08:24:13	*Parus varius*	4	0	Rest	Hyeong-do	35.33607182	125.99124241
2024-01-03	08:25:30	*Parus ater*	1	0	Rest	Hyeong-do	35.33610484	125.99107999
2024-01-03	08:26:32	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33592049	125.99106396
2024-01-03	08:32:54	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33595218	125.98956819
2024-01-03	08:33:19	*Zosterops japonicus*	3	0	Rest	Hyeong-do	35.33596208	125.98963121
2024-01-03	08:33:42	*Parus varius*	1	0	Rest	Hyeong-do	35.33603976	125.98965592
2024-01-03	08:35:05	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33563360	125.98967704
2024-01-03	08:38:13	*Parus major*	5	0	Rest	Hyeong-do	35.33595281	125.98934299
2024-01-03	08:40:39	*Monticola solitarius*	1	0	Rest	Hyeong-do	35.33565974	125.98815712
2024-01-03	08:42:36	*Parus varius*	2	0	Rest	Hyeong-do	35.33602577	125.98903330
2024-01-03	08:47:29	*Parus ater*	5	0	Rest	Hyeong-do	35.33581618	125.99114239
2024-01-03	08:47:50	*Parus major*	3	0	Rest	Hyeong-do	35.33572784	125.99086986
2024-01-03	08:49:20	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33625360	125.99206309
2024-01-03	08:51:16	*Buteo buteo*	1	22.57333737	Move	Hyeong-do	35.33579157	125.99494708
2024-01-03	08:54:39	*Zosterops japonicus*	2	0	Rest	Hyeong-do	35.33562906	125.99505828
2024-01-03	08:55:50	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33577237	125.99477013
2024-01-03	08:57:11	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33593365	125.99552466
2024-01-03	08:58:47	*Parus ater*	3	0	Rest	Hyeong-do	35.33561046	125.99614662
2024-01-03	09:38:41	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36859781	126.05642602
2024-01-03	09:39:21	*Buteo buteo*	1	59.39113153	Move	Soseokman-do	35.36831632	126.05659067
2024-01-03	09:44:03	*Turdus eunomus*	2	0	Rest	Soseokman-do	35.36843070	126.05576245
2024-01-03	09:44:03	*Turdus naumanni*	1	0	Rest	Soseokman-do	35.36843070	126.05576245
2024-01-03	09:50:58	*Microscelis amaurotis*	2	0	Rest	Soseokman-do	35.36850152	126.05749457
2024-01-03	09:52:40	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36899568	126.05829514
2024-01-03	09:54:36	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36867612	126.05863594
2024-01-03	10:03:37	*Microscelis amaurotis*	2	0	Rest	Soseokman-do	35.36784202	126.05712826
2024-01-03	10:05:28	*Turdus naumanni*	4	0	Rest	Soseokman-do	35.36805130	126.05712537
2024-01-03	10:08:42	*Turdus naumanni*	1	0	Rest	Soseokman-do	35.36678464	126.05629127
2024-01-03	10:08:54	*Turdus naumanni*	2	0	Rest	Soseokman-do	35.36708290	126.05603562
2024-01-03	10:16:00	*Microscelis amaurotis*	3	0	Rest	Soseokman-do	35.36652235	126.05757719
2024-01-03	10:16:11	*Parus major*	2	0	Rest	Soseokman-do	35.36647624	126.05758872
2024-01-03	10:19:30	*Lanius bucephalus*	1	0	Rest	Soseokman-do	35.36728153	126.05643638
2024-01-03	10:33:46	*Phalacrocorax carbo*	1	0	Rest	Soseokman-do	35.36695191	126.05542957
2024-01-03	10:36:02	*Buteo buteo*	1	0	Rest	Soseokman-do	35.36473608	126.06000358
2024-01-02	10:56:24	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34386295	126.01141237
2024-01-02	10:57:07	*Anas poecilorhyncha*	2	0	Rest	Anma-do	35.34711545	126.01167986
2024-01-02	11:04:20	*Emberiza cioides*	1	0	Rest	Anma-do	35.34412160	126.00985037
2024-01-02	11:11:10	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34201764	126.01143353
2024-01-02	11:15:18	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34112943	126.01326898
2024-01-02	11:17:02	*Buteo buteo*	1	0	Rest	Anma-do	35.34125333	126.01396714
2024-01-02	11:24:10	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34219937	126.01660178
2024-01-02	11:25:24	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34212059	126.01702773
2024-01-02	11:26:16	*Ardea cinerea*	1	0	Rest	Anma-do	35.34143785	126.01704135
2024-01-02	11:26:52	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34187005	126.01751750
2024-01-02	11:31:44	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34110315	126.01865419
2024-01-02	11:36:58	*Parus major*	5	0	Rest	Anma-do	35.33872325	126.02064641
2024-01-02	11:36:58	*Emberiza elegans*	4	0	Rest	Anma-do	35.33872325	126.02064641
2024-01-02	11:43:23	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.33682317	126.02085679
2024-01-02	11:48:03	*Buteo buteo*	1	45	Move	Anma-do	35.33634755	126.01956858
2024-01-02	11:50:21	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33596472	126.01925979
2024-01-02	11:52:54	*Phalacrocorax capillatus*	1	0	Rest	Anma-do	35.33566146	126.01787177
2024-01-02	11:59:52	*Phalacrocorax capillatus*	2	0	Rest	Anma-do	35.33328067	126.01384653
2024-01-02	12:21:00	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.33654592	126.02080223
2024-01-02	12:28:04	*Lanius bucephalus*	2	0	Rest	Anma-do	35.33698786	126.02443512
2024-01-02	12:32:31	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.33794313	126.02558068
2024-01-02	12:39:35	*Accipiter nisus*	1	16.747506	Move	Anma-do	35.33789618	126.02966469
2024-01-02	12:41:36	*Zosterops japonicus*	1	0	Rest	Anma-do	35.33785753	126.02842233
2024-01-02	12:52:16	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34089724	126.02723442
2024-01-02	13:04:35	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34341556	126.02773405
2024-01-02	13:05:58	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34378306	126.02734300
2024-01-02	13:07:12	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34419025	126.02691460

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2024-01-02	13:18:03	*Pycnonotus sinensis*	1	0	Rest	Anma-do	35.34489736	126.02629410
2024-01-02	13:22:15	*Ardea cinerea*	1	0	Rest	Anma-do	35.34591903	126.02716659
2024-01-02	13:23:02	*Buteo buteo*	1	0	Rest	Anma-do	35.34575249	126.02775572
2024-01-02	13:24:35	*Buteo buteo*	1	0	Rest	Anma-do	35.34595691	126.02731245
2024-01-02	13:26:54	*Passer montanus*	30	0	Rest	Anma-do	35.34593013	126.02807264
2024-01-02	13:26:54	*Falco tinnunculus*	1	0	Rest	Anma-do	35.34593013	126.02807264
2024-01-02	13:49:40	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35227175	126.02542451
2024-01-02	13:58:19	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35277213	126.02762644
2024-01-02	14:06:28	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35534053	126.02576143
2024-01-02	14:08:25	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35573832	126.02489098
2024-01-02	14:09:20	*Monticola solitarius*	1	0	Rest	Anma-do	35.35599112	126.02556642
2024-01-02	14:14:26	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35737526	126.02657813
2024-01-02	14:15:44	*Parus major*	2	0	Rest	Anma-do	35.35758271	126.02654516
2024-01-02	14:17:40	*Parus ater*	10	0	Rest	Anma-do	35.35758271	126.02654516
2024-01-02	14:39:53	*Parus ater*	2	0	Rest	Anma-do	35.35262378	126.02732206
2024-01-02	14:42:48	*Buteo buteo*	1	8.370776849	Move	Anma-do	35.35226686	126.02746245
2024-01-02	0.614583333	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35226686	126.02746245
2024-01-02	14:53:55	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35009336	126.02447627
2024-01-02	14:58:16	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34914674	126.02607184
2024-01-02	15:54:43	*Monticola solitarius*	2	0	Rest	Anma-do	35.35575677	126.00725612
2024-01-02	15:57:56	*Falco tinnunculus*	1	0	Rest	Anma-do	35.35641887	126.00779315
2024-01-02	15:59:26	*Microscelis amaurotis*	3	0	Rest	Anma-do	35.35639901	126.00814022
2024-01-02	16:02:51	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35523358	126.00908359
2024-01-02	16:16:00	*Podiceps cristatus*	1	0	Rest	Anma-do	35.35163560	126.01448484
2024-01-02	16:21:39	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35344461	126.01764467
2024-01-02	16:22:44	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.35295308	126.01828977
2024-01-02	16:29:38	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35006858	126.01945244
2024-01-02	16:33:12	*Anas platyrhynchos*	15	0	Rest	Anma-do	35.34816225	126.01918339
2024-01-02	16:44:18	*Ardea cinerea*	1	0	Rest	Anma-do	35.34481428	126.02222914
2024-01-02	16:51:05	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34422474	126.02002245
2024-01-02	16:53:06	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34368622	126.01866021
2024-01-02	16:58:47	*Buteo buteo*	1	3.001813907	Move	Anma-do	35.34432070	126.01584404
2024-01-02	17:04:04	*Anas poecilorhyncha*	16	0	Rest	Anma-do	35.34484780	126.01452313
2024-01-02	17:05:18	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34403763	126.01462005
2024-01-02	17:09:20	*Anas platyrhynchos*	2	0	Rest	Anma-do	35.34577853	126.00664477
2024-01-02	17:09:20	*Anas poecilorhyncha*	4	0	Rest	Anma-do	35.34577853	126.00664477
2024-01-02	17:09:31	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34418447	126.01188364
2024-01-02	17:26:36	*Parus major*	1	0	Rest	Anma-do	35.34441307	126.02354322
2024-01-03	08:36:55	*Parus major*	5	0	Rest	O-do	35.33106802	126.00379738
2024-01-03	08:37:42	*Parus ater*	2	0	Rest	O-do	35.33107049	126.00375671
2024-01-03	08:38:04	*Certhia familiaris*	2	0	Rest	O-do	35.33107505	126.00374894
2024-01-03	09:07:40	*Emberiza pallasi*	5	0	Rest	O-do	35.33201328	126.00228824
2024-01-03	09:07:40	*Microscelis amaurotis*	2	0	Rest	O-do	35.33188282	126.00212239
2024-01-03	09:40:48	*Corvus macrorhynchos*	1	0	Rest	Daeseokman-do	35.37300739	126.05521192
2024-01-03	09:44:39	*Buteo buteo*	1	0	Rest	Daeseokman-do	35.37373746	126.05341657
2024-01-03	09:50:39	*Buteo buteo*	1	0	Rest	Daeseokman-do	35.37415331	126.05515050
2024-01-03	09:54:19	*Emberiza pallasi*	2	0	Rest	Daeseokman-do	35.37350847	126.05596491
2024-01-03	09:59:22	*Emberiza pallasi*	2	0	Rest	Daeseokman-do	35.37437687	126.05552616
2024-01-03	10:12:21	*Monticola solitarius*	1	0	Rest	Daeseokman-do	35.37333335	126.05132719
2024-01-03	10:15:44	*Turdus eunomus*	5	0	Rest	Daeseokman-do	35.37301386	126.05080416
2024-01-03	10:16:23	*Corvus macrorhynchos*	1	0	Rest	Daeseokman-do	35.37292667	126.04999432
2024-01-03	10:29:02	*Buteo buteo*	1	0	Rest	Daeseokman-do	35.36863759	126.04003944
2024-01-03	10:31:15	*Parus major*	5	0	Rest	Daeseokman-do	35.37249589	126.04739575
2024-01-03	10:32:33	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37252705	126.04739985
2024-01-03	10:34:46	*Emberiza elegans*	6	0	Rest	Daeseokman-do	35.37250103	126.04724255
2024-01-03	10:34:46	*Turdus eunomus*	1	0	Rest	Daeseokman-do	35.37250103	126.04724255
2024-01-03	10:38:40	*Falco peregrinus*	2	25	Rest	Daeseokman-do	35.37242462	126.04672062
2024-01-03	10:39:40	*Parus major*	2	0	Rest	Daeseokman-do	35.37242445	126.04694687
2024-01-03	10:40:10	*Turdus eunomus*	1	0	Rest	Daeseokman-do	35.37242445	126.04694687
2024-01-03	10:44:19	*Turdus eunomus*	5	0	Rest	Daeseokman-do	35.37242305	126.04680595
2024-01-03	10:44:19	*Turdus naumanni*	1	0	Rest	Daeseokman-do	35.37242305	126.04680595
2024-01-03	10:55:33	*Emberiza elegans*	11	0	Rest	Daeseokman-do	35.37276604	126.04875511
2024-01-03	10:59:03	*Microscelis amaurotis*	2	0	Rest	Daeseokman-do	35.37272519	126.04911149
2024-01-03	10:59:15	*Parus ater*	4	0	Rest	Daeseokman-do	35.37271428	126.04913013
2024-01-02	14:53:55	*Corvus macrorhynchos*	2	0	Rest	Anma-do	35.34935671	126.02382460
2024-01-03	09:07:40	*Emberiza cioides*	1	0	Rest	O-do	35.33188282	126.00212239
2024-02-24	0.299594907	*Anas platyrhynchos*	2	0	Rest	Anma-do	35.34573275	126.0104452

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2024-02-24	0.301087963	*Larus argentatus*	1	46.30610923	Move	Anma-do	35.35486626	126.0156967
2024-02-24	0.3053125	*Anas platyrhynchos*	10	0	Rest	Anma-do	35.34707421	126.0122657
2024-02-24	0.308043981	*Carduelis spinus*	37	0	Rest	Anma-do	35.34423289	126.0134112
2024-02-24	0.309270833	*Anas poecilorhyncha*	13	0	Rest	Anma-do	35.3451343	126.0137975
2024-02-24	0.313564815	*Carduelis spinus*	10	0	Rest	Anma-do	35.34394418	126.0165417
2024-02-25	0.31755787	*Phalacrocorax carbo*	1	0	Rest	O-do	35.33291146	126.0044193
2024-02-25	0.318078704	*Parus ater*	2	0	Rest	O-do	35.33130471	126.0041717
2024-02-25	0.318368056	*Parus major*	1	0	Rest	O-do	35.33126325	126.0042902
2024-02-24	0.318923611	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34426028	126.0185233
2024-02-25	0.319548611	*Microscelis amaurotis*	1	0	Rest	O-do	35.33091356	126.0045609
2024-02-24	0.31994213	*Phalacrocorax capillatus*	1	86.25819495	Move	Anma-do	35.34294401	126.0189483
2024-02-24	0.32087963	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34389486	126.0187612
2024-02-24	0.321087963	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34323818	126.0185555
2024-02-24	0.323391204	*Emberiza pusilla*	10	0	Rest	Anma-do	35.34391727	126.0197128
2024-02-25	0.326064815	*Parus major*	17	0	Rest	O-do	35.33094918	126.0061766
2024-02-25	0.327384259	*Parus ater*	4	0	Rest	O-do	35.33093437	126.0063394
2024-02-25	0.329166667	*Microscelis amaurotis*	1	0	Rest	O-do	35.32970842	126.0069844
2024-02-25	0.329409722	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33654917	125.9913843
2024-02-24	0.329699074	*Turdus pallidus*	2	0	Rest	Anma-do	35.34433151	126.0206746
2024-02-24	0.331087963	*Emberiza elegans*	6	0	Rest	Anma-do	35.34433295	126.0201509
2024-02-25	0.331215278	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33648814	125.9910496
2024-02-25	0.332418981	*Microscelis amaurotis*	1	0	Rest	O-do	35.32922593	126.0083803
2024-02-25	0.332673611	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33653942	125.9908298
2024-02-24	0.334247685	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34428107	126.0176097
2024-02-25	0.336296296	*Microscelis amaurotis*	2	0	Rest	Hyeong-do	35.33680275	125.9896273
2024-02-25	0.338298611	*Microscelis amaurotis*	1	0	Rest	O-do	35.32962676	126.0078213
2024-02-24	0.340277778	*Corvus macrorhynchos*	1	0	Rest	Anma-do	35.34348084	126.0190781
2024-02-25	0.340902778	*Microscelis amaurotis*	1	0	Rest	O-do	35.32957812	126.0064269
2024-02-24	0.341747685	*Turdus pallidus*	1	0	Rest	Anma-do	35.34435704	126.0198775
2024-02-25	0.342592593	*Parus major*	2	0	Rest	Hyeong-do	35.33702871	125.9890454
2024-02-25	0.343368056	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33712985	125.9890962
2024-02-24	0.344675926	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.3445024	126.0226879
2024-02-25	0.345613426	*Parus major*	2	0	Rest	Hyeong-do	35.33740956	125.9889535
2024-02-25	0.34568287	*Emberiza elegans*	10	0	Rest	Hyeong-do	35.33740956	125.9889535
2024-02-24	0.346284722	*Turdus eunomus*	9	0	Rest	Anma-do	35.34546252	126.0246706
2024-02-24	0.346284722	*Turdus naumanni*	2	0	Rest	Anma-do	35.34546252	126.0246706
2024-02-24	0.346921296	*Corvus macrorhynchos*	1	0	Rest	Anma-do	35.34493356	126.0241848
2024-02-25	0.348634259	*Eophona migratoria*	20	0	Rest	O-do	35.33147514	126.0038326
2024-02-24	0.351631944	*Corvus macrorhynchos*	2	319.6180631	Move	Anma-do	35.34160913	126.0238093
2024-02-25	0.352256944	*Falco peregrinus*	2	0	Rest	Hyeong-do	35.33655801	125.9853996
2024-02-25	0.353854167	*Parus major*	3	0	Rest	O-do	35.33043745	126.0025193
2024-02-25	0.353923611	*Microscelis amaurotis*	1	0	Rest	O-do	35.33073669	126.0026588
2024-02-24	0.355729167	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34263686	126.0250425
2024-02-24	0.356076389	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34350617	126.0252661
2024-02-25	0.356145833	*Parus ater*	3	0	Rest	O-do	35.33007504	126.0023461
2024-02-24	0.356180556	*Phoenicurus auroreus*	1	0	Rest	Anma-do	35.34271277	126.0255205
2024-02-25	0.356469907	*Podiceps cristatus*	1	0	Rest	Hyeong-do	35.3357884	125.9874353
2024-02-25	0.356875	*Emberiza elegans*	5	0	Rest	O-do	35.3301923	126.0023333
2024-02-25	0.357094907	*Parus ater*	1	0	Rest	O-do	35.3300263	126.0020592
2024-02-24	0.357453704	*Parus major*	3	0	Rest	Anma-do	35.34281333	126.0257427
2024-02-24	0.361435185	*Buteo buteo*	1	0	Rest	Anma-do	35.34171102	126.026344
2024-02-25	0.361759259	*Microscelis amaurotis*	1	0	Rest	Hyeong-do	35.33576684	125.9893937
2024-02-25	0.3628125	*Streptopelia orientalis*	2	0	Rest	O-do	35.32934393	126.0006085
2024-02-25	0.364247685	*Microscelis amaurotis*	1	0	Rest	O-do	35.32955104	125.9997488
2024-02-25	0.365601852	*Microscelis amaurotis*	3	0	Rest	Hyeong-do	35.33592919	125.9906552
2024-02-25	0.365671296	*Parus major*	1	0	Rest	O-do	35.32947822	126.0005796
2024-02-24	0.365856481	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34412243	126.0284971
2024-02-25	0.367488426	*Emberiza elegans*	15	0	Rest	Hyeong-do	35.33588986	125.9914311
2024-02-24	0.369305556	*Falco tinnunculus*	1	0	Rest	Anma-do	35.34624722	126.0294786
2024-02-25	0.373402778	*Parus ater*	10	0	Rest	Hyeong-do	35.33632735	125.9924163
2024-02-25	0.373518519	*Parus major*	4	0	Rest	Hyeong-do	35.33632735	125.9924163
2024-02-24	0.373576389	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34769897	126.030307
2024-02-24	0.376979167	*Ardea cinerea*	1	0	Rest	Anma-do	35.34840448	126.0274891
2024-02-25	0.381064815	*Phalacrocorax capillatus*	1	0	Rest	Hyeong-do	35.33577824	125.9974909
2024-02-24	0.383263889	*Motacilla alba*	2	0	Rest	Anma-do	35.34581215	126.0271281
2024-02-24	0.384537037	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34483559	126.0268276
2024-02-24	0.388287037	*Parus major*	5	0	Rest	Anma-do	35.34614734	126.0255948

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2024-02-24	0.388402778	*Parus ater*	3	0	Rest	Anma-do	35.34614734	126.0255948
2024-02-24	0.38962963	*Turdus pallidus*	1	0	Rest	Anma-do	35.34629573	126.025462
2024-02-24	0.391064815	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34770915	126.0246276
2024-02-24	0.393900463	*Streptopelia orientalis*	2	0	Rest	Anma-do	35.34943316	126.0244064
2024-02-24	0.399710648	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34802633	126.0211346
2024-02-24	0.403622685	*Parus major*	4	0	Rest	Anma-do	35.34972986	126.0194059
2024-02-24	0.403738426	*Emberiza elegans*	7	0	Rest	Anma-do	35.34968414	126.0194179
2024-02-25	0.406550926	*Phalacrocorax carbo*	1	0	Rest	O-do	35.33146883	126.0120265
2024-02-24	0.40744213	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35209268	126.0202305
2024-02-24	0.408900463	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35240067	126.0187861
2024-02-24	0.409039352	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35281137	126.0182112
2024-02-24	0.410497685	*Parus major*	2	0	Rest	Anma-do	35.35311719	126.0180755
2024-02-24	0.413194444	*Grus monacha*	43	89.43612845	Move	Anma-do	35.35450087	126.0144026
2024-02-24	0.416076389	*Parus major*	2	0	Rest	Anma-do	35.35299841	126.0136976
2024-02-24	0.420381944	*Parus major*	1	0	Rest	Anma-do	35.35455332	126.0107
2024-02-24	0.421643519	*Larus argentatus*	1	0	Rest	Anma-do	35.3528585	126.0082294
2024-02-24	0.422951389	*Buteo buteo*	1	0	Rest	Anma-do	35.35687145	126.009759
2024-02-25	0.425543981	*Buteo buteo*	1	0	Rest	Soseokman-do	35.36863682	126.0569671
2024-02-25	0.428634259	*Falco peregrinus*	1	0	Rest	Soseokman-do	35.36579553	126.0592761
2024-02-25	0.433576389	*Monticola solitarius*	1	0	Rest	Soseokman-do	35.36688315	126.0556781
2024-02-25	0.435844907	*Falco peregrinus*	1	0	Rest	Daeseokman-do	35.37349549	126.0528539
2024-02-24	0.4421875	*Parus major*	3	0	Rest	Anma-do	35.35512691	126.0038676
2024-02-24	0.444027778	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35518332	126.0030791
2024-02-24	0.445543981	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.35418416	126.0031367
2024-02-25	0.447731481	*Phalacrocorax carbo*	1	0	Rest	Daeseokman-do	35.37391132	126.0477144
2024-02-24	0.449074074	*Phalacrocorax capillatus*	1	0	Rest	Anma-do	35.35502157	126.0008611
2024-02-25	0.450798611	*Parus ater*	9	0	Rest	Soseokman-do	35.36862511	126.0583481
2024-02-25	0.457106481	*Emberiza rustica*	1	0	Rest	Soseokman-do	35.36784632	126.0598736
2024-02-25	0.457708333	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.36794263	126.0596919
2024-02-24	0.458148148	*Parus major*	1	0	Rest	Anma-do	35.35404205	125.9994961
2024-02-25	0.458506944	*Microscelis amaurotis*	1	0	Rest	Soseokman-do	35.3681887	126.0597371
2024-02-24	0.461134259	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.35432152	126.0024745
2024-02-25	0.464594907	*Corvus macrorhynchos*	1	0	Rest	Daeseokman-do	35.37111196	126.0445361
2024-02-25	0.464594907	*Emberiza elegans*	7	0	Rest	Daeseokman-do	35.37111196	126.0445361
2024-02-25	0.470787037	*Parus major*	3	0	Rest	Daeseokman-do	35.3722759	126.0465923
2024-02-24	0.49375	*Parus major*	3	0	Rest	Anma-do	35.34907448	126.0207603
2024-02-24	0.494351852	*Buteo buteo*	2	77.81078892	Move	Anma-do	35.34631686	126.0206828
2024-02-24	0.495138889	*Anas poecilorhyncha*	20	0	Rest	Anma-do	35.34731024	126.0209888
2024-02-24	0.49537037	*Anas platyrhynchos*	8	0	Rest	Anma-do	35.3473915	126.0211243
2024-02-24	0.49662037	*Anas platyrhynchos*	12	0	Rest	Anma-do	35.34739025	126.022049
2024-02-24	0.496782407	*Anas poecilorhyncha*	2	0	Rest	Anma-do	35.34739025	126.022049
2024-02-24	0.498148148	*Phalacrocorax carbo*	1	0	Rest	Anma-do	35.34714616	126.0227324
2024-02-24	0.555810185	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34802093	126.0293297
2024-02-24	0.558912037	*Anas crecca*	8	0	Rest	Anma-do	35.34844249	126.0306827
2024-02-24	0.563854167	*Streptopelia orientalis*	2	0	Rest	Anma-do	35.34877441	126.0320889
2024-02-24	0.564016204	*Corvus macrorhynchos*	1	0	Rest	Anma-do	35.34853152	126.0318328
2024-02-24	0.564699074	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34906159	126.0321549
2024-02-24	0.565324074	*Corvus macrorhynchos*	1	0	Rest	Anma-do	35.34799259	126.0316027
2024-02-24	0.56712963	*Parus major*	2	0	Rest	Anma-do	35.35058212	126.032556
2024-02-24	0.571180556	*Corvus macrorhynchos*	1	53.28250024	Move	Anma-do	35.35052459	126.0303357
2024-02-24	0.571493056	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.34908951	126.0293486
2024-02-24	0.583553241	*Parus major*	3	0	Rest	Anma-do	35.35265554	126.0252651
2024-02-24	0.585266204	*Carduelis spinus*	13	0	Rest	Anma-do	35.35219018	126.0273758
2024-02-24	0.591388889	*Turdus eunomus*	1	0	Rest	Anma-do	35.35353156	126.0263382
2024-02-24	0.593321759	*Dendrocopos major*	1	0	Rest	Anma-do	35.35353728	126.0264734
2024-02-24	0.593530093	*Parus major*	5	0	Rest	Anma-do	35.35346231	126.0264861
2024-02-24	0.598148148	*Microscelis amaurotis*	1	0	Rest	Anma-do	35.3556995	126.0259997
2024-02-24	0.606157407	*Coccothraustes coccothraus*	3	0	Rest	Anma-do	35.35811687	126.0283453
2024-02-24	0.619641204	*Parus ater*	5	0	Rest	Anma-do	35.36262966	126.022787
2024-02-24	0.632280093	*Parus ater*	5	0	Rest	Anma-do	35.35763187	126.0241528
2024-02-24	0.63375	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.35830946	126.0237273
2024-02-24	0.656840278	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35044785	126.024936
2024-02-24	0.657118056	*Lanius bucephalus*	1	0	Rest	Anma-do	35.35032544	126.0246054
2024-02-24	0.659074074	*Streptopelia orientalis*	1	0	Rest	Anma-do	35.34929837	126.0253198
2024-02-24	0.659027778	*Falco tinnunculus*	1	0	Rest	Anma-do	35.34929837	126.0253198
2024-02-24	0.662407407	*Ardea cinerea*	1	0	Rest	Anma-do	35.34730015	126.0273471
2024-02-24	0.672060185	*Lanius bucephalus*	1	0	Rest	Anma-do	35.3406677	126.028914

Date	Time	Scientific Name	Number of Individuals	Flight height	Activity	Survey Area	Latitude	Longitude
2024-02-24	0.672210648	*Microscelis amaurotis*	2	0	Rest	Anma-do	35.34013076	126.0286227
2024-02-24	0.682037037	*Lanius bucephalus*	1	0	Rest	Anma-do	35.33787957	126.0259151
2024-02-24	0.682210648	*Parus major*	2	0	Rest	Anma-do	35.33813041	126.0260736
2024-02-24	0.683553241	*Emberiza elegans*	13	0	Rest	Anma-do	35.33718958	126.0248566
2024-02-24	0.689664352	*Parus major*	1	0	Rest	Anma-do	35.33652225	126.0206387
2024-02-24	0.693043981	*Phalacrocorax capillatus*	1	0	Rest	Anma-do	35.34001798	126.0178044
2024-02-24	0.695034722	*Buteo buteo*	1	0	Rest	Anma-do	35.34186649	126.0206799
2024-02-24	0.697280093	*Corvus macrorhynchos*	1	0	Rest	Anma-do	35.34245675	126.0201608
2024-02-24	0.6996875	*Buteo buteo*	1	54.69544995	Move	Anma-do	35.34228862	126.0185299
2024-02-24	0.703541667	*Falco tinnunculus*	1	0	Rest	Anma-do	35.34197532	126.0153268
2024-02-24	0.706666667	*Lanius bucephalus*	1	0	Rest	Anma-do	35.34045594	126.0133065
2024-02-24	0.708009259	*Podiceps cristatus*	1	0	Rest	Anma-do	35.34044715	126.010558
2024-02-24	0.708113426	*Podiceps cristatus*	1	0	Rest	Anma-do	35.33955115	126.0114388
2024-02-24	0.710590278	*Emberiza elegans*	8	0	Rest	Anma-do	35.34196606	126.0124494
2024-02-24	0.710729167	*Parus major*	3	0	Rest	Anma-do	35.34236873	126.0118483
2024-02-24	0.722256944	*Phalacrocorax carbo*	2	0	Rest	Anma-do	35.34512189	126.0136781
2024-02-24	0.725347222	*Larus argentatus*	1	0	Rest	Anma-do	35.34729488	126.0164958

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-03-29	14:36:57	*Larus crassirostris*	1	0.0	On the Water	35.38024984	126.02439479
2023-03-29	14:53:59	*Larus crassirostris*	1	20.0	In the Air	35.38056327	125.96978836
2023-03-29	15:40:26	*Larus crassirostris*	1	16.2	In the Air	35.37971590	125.82648633
2023-03-29	16:32:15	*Larus crassirostris*	1	22.7	In the Air	35.34973600	125.78560310
2023-03-29	16:36:11	*Larus crassirostris*	1	8.0	In the Air	35.34981397	125.79761505
2023-03-29	16:44:35	*Larus crassirostris*	1	14.4	In the Air	35.35008752	125.82285447
2023-03-29	18:06:02	*Larus crassirostris*	1	5.0	In the Air	35.32002934	125.92985903
2023-03-29	18:20:13	*Larus crassirostris*	2	16.2	In the Air	35.31983204	125.88845493
2023-03-30	10:23:51	*Larus crassirostris*	1	3.8	In the Air	35.23015987	125.99093088
2023-03-30	10:25:22	*Larus crassirostris*	3	13.8	In the Air	35.23024289	125.98608440
2023-03-30	10:31:24	*Larus crassirostris*	2	7.3	In the Air	35.22987720	125.97000087
2023-03-30	10:36:59	*Larus crassirostris*	2	5.0	In the Air	35.23001116	125.95008579
2023-03-30	10:48:39	*Larus crassirostris*	1	20.0	In the Air	35.22971393	125.91374980
2023-03-30	10:49:30	*Larus argentatus*	1	2.0	In the Air	35.22960559	125.91083694
2023-03-30	10:52:06	*Larus crassirostris*	1	8.6	In the Air	35.22980386	125.90274069
2023-03-30	10:53:26	*Larus crassirostris*	6	25.3	In the Air	35.22980913	125.89950667
2023-03-30	10:55:02	*Larus crassirostris*	2	33.3	In the Air	35.22977009	125.89465239
2023-03-30	10:59:59	*Larus crassirostris*	1	0.0	On the Water	35.22983880	125.87842181
2023-03-30	11:09:21	*Larus crassirostris*	2	4.3	In the Air	35.22986674	125.84904132
2023-03-30	11:10:47	*Larus crassirostris*	2	44.9	In the Air	35.22984320	125.84455061
2023-03-30	11:14:29	*Larus crassirostris*	2	2.0	In the Air	35.22997817	125.83287808
2023-03-30	11:15:15	*Larus crassirostris*	5	16.0	In the Air	35.22985096	125.83046347
2023-03-30	11:15:15	*Larus crassirostris*	2	16.0	In the Air	35.22985096	125.83046347
2023-03-30	11:17:55	*Larus crassirostris*	2	2.0	In the Air	35.22989260	125.82201346
2023-03-30	11:24:03	*Ardea alba*	1	5.0	In the Air	35.22982131	125.80273385
2023-03-30	11:27:34	*Larus crassirostris*	1	19.1	In the Air	35.22975618	125.79483685
2023-03-30	11:29:17	*Larus crassirostris*	1	38.6	In the Air	35.22981388	125.78640830
2023-03-30	11:31:54	*Larus crassirostris*	1	32.2	In the Air	35.22976271	125.77811548
2023-03-30	11:50:49	*Larus crassirostris*	1	23.4	In the Air	35.25963399	125.75853200
2023-03-30	11:57:50	*Larus argentatus*	1	26.3	In the Air	35.25948132	125.78038620
2023-03-30	11:58:50	*Larus crassirostris*	2	31.4	In the Air	35.25958373	125.78350176
2023-03-30	12:06:18	*Larus crassirostris*	1	2.0	In the Air	35.25924338	125.80660749
2023-03-30	12:15:19	*Larus crassirostris*	1	20.3	In the Air	35.25941014	125.83490897
2023-03-30	12:42:29	*Larus crassirostris*	1	25.0	In the Air	35.25858872	125.85218024
2023-03-30	12:52:29	*Larus argentatus*	1		On the Water	35.25985474	125.88202676
2023-03-30	12:55:17	*Larus crassirostris*	7	0.0	On the Water	35.25967723	125.89273827
2023-03-30	12:59:23	*Larus crassirostris*	1	32.6	In the Air	35.25956284	125.90615122
2023-03-30	13:00:35	*Larus crassirostris*	1	0.0	On the Water	35.25967063	125.91005421
2023-03-30	13:02:03	*Larus crassirostris*	1	0.0	On the Water	35.25970925	125.91459311
2023-03-30	13:08:44	*Larus crassirostris*	1	10.8	In the Air	35.26000266	125.93597107
2023-03-30	13:10:40	*Larus crassirostris*	1	30.0	In the Air	35.25995984	125.94199442
2023-03-30	13:12:28	*Larus crassirostris*	1	43.9	In the Air	35.25996073	125.94781274
2023-03-30	13:19:17	*Larus crassirostris*	6	5.0	In the Air	35.25985537	125.96993593
2023-03-30	13:20:57	*Larus crassirostris*	1	46.0	In the Air	35.25972462	125.97533927
2023-03-30	13:26:40	*Larus crassirostris*	3	12.6	In the Air	35.25982504	125.99222767
2023-03-30	13:27:39	*Larus crassirostris*	1	21.1	In the Air	35.25987991	125.99700756
2023-03-30	13:30:06	*Larus crassirostris*	1	0.0	On the Water	35.25991887	126.00483781
2023-03-30	13:34:10	*Larus crassirostris*	2	15.0	In the Air	35.25991372	126.01466058
2023-03-30	13:39:15	*Larus crassirostris*	1	30.0	In the Air	35.26006194	126.01865992
2023-03-30	13:39:15	*Larus crassirostris*	1	30.0	In the Air	35.26006194	126.01865992
2023-03-30	13:42:49	*Larus crassirostris*	3	25.0	In the Air	35.25969307	126.02491605
2023-03-30	13:59:31	*Larus crassirostris*	1	2.0	In the Air	35.29021406	126.02615485
2023-03-30	14:04:25	*Larus crassirostris*	1	0.0	On the Water	35.28975292	126.01095990
2023-03-30	14:04:47	*Larus crassirostris*	1	21.6	In the Air	35.28975292	126.01095990
2023-03-30	14:05:16	*Larus crassirostris*	2	0.0	On the Water	35.28977936	126.00821756
2023-03-30	14:13:57	*Larus crassirostris*	1	35.0	In the Air	35.28977517	125.98097353
2023-03-30	14:18:18	*Larus crassirostris*	5	5.1	In the Air	35.28981307	125.96819342
2023-03-30	14:20:31	*Larus crassirostris*	1	20.7	In the Air	35.28974786	125.96016346
2023-03-30	14:25:25	*Synthliboramphus antiquus*	2		On the Water	35.28974434	125.94876239
2023-03-30	14:27:52	*Larus argentatus*	1		On the Water	35.28981327	125.93718141
2023-03-30	14:27:52	*Larus crassirostris*	1	0.0	On the Water	35.28981327	125.93718141
2023-03-30	14:35:03	*Larus crassirostris*	2	37.5	In the Air	35.28977607	125.91451482
2023-03-30	14:36:45	*Larus crassirostris*	1	1.0	In the Air	35.28959972	125.90839226
2023-03-30	14:37:10	*Larus crassirostris*	2	9.9	In the Air	35.28976225	125.90702269
2023-03-30	14:44:15	*Larus crassirostris*	2	29.0	In the Air	35.28988713	125.88517464
2023-03-30	14:48:54	*Larus crassirostris*	1	20.6	In the Air	35.29022938	125.86929597
2023-03-30	14:48:54	*Larus crassirostris*	4	20.6	In the Air	35.29022938	125.86929597
2023-03-30	14:55:24	*Larus crassirostris*	1	5.4	In the Air	35.28999692	125.84875634

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-03-30	14:56:54	*Larus crassirostris*	2	11.1	In the Air	35.28958090	125.84388791
2023-03-30	14:59:41	*Larus crassirostris*	2	31.6	In the Air	35.28924457	125.83484034
2023-03-30	15:01:11	*Gavia stellata*	1	2.0	In the Air	35.28919059	125.83014480
2023-03-30	15:02:15	*Larus crassirostris*	2	19.8	In the Air	35.28919059	125.83014480
2023-03-30	15:03:59	*Larus crassirostris*	2	0.0	On the Water	35.28911254	125.82114732
2023-03-30	15:05:17	*Larus crassirostris*	1	9.2	In the Air	35.28919266	125.81692242
2023-03-30	15:08:24	*Larus crassirostris*	1	11.3	In the Air	35.28892128	125.80695780
2023-03-30	15:09:51	*Larus crassirostris*	2	20.6	In the Air	35.28905887	125.80236210
2023-03-30	15:13:32	*Larus crassirostris*	2	30.0	In the Air	35.28953045	125.79059738
2023-03-30	15:15:10	*Larus crassirostris*	1	22.7	In the Air	35.28946533	125.78540741
2023-03-30	15:18:09	*Larus crassirostris*	3	25.8	In the Air	35.28912377	125.77590705
2023-03-30	15:19:23	*Larus crassirostris*	1	20.4	In the Air	35.28914615	125.77211216
2023-03-30	15:24:04	*Larus crassirostris*	1	12.8	In the Air	35.28981262	125.75752734
2023-03-30	15:24:41	*Larus crassirostris*	3	10.9	In the Air	35.28992605	125.75560427
2023-03-30	15:26:04	*Larus crassirostris*	4	2.0	In the Air	35.28989522	125.75165619
2023-03-30	15:44:45	*Larus crassirostris*	1	20.1	In the Air	35.32005157	125.76081739
2023-03-30	15:51:14	*Larus crassirostris*	2	18.1	In the Air	35.31994635	125.78116728
2023-03-30	15:57:23	*Larus crassirostris*	2	20.0	In the Air	35.31975668	125.80027699
2023-03-30	15:57:50	*Larus crassirostris*	1	27.7	In the Air	35.31984645	125.80310473
2023-03-30	16:02:02	*Synthliboramphus antiquus*	8	2.0	In the Air	35.31999167	125.81658651
2023-03-30	16:06:40	*Larus crassirostris*	1	30.0	In the Air	35.32001968	125.83142192
2023-03-30	16:09:33	*Larus crassirostris*	1	16.9	In the Air	35.32001395	125.84068633
2023-03-30	16:11:08	*Larus crassirostris*	2	15.5	In the Air	35.31997568	125.84549250
2023-03-30	16:12:55	*Larus crassirostris*	5	0.0	On the Water	35.31975156	125.85147638
2023-03-30	16:12:55	*Larus crassirostris*	3	0.0	On the Water	35.31975156	125.85147638
2023-03-29	09:21:07	*Larus crassirostris*	1	28.0	In the Air	35.41013237	126.01752614
2023-03-29	09:24:04	*Larus crassirostris*	1	15.4	In the Air	35.40992268	126.00958233
2023-03-29	09:40:53	*Larus crassirostris*	2	28.1	In the Air	35.40989147	125.96168980
2023-03-29	09:56:13	*Larus crassirostris*	2	49.6	In the Air	35.41000995	125.91835265
2023-03-29	10:20	*Larus crassirostris*	1	19.0	In the Air	35.41003926	125.87264787
2023-03-29	10:39:04	*Larus crassirostris*	1	42.6	In the Air	35.40991197	125.80021059
2023-03-29	10:41:02	*Larus crassirostris*	1	13.8	In the Air	35.40995529	125.79467113
2023-03-29	11:16:58	*Larus crassirostris*	1	20.0	In the Air	35.43995694	125.80190023
2023-03-29	11:19:17	*Larus crassirostris*	1	15.0	In the Air	35.43981262	125.80843300
2023-03-29	11:23:04	*Larus crassirostris*	1	0.0	On the Water	35.43993360	125.81863146
2023-03-29	11:24:03	*Larus crassirostris*	1	0.0	On the Water	35.43986029	125.82144441
2023-03-29	11:36:46	*Larus crassirostris*	1	20.0	In the Air	35.43980890	125.85923829
2023-03-29	11:36:46	*Larus crassirostris*	4	20.0	In the Air	35.43980890	125.85923829
2023-03-29	11:41:59	*Larus crassirostris*	2	169.0	In the Air	35.43980234	125.87267936
2023-03-29	11:45:26	*Ardea cinerea*	3	25.0	In the Air	35.44004952	125.88570553
2023-03-29	11:53:22	*Larus crassirostris*	3	5.0	In the Air	35.43976957	125.91022756
2023-03-29	12:03:46	*Larus crassirostris*	4	15.0	In the Air	35.43973628	125.94205967
2023-03-29	12:08:01	*Larus crassirostris*	1	63.4	In the Air	35.43968386	125.95495619
2023-03-29	12:08:54	*Larus crassirostris*	3	15.0	In the Air	35.43997186	125.95770194
2023-03-29	12:09:29	*Larus crassirostris*	1	28.0	In the Air	35.43979713	125.95950980
2023-03-29	12:11:07	*Larus crassirostris*	1	16.8	In the Air	35.43976044	125.96432726
2023-03-29	12:14:54	*Synthliboramphus antiquus*	1	2.0	In the Air	35.43982947	125.97567659
2023-04-27	12:26:49	*Phalacrocorax capillatus*	1	1.0	In the Air	35.22948970	125.94309849
2023-04-27	12:36:50	*Larus crassirostris*	1	30.0	In the Air	35.22974010	125.91390064
2023-04-27	12:42:49	*Larus crassirostris*	1	11.0	In the Air	35.22942118	125.89596753
2023-04-27	12:47:33	*Larus crassirostris*	1	25.0	In the Air	35.22925282	125.88129921
2023-04-27	12:59:14	*Larus crassirostris*	2	43.5	In the Air	35.22988390	125.84615296
2023-04-27	13:07:35	*Larus crassirostris*	2	79.6	In the Air	35.23007648	125.82086896
2023-04-27	13:11:14	*Larus crassirostris*	1	54.7	In the Air	35.23010168	125.80953375
2023-04-27	13:15:53	*Larus crassirostris*	1	0.0	On the Water	35.22983880	125.79735634
2023-04-27	13:16:25	*Larus crassirostris*	1	0.0	On the Water	35.22954716	125.79339223
2023-04-27	13:49:07	*Larus crassirostris*	1	11.4	In the Air	35.25931953	125.78576664
2023-04-27	13:49:47	*Larus crassirostris*	1	13.6	In the Air	35.25937896	125.78792627
2023-04-27	13:51:50	*Larus crassirostris*	1	12.2	In the Air	35.25941372	125.79429826
2023-04-27	13:53:48	*Larus crassirostris*	1	15.4	In the Air	35.25901723	125.80045701
2023-04-27	14:00:27	*Larus crassirostris*	1	8.6	In the Air	35.25933946	125.82108949
2023-04-27	14:15:29	*Larus crassirostris*	1	16.2	In the Air	35.25875069	125.86807039
2023-04-27	14:20:37	*Larus crassirostris*	1	11.2	In the Air	35.25855753	125.88442601
2023-04-27	14:21:57	*Larus crassirostris*	1	37.4	In the Air	35.25886911	125.88873661
2023-04-27	14:31:00	*Larus crassirostris*	1	2.5	In the Air	35.25952398	125.91762093
2023-04-27	14:35:50	*Larus crassirostris*	2	1.0	In the Air	35.25975714	125.93322445
2023-04-27	14:44:08	*Larus crassirostris*	1	10.0	In the Air	35.26002859	125.95936045
2023-04-27	14:50:37	*Ardea alba*	7	34.0	In the Air	35.25969055	125.97997343

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-04-27	15:01:19	*Larus crassirostris*	1	20.0	In the Air	35.25999110	126.01137689
2023-04-27	15:06:08	*Larus crassirostris*	1	15.8	In the Air	35.25982999	126.02493690
2023-04-28	07:55:08	*Larus crassirostris*	1	17.8	In the Air	35.29016677	125.99696490
2023-04-28	08:01:43	*Larus crassirostris*	1	23.2	In the Air	35.29099556	125.97620330
2023-04-28	08:05:52	*Synthliboramphus antiquus*	1	1.0	In the Air	35.29130776	125.96284958
2023-04-28	08:09:32	*Larus argentatus*	1		On the Water	35.29085834	125.95186851
2023-04-28	08:10:05	*Larus crassirostris*	1	2.0	In the Air	35.29075071	125.94934944
2023-04-28	08:11:57	*Ninox scutulata*	1	1.0	In the Air	35.29085552	125.94337275
2023-04-28	08:13:43	*Larus crassirostris*	3	12.4	In the Air	35.28996801	125.94096233
2023-04-28	08:15:36	*Larus crassirostris*	1	3.1	In the Air	35.29030099	125.93181033
2023-04-28	08:18:37	*Larus crassirostris*	1	1.0	In the Air	35.28883073	125.92263735
2023-04-28	08:24:16	*Larus crassirostris*	2	8.0	In the Air	35.28797096	125.90466443
2023-04-28	08:32:43	*Larus crassirostris*	1	1.0	In the Air	35.28819258	125.87744389
2023-04-28	08:34:22	*Hirundo rustica*	1	1.0	In the Air	35.28816685	125.87213101
2023-04-28	08:35:57	*Larus crassirostris*	1	3.8	In the Air	35.28806802	125.86768195
2023-04-28	08:37:37	*Larus crassirostris*	1	1.0	In the Air	35.29033095	125.86237515
2023-04-28	08:41:32	*Larus crassirostris*	1	5.8	In the Air	35.29080191	125.85069962
2023-04-28	08:42:24	*Larus crassirostris*	1	15.5	In the Air	35.29081799	125.84809102
2023-04-28	08:53:27	*Larus crassirostris*	1	5.0	In the Air	35.29046808	125.81813414
2023-04-28	09:06:05	*Bubulcus ibis*	15	1.0	In the Air	35.29048097	125.77730854
2023-04-28	09:09:07	*Larus crassirostris*	1	7.0	In the Air	35.29065719	125.76827686
2023-04-28	09:43:32	*Larus crassirostris*	1	0.0	On the Water	35.31871085	125.78826293
2023-04-28	09:50:20	*Larus crassirostris*	2	19.1	In the Air	35.32091825	125.81008619
2023-04-28	10:00:08	*Larus crassirostris*	1	0.0	On the Water	35.32095722	125.84058518
2023-04-28	10:03:59	*Larus crassirostris*	1	21.3	In the Air	35.32046699	125.85415767
2023-04-28	10:27:36	*Larus crassirostris*	1	1.0	In the Air	35.32009781	125.92865020
2023-04-28	10:39:24	*Larus crassirostris*	2	1.0	In the Air	35.31983482	125.96575725
2023-04-28	10:42:46	*Larus crassirostris*	2	1.0	In the Air	35.31953679	125.97641163
2023-04-28	11:06:05	*Phalacrocorax capillatus*	1	1.0	In the Air	35.35013618	125.95000779
2023-04-28	11:18:13	*Larus crassirostris*	1	1.0	In the Air	35.34994495	125.91474722
2023-04-28	11:21:47	*Larus crassirostris*	1	12.8	In the Air	35.34956646	125.90826702
2023-04-28	11:24:22	*Larus crassirostris*	2	0.0	On the Water	35.34952381	125.89168524
2023-04-28	11:26:49	*Larus crassirostris*	1	5.0	In the Air	35.34949385	125.88365961
2023-04-28	11:29:16	*Larus crassirostris*	2	9.9	In the Air	35.34971143	125.87641343
2023-04-28	11:30:28	*Larus crassirostris*	1	11.6	In the Air	35.34976119	125.87192932
2023-04-28	11:32:40	*Larus crassirostris*	1	19.6	In the Air	35.35014632	125.86497351
2023-04-28	11:36:19	*Larus crassirostris*	1	10.0	In the Air	35.34989932	125.85374630
2023-04-28	11:39:55	*Larus crassirostris*	2	0.0	On the Water	35.35000198	125.84658290
2023-04-28	11:43:01	*Larus crassirostris*	4	13.9	In the Air	35.34981489	125.83227617
2023-04-28	11:45:09	*Larus crassirostris*	1	0.0	On the Water	35.34993110	125.82884994
2023-04-28	11:47:10	*Larus crassirostris*	1	18.4	In the Air	35.35000660	125.81939527
2023-04-28	11:48:44	*Larus crassirostris*	1	0.0	On the Water	35.35005103	125.81503811
2023-04-28	11:53:45	*Larus crassirostris*	1	10.9	In the Air	35.34937520	125.79978918
2023-04-28	11:55:51	*Larus crassirostris*	1	32.9	In the Air	35.34879788	125.79631361
2023-04-28	11:58:11	*Larus crassirostris*	1	5.0	In the Air	35.35014635	125.78380682
2023-04-28	12:01:26	*Larus crassirostris*	1	1.0	In the Air	35.34981726	125.77338030
2023-04-28	12:06:51	*Larus crassirostris*	1	11.3	In the Air	35.35017882	125.75554559
2023-04-28	12:28:49	*Larus crassirostris*	2	25.4	In the Air	35.38000844	125.76620923
2023-04-28	12:32:47	*Ardea cinerea*	2	1.0	In the Air	35.37927640	125.77986411
2023-04-28	12:34:06	*Larus crassirostris*	2	1.9	In the Air	35.37930723	125.78425453
2023-04-28	12:46:34	*Larus crassirostris*	2	6.3	In the Air	35.37955490	125.82467191
2023-04-28	12:50:47	*Larus crassirostris*	1	19.3	In the Air	35.37984443	125.83955107
2023-04-28	12:54:32	*Larus crassirostris*	3	3.2	In the Air	35.38103558	125.85065346
2023-04-28	12:56:55	*Larus crassirostris*	2	10.6	In the Air	35.38062298	125.85854320
2023-04-28	13:38:41	*Larus crassirostris*	2	12.4	In the Air	35.37881463	125.87616860
2023-04-28	13:43:07	*Larus crassirostris*	1	1.0	In the Air	35.38074653	125.89065618
2023-04-28	13:47:00	*Larus crassirostris*	1	1.0	In the Air	35.38099947	125.90361941
2023-04-28	14:01:03	*Larus crassirostris*	2	1.0	In the Air	35.37923327	125.94962014
2023-04-28	14:05:20	*Larus crassirostris*	1	1.0	In the Air	35.37950222	125.96380836
2023-04-28	14:07:57	*Larus crassirostris*	2	1.0	In the Air	35.37953471	125.97266777
2023-04-28	14:21:25	*Larus crassirostris*	3	40.6	In the Air	35.38014792	126.01499705
2023-04-28	14:41:10	*Larus crassirostris*	1	1.0	In the Air	35.40974822	126.00613696
2023-04-28	14:49:46	*Larus crassirostris*	1	12.7	In the Air	35.40913363	125.98175467
2023-04-28	14:51:38	*Larus crassirostris*	1	5.0	In the Air	35.41047048	125.97629754
2023-04-28	14:55:03	*Larus crassirostris*	1	1.0	In the Air	35.41050801	125.96512662
2023-04-28	14:56:23	*Larus crassirostris*	3	1.0	In the Air	35.41030054	125.96030224
2023-04-28	15:04:27	*Larus crassirostris*	2	27.0	In the Air	35.41102672	125.93280200

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-04-28	15:05:49	*Larus crassirostris*	1	18.9	In the Air	35.41103439	125.92819508
2023-04-28	15:08:03	*Larus crassirostris*	1	11.0	In the Air	35.41079723	125.92058592
2023-04-28	15:50:30	*Larus crassirostris*	2	10.0	In the Air	35.40954733	125.77404126
2023-04-28	15:52:09	*Synthliboramphus antiquus*	2	1.0	In the Air	35.40961890	125.76830033
2023-04-28	16:13:32	*Larus crassirostris*	1	20.0	In the Air	35.43968614	125.80248259
2023-04-28	16:20:45	*Larus crassirostris*	1	20.9	In the Air	35.43954318	125.82699684
2023-04-28	16:22:05	*Larus crassirostris*	1	1.0	In the Air	35.43966816	125.83143312
2023-04-28	16:24:55	*Larus crassirostris*	1	10.0	In the Air	35.43969815	125.84080641
2023-04-28	16:28:23	*Larus crassirostris*	1	0.0	On the Water	35.43967600	125.85240849
2023-04-28	16:30:29	*Larus crassirostris*	1	32.7	In the Air	35.43957469	125.85904974
2023-04-28	16:33:14	*Larus crassirostris*	1	6.5	In the Air	35.43926910	125.86814881
2023-04-28	16:35:16	*Caprimulgus indicus*	1	1.0	In the Air	35.43951624	125.87465728
2023-04-28	16:42:47	*Larus crassirostris*	1	1.0	In the Air	35.43986854	125.89965192
2023-04-28	16:44:34	*Caprimulgus indicus*	1	1.0	In the Air	35.43983105	125.90573110
2023-04-28	16:53:20	*Larus crassirostris*	1	5.0	In the Air	35.44006598	125.93493529
2023-04-28	16:58:40	*Larus crassirostris*	1	10.0	In the Air	35.43957407	125.94914956
2023-04-28	17:05:52	*Larus crassirostris*	1	1.0	In the Air	35.43962401	125.97786911
2023-05-30	07:06:43	*Larus crassirostris*	1	6.3	In the Air	35.44097946	125.97676694
2023-05-30	07:08:34	*Larus crassirostris*	3	5.0	In the Air	35.44098852	125.97120575
2023-05-30	07:09:53	*Larus crassirostris*	1	10.3	In the Air	35.44100192	125.96737782
2023-05-30	07:12:53	*Larus crassirostris*	1	9.6	In the Air	35.44102971	125.95844815
2023-05-30	07:13:36	*Larus crassirostris*	3	2.0	In the Air	35.44103310	125.95631770
2023-05-30	07:14:21	*Larus crassirostris*	1	2.0	In the Air	35.44103680	125.95409066
2023-05-30	07:14:37	*Larus crassirostris*	1	2.0	In the Air	35.44103136	125.95354649
2023-05-30	07:16:58	*Larus crassirostris*	9	2.0	In the Air	35.44102743	125.94671748
2023-05-30	07:18:05	*Larus crassirostris*	3	10.0	In the Air	35.44104190	125.94309672
2023-05-30	07:20:48	*Larus crassirostris*	1	5.0	In the Air	35.44105702	125.93511063
2023-05-30	07:21:53	*Larus crassirostris*	3	2.0	In the Air	35.44105205	125.93202486
2023-05-30	07:22:19	*Oceanodroma monorhis*	1	1.0	In the Air	35.44104267	125.93081022
2023-05-30	07:23:14	*Oceanodroma monorhis*	4	4.0	In the Air	35.44106401	125.92807825
2023-05-30	07:23:51	*Larus crassirostris*	3	18.1	In the Air	35.44106218	125.92626763
2023-05-30	07:24:29	*Oceanodroma monorhis*	4	1.0	In the Air	35.44106325	125.92438131
2023-05-30	07:25:47	*Oceanodroma monorhis*	3	1.0	In the Air	35.44106181	125.92061206
2023-05-30	07:29:40	*Oceanodroma monorhis*	2	1.0	In the Air	35.44107565	125.90915406
2023-05-30	07:31:20	*Oceanodroma monorhis*	9	2.0	In the Air	35.44108234	125.90424781
2023-05-30	07:34:20	*Larus crassirostris*	3	1.4	In the Air	35.44108639	125.89538276
2023-05-30	07:36:59	*Oceanodroma monorhis*	4	2.0	In the Air	35.44104688	125.88788770
2023-05-30	07:38:00	*Cecropis daurica*	1	10.0	In the Air	35.44106701	125.88495037
2023-05-30	07:39:29	*Larus crassirostris*	1	0.0	On the Water	35.44105862	125.88057746
2023-05-30	07:40:48	*Oceanodroma monorhis*	2	2.0	In the Air	35.44107439	125.87692829
2023-05-30	07:43:12	*Oceanodroma monorhis*	4	2.0	In the Air	35.44106124	125.86905498
2023-05-30	07:44:49	*Oceanodroma monorhis*	1	2.0	In the Air	35.44105102	125.86425695
2023-05-30	07:49:24	*Oceanodroma monorhis*	3	2.0	In the Air	35.44102567	125.85003195
2023-05-30	07:55:25	*Oceanodroma monorhis*	2	3.0	In the Air	35.44106943	125.83141925
2023-05-30	08:30:57	*Larus crassirostris*	1	53.4	In the Air	35.41087465	125.77030191
2023-05-30	08:34:58	*Larus crassirostris*	2	2.0	In the Air	35.41077934	125.78156764
2023-05-30	08:35:55	*Larus crassirostris*	1	19.2	In the Air	35.41073717	125.78614938
2023-05-30	08:37:30	*Larus crassirostris*	1	4.2	In the Air	35.41067145	125.79096255
2023-05-30	08:39:23	*Oceanodroma monorhis*	4	2.0	In the Air	35.41064633	125.79644125
2023-05-30	08:41:00	*Larus crassirostris*	1	8.1	In the Air	35.41058977	125.80160306
2023-05-30	08:46:17	*Oceanodroma monorhis*	2	2.0	In the Air	35.41044354	125.81765759
2023-05-30	08:49:06	*Oceanodroma monorhis*	1	1.0	In the Air	35.41038515	125.82637166
2023-05-30	08:50:40	*Larus crassirostris*	1	4.2	In the Air	35.41035649	125.83098643
2023-05-30	08:54:50	*Hirundo rustica*	1	10.0	In the Air	35.41023766	125.84364611
2023-05-30	08:55:55	*Cecropis daurica*	6	3.0	In the Air	35.41021187	125.84698516
2023-05-30	08:57:17	*Larus crassirostris*	1	0.0	On the Water	35.41019337	125.85095282
2023-05-30	09:00:14	*Larus crassirostris*	1	1.0	In the Air	35.41012076	125.85991140
2023-05-30	09:04:20	*Larus crassirostris*	1	17.0	In the Air	35.41005703	125.87253563
2023-05-30	09:06:03	*Oceanodroma monorhis*	1	1.0	In the Air	35.40998649	125.87786195
2023-05-30	09:08:03	*Calonectris leucomelas*	1	3.0	In the Air	35.40990224	125.88372352
2023-05-30	09:10:24	*Larus crassirostris*	1	11.8	In the Air	35.40986066	125.89090038
2023-05-30	09:13:56	*Larus crassirostris*	2	2.0	In the Air	35.40978365	125.90198849
2023-05-30	09:18:30	*Larus crassirostris*	2	2.0	In the Air	35.40968098	125.91587210
2023-05-30	09:19:01	*Ardea alba*	1	2.0	In the Air	35.40965843	125.91747808
2023-05-30	09:19:01	*Oceanodroma monorhis*	1	2.0	In the Air	35.40965843	125.91747808
2023-05-30	09:20:44	*Larus crassirostris*	1	3.4	In the Air	35.40961747	125.92264671
2023-05-30	09:22:43	*Larus crassirostris*	1	23.4	In the Air	35.40957018	125.92857667
2023-05-30	09:24:50	*Larus crassirostris*	3	16.9	In the Air	35.40948305	125.93508460

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-05-30	09:26:57	*Larus crassirostris*	1	10.0	In the Air	35.40943086	125.94144998
2023-05-30	09:29:29	*Larus crassirostris*	1	0.7	In the Air	35.40935715	125.94928608
2023-05-30	09:31:29	*Larus crassirostris*	1	22.0	In the Air	35.40935319	125.95502513
2023-05-30	09:32:46	*Larus crassirostris*	1	15.3	In the Air	35.40934275	125.95902782
2023-05-30	09:34:36	*Larus crassirostris*	2	12.4	In the Air	35.40930866	125.96441468
2023-05-30	09:35:07	*Larus crassirostris*	1	0.0	On the Water	35.40932023	125.96601986
2023-05-30	09:37:19	*Larus crassirostris*	3	20.0	In the Air	35.40919566	125.97253431
2023-05-30	09:44:26	*Phylloscopus fuscatus*	1	5.0	In the Air	35.40800695	125.99290804
2023-05-30	09:53:31	*Larus crassirostris*	1	20.0	In the Air	35.40957440	126.01827509
2023-05-30	10:12:13	*Larus crassirostris*	1	18.9	In the Air	35.37975936	126.00957523
2023-05-30	10:16:18	*Larus crassirostris*	1	14.2	In the Air	35.37977997	125.99763123
2023-05-30	10:19:53	*Larus crassirostris*	1	14.3	In the Air	35.37975457	125.98665544
2023-05-30	10:22:45	*Larus crassirostris*	2	22.9	In the Air	35.37972042	125.97767477
2023-05-30	10:25:50	*Larus crassirostris*	1	15.3	In the Air	35.37967853	125.96806061
2023-05-30	10:28:05	*Larus crassirostris*	2	13.7	In the Air	35.37964545	125.96095231
2023-05-30	10:29:44	*Larus crassirostris*	2	8.0	In the Air	35.37961287	125.95572726
2023-05-30	10:30:22	*Phalaropus lobatus*	2	2.0	In the Air	35.37960028	125.95372406
2023-05-30	10:35:40	*Larus crassirostris*	1	10.1	In the Air	35.37949502	125.93694268
2023-05-30	10:39:23	*Cecropis daurica*	2	20.0	In the Air	35.37946756	125.92542373
2023-05-30	10:39:45	*Larus crassirostris*	3	30.0	In the Air	35.37947278	125.92411937
2023-05-30	10:44:06	*Larus crassirostris*	1	10.4	In the Air	35.37939548	125.91052887
2023-05-30	10:47:28	*Larus crassirostris*	2	14.0	In the Air	35.37938114	125.90010847
2023-05-30	10:50:22	*Larus crassirostris*	3	13.3	In the Air	35.37929711	125.89084681
2023-05-30	10:53:25	*Larus crassirostris*	1	4.6	In the Air	35.37926749	125.88163302
2023-05-30	10:57:02	*Larus crassirostris*	1	2.0	In the Air	35.37917828	125.87070816
2023-05-30	11:00:15	*Larus crassirostris*	1	11.2	In the Air	35.37913814	125.86073416
2023-05-30	11:00:49	*Larus crassirostris*	1	20.0	In the Air	35.37911870	125.85893554
2023-05-30	11:04:11	*Larus crassirostris*	1	0.0	On the Water	35.37908031	125.84863707
2023-05-30	11:04:56	*Larus crassirostris*	1	0.0	On the Water	35.37907736	125.84652651
2023-05-30	11:06:46	*Larus crassirostris*	1	25.2	In the Air	35.37905492	125.84063728
2023-05-30	11:08:24	*Larus crassirostris*	6	30.0	In the Air	35.37902709	125.83571410
2023-05-30	11:10:38	*Larus crassirostris*	2	0.0	On the Water	35.37899696	125.82848571
2023-05-30	11:12:37	*Larus crassirostris*	6	3.0	In the Air	35.37897077	125.82257863
2023-05-30	11:15:17	*Larus crassirostris*	3	10.7	In the Air	35.37892027	125.81388565
2023-05-30	11:17:32	*Oceanodroma monorhis*	9	1.0	In the Air	35.37889615	125.80697836
2023-05-30	11:20:19	*Oceanodroma monorhis*	1	2.0	In the Air	35.37886697	125.79827577
2023-05-30	11:21:18	*Larus crassirostris*	1	20.0	In the Air	35.37886105	125.79498677
2023-05-30	11:22:45	*Larus crassirostris*	1	15.0	In the Air	35.37885057	125.79034162
2023-05-30	11:23:37	*Larus crassirostris*	1	0.0	On the Water	35.37883421	125.78768954
2023-05-30	11:24:03	*Sterna hirundo*	2	15.0	In the Air	35.37881136	125.78625171
2023-05-30	11:25:04	*Larus crassirostris*	1	0.0	On the Water	35.37880286	125.78319511
2023-05-30	11:27:13	*Larus crassirostris*	1	30.0	In the Air	35.37877082	125.77644219
2023-05-30	11:28:51	*Larus crassirostris*	3	18.6	In the Air	35.37875479	125.77103003
2023-05-30	11:33:12	*Larus crassirostris*	1	25.9	In the Air	35.37869868	125.75717312
2023-05-30	11:34:34	*Larus crassirostris*	2	13.8	In the Air	35.37917307	125.75289153
2023-05-30	11:55:45	*Larus crassirostris*	1	1.0	In the Air	35.34945551	125.76180556
2023-05-30	11:58:22	*Larus crassirostris*	1	3.0	In the Air	35.34945213	125.76930956
2023-05-30	12:00:30	*Larus crassirostris*	1	2.0	In the Air	35.34943125	125.77531808
2023-05-30	12:03:22	*Larus crassirostris*	1	15.0	In the Air	35.34941649	125.78381823
2023-05-30	12:04:28	*Larus crassirostris*	1	20.0	In the Air	35.34943816	125.78701347
2023-05-30	12:06:13	*Larus crassirostris*	1	36.8	In the Air	35.34943737	125.79197408
2023-05-30	12:07:40	*Larus crassirostris*	1	1.0	In the Air	35.34941231	125.79623678
2023-05-30	12:09:14	*Larus crassirostris*	1	0.0	On the Water	35.34954157	125.79867729
2023-05-30	12:12:59	*Larus crassirostris*	3	25.0	In the Air	35.34941523	125.80463059
2023-05-30	12:15:31	*Larus crassirostris*	3	0.0	On the Water	35.34941513	125.81221980
2023-05-30	12:18:44	*Larus crassirostris*	1	10.0	In the Air	35.34938055	125.82175039
2023-05-30	12:22:02	*Larus crassirostris*	1	20.0	In the Air	35.34934094	125.83135602
2023-05-30	12:26:22	*Larus crassirostris*	2	2.0	In the Air	35.34929173	125.84425756
2023-05-30	12:29:08	*Larus crassirostris*	2	30.0	In the Air	35.34925863	125.85267664
2023-05-30	12:32:41	*Larus crassirostris*	1	30.1	In the Air	35.34924114	125.86311546
2023-05-30	12:35:10	*Larus crassirostris*	1	5.0	In the Air	35.34922374	125.87053156
2023-05-30	12:37:17	*Larus crassirostris*	2	30.0	In the Air	35.34918786	125.87390034
2023-05-30	12:38:44	*Larus crassirostris*	3	10.0	In the Air	35.34923812	125.88085534
2023-05-30	12:41:21	*Synthliboramphus antiquus*	1	1.0	In the Air	35.34895868	125.88861548
2023-05-30	12:42:03	*Phalaropus lobatus*	5		On the Water	35.34910504	125.89055817
2023-05-30	12:42:59	*Larus crassirostris*	2	34.9	In the Air	35.34917424	125.89298152
2023-05-30	12:41:21	*Synthliboramphus antiquus*	2	1.0	In the Air	35.34895868	125.88861548
2023-05-30	12:45:02	*Larus crassirostris*	2	20.0	In the Air	35.34888374	125.89889348

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-05-30	12:47:43	*Egretta garzetta*	2	2.7	In the Air	35.34917095	125.90688487
2023-05-30	12:47:43	*Egretta intermedia*	2	2.7	In the Air	35.34917095	125.90688487
2023-05-30	12:52:23	*Larus crassirostris*	2	31.3	In the Air	35.34909962	125.92065675
2023-05-30	12:54:31	*Larus crassirostris*	5	19.0	In the Air	35.34906109	125.92683237
2023-05-30	12:55:38	*Sterna hirundo*	1		On the Water	35.34907632	125.93015331
2023-05-30	12:58:50	*Larus crassirostris*	2	36.8	In the Air	35.34903620	125.93972887
2023-05-30	13:01:20	*Larus crassirostris*	4	30.0	In the Air	35.34902134	125.94707654
2023-05-30	13:04:06	*Larus crassirostris*	1	64.0	In the Air	35.34901555	125.95516942
2023-05-30	13:04:31	*Larus crassirostris*	1	0.0	On the Water	35.34899409	125.95641869
2023-05-30	13:07:03	*Larus crassirostris*	2	29.4	In the Air	35.34899340	125.96377133
2023-05-30	13:09:39	*Larus crassirostris*	1	0.0	On the Water	35.34896050	125.97124620
2023-05-30	13:12:30	*Larus crassirostris*	1	10.1	In the Air	35.35027235	125.97884319
2023-05-30	13:26:56	*Larus crassirostris*	1	20.0	In the Air	35.31974919	125.97705232
2023-05-30	13:34:25	*Larus crassirostris*	1	22.7	In the Air	35.31971691	125.95468155
2023-05-30	13:36:56	*Larus crassirostris*	1	15.0	In the Air	35.31969508	125.94694090
2023-05-30	13:40:10	*Larus crassirostris*	1	9.3	In the Air	35.31965915	125.93729154
2023-05-30	13:41:08	*Larus crassirostris*	1	16.2	In the Air	35.31963315	125.93448079
2023-05-30	13:43:27	*Larus crassirostris*	2	11.7	In the Air	35.31962820	125.92759871
2023-05-30	13:45:31	*Stercorarius parasiticus*	1	5.0	In the Air	35.31960704	125.92319560
2023-05-30	13:48:11	*Larus crassirostris*	1	40.0	In the Air	35.31955793	125.91378386
2023-05-30	13:51:27	*Larus crassirostris*	2	0.0	On the Water	35.31952261	125.90393091
2023-05-30	13:54:32	*Larus crassirostris*	1	17.9	In the Air	35.31950431	125.89476558
2023-05-30	14:01:19	*Larus crassirostris*	1	11.7	In the Air	35.31945924	125.87440840
2023-05-30	14:04:04	*Larus crassirostris*	3	14.9	In the Air	35.31944860	125.86594042
2023-05-30	14:10:37	*Larus crassirostris*	1	184.0	In the Air	35.31937479	125.84600247
2023-05-30	14:11:56	*Larus crassirostris*	4	7.8	In the Air	35.31933744	125.84209970
2023-05-30	14:19:59	*Larus crassirostris*	1	17.4	In the Air	35.31924491	125.81859025
2023-05-30	14:25:28	*Larus crassirostris*	2	25.3	In the Air	35.31918210	125.80065530
2023-05-30	14:36:11	*Larus crassirostris*	1	8.2	In the Air	35.31904197	125.76770520
2023-05-30	14:41:34	*Larus crassirostris*	1	18.2	In the Air	35.31943207	125.75124925
2023-05-30	14:57:48	*Larus crassirostris*	2	0.0	On the Water	35.28967454	125.74781306
2023-05-30	15:01:01	*Larus crassirostris*	1	10.8	In the Air	35.28964371	125.75708553
2023-05-30	15:10:54	*Larus crassirostris*	2	26.2	In the Air	35.28954481	125.78576648
2023-05-30	15:14:35	*Larus crassirostris*	2	22.6	In the Air	35.28952454	125.79649333
2023-05-30	15:23:16	*Calonectris leucomelas*	5	5.0	In the Air	35.28945021	125.82117309
2023-05-30	15:24:35	*Calonectris leucomelas*	6	2.0	In the Air	35.28942844	125.82494626
2023-05-30	15:26:03	*Calonectris leucomelas*	41		On the Water	35.28952838	125.82912827
2023-05-30	15:26:35	*Synthliboramphus antiquus*	6	1.0	In the Air	35.28946058	125.83073401
2023-05-30	15:34:03	*Larus crassirostris*	1	17.2	In the Air	35.28937687	125.85260435
2023-05-30	15:40:17	*Larus crassirostris*	2	21.0	In the Air	35.28928395	125.87083277
2023-05-30	15:46:01	*Larus crassirostris*	3	36.9	In the Air	35.28726150	125.87936098
2023-05-30	15:49:40	*Larus crassirostris*	3	2.2	In the Air	35.28711110	125.89017473
2023-05-30	15:56:17	*Larus crassirostris*	1	18.2	In the Air	35.28986958	125.90666018
2023-05-30	15:59:26	*Larus crassirostris*	1	13.4	In the Air	35.29022123	125.91638442
2023-05-30	16:00:45	*Larus crassirostris*	2	13.1	In the Air	35.29039065	125.92031100
2023-05-30	16:03:06	*Larus crassirostris*	1	21.6	In the Air	35.29068146	125.92715100
2023-05-30	16:04:40	*Larus crassirostris*	5	14.9	In the Air	35.29087550	125.93178145
2023-05-30	16:10:49	*Larus crassirostris*	4	13.5	In the Air	35.29064789	125.94947783
2023-05-30	16:26:10	*Larus crassirostris*	1	7.7	In the Air	35.29099110	125.99367797
2023-05-30	16:32:43	*Larus crassirostris*	1	16.9	In the Air	35.29122818	126.01178390
2023-05-30	16:34:42	*Synthliboramphus antiquus*	4	1.0	In the Air	35.28999799	126.01688371
2023-05-30	16:36:37	*Larus crassirostris*	1	1.1	In the Air	35.28983926	126.02181492
2023-05-30	16:38:26	*Larus crassirostris*	5	2.0	In the Air	35.29007445	126.02648527
2023-05-30	16:54:12	*Larus crassirostris*	2	11.4	In the Air	35.25911962	126.01768501
2023-05-30	16:55:21	*Larus crassirostris*	2	0.0	On the Water	35.25903390	126.01451646
2023-05-30	17:00:21	*Larus crassirostris*	6	13.7	In the Air	35.25960549	126.00261043
2023-05-30	17:04:03	*Larus crassirostris*	4	10.6	In the Air	35.25951519	125.99163614
2023-05-30	17:08:04	*Larus crassirostris*	3	8.5	In the Air	35.25962733	125.98006012
2023-05-30	17:15:34	*Larus crassirostris*	4	12.8	In the Air	35.26031607	125.95795337
2023-05-30	17:16:04	*Larus crassirostris*	1	0.0	On the Water	35.26035917	125.95640849
2023-05-30	17:21:41	*Larus crassirostris*	6	29.5	In the Air	35.25984754	125.93994001
2023-05-30	17:24:23	*Larus crassirostris*	1	18.4	In the Air	35.25949668	125.93196767
2023-05-30	17:29:07	*Larus crassirostris*	4	17.5	In the Air	35.25937044	125.91813306
2023-05-30	17:30:05	*Synthliboramphus antiquus*	10	1.0	In the Air	35.25933264	125.91528801
2023-05-30	17:33:04	*Larus crassirostris*	7	8.4	In the Air	35.25894000	125.90695037
2023-05-30	17:36:23	*Larus crassirostris*	8	18.4	In the Air	35.25914074	125.89744658
2023-05-30	17:38:03	*Larus crassirostris*	7	0.0	On the Water	35.25910562	125.89275710
2023-05-30	17:40:39	*Synthliboramphus antiquus*	2	2.0	In the Air	35.25931823	125.88584986

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-05-30	17:41:37	*Larus crassirostris*	1	0.0	On the Water	35.25917085	125.88308527
2023-05-30	17:43:13	*Larus crassirostris*	2	2.0	In the Air	35.25906142	125.87852495
2023-05-30	17:47:25	*Larus crassirostris*	6	33.4	In the Air	35.26007108	125.86859359
2023-05-30	17:55:08	*Larus crassirostris*	6	0.0	On the Water	35.25998410	125.84687616
2023-05-30	18:01:44	*Oceanodroma monorhis*	1	2.0	In the Air	35.25984615	125.82714216
2023-05-30	18:08:17	*Oceanodroma monorhis*	2	1.0	In the Air	35.25970429	125.80745255
2023-05-30	18:16:56	*Larus crassirostris*	1	32.2	In the Air	35.25971241	125.78104383
2023-05-30	18:21:25	*Oceanodroma monorhis*	1	3.0	In the Air	35.25949011	125.76787918
2023-05-31	08:03:46	*Larus crassirostris*	3	5.0	In the Air	35.25981888	125.76836392
2023-05-31	08:05:52	*Larus crassirostris*	4	20.0	In the Air	35.25986001	125.76214415
2023-05-31	08:07:19	*Larus crassirostris*	70	0.0	Mixed	35.25982653	125.75761852
2023-05-31	08:26:19	*Larus crassirostris*	2	33.5	In the Air	35.22967660	125.77789446
2023-05-31	08:27:41	*Calonectris leucomelas*	1	1.0	Mixed	35.22983219	125.78213270
2023-05-31	08:28:05	*Larus crassirostris*	3	0.0	On the Water	35.22986661	125.78343560
2023-05-31	08:29:16	*Larus crassirostris*	4	0.0	On the Water	35.22974014	125.78707396
2023-05-31	08:30:05	*Larus crassirostris*	1	23.9	In the Air	35.22985412	125.78962231
2023-05-31	08:31:46	*Larus crassirostris*	3	14.3	In the Air	35.22960864	125.79395878
2023-05-31	08:33:50	*Larus crassirostris*	18	0.0	Mixed	35.22984068	125.80026594
2023-05-31	08:35:04	*Larus crassirostris*	3	26.3	In the Air	35.22982972	125.80386377
2023-05-31	08:35:33	*Calonectris leucomelas*	1	1.0	In the Air	35.22988839	125.80536638
2023-05-31	08:37:29	*Larus crassirostris*	3	0.0	On the Water	35.22983184	125.81119282
2023-05-31	08:40:08	*Larus crassirostris*	4	0.0	On the Water	35.22988332	125.81913445
2023-05-31	08:41:19	*Larus crassirostris*	3	0.0	On the Water	35.22997970	125.82287776
2023-05-31	08:42:51	*Larus crassirostris*	3	21.6	In the Air	35.22979093	125.82762775
2023-05-31	09:55:53	*Larus crassirostris*	1	0.0	On the Water	35.23017473	125.83796375
2023-05-31	09:56:56	*Larus crassirostris*	1	15.6	In the Air	35.22992967	125.84070249
2023-05-31	09:59:47	*Calonectris leucomelas*	1	1.0	In the Air	35.23002579	125.85029219
2023-05-31	10:01:23	*Larus crassirostris*	1	21.3	In the Air	35.22984881	125.85558846
2023-05-31	10:03:22	*Larus crassirostris*	1	3.1	In the Air	35.22974915	125.86165245
2023-05-31	10:14:11	*Larus crassirostris*	3	25.0	In the Air	35.22951928	125.89449894
2023-05-31	10:18:12	*Larus crassirostris*	1	1.0	In the Air	35.23025161	125.90698629
2023-05-31	10:21:32	*Larus crassirostris*	1	6.5	In the Air	35.23020182	125.91764990
2023-05-31	10:25:54	*Larus crassirostris*	3	17.5	In the Air	35.23037740	125.93107384
2023-05-31	10:31:35	*Larus crassirostris*	1	0.0	On the Water	35.22981103	125.94833959
2023-05-31	10:37:14	*Larus crassirostris*	1	3.0	In the Air	35.23006959	125.96542860
2023-05-31	10:39:05	*Larus crassirostris*	1	12.7	In the Air	35.23006257	125.97104407
2023-05-31	10:42:25	*Larus crassirostris*	3	2.0	In the Air	35.23004792	125.98125245
2023-05-31	10:45:43	*Larus crassirostris*	35	0.0	Mixed	35.22990908	125.99145343
2023-06-27	17:33:01	*Larus crassirostris*	1	10.0	In the Air	35.23010436	125.99561301
2023-06-27	17:37:25	*Larus crassirostris*	5	4.1	In the Air	35.23040211	125.98313654
2023-06-27	17:39:09	*Larus crassirostris*	3	20.0	In the Air	35.23047284	125.97825679
2023-06-27	17:41:35	*Larus crassirostris*	2	15.0	In the Air	35.23035243	125.97125695
2023-06-27	17:42:57	*Larus crassirostris*	23	15.0	Mixed	35.23025337	125.96739070
2023-06-27	17:46:14	*Larus crassirostris*	1	5.9	In the Air	35.23013520	125.95775663
2023-06-27	17:48:28	*Larus crassirostris*	7	0.0	On the Water	35.23004124	125.95088724
2023-06-27	17:49:36	*Larus crassirostris*	1	30.0	In the Air	35.22999611	125.94718741
2023-06-27	17:51:12	*Larus crassirostris*	1	24.5	In the Air	35.22993274	125.94216864
2023-06-27	17:51:48	*Larus crassirostris*	2	0.0	On the Water	35.22990237	125.94019514
2023-06-27	17:53:28	*Larus crassirostris*	1	26.2	In the Air	35.22981219	125.93494148
2023-06-27	17:56:39	*Larus crassirostris*	2	20.0	In the Air	35.23041560	125.92640232
2023-06-27	17:57:41	*Larus crassirostris*	2	0.0	On the Water	35.22993000	125.92372905
2023-06-27	17:59:22	*Larus crassirostris*	1	6.6	In the Air	35.22968280	125.91918920
2023-06-27	18:02:04	*Larus crassirostris*	1	20.0	In the Air	35.22947577	125.91047093
2023-06-27	18:03:57	*Larus crassirostris*	1	0.0	On the Water	35.22937184	125.90461132
2023-06-27	18:05:32	*Larus crassirostris*	1	36.8	In the Air	35.22933491	125.89961752
2023-06-27	18:07:24	*Larus crassirostris*	2	25.0	In the Air	35.22928041	125.89376608
2023-06-27	18:09:49	*Larus crassirostris*	1	15.0	In the Air	35.22902238	125.88583995
2023-06-27	18:10:43	*Larus crassirostris*	3	0.0	On the Water	35.22903686	125.88300903
2023-06-27	18:12:19	*Larus crassirostris*	1	20.0	In the Air	35.22897406	125.87794748
2023-06-27	18:13:58	*Larus crassirostris*	2	1.0	In the Air	35.22889712	125.87274080
2023-06-27	18:15:35	*Larus crassirostris*	15	0.0	On the Water	35.22886924	125.86761926
2023-06-27	18:18:52	*Larus crassirostris*	13	0.0	On the Water	35.22872484	125.85855187
2023-06-27	18:24:35	*Larus crassirostris*	1	0.0	On the Water	35.22867466	125.83952924
2023-06-27	18:26:45	*Larus crassirostris*	3	0.0	On the Water	35.22914193	125.83277691
2023-06-27	18:28:20	*Larus crassirostris*	2	0.0	On the Water	35.22956029	125.82853790
2023-06-27	18:29:42	*Larus crassirostris*	3	0.0	On the Water	35.22944881	125.82433886
2023-06-27	18:33:39	*Larus crassirostris*	2	20.0	In the Air	35.22916216	125.81272885

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-06-27	19:04:51	*Larus crassirostris*	1	10.0	In the Air	35.26038097	125.76242148
2023-06-27	19:09:56	*Larus crassirostris*	2	10.0	In the Air	35.26016905	125.77723458
2023-06-27	19:15:21	*Larus crassirostris*	3	10.0	In the Air	35.25979866	125.79379625
2023-06-27	19:18:07	*Larus crassirostris*	1	0.0	On the Water	35.25959040	125.80229851
2023-06-27	19:21:03	*Larus crassirostris*	1	0.0	On the Water	35.25938475	125.81172016
2023-06-27	19:21:48	*Larus crassirostris*	4	10.0	In the Air	35.25935086	125.81392942
2023-06-27	19:25:35	*Larus crassirostris*	3	10.0	In the Air	35.25910177	125.82545525
2023-06-27	19:27:17	*Larus crassirostris*	1	20.0	In the Air	35.25900754	125.83079416
2023-06-28	07:45:42	*Larus crassirostris*	5	0.0	On the Water	35.25906791	125.84740225
2023-06-28	07:50:15	*Larus crassirostris*	1	0.0	On the Water	35.26009252	125.86068466
2023-06-28	07:52:47	*Larus crassirostris*	2	25.0	In the Air	35.26005270	125.86848958
2023-06-28	07:59:21	*Larus crassirostris*	3	5.0	In the Air	35.26003482	125.88874176
2023-06-28	08:04:33	*Larus crassirostris*	2	49.1	In the Air	35.25996035	125.90397737
2023-06-28	08:08:03	*Larus crassirostris*	4	25.0	In the Air	35.25982819	125.91438514
2023-06-28	08:25:03	*Larus crassirostris*	80	15.0	Mixed	35.25977158	125.96558895
2023-06-28	08:42:32	*Larus crassirostris*	200	40.0	Mixed	35.25999699	126.01473898
2023-06-28	09:07:00	*Larus crassirostris*	4	1.0	In the Air	35.29029209	126.00641667
2023-06-28	09:14:07	*Larus crassirostris*	1	1.0	In the Air	35.28942501	125.98473171
2023-06-28	09:17:28	*Larus crassirostris*	1	1.0	In the Air	35.28977648	125.97600293
2023-06-28	09:21:26	*Larus crassirostris*	2	1.0	In the Air	35.28982785	125.96441891
2023-06-28	09:26:11	*Larus crassirostris*	1	1.0	In the Air	35.28978070	125.95082603
2023-06-28	09:28:06	*Larus crassirostris*	3	0.0	On the Water	35.28965852	125.94425723
2023-06-28	09:30:10	*Larus crassirostris*	1	20.0	In the Air	35.28966074	125.93789289
2023-06-28	09:33:23	*Larus crassirostris*	6	25.4	In the Air	35.28955107	125.92822565
2023-06-28	09:35:27	*Larus crassirostris*	1	0.0	On the Water	35.28956004	125.92254527
2023-06-28	09:36:08	*Larus crassirostris*	2	0.0	On the Water	35.28953123	125.91952085
2023-06-28	09:38:26	*Larus crassirostris*	2	41.1	In the Air	35.28953881	125.91350383
2023-06-28	09:41:15	*Larus crassirostris*	1	0.0	On the Water	35.28940053	125.90393681
2023-06-28	09:42:29	*Larus crassirostris*	1	24.3	In the Air	35.28941014	125.90126971
2023-06-28	09:56:30	*Larus crassirostris*	6	0.0	On the Water	35.28926002	125.87113583
2023-06-28	10:03:15	*Larus crassirostris*	1	11.2	In the Air	35.29002880	125.85180219
2023-06-28	10:05:14	*Larus crassirostris*	1	10.0	In the Air	35.29037061	125.84564021
2023-06-28	10:07:25	*Larus crassirostris*	1	1.0	In the Air	35.29062639	125.84000241
2023-06-28	10:10:53	*Larus crassirostris*	1	1.3	In the Air	35.29107786	125.83013710
2023-06-28	10:15:14	*Larus crassirostris*	3	1.0	In the Air	35.29035337	125.81658528
2023-06-28	10:20:31	*Larus crassirostris*	2	2.7	In the Air	35.28898625	125.80033450
2023-06-28	10:53:39	*Larus crassirostris*	1	20.0	In the Air	35.32020262	125.75109633
2023-06-28	10:58:13	*Larus crassirostris*	1	10.0	In the Air	35.32032990	125.76352521
2023-06-28	11:03:47	*Larus crassirostris*	1	3.0	In the Air	35.32032175	125.77939338
2023-06-28	11:17:22	*Larus crassirostris*	2	10.0	In the Air	35.31959939	125.81579653
2023-06-28	11:23:56	*Larus crassirostris*	1	20.0	In the Air	35.32040539	125.83718018
2023-06-28	11:28:14	*Larus crassirostris*	1	15.0	In the Air	35.32040739	125.84964170
2023-06-28	11:46:39	*Larus crassirostris*	2	0.0	On the Water	35.32050342	125.90366730
2023-06-28	11:55:10	*Larus crassirostris*	1	0.0	On the Water	35.32254391	125.92921987
2023-06-28	12:07:18	*Larus crassirostris*	1	20.0	In the Air	35.31972957	125.96945541
2023-06-28	12:47:41	*Larus crassirostris*	2	72.3	In the Air	35.35007358	125.95512661
2023-06-28	12:55:04	*Larus crassirostris*	1	4.6	In the Air	35.35047726	125.93192745
2023-06-28	13:15:00	*Larus crassirostris*	1	13.6	In the Air	35.34993733	125.87489179
2023-06-28	13:20:58	*Larus crassirostris*	1	0.0	On the Water	35.34960722	125.85890014
2023-06-28	13:26:04	*Larus crassirostris*	1	19.5	In the Air	35.34995369	125.83898269
2023-06-28	13:26:32	*Larus crassirostris*	1	0.0	On the Water	35.34988589	125.83733608
2023-06-28	13:32:24	*Larus crassirostris*	1	1.2	In the Air	35.35016583	125.81843103
2023-06-28	13:44:12	*Larus crassirostris*	1	48.1	In the Air	35.35003649	125.78085273
2023-06-28	13:44:36	*Oceanodroma monorhis*	1	3.0	In the Air	35.35007786	125.77950234
2023-06-28	13:50:07	*Larus crassirostris*	1	15.2	In the Air	35.34974890	125.76228744
2023-06-28	14:26:37	*Larus crassirostris*	1	7.9	In the Air	35.38016187	125.80129345
2023-06-28	14:35:36	*Calonectris leucomelas*	23	1.0	In the Air	35.38014972	125.82851495
2023-06-28	14:43:30	*Calonectris leucomelas*	1	1.0	In the Air	35.38001628	125.85280121
2023-06-28	14:54:13	*Calonectris leucomelas*	7	1.0	In the Air	35.38001360	125.88528586
2023-06-28	15:04:32	*Larus crassirostris*	1	5.7	In the Air	35.37998206	125.91668292
2023-06-28	15:17:32	*Larus crassirostris*	1	7.0	In the Air	35.37970442	125.95169238
2023-06-28	15:18:05	*Larus crassirostris*	1	0.0	On the Water	35.37971555	125.95352649
2023-06-28	15:28:49	*Larus crassirostris*	1	7.4	In the Air	35.37978926	125.98700062
2023-06-28	15:31:53	*Larus crassirostris*	1	8.4	In the Air	35.37987371	125.99664205
2023-06-28	15:37:48	*Larus crassirostris*	4	1.0	In the Air	35.37993835	126.01547915
2023-06-28	15:39:37	*Larus crassirostris*	1	5.9	In the Air	35.37971136	126.02071354
2023-06-28	15:41:38	*Larus crassirostris*	1	30.0	In the Air	35.37949713	126.02741328
2023-06-28	15:59:14	*Larus crassirostris*	1	26.1	In the Air	35.40985449	126.00795541

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-06-28	16:01:41	*Larus crassirostris*	1	14.6	In the Air	35.40975082	126.00025413
2023-06-28	16:11:09	*Calonectris leucomelas*	11	1.0	In the Air	35.40982297	125.97012790
2023-06-28	16:17:31	*Larus crassirostris*	1	12.5	In the Air	35.40973027	125.95087670
2023-06-28	16:18:12	*Calonectris leucomelas*	1	1.0	In the Air	35.40975513	125.94702489
2023-06-28	16:25:52	*Larus crassirostris*	1	1.6	In the Air	35.40969436	125.92265693
2023-06-28	16:28:20	*Calonectris leucomelas*	3	1.0	In the Air	35.40975804	125.91416183
2023-06-28	16:37:11	*Calonectris leucomelas*	3	1.0	In the Air	35.40989811	125.88541763
2023-06-28	16:52:34	*Larus crassirostris*	1	1.5	In the Air	35.40975295	125.83578920
2023-06-28	16:54:40	*Larus crassirostris*	4	5.1	In the Air	35.40974035	125.82959144
2023-06-28	16:58:53	*Larus crassirostris*	4	1.1	In the Air	35.41010726	125.81770493
2023-06-28	17:00:53	*Calonectris leucomelas*	1	1.0	In the Air	35.41003666	125.81133941
2023-06-28	17:02:02	*Calonectris leucomelas*	2	2.0	In the Air	35.41000158	125.80741539
2023-06-28	17:15:42	*Larus crassirostris*	2	6.9	In the Air	35.40954221	125.76474533
2023-06-28	17:37:40	*Larus crassirostris*	1	9.8	In the Air	35.43985317	125.80746851
2023-06-28	17:39:14	*Larus crassirostris*	1	0.0	On the Water	35.43982348	125.81227337
2023-06-28	17:41:09	*Calonectris leucomelas*	2	1.0	In the Air	35.43981775	125.81851956
2023-06-28	17:43:51	*Larus crassirostris*	1	1.0	In the Air	35.43990123	125.82699991
2023-06-28	17:47:15	*Larus crassirostris*	3	5.3	In the Air	35.43981584	125.83859584
2023-06-28	17:48:10	*Larus crassirostris*	3	0.0	On the Water	35.43981053	125.84160115
2023-06-28	17:57:13	*Larus crassirostris*	1	1.0	In the Air	35.43976357	125.87125467
2023-06-28	18:03:49	*Larus crassirostris*	1	10.0	In the Air	35.43976736	125.89032848
2023-06-28	18:20:44	*Sterna albifrons*	2	5.0	In the Air	35.43910342	125.94486106
2023-06-28	18:22:16	*Larus crassirostris*	3	9.5	In the Air	35.43902796	125.94988412
2023-06-28	18:24:07	*Larus crassirostris*	3	3.5	In the Air	35.43891558	125.95587505
2023-06-28	18:26:05	*Larus crassirostris*	1	20.0	In the Air	35.43879536	125.96223238
2023-06-28	18:30:27	*Larus crassirostris*	1	1.2	In the Air	35.43852037	125.97638450
2023-07-20	11:47:03	*Larus crassirostris*	4	0.0	On the Water	35.23010960	125.96832625
2023-07-20	11:50:10	*Larus crassirostris*	2	0.0	On the Water	35.22917522	125.95332988
2023-07-20	11:50:53	*Larus crassirostris*	3	0.0	On the Water	35.22915839	125.95048799
2023-07-20	11:51:29	*Larus crassirostris*	1	3.7	In the Air	35.22912456	125.94860522
2023-07-20	11:52:57	*Larus crassirostris*	1	9.1	In the Air	35.22989187	125.94375290
2023-07-20	11:53:32	*Larus crassirostris*	1	13.9	In the Air	35.22988736	125.94171528
2023-07-20	11:54:08	*Larus crassirostris*	1	11.6	In the Air	35.22989563	125.93961167
2023-07-20	11:57:00	*Larus crassirostris*	1	65.5	In the Air	35.23012874	125.92993312
2023-07-20	11:58:27	*Larus crassirostris*	1	1.0	In the Air	35.23019988	125.92482861
2023-07-20	12:00:25	*Larus crassirostris*	1	0.0	On the Water	35.23030580	125.91830256
2023-07-20	12:02:44	*Larus crassirostris*	1	1.0	In the Air	35.23046935	125.91029357
2023-07-20	12:08:33	*Larus crassirostris*	1	5.8	In the Air	35.23064908	125.89268179
2023-07-20	12:10:51	*Larus crassirostris*	4	0.0	On the Water	35.23047126	125.88466901
2023-07-20	12:12:23	*Larus crassirostris*	1	0.0	On the Water	35.23045636	125.87910000
2023-07-20	12:13:12	*Larus crassirostris*	1	16.5	In the Air	35.23045686	125.87643514
2023-07-20	12:15:36	*Larus crassirostris*	1	16.4	In the Air	35.23060653	125.86787037
2023-07-20	12:19:38	*Larus crassirostris*	1	2.5	In the Air	35.22996959	125.85240808
2023-07-20	12:21:22	*Larus crassirostris*	2	0.0	On the Water	35.23042025	125.84745863
2023-07-20	12:24:02	*Larus crassirostris*	23	1.0	In the Air	35.23053758	125.83760230
2023-07-20	12:25:01	*Larus crassirostris*	1	9.4	In the Air	35.23046116	125.83535370
2023-07-20	12:27:28	*Larus crassirostris*	1	1.0	In the Air	35.23066017	125.82541268
2023-07-20	12:31:58	*Oceanodroma monorhis*	1	1.0	In the Air	35.23090351	125.80914352
2023-07-20	12:37:40	*Larus crassirostris*	3	0.0	On the Water	35.23121118	125.78874858
2023-07-20	12:57:49	*Oceanodroma monorhis*	1	1.0	In the Air	35.25983716	125.75633196
2023-07-20	12:59:43	*Oceanodroma monorhis*	1	1.0	In the Air	35.26017502	125.76257002
2023-07-20	13:05:03	*Larus crassirostris*	1	13.1	In the Air	35.25991642	125.78147378
2023-07-20	13:08:08	*Larus crassirostris*	1	15.0	In the Air	35.25991358	125.79073753
2023-07-20	13:09:16	*Larus crassirostris*	1	12.7	In the Air	35.25991742	125.79704675
2023-07-20	13:16:11	*Larus crassirostris*	2	0.0	On the Water	35.25992044	125.82263701
2023-07-20	13:17:00	*Larus crassirostris*	1	0.0	On the Water	35.25990991	125.82573131
2023-07-20	13:18:02	*Larus crassirostris*	4	0.0	On the Water	35.25992219	125.83010359
2023-07-20	13:20:09	*Larus crassirostris*	1	0.0	On the Water	35.25987346	125.83649035
2023-07-20	13:22:44	*Larus crassirostris*	1	0.0	On the Water	35.25982129	125.84314998
2023-07-20	13:23:38	*Larus crassirostris*	2	0.0	On the Water	35.25877692	125.84940947
2023-07-20	13:24:41	*Larus crassirostris*	22	0.0	On the Water	35.25869827	125.85316295
2023-07-20	13:25:22	*Larus crassirostris*	24	0.0	On the Water	35.25876731	125.85335801
2023-07-20	13:28:30	*Larus crassirostris*	6	0.0	On the Water	35.25956904	125.86646287
2023-07-20	13:29:34	*Larus crassirostris*	1	2.7	In the Air	35.25966051	125.87023663
2023-07-20	13:30:23	*Larus crassirostris*	1	0.0	On the Water	35.25974658	125.87316550
2023-07-20	13:34:48	*Larus crassirostris*	1	0.0	On the Water	35.26034368	125.88889974
2023-07-20	13:36:13	*Larus crassirostris*	3	9.4	In the Air	35.26055043	125.89387866
2023-07-20	13:37:41	*Larus crassirostris*	3	3.0	In the Air	35.25969760	125.89887332

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-07-20	13:44:56	*Larus crassirostris*	1	20.0	In the Air	35.26020168	125.92474343
2023-07-20	13:58:17	*Larus crassirostris*	4	0.0	On the Water	35.25981097	125.97373467
2023-07-20	14:01:13	*Larus crassirostris*	1	11.2	In the Air	35.25897965	125.98436531
2023-07-20	14:02:24	*Larus crassirostris*	4	0.0	On the Water	35.25909260	125.98863877
2023-07-20	14:05:05	*Larus crassirostris*	4	0.0	On the Water	35.25910367	125.99855594
2023-07-20	14:05:50	*Larus crassirostris*	1	19.1	In the Air	35.25885863	126.00105665
2023-07-20	14:32:53	*Larus crassirostris*	6	0.0	On the Water	35.29003901	125.99949009
2023-07-20	14:53:38	*Larus crassirostris*	5	0.0	On the Water	35.28928006	125.93470054
2023-07-20	14:59:36	*Larus crassirostris*	1	0.0	On the Water	35.28944755	125.90967020
2023-07-20	15:08:16	*Larus crassirostris*	8	0.0	On the Water	35.28915424	125.88178749
2023-07-20	15:10:34	*Larus crassirostris*	17	0.0	On the Water	35.28915424	125.88178749
2023-07-20	15:12:21	*Larus crassirostris*	4	0.0	On the Water	35.28954175	125.86733042
2023-07-20	15:12:54	*Larus crassirostris*	1	0.0	On the Water	35.28957988	125.86736745
2023-07-20	15:14:21	*Larus crassirostris*	1	0.0	On the Water	35.28963809	125.86062020
2023-07-20	15:24:21	*Oceanodroma monorhis*	1	4.4	In the Air	35.28980841	125.82723995
2023-07-20	15:26:25	*Larus crassirostris*	1	2.6	In the Air	35.28980841	125.82723995
2023-07-20	15:34:33	*Larus crassirostris*	1	10.8	In the Air	35.29015767	125.79363722
2023-07-20	15:39:40	*Oceanodroma monorhis*	1	4.2	In the Air	35.29023049	125.77608379
2023-07-20	15:44:09	*Oceanodroma monorhis*	2	1.0	In the Air	35.29026214	125.77255398
2023-07-20	16:03:08	*Oceanodroma monorhis*	1	3.0	In the Air	35.32013815	125.75798619
2023-07-20	16:07:54	*Larus crassirostris*	3	3.4	In the Air	35.32009161	125.77392707
2023-07-20	16:14:35	*Larus crassirostris*	3	11.0	In the Air	35.32009566	125.79641689
2023-07-20	16:18:07	*Oceanodroma monorhis*	1	3.3	In the Air	35.32011112	125.80781550
2023-07-20	16:18:50	*Larus crassirostris*	1	9.3	In the Air	35.32011112	125.80781550
2023-07-20	16:20:53	*Oceanodroma monorhis*	1	3.5	In the Air	35.32008792	125.81683606
2023-07-20	16:22:51	*Larus crassirostris*	1	13.9	In the Air	35.32009905	125.82337571
2023-07-20	16:24:31	*Larus crassirostris*	1	28.9	In the Air	35.32013838	125.82908949
2023-07-20	16:27:57	*Larus crassirostris*	6	66.4	In the Air	35.32009662	125.84054872
2023-07-20	16:28:51	*Larus crassirostris*	7	5.0	In the Air	35.32009662	125.84054872
2023-07-20	16:33:09	*Larus crassirostris*	4	0.0	On the Water	35.32011898	125.85793810
2023-07-20	16:33:09	*Larus crassirostris*	2	0.0	On the Water	35.32011898	125.85793810
2023-07-20	16:33:54	*Oceanodroma monorhis*	1	4.9	In the Air	35.32011056	125.86040613
2023-07-20	16:36:09	*Larus crassirostris*	1	20.0	In the Air	35.32011044	125.86783940
2023-07-20	16:41:50	*Larus crassirostris*	3	0.0	On the Water	35.32009820	125.88707208
2023-07-20	16:46:27	*Larus crassirostris*	1	50.0	In the Air	35.32012093	125.90283535
2023-07-20	16:48:03	*Larus crassirostris*	1	0.0	On the Water	35.32010419	125.90674032
2023-07-20	17:00:18	*Larus crassirostris*	2	8.2	In the Air	35.32011099	125.94914962
2023-07-20	17:00:18	*Larus crassirostris*	2	8.2	In the Air	35.32011099	125.94914962
2023-07-20	17:01:26	*Larus crassirostris*	1	12.3	In the Air	35.32013584	125.95293540
2023-07-20	17:02:08	*Larus crassirostris*	1	13.7	In the Air	35.32011495	125.95523330
2023-07-20	17:03:34	*Larus crassirostris*	1	20.8	In the Air	35.32006596	125.96000461
2023-07-20	17:06:07	*Larus crassirostris*	1	30.0	In the Air	35.32002736	125.96852756
2023-07-20	17:08:01	*Larus crassirostris*	1	54.9	In the Air	35.31995337	125.97485449
2023-07-20	17:39:37	*Larus crassirostris*	3	0.0	On the Water	35.35104432	125.91388012
2023-07-20	17:44:01	*Larus crassirostris*	1	0.0	On the Water	35.35111722	125.89845040
2023-07-20	17:46:23	*Larus crassirostris*	1	0.0	On the Water	35.35113302	125.89024279
2023-07-20	17:48:34	*Larus crassirostris*	1	20.0	In the Air	35.35109876	125.88250432
2023-07-20	17:53:25	*Oceanodroma monorhis*	1	4.9	In the Air	35.35110402	125.86811073
2023-07-20	17:55:34	*Larus crassirostris*	6	0.0	On the Water	35.35105433	125.85768275
2023-07-20	18:01:24	*Larus crassirostris*	25	0.0	On the Water	35.34955870	125.84685125
2023-07-20	18:01:24	*Larus crassirostris*	11	0.0	On the Water	35.34955870	125.84685125
2023-07-20	18:02:37	*Larus crassirostris*	1	0.0	On the Water	35.34784519	125.84445259
2023-07-20	18:05:19	*Larus crassirostris*	2	11.2	In the Air	35.34921087	125.83548638
2023-07-20	18:09:20	*Larus crassirostris*	1	20.0	In the Air	35.34973651	125.82154889
2023-07-20	18:11:57	*Larus crassirostris*	1	50.0	In the Air	35.35010810	125.81265295
2023-07-20	18:13:41	*Larus crassirostris*	1	0.0	On the Water	35.34985829	125.81221556
2023-07-20	18:13:41	*Larus crassirostris*	1	0.0	On the Water	35.34985829	125.81221556
2023-07-20	18:16:41	*Larus crassirostris*	1	20.4	In the Air	35.35077967	125.79669769
2023-07-20	18:21:19	*Larus crassirostris*	1	0.0	On the Water	35.35055883	125.78113486
2023-07-20	18:21:44	*Oceanodroma monorhis*	1	3.3	In the Air	35.35055883	125.78113486
2023-07-20	18:29:03	*Larus crassirostris*	1	20.0	In the Air	35.35035268	125.75405976
2023-07-20	18:30:11	*Larus crassirostris*	1	0.0	On the Water	35.35033281	125.75019021
2023-07-20	18:31:16	*Oceanodroma monorhis*	1	1.0	In the Air	35.35013079	125.74719142
2023-07-20	18:48:38	*Oceanodroma monorhis*	2	1.0	In the Air	35.38080809	125.76630805
2023-07-20	18:52:01	*Oceanodroma monorhis*	1	1.0	In the Air	35.38092291	125.77772425
2023-07-20	18:53:45	*Oceanodroma monorhis*	1	1.0	In the Air	35.38097371	125.78378338
2023-07-20	18:54:39	*Oceanodroma monorhis*	1	1.0	In the Air	35.38102159	125.78677689

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-07-20	18:58:58	*Larus crassirostris*	1	40.0	In the Air	35.38115110	125.80170071
2023-07-20	19:08:59	*Oceanodroma monorhis*	1	1.0	In the Air	35.37998473	125.83520519
2023-07-20	19:11:54	*Larus crassirostris*	1	54.3	In the Air	35.37962979	125.84518120
2023-07-20	19:13:23	*Larus crassirostris*	1	20.0	In the Air	35.37947002	125.85018000
2023-07-20	19:16:55	*Larus crassirostris*	1	30.0	In the Air	35.38049465	125.86172224
2023-07-20	19:18:09	*Larus crassirostris*	1	60.0	In the Air	35.38039205	125.86593759
2023-07-20	19:19:22	*Larus crassirostris*	1	70.0	In the Air	35.38031160	125.86981574
2023-07-20	19:21:38	*Larus crassirostris*	1	80.0	In the Air	35.37998106	125.87762674
2023-07-20	19:24:51	*Larus crassirostris*	1	16.3	In the Air	35.37948090	125.88844826
2023-07-20	19:26:21	*Oceanodroma monorhis*	1	1.0	In the Air	35.37920495	125.89351105
2023-07-20	19:26:58	*Larus crassirostris*	3	0.0	On the Water	35.37939065	125.89361810
2023-07-21	07:25:05	*Larus crassirostris*	1	0.0	On the Water	35.37932855	125.91833952
2023-07-21	07:32:22	*Larus crassirostris*	1	16.5	In the Air	35.37928838	125.94219401
2023-07-21	07:32:22	*Larus crassirostris*	1	16.5	In the Air	35.37928838	125.94219401
2023-07-21	07:33:12	*Larus crassirostris*	2	0.0	On the Water	35.37948397	125.94481532
2023-07-21	07:33:12	*Larus crassirostris*	1	0.0	On the Water	35.37963880	125.94528033
2023-07-21	07:36:41	*Larus crassirostris*	1	8.7	In the Air	35.37949490	125.95602970
2023-07-21	07:40:30	*Larus crassirostris*	1	0.0	On the Water	35.37971255	125.96804245
2023-07-21	07:42:07	*Larus crassirostris*	2	20.0	In the Air	35.37980415	125.97295019
2023-07-21	07:44:16	*Larus crassirostris*	1	20.0	In the Air	35.37991626	125.97941301
2023-07-21	07:48:47	*Larus crassirostris*	1	25.0	In the Air	35.37960358	125.99280852
2023-07-21	07:50:41	*Larus crassirostris*	1	32.0	In the Air	35.37928038	125.99795873
2023-07-21	07:54:37	*Larus crassirostris*	4	0.0	On the Water	35.37887261	126.00832258
2023-07-21	08:25:13	*Larus crassirostris*	3	0.0	On the Water	35.41067473	125.98938372
2023-07-21	08:27:36	*Ardea alba*	2	27.0	In the Air	35.41050699	125.98100491
2023-07-21	08:30:04	*Larus crassirostris*	1	30.0	In the Air	35.41031486	125.97234940
2023-07-21	08:32:17	*Larus crassirostris*	1	30.0	In the Air	35.41021818	125.96462670
2023-07-21	08:43:35	*Larus crassirostris*	1	30.0	In the Air	35.40982544	125.92535080
2023-07-21	08:53:45	*Larus crassirostris*	1	0.0	On the Water	35.40990468	125.89039396
2023-07-21	08:54:07	*Larus crassirostris*	1	25.0	In the Air	35.40990468	125.89039396
2023-07-21	08:55:03	*Larus crassirostris*	1	20.0	In the Air	35.40993915	125.88598019
2023-07-21	08:59:33	*Larus crassirostris*	1	22.2	In the Air	35.40984567	125.87037443
2023-07-21	09:00:27	*Larus crassirostris*	1	30.0	In the Air	35.40984337	125.86715791
2023-07-21	09:03:24	*Larus crassirostris*	3	0.0	On the Water	35.40983425	125.85687146
2023-07-21	09:13:08	*Larus crassirostris*	1	0.0	On the Water	35.41036130	125.82232313
2023-07-21	09:26:53	*Oceanodroma monorhis*	1	1.0	In the Air	35.41054175	125.77349239
2023-07-21	09:53:53	*Oceanodroma monorhis*	1	1.0	In the Air	35.43994389	125.80742731
2023-07-21	10:00:38	*Larus crassirostris*	1	0.0	On the Water	35.43974924	125.82864748
2023-07-21	10:05:40	*Larus crassirostris*	1	39.9	In the Air	35.43969001	125.84437486
2023-07-21	10:06:43	*Larus crassirostris*	1	0.0	On the Water	35.43965872	125.84807291
2023-07-21	10:31:54	*Larus crassirostris*	1	15.0	In the Air	35.43925125	125.92861709
2023-08-24	06:56:05	*Larus crassirostris*	1	4.0	In the Air	35.22987043	125.99098836
2023-08-24	07:06:31	*Larus crassirostris*	1	9.7	In the Air	35.23005512	125.95821170
2023-08-24	07:16:05	*Larus crassirostris*	3	0.0	On the Water	35.22993960	125.92772297
2023-08-24	07:16:05	*Larus crassirostris*	2	0.0	On the Water	35.22993960	125.92772297
2023-08-24	07:20:01	*Larus crassirostris*	2	0.0	On the Water	35.22976432	125.91600502
2023-08-24	07:20:39	*Larus crassirostris*	1	15.0	In the Air	35.22976432	125.91600502
2023-08-24	07:22:48	*Larus crassirostris*	1	22.8	In the Air	35.22954349	125.90792819
2023-08-24	07:27:03	*Larus crassirostris*	4	0.0	On the Water	35.22877550	125.89585960
2023-08-24		*Larus crassirostris*	2	0.0	On the Water	35.22877550	125.89585960
2023-08-24	07:27:03	*Larus crassirostris*	3	0.0	On the Water	35.22877550	125.89585960
2023-08-24	07:37:34	*Phalaropus lobatus*	34		On the Water	35.22906743	125.86484512
2023-08-24	07:40:04	*Phalaropus lobatus*	2	1.0	In the Air	35.22927206	125.85803330
2023-08-24	07:54:32	*Oceanodroma monorhis*	1	1.0	In the Air	35.23042510	125.81347150
2023-08-24	08:01:09	*Calonectris leucomelas*	1	1.0	In the Air	35.23045455	125.79329883
2023-08-24	08:05:53	*Larus crassirostris*	1	20.0	In the Air	35.23043512	125.78019295
2023-08-24	08:41:29	*Calonectris leucomelas*	1	1.0	In the Air	35.25855195	125.80951170
2023-08-24	08:44:03	*Sterna hirundo*	3	11.8	In the Air	35.25814976	125.81754232
2023-08-24	08:53:42	*Larus crassirostris*	1	30.0	In the Air	35.25759114	125.84575179
2023-08-24	08:57:02	*Oceanodroma monorhis*	3	3.0	In the Air	35.25901762	125.85456436
2023-08-24	09:00:58	*Larus crassirostris*	1	8.4	In the Air	35.25984533	125.86631705
2023-08-24	09:13:56	*Larus crassirostris*	1	5.0	In the Air	35.26016554	125.90743493
2023-08-24	09:14:40	*Phalaropus lobatus*	11		On the Water	35.26008872	125.90983566
2023-08-24	09:25:14	*Larus crassirostris*	1	3.6	In the Air	35.25955534	125.94071890
2023-08-24	09:31:44	*Phalaropus lobatus*	2		On the Water	35.25956459	125.95922446
2023-08-24	09:33:38	*Larus crassirostris*	2	23.5	In the Air	35.25929511	125.96593226
2023-08-24	09:35:02	*Larus crassirostris*	1	16.8	In the Air	35.25919560	125.97029743
2023-08-24	09:41:38	*Larus crassirostris*	1	19.6	In the Air	35.25828216	125.99056519

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-08-24	09:49:08	*Larus crassirostris*	1	0.0	On the Water	35.26003932	126.01298137
2023-08-24	09:49:08	*Larus crassirostris*	2	0.0	On the Water	35.26003932	126.01298137
2023-08-24	10:07:55	*Larus crassirostris*	1	11.9	In the Air	35.29022778	126.02096105
2023-08-24	10:09:14	*Larus crassirostris*	1	0.0	On the Water	35.29018491	126.01746568
2023-08-24	10:11:51	*Larus crassirostris*	1	15.0	In the Air	35.29008617	126.00902824
2023-08-24	10:13:55	*Phalaropus lobatus*	6		On the Water	35.29004523	126.00345711
2023-08-24	10:13:55	*Larus crassirostris*	2	0.0	On the Water	35.29004523	126.00345711
2023-08-24	10:29:26	*Larus crassirostris*	1	17.9	In the Air	35.29099347	125.95711546
2023-08-24	10:30:27	*Larus crassirostris*	3	0.0	On the Water	35.29064668	125.95375568
2023-08-24	10:36:27	*Phalaropus lobatus*	1		On the Water	35.29018146	125.94245289
2023-08-24	10:42:30	*Oceanodroma monorhis*	1	1.0	In the Air	35.28998246	125.92582868
2023-08-24	10:44:34	*Phalaropus lobatus*	1	1.0	In the Air	35.29034263	125.91975078
2023-08-24	10:46:18	*Calonectris leucomelas*	2	1.0	In the Air	35.29033491	125.91466094
2023-08-24	10:47:04	*Phalaropus lobatus*	12		On the Water	35.29004949	125.91208967
2023-08-24	10:48:42	*Oceanodroma monorhis*	1	2.0	In the Air	35.28971643	125.90727293
2023-08-24	11:26:07	*Larus crassirostris*	1	0.0	On the Water	35.28939636	125.79710485
2023-08-24	11:27:23	*Larus crassirostris*	1	20.0	In the Air	35.28944807	125.79305804
2023-08-24	11:38:23	*Oceanodroma monorhis*	1	1.0	In the Air	35.28951461	125.76078422
2023-08-24	11:41:11	*Phalaropus lobatus*	4		On the Water	35.28957531	125.75246332
2023-08-24	12:00:16	*Oceanodroma monorhis*	1	1.0	In the Air	35.31990913	125.75307512
2023-08-24	12:15:06	*Oceanodroma monorhis*	1	1.0	In the Air	35.32011595	125.79560709
2023-08-24	12:26:22	*Calonectris leucomelas*	1	1.0	In the Air	35.31998344	125.82714511
2023-08-24	12:37:43	*Larus crassirostris*	1	25.0	In the Air	35.31992330	125.86043411
2023-08-24	12:49:22	*Sterna hirundo*	1		On the Water	35.32100924	125.89442739
2023-08-24	12:55:07	*Calonectris leucomelas*	1	1.0	In the Air	35.32150209	125.91021699
2023-08-24	14:20:15	*Larus crassirostris*	1	5.0	In the Air	35.35006563	125.97668960
2023-08-24	14:21:07	*Larus crassirostris*	2	2.7	In the Air	35.34982262	125.97318127
2023-08-24	14:22:04	*Larus crassirostris*	1	20.0	In the Air	35.34987649	125.97062652
2023-08-24	14:22:52	*Larus crassirostris*	2	2.7	In the Air	35.35005574	125.96797849
2023-08-24	14:24:20	*Phalaropus lobatus*	1		On the Water	35.35003008	125.96482143
2023-08-24	14:32:55	*Phalaropus lobatus*	8		On the Water	35.35256388	125.94202494
2023-08-24	14:39:50	*Calonectris leucomelas*	1	1.0	In the Air	35.34964792	125.92374676
2023-08-24	14:41:51	*Calonectris leucomelas*	4	1.0	In the Air	35.34887111	125.91688572
2023-08-24	14:50:15	*Calonectris leucomelas*	1	1.0	In the Air	35.34966776	125.89157939
2023-08-24	14:55:22	*Calonectris leucomelas*	1	1.0	In the Air	35.34964531	125.87778216
2023-08-24	15:00:00	*Oceanodroma monorhis*	1	1.0	In the Air	35.34973018	125.86984291
2023-08-24	15:19:44	*Sterna hirundo*	1	14.3	In the Air	35.35011172	125.80218788
2023-08-24	15:21:20	*Oceanodroma monorhis*	1	1.0	In the Air	35.34998047	125.79777547
2023-08-24	15:22:03	*Calonectris leucomelas*	1	1.0	In the Air	35.34988363	125.79589511
2023-08-24	15:23:00	*Oceanodroma monorhis*	2	1.0	In the Air	35.34957047	125.79335294
2023-08-24	15:30:12	*Phalaropus lobatus*	5		On the Water	35.34985481	125.77199223
2023-08-24	15:35:48	*Oceanodroma monorhis*	1	1.0	In the Air	35.35036366	125.75571455
2023-08-24	16:04:25	*Oceanodroma monorhis*	3	1.0	In the Air	35.37991361	125.78487521
2023-08-24	16:08:07	*Phalaropus lobatus*	11		On the Water	35.37962700	125.79613578
2023-08-24	16:09:30	*Oceanodroma monorhis*	1	1.0	In the Air	35.37966226	125.80037658
2023-08-24	16:25:10	*Oceanodroma monorhis*	1	1.0	In the Air	35.38004945	125.85000310
2023-08-24	16:27:40	*Calonectris leucomelas*	1	1.0	In the Air	35.37979145	125.85761291
2023-08-24	16:28:52	*Calonectris leucomelas*	1	1.0	In the Air	35.37964948	125.86130367
2023-08-24	16:33:42	*Calonectris leucomelas*	3	1.0	In the Air	35.37966025	125.87676148
2023-08-24	16:33:42	*Oceanodroma monorhis*	3	1.0	In the Air	35.37966025	125.87676148
2023-08-24	16:36:17	*Oceanodroma monorhis*	3	2.0	In the Air	35.37984620	125.88421423
2023-08-24	16:41:24	*Larus crassirostris*	1	0.0	On the Water	35.38022680	125.89932442
2023-08-24	16:42:53	*Oceanodroma monorhis*	1	1.0	In the Air	35.38027984	125.90371134
2023-08-24	16:43:54	*Calonectris leucomelas*	2	3.0	In the Air	35.38030865	125.90742778
2023-08-24	16:44:51	*Calonectris leucomelas*	5	1.0	In the Air	35.38035087	125.91018500
2023-08-24	16:47:49	*Larus crassirostris*	1	0.0	On the Water	35.38055264	125.91959304
2023-08-24	16:49:52	*Calonectris leucomelas*	5	1.0	In the Air	35.38058051	125.92558778
2023-08-24	16:54:18	*Larus crassirostris*	1	18.4	In the Air	35.37985185	125.93665490
2023-08-24	17:13:23	*Larus crassirostris*	1	0.0	On the Water	35.37939302	125.99756636
2023-08-24	17:13:47	*Larus crassirostris*	1	19.5	In the Air	35.37938253	125.99942145
2023-08-24	17:15:15	*Larus crassirostris*	1	5.0	In the Air	35.37921560	126.00411719
2023-08-24	17:16:05	*Larus crassirostris*	1	2.0	In the Air	35.37909467	126.00676371
2023-08-24	17:16:43	*Phalaropus lobatus*	4	2.7	In the Air	35.37902216	126.00864143
2023-08-24	17:18:29	*Larus crassirostris*	1	4.9	In the Air	35.37882122	126.01430413
2023-08-24	17:21:17	*Larus crassirostris*	4	0.0	On the Water	35.37965147	126.02296476
2023-08-25	10:50:46	*Calonectris leucomelas*	1	1.0	In the Air	35.40972933	125.97396320
2023-08-25	10:58:31	*Larus crassirostris*	1	23.5	In the Air	35.40916547	125.95188096
2023-08-25	11:04:40	*Oceanodroma monorhis*	1	1.0	In the Air	35.40933808	125.93254415

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-08-25	11:09:54	*Oceanodroma monorhis*	1	1.0	In the Air	35.40977084	125.91644348
2023-08-25	11:10:25	*Phalaropus lobatus*	7		On the Water	35.40983088	125.91520574
2023-08-25	11:11:02	*Phalaropus lobatus*	22		On the Water	35.40988227	125.91277702
2023-08-25	11:17:53	*Oceanodroma monorhis*	1	2.0	In the Air	35.40956794	125.89198246
2023-08-25	11:34:50	*Oceanodroma monorhis*	1	1.0	In the Air	35.40897861	125.84134866
2023-08-25	11:44:09	*Oceanodroma monorhis*	2	3.0	In the Air	35.40889746	125.81455114
2023-08-25	11:53:32	*Oceanodroma monorhis*	3	2.0	In the Air	35.40893683	125.78731060
2023-08-25	11:56:31	*Oceanodroma monorhis*	2	1.0	In the Air	35.40876862	125.77831798
2023-08-25	11:59:38	*Oceanodroma monorhis*	1	1.0	In the Air	35.40865513	125.76903737
2023-08-25	12:24:41	*Oceanodroma monorhis*	1	1.0	In the Air	35.43957864	125.80824607
2023-08-25	12:27:33	*Oceanodroma monorhis*	1	1.0	In the Air	35.43934475	125.81748412
2023-08-25	12:29:02	*Oceanodroma monorhis*	1	1.0	In the Air	35.43923262	125.82217940
2023-08-25	12:37:14	*Oceanodroma monorhis*	1	1.0	In the Air	35.44062783	125.84714050
2023-08-25	12:39:50	*Oceanodroma monorhis*	2	2.0	In the Air	35.44093697	125.85482826
2023-08-25	12:43:44	*Oceanodroma monorhis*	2	1.0	In the Air	35.44015497	125.86629599
2023-08-25	12:47:14	*Oceanodroma monorhis*	1	2.0	In the Air	35.44019358	125.87769184
2023-08-25	12:48:44	*Oceanodroma monorhis*	1	1.0	In the Air	35.43978616	125.88215428
2023-08-25	12:55:54	*Larus crassirostris*	2	6.7	In the Air	35.43980667	125.90359831
2023-08-25	12:57:31	*Larus crassirostris*	1	9.6	In the Air	35.43990023	125.90909170
2023-08-25	13:00:26	*Larus crassirostris*	1	9.3	In the Air	35.44003001	125.91747204
2023-08-25	13:07:37	*Larus crassirostris*	1	5.5	In the Air	35.43998901	125.94057039
2023-08-25	13:08:39	*Larus crassirostris*	1	7.4	In the Air	35.43994570	125.94348396
2023-08-25	13:10:02	*Calonectris leucomelas*	1	1.0	In the Air	35.43992139	125.94797175
2023-08-25	13:18:58	*Oceanodroma monorhis*	2	1.0	In the Air	35.44035713	125.97519142
2023-09-23	06:52:28	*Larus crassirostris*	1	14.7	In the Air	35.44001499	125.97816239
2023-09-23	06:53:40	*Larus crassirostris*	1	13.6	In the Air	35.44035036	125.97459373
2023-09-23	06:54:35	*Larus crassirostris*	1	3.2	In the Air	35.44009635	125.97313876
2023-09-23	06:55:28	*Larus crassirostris*	1	0.0	On the Water	35.43777667	125.97046779
2023-09-23	06:58:26	*Larus crassirostris*	1	8.7	In the Air	35.43992572	125.96353833
2023-09-23	07:00:02	*Larus crassirostris*	1	2.0	In the Air	35.43990472	125.95677341
2023-09-23	07:00:31	*Larus crassirostris*	1	6.3	In the Air	35.43992606	125.95560443
2023-09-23	07:02:41	*Larus crassirostris*	1	11.8	In the Air	35.43989442	125.94836712
2023-09-23	07:08:10	*Larus crassirostris*	1	9.8	In the Air	35.44013111	125.93138823
2023-09-23	07:09:14	*Larus crassirostris*	1	2.7	In the Air	35.44005496	125.92818509
2023-09-23	07:10:13	*Larus crassirostris*	1	2.7	In the Air	35.43993862	125.92472025
2023-09-23	07:12:57	*Larus crassirostris*	2	2.7	In the Air	35.43923781	125.91600664
2023-09-23	07:14:55	*Larus crassirostris*	2	2.5	In the Air	35.44023182	125.91092369
2023-09-23	07:16:10	*Larus crassirostris*	1	3.1	In the Air	35.44014470	125.90614865
2023-09-23	07:16:34	*Larus crassirostris*	2	4.4	In the Air	35.44009983	125.90553505
2023-09-23	07:18:19	*Larus crassirostris*	1	9.5	In the Air	35.43968312	125.89888992
2023-09-23	07:21:39	*Larus crassirostris*	2	2.7	In the Air	35.43974127	125.88820087
2023-09-23	07:23:12	*Larus crassirostris*	1	2.7	In the Air	35.43974039	125.88336622
2023-09-23	07:24:26	*Larus crassirostris*	1	7.7	In the Air	35.43975059	125.87950957
2023-09-23	07:25:01	*Larus crassirostris*	3	2.7	In the Air	35.43977839	125.87743167
2023-09-23	07:25:50	*Larus crassirostris*	1	2.7	In the Air	35.43973692	125.87476590
2023-09-23	07:28:04	*Calonectris leucomelas*	1	2.7	In the Air	35.43980046	125.86762563
2023-09-23	07:29:00	*Larus crassirostris*	1	7.3	In the Air	35.43983587	125.86466727
2023-09-23	07:32:41	*Larus crassirostris*	1	5.4	In the Air	35.43991820	125.85296294
2023-09-23	07:41:09	*Larus crassirostris*	2	6.9	In the Air	35.43963354	125.82659715
2023-09-23	07:42:19	*Larus crassirostris*	1	6.7	In the Air	35.43954594	125.82289368
2023-09-23	07:43:32	*Larus crassirostris*	1	8.3	In the Air	35.43952071	125.81911787
2023-09-23	07:45:47	*Larus crassirostris*	1	12.0	In the Air	35.43957578	125.81210855
2023-09-23	08:20:55	*Sterna hirundo*	1	9.0	In the Air	35.40974281	125.79299687
2023-09-23	08:24:34	*Larus crassirostris*	1	7.3	In the Air	35.40982294	125.80287151
2023-09-23	08:25:34	*Larus crassirostris*	1	22.6	In the Air	35.40984699	125.80645467
2023-09-23	08:26:51	*Larus crassirostris*	3	0.9	In the Air	35.40985740	125.81002944
2023-09-23	08:29:51	*Larus crassirostris*	1	3.1	In the Air	35.40985810	125.81200097
2023-09-23	08:37:10	*Larus crassirostris*	1	11.9	In the Air	35.40988495	125.83936128
2023-09-23	08:41:31	*Larus crassirostris*	1	19.1	In the Air	35.40985276	125.84436597
2023-09-23	08:48:03	*Larus crassirostris*	1	7.2	In the Air	35.41032215	125.86967554
2023-09-23	09:20:07	*Larus crassirostris*	1	23.9	In the Air	35.40754617	125.94548992
2023-09-23	09:22:24	*Larus crassirostris*	1	0.0	On the Water	35.41009643	125.96499486
2023-09-23	09:36:33	*Calonectris leucomelas*	1	2.7	In the Air	35.40975339	126.00619854
2023-09-23	09:38:13	*Larus crassirostris*	1	0.0	On the Water	35.40990681	126.01100558
2023-09-23	09:40:20	*Calonectris leucomelas*	1	2.7	In the Air	35.41012378	126.01739821
2023-09-23	09:40:47	*Larus crassirostris*	1	2.7	In the Air	35.41010943	126.01870475
2023-09-23	09:58:26	*Larus crassirostris*	1	2.9	In the Air	35.37991781	126.02101974
2023-09-23	09:59:52	*Larus crassirostris*	1	10.6	In the Air	35.37973732	126.01606800

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-09-23	10:00:40	*Larus crassirostris*	1	0.0	On the Water	35.37963348	126.01419152
2023-09-23	10:01:12	*Larus crassirostris*	1	14.8	In the Air	35.37955906	126.01172580
2023-09-23	10:02:52	*Larus crassirostris*	1	51.4	In the Air	35.38006730	126.00662819
2023-09-23	10:07:40	*Larus crassirostris*	1	60.6	In the Air	35.37997544	125.99092244
2023-09-23	10:09:30	*Larus crassirostris*	1	16.5	In the Air	35.37983858	125.98499859
2023-09-23	10:10:19	*Larus crassirostris*	1	14.6	In the Air	35.37985561	125.98474312
2023-09-23	10:10:45	*Larus crassirostris*	1	35.7	In the Air	35.37974306	125.98073902
2023-09-23	10:11:15	*Larus crassirostris*	1	11.2	In the Air	35.37970174	125.97914341
2023-09-23	10:12:22	*Larus crassirostris*	1	37.7	In the Air	35.37961766	125.97667546
2023-09-23	10:20:04	*Larus crassirostris*	1	12.5	In the Air	35.38013140	125.95181551
2023-09-23	10:23:19	*Larus crassirostris*	1	14.2	In the Air	35.38021071	125.94090393
2023-09-23	10:24:14	*Larus crassirostris*	1	16.5	In the Air	35.38026612	125.93720371
2023-09-23	10:30:41	*Larus crassirostris*	1	2.7	In the Air	35.38060057	125.91640524
2023-09-23	10:36:12	*Larus crassirostris*	1	6.3	In the Air	35.37968034	125.89844237
2023-09-23	10:47:29	*Larus crassirostris*	1	13.6	In the Air	35.37973079	125.86139234
2023-09-23	10:55:35	*Larus crassirostris*	1	11.8	In the Air	35.37912726	125.83481277
2023-09-23	10:58:22	*Larus crassirostris*	2	0.0	On the Water	35.38027162	125.82627975
2023-09-23	11:00:52	*Larus crassirostris*	1	4.4	In the Air	35.38042849	125.81794489
2023-09-23	11:04:03	*Larus crassirostris*	1	2.7	In the Air	35.38036644	125.81447056
2023-09-23	11:05:34	*Larus crassirostris*	1	8.1	In the Air	35.38020031	125.81145630
2023-09-23	11:11:23	*Larus crassirostris*	1	6.6	In the Air	35.38063634	125.78548136
2023-09-23	11:14:04	*Calonectris leucomelas*	1	2.7	In the Air	35.38081595	125.77772190
2023-09-23	11:18:41	*Egretta intermedia*	3	2.7	In the Air	35.37982334	125.76427995
2023-09-23	11:22:09	*Larus crassirostris*	1	9.6	In the Air	35.37934940	125.75404848
2023-09-23	12:03:42	*Larus crassirostris*	1	3.8	In the Air	35.28924074	125.75315784
2023-09-23	12:46:09	*Larus crassirostris*	1	0.0	On the Water	35.29005858	125.87006358
2023-09-23	12:58:41	*Calonectris leucomelas*	1	2.7	In the Air	35.29018800	125.90716834
2023-09-23	13:01:04	*Calonectris leucomelas*	3	2.7	In the Air	35.29025013	125.91424636
2023-09-23	13:12:35	*Calonectris leucomelas*	1	2.7	In the Air	35.28960326	125.94990933
2023-09-23	13:16:20	*Larus crassirostris*	3	0.0	On the Water	35.28982099	125.96172237
2023-09-23	13:16:57	*Larus crassirostris*	1	2.7	In the Air	35.28985855	125.96319214
2023-09-23	13:17:44	*Larus crassirostris*	1	11.3	In the Air	35.28985855	125.96345075
2023-09-23	13:18:35	*Larus crassirostris*	2	14.9	In the Air	35.28985933	125.96869303
2023-09-23	13:31:53	*Calonectris leucomelas*	1	1.0	In the Air	35.28998933	126.01061738
2023-09-23	13:35:18	*Larus crassirostris*	1	28.6	In the Air	35.29007184	126.02163656
2023-09-23	13:52:11	*Larus crassirostris*	1	20.0	In the Air	35.25967728	126.01640656
2023-09-23	14:03:45	*Larus crassirostris*	1	8.5	In the Air	35.25972578	125.98086936
2023-09-23	14:09:32	*Larus crassirostris*	1	0.0	On the Water	35.25982597	125.96314927
2023-09-23	14:11	*Calonectris leucomelas*	1	2.7	In the Air	35.25989276	125.95384803
2023-09-23	14:13:13	*Larus crassirostris*	1	11.8	In the Air	35.25991238	125.95187137
2023-09-23	14:14:07	*Calonectris leucomelas*	3	1.0	In the Air	35.25992394	125.94897548
2023-09-23	14:15:08	*Calonectris leucomelas*	1	1.0	In the Air	35.25998278	125.94590014
2023-09-23	14:19:02	*Larus crassirostris*	1	2.7	In the Air	35.26002534	125.93528307
2023-09-23	14:25:45	*Calonectris leucomelas*	1	1.0	In the Air	35.26001782	125.91339465
2023-09-23	14:29:07	*Calonectris leucomelas*	1	2.2	In the Air	35.25972771	125.90315898
2023-09-23	14:30:46	*Calonectris leucomelas*	1	2.7	In the Air	35.25964675	125.89798268
2023-09-23	14:33:29	*Calonectris leucomelas*	1	2.7	In the Air	35.25965083	125.88967043
2023-09-23	14:45:23	*Larus crassirostris*	1	23.0	In the Air	35.25969028	125.85361766
2023-09-23	14:51:36	*Calonectris leucomelas*	1	3.0	In the Air	35.25986767	125.83427164
2023-09-23	15:38:50	*Larus crassirostris*	1	0.0		35.22986098	125.78648982
2023-09-23	15:39:51	*Larus crassirostris*	1	0.0		35.22989397	125.78950260
2023-09-23	16:11:09	*Calonectris leucomelas*	1	2.7	In the Air	35.22968335	125.87650670
2023-09-23	16:15:33	*Larus crassirostris*	1	0.0		35.22975878	125.88936251
2023-09-23	16:18:39	*Larus crassirostris*	1	0.0	On the Water	35.23014460	125.89878535
2023-09-23	16:38:10	*Calonectris leucomelas*	1		On the Water	35.22961220	125.95882246
2023-09-23	16:44:21	*Larus crassirostris*	1	12.2	In the Air	35.22954743	125.97774148
2023-09-23	16:45:05	*Calonectris leucomelas*	1			35.22974341	125.97981578
2023-09-23	16:45:05	*Calonectris leucomelas*	1			35.22987687	125.98123939
2023-09-23	16:47:10	*Calonectris leucomelas*	1			35.22994293	125.98661169
2023-09-24	06:47:20	*Larus crassirostris*	1	13.3	In the Air	35.35004788	125.97081991
2023-09-24	06:47:43	*Larus crassirostris*	1	3.2	In the Air	35.35009442	125.96957732
2023-09-23	06:48:24	*Larus crassirostris*	3	2.9	In the Air	35.34999529	125.96737523
2023-09-23	06:48:51	*Larus crassirostris*	3	2.3	In the Air	35.34999529	125.96721671
2023-09-24	06:50:06	*Larus crassirostris*	1	2.7	In the Air	35.34971750	125.96189548
2023-09-24	06:51:12	*Larus crassirostris*	1	2.7	In the Air	35.34980385	125.95927613
2023-09-24	06:52:02	*Larus crassirostris*	1	7.3	In the Air	35.34948466	125.95571692
2023-09-24	06:53:15	*Larus crassirostris*	1	5.4	In the Air	35.34926147	125.95178621
2023-09-24	06:55:23	*Larus crassirostris*	1	0.0	On the Water	35.34919071	125.94591319

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-09-24	06:56:06	*Larus crassirostris*	1	1.4	In the Air	35.34916341	125.94264412
2023-09-24	06:57:01	*Larus crassirostris*	1	5.4	In the Air	35.34916581	125.93998704
2023-09-24	06:57:33	*Larus crassirostris*	1	1.9	In the Air	35.34957053	125.93805654
2023-09-24	06:58:20	*Larus crassirostris*	1	2.7	In the Air	35.34972402	125.93559953
2023-09-24	07:00:06	*Larus crassirostris*	1	2.7	In the Air	35.34963435	125.93027408
2023-09-24	7:00	*Larus crassirostris*	1	1.4	In the Air	35.34967915	125.92982610
2023-09-24	07:00:53	*Larus crassirostris*	1	2.1	In the Air	35.34958262	125.92732391
2023-09-24	07:03:56	*Larus crassirostris*	1	14.9	In the Air	35.34993881	125.91776255
2023-09-24	07:03:56	*Larus crassirostris*	1	14.9	In the Air	35.34993881	125.91776255
2023-09-24	07:06:57	*Larus crassirostris*	1	2.7	In the Air	35.34996097	125.90798179
2023-09-24	07:08:55	*Larus crassirostris*	1	0.8	In the Air	35.35005438	125.90133655
2023-09-24	07:09:33	*Larus crassirostris*	1	4.1	In the Air	35.35005055	125.89922054
2023-09-24	07:10:18	*Larus crassirostris*	1	0.0	On the Water	35.35005365	125.89682412
2023-09-24	07:11:29	*Larus crassirostris*	2	2.7	In the Air	35.35008806	125.89302704
2023-09-24	07:12:19	*Larus crassirostris*	1	3.5	In the Air	35.35012402	125.89046097
2023-09-24	07:15:11	*Larus crassirostris*	1	2.7	In the Air	35.35026592	125.88094683
2023-09-24	07:15:51	*Larus crassirostris*	1	15.0	In the Air	35.35026118	125.87871633
2023-09-24	07:20:37	*Larus argentatus*	1	2.7	In the Air	35.35043715	125.86282465
2023-09-24	07:22:06	*Larus crassirostris*	1	61.6	In the Air	35.35041050	125.85779194
2023-09-24	07:22:50	*Larus crassirostris*	1	22.9	In the Air	35.35043539	125.85590140
2023-09-24	07:23:34	*Larus crassirostris*	1	22.9	In the Air	35.35029742	125.85465967
2023-09-24	07:23:48	*Larus crassirostris*	1	0.0	On the Water	35.35051056	125.85227227
2023-09-24	07:28:02	*Calonectris leucomelas*	1		On the Water	35.35054921	125.83885139
2023-09-24	07:28:29	*Calonectris leucomelas*	1		On the Water	35.35059810	125.83733443
2023-09-24	07:29:34	*Larus crassirostris*	1	10.6	In the Air	35.35060113	125.83390146
2023-09-24	07:30:52	*Larus crassirostris*	1	9.6	In the Air	35.35065633	125.83003688
2023-09-24	07:36:32	*Larus crassirostris*	1	21.9	In the Air	35.35077473	125.81376471
2023-09-24	07:37:20	*Larus crassirostris*	1	2.7	In the Air	35.35059435	125.80902210
2023-09-24	07:39:18	*Larus crassirostris*	1	14.9	In the Air	35.35043779	125.80290873
2023-09-24	07:39:56	*Larus crassirostris*	2	2.7	In the Air	35.35040792	125.80077468
2023-09-24	07:46:32	*Larus crassirostris*	1	1.9	In the Air	35.35002014	125.77956878
2023-09-24	07:49:11	*Calonectris leucomelas*	1	2.7	In the Air	35.34992766	125.77106920
2023-09-24	07:50:39	*Larus crassirostris*	1	13.5	In the Air	35.34993522	125.76638206
2023-09-24	07:51:33	*Larus crassirostris*	2	2.7	In the Air	35.34989841	125.76334739
2023-09-24	08:11:11	*Larus crassirostris*	1	14.4	In the Air	35.31951035	125.74886466
2023-09-24	08:29:09	*Larus crassirostris*	1	0.0	On the Water	35.32028844	125.80000773
2023-09-24	08:30:01	*Larus crassirostris*	1	4.5	In the Air	35.32048806	125.80382795
2023-09-24	08:31:56	*Calonectris leucomelas*	1	2.7	In the Air	35.32045387	125.80894493
2023-09-24	08:33:28	*Larus crassirostris*	1	116.3	In the Air	35.32048959	125.81126312
2023-09-24	08:37:52	*Larus crassirostris*	1	4.9	In the Air	35.32051058	125.81484984
2023-09-24	08:40:41	*Larus crassirostris*	2	13.5	In the Air	35.32077485	125.83571311
2023-09-24	08:42:11	*Larus crassirostris*	2	4.0	In the Air	35.32070933	125.84015514
2023-09-24	08:43:14	*Larus crassirostris*	1	9.3	In the Air	35.32080564	125.84321128
2023-09-24	08:43:50	*Larus crassirostris*	3	23.1	In the Air	35.32079261	125.84492636
2023-09-24	08:44:41	*Larus crassirostris*	1	11.9	In the Air	35.32080977	125.84686210
2023-09-24	08:45:12	*Larus crassirostris*	1	22.4	In the Air	35.32078563	125.84890004
2023-09-24	08:58:51	*Calonectris leucomelas*	1	2.7	In the Air	35.31968535	125.88962774
2023-09-24	8:59	*Larus crassirostris*	3	0.0	On the Water	35.31965691	125.89125202
2023-09-24	09:00:04	*Larus crassirostris*	1	0.0	On the Water	35.31965691	125.89125202
2023-09-24	09:00:19	*Larus crassirostris*	1	7.7	In the Air	35.31974958	125.89307088
2023-09-24	09:06:54	*Larus crassirostris*	1	13.1	In the Air	35.31992764	125.91543710
2023-09-24	09:08:00	*Larus crassirostris*	1	0.0	On the Water	35.32011569	125.91883725
2023-09-24	09:09:37	*Larus crassirostris*	1	42.0	In the Air	35.32038813	125.92395884
2023-09-24	09:11:56	*Larus crassirostris*	1	13.0	In the Air	35.32051755	125.93099933
2023-09-24	09:15:25	*Larus crassirostris*	1	30.7	In the Air	35.31967315	125.94139453
2023-09-24	09:18:11	*Larus crassirostris*	1	5.2	In the Air	35.31947764	125.94984522
2023-09-24	09:21:04	*Larus crassirostris*	1	15.0	In the Air	35.31925966	125.95865868
2023-09-24	09:24:30	*Calonectris leucomelas*	2	2.7	In the Air	35.31905382	125.96923170
2023-09-24	09:27:07	*Calonectris leucomelas*	1	2.7	In the Air	35.31958632	125.97743042
2023-09-24	09:27:54	*Larus crassirostris*	1	2.7	In the Air	35.31970094	125.97981844
2023-10-12	07:00:17	*Larus crassirostris*	1	33.1	In the Air	35.43993724	125.96079498
2023-10-12	07:01:42	*Larus crassirostris*	1	36.6	In the Air	35.43986007	125.95642552
2023-10-12	07:02:58	*Larus crassirostris*	1	4.9	In the Air	35.44001195	125.95287146
2023-10-12	07:05:07	*Larus crassirostris*	1	32.6	In the Air	35.44001246	125.94638142
2023-10-12	07:07:11	*Larus crassirostris*	2	3.7	In the Air	35.44003686	125.94039081
2023-10-12	07:09:32	*Larus crassirostris*	1	29.5	In the Air	35.43982712	125.93330392
2023-10-12	07:15:24	*Larus crassirostris*	1	58.1	In the Air	35.43987000	125.91502517
2023-10-12	07:16:36	*Larus crassirostris*	1	13.1	In the Air	35.43983529	125.91116701

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-10-12	07:20:22	*Larus crassirostris*	1	26.2	In the Air	35.43992582	125.89975920
2023-10-12	07:22:24	*Larus crassirostris*	1	0.0	On the Water	35.43996235	125.89362048
2023-10-12	07:24:44	*Larus crassirostris*	1	0.0	On the Water	35.43997660	125.88872319
2023-10-12	07:31:57	*Larus crassirostris*	1	0.0	On the Water	35.43973331	125.86473673
2023-10-12	07:35:21	*Larus crassirostris*	1	0.0	On the Water	35.43961458	125.85462886
2023-10-12	07:36:27	*Larus crassirostris*	1	0.0	On the Water	35.43948243	125.85115001
2023-10-12	07:38:26	*Larus crassirostris*	1	5.2	In the Air	35.43944886	125.84517606
2023-10-12	07:39:53	*Larus crassirostris*	1	0.0	On the Water	35.43958875	125.84094704
2023-10-12	07:44:58	*Larus crassirostris*	1	4.2	In the Air	35.43978709	125.82560574
2023-10-12	07:49:48	*Calonectris leucomelas*	1	1.0	In the Air	35.43998522	125.81097632
2023-10-12	07:53:34	*Larus sp.*	537	5.0	Mixed	35.44000539	125.79942633
2023-10-12	07:53:34	*Larus sp.*	1	5.0	Mixed	35.44000539	125.79942633
2023-10-12	07:53:34	*Larus sp.*	10	5.0	Mixed	35.44000539	125.79942633
2023-10-12	07:53:34	*Larus sp.*	22	5.0	Mixed	35.44000539	125.79942633
2023-10-12	08:07:41	*Larus crassirostris*	1	0.0	On the Water	35.41543254	125.76531539
2023-10-12	08:07:41	*Larus cachinans*	3		On the Water	35.41543254	125.76531539
2023-10-12	08:07:41	*Larus argentatus*	1		On the Water	35.41543254	125.76531539
2023-10-12	08:28:45	*Larus crassirostris*	1	6.0	In the Air	35.41010770	125.80861901
2023-10-12	08:31:12	*Larus crassirostris*	1	13.5	In the Air	35.41015572	125.81632427
2023-10-12	08:38:06	*Anas sp.*	5	111.8	In the Air	35.40996041	125.83696776
2023-10-12	08:42:59	*Larus crassirostris*	1	25.1	In the Air	35.40988272	125.85183310
2023-10-12	08:44:24	*Larus crassirostris*	1	25.1	In the Air	35.40991849	125.85337304
2023-10-12	08:51:05	*Larus crassirostris*	1	0.0	On the Water	35.41031858	125.87670691
2023-10-12	08:56:31	*Larus crassirostris*	1	14.6	In the Air	35.40992278	125.89301127
2023-10-12	09:03:52	*Larus crassirostris*	1	10.5	In the Air	35.40991613	125.91495705
2023-10-12	09:09:26	*Larus crassirostris*	1	8.4	In the Air	35.41002129	125.92032340
2023-10-12	09:11:36	*Larus crassirostris*	1	0.0	On the Water	35.41057259	125.93976959
2023-10-12	09:52:07	*Larus crassirostris*	1	4.5	In the Air	35.37984677	126.02573253
2023-10-12	09:52:41	*Larus crassirostris*	1	0.0	On the Water	35.37977926	126.02303938
2023-10-12	09:52:41	*Larus crassirostris*	1	0.0	On the Water	35.37977926	126.02303938
2023-10-12	09:53:47	*Larus crassirostris*	1	0.0	On the Water	35.37974017	126.02055186
2023-10-12	09:53:52	*Larus crassirostris*	1	22.3	In the Air	35.37970938	126.01936842
2023-10-12	10:00:39	*Larus crassirostris*	1	2.7	In the Air	35.37988685	125.99802182
2023-10-12	10:02:57	*Larus crassirostris*	1	8.2	In the Air	35.37996313	125.99086219
2023-10-12	10:06:26	*Larus crassirostris*	1	20.8	In the Air	35.37986521	125.97958691
2023-10-12	10:08:15	*Larus crassirostris*	1	0.0	On the Water	35.37988743	125.97332989
2023-10-12	10:16:39	*Larus crassirostris*	1	15.7	In the Air	35.37994108	125.94592507
2023-10-12	10:26:27	*Larus crassirostris*	1	11.3	In the Air	35.37982328	125.91548106
2023-10-12	10:32:22	*Larus crassirostris*	1	45.0	In the Air	35.38006554	125.89627619
2023-10-12	10:35:40	*Larus crassirostris*	1	0.0	On the Water	35.38016534	125.88569094
2023-10-12	10:39:49	*Larus crassirostris*	1	30.3	In the Air	35.38001042	125.87264563
2023-10-12	10:40:52	*Larus crassirostris*	1	30.3	In the Air	35.38002665	125.86916052
2023-10-12	10:42:51	*Larus crassirostris*	1	5.3	In the Air	35.37998725	125.86270592
2023-10-12	10:51:21	*Larus crassirostris*	1	22.5	In the Air	35.37979180	125.83567788
2023-10-12	10:59:54	*Larus crassirostris*	1	35.1	In the Air	35.37979063	125.80864459
2023-10-12	11:00:48	*Larus crassirostris*	1	0.0	On the Water	35.37985588	125.80601933
2023-10-12	11:15:38	*Larus crassirostris*	1	17.3	In the Air	35.38019764	125.75899960
2023-10-12	12:11:23	*Larus crassirostris*	1	0.0	On the Water	35.28932521	125.78788683
2023-10-12	12:20:47	*Larus crassirostris*	1	0.0	On the Water	35.28939302	125.81734754
2023-10-12	12:22:41	*Larus cachinans*	1		On the Water	35.28940391	125.82317225
2023-10-12	12:24:59	*Larus crassirostris*	1	0.0	On the Water	35.28950245	125.83052299
2023-10-12	12:25:40	*Larus crassirostris*	1	0.0	On the Water	35.28951012	125.83252872
2023-10-12	12:42:11	*Larus crassirostris*	2	3.5	In the Air	35.29031449	125.88644292
2023-10-12	12:51:03	*Larus crassirostris*	1	24.4	In the Air	35.29048930	125.91539779
2023-10-12	13:01:50	*Larus crassirostris*	1	7.0	In the Air	35.28980063	125.95007815
2023-10-12	13:15:15	*Larus crassirostris*	2	36.6	In the Air	35.28851953	125.99375207
2023-10-12	13:18:09	*Larus crassirostris*	1	7.9	In the Air	35.28810359	126.00283747
2023-10-12	13:20:57	*Larus cachinans*	1		On the Water	35.28805764	126.00957341
2023-10-12	13:44:32	*Larus crassirostris*	1	4.7	In the Air	35.25936335	126.00770766
2023-10-12	13:46:15	*Larus crassirostris*	1	6.9	In the Air	35.25943216	126.00227954
2023-10-12	13:49:27	*Larus crassirostris*	1	13.3	In the Air	35.25945488	125.99179116
2023-10-12	14:07:37	*Larus cachinans*	1	1.0	In the Air	35.25865823	125.93162218
2023-10-12	14:16:57	*Larus crassirostris*	1	0.0	On the Water	35.25843002	125.90118492
2023-10-12	14:32:37	*Larus cachinans*	1		On the Water	35.25894285	125.85021831
2023-10-12	14:32:37	*Larus crassirostris*	1	0.0	On the Water	35.25894285	125.85021831
2023-10-12	14:35:06	*Larus crassirostris*	1	0.0	On the Water	35.25876783	125.84229761
2023-10-12	14:36:08	*Larus crassirostris*	1	5.9	In the Air	35.25878663	125.83986835

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-10-12	14:39:04	*Larus crassirostris*	1	7.2	In the Air	35.25869425	125.82936899
2023-10-12	14:43:13	*Larus crassirostris*	1	101.4	In the Air	35.25844915	125.81622571
2023-10-12	14:51:34	*Larus crassirostris*	1	4.7	In the Air	35.25785705	125.78879983
2023-10-12	15:00:50	*Larus crassirostris*	2	1.0	In the Air	35.25902692	125.75915990
2023-10-12	15:03:04	*Larus crassirostris*	1	6.9	In the Air	35.25912551	125.75200119
2023-10-12	15:24:39	*Larus crassirostris*	1	17.5	In the Air	35.22912293	125.79072434
2023-10-12	15:26:05	*Larus argentatus*	1		On the Water	35.22924809	125.79492037
2023-10-12	15:27:04	*Larus crassirostris*	1	0.0	On the Water	35.22946614	125.79821367
2023-10-12	15:29:10	*Larus crassirostris*	2	3.6	In the Air	35.22979546	125.80444852
2023-10-12	15:30:21	*Larus crassirostris*	1	12.5	In the Air	35.22998350	125.80799456
2023-10-12	15:36:38	*Larus crassirostris*	1	9.2	In the Air	35.23037687	125.82614513
2023-10-12	15:41:26	*Larus crassirostris*	1	0.0	On the Water	35.22995769	125.84003184
2023-10-12	15:49:28	*Larus crassirostris*	1	9.3	In the Air	35.22868091	125.86315980
2023-10-12	15:52:22	*Larus crassirostris*	1	0.0	On the Water	35.22894084	125.87118101
2023-10-12	15:55:05	*Larus crassirostris*	2	0.0	On the Water	35.22964991	125.87885108
2023-10-12	16:01:12	*Larus crassirostris*	1	0.0	On the Water	35.23080957	125.89687261
2023-10-12	16:02:14	*Larus crassirostris*	2	10.6	In the Air	35.23061986	125.90000369
2023-10-12	16:08:13	*Larus crassirostris*	2	5.8	In the Air	35.23050581	125.91734078
2023-10-12	16:18:24	*Larus crassirostris*	1	9.6	In the Air	35.23072154	125.93152017
2023-10-12	16:21:44	*Larus crassirostris*	2	4.6	In the Air	35.23106216	125.94972107
2023-10-12	16:23:52	*Larus crassirostris*	1	35.4	In the Air	35.23077681	125.96063962
2023-10-12	16:25:35	*Larus crassirostris*	1	14.7	In the Air	35.23072812	125.96575198
2023-10-12	16:26:29	*Larus crassirostris*	3	2.6	In the Air	35.23075790	125.96891839
2023-10-12	16:28:00	*Larus crassirostris*	2	38.9	In the Air	35.23075195	125.97345522
2023-10-12	16:29:29	*Larus crassirostris*	1	8.2	In the Air	35.23073360	125.97773383
2023-10-12	16:32:19	*Larus crassirostris*	1	3.1	In the Air	35.23063181	125.98609154
2023-10-13	07:03:18	*Larus crassirostris*	1	27.5	In the Air	35.35020911	125.97839339
2023-10-13	07:05:59	*Larus crassirostris*	1	7.9	In the Air	35.35001311	125.97005770
2023-10-13	07:07:01	*Larus crassirostris*	1	23.5	In the Air	35.35079682	125.96701230
2023-10-13	07:08:38	*Larus crassirostris*	1	13.4	In the Air	35.35048257	125.96310647
2023-10-13	07:10:00	*Larus crassirostris*	1	12.1	In the Air	35.34983222	125.95887661
2023-10-13	07:11:06	*Larus crassirostris*	1	26.1	In the Air	35.34970669	125.95513589
2023-10-13	07:17:26	*Larus crassirostris*	2	54.2	In the Air	35.34984338	125.93482590
2023-10-13	07:20:03	*Larus crassirostris*	1	21.8	In the Air	35.34987085	125.92663377
2023-10-13	07:23:01	*Larus crassirostris*	1	24.8	In the Air	35.34991687	125.91728522
2023-10-13	07:30:53	*Larus crassirostris*	1	1.8	In the Air	35.35012614	125.89299429
2023-10-13	07:35:49	*Larus crassirostris*	1	19.1	In the Air	35.35011230	125.87771719
2023-10-13	07:36:42	*Larus crassirostris*	1	28.5	In the Air	35.35004656	125.87486912
2023-10-13	07:39:45	*Larus crassirostris*	1	2.4	In the Air	35.34997071	125.86595869
2023-10-13	07:48:07	*Larus crassirostris*	1	1.0	In the Air	35.34995005	125.86139209
2023-10-13	07:56:35	*Larus crassirostris*	1	101.7	In the Air	35.34988580	125.81366338
2023-10-13	08:09:28	*Larus argentatus*	1	20.6	In the Air	35.35006773	125.77385300
2023-10-13	08:11:43	*Larus crassirostris*	1	8.4	In the Air	35.35003103	125.76646241
2023-10-13	08:14:28	*Larus crassirostris*	1	24.5	In the Air	35.34989585	125.75832405
2023-10-13	08:16:47	*Larus crassirostris*	1	0.0	On the Water	35.34981098	125.75090305
2023-10-13	08:17:58	*Larus crassirostris*	1	28.6	In the Air	35.34974409	125.74756164
2023-10-13	8:18	*Larus argentatus*	1	28.6	In the Air	35.34974409	125.74756164
2023-10-13	08:19:16	*Ardea alba*	1	28.6	In the Air	35.34942023	125.74461330
2023-10-13	08:44:37	*Larus argentatus*	1	42.3	In the Air	35.32090847	125.78721058
2023-10-13	08:56:42	*Larus argentatus*	1	17.4	In the Air	35.32019098	125.82488421
2023-10-13	09:05:15	*Larus crassirostris*	1	26.0	In the Air	35.32001941	125.85194439
2023-10-13	09:14:02	*Larus argentatus*	1	12.3	In the Air	35.32024743	125.88047689
2023-10-13	09:17:01	*Larus crassirostris*	3	0.0	On the Water	35.32026888	125.88877066
2023-10-13	09:17:37	*Larus crassirostris*	3	0.0	On the Water	35.32047551	125.89185624
2023-10-13	09:19:47	*Anas poecilorhyncha*	1		On the Water	35.32020752	125.89867859
2023-10-13	09:26:27	*Larus crassirostris*	2	0.0	On the Water	35.31986865	125.92046233
2023-10-13	09:30:08	*Larus crassirostris*	1	0.0	On the Water	35.31987702	125.93255998
2023-10-13	09:36:47	*Larus crassirostris*	1	24.9	In the Air	35.32003310	125.95415014
2023-10-13	09:39:17	*Larus crassirostris*	1	24.9	In the Air	35.32007191	125.95552112
2023-10-13	09:40:57	*Aythya marila*	7	10.0	In the Air	35.32024136	125.96799024
2023-11-14	08:06:34	*Larus crassirostris*	1	15.0	In the Air	35.23024952	125.98995482
2023-11-14	08:16:32	*Larus crassirostris*	1	6.7	In the Air	35.23009546	125.95954052
2023-11-14	08:19:28	*Larus crassirostris*	2	7.4	In the Air	35.23022460	125.95167566
2023-11-14	08:23:02	*Larus crassirostris*	1	29.9	In the Air	35.23025047	125.94239751
2023-11-14	08:25:07	*Larus crassirostris*	1	15.0	In the Air	35.23001448	125.93676325
2023-11-14	08:27:19	*Larus crassirostris*	1	10.0	In the Air	35.23030756	125.93130397
2023-11-14	08:33:01	*Larus crassirostris*	1	11.9	In the Air	35.22962929	125.91726233

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-11-14	08:45:43	*Larus crassirostris*	1	9.2	In the Air	35.23030564	125.88441752
2023-11-14	08:50:38	*Larus crassirostris*	3	11.3	In the Air	35.23039484	125.87155186
2023-11-14	08:52:24	*Larus crassirostris*	2	10.0	In the Air	35.23046410	125.86706958
2023-11-14	08:53:35	*Larus crassirostris*	3	38.5	In the Air	35.23002783	125.86367583
2023-11-14	09:00:42	*Larus crassirostris*	1	15.1	In the Air	35.22913954	125.84479426
2023-11-14	09:07:32	*Larus crassirostris*	2	12.8	In the Air	35.22926562	125.82672401
2023-11-14	09:12:27	*Larus crassirostris*	6	2.7	In the Air	35.22915612	125.81357724
2023-11-14	09:18:36	*Larus crassirostris*	1	16.9	In the Air	35.22946429	125.79562831
2023-11-14	09:22:28	*Larus crassirostris*	1	9.6	In the Air	35.22954888	125.78489899
2023-11-14	10:17:57	*Larus crassirostris*	1	5.0	In the Air	35.25998276	125.77278699
2023-11-14	10:21:22	*Larus crassirostris*	1	0.0	On the Water	35.26013409	125.78058720
2023-11-14	10:27:12	*Larus crassirostris*	1	23.1	In the Air	35.25987372	125.79503944
2023-11-14	10:49:06	*Larus crassirostris*	1	2.7	In the Air	35.25970369	125.85176684
2023-11-14	10:54:17	*Larus crassirostris*	1	3.3	In the Air	35.25965770	125.86567709
2023-11-14	11:04:22	*Larus crassirostris*	1	2.7	In the Air	35.25993388	125.89348287
2023-11-14	11:12:29	*Larus crassirostris*	1	26.8	In the Air	35.25977189	125.91550684
2023-11-14	11:17:13	*Larus crassirostris*	1	0.0	On the Water	35.25988423	125.92881972
2023-11-14	11:32:22	*Larus crassirostris*	1	32.0	In the Air	35.25982888	125.97217781
2023-11-14	11:38:15	*Larus crassirostris*	1	8.2	In the Air	35.25997658	125.98982225
2023-11-15	07:39:46	*Larus crassirostris*	3	6.3	In the Air	35.28977101	125.97520131
2023-11-15	07:48:30	*Larus crassirostris*	1	24.0	In the Air	35.29057013	125.95630881
2023-11-15	07:56:54	*Larus crassirostris*	2	15.0	In the Air	35.28935904	125.93750967
2023-11-15	08:03:09	*Larus crassirostris*	1	20.0	In the Air	35.28992253	125.92365206
2023-11-15	08:13:29	*Larus crassirostris*	2	3.0	In the Air	35.28977465	125.89381218
2023-11-15	08:19:08	*Larus crassirostris*	2	12.7	In the Air	35.28973538	125.87821275
2023-11-15	08:26:29	*Larus crassirostris*	1	0.0	On the Water	35.28982448	125.85808098
2023-11-15	08:32:21	*Larus crassirostris*	2	0.0	On the Water	35.28954149	125.84050397
2023-11-15	08:42:03	*Larus crassirostris*	1	0.0	On the Water	35.29007330	125.81849807
2023-11-15	08:42:30	*Larus crassirostris*	1	8.6	In the Air	35.29031885	125.81721952
2023-11-15	09:27:35	*Larus crassirostris*	1	15.0	In the Air	35.31993692	125.76256878
2023-11-15	09:52:07	*Larus crassirostris*	2	62.8	In the Air	35.31990282	125.83253313
2023-11-15	09:55:19	*Larus crassirostris*	1	12.3	In the Air	35.31998429	125.84189399
2023-11-15	11:33:54	*Larus crassirostris*	1	10.0	In the Air	35.35003083	125.96402657
2023-11-15	12:04:29	*Larus crassirostris*	1	25.0	In the Air	35.35000014	125.87169269
2023-11-15	12:20:03	*Larus crassirostris*	1	9.1	In the Air	35.35013543	125.82354023
2023-11-15	12:21:52	*Larus crassirostris*	1	0.0	On the Water	35.35007719	125.81827717
2023-11-15	12:26:37	*Larus crassirostris*	1	0.0	On the Water	35.35000856	125.80325448
2023-11-15	12:30:28	*Larus crassirostris*	2	25.0	In the Air	35.35000404	125.79172381
2023-11-15	12:33:39	*Larus crassirostris*	1	30.0	In the Air	35.34995750	125.78192787
2023-11-15	13:02:08	*Larus crassirostris*	1	30.0	In the Air	35.38018094	125.75676220
2023-11-15	13:05:07	*Larus crassirostris*	1	25.0	In the Air	35.38032748	125.76603857
2023-11-15	13:13:16	*Larus crassirostris*	1	25.0	In the Air	35.37995192	125.79145629
2023-11-15	13:26:21	*Larus crassirostris*	2	15.4	In the Air	35.38012239	125.83213567
2023-11-15	13:46:15	*Larus crassirostris*	1	27.1	In the Air	35.37997057	125.89456813
2023-11-15	13:47:58	*Larus crassirostris*	3	25.0	In the Air	35.38007187	125.90024502
2023-11-15	14:05:26	*Larus crassirostris*	3	4.9	In the Air	35.38000315	125.95575385
2023-11-15	14:12:32	*Larus crassirostris*	1	7.7	In the Air	35.38015141	125.97822084
2023-11-15	14:14:18	*Larus crassirostris*	2	10.0	In the Air	35.38009918	125.98380601
2023-11-15	14:19:12	*Larus crassirostris*	1	3.3	In the Air	35.38010677	125.99934459
2023-11-15	14:24:15	*Larus crassirostris*	3	15.0	In the Air	35.37984502	126.01614185
2023-11-15	14:24:15	*Larus crassirostris*	1	15.0	In the Air	35.37984502	126.01614185
2023-11-21	07:35:52	*Larus crassirostris*	1	10.0	In the Air	35.44056837	125.94544155
2023-11-21	07:37:43	*Larus crassirostris*	1	10.0	In the Air	35.44026466	125.93945878
2023-11-21	07:39:59	*Larus crassirostris*	2	15.0	In the Air	35.43957175	125.93266715
2023-11-21	07:42:04	*Larus crassirostris*	1	15.0	In the Air	35.43962867	125.92599163
2023-11-21	07:42:04	*Larus argentatus*	1	15.0	In the Air	35.43962867	125.92599163
2023-11-21	07:43:44	*Larus crassirostris*	3	10.0	In the Air	35.44038986	125.92075465
2023-11-21	07:44:24	*Larus crassirostris*	1	10.0	In the Air	35.44050455	125.91874725
2023-11-21	07:45:54	*Larus crassirostris*	1	10.0	In the Air	35.44036909	125.91420532
2023-11-21	07:49:14	*Larus crassirostris*	1	10.0	In the Air	35.44009583	125.90341710
2023-11-21	07:51:02	*Larus crassirostris*	1	9.0	In the Air	35.44034903	125.89753502
2023-11-21	07:55:12	*Larus argentatus*	1	10.0	In the Air	35.43865575	125.88527251
2023-11-21	07:58:02	*Larus crassirostris*	1	0.0	On the Water	35.43820353	125.87613703
2023-11-21	07:59:39	*Larus crassirostris*	2	15.0	In the Air	35.43934578	125.87111000
2023-11-21	08:03:13	*Larus crassirostris*	1	12.0	In the Air	35.44022172	125.86116828
2023-11-21	08:05:05	*Larus crassirostris*	4	12.0	In the Air	35.43985813	125.85338380
2023-11-21	08:08:08	*Larus crassirostris*	1	10.0	In the Air	35.43957272	125.84371189
2023-11-21	08:09:09	*Larus crassirostris*	1	12.0	In the Air	35.43996353	125.84036815

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-11-21	08:09:09	*Larus crassirostris*	1	12.0	In the Air	35.43996353	125.84036815
2023-11-21	08:17:27	*Larus crassirostris*	1	12.0	In the Air	35.43931759	125.81404659
2023-11-21	08:18:48	*Larus crassirostris*	1	15.0	In the Air	35.43954691	125.80983981
2023-11-21	08:21:41	*Larus crassirostris*	1	15.0	In the Air	35.43969375	125.80056917
2023-11-21	08:21:50	*Larus crassirostris*	1	0.0	On the Water	35.43972553	125.79991868
2023-11-21	08:35:44	*Phalacrocorax sp.*	200	30.0	In the Air	35.41837865	125.76853525
2023-11-21	08:45:53	*Larus crassirostris*	1	10.0	In the Air	35.41038027	125.76879021
2023-11-21	08:47:59	*Larus crassirostris*	2	10.0	In the Air	35.40999017	125.77423005
2023-11-21	08:52:55	*Larus crassirostris*	3	15.0	In the Air	35.40976773	125.79006845
2023-11-21	08:56:19	*Larus crassirostris*	1	15.0	In the Air	35.40983869	125.80153004
2023-11-21	08:56:19	*Larus argentatus*	1	15.0	In the Air	35.40983869	125.80153004
2023-11-21	08:57:20	*Larus crassirostris*	1	0.0	On the Water	35.40982072	125.80479490
2023-11-21	09:03:28	*Larus crassirostris*	7	0.0	On the Water	35.41084807	125.82460557
2023-11-21	09:04:18	*Larus crassirostris*	2	9.0	In the Air	35.41071987	125.82721617
2023-11-21	09:07:41	*Larus crassirostris*	1	8.0	In the Air	35.40922686	125.83732257
2023-11-21	09:08:29	*Larus crassirostris*	1	0.0	On the Water	35.40911761	125.83974985
2023-11-21	09:10:42	*Larus crassirostris*	1	12.0	In the Air	35.41044908	125.84655898
2023-11-21	09:10:42	*Larus argentatus*	1	12.0	In the Air	35.41044908	125.84655898
2023-11-21	9:13	*Larus crassirostris*	1	25.0	In the Air	35.41044908	125.84655898
2023-11-21	09:14:28	*Larus crassirostris*	1	25.0	In the Air	35.40961280	125.85868749
2023-11-21	09:19:18	*Larus crassirostris*	1	10.0	In the Air	35.41007444	125.87401130
2023-11-21	09:21:39	*Larus crassirostris*	4	0.0	On the Water	35.40987363	125.88071223
2023-11-21	09:24:29	*Larus crassirostris*	9	0.0	On the Water	35.40908534	125.89014739
2023-11-21	09:28:37	*Larus crassirostris*	1	0.0	On the Water	35.40988947	125.90297523
2023-11-21	09:29:52	*Larus crassirostris*	2	0.0	On the Water	35.40957563	125.90695725
2023-11-21	09:33:23	*Larus crassirostris*	8	0.0	On the Water	35.41000300	125.91785197
2023-11-21	09:34:06	*Larus crassirostris*	12	0.0	On the Water	35.40976013	125.92014104
2023-11-21	09:38:51	*Larus crassirostris*	6	0.0	On the Water	35.41044890	125.93508592
2023-11-21	09:38:51	*Larus crassirostris*	1	0.0	On the Water	35.41044890	125.93508592
2023-11-21	09:44:51	*Larus crassirostris*	2	0.0	On the Water	35.40992529	125.95386655
2023-11-21	09:55:03	*Larus crassirostris*	1	0.0	On the Water	35.40980883	125.98535192
2023-11-21	09:55:03	*Larus crassirostris*	9	0.0	On the Water	35.40980883	125.98535192
2023-11-21	10:04:29	*Larus crassirostris*	1	10.0	In the Air	35.40959453	126.01418518
2023-11-21	10:05:49	*Larus crassirostris*	1	0.0	On the Water	35.40961663	126.01825270
2023-12-04	09:32:33	*Larus crassirostris*	1	15.0	In the Air	35.44033540	125.95759284
2023-12-04	09:35:59	*Larus crassirostris*	1	20.0	In the Air	35.44036024	125.94714088
2023-12-04	09:41:32	*Larus cachinans*	1		On the Water	35.44027510	125.93008997
2023-12-04	09:51:21	*Larus crassirostris*	1	4.6	In the Air	35.44005095	125.90023581
2023-12-04	09:52:37	*Larus crassirostris*	1	0.0	On the Water	35.44000537	125.89614501
2023-12-04	10:01:07	*Larus crassirostris*	1	15.1	In the Air	35.44034954	125.87076190
2023-12-04	10:03:06	*Larus cachinans*	1		On the Water	35.44034772	125.86450411
2023-12-04	10:18:36	*Larus crassirostris*	1	13.2	In the Air	35.44008881	125.81825046
2023-12-04	11:00:07	*Gavia pacifica*	1	1.0	In the Air	35.41002886	125.80768943
2023-12-04	11:04:36	*Larus argentatus*	1		On the Water	35.40989266	125.82124544
2023-12-04	11:15:55	*Larus crassirostris*	1	0.0	On the Water	35.40969464	125.85500133
2023-12-04	11:18:50	*Larus crassirostris*	1	0.0	On the Water	35.40967736	125.86363531
2023-12-04	11:52:47	*Podiceps cristatus*	1		On the Water	35.41013086	125.96520162
2023-12-04	11:55:41	*Larus crassirostris*	1	15.0	In the Air	35.41003216	125.97424017
2023-12-04	11:56:22	*Larus crassirostris*	1	0.0	On the Water	35.41003256	125.97606201
2023-12-05	07:27:43	*Larus crassirostris*	2	0.0	On the Water	35.37978788	126.02077823
2023-12-05	07:31:16	*Larus crassirostris*	1	5.0	In the Air	35.38005733	126.00936684
2023-12-05	07:33:50	*Larus crassirostris*	1	5.0	In the Air	35.38016214	126.00157203
2023-12-05	07:34:28	*Larus crassirostris*	1	10.0	In the Air	35.38016214	126.00157203
2023-12-05	07:35:39	*Larus crassirostris*	2	0.0	On the Water	35.38013941	125.99600872
2023-12-05	07:37:10	*Larus crassirostris*	4	1.0	In the Air	35.38011290	125.99152602
2023-12-05	07:39:39	*Larus argentatus*	1	10.0	In the Air	35.38004181	125.98384585
2023-12-05	07:39:39	*Larus crassirostris*	1	10.0	In the Air	35.38004181	125.98384585
2023-12-05	07:39:39	*Larus crassirostris*	1	10.0	In the Air	35.38004181	125.98384585
2023-12-05	07:39:39	*Larus crassirostris*	1	10.0	In the Air	35.38004181	125.98384585
2023-12-05	07:42:32	*Larus crassirostris*	5	10.0	In the Air	35.37992564	125.97496335
2023-12-05	07:42:32	*Larus crassirostris*	1	10.0	In the Air	35.37992564	125.97496335
2023-12-05	07:44:48	*Larus crassirostris*	1	20.0	In the Air	35.38003126	125.96798594
2023-12-05	07:45:19	*Larus crassirostris*	2	8.0	In the Air	35.38006932	125.96654857
2023-12-05	07:46:58	*Larus crassirostris*	1	20.0	In the Air	35.38020168	125.96139444
2023-12-05	07:48:32	*Larus crassirostris*	1	2.0	In the Air	35.38024394	125.95678056
2023-12-05	07:49:59	*Larus crassirostris*	2	10.0	In the Air	35.38019422	125.95205653
2023-12-05	07:53:08	*Larus crassirostris*	4	15.0	In the Air	35.38000791	125.94218241
2023-12-05	07:56:10	*Larus crassirostris*	7	20.5	In the Air	35.37996995	125.93285705

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-12-05	07:58:03	*Larus argentatus*	1	25.0	In the Air	35.38002622	125.92709579
2023-12-05	08:00:58	*Larus crassirostris*	1	11.3	In the Air	35.38021001	125.91815458
2023-12-05	08:02:32	*Larus crassirostris*	1	25.0	In the Air	35.38021138	125.91311430
2023-12-05	08:03:45	*Larus crassirostris*	4	25.0	In the Air	35.38021138	125.91311430
2023-12-05	08:06:24	*Larus crassirostris*	1	8.5	In the Air	35.38011352	125.90111297
2023-12-05	08:10:15	*Larus crassirostris*	1	9.0	In the Air	35.38007648	125.88948984
2023-12-05	08:13:09	*Larus crassirostris*	4	13.0	In the Air	35.38009697	125.88051897
2023-12-05	08:18:12	*Larus crassirostris*	4	5.0	In the Air	35.37994429	125.86453571
2023-12-05	08:20:26	*Larus crassirostris*	1	14.0	In the Air	35.38010334	125.85759125
2023-12-05	08:21:34	*Larus crassirostris*	2	11.0	In the Air	35.38017638	125.85416804
2023-12-05	08:25:19	*Larus crassirostris*	2	14.0	In the Air	35.38011546	125.84254423
2023-12-05	08:26:48	*Larus crassirostris*	1	12.0	In the Air	35.38017714	125.83773296
2023-12-05	08:28:19	*Larus crassirostris*	1	5.0	In the Air	35.38019948	125.83321198
2023-12-05	08:37:37	*Larus argentatus*	1	20.0	In the Air	35.38013824	125.80378922
2023-12-05	08:47:49	*Larus crassirostris*	1	22.0	In the Air	35.38014537	125.77186288
2023-12-05	09:26:46	*Larus crassirostris*	1	13.0	In the Air	35.35026526	125.79658966
2023-12-05	09:40:42	*Larus crassirostris*	1	0.0	On the Water	35.34982068	125.83563428
2023-12-05	09:40:42	*Larus crassirostris*	6	0.0	On the Water	35.34982068	125.83563428
2023-12-05	09:42:53	*Larus crassirostris*	1	0.0	On the Water	35.34980813	125.84175729
2023-12-05	09:44:01	*Larus crassirostris*	1	16.0	In the Air	35.34973471	125.84507172
2023-12-05	09:53:55	*Larus crassirostris*	2	23.0	In the Air	35.35014833	125.87275494
2023-12-05	09:53:55	*Larus crassirostris*	1	23.0	In the Air	35.35014833	125.87275494
2023-12-05	10:02:06	*Larus crassirostris*	2	28.0	In the Air	35.35015064	125.89619456
2023-12-05	10:10:32	*Larus crassirostris*	1	19.0	In the Air	35.35018066	125.91966962
2023-12-05	10:25:47	*Larus crassirostris*	2	26.0	In the Air	35.34996067	125.96229972
2023-12-05	11:02:48	*Podiceps cristatus*	1	1.0	In the Air	35.32013614	125.93687819
2023-12-05	11:16:12	*Larus crassirostris*	2	5.0	In the Air	35.32016900	125.89791233
2023-12-05	11:16:12	*Larus crassirostris*	3	5.0	In the Air	35.32016900	125.89791233
2023-12-05	11:22:28	*Larus crassirostris*	1	0.0	On the Water	35.32014480	125.87980891
2023-12-05	11:34:45	*Larus crassirostris*	1	25.0	In the Air	35.31998837	125.84391638
2023-12-05	11:37:55	*Larus crassirostris*	1	20.0	In the Air	35.32031098	125.83448983
2023-12-05	12:01:44	*Larus crassirostris*	1	0.0	On the Water	35.32003996	125.76511554
2023-12-05	12:07:24	*Larus crassirostris*	1	0.0	On the Water	35.32013558	125.74855988
2023-12-05	12:37:27	*Larus crassirostris*	1	30.0	In the Air	35.28997306	125.79219089
2023-12-05	12:43:53	*Gavia pacifica*	1	10.0	In the Air	35.29013412	125.81115366
2023-12-05	12:58:33	*Podiceps cristatus*	1	1.0	In the Air	35.28998844	125.85466803
2023-12-05	13:18:11	*Larus crassirostris*	1	26.0	In the Air	35.28975518	125.91310152
2023-12-05	13:32:40	*Larus crassirostris*	1	0.0	On the Water	35.28986344	125.95692663
2023-12-05	13:34:43	*Larus crassirostris*	1	15.0	In the Air	35.28991688	125.96311863
2023-12-05	13:36:06	*Larus crassirostris*	2	0.0	On the Water	35.29001186	125.96706889
2023-12-05	13:39:53	*Larus crassirostris*	1	15.0	In the Air	35.29006595	125.97942944
2023-12-05	13:43:41	*Larus argentatus*	1	30.0	In the Air	35.29004981	125.99058868
2023-12-05	14:21:58	*Tadorna tadorna*	6	1.0	In the Air	35.25929440	125.98541449
2023-12-05	14:30:19	*Larus crassirostris*	1	0.0	On the Water	35.26001278	125.96189270
2023-12-05	14:30:19	*Larus crassirostris*	1	0.0	On the Water	35.26001278	125.96189270
2023-12-05	14:33:34	*Larus crassirostris*	2	0.0	On the Water	35.25983559	125.95246761
2023-12-05	14:37:52	*Larus crassirostris*	1	0.0	On the Water	35.26001024	125.94039555
2023-12-05	14:43:38	*Larus crassirostris*	1	18.0	In the Air	35.25973577	125.92399768
2023-12-05	14:48:57	*Larus crassirostris*	1	0.0	On the Water	35.25996164	125.90930089
2023-12-05	14:55:18	*Larus crassirostris*	4	0.0	On the Water	35.26009250	125.89164446
2023-12-05	15:04:52	*Larus crassirostris*	1	0.0	On the Water	35.25969818	125.86509594
2023-12-05	15:06:46	*Larus crassirostris*	1	8.0	In the Air	35.25973039	125.85977091
2023-12-05	15:11:36	*Larus crassirostris*	5	0.0	On the Water	35.25971825	125.84638988
2023-12-05	15:19:35	*Larus crassirostris*	1	20.0	In the Air	35.25968827	125.82464079
2023-12-05	15:27:14	*Larus crassirostris*	1	0.0	On the Water	35.25977394	125.80164203
2023-12-05	15:31:22	*Larus crassirostris*	1	0.0	On the Water	35.25975902	125.78915915
2023-12-05	15:34:40	*Larus crassirostris*	11	0.0	On the Water	35.26004434	125.77934981
2023-12-05	15:40:22	*Larus crassirostris*	1	0.0	On the Water	35.26015807	125.76215017
2023-12-05	15:44:04	*Larus crassirostris*	1	10.0	In the Air	35.26015527	125.75110961
2023-12-05	16:09:51	*Larus crassirostris*	3	25.0	In the Air	35.23006307	125.80423154
2023-12-05	16:10:46	*Larus crassirostris*	1	0.0	On the Water	35.22997120	125.80690595
2023-12-05	16:12:20	*Larus crassirostris*	1	25.0	In the Air	35.22989388	125.81175099
2023-12-05	16:14:24	*Larus crassirostris*	1	0.0	On the Water	35.22978957	125.81808963
2023-12-05	16:17:16	*Larus crassirostris*	4	0.0	On the Water	35.22956225	125.82675645
2023-12-05	16:17:16	*Larus crassirostris*	1	0.0	On the Water	35.22956225	125.82675645
2023-12-05	16:23:29	*Larus crassirostris*	1	0.0	On the Water	35.22976709	125.84541179
2023-12-05	16:26:48	*Larus argentatus*	1	1.0	In the Air	35.22978769	125.85552217
2023-12-05	16:29:11	*Larus crassirostris*	1	8.0	In the Air	35.22988080	125.86313051

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2023-12-05	16:33:20	*Larus crassirostris*	1	15.0	In the Air	35.23017788	125.87573440
2023-12-05	16:35:04	*Larus argentatus*	1	1.0	In the Air	35.23035437	125.88094487
2023-12-05	16:40:27	*Larus crassirostris*	1	10.0	In the Air	35.23019920	125.89738258
2023-12-05	16:43:35	*Larus crassirostris*	2	0.0	On the Water	35.22989636	125.90681224
2023-12-05	16:52:42	*Larus crassirostris*	1	25.0	In the Air	35.22971234	125.93422099
2023-12-05	16:54:49	*Larus crassirostris*	1	15.0	In the Air	35.22979299	125.94075805
2023-12-05	16:59:50	*Larus crassirostris*	2	17.0	In the Air	35.22998706	125.95609812
2023-12-05	17:01:37	*Larus crassirostris*	1	0.0	On the Water	35.22943809	125.96125294
2023-12-05	17:11:26	*Larus crassirostris*	1	0.0	On the Water	35.22992678	125.99120916
2023-12-05	17:12:37	*Larus crassirostris*	1	0.0	On the Water	35.22992705	125.99499407
2024-01-02	11:34:08	*Larus crassirostris*	1	8.9	In the Air	35.43975416	125.93929450
2024-01-02	11:44:43	*Larus crassirostris*	1	15.6	In the Air	35.43975963	125.90901538
2024-01-02	11:47:31	*Larus argentatus*	1	43.4	In the Air	35.43980804	125.90065872
2024-01-02	11:54:21	*Larus crassirostris*	2	5.0	In the Air	35.43966386	125.88093760
2024-01-02	11:58:05	*Larus crassirostris*	2	17.3	In the Air	35.44010624	125.87025720
2024-01-02	12:02:23	*Larus crassirostris*	1	20.2	In the Air	35.43993622	125.85788976
2024-01-02	12:21:36	*Larus crassirostris*	2	2.0	In the Air	35.43970048	125.80296779
2024-01-02	12:49:38	*Larus crassirostris*	1	0.0	On the Water	35.40980017	125.77836449
2024-01-02	12:51:49	*Larus crassirostris*	1	11.1	In the Air	35.40974206	125.78427343
2024-01-02	12:53:48	*Gavia arctica*	1	10.0	In the Air	35.40957948	125.79025833
2024-01-02	12:55:45	*Synthliboramphus antiquus*	3		On the Water	35.40977063	125.79527346
2024-01-02	12:58:39	*Larus canus*	1	18.2	In the Air	35.40987725	125.80441329
2024-01-02	13:01:13	*Gavia arctica*	1	10.0	In the Air	35.41005588	125.81161245
2024-01-02	13:13:13	*Larus crassirostris*	1	20.0	In the Air	35.40987393	125.84663387
2024-01-02	13:41:12	*Larus crassirostris*	3	20.0	In the Air	35.40992431	125.92877740
2024-01-02	13:47:27	*Larus crassirostris*	1	22.4	In the Air	35.40985426	125.94709665
2024-01-02	13:48:33	*Synthliboramphus antiquus*	2		On the Water	35.40970965	125.95021139
2024-01-02	13:51:19	*Larus argentatus*	1	28.5	In the Air	35.40979437	125.95834826
2024-01-02	13:58:53	*Larus crassirostris*	6	5.0	In the Air	35.40977946	125.98131941
2024-01-02	13:58:53	*Larus crassirostris*	1	5.0	In the Air	35.40977946	125.98131941
2024-01-02	14:50:54	*Synthliboramphus antiquus*	2		On the Water	35.38023351	125.96057620
2024-01-02	14:56:16	*Synthliboramphus antiquus*	2		On the Water	35.38012391	125.94402612
2024-01-02	15:04:39	*Synthliboramphus antiquus*	2		On the Water	35.38020189	125.92045190
2024-01-02	15:10:17	*Larus crassirostris*	1	16.9	In the Air	35.37983336	125.90472067
2024-01-02	15:15:06	*Larus crassirostris*	1	30.0	In the Air	35.37990826	125.89127389
2024-01-02	15:35:18	*Larus crassirostris*	1	21.2	In the Air	35.38001354	125.83474880
2024-01-02	15:38:45	*Synthliboramphus antiquus*	2		On the Water	35.38028521	125.82493783
2024-01-02	15:46:31	*Synthliboramphus antiquus*	2		On the Water	35.37985650	125.80181213
2024-01-02	15:51:33	*Synthliboramphus antiquus*	2		On the Water	35.38022133	125.78690276
2024-01-02	15:52:03	*Larus crassirostris*	1	3.0	In the Air	35.38018205	125.78570856
2024-01-02	15:57:06	*Synthliboramphus antiquus*	4		On the Water	35.38001041	125.77032341
2024-01-02	16:03:54	*Larus crassirostris*	2	2.7	In the Air	35.38013680	125.75053217
2024-01-02	16:23:17	*Gavia arctica*	4	10.0	In the Air	35.34971298	125.75878019
2024-01-02	16:25:54	*Larus crassirostris*	1	30.0	In the Air	35.34975839	125.76603273
2024-01-02	16:36:25	*Gavia pacifica*	1	3.3	In the Air	35.34988684	125.79741238
2024-01-02	16:42:32	*Synthliboramphus antiquus*	2		On the Water	35.34988248	125.81589976
2024-01-02	16:47:52	*Gavia arctica*	1	10.0	In the Air	35.34983648	125.83161067
2024-01-02	16:49:00	*Larus crassirostris*	1	24.2	In the Air	35.34991291	125.83513408
2024-01-02	17:20:29	*Larus argentatus*	1	24.1	In the Air	35.35014805	125.92793212
2024-01-03	12:21:52	*Larus crassirostris*	1	5.0	In the Air	35.25986690	125.93531498
2024-01-03	12:34:03	*Larus crassirostris*	1	1.0	In the Air	35.25976421	125.90411578
2024-01-03	12:46:11	*Larus argentatus*	1	34.6	In the Air	35.25964510	125.87611764
2024-01-04	13:06:14	*Larus argentatus*	1	32.2	In the Air	35.31961930	125.96198993
2024-01-04	13:16:53	*Larus crassirostris*	2	7.3	In the Air	35.31958702	125.93081370
2024-01-04	13:25:23	*Larus crassirostris*	1	21.9	In the Air	35.31934594	125.90614453
2024-01-04	13:30:41	*Larus crassirostris*	1	28.6	In the Air	35.31974194	125.89101906
2024-01-04	13:36:41	*Larus crassirostris*	1	67.5	In the Air	35.31955941	125.87413427
2024-01-04	13:39:08	*Larus crassirostris*	1	59.8	In the Air	35.31960182	125.86775874
2024-01-04	13:43:14	*Larus crassirostris*	4	29.2	In the Air	35.32028309	125.85656918
2024-01-04	13:45:01	*Larus crassirostris*	2	18.1	In the Air	35.32009109	125.85171412
2024-01-04	13:55:02	*Larus crassirostris*	1	12.7	In the Air	35.31965091	125.82373479
2024-01-04	13:56:26	*Larus crassirostris*	1	18.3	In the Air	35.31986648	125.81981556
2024-01-04	14:19:09	*Synthliboramphus antiquus*	4	4.5	In the Air	35.31964521	125.75589351
2024-01-04	14:40:29	*Synthliboramphus antiquus*	4	3.1	In the Air	35.28982431	125.75964926
2024-01-04	15:10:05	*Larus crassirostris*	2	11.2	In the Air	35.29020024	125.84627751
2024-01-04	15:31:24	*Larus argentatus*	1	8.0	In the Air	35.29027676	125.90952845
2024-01-04	17:10:18	*Larus crassirostris*	1	14.1	In the Air	35.25987807	125.81813475
2024-01-04	17:57:23	*Larus crassirostris*	1	3.3	In the Air	35.22936866	125.81023495

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2024-01-04	17:59:39	*Larus crassirostris*	1	5.2	In the Air	35.22951943	125.81688836
2024-02-23	16:15:53	*Larus crassirostris*	1	20.0	In the Air	35.23016228	125.99033496
2024-02-23	16:16:36	*Larus crassirostris*	1	20.0	In the Air	35.23008544	125.98872509
2024-02-23	16:16:43	*Larus crassirostris*	2	17.3	In the Air	35.23008544	125.98872509
2024-02-23	16:18:16	*Larus crassirostris*	1	13.3	In the Air	35.23002464	125.98385190
2024-02-23	16:18:57	*Larus crassirostris*	1	15.0	In the Air	35.22993972	125.98106804
2024-02-23	16:21:36	*Larus crassirostris*	1	15.0	In the Air	35.22988639	125.97329567
2024-02-23	16:22:15	*Larus crassirostris*	1	30.0	In the Air	35.22984147	125.97146514
2024-02-23	16:23:10	*Larus crassirostris*	1	30.0	In the Air	35.22987454	125.96893139
2024-02-23	16:23:53	*Larus crassirostris*	1	17.4	In the Air	35.22984781	125.96645121
2024-02-23	16:24:51	*Larus crassirostris*	1	8.7	In the Air	35.22994646	125.96363585
2024-02-23	16:25:40	*Larus crassirostris*	1	7.9	In the Air	35.22996657	125.96126682
2024-02-23		*Larus crassirostris*	1	63.0	In the Air	35.23040551	125.95830598
2024-02-23	16:28:00	*Larus crassirostris*	3	14.2	In the Air	35.23006654	125.95550286
2024-02-23	16:29:37	*Larus crassirostris*	1	5.9	In the Air	35.23001700	125.95156184
2024-02-23	16:32:38	*Larus crassirostris*	1	13.1	In the Air	35.22999618	125.94208132
2024-02-23	16:35:05	*Larus crassirostris*	1	15.0	In the Air	35.22999719	125.93517056
2024-02-23	16:38:03	*Larus crassirostris*	3	1.0	In the Air	35.23016139	125.92791790
2024-02-23	16:44:10	*Larus crassirostris*	1	0.0	On the Water	35.22982796	125.91038149
2024-02-23	16:45:38	*Larus crassirostris*	3	0.0	On the Water	35.22969840	125.90588183
2024-02-23	16:47:52	*Larus crassirostris*	61	0.0	Mixed	35.22956410	125.89900089
2024-02-23	16:53:40	*Larus crassirostris*	4	0.0	On the Water	35.22958303	125.88174401
2024-02-23	16:54:45	*Larus crassirostris*	2	0.0	On the Water	35.22970481	125.87819844
2024-02-23	17:12:57	*Larus crassirostris*	1	0.0	On the Water	35.22950505	125.82629852
2024-02-24	07:41:20	*Larus crassirostris*	1	3.3	In the Air	35.43964512	125.96178380
2024-02-24	08:08:41	*Larus crassirostris*	2	4.9	In the Air	35.44030661	125.88055791
2024-02-24	08:12:21	*Larus crassirostris*	1	45.8	In the Air	35.44007981	125.87012879
2024-02-24	08:14:14	*Synthliboramphus antiquus*	3		On the Water	35.43984930	125.86414937
2024-02-24	08:15:51	*Larus crassirostris*	1	1.3	In the Air	35.43986095	125.85974961
2024-02-24	08:16:29	*Synthliboramphus antiquus*	3		On the Water	35.43990436	125.85746683
2024-02-24	08:18:38	*Larus crassirostris*	1	11.0	In the Air	35.43995524	125.85170834
2024-02-24	08:24:09	*Larus crassirostris*	1	14.3	In the Air	35.43991299	125.83523086
2024-02-24	08:25:01	*Larus crassirostris*	1	2.7	In the Air	35.43991238	125.83266351
2024-02-24	08:34:27	*Synthliboramphus antiquus*	2	1.0	In the Air	35.43999570	125.80638475
2024-02-24	08:34:54	*Larus crassirostris*	1	11.7	In the Air	35.43994055	125.80419643
2024-02-24	09:01:07	*Larus crassirostris*	1	0.0	On the Water	35.40975353	125.77027594
2024-02-24	09:11:09	*Larus crassirostris*	1	1.0	In the Air	35.40982458	125.78242309
2024-02-24	09:15:02	*Larus crassirostris*	1	5.0	In the Air	35.41014940	125.80717896
2024-02-24	09:30:42	*Synthliboramphus antiquus*	1		On the Water	35.40973695	125.85497495
2024-02-24	09:43:24	*Larus crassirostris*	1	2.7	In the Air	35.40990247	125.89555410
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2024-02-24	10:13:42	*Larus crassirostris*	2	1.0	In the Air	35.41004217	125.98963438
2024-02-24	10:53:41	*Synthliboramphus antiquus*	1		On the Water	35.37993800	125.97901322
2024-02-24	11:11:08	*Synthliboramphus antiquus*	3		On the Water	35.38042954	125.92836675
2024-02-24	11:38:07	*Larus crassirostris*	1	13.5	In the Air	35.38010233	125.84972752
2024-02-24	11:49:06	*Synthliboramphus antiquus*	6		On the Water	35.38024900	125.81993600
2024-02-24	11:50:34	*Synthliboramphus antiquus*	4	1.0	In the Air	35.38021048	125.81349197
2024-02-24	11:56:14	*Synthliboramphus antiquus*	10		On the Water	35.37992301	125.79465212
2024-02-24	12:30:28	*Synthliboramphus antiquus*	3		On the Water	35.34989810	125.76057334
2024-02-24	12:40:47	*Larus crassirostris*	1	1.0	In the Air	35.35013324	125.79042264
2024-02-24	12:54:38	*Synthliboramphus antiquus*	5	1.0	In the Air	35.35011321	125.83256103
2024-02-24	12:55:59	*Synthliboramphus antiquus*	1	1.0	In the Air	35.35018826	125.83662789
2024-02-24	13:28:09	*Larus crassirostris*	1	22.1	In the Air	35.34989408	125.93742988
2024-02-24	13:30:36	*Synthliboramphus antiquus*	1		On the Water	35.34982985	125.94510674
2024-02-24	14:23:55	*Larus crassirostris*	2	8.0	In the Air	35.28970159	125.99665189
2024-02-24	14:27:54	*Larus crassirostris*	1	7.0	In the Air	35.28962897	125.98440966
2024-02-24	14:37:11	*Larus crassirostris*	1	9.0	In the Air	35.28971485	125.95580236
2024-02-24	15:38:51	*Larus crassirostris*	1	43.6	In the Air	35.28942795	125.76585745
2024-02-24	15:39:01	*Larus crassirostris*	1	8.5	In the Air	35.28942795	125.76585745
2024-02-24	15:44:34	*Larus crassirostris*	1	23.0	In the Air	35.28957038	125.74810960
2024-02-25	13:17:26	*Synthliboramphus antiquus*	1	1.0	In the Air	35.32002261	125.77450859
2024-02-25	13:21:52	*Synthliboramphus antiquus*	2	1.0	In the Air	35.31990883	125.78782202
2024-02-25	13:24:22	*Synthliboramphus antiquus*	4	1.0	In the Air	35.31989228	125.79559814
2024-02-25	13:41:17	*Larus crassirostris*	4	0.0	On the Water	35.32001729	125.84887000
2024-02-25	13:44:43	*Larus crassirostris*	1	0.0	On the Water	35.31997990	125.85931218
2024-02-25	13:45:56	*Synthliboramphus antiquus*	2	1.0	In the Air	35.31997037	125.86299226
2024-02-25	13:48:51	*Larus crassirostris*	1	7.0	In the Air	35.31987628	125.87181270
2024-02-25	13:51:37	*Larus crassirostris*	1	2.0	In the Air	35.31971929	125.88081304

Date	Time	Scientific Name	Number of Individuals	Flight height	Location	Latitude	Longitude
2024-02-25	13:52:31	*Larus crassirostris*	2	2.0	In the Air	35.31970184	125.88369091
2024-02-25	13:53:39	*Larus crassirostris*	1	5.6	In the Air	35.31966036	125.88675577

APPENDIX D MARINE MAMMAL UNDERWATER NOISE IMPACT ASSESSMENT

ESIA for Project Anma

Underwater Noise Modelling Report

PREPARED FOR
Anma Offshore Wind Energy Co., Ltd.

DATE
19 June 2025

REFERENCE
0751215



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1. INTRODUCTION

1.1 PRESENTATION OF THE PROJECT

The Project consists of two (2) phases - Phase 1 and Phase 2 - corresponding to Electricity Business Licences (EBL 1 and EBL 2). The Project will utilise Siemens Gamesa Renewable Energy's (SGRE) SG DD-236 14.0 MW wind turbine generators (hereinafter as "WTGs"). Phase 1 consists of 16 WTG units with a permitted total capacity of 224 MW and Phase 2 consists of 22 WTG units with a permitted total capacity of 308 MW. The Project's wind turbines area will take up a total area of 80 km^2 of public waters.

The WTGs will be connected via 66kV Inter-Array submarine cables (hereinafter as "IACs" - Phase 1: circa 51 km and Phase 2: circa 69 km) to the Offshore Substation (hereinafter as "OSS") (125°56'32.86"E, 35°19'44.00" N[1]).

230kV export submarine cables (hereinafter as "EXCs") will then be routed to the Onshore Substation (hereinafter as "ONS"). And then, using 154kV onshore cables, electricity will be connected to the West Yeonggwang (or Seoyeonggwang) KEPCO onshore substation operated by KEPCO.

The project's layout is presented in Figure 1-1.

[1] WGS 84

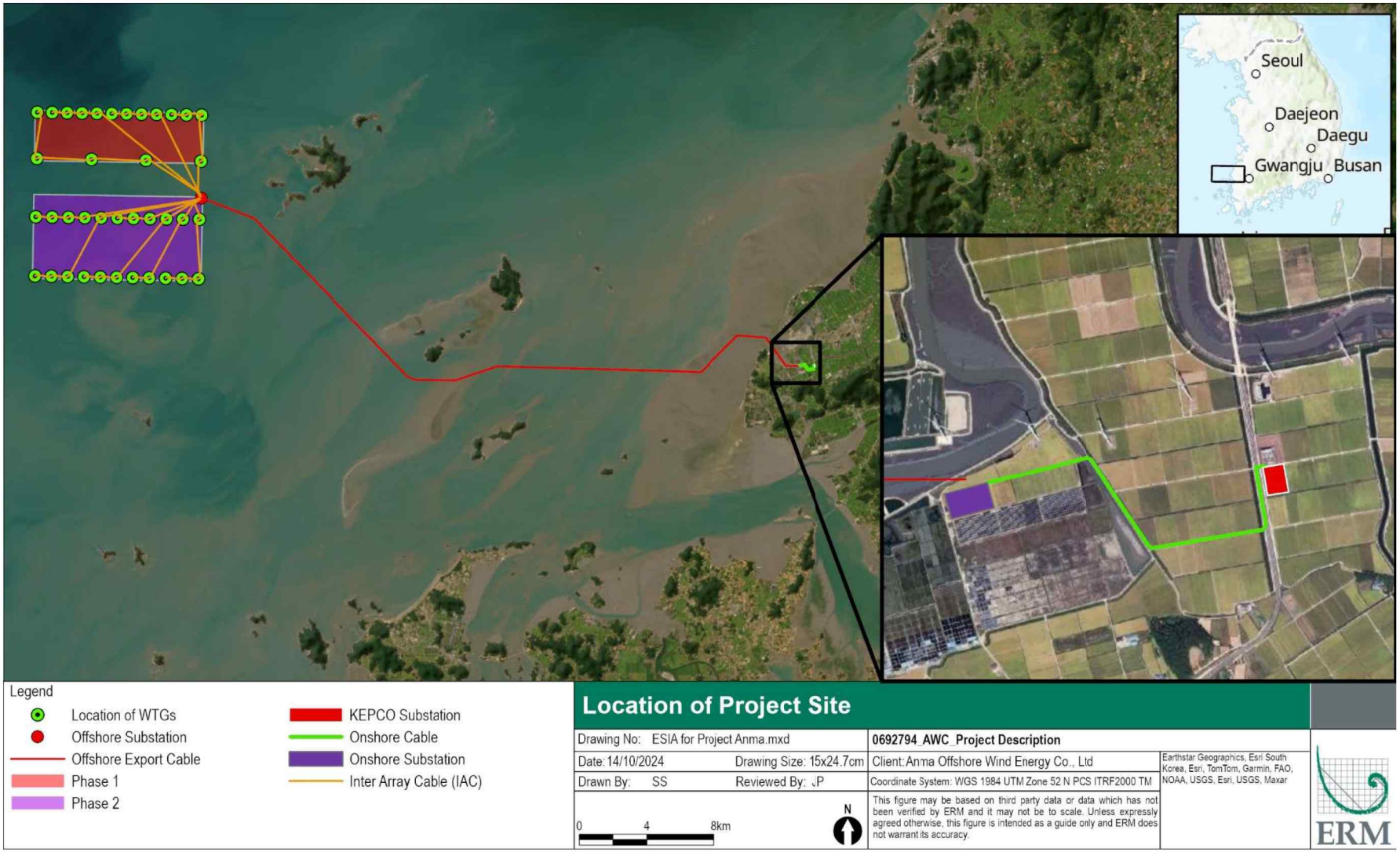


FIGURE 1-1 ANMA OFFSHORE WINDFARM

1.2 PURPOSE OF THIS REPORT

K2 Management (hereinafter referred to as K2M) has been appointed by Anma Offshore Wind Energy Co., Ltd. (hereinafter referred to as the Client or AWC) to act as the Lenders' Environmental & Social Advisor (LESA) for the provision of environmental & social due diligence (ESDD) services for the Anma Offshore Wind Project (the Project). Following the ESDD conducted on 8 April 2024, K2M identified a series of Environmental & Social Action Plan (ESAP) items that required further assessment. Specifically, ESAP item #3.2 highlighted the need for supplementary assessment and subsequent reporting on underwater noise impacts, which would require detailed modelling and evaluation.

In response to these requirements, ERM Korea Ltd. ("ERM") has undertaken underwater noise modelling, and the results were further reviewed and validated by INOGEN, through which the final conclusions were derived, to assess the potential impact on sensitive marine receptors, specifically focusing on noise emissions generated during the construction phase (i.e., pile driving activities) of the Project.

It should be noted that this report specifically addresses underwater noise impacts from construction-related activities, particularly pile driving. Noise emissions generated during the operational phase of the turbine array were not quantitatively modelled in this assessment. Operational noise from offshore wind turbines generally produces continuous, low-intensity, low-frequency underwater noise, significantly lower than impulsive piling noise. Existing literature and comparable offshore wind farm projects indicate that operational noise levels typically have negligible or minimal ecological impacts on marine mammals and other marine fauna. Moreover, the specific turbine model selected for this Project (SGRE SG DD-236 14.0 MW) incorporates low-noise design features, further minimizing underwater acoustic impacts. Nevertheless, operational noise emissions will be carefully monitored as part of the Project's ongoing environmental monitoring program, ensuring that actual noise levels remain within acceptable ecological thresholds throughout the operational lifecycle of the wind farm.

This report presents the methodology and results of the underwater noise modelling. The assessment focuses on marine mammal receptors, using recognized criteria (Southall et al 2019) to inform the assessment. The modelling includes a thorough analysis of noise-emitting activities such as impact piling, providing key metrics like peak sound pressure levels, and sound exposure levels. Additionally, the report outlines cumulative sound exposure inputs due to installation of the project’s foundation. This supplementary assessment is designed to meet the requirements of both the ESDD and the project ecologists.

Regarding marine fish, while the regulatory EIA previously evaluated potential impacts on fish and determined that the risk was low, the current modelling specifically focuses on marine mammals due to their higher sensitivity to underwater noise. Marine mammals rely heavily on acoustic signals for communication, navigation, and foraging, making them more vulnerable to noise-related disturbances than fish. Given that regulatory thresholds for marine mammal protection are more stringent than those for fish, ensuring compliance with marine mammal noise criteria inherently provides a sufficient margin of safety for fish species as well. Given these lower relative risks and in

consideration of the practicality of assessment, a detailed quantitative modelling of underwater noise impacts on marine fish has not been included at this stage. Nevertheless, consistent with the precautionary approach outlined in IFC guidelines and LESA's recommendations, underwater noise impacts on fish species will becarefully monitored and will be assessed if any significant impact is identified during the operational phase of the Project. Specifically, the Project commits to implementing a targeted underwater noise monitoring program, utilizing the Popper et al. (2014) 'Sound Exposure Guidelines for Fishes and Sea Turtles' as the evaluation criteria. Should monitoring identify impacts exceeding expected thresholds, further detailed mitigation measures will be promptly developed and implemented.

Additionally, it is noted that this report primarily evaluates impulsive noise impacts resulting from pile driving activities, as these represent the worst-case scenario for underwater noise impacts. However, continuous (non-impulsive) noise sources, such as vessel noise from support vessels, were initially scoped out due to their substantially lower expected impact levels. Nevertheless, in response to LESA’s comments and to ensure full compliance with IFC guidelines, a supplemental assessment of vessel and other non-piling noise sources will be conducted if any significant impact is identified through monitoring during the operational phase of the Project.

2. METHODOLOGY

2.1 INTRODUCTION

Transmission loss modelling has been carried out to predict the distances at which underwater noise from piling activities will meet the criteria. This type of modelling takes into account the specific acoustic properties of the study area which determines how far noise will propagate from an underwater noise source. This section describes the methodology which has been used to carry out these predictions.

2.2 PREDICTION MODEL

The model used for this prediction exercise is an ERM in-house software package called the Marine Mammal Noise Exposure Tool (MMNET). It uses widely accepted mathematical algorithms which are discussed in more detail in Section 2.4.1. The model is divided into two (2) main components, the noise propagation calculation and the exposure level calculation (which simulates the movement of animals within the sound field).

The noise propagation component calculates how the sound level varies in the marine environment taking into account source and receiving environment characteristics.

National and international underwater noise criteria for marine species have been derived to assess the effects of these sound levels on marine organisms. These criteria are commonly accepted by the technical, scientific and regulatory communities and are based on numerous studies related to effects on marine mammals and fishes.

The distances from the piling activities at which the criteria adopted for this assessment will be met have been calculated. This allows for zones to be established over which potential noise impacts may occur. The two (2) components of the model are sensitive to different input parameters. The propagation calculation is sensitive to some of the physical input parameters (such as seabed characteristics and bathymetry) which affect noise propagation.

2.3 NOISE SOURCE

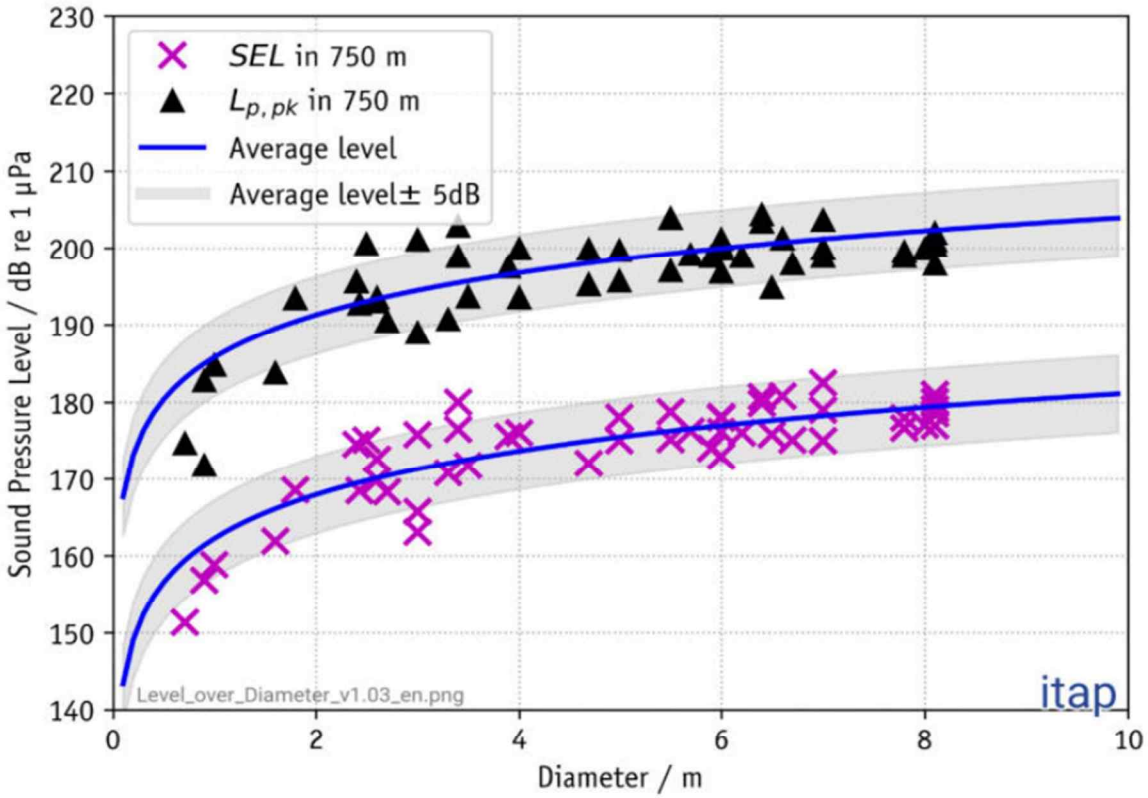
2.3.1 NOISE SOURCES

The main noise sources from the proposed Project will be the pile driving for the installation of the pin pile jacket foundations for the Wind Turbine Generators (WTGs). The contribution to the noise propagation from other sources such as vessels, cable laying or trenching have been considered less likely to result in noise impacts due to the lower level of noise emitted and therefore they have not been considered for this Study.

2.3.2 JACKET PILE DRIVING

For jacket pile driving a 2,000 to 3,000 kilojoule (KJ) hammer is expected to be used. The diameter of the piles is anticipated to be approximately 3.5 meters. The source noise level for the sound exposure level (SEL) for a single strike has been derived based on the

diameter of the piles. The data presented by Bellman et al. 2020[1] in Figure 2-1 includes measurements of marine piling at 750 m from the source. The measurements have been undertaken for piles with diameters from less than 1 m to a maximum diameter of approximately 9 m.



Source: Verfuss et al 2023

FIGURE 2-1 MEASUREMENTS OF SINGLE PULSE SOUND EXPOSURE LEVEL AT 750 M DISTANCE FROM PILING OF MONOPILES WITHOUT NOISE ABATEMENT SYSTEM

Based on the value of sound exposure level exceeded for 5 % of the time (SEL_5), which is shown as the top of the blue shaded band around the trend line of the SEL measured data, the estimated source level at 750 m from the pile is approximately 178 dB re 1 μPa^2s. Since the noise model requires a noise input at a distance of 1 m from the pile, the source term has been adjusted by back-calculating to a 1 m noise level. Using Thiele's equation for sound propagation[2] which proposes a 4.5 dB increase in sound level per halving of distance, the calculated increase in SEL_5 from 750 m to 1 m is 43.1 dB.

[1] Bellmann M. A., Brinkmann J., May A., Wendt T., Gerlach S. & Remmers P. (2020) Underwater noise during the impulse pile-driving procedure: Influencing factors on pile-driving noise and technical possibilities to comply with noise mitigation values. Supported by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit (BMU)), FKZ UM16 881500. Commissioned and managed by the Federal Maritime and Hydrographic Agency (Bundesamt für Seeschifffahrt und Hydrographie (BSH)), Order No. 10036866. Edited by the itap GmbH.

[2] Thiele, R. (2002). Propagation loss values for the North Sea. FTZ-Büsum: Handout Fachgespräch: Offshore-Windmillssound emissions and marine mammals., 15.01.2002.

This results in a noise source term of 221 dB re 1 μPa²s at 1 m from the pile. The same way, the Peak source value is estimated to be 242 dB 1 μPa at 1 m from the pile.

An important factor to take into account for noise modelling and assessment is the frequency of the emitted sound. In pile driving sources most energy is produced in the 50-400 Hz frequency bands. This low frequency sound dominates the overall level, however, for the assessment of underwater sound on marine mammals, the lower level energy components that are generated at higher frequencies (e.g. > 600 Hz) are also potentially important. Therefore, a source spectrum has been used which takes these frequencies into account. A sound source spectrum for pile driving has been developed for this assessment based on the work by Robinson [1] and it is shown in Figure 2-2.

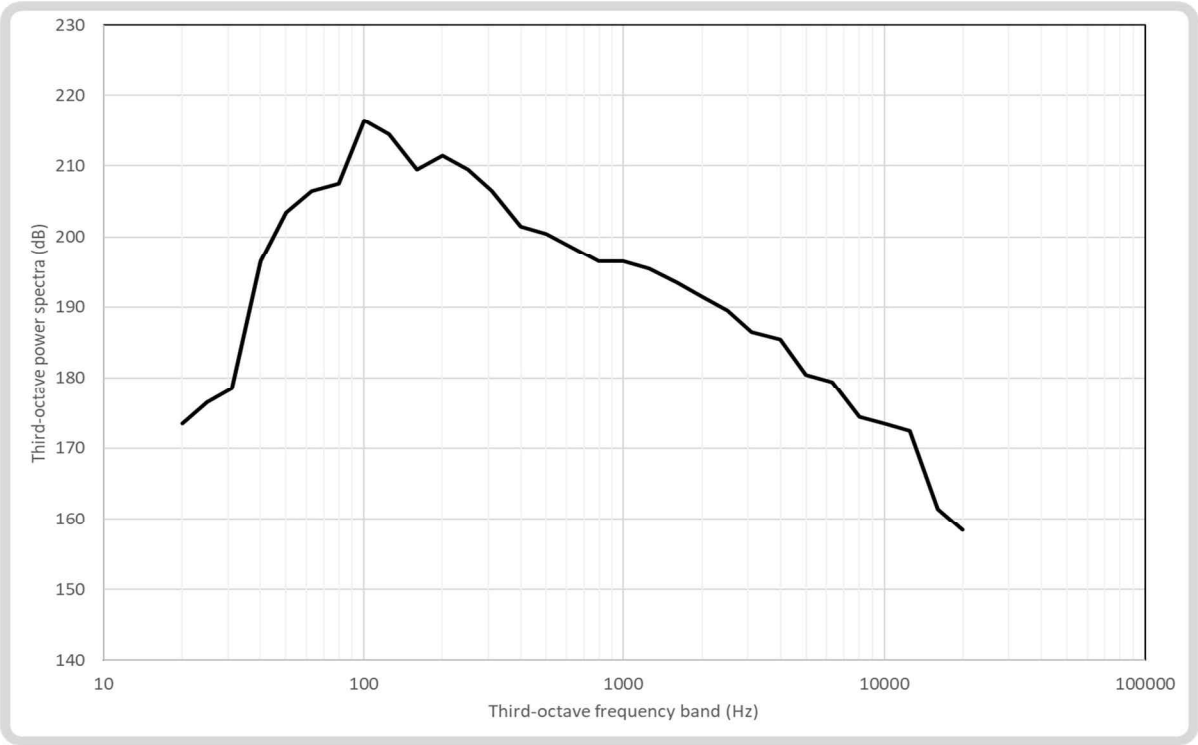


FIGURE 2-2 ESTIMATED SEL SPECTRUM AT 1 METER– PILE DRIVING.

In this assessment, the worst-case scenario assumes approximately 7,450 hammer strikes per pile within a 24-hour installation period. Based on this assumption, the cumulative sound exposure level (SELcum) at source is estimated to be approximately 260 dB re 1μPa²s.

2.4 UNDERWATER SOUND PROPAGATION

2.4.1 FACTORS AFFECTING THE MODELLING

The underwater sound propagation model takes into account site-specific factors that affect propagation such as bathymetry, seabed type and acoustic properties of the water column. Since underwater sound can travel long distances, the modelling is carried out to a distance of 50 kilometres, from the noise source. A number of prediction codes such

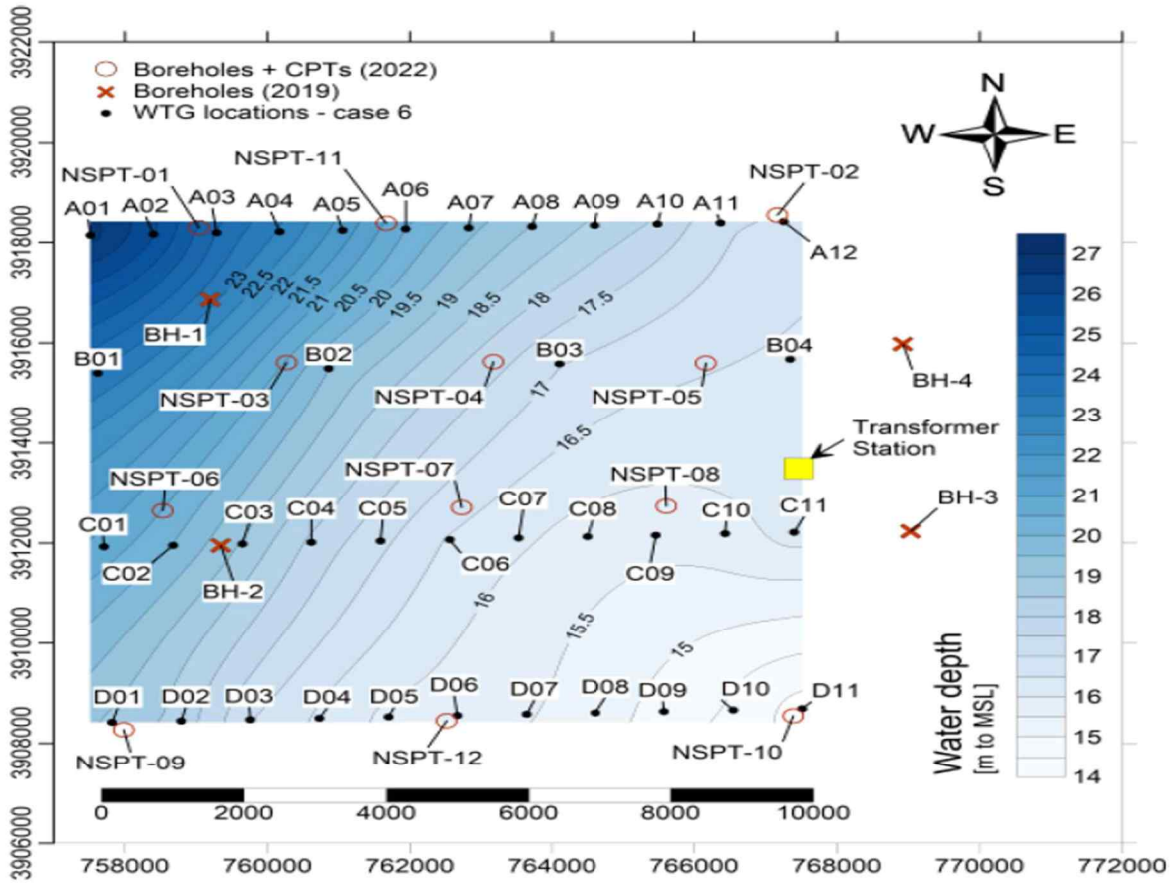
[1] Stephen P Robinson, Peter D. Theobald. Underwater noise generated from marine piling. Acoustical Society of America 2012.

as RAMGEO, RAMSGEO and Bellhop and Bounce[1] can be used in order to reflect the intricacies of real environments, in range-dependent conditions such as sloping or irregular seabed areas, range-varying sound speed profiles and elastic/fluidised seabeds.

In this case sound modelling has been carried out using a well-established sound modelling algorithm for shallow waters[2] (RAMSGEO for 20 to 800 Hz and Bellhop for 1000 to 20000 Hz) to predict sound propagation as it spreads out from the sound source in the marine environment. As mentioned, the main inputs to the sound propagation model are the acoustic characteristics of the marine environment. The key acoustic characteristics which affect sound propagation are the sound speed profile of the water column, bathymetry and seabed characteristics. The assumptions made for each of these parameters are discussed in the following sections.

2.4.2 MODELLED TRANSECTS

The modelling location was selected based on identifying the worst pile installation scenario in terms of hardest driving conditions. The data was provided by ANMA. Driveability results were prepared based on sampling geological data from boreholes within the project area, as presented in Figure 2-3. Figure 2-4 presents the worst-case scenario, that was developed for sampling location NSPT-08 and the nearest WTG is the C09.



[1] AcTUP Acoustic Toolbox, Curtin University, Centre for Marine Science and Technology, Maggi and Duncan.
[2] Wang et al, Review of Underwater Acoustic Propagation Models, NPL REPORT AC 12, 2014

FIGURE 2-3 LOCATION OF BOREHOLES IN RELATION TO WTGS

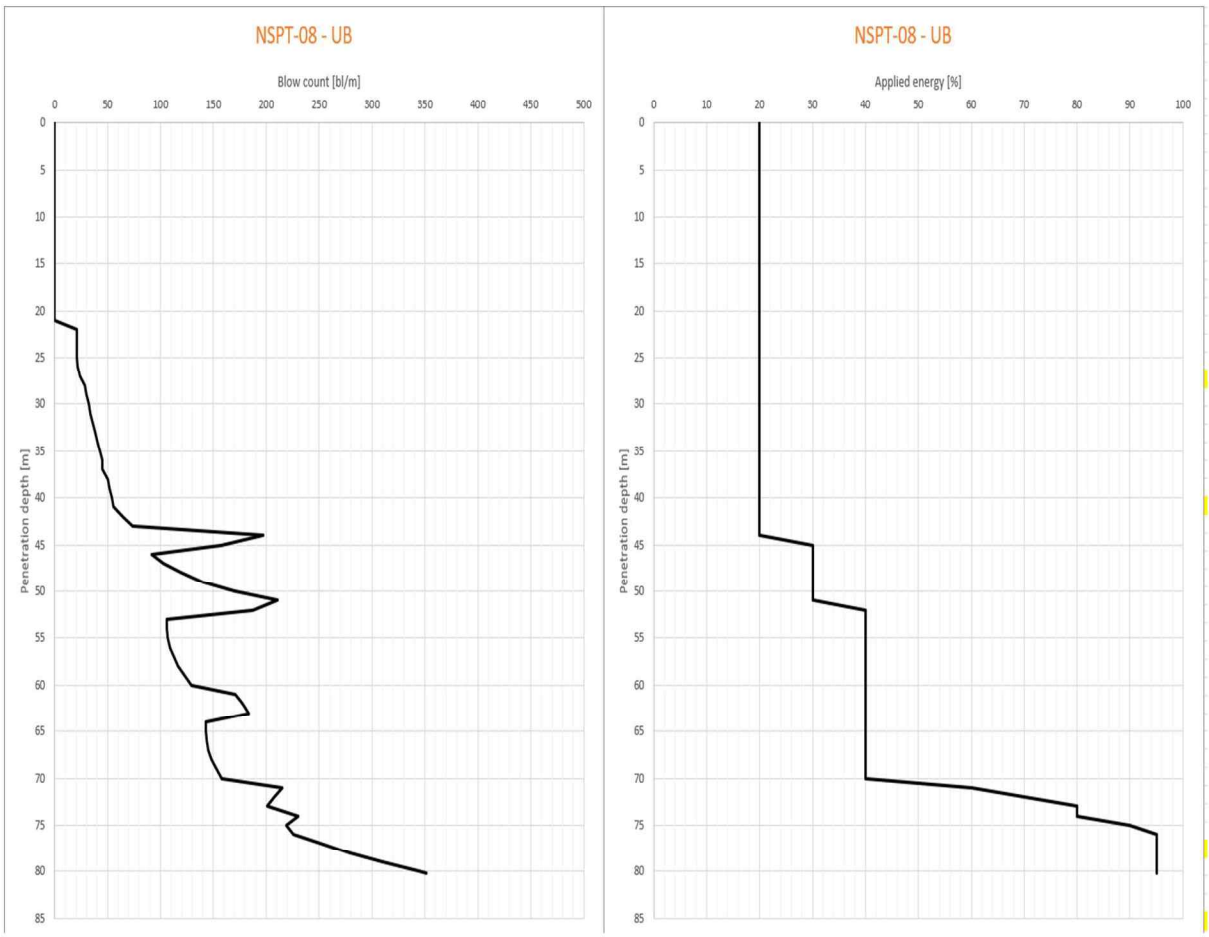


FIGURE 2-4 DRIVEABILITY RESULTS.

Model inputs for 8 transects were prepared in different directions (N, NE, E, SE, S, SW, W and NW). For each modelled transect, the acoustic transmission loss was calculated for the frequency range 20 to 20,000 Hz. The modelled location and transects are shown in Figure 2-5. For each transect the highest noise levels at any depth have been calculated for distances from the source location between 0 m to 50 km in steps of 100 m.

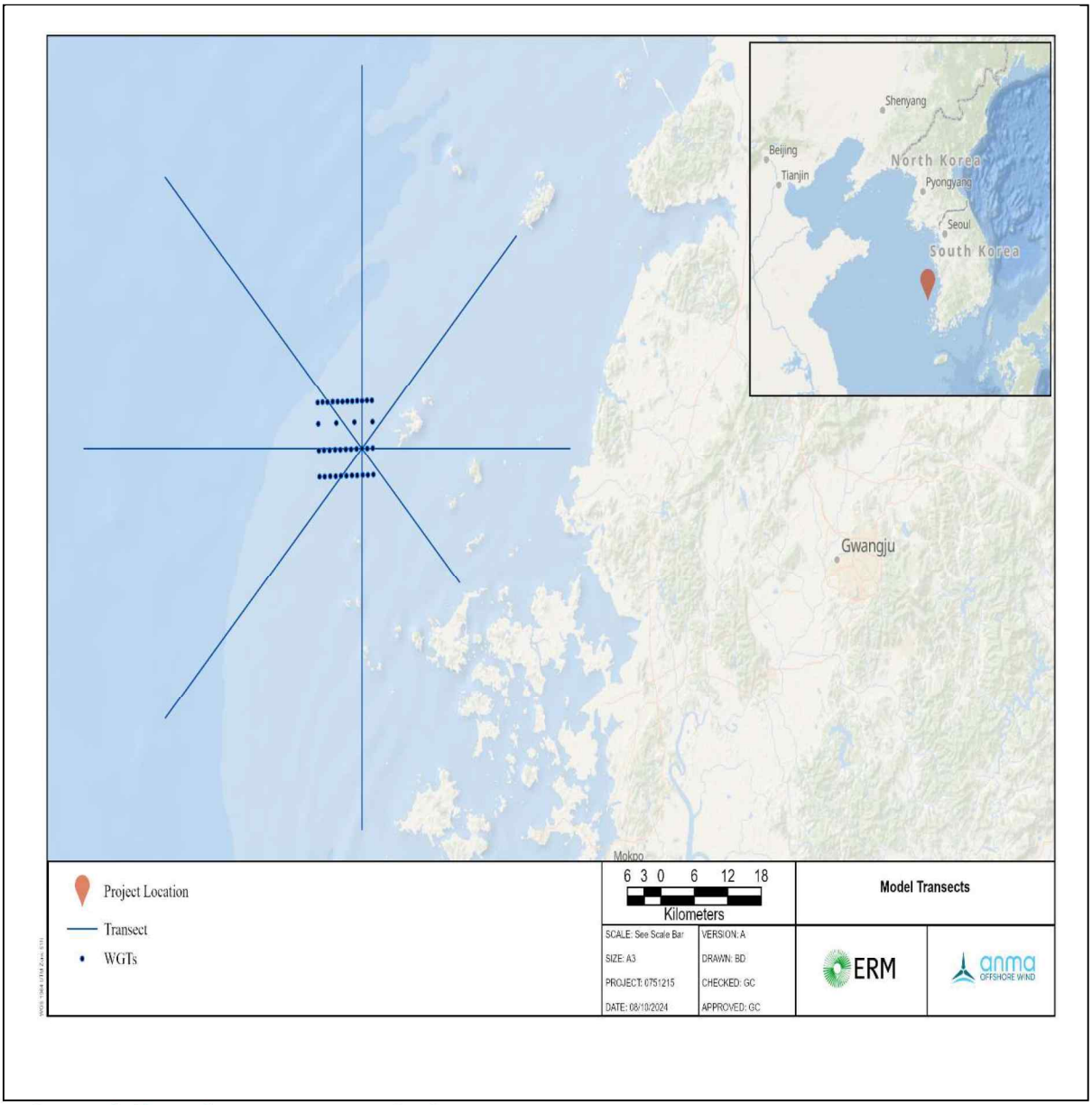


FIGURE 2-5 MODELLED TRANSECT

2.4.3 SEABED CHARACTERISTICS

The geology data for the Project has been provided by ANMA[1] as shown below.

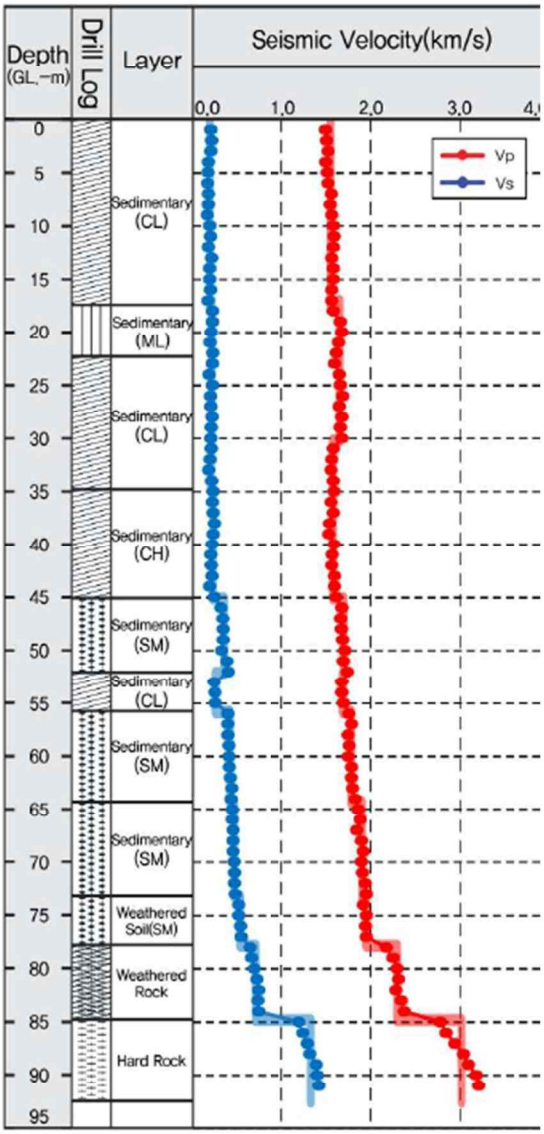


FIGURE 2-6 SEABED ACOUSTIC CHARACTERISTICS

2.4.4 SOUND SPEED PROFILE

The speed of sound in the ocean increases with increasing values of temperature, salinity and pressure (which increases with depth). The sound speed depends more strongly on temperature than on the other variables[2]. In deeper water the pressure can dominate and the sound speed can increase with increasing depth.

[1] AWF-SII-GEO-REP-SOI-0002_Extract_P-S logging results
[2]Alec J Duncan, Robert D McCauley, Environmental Impact Assessment of Underwater Sound: Progress and Pitfalls. AAS 2008.

Sound speed profile data for the water column were provided by ANMA[1] and presented in Figure 2-7.

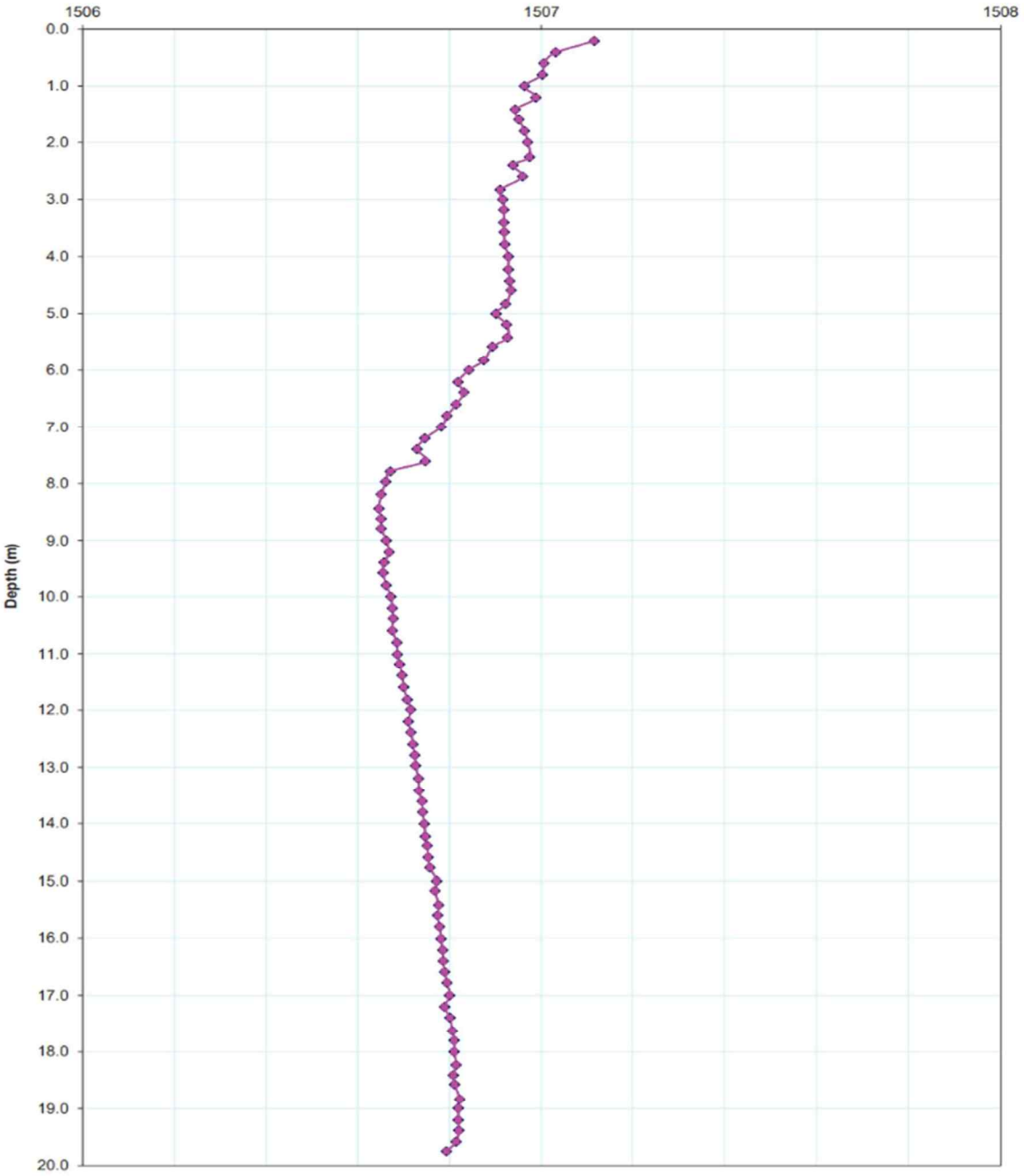


FIGURE 2-7: SOUND SPEED PROFILE

2.4.5 BATHYMETRY DATA

The bathymetric data were obtained from GEBCO[2], which provides publicly available bathymetric data sets in Graphical Information System (GIS) format. The depth data have been extracted at 500 m intervals between the noise source location and a point 50 km from the source.

[1] AWF-SII-TEC-REP-ENV-0001 Field and Operations Report
[2] www.gebco.net

2.5 CUMULATIVE SOUND EXPOSURE (SELCUM) CALCULATION METHOD

The method used to calculate the Cumulative Sound Exposure Level (SELcum), which is one of the parameters used to assess the potential for auditory injury to marine fauna exposed to noise over time (see Section 0 for further details), is to model an animal moving away from the piling location. As the animal swims away from the piling location the animal will receive pulses of sound energy, which are quantified in the model using the SEL parameter for each pile strike. The noise model then calculates the SELcum over a period of 24 hour period, by accumulating the sound energy from each pulse to which the animal will be subjected. One pile is expected to be installed per day and the exposure calculation, therefore, is related to the number of strikes for a single pile.

There is a variety of options for possible relative movement between the hypothetical animal and the source, but some of them are more likely than others. What is usually accepted is that marine mammals will not swim towards the noise source. For stationary noise sources such as piling, there is one main option i.e., the swim-away model. This option considers that an animal would swim directly away from the noise source.

SELcum has been calculated using consultant's MMNET. MMNET assumes the animal moves in a straight line through the sound field along each modelled transect, accumulating the SEL taking into account the distances and the variations in piling noise level as the animal swims away from the source. The model creates sound fields for different points along each modelled transect, with a minimum distance of 100 m (based on the limit of the model) from the source and then at 100 m intervals. The noise levels at each position are calculated using the AcTUP suite of underwater noise propagation algorithms developed for Matlab and published by Curtin University, using RAMGEO for 20 to 800 Hz and Bellhop for 1,000 to 20,000 Hz to calculate the transmission loss and combines this information with source noise levels and frequency weighting values to derive an overall noise level at each point.

The calculation also takes the swimming speed of the animal into account, calculating the SELcum for a range of starting distances assuming the animal swims away from the source, and travels to up to 50 km from the piling location (the end of the modelled transect). It also takes into consideration piling soft start, and the changes of the SEL source level due to piling energy variation. The animal is assumed to start swimming away from the pile when the piling activity begins at the beginning of the soft start procedure.

For this Project, the modelled scenario is based on the assumption that all animals have a swimming speed of approximately 5.4 km/h as per Danish guidance[1]. The assumed speed is representative of the speed of the slowest animals of concern. Taking the lowest likely speed is a worst-case assumption. For a faster swim speed, the effective speed of separation would be higher, and the calculated mitigation zone smaller. Higher speeds have been reported for harbour porpoise as they swim away from piling varying from 4.3 km/h at lower noise levels, and up to 7.1 km/h for higher noise levels[2].

[1] Input to Revisions of Guidelines Regarding Underwater Noise From Oil and Gas Activities – Effects on Marine Mammals and Mitigation Measures, Scientific Report from DCE – Danish Centre for Environment and Energy, No 202, 2016.
[2] Ronald A. Kastelein, Shirley Van de Voorde, and Nancy Jennings. Swimming Speed of a Harbor Porpoise (Phocoena phocoena) During Playbacks of Offshore Pile Driving Sounds, Aquatic Mammals 44(1), 92-99, DOI 10.1578/AM.44.1.2018.92

These calculations are necessarily approximate, as mentioned previously, as the potential hypothesis and variables are numerous, however, the hypothesis and variables fall generally on the safe and protective side, for instance the animal swimming speed which is towards the low end of the likely range.

3. NOISE ASSESSMENT CRITERIA

3.1 INJURY CRITERIA

The criteria defined by Southall et al. 2019[1] are well accepted as reflecting the current state of knowledge regarding the potential for auditory effects to marine fauna. This publication evaluates Southall et al. 2007[2] in light of more recent scientific findings and proposes revised noise exposure criteria to predict the likely onset of auditory effects on marine mammals. The criteria for auditory injury (i.e. Permanent Threshold Shift, PTS) have been estimated from data on Temporary Threshold Shift (TTS), which is effectively auditory fatigue and does not constitute permanent effects on hearing. It is noted that the guidance in Southall et al. 2019 uses the same thresholds and frequency weightings as are included in guidance produced by National Oceanic and Atmospheric Administration (NOAA) in 2018. In addition, it uses the same frequency weighting functions, although the marine mammal groups are named differently as discussed below. The revised frequency-weighting curves for all cetacean groups and marine carnivores in water are shown in Figure 3-1, Figure 3-2 and Figure 3-3.

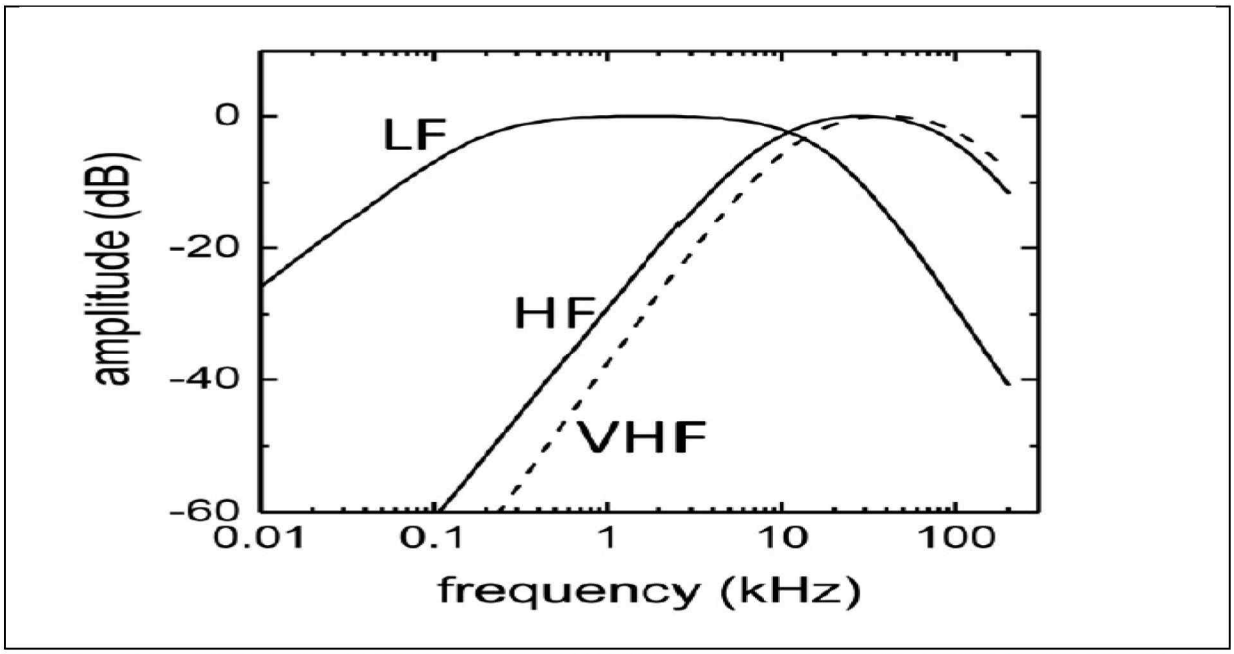


FIGURE 3-1 FREQUENCY WEIGHTING CURVES SOUTHALL ET AL 2019 (LOW FREQUENCY, HIGH FREQUENCY AND VERY HIGH FREQUENCY CETACEANS)

[1] Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects, Brandon L. Southall, James J. Finneran, Colleen Reichmusth, Paul E. Nachtigall, Darlene R. Ketten, Ann E. Bowles, William T. Ellison, Douglas P.Nowacek and Peter L. Tyack, Aquatic Mammals 2019, 45(2) 125-232.

[2] Southall, B.L., A.E. Bowles, W.T. Ellison, J.J. Finneran, R.L. Gentry, C.R. Greene, Jr., D. Kastak, D.R. Ketten, J.H. Miller, P.E. Nachtigall, W.J. Richardson, J.A. Thomas, and P.L. Tyack. 2007. Marine mammal noise exposure criteria: Initial scientific recommendations. Aquatic Mammals 2007 33:411-521.

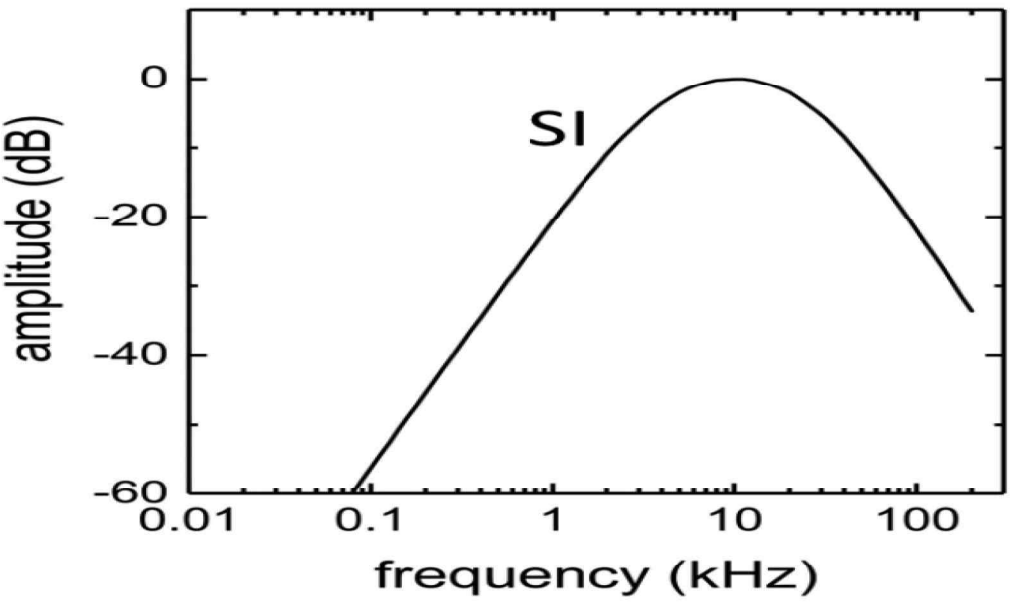


FIGURE 3-2 FREQUENCY WEIGHTING SOUTHALL ET AL 2019 (SIRENIANS)

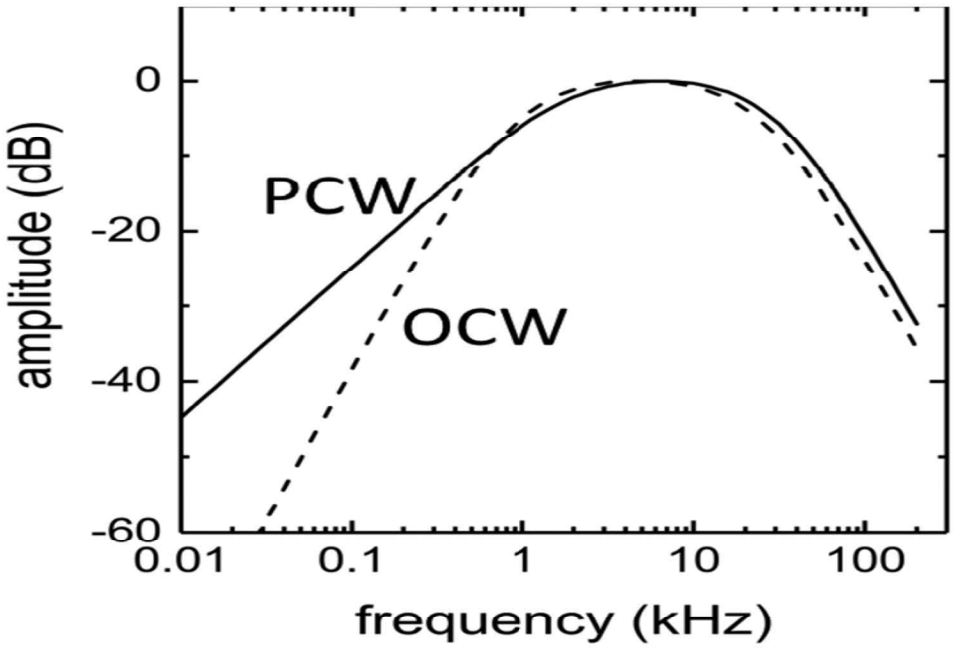


FIGURE 3-3 FREQUENCY WEIGHTING CURVES SOUTHALL *ET AL* 2019 (PCW AND OCW)

A summary of the criteria, for PTS and TTS, is presented in Table 3-1.

TABLE 3-1 THRESHOLD VALUES

Hearing Group	Piling			
	PTS		TTS	
	Peak Threshold (dB re 1 µPa)	Cumulative SEL Threshold (dB re 1 µPa2s)	Peak Threshold (dB re 1 µPa)	Cumulative SEL Threshold (dB re 1 µPa2s)
Low-Frequency (LF) cetaceans	219	183	213	168
High-Frequency (HF) cetaceans	230	185	224	170
Very High-Frequency (VHF) cetaceans	202	155	196	140
Sirenians (SI)	226	190	220	175
Phocid pinnipeds (PCW)	218	185	212	170
Other Marine Carnivores (OCW)	232	203	226	188

Source: Southall et Al 2019

3.2 BEHAVIOURAL CRITERIA

There are a variety of sources of information regarding the likely behavioural effects of marine mammals. Although this varies considerably, a standard which has been in common use over a long period of time is from guidance in the United States (NMFS, 2013) which indicates a "level B take"[1] above 160 dB re 1µPa (RMS). This has been adopted for marine mammals in this assessment.

[1] The U.S. Marine Mammal Protection Act (MMPA) defines Level B harassment as any act of pursuit, torment or annoyance that has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. Current thresholds established for Level B harassment are 160 dB re 1µPa from a non-continuous noise source averaged over the duration of the signal.

4. RESULTS OF MODELLING

The distances at which the criteria will be met are presented below based on the worst-case scenario in terms of environmental conditions and installation scenario. The predicted impact zones have been estimated based on the source values presented in Section 2.3.

The PTS impact zones are predicted to be up to 500 m pre-start safety zone that can be implemented by marine mammal observer (MMO)/passive acoustic monitoring (PAM). Table 4-1 shows the predicted distances from the piling location at which the PTS thresholds will be met, whilst TTS impact zones are presented in Table 4-2.

TTS impact zones exceed the 500 m pre-start safety zone implemented by MMO/PAM, for the low-frequency (LF) and very high-frequency (VHF) cetaceans but also for Phocid pinnipeds hearing groups. The behavioral impact zone is likely to extend up to 1.4 km from the piling location, for all marine mammals.

TABLE 4-1 CALCULATED DISTANCES FOR PTS

Hearing Group	**SELcum (weighted), dB re 1 µPa2s**	**Peak SPL, (unweighted), dB re 1 µPa**	**Distance to Threshold Exceedance (km)[1]**	
	PTS	PTS	SEL	Peak
LF cetaceans	183	219	0.1	< 0.1
HF cetaceans	185	230	< 0.1	< 0.1
VHF cetaceans	155	202	< 0.1	0.1
Sirenians	190	226	< 0.1	< 0.1
Phocid pinnipeds (PCW)	185	218	0.5	< 0.1
Otariid pinnipeds (OCW)	203	232	< 0.1	< 0.1

[1] Predicted distances have been rounded up to the nearest 0.1 km.

TABLE 4-2 CALCULATED DISTANCES FOR TTS

Hearing Group	**SELcum (weighted), dB re 1 µPa^{2}s**	**Peak SPL, (unweighted), dB re 1 µPa**	**Distance to Threshold Exceedance (km)[1]**	
	TTS	TTS	SEL	Peak
LF cetaceans	168	213	10	< 0.1
HF cetaceans	170	224	< 0.1	< 0.1
VHF cetaceans	140	196	0.9	0.3
Sirenians	175	220	< 0.1	< 0.1
Phocid pinnipeds (PCW)	170	212	15	< 0.1
Otariid pinnipeds (OCW)	188	226	< 0.1	< 0.1

[1] Predicted distances have been rounded up to the nearest 0.1 km.

Figure 4-1 to Figure 4-7 present the predicted noise levels for Peak and SELcum for all hearing groups. The Figure 4-2 to Figure 4-7 present how the SELcum levels change, for each hearing group, with the increase of distance between starting swimming away location of the mammas, the mammals and the piling location, as explained in Section 2.5. Predicted peak noise levels at 750 m from the source (Figure 4-1) are approximately 15 dB lower than the measured noise levels presented in Figure 2-1. The project is located at shallow waters and in combination with the other environmental factors in the study area (sound speed profile and seabed), the underwater noise propagation is overall weak. The effect of the bathymetry is noticeable on Figure 4-2 to Figure 4-7 where SELcum levels are presented for each hearing group. For some hearing groups, the thresholds were estimated within 100 m from the source and therefore are not presented on the figures.

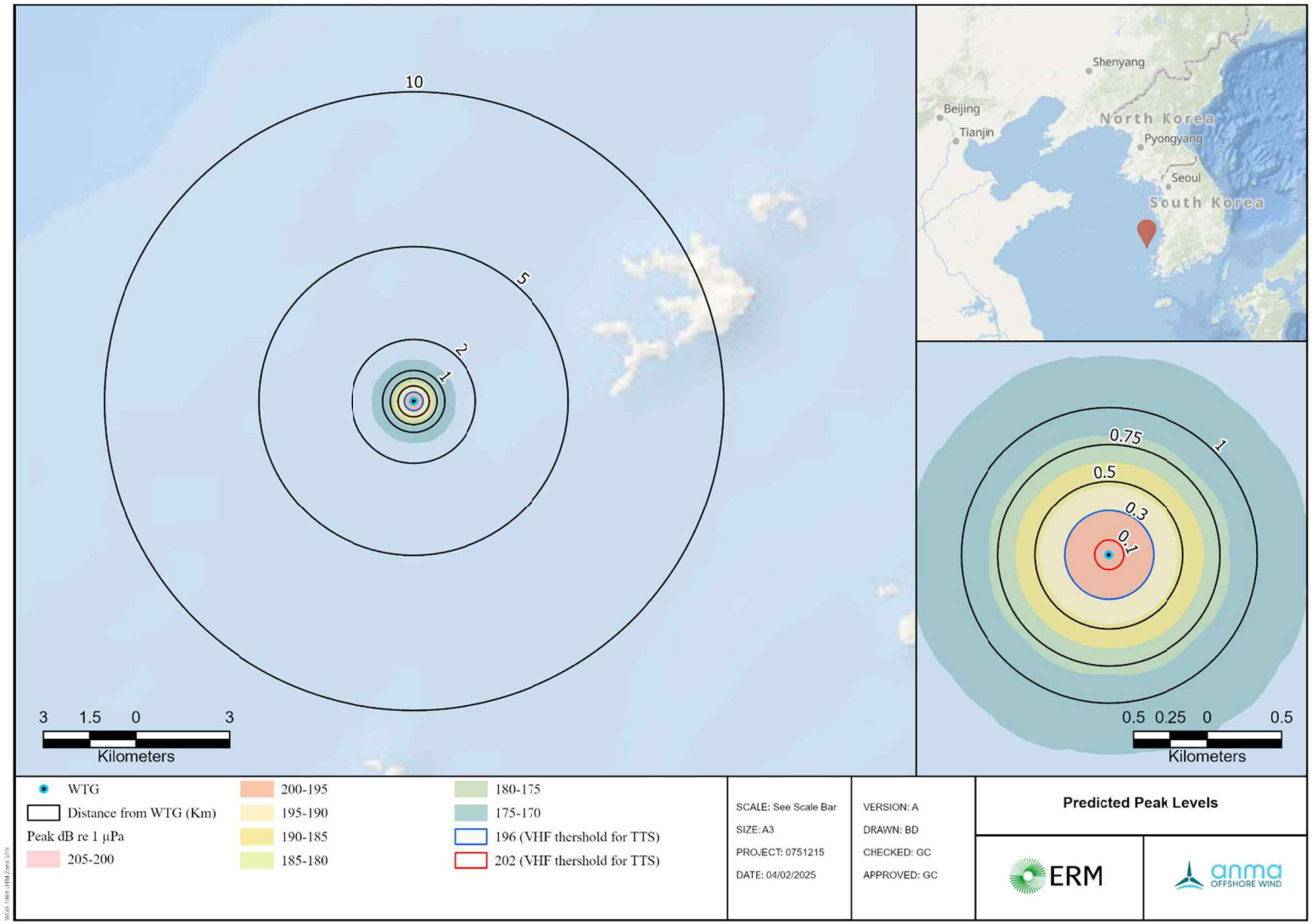


FIGURE 4-1 PREDICTED PEAK LEVELS

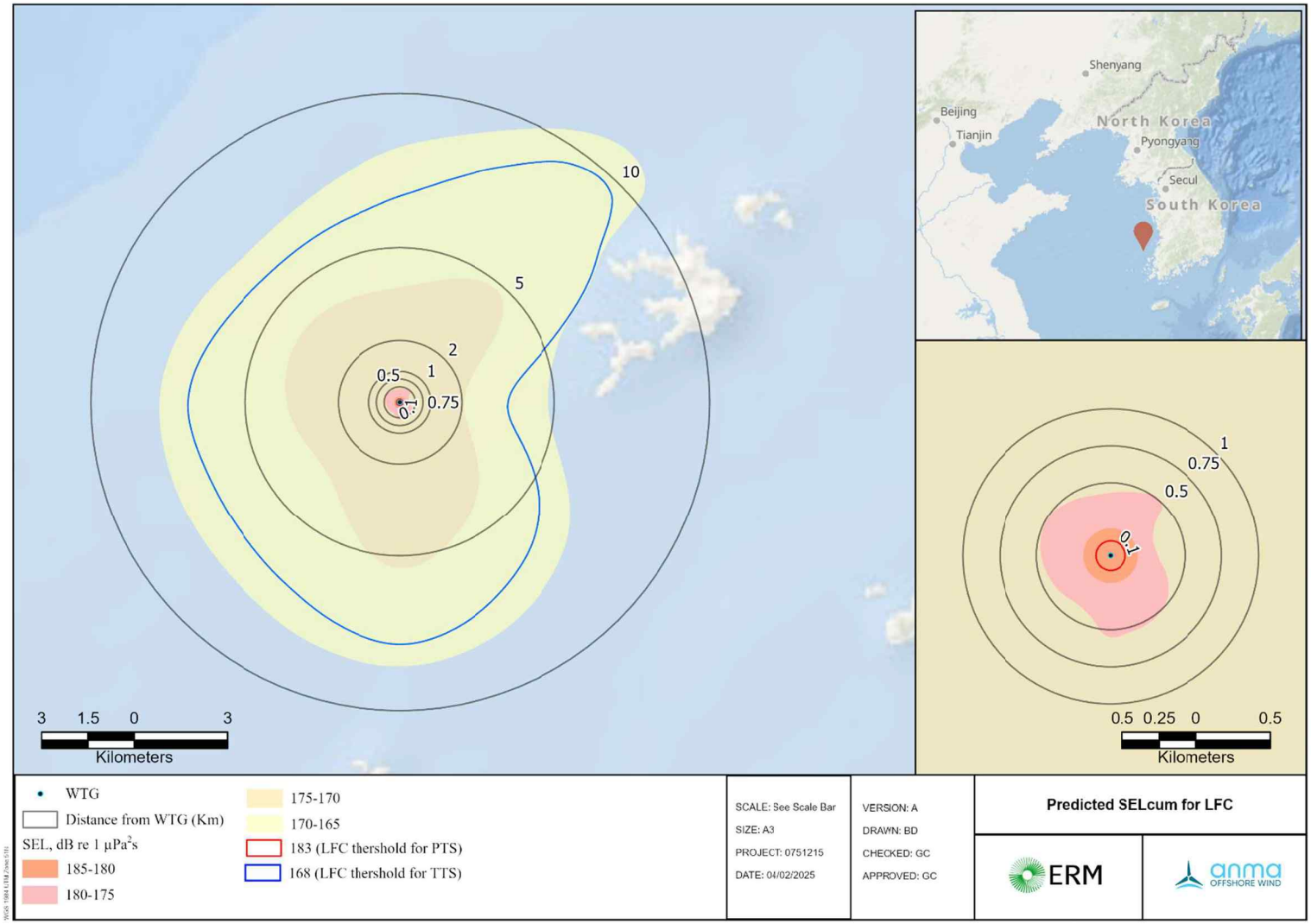


FIGURE 4-2 PREDICTED SELCUM - LOW FREQUENCY HEARING

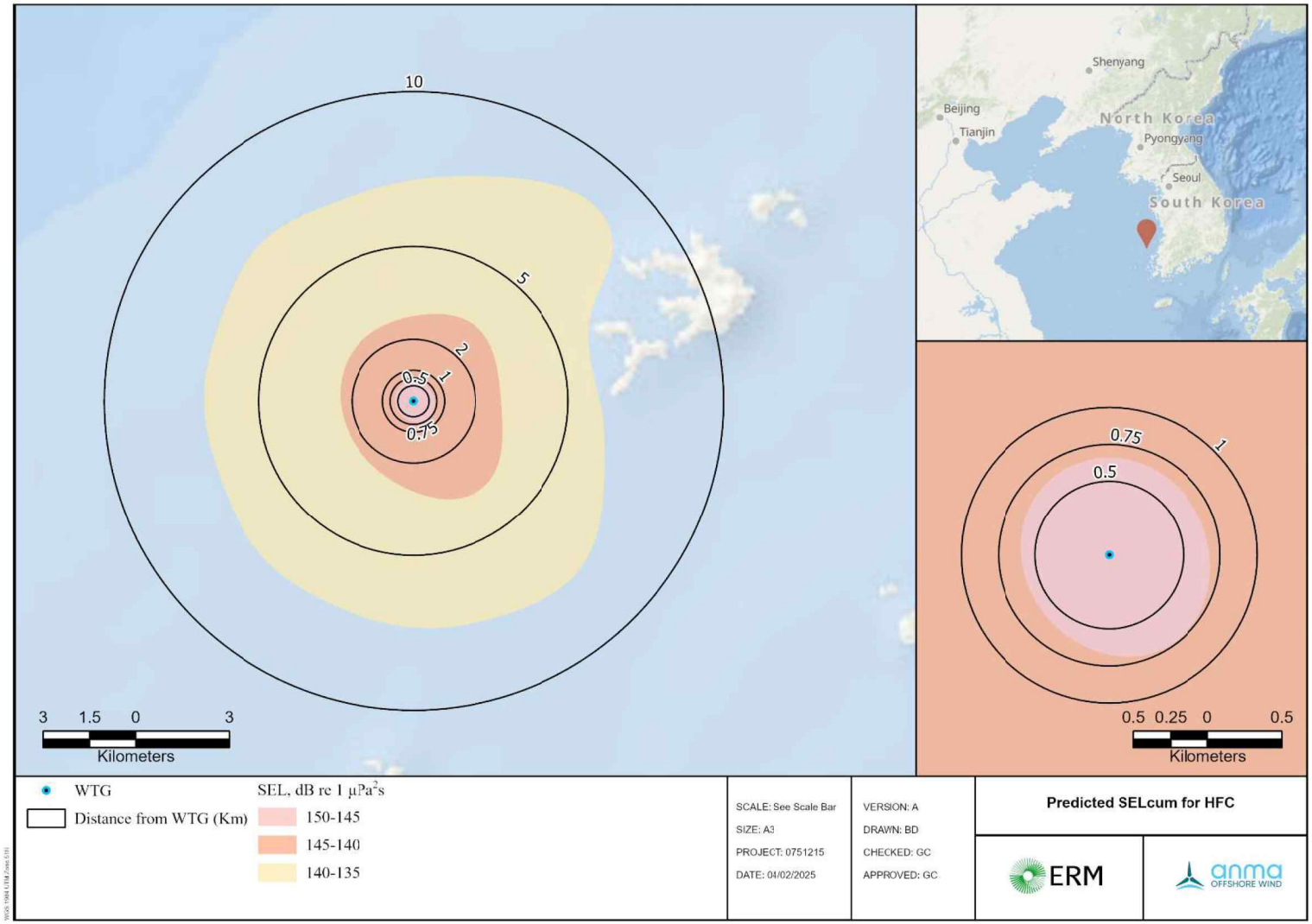


FIGURE 4-3 PREDICTED SELCUM - HIGH FREQUENCY HEARING

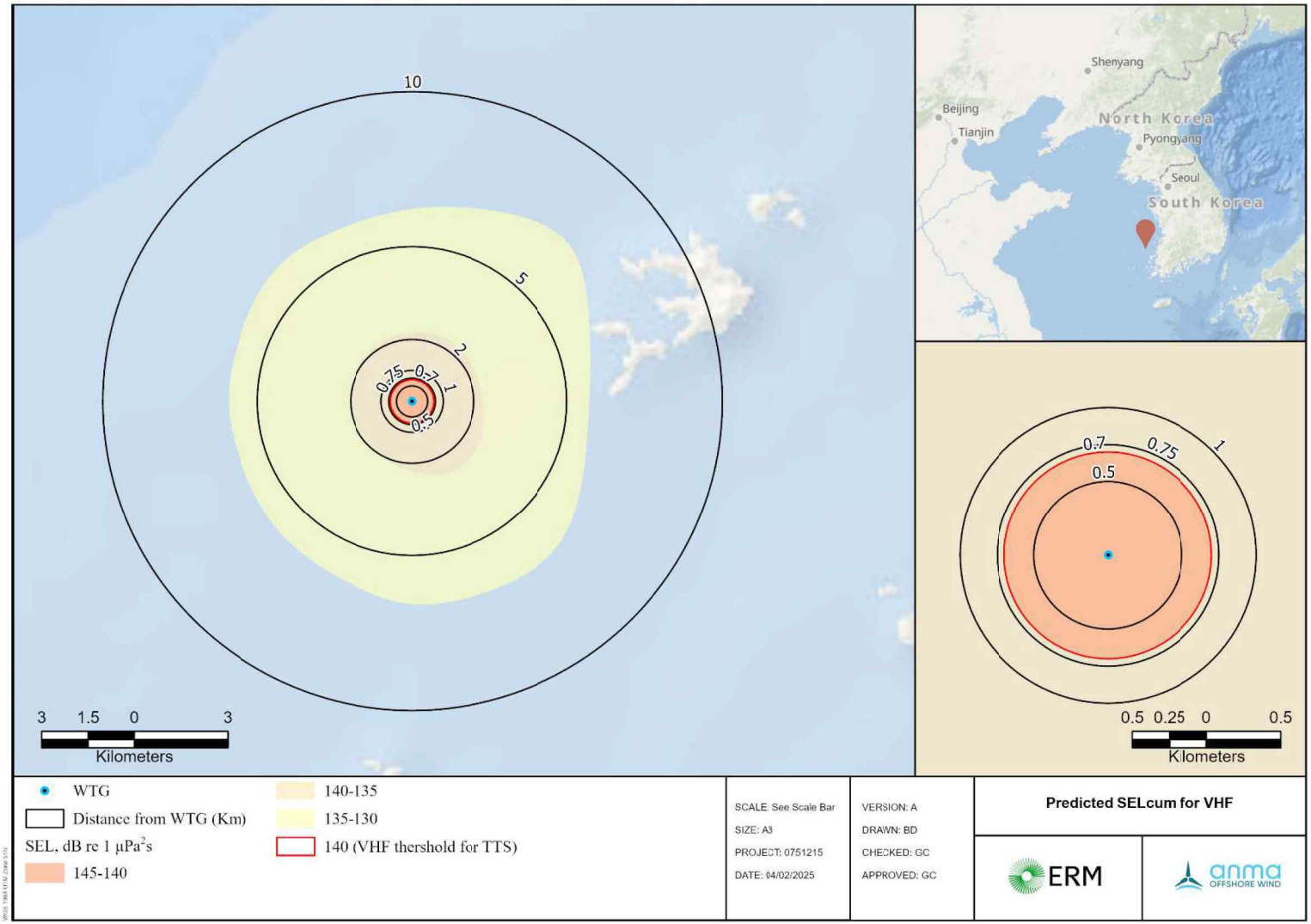


FIGURE 4-4 PREDICTED SELCUM – VERY HIGH FREQUENCY

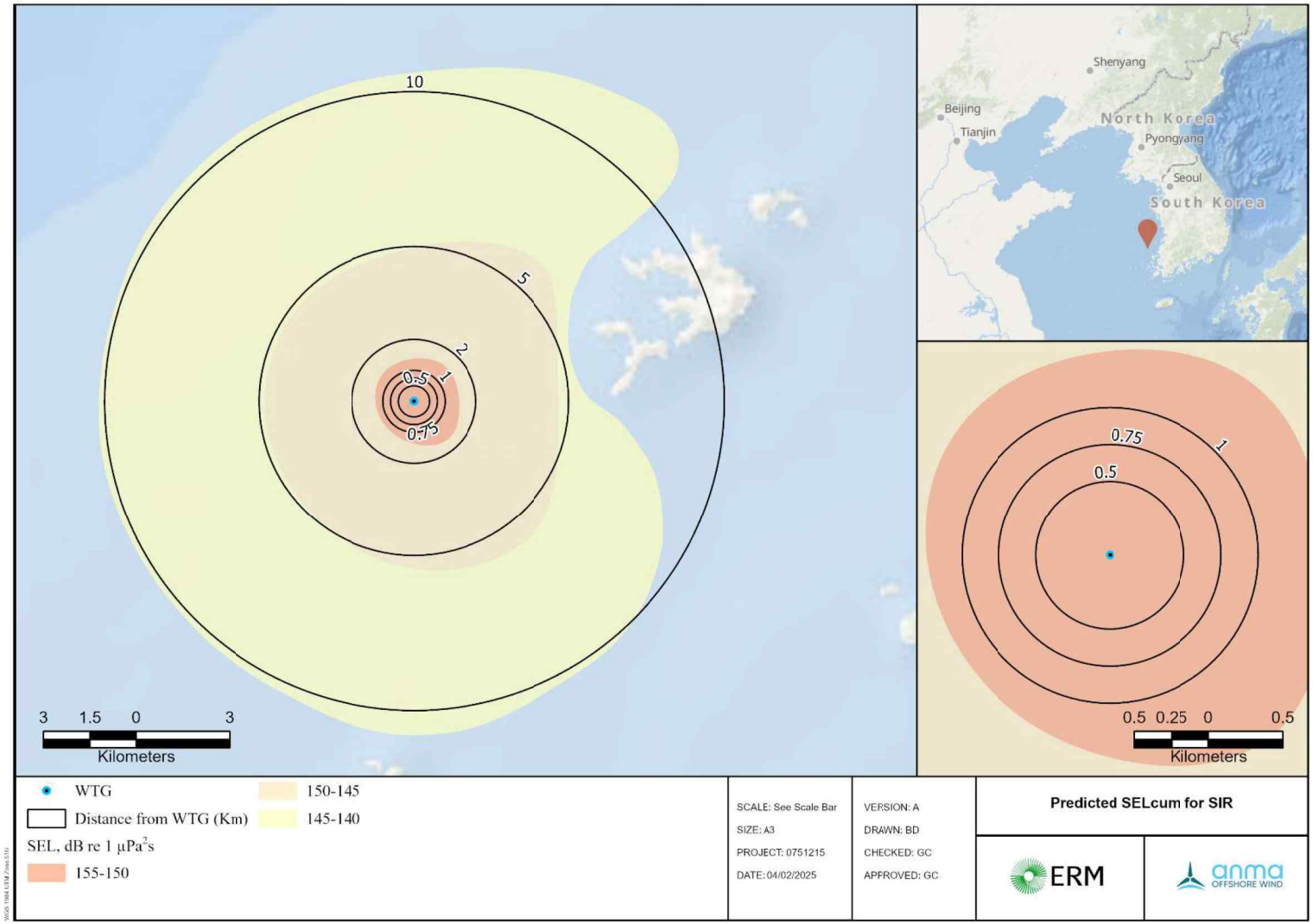


FIGURE 4-5 PREDICTED SELCUM – SIRENIANS

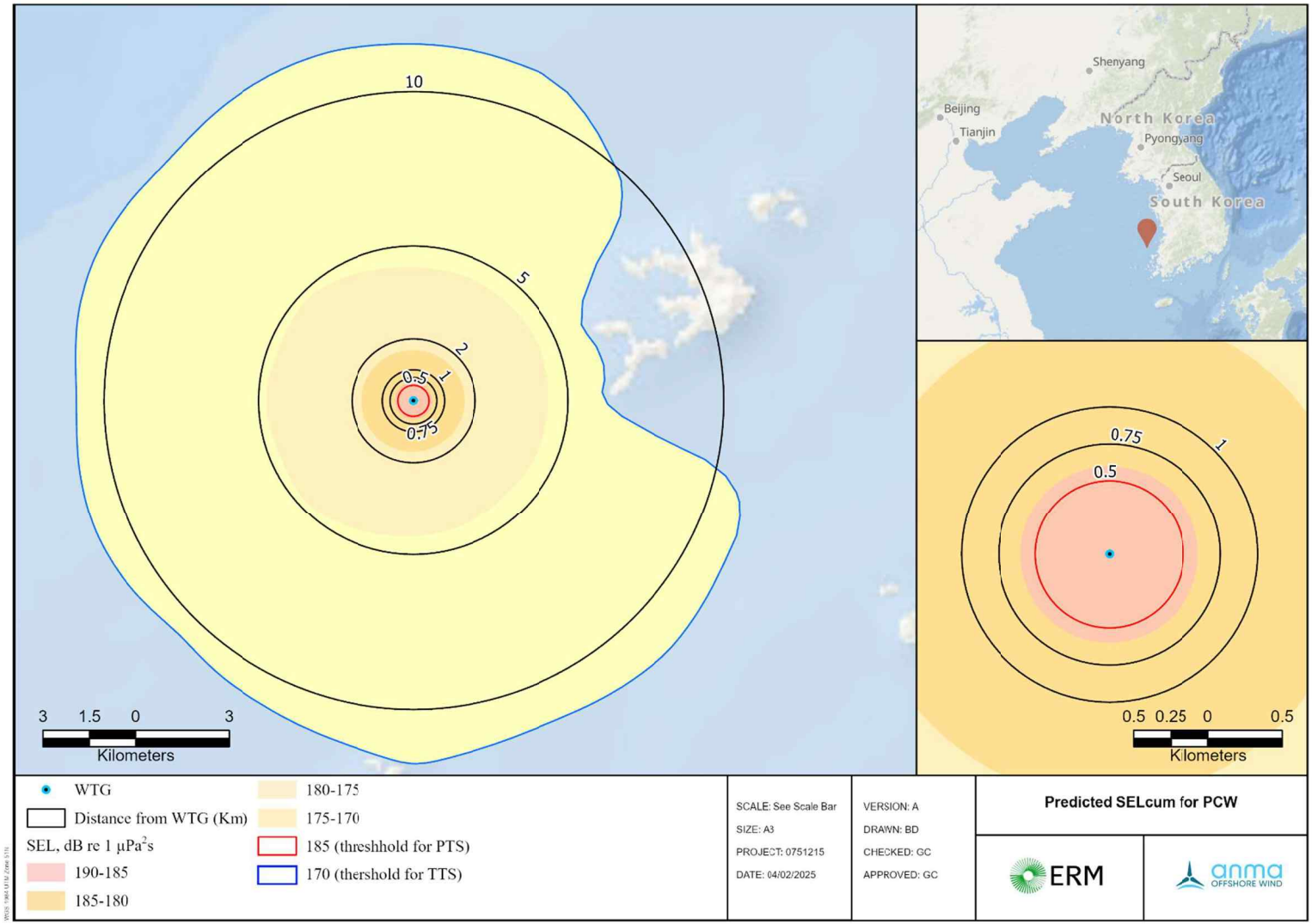


FIGURE 4-6 PREDICTED SELCUM - PHOCID PINNIPEDS

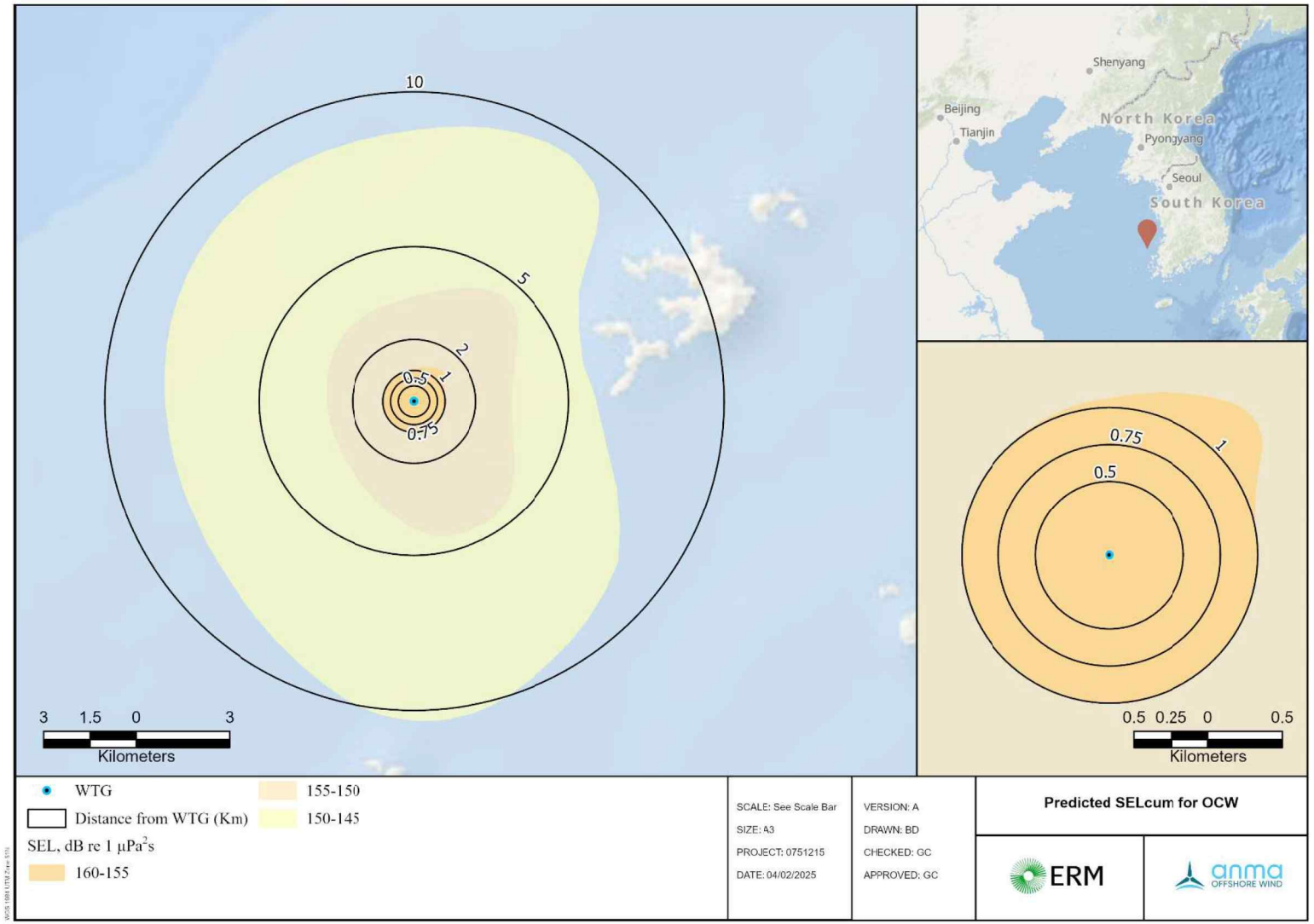


FIGURE 4-7 PREDICTED SELCUM - OTHER MARINE CARNIVORES

5. CONCLUSION

The purpose of this study was to model the propagation of underwater noise specifically from impact piling activities during the construction phase of the Project. The modelling has taken into account the specific acoustic properties of the study area which determine how far sound will spread from the noise sources. These modelled noise levels have been used to establish the zones over which PTS, TTS and behavioural effects are likely to occur for marine mammals.

The project is situated in shallow waters, which, along with other environmental factors, results in weak propagation. However, the predicted potential impact zones exceed the safety zone (MMO/PAM), for TTS criteria for LF, VHF and PWC hearing groups, whilst for PTS criteria will be at 500 m from the piling location, and up to 100 m for the rest of the hearing groups.

Nevertheless, the Project will carefully monitor vessel and underwater noise impacts on fish species during the operational phase and, if any significant impact is identified, conduct supplementary assessments to fully align with IFC guidelines and international best practices. This will ensure effective environmental protection consistent with IFC Performance Standards and address the specific concerns raised by LESA.

APPENDIX E COLLISION RISK MODELLING

PREPARED FOR
Anma Offshore Wind Energy Co., Ltd.

DATE
11 July 2025

REFERENCE
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ESIA for Project Anma

Collision Risk Modelling



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ACRONYMS AND ABBREVIATIONS

Acronym	Description
AWC	Anma Offshore Wind Energy Co., Ltd
CR	Critically Endangered
CRM	Collision Risk Modeling
EN	Endangered
ERM	ERM Korea Ltd.
IUCN	International Union for Conservation of Nature
LC	Least Concern
MSFA	Multi Species Feeding Associations
NT	Near Threatened
VU	Vulnerable
WTG	Wind Turbine Generators

1. INTRODUCTION

Anma Offshore Wind Energy Co., Ltd; ("AWC" or the "Project proponent") has commissioned ERM Korea Ltd. (ERM) to undertake Environmental and Social Impact Assessment against the internationally recognised standards (also referred to as the Applicable Standards) for the fixed bottom offshore wind farm comprising Phase 1 with permitted capacity of 224 MW, and Phase 2 with permitted capacity of 308 MW (collectively referred as "Anma Project" or "the Project") on a voluntary basis to prepare for financing of the Project. To incorporate updates based on comments from the Lender's Environmental and Social Advisor (LESA), IA Partners Co., Ltd., a member of INOGEN Alliance (INOGEN) has been engaged to carry out the necessary revisions.

The high-level findings in terms of impacts to biodiversity and the measures to mitigate or avoid those are presented in this preliminary report.

1.1 OBJECTIVES

This report is the Bird Collision Risk Modeling (hereafter referred as the "CRM") report for the Project that is an Appendix E of Biodiversity Impact Assessment.

The primary objective of this report is to evaluate and quantify the potential risks of collisions between marine birds and wind turbine generators (WTG). By assessing these risks, the report aims to identify and address any potential adverse impacts on marine ecosystems, thereby supporting the protection of biodiversity and the sustainable development of the offshore wind project.

2. METHODOLOGY

2.1 BASELINE OFFSHORE BIRD SURVEY

The bird survey focuses on seabirds and migratory birds. A systematic line-transect boat survey has been undertaken. The transects provide coverage in the windfarm boundary plus a buffer of radius of 8 km (study area for primary survey). The transect lines follow a pre-designated 206 km long parallel transect layout. During each survey, as the vessel transits the transect lines at a relatively constant speed of 15-18 km/hr, observations have been made by a team of two observers (from a rotating team of three observers) on board.

Data regarding the number of individuals, flight altitude, movement direction, and other behaviours of the observed species were recorded. Distance measurements were conducted using a laser rangefinder (Swarovski EL range 10X42).

Figure 2.1 displays the total area of supplementary bird surveys that was conducted from March 2023 to February 2024. While bird surveys was also conducted during the EIA as outlined in BIA, flight altitude or behavioral patterns, which are critical inputs for CRM, were not obtained. Therefore, the original survey methodology is considered insufficient for collision risk assessment. Nevertheless, survey results show that during the original EIA, a total of 11 bird species and 1,120 individuals were recorded within the wind farm area, whereas during the ESIA, 32 species and 1,697 individuals were observed—demonstrating greater species diversity and abundance in the supplementary dataset.

Considering these circumstances, it was interpreted that excluding the EIA survey results would not affect the CRM outcomes, and only ESIA supplementary survey data were used for the modelling.

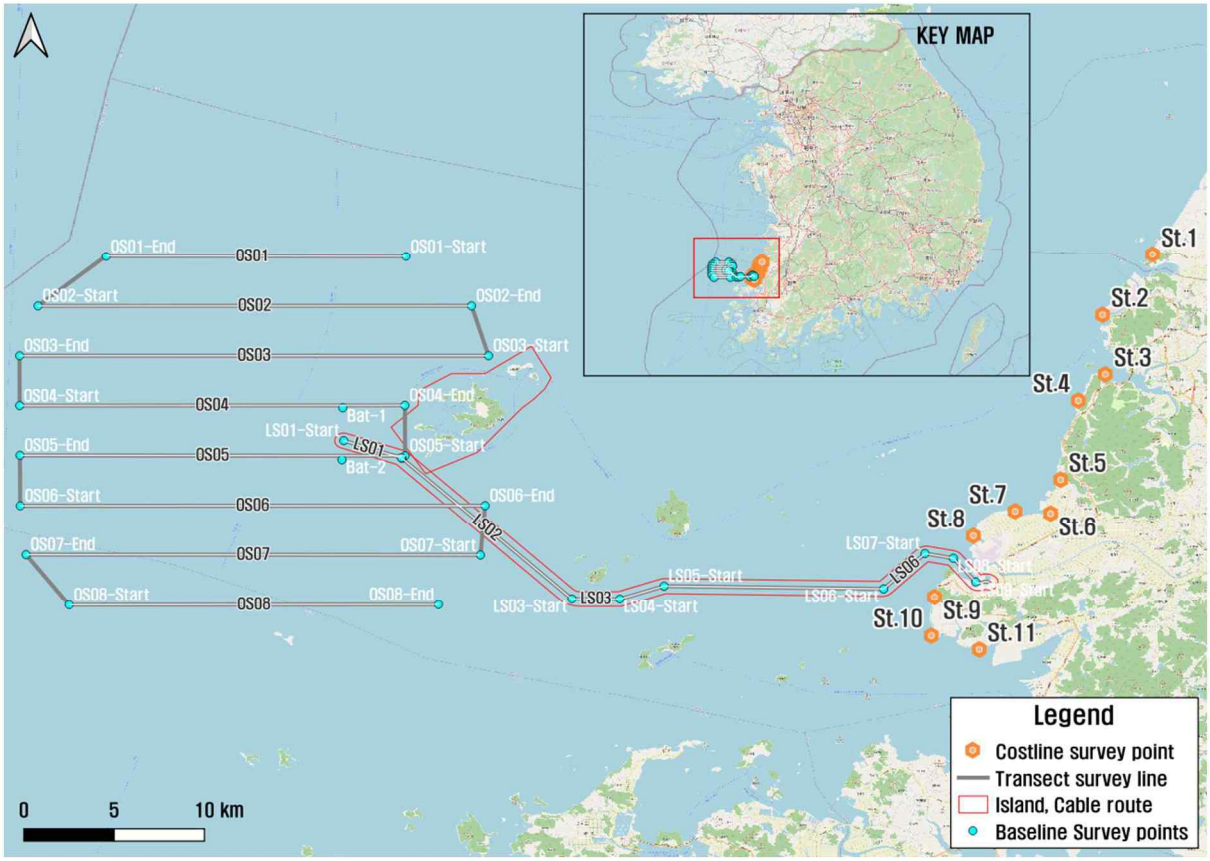


FIGURE 2.1 AREA OF SUPPLEMENTARY BIRD SURVEY

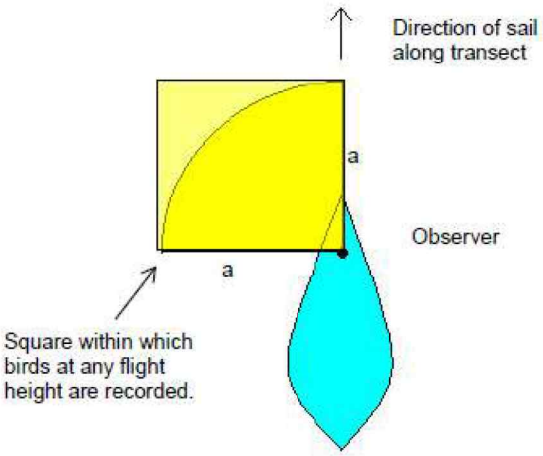
The vessel maintained a speed of less than 20 km/hr along each transect to minimise disturbance, with two to three observers positioned for optimal data collection. Specifically, one or two dedicated observers were tasked with scanning the ocean's surface for bird species, while a third observer was responsible for recording the collected data, including the time of sightings, species and number observed, and the distance of sightings from the survey platform. Additionally, flying birds were recorded in 'snapshots' to estimate the density of birds in flight, along with flight height and weather conditions during each survey.

Equipment used in the survey included:

- Binoculars;
- DSLR (Nikon D500); and
- Drone (DJI Mavic Pro).

The survey methodology involved a 300 m wide strip-transect operated on one side and ahead of the vessel and short time-intervals (1, 5, or 10-minute periods) in a continuous series to sample short stretches of water with a known surface area, a known location and any other biological, geographical, or physical factors that could be associated by that area. To evaluate the bias caused by specific differences in detection probability with distance away from the observer, the transect was subdivided into narrower distance strata (A= 0-50 m away from the vessel, B = 50-100 m, C = 100-200 m, D = 200-300 m, and E > 300 m). A species-specific frequency distribution over these strata indicated how many individuals were likely to have been missed in the furthest strata (Distance Sampling). All birds on water within 300 m perpendicular to track line of the vessel were counted as 'in transect'.

Periodically during each ten-minute count, snapshot counts of all birds in the air were taken. Normally such counts occur at minute intervals, but this is dependent on the speed of the boat. These methods provide density information and allow an estimation of collision risk to be derived.



Source: Using A Collision Risk Model To Assess Bird Collision Risks For Offshore Windfarms[1]

FIGURE 2.2 BOAT BASED SURVEY – SNAPSHOT OF BIRDS IN FLIGHT

It is important to note that surveys were exclusively conducted during daylight hours, and nocturnal surveys were not carried out due to the safety issue.

2.2 CRM METHODOLOGY

The CRM methodology involves several key steps. First, data on seabird flight activity, including flight height, speed, and behaviour patterns in the WTG Area is collected along with information on the distribution and abundance of seabird species in the vicinity. Subsequently, the characteristics of the wind farm are assessed, which include detailing specifications of the WTG: rotor diameter, hub height, rotation speed, and the number of turbines. The blade sweep area, which is the zone where bird collisions are most likely to occur, is then defined. Following this, the collision risk zones are determined by combining seabird flight height data with the turbine blade sweep area.

The flight activity of seabirds through the collision risk zone is modelled to calculate the probability of a bird flying through the rotor-swept area during the operational period of the wind turbines. The collision risk model formula[2] is utilized to estimate the probability of collision per bird transit through the rotor-swept area. To assess the potential impact on the seabird population, the collision risk is extrapolated over the operational life of the wind farm, considering factors such as species-specific vulnerability and conservation status to understand the broader ecological impact.

Finally, the collision mortalities for one year were calculated under the assumption that birds were unable to avoid collisions, and then the number of collision deaths was estimated

[1] Bill Band. 2012. Using a Collision Risk Model to Assess Bird Collision Risk for Offshore Windfarms. Strategic Ornithological Support Services program. Nature Scott.
[2] Band, W., Madders, M., Whitfield, D.R, 2007.Developing field and analytical methods to assess avian collision risk at wind farms. In: Lucas, M., Janss, G.F.E., Ferrer, M. (Eds.), Birds and Wind Farms: Risk Assessment and Mitigation. Quercus, Madrid, PP. 259-275.

considering avoidance rates of 95%, 98%, and 99%. Based on the ERM Impact Assessment standard, the sensitivity of ecological receptors is defined by evaluating the resource sensitivity for species and habitats separately. The impact level for each entity is then categorized as Negligible, Minor, Moderate, Major, or Critical. The method of dividing the impact level is as shown in the Table 2.1.

TABLE 2.1 SPECIES IMPACT ASSESSMENT CRITERIA

Baseline Species Sensitivity/Value		**Magnitude of Effect on Baseline Habitats**			
		Negligible	Small	Medium	Large
		Effect is within the normal range of variation for the population of the species	Effect does not cause a substantial change in the population of the species or other species dependent on it	Effect causes a substantial change in abundance and/or reduction in distribution of a population over one, or more generations, but does not threaten the long term viability/ function of that population dependent on it.	Affects entire population, or a significant part of it causing a substantial decline in abundance and/or change in and recovery of the population (or another dependent on it) is not possible either at all, or within several generations due to natural recruitment (reproduction, immigration from unaffected areas).
Negligible	Species with no specific value or importance attached to them.	Negligible	Negligible	Negligible	Negligible
Low	Species and sub-species of LC on the IUCN Red List, or not meeting criteria for medium or high value.	Negligible	Negligible	Minor	Moderate
Medium	Species on IUCN Red List as VU, NT, or DD, species protected under national legislation, nationally restricted range species, nationally important numbers of migratory, or congregatory species, species not meeting criteria for high value, and species vital to the survival of a medium value species.	Negligible	Minor	Moderate	Major
High	Species on IUCN Red List as CR, or EN. Species having a globally restricted range (i.e. plants endemic to a site, or found globally at fewer than 10 sites, Birds having a distribution range (or globally breeding range for bird species) less than 50,000 km2), internationally important numbers of migratory, or congregatory species, key evolutionary species, and species vital to the survival of a high value species.	Negligible	Moderate	Major	Critical

3. BASELINE SURVEY RESULT

The International Union for Conservation of Nature (IUCN) Red List of Threatened Species classifies species based on their risk of extinction. It includes several categories:

- Least Concern (LC): Widespread and abundant.
- Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
- Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
- Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
- Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

Among the findings, the detection of several significant species based on seasonal variations is noteworthy. The data shows the presence of the Near Threatened (NT) species, Streaked Shearwater (*Calonectris leucomelas*; NT [IUCN v.2024-1]), with a total of 177 individuals observed primarily during June 2023 to September 2023. Additionally, the Ancient Murrelet (*Synthliboramphus antiquus*; LC [IUCN v.2024-1]) was recorded with 123 individuals, with higher numbers during January to March, reflecting its prominence in early winter and spring.

The Black-tailed Gull (*Larus crassirostris*; LC [IUCN v.2024-1]) stood out as the most frequently observed species, with a total of 3,111 individuals, peaking during the months of May to July. This was followed by the Fork-tailed Storm Petrel (*Oceanodroma monorhis*; NT [IUCN v.2024-1]), with 136 individuals predominantly observed between July and September. Vega Gull (*Larus vegae*; LC [IUCN v.2024-1]) was another key species with a total of 48 recorded individuals, distributed more evenly across the year, particularly from January to November.

Out of all the months surveyed, the highest number of species (14 species) were recorded during May 2023, while the lowest (two species) were recorded during February 2024. The seasonal variations in abundance across the months are evident, with February and November marking the least biodiverse months.

Figure 3.1 illustrates the total recorded birds within windfarm area.

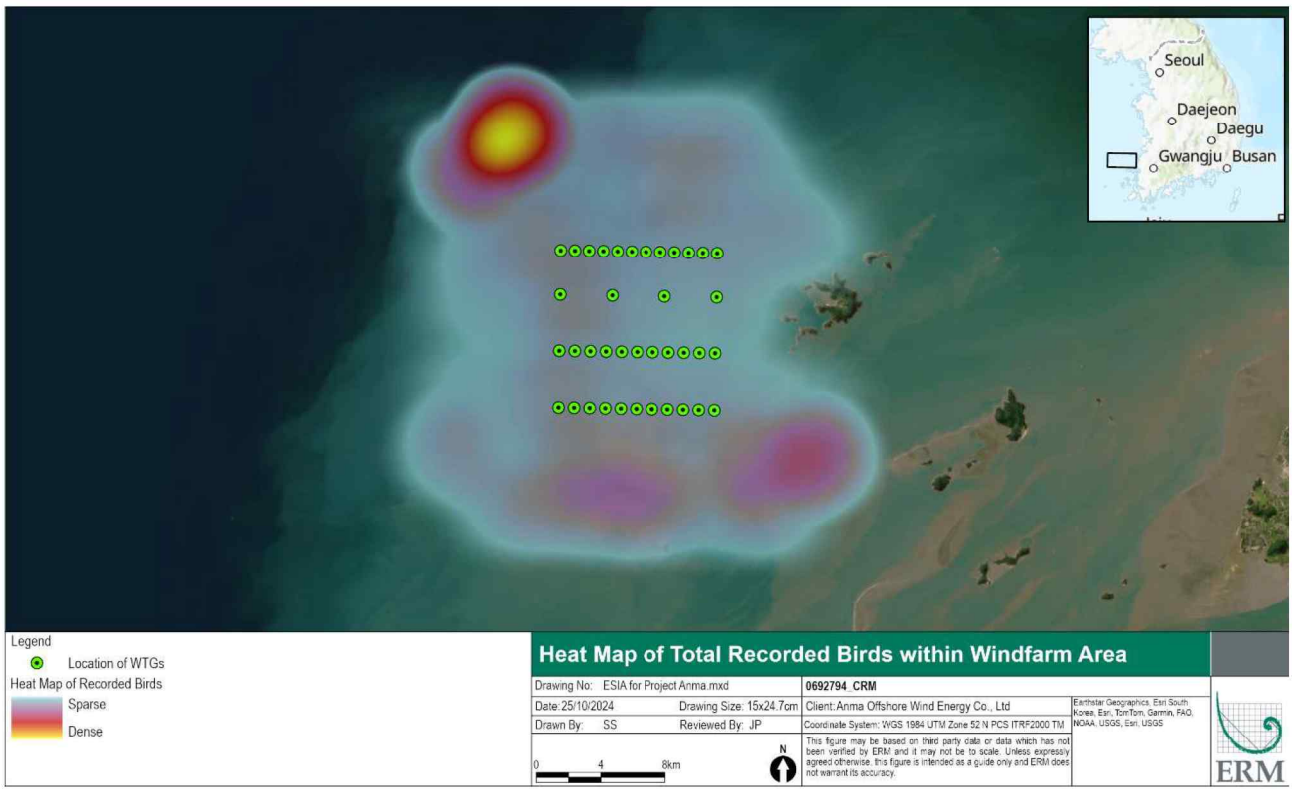


FIGURE 3.1 HEAT MAP OF TOTAL RECORDED BIRDS WITHIN WINDFARM AREA

In terms of total individual abundance across seasons, Autumn (September to November) recorded the highest number of individuals, followed by Summer (June to August), Spring (March to April), and Winter (December to February). These patterns illustrate distinct seasonal movements and habitat use by the species surveyed (refer to Figure 3.2).

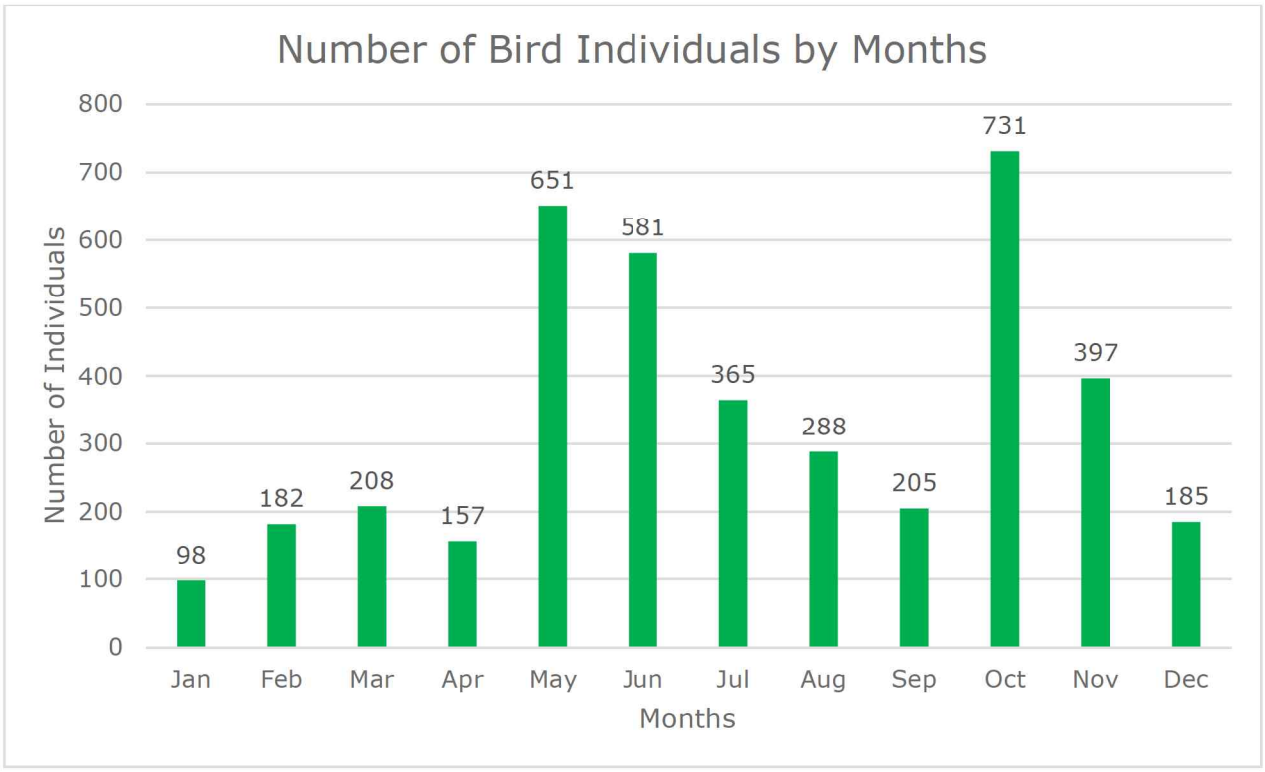


FIGURE 3.2 NUMBER OF BIRD INDIVIDUALS BY MONTHS

TABLE 3.1 NUMBER OF INDIVIDUALS FOR EACH SPECIES

Scientific name	English name	IUCN* (2024-1)	Korean Red List* (2014)	Number of individuals											
				Mar-2023	Apr-2023	May-2023	Jun-2023	Jul-2023	Aug-2023	Sep-2023	Oct-2023	Nov-2023	Dec-2023	Jan-2024	Feb-2024
Ardea alba	Great White Egret	LC	-	1	7	1	-	2	-	-	1	-	-	-	-
Ardea cinerea	Grey Heron	LC	-	3	2	-	-	-	-	-	-	-	-	-	-
Anas zonorhyncha	Eastern Spot-billed Duck	LC	-	-	-	-	-	-	-	-	1	-	-	-	-
Anas sp.	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-
Aythya marila	Greater Scaup	LC	-	-	-	-	-	-	-	-	7	-	-	-	-
Bubulcus ibis	Cattle Egret	LC	-	-	15	-	-	-	-	-	-	-	-	-	-
Calonectris leucomelas	Streaked Shearwater	NT	-	-	-	56	54	-	33	33	1	-	-	-	-
Caprimulgus indicus	Jungle Nightjar	LC	-	-	2	-	-	-	-	-	-	-	-	-	-
Cecropis daurica	Red-rumped Swallow	LC	-	-	-	9	-	-	-	-	-	-	-	-	-
Egretta garzetta	Little Egret	LC	-	-	-	2	-	-	-	3	-	-	-	-	-
Egretta intermedia	Intermediate Egret	LC	-	-	-	2	-	-	-	-	-	-	-	-	-
Gavia arctica	Arctic Loon	LC	-	-	-	-	-	-	-	-	-	-	-	8	-
Gavia pacifica	Pacific Loon	LC	-	-	-	-	-	-	-	-	-	-	2	1	-
Gavia stellata	Red-throated Loon	LC	-	1	-	-	-	-	-	-	-	-	-	-	-
Hirundo rustica	Barn Swallow	LC	-	-	1	1	-	-	-	-	-	-	-	-	-
Larus vegae	Vega Gull	LC	-	4	1	-	-	-	-	1	7	4	7	6	-
Larus canus	Mew Gull	LC	-	-	-	-	-	-	-	-	-	-	-	1	-
Larus mongolicus	Mongolian Gull	-	-	-	-	-	-	-	-	-	7	-	2	-	-
Larus crassirostris	Black-tailed Gull	LC	-	188	123	481	524	340	69	167	680	193	165	52	129
Ninox scutulata	Brown Boobook	LC	-	-	1	-	-	-	-	-	-	-	-	-	-
Tadorna tadorna	Common Shelduck	LC	-	-	-	-	-	-	-	-	-	-	6	-	-
Oceanodroma monorhis	Swinhoe's Storm-petrel	NT	-	-	-	62	1	23	50	-	-	-	-	-	-
Podiceps cristatus	Great Crested Grebe	LC	-	-	-	-	-	-	-	-	-	-	3	-	-
Phalacrocorax sp.	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-
Phalacrocorax capillatus	Japanese Cormorant	LC	-	-	2	-	-	-	-	-	-	-	-	-	-

Scientific name	English name	IUCN* (2024-1)	Korean Red List* (2014)	Number of individuals											
				Mar-2023	Apr-2023	May-2023	Jun-2023	Jul-2023	Aug-2023	Sep-2023	Oct-2023	Nov-2023	Dec-2023	Jan-2024	Feb-2024
Phalaropus lobatus	Red-necked Phalarope	LC	-	-	-	7	-	-	131	-	-	-	-	-	-
Phylloscopus fuscatus	Dusky Warbler	LC	-	-	-	1	-	-	-	-	-	-	-	-	-
Stercorarius parasiticus	Arctic Jaeger	LC	-	-	-	1	-	-	-	-	-	-	-	-	-
Sterna albifrons	Little Tern	LC	-	-	-	-	2	-	-	-	-	-	-	-	-
Sterna hirundo	Common Tern	LC	-	-	-	3	-	-	4	1	-	-	-	-	-
Synthliboramphus antiquus	Ancient Murrelet	LC	-	11	3	25	-	-	-	-	-	-	-	31	53
Sum				208	157	651	581	365	288	205	731	397	185	98	182

Note: *: Unable to determine exact species during the surveys.
****International Union for the Conservation of Nature (IUCN) Red List**
Least Concern (LC): Widespread and abundant.
Near Threatened (NT): Close to qualifying for or is likely to qualify for a threatened category in the near future.
Vulnerable (VU): Considered to be facing a high risk of extinction in the wild.
Endangered (EN): Considered to be facing a very high risk of extinction in the wild.
Critically Endangered (CR): Considered to be facing an extremely high risk of extinction in the wild.

Out of the bird species recorded during the transect line survey conducted in the wind farm area, only three species were found within the designated collision risk zone, which was set between 36.24 meters and 270 meters. The collision risk zone refers to the area between the lowest tip height and the highest tip height of the WTGs once they are installed offshore. The species found within this collision risk zone are listed in the following Table 3.2.

TABLE 3.2 RECORDED HEIGHT OF AVIAN SPECIES

Species	< 36.24m	36.24-270m	Grand Total
Anas poecilorhyncha	1	-	1
Anas sp.	-	5	5
Ardea alba	12	-	12
Ardea cinerea	5	-	5
Aythya marila	7	-	7
Bubulcus ibis	15	-	15
Calonectris leucomelas	177	-	177
Caprimulgus indicus	2	-	2
Cecropis daurica	9	-	9
Egretta garzetta	2	-	2
Egretta intermedia	5	-	5
Gavia arctica	7	-	7
Gavia pacifica	3	-	3
Gavia stellata	1	-	1
Hirundo rustica	2	-	2
Larus vegae	28	2	30
Larus mongolicus	9	-	9
Larus canus	1	-	1
Larus crassirostris	2,280	283	2,563
Larus sp.	570	-	570
Ninox scutulata	1	-	1
Oceanodroma monorhis	136	-	136
Phalacrocorax capillatus	2	-	2
Phalacrocorax sp.	200	-	200
Phalaropus lobatus	138	-	138
Phylloscopus fuscatus	1	-	1
Podiceps cristatus	3	-	3
Stercorarius parasiticus	1	-	1
Sterna albifrons	2	-	2

Species	< 36.24m	36.24-270m	Grand Total
Sterna hirundo	9	-	9
Synthliboramphus antiquus	123	-	123
Tadorna tadorna	6	-	6

4. INPUT DATA

4.1 RECORDED FLIGHT PATTERN

The distribution of flying height was assessed for seabirds by categorizing any birds seen in flight to its altitude as summarised below:

- Below blade sweep area 0-36.24 m;
- Within the blade sweep area (collision risk zone) 36.24-270 m; and
- Above blade sweep area (> 270 m).

Accurate data on flight heights is difficult to capture. In boat-based surveys, it relies on observers being able to estimate flight heights, and the accuracy of such estimates decreases with height.

Among the 32 recorded species, three species of birds were recorded within collision risk zone as shown below:

- Vega Gull [*Larus vegae;* LC (IUCN v2023-1)];
- Black-tailed Gull [*Larus crassirostris*; LC (IUCN v2023-1)]; and
- Anas species.

These selections were made based on the observation of all species flying within the range of 36.24 m to 270 m above mean sea level, a height representative of the space occupied by the turbine blades. Collision risk modelling was conducted for all these three species.

Figure 4.1 presents comprehensive data on bird presence observed across all flight heights within the windfarm area.

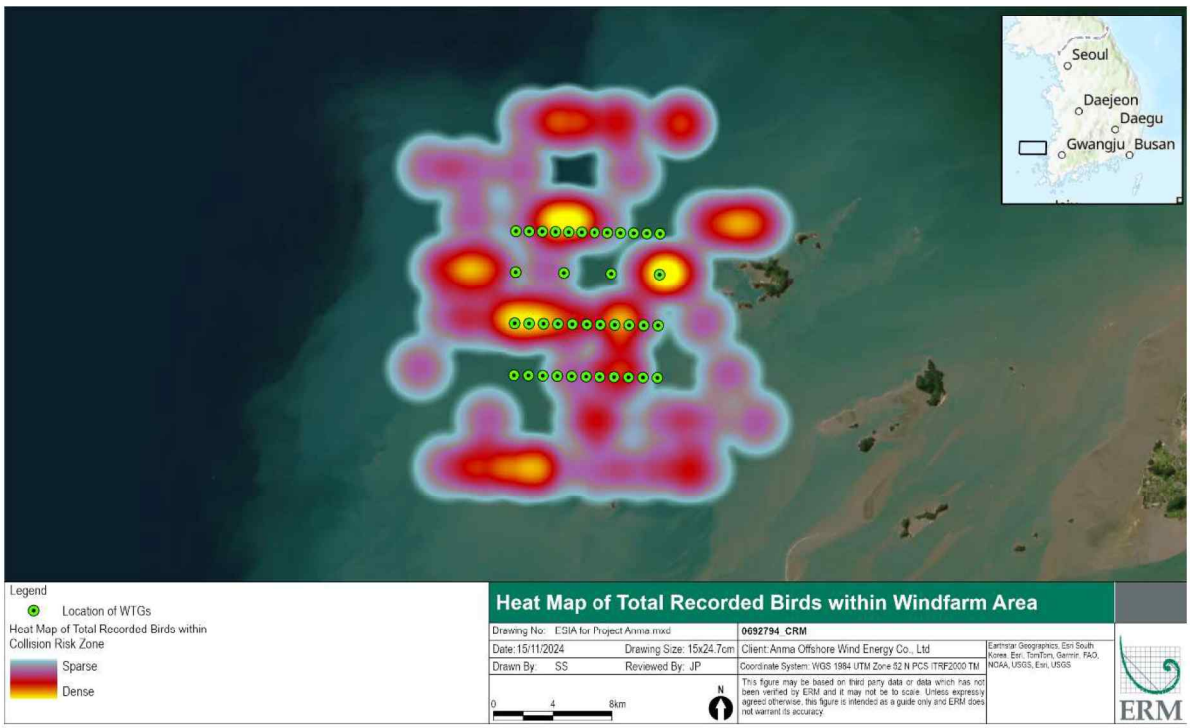


FIGURE 4.1 HEAT MAP OF TOTAL RECORDED BIRDS WIHTIN COLLISION RISK ZONE

Table 4.1 represents the proportion at rotor height of different species, observed during the offshore bird monitoring.

TABLE 4.1 DISTRIBUTION OF FLIGHT HEIGHT OF RECORDED SPECIES

Scientific Name	Flight Height (Number of Individuals)			Flight Height (% of number of individuals)		
	< 36.24m	36.24-270m	> 270m	< 36.24m	36.24-270m	> 270m
Vega Gull	28	2	-	93.3	6.7	-
Black-tailed Gull	2,280	283	-	89.0	11.0	-
Anas species	-	5	-	-	100	-

4.2 WTG SPECIFICATION

Apart from recorded data on avian flight activity recorded from offshore monitoring, data on specifications of wind turbines and biometrics of birds was utilised for CRM. Following is the WTG specification used during the CRM.

TABLE 4.2 WTG DETAILS

WTG Components	Parameter	Details
WTG	Type Class	SG DD-236
RPM	-	12
Monthly Proportion of Time Operational	%	90
ROTOR	Type	3-bladed, horizontal axis
	Position	Upwind
	Diameter (m)	236
	Length of blade (m)	115
	Max Blade Width (Chord) (m)	6.5
	Pitch (deg.)	6
	Swept area (m^2)	43,500
	Mean Sea Level to Lower Tip Blade (m)	36.24
TOWER	Type	Cylindrical and tapered tubular
	Hub height (m)	153
	Total height from Mean Sea Level (MSL) (m)	270
OPERATION DATA	Cut in Wind speed (m/s)	3
	Nominal Power (m/s)	at 12
	Cut out wind speed (m/s)	28
Tidal Offset	Mean Sea Level: 2.66 m Highest tide: 5.2 m - 5.9 m	

4.3 BIOMETRIC OF SPECIES

In addition to information required on wind turbine and site specification, the following biometric data on avian selected, was required for CRM.

TABLE 4.3 BIOMETRICS OF SPECEIS FOR COLLISION RISK MODELLING

Species	Bird Length (m)	Wingspan (m)	Flight Speed (m/s)	Nocturnal Activity Factor[3]	Reference
Vega Gull (*Larus vegae*)	0.60	1.34	12.8	3	• Bird Length: https://www.marlin.ac.uk/species/detail/2209 • Wingspan: Alerstam et al., (2007). Flight Speed among Bird Species • Flight Speed: Alerstam et al., (2007). Flight Speed among Bird Species
Black-tailed Gull (*Larus crassirostris*)	0.46	1.26-1.28	4.1	1	• Bird Length: https://picturebirdai.com/wiki/Larus_crassirostris.html • Wingspan: https://picturebirdai.com/wiki/Larus_crassirostris.html • Flight Speed: Cheng, Z. Q. (1990). Behavior of Nesting Black-Tailed Gulls (Larus crassirostris)
Anas species [Mallard (Anas platyrhynchos)]*	0.50 – 0.71	0.88	18.5	1	• Bird Length: https://www.dimensions.com/element/mallard-anas-platyrhynchos • Wingspan: Alerstam et al., (2007). Flight Speed among Bird Species • Flight Speed: Alerstam et al., (2007). Flight Speed among Bird Species

Note
*: It should be noted that The Mallard (Anas platyrhynchos), one of the most common Anas species in Korea, has been selected.

[3] Data used in the collision model should take both day and night flights into account. Where there is no night-time survey data available, or other records of nocturnal activity, for the species in question, (or for other sites if not at this site), it should be assumed that the Garthe and Hüppop/ King et al 1-5 rankings apply. These rankings should then be translated to levels of activity at night which are respectively 0%, 25%, 50%, 75% and 100% of daytime activity. These percentages are a simple way of quantifying the rankings for use in collision modelling, and they may to some extent be precautionary. For some species, there are no such expert rankings available. Levels of activity may vary from season to season, and activity at sea may in any case differ from the levels of activity in breeding colonies for which the rankings have been formulated. Some species are particularly active during dawn and dusk or extended twilight periods, or in locations where there is ambient windfarm lighting. When expressing the output of the collision risk assessment, the uncertainty surrounding flight activity should reflect the degree of confidence (or lack of confidence) in the flight activity information.

4.4 OTHER INPUT DATA

A total of 206 km of transect lines have been surveyed excluding the distance covered between the lines. Given that the farthest observed bird was at a distance of 2 km, the survey area can be estimated by multiplying this distance by the total length of surveyed lines, resulting in an area of 412 km^2.

The bird density was computed for the birds recorded within the flight band ranging from 36.24 m to 270 m for each month. As illustrated in Table 4.4 and Table 4.5, the number of individuals and density recorded within collision risk zone is denoted in units of birds per square kilometre (bird/km^2) for each respective month.

TABLE 4.4 NUMBER OF INDIVIDUALS WITHIN FLIGHT BAND PER MONTH

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Anas sp.	0	0	0	0	0	0	0	0	0	5	0	0
Larus vegae	1	0	0	0	0	0	0	0	0	1	0	0
Larus crassirostris	2	3	13	9	10	208	16		6	11	5	

TABLE 4.5 DENSITY WIHTIN FLIGHT BAD PER MONTH

Species	Density (birds/km2) within Flight Band (27 - 263m) per Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Anas sp.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.012136	0.000000	0.000000
Larus vegae	0.002427	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.002427	0.000000	0.000000
Larus crassirostris	0.004854	0.007282	0.031553	0.021845	0.024272	0.504854	0.038835	0.000000	0.014563	0.026699	0.012136	0.000000

5. CRM OUTCOME

The collision risk modelling, conducted using data gathered from 12 rounds of offshore surveys spanning from March 2023 to February 2024, factoring in avoidance rates of 95%, 98% and 99%.

Birds are known to exhibit two types of avoidance behaviour[4] :

- 'Macro-avoidance' whereby birds alter their flight path to keep clear of the entire wind farm[5] [6] [7] [8], and
- 'Micro-avoidance' whereby birds enter the wind farm but take evasive actions to avoid individual wind turbines[9]

Band et al. 2012 recommended that collision risks be evaluated assuming avoidance rates of 95%, 98%, 99% and 99.5%. For this particular CRM the probabilistic figure of predicted collision has been corrected by using 95%, 98% and 99% avoidance rate.

The CRM was conducted for a total of three species and the results are presented in Sections 5.1 to 5.3.

5.1 BLACK-TAILED GULL (LARUS CRASSIROSTRIS)

The survey data indicates that a total of 2,563 individuals of Black-tailed Gulls were recorded in the study area, with 283 individuals observed within the designated collision risk zone. CRM was conducted to assess the potential impact of the offshore wind farm on this species. The CRM results estimate that 3,550 individuals are expected to transit through the rotor-swept area annually.

The probability of collision for Black-tailed Gulls during a single rotor transit was determined to be 9.2%. Based on this collision probability and without accounting for avoidance behavior, the model estimates that approximately 295 individuals could collide with turbines annually. To provide a more realistic assessment, various avoidance rates (95%, 98%, and 99%) were applied. At a 95% avoidance rate, the estimated annual collision mortality is reduced to 15 individuals. At a 98% avoidance rate, the estimated mortality further decreases to 6 individuals per year, and at a 99% avoidance rate, it is reduced to only 3 individuals annually.

Figure 5.1 presents a heat map based on the data collected during the survey period, illustrating the spatial distribution of Black-tailed Gulls within the collision risk zone. The heat map indicates that individuals are distributed across various parts of the project area, with no significant concentration of birds in any one particular location within the collision risk zone.

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[4] Robert W. Furness, Helen M. Wade, Elizabeth A. Masden, 2013. Assessing vulnerability of marine bird populations to offshore wind farms, Journal of Environmental Management, Volume 119, Pages 56-66, ISSN 0301-4797, https://doi.org/10.1016/j.jenvman.2013.01.025.
[5] Fox, A. & Petersen, Ib. (2019). Offshore wind farms and their effects on birds.
[6] Desholm, M. & Kahlert, J. 2005. Avian collision risk at an offshore wind farm. Royal Society Biol. Lett. 1: 296-298.
[7] Villegas-Patraca, R., Cabrera-Cruz, S.A., Herrera-Alsina, L., 2014. Soaring migratory birds avoid wind farm in the Isthmus of Tehuantepec, southern Mexico. PloS ONE 9, e92462.
[8] Plonczkier, P., Simms, I.C., 2012. Radar monitoring of migrating pink-footed geese: behavioral responses to offshore wind farm development. J. Appl. Ecol. 49, 1187-1194.
[9] Band, W., Madders, M., Whitfield, D.R, 2007.Developing field and analytical methods to assess avian collision risk at wind farms. In: Lucas, M., Janss, G.F.E., Ferrer, M. (Eds.), Birds and Wind Farms: Risk Assessment and Mitigation. Quercus, Madrid, PP. 259-275.

According to the IUCN Red List, the global population of Black-tailed Gulls is estimated at approximately 1,100,000 individuals, and the species is classified as Least Concern (LC). With an avoidance rate of 98%, it is estimated that only 6 individuals may perish annually due to collisions with turbines. Given the large global population and the insignificant expected mortality, the magnitude of impact is considered to be **Negligible**, as this level of mortality falls well within the natural range of variation for the species.

Furthermore, considering the Black-tailed Gull's IUCN status as LC and its large population size, the sensitivity of the species to this impact is assessed as **Low**.

In conclusion, based on the CRM results and the species' global population, the operational phase of the offshore wind farm is expected to have a **Negligible** impact on the population of Black-tailed Gulls. This conclusion is consistent with the species impact assessment criteria outlined in Table 2.1 of this report.

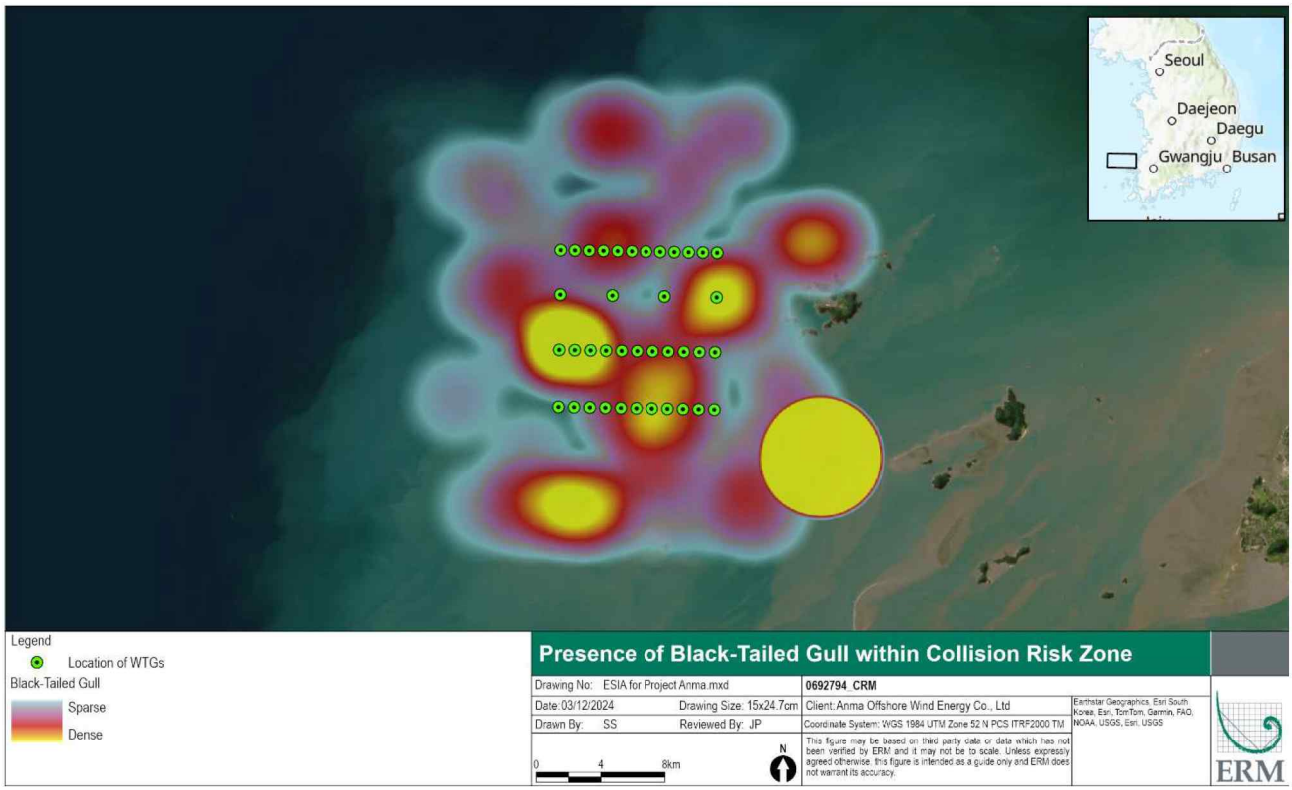


FIGURE 5.1 PRESENCE OF BLACK-TAILED GULL WITHIN COLLISION RISK ZONE

5.2 VEGA GULL (LARUS VEGAE)

The survey data recorded 30 individuals of Vega Gulls, with two of them observed within the collision risk zone of the offshore wind farm project. Based on CRM, it is estimated that 74 individuals could potentially fly through the rotor-swept area annually.

The calculated probability of collision for a single rotor transit for the Vega Gull was determined to be 8.7%. Without factoring in avoidance behavior, this translates to an estimated seven collision mortalities per year. When applying avoidance rates of 95%, 98%, and 99%, the estimated collision mortalities significantly decreased. At a 95% avoidance rate, the anticipated collision mortality is reduced to 0.18 individuals per year. With a 98% avoidance rate, the expected mortality further drops to 0.07 individuals, and with a 99% avoidance rate, the projected mortality is minimal at just 0.0 4 individuals per year.

A map presented in Figure 5.2, based on collected field data, illustrates the spatial distribution of Vega Gulls in the collision risk zone. The distribution appears dispersed across the project area, with no significant clustering.

According to the IUCN Red List, the global population of Vega Gulls is estimated at around 1,220,000 individuals. Given the collision risk modelling results, with a 98% avoidance rate, only 0.14 individuals are expected to be affected annually. Therefore, the magnitude of impact is assessed as **Negligible**, as the expected mortality is within normal variation for the species.

Considering the Vega Gull's status as Least Concern (LC) on the IUCN Red List, the sensitivity of the species to this impact is considered **Low**.

In conclusion, the operation of the offshore wind farm is projected to have a **Negligible** impact on the population of Vega Gulls, based on the CRM and species impact assessment criteria outlined in Table 2.1.

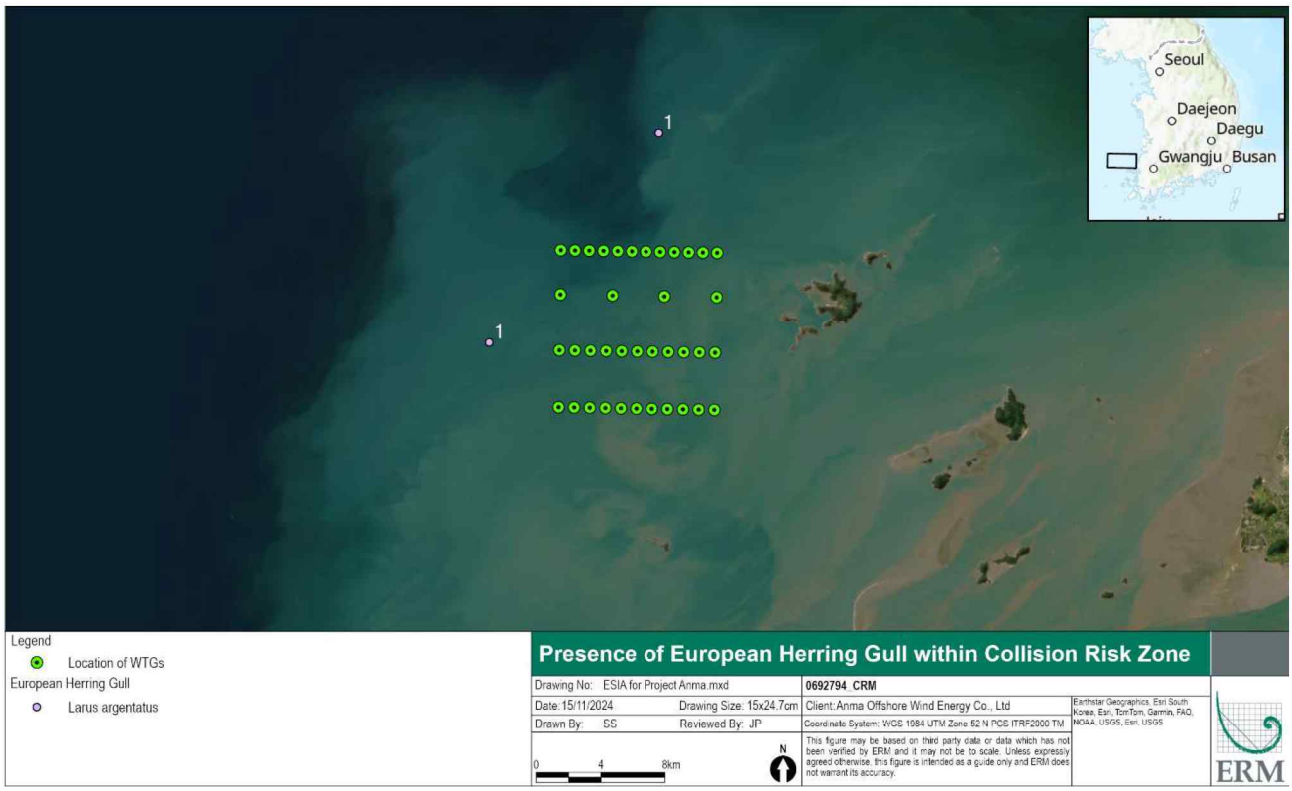


FIGURE 5.2 PRESENCE OF VEGA GULL WITHIN COLLISION RISK ZONE

5.3 MALLARD (ANAS PLATYRHYNCHOS)

As described in Section 4.3, the specific species for Anas sp. could not be identified during the baseline surveys. Therefore, the CRM was conducted based on the assumption that the most common Anas species in South Korea, the Mallard, represents the species involved.

The data shows that five individuals of Anas sp. which is considered as Mallard were recorded, all of which were located within the collision risk zone. The CRM analysis estimated that approximately 2,000 individuals could potentially fly through the rotor-swept area annually.

For Mallards, the determined probability of collision for a single rotor transit was 4.6%. Using this probability, the initial calculation for collision mortality (without any avoidance measures) resulted in an estimated 83 collision mortalities per year. When avoidance rates of 95%, 98%,

and 99% were applied, the estimated collision mortalities were significantly reduced. At a 95% avoidance rate, the anticipated mortality was reduced to 4.13 individuals. At a 98% avoidance rate, it decreased to 1.65 individuals, and at a 99% avoidance rate, the expected collision mortality further dropped to 0.83 individuals annually.

A map, as presented in Figure 5.3, provides insights into the spatial distribution and concentration of individuals within the collision risk zone. The recorded individuals are distributed across various locations within the project area, with no major clustering.

The global population of Mallards is estimated at 19,000,000 individuals according to the IUCN Red List. Based on CRM results with a 98% avoidance rate, only 1.65 individuals are expected to be affected annually, indicating that the magnitude of impact is **Negligible**. This is considered to be within the normal variation for the species.

Additionally, since the Mallard is listed as Least Concern (LC) on the IUCN Red List, the sensitivity of the species to this impact is considered **Low**.

Overall, the operation of the offshore wind farm is expected to have a **Negligible** impact on the Mallard population, as assessed through the species impact criteria shown in Table 2.1.

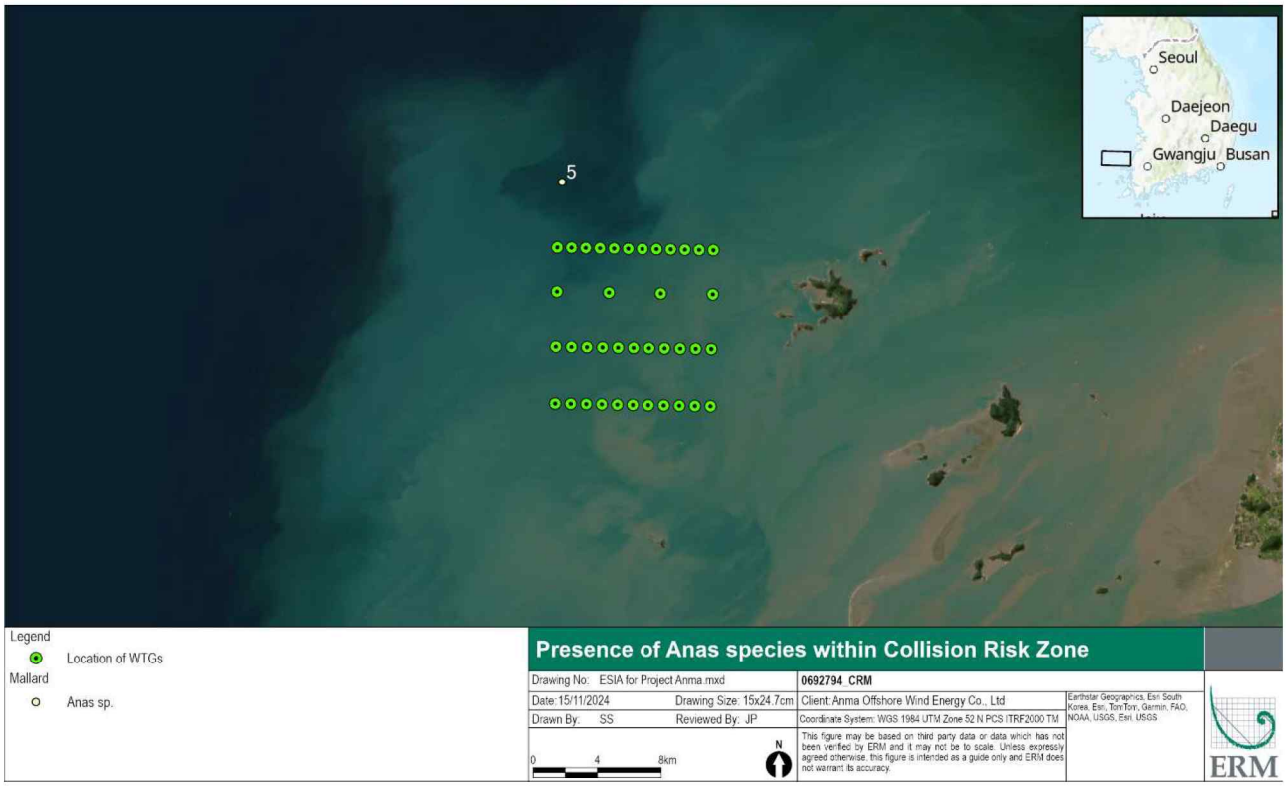


FIGURE 5.3 PRESENCE OF ANAS SPECIES WIHTIN COLLSION RISK ZONE

6. CONCLUSION

Based on the CRM conducted for various bird species, the overall impact of the proposed offshore wind farm on avian populations is considered **Negligible**. For the three species analyzed—Black-tailed Gull, Vega Gull, and Mallard—the estimated collision mortalities remain minimal, particularly when avoidance rates are considered. The CRM estimates indicate that at a 98% avoidance rate, annual collision mortalities range from 0.14 to 6 individuals per species. Given the large global populations of these species, as documented by the IUCN Red List, the estimated collision rates are within acceptable thresholds, having negligible effects on population dynamics.

The sensitivity of these species, all of which are categorized as Least Concern on the IUCN Red List, is also considered Low. This further supports the conclusion that the operational offshore wind farm will not significantly affect these bird populations.

Moreover, the project's ongoing mitigation efforts, including avoidance measures and adaptive management, will ensure that any potential impacts are monitored and addressed, thus maintaining minimal risk to bird species. In conclusion, the CRM results demonstrate that the Project is expected to have a Negligible impact on bird populations that may trespass the offshore wind farm site.

APPENDIX A LIMITATION

- The short term visual offshore surveys are typically limited samples representative of overall flight activity occurring in the surveyed zone. So, they cannot be considered as representative of all manner of flight activity. Species that are IUCN threatened and are represented by very low global populations often flock with other species particularly in Multi Species Feeding Associations (MSFAs) often occurring during feeding frenzies (see above) and these can go unnoticed during offshore avian flight surveys.
- Offshore surveys only capture daytime avian activity. However, many migratory birds typically carry out long distance migration flights during the night. So, the prevailing survey effort may not have captured such nighttime flight activity.
- Distance correction was not applied to the vessel-based bird survey data. The surveys employed a strip transect method with a fixed observation width, assuming near-complete detectability of birds within this band. Nevertheless, potential variation in detectability with distance from the observer was not accounted. As a result, bird densities may be underestimated, particularly for smaller or more distant species. In this respect, the model may underestimate collision risk.
- Although the results is expected to not be affected, the data from the EIA survey was not incorporated in the modelling process as observations of flight altitude or behavioral patterns were not recorded.
- As the CRM assumes that birds can avoid stationary infrastructure no consideration is taken of the turbine towers, nor the blades when stationary. While this may be a valid assumption in clear daylight conditions it may not be wholly true at night or in conditions of poor visibility.
- CRM does not take into account the effects on a bird's flight in turbulence in the wake of a blade. Observers have seen birds 'knocked out of the sky' by turbulence, and there is potential for this to increase mortality through disorientation or impact with the sea surface.
- The model does not take account any 'slipstream' effects whereby the air rushing over the surface of a blade may carry a bird clear of the blade when otherwise it was on a collision course. In this respect, the model may over-estimate collision risk.
- Real birds are larger than represented by a flying cross (as considered by CRM by taking into account length and breadth of bird), though a cross should represent the main extremities. In this respect, the model may underestimate collision risk.
- The basic collision model evaluates the probability of a bird colliding if it passes at random at any point through the rotor disk on a flight path perpendicular to the rotor plane. In practice, the points of passage of seabirds through the rotor are not distributed uniformly across the rotor. Survey data for seabirds indicate that typical flight heights for many species are relatively low, such that much of the bird flux through a rotor, and the associated collision risk, will relate to the lower parts of the rotor plane. Since it averages risk over the entire rotor including higher-risk areas close to the hub, the basic model will overestimate the collision risk for seabirds whose flight passages are more concentrated towards the lower part of the rotor plane.

APPENDIX F BIRD TRACKER STUDY METHODOLOGY AND RESULTS

This appendix provides the full results of the bird tracker study conducted between 2022 and 2023 for selected seabird species. While this data is not directly used in the impact assessment, it has been included here to provide supplementary context and transparency.

1. Purpose of the Bird Tracker Study

The purpose of the bird tracker study was to gather supplementary information on the movement patterns, habitat use, and potential interaction of seabirds with the offshore wind farm area and surrounding marine environment. Specifically, the study aimed to:

- Understand seasonal foraging behavior and flight paths of target seabird species.
- Identify areas of concentrated activity or potential sensitivity within the project's area of influence.
- Supplement baseline data collected through visual surveys by providing GPS-based spatial information.
- Inform ongoing project planning and future adaptive management strategies, particularly related to avian risk mitigation.

Although the tracking data were not directly incorporated into the quantitative impact assessment, the study serves as a supporting reference to understand spatial and temporal trends in seabird activity that may inform future monitoring and management.

2. Methodology of the Bird Tracker Study

To support the supplementary understanding of seabird ecology in relation to the offshore wind farm development, a GPS tracking study was conducted on a focal seabird species. This study aimed to collect fine-scale movement data that could help characterize spatial use patterns within and around the Project area.

Black-tailed gulls were designated as the focal species for capture, and this operation was conducted on Anma-do and Songi-do, situated in close proximity to the project site and its adjacent coastal areas. Subsequently, intensive capturing efforts were initiated, commencing at the end of June 2022, once the breeding period of black-tailed gulls had concluded. This strategic approach aimed to ensure the capture and tracking of the target species to gain insight into movement behavior near the Project area.

Table F-1 Bird Capture Plan

Category	Subject of capture	Number of individuals	Place of capture	Time of capture
Resident bird	Black-tailed gull	5	Within Yeonggwang-gun (Anma-do)	June~August, 2022
Resident bird	Black-tailed gull	5	Within Yeonggwang-gun (Songi-do)	June~August, 2022

Source: Supplementary EIA

Upon capturing a wild bird, a tracking device capable of real-time movement monitoring was employed. The WT-300 model, renowned for its efficacy both in Korea and internationally, was selected for its reliability. The operational principle of the WT-300 is outlined as follows: as an individual equipped with the attached tracker moves, the device records GPS-based location data at predetermined intervals, storing this received information internally within the tracker. This approach enables the continuous tracking and monitoring of the bird's movements, providing valuable insights into its behavior and habitat utilization.

The acquired location data is seamlessly transmitted to the server through a reliable commercial mobile communication network. Accessing this stored information is conveniently achieved through a user-friendly web interface, accessible on both PCs and smartphones.

Tracker settings are configured to capture GPS data at specific intervals throughout the day (at 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, and 22 hours), with data transmission occurring once daily at noon. Prior to attachment, a thorough assessment of the individual's live weight and overall health status is conducted to ensure suitability for tracker affixation. Trackers are securely fastened in the form of a backpack, following an internationally recognized approach. Careful attention is paid during attachment to avoid any disruption to the bird's natural activities. Each tracker is assigned a unique identification number, mitigating any potential confusion with other equipment. Upon release, the event is meticulously documented through photography, serving as a crucial record of the bird's successful return to its natural habitat. This comprehensive process ensures accurate monitoring and valuable insights into the bird's behavior and habitat utilization.

3. Result of the Bird Tracker Study

The following section has been prepared in alignment with EIA best practice guidance. While not formally required under the impact assessment framework, AWC voluntarily conducted the bird tracker study to collect fine-scale spatial data (e.g., location and movement) for one of the most abundant seabird species in the region, the black-tailed gull (*Larus crassirostris*). However, it should be highlighted that the study results are intended to provide supplementary insight, but should not be considered representative of the entire avian assemblage at the site.

Field implementation began in July 2022. On 7th July, five black-tailed gulls were successfully captured on Songi-do, followed by the capture of an additional five individuals on Anma-do on 2nd August 2022, bringing the total captured to ten. The individuals caught on Songi-do were identified as adult birds, aged three years or older, distinguished by the absence of young bird feathers, and trackers were affixed to them. On Anma-do, both young and adult birds were captured. Trackers were attached to three adult birds as well as to two young birds for comprehensive monitoring.

Table F-2 Status of Attachment of Trackers

Order	Tracker number	Live weight (g)	Age	Date of attachment	Locations where the trackers are attached to individuals
1	sol2201	580	Adult bird	7 July, 2022	Dock, Songi-do (Songi-ri, Nagwol-myeon, Yeonggwang-gun) N35° 16′ 20.1″ E126° 9′ 2.2″
2	sol2202	610	Adult bird		
3	sol2203	500	Adult bird		
4	sol2204	502	Adult bird		
5	sol2205	505	Adult bird		
6	sol2206	530	Young bird	2 August, 2022	Dock, Anma-do (Wolchon-ri, Nagwol-myeon, Yeonggwang-gun) N35° 20′ 44.0″ E126° 0′ 57.9″
7	sol2207	590	Adult bird		
8	sol2208	455	Adult bird		
9	sol2209	515	Adult bird		
10	sol2210	525	Young bird		

Source: Supplementary EIA

As of 24 May 2023, the status of movement for all ten individuals with attached trackers has been assessed based on location data.

Among these, seven individuals have been consistently transmitting signals up to the specified date. Specifically, sol2206 and sol2207 sent signals until 24 May 2023, sol2202 until 22 May 2023, sol2208 until 18 May 2023, sol2204, sol2209 and sol2210 until 23 May 2023. This suggests that all seven individuals have been actively transmitting signals up until the present time, considering their movements on the high sea.

Regarding the remaining three individuals from Songi-do, it was noted that sol2201 ceased sending signals on 17 September 2022, sol2203 on 7 August 2022, and sol2205 on 7 July 2022. Sol2201 remained active around the dock of Songi-do without relocating to another area after the tracker attachment, and then ceased transmission on 1st September 2022. Sol2203 initially moved northward along the West Coast of Jeollanam-do after the tracker attachment, and subsequently journeyed to the Gogunsan Islands near Saemangeum before stopping signal transmission on 7 August 2022. Sol2205 ceased transmitting signals on the day the tracker was affixed.

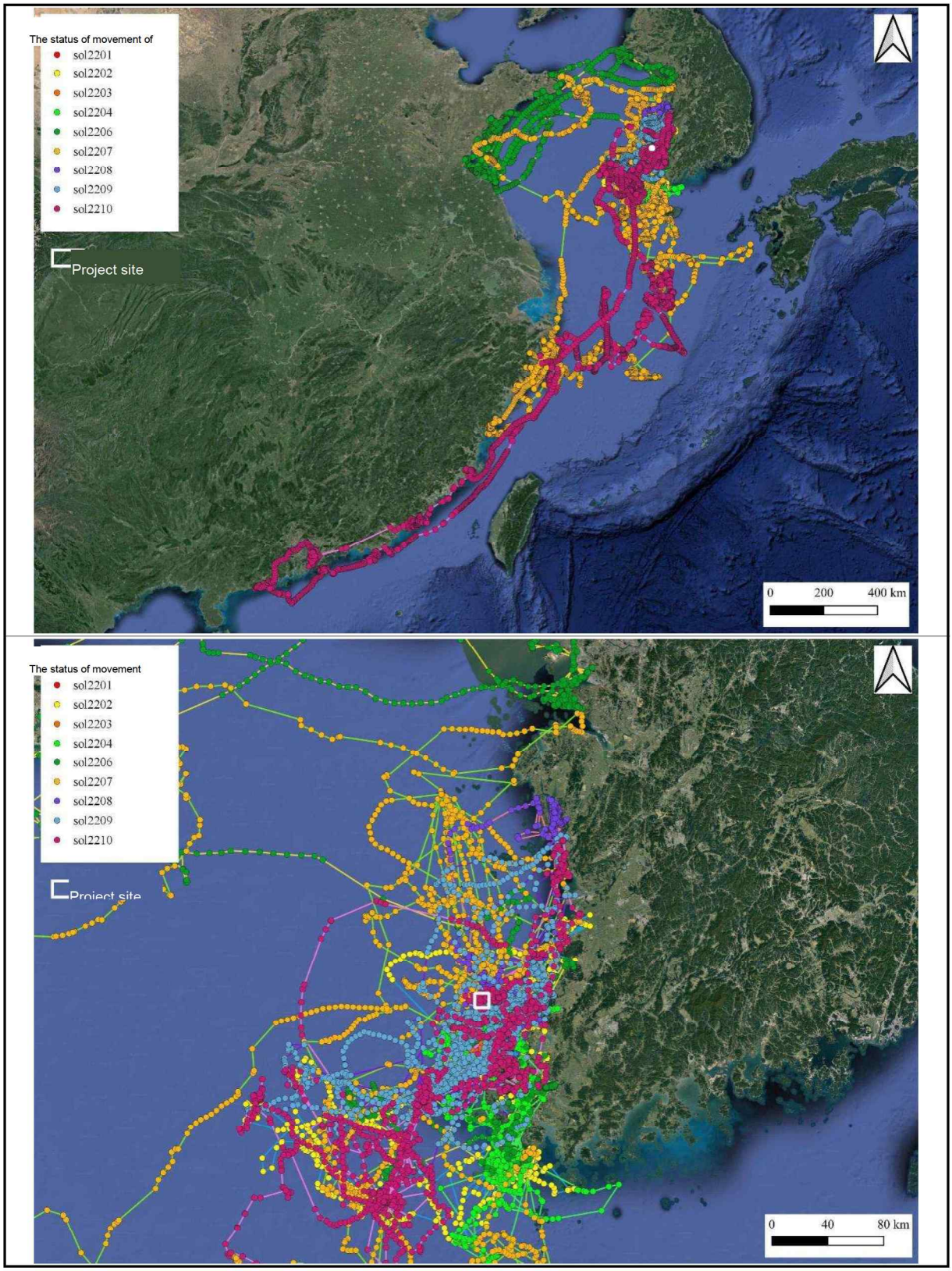
Among the remaining seven individuals, sol2206, sol2207, and sol2210 were observed embarking on extensive journeys, venturing beyond national borders and traversing the West Coast. Specifically, it was observed that sol2206 made multiple trips to the west coast of China near Chengdu before returning to Korea, sol2207 journeyed to Jeju-do, the vicinity of Kyushu in Japan, the west coast of China, and the vicinity of Fuzhou in southeastern China before returning to the country, and sol2210 moved to offshore areas near Hong Kong and Macao along the West Coast of China before returning to Korea. As of 24 May 2023, one individual, sol2207, was found to be residing at the location of tracker attachment, having returned to Anma Port. Meanwhile, sol2204 and sol2209 were observed to be active in offshore areas near Songi-do.

Table F-3 The Status of Movement of the Birds with Trackers Attached

No.	Tracker number	Date of attachment	Locations where the trackers are attached to individuals	Date of final receipt	Final location (as of 24 May, 2023)
1	sol2201	07 July, 2022	Songi-do	17 September, 2022	Dock, Songi-do, Nagwol-myeon, Yeonggwang-gun, Jeollanam-do
2	sol2202	07 July, 2022	Songi-do	22 May, 2023	Offshore areas in the vicinity of Songi-do, Nagwol-myeon, Yeonggwang-gun, Jeollanam-do
3	sol2203	07 July, 2022	Songi-do	07 August, 2022	In the vicinity of Gogunsan Islands, Okdo-myeon, Gunsan-si, Jeollabuk-do
4	sol2204	07 July, 2022	Songi-do	23 May, 2023	Offshore areas in the vicinity of Songi-do, Nagwol-myeon, Yeonggwang-gun, Jeollanam-do
5	sol2205	07 July, 2022	Songi-do	07 July, 2022	-
6	sol2206	02 August, 2022	Anma-do	24 May, 2023	Offshore areas in the vicinity of Youngheung-do-Daebu-do, Youngheung-myeon, Ongjin-gun, Incheon Metropolitan City

7	sol2207	02 August, 2022	Anma-do	24 May, 2023	In the vicinity of Anma Port, Anma-do, Nagwol- nearby, Yeonggwang-gun, Jeollanam-do
8	sol2208	02 August, 2022	Anma-do	18 May, 2023	Offshore areas in the vicinity of Jaewon-do, Imja-myeon, Shinan-gun, Jeollanam-do
9	sol2209	02 August, 2022	Anma-do	23 May, 2023	Sonoin-do, Nagwol-myeon, Yeonggwang-gun, Jeollanam-do
10	sol2210	02 August, 2022	Anma-do	23 May, 2023	Offshore areas in the vicinity of Jinri Port, Imja-myeon, Shinan-gun, Jeollanam-do

Source: Supplementary EIA

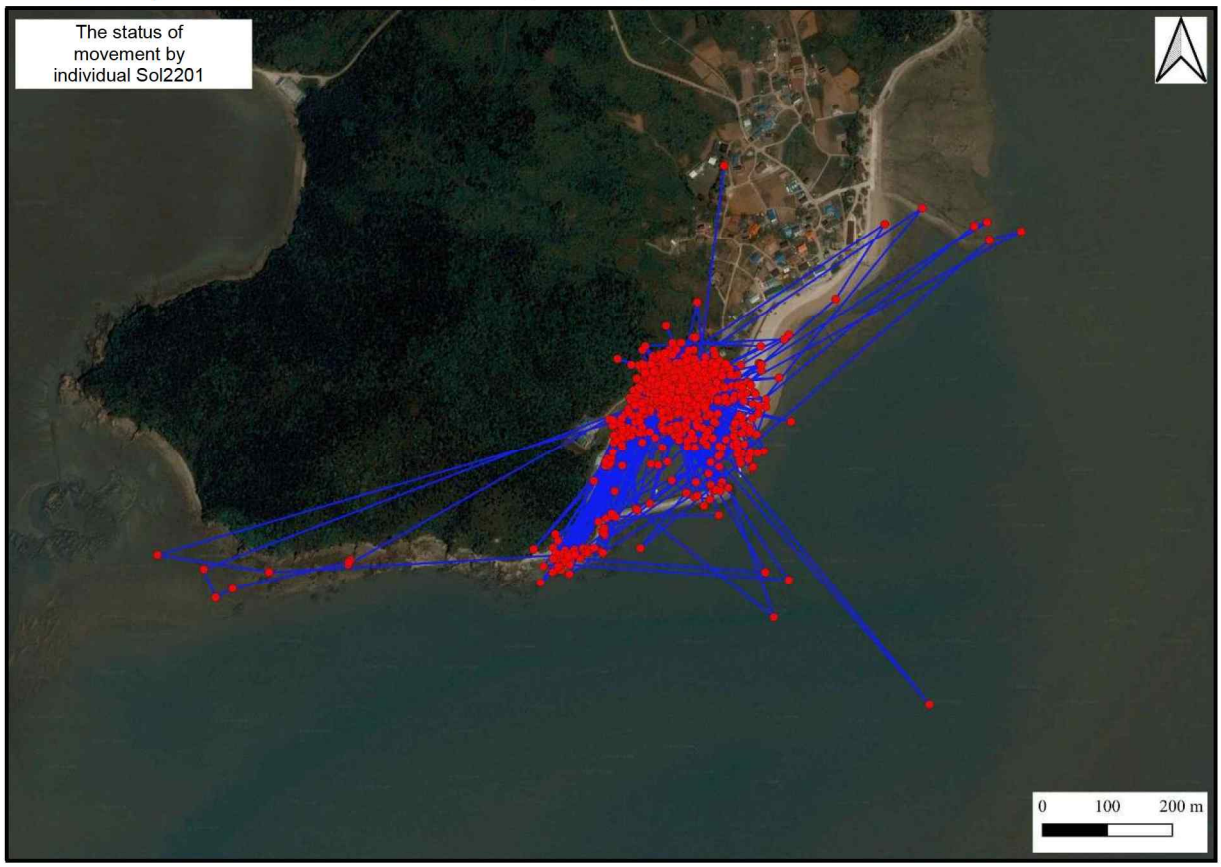


Source: Supplementary EIA

Figure F-1 Movement of All the Individuals of Bird

Sol2201

Sol2201 exhibited activity in offshore areas near the dock of Songi-do, including coastal regions and mud flats, where the tracker was affixed. This behavior was observed for approximately two months. However, on 17 September 2022, signal transmission ceased, occurring in close proximity to the locations where the trackers had been attached. This suggests that sol2201 may have met a condition that prevented the continuation of signal transmission.



Source: Supplementary EIA

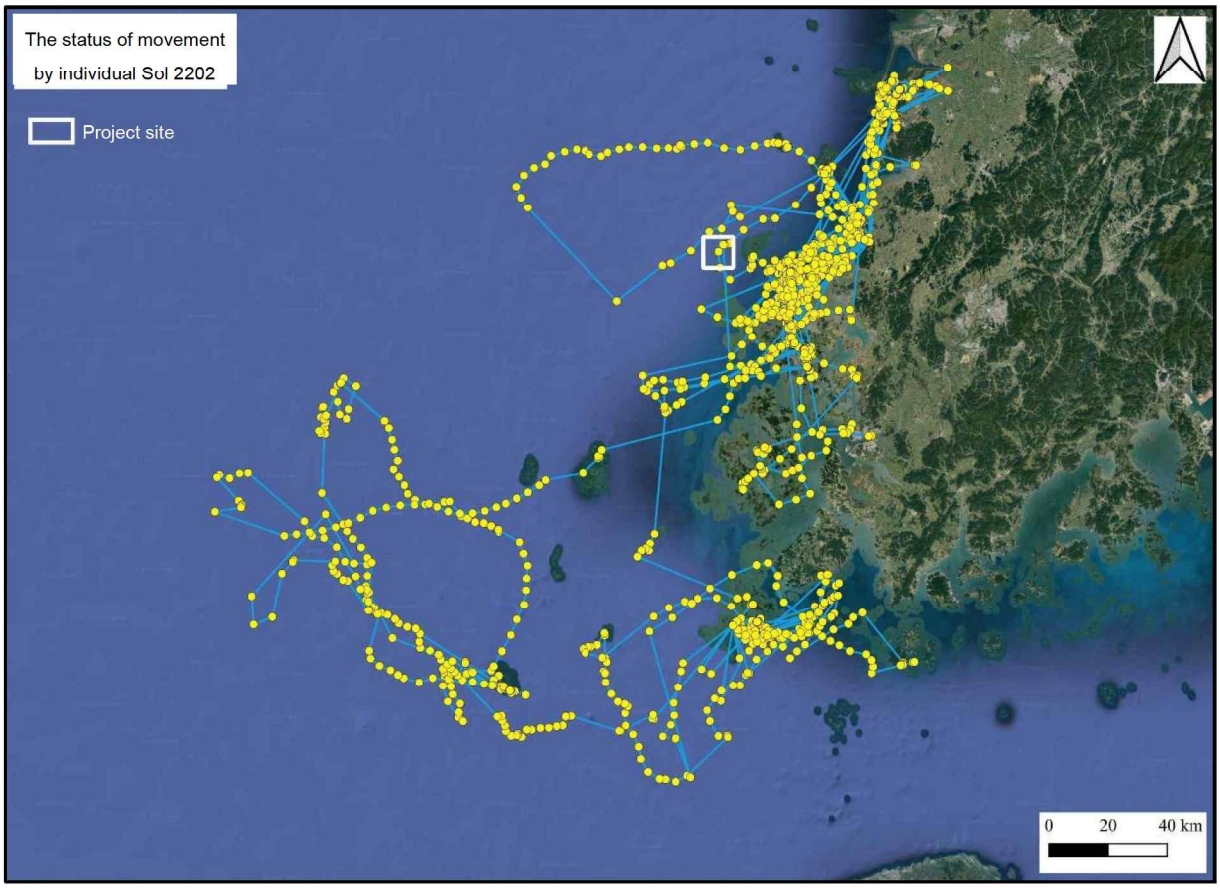
Figure F-2 The Status of Movement of Sol2201

Sol2202

Sol2202 displayed a diverse range of movements after the attachment of the tracker. Initially, it was active around the dock of Songi-do, remaining there until August 2022. In September 2022, it journeyed southwards, spending some time near Ji-do, Shinan-gun, and then returning to Songi-do. From then on, its movements were characterized by a mix of northward and southward trajectories, encompassing areas like Saemangeum Embankment, Byeonsan Peninsula, and more.

In November 2022, it exhibited a particularly dynamic range of movements, covering regions downstream of Dongjin River, southern parts of Saemangeum, areas around Imja-do, and coastal zones around Beopseongpo. December 2022 saw it transitioning southwards, passing the project site twice, and venturing into areas surrounding Jo-do and Gageo-do in January 2023.

February 2023 witnessed a decrease in its movements to the open sea, and in March 2023, it returned to Songi-do. Since then, its activities have been concentrated around the coastal regions of Beopseongpo, Chilsan-do, and Shinan mud flat, all centered on Songi-do. In subsequent months, it continued to maintain activity in the vicinity of Songi-do and surrounding areas. As of 22 May 2023, the individual remains active in the offshore areas near Songi-do, Nagwol-myeon, Yeonggwang-gun, Jeollanam-do.



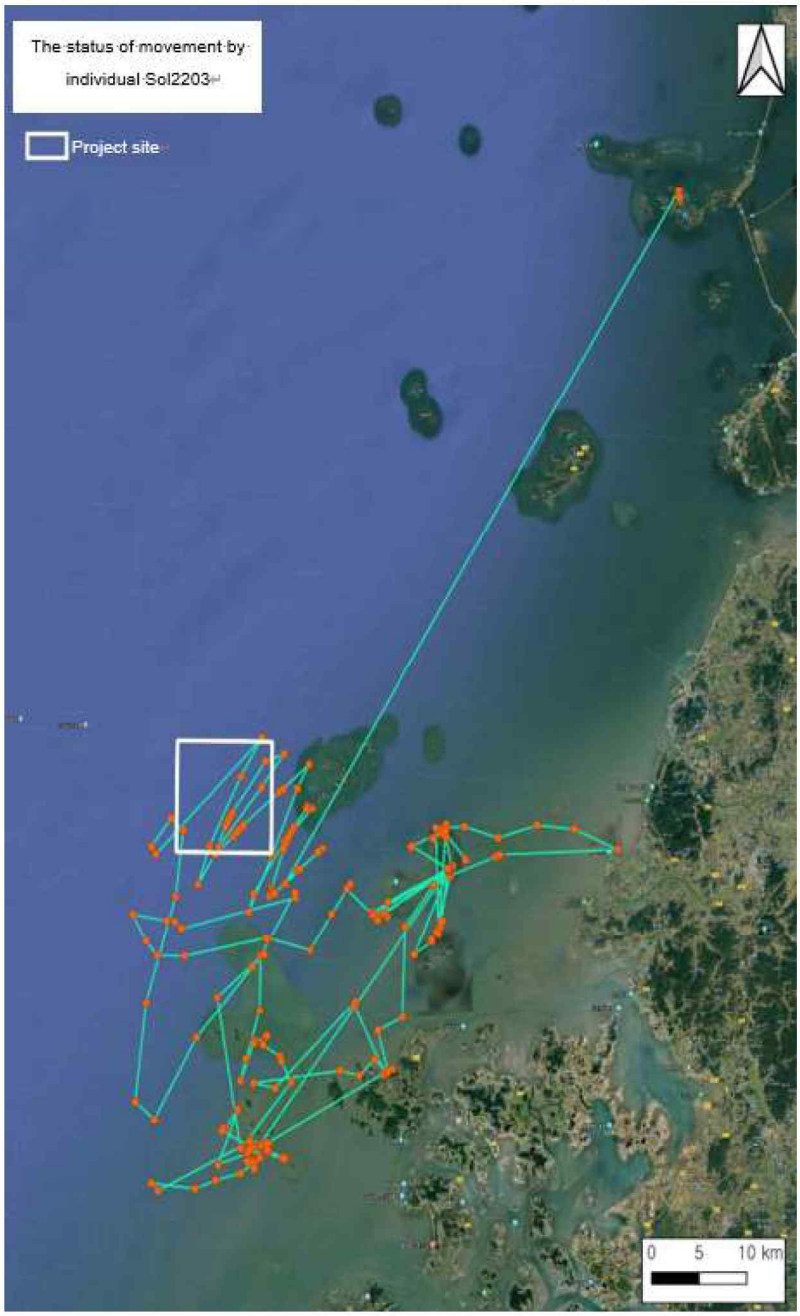
Source: Supplementary EIA

Figure F-3 The Status of Movement of Sol2202

Sol2203

Sol2203 exhibited an active movement pattern, primarily focusing on the dock of Songi-do, the location where the tracker was attached. It frequently travelled to nearby islands like Songi-do and Nagwol-do in Yeonggwang-gun, showcasing a dynamic range of activity.

Between 13 July 2022 and 17 July 2022, it ventured to the offshore areas near Amja-do, Shinan-gun, Jeollanam-do. Subsequently, from 19 July to 20 July 2022, it proceeded to the offshore areas of Anma-do, near the project site, and made multiple passes by the project site.



Source: Supplementary EIA

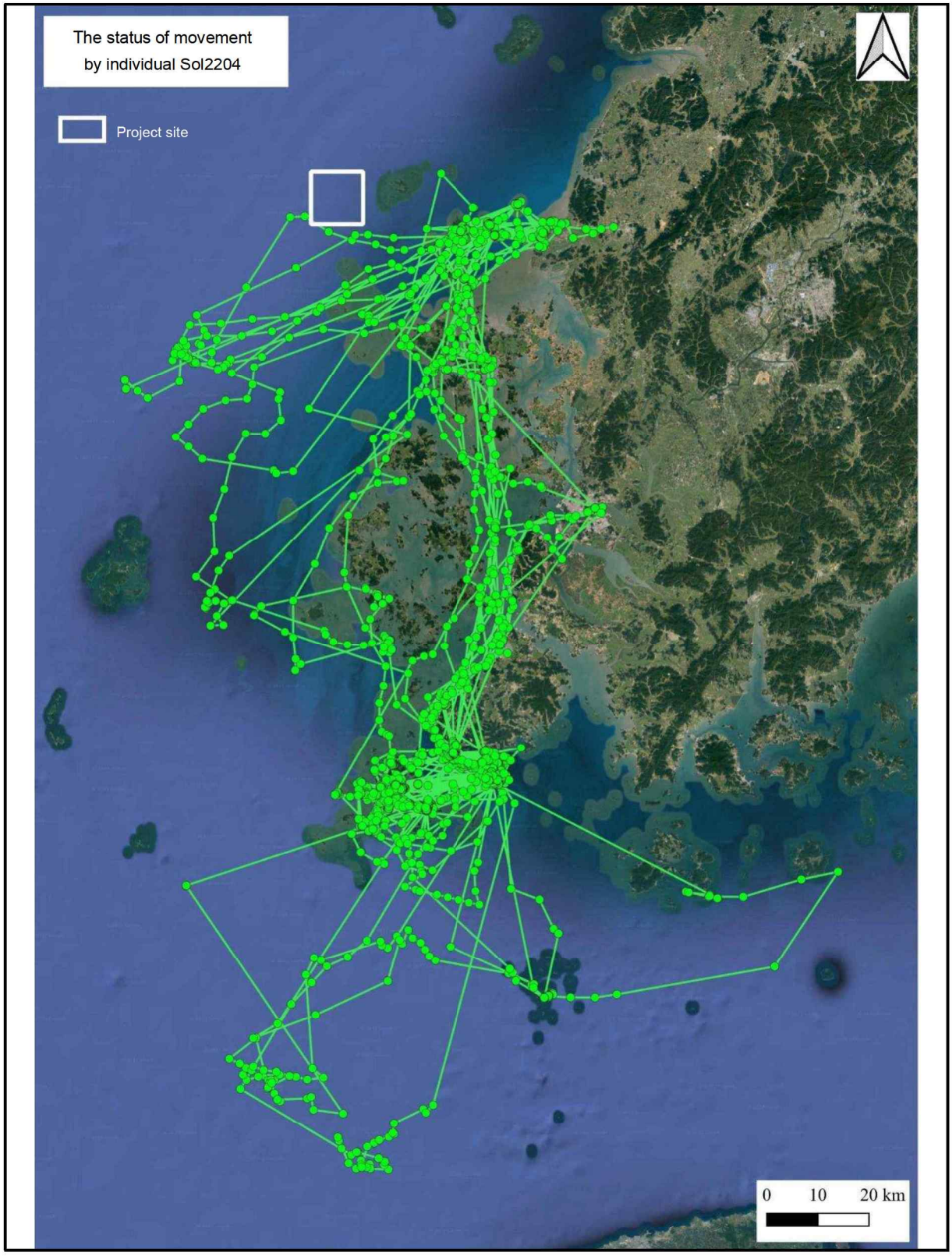
Figure F-4 The Status of Movement of Sol2203

Sol2204

Sol2204 displayed a distinctive movement pattern compared to other tracked black-tailed gulls from Songi-do. This individual promptly departed from Songi-do after the tracker attachment and explored various locations.

After the tracker attachment on 7 July 2022, Sol2204 swiftly left Songi-do and explored various locations. In July 2022, it ventured near Baeksu Mud Flat, Yeonggwang-gun, before embarking on a southward journey, passing numerous islands along the way. From August 2022 to September 2022 it remained active around adjacent islands and offshore areas like Hajo-do, Sangjo-do, Gwansa-do, and Daema-do. October 2022 marked the start of a long-distance journey, visiting small islands and frequently passing the main island of Jindo-gun. In November 2022, its movements became even more frequent, covering nearby islands like Donggeocha-do and Gwanmae-do. December 2022 and January 2023 were characterized by extensive coverage of the main island of Jin-do and neighbouring islands, with excursions to areas near Chuja-do, Jeju-si, and Cheongsan-do. By February 2023, open-sea migrations decreased, and activity centred around the inner harbor of Jin-do Port. March 2023 saw occasional ventures along offshore areas near Shinan-gun and nearby islands. From April 2023 to May 2023, Sol2204 frequented coastal areas near Jin-do Port and the vicinity of its breeding site on Songi-do, with occasional excursions to the open sea of Shinan-gun.

As of 22 May 2023, the individual has been actively observed in the offshore areas near Songi-do, Nagwol-myeon, Yeonggwang-gun, Jeollanam-do.



Source: Supplementary EIA

Figure F-5 The Status of Movement of Sol2204

Sol2206

In August 2022, the tracker was attached to Sol2206 near Anma Port, where it remained active along the coastal areas. Later, in September, it exhibited a tendency to explore various locations along the West Coast of Korea. The bird made a notable journey, passing Gomso Port, Buan-gun, and reaching Gochang Mud Flat, Gochang-gun. It returned to Beopseongpo before moving southwards, passing Imja-do, Jeung-do, and Jangsan-do. In September 2022, it arrived at a place near Mokpo Inner Harbour, remaining active around the Mokpo Outer Harbour, nearby islands, and coastal areas. October 2022 saw a more daring move to the open sea, passing Jin-do, Shineui-do, and other islands in the archipelago. It ventured to the far West Coast, even reaching Hong-do. November 2022 continued this active exploration around Sangtae-do, Hatae-do, and Hong-do, with occasional visits to coastal islands like Bigeum-do and Docho-do. An ambitious journey northwards ensued, reaching the southern coast of Weihai City, China in mid-November 2022.

From December 2022 to April 2023, the individual settled along China's eastern coast, showing remarkable stability. It returned to Korea in April 2023, embarking on an extensive journey that included passing Baekryeong-do and the coastal areas near Ongjin-gun, North Korea. The bird traversed the west coast again, ultimately arriving at the coastal areas near Weihai City, China. In May, it returned to Korea, predominantly staying around Youngheung-do while visiting Sihwaho Lake, Song-do, Youngjong-do, and Ganghwa Mud Flat. As of 24 May 2023, this individual is actively observed around the offshore areas of Youngeung-do, Youngheung-myeon, Ongjin-gun, Incheon Metropolitan City.

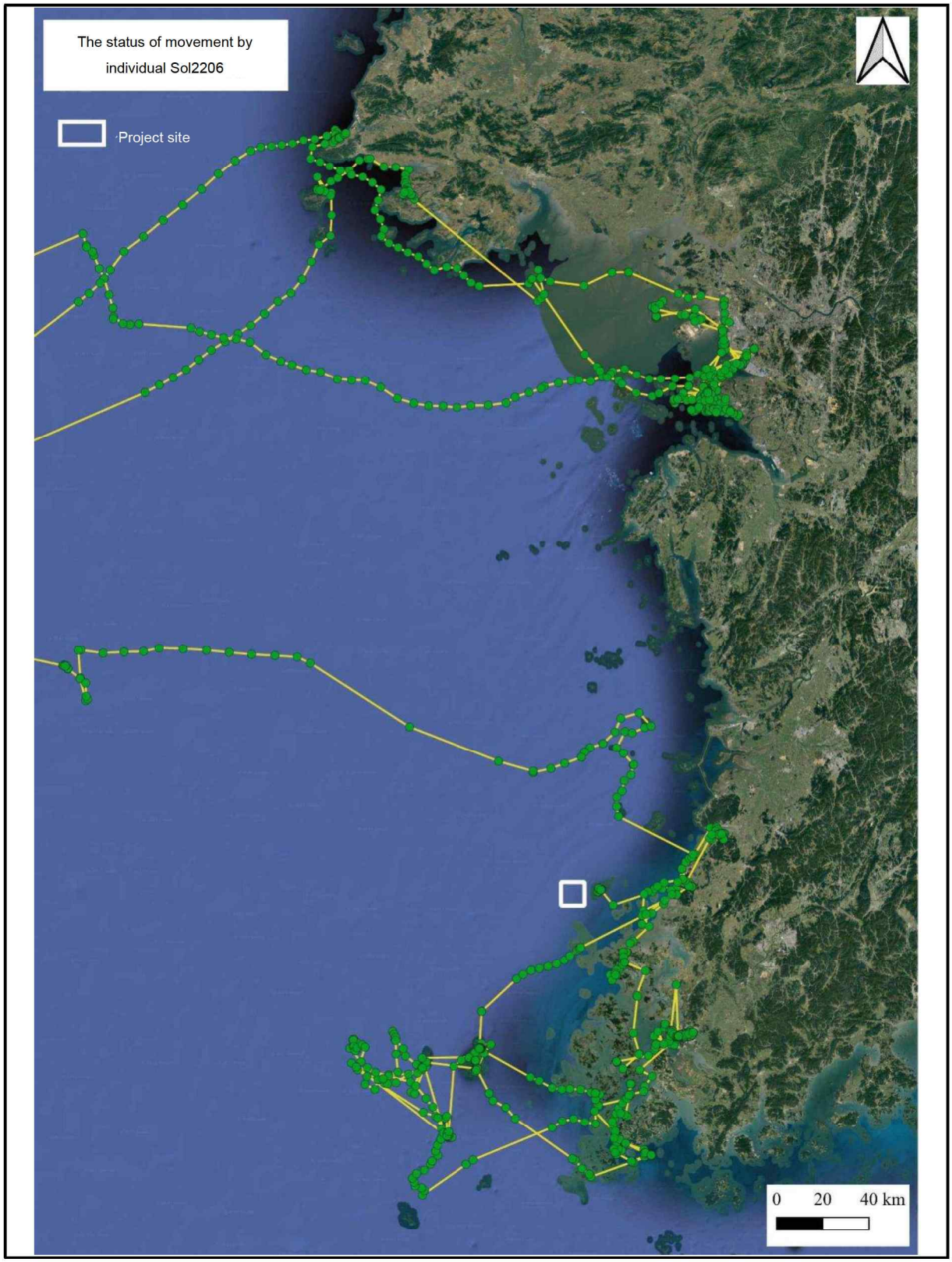


Figure F-6 The Status of Movement of Sol2206

Sol2207

From August 2022 to October 2022, Sol2207's activity centred on Anma-do, encompassing the nearby sea and islands. In August 2022, the bird predominantly explored the coastal areas of Anma Port, staying relatively close to Anma-do. September witnessed an expansion of its range, venturing into offshore areas near Anma-do and passing Songi-do and other islands. October 2022 showed a similar pattern, with a slightly increased presence in the open sea as opposed to the inland sea centered on Anma-do.

In November 2022, a more significant shift occurred. Initially centred around the neighbourhood areas of Anma-do, Sol2207 embarked on a journey that took it to the southern part of Saemangeum, Buan-gun, and the downstream of Dongsan River. Subsequently, it explored the neighbourhood areas of Saemangeum, taking a significant detour towards the western open sea and passing Anma-do. By month-end, it had traversed a substantial portion of the west coast, demonstrating its capacity for long-distance travel. December 2022 saw an even bolder exploration of the seas surrounding Korea, culminating in a journey to the eastern coast near Qingdao City, China.

From January 2023 to April 2023 (Abroad), it centred its activities on Jeju-do, occasionally visiting the high seas near Chuja-do and Gageo-do. In late January 2023, it commenced a southward journey, eventually arriving at the southeastern sea of China. This period witnessed a focus on the islands and coastal areas of southeastern China. In April 2023, it began its return to Korea, showing increased activity around Anma-do, Songi-do, and Chilsan-do. By May 2023, its patterns remained similar, with heightened visits to Gyeokryeolbiyeol-do, Taean, and the neighbouring areas of Anma-do.

As of 24 May 2023, Sol2207 was confirmed to be actively present in the neighbourhood areas of Anma Port, Anma-do, Nagwol-myeon, Yeonggwang-gun, Jeollanam-do, where the tracker was initially attached. Since April 2023, its frequent visits to Gyeokryeolbiyeol-do and the surrounding areas of Anma-do suggest possible breeding behavior on Gyeokryeolbiyeol-do, with visits to Anma-do for feeding during the breeding season.



Source: Supplementary EIA

Figure F-7 The Status of Movement of Sol2207

Sol2208

From August 2022 to October 2022, Sol2208's activity was centred on Anma-do, encompassing the nearby sea and islands. It began taking longer journeys from November onwards. In August, it predominantly explored the coastal areas of Anma Port, remaining relatively close to the neighbourhood of Anma-do. September and October followed similar patterns, with Sol2208 staying in proximity to Anma-do and focusing on nearby offshore areas, occasionally passing the project site.

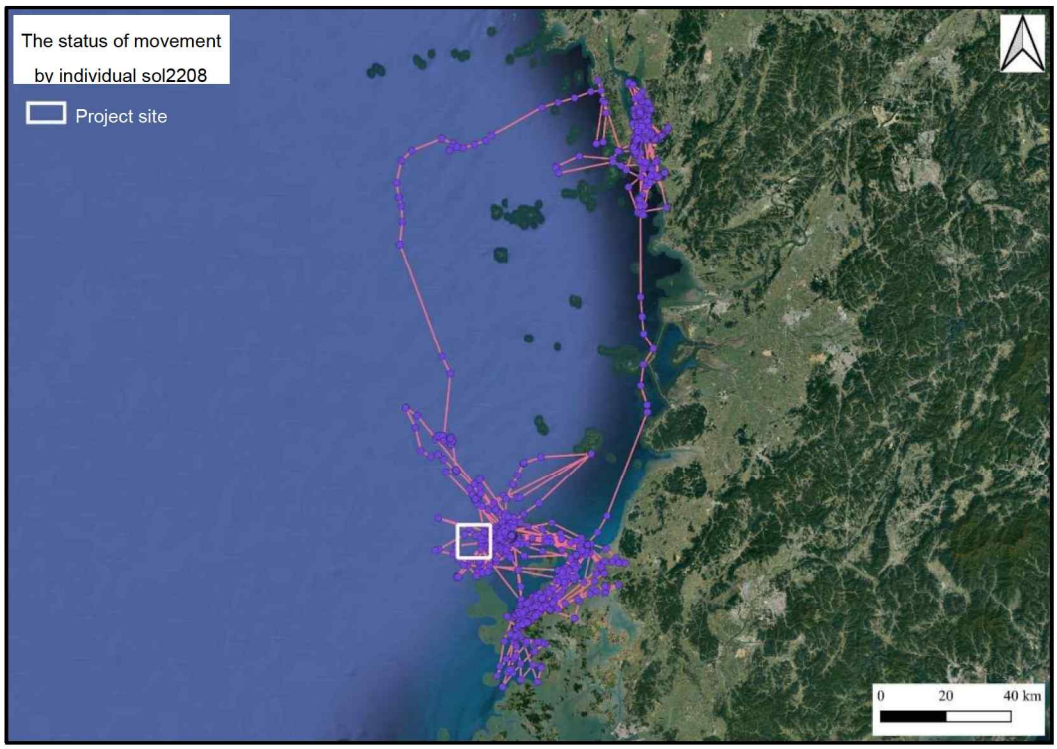
In November, there was a notable shift in behavior. Sol2208 visited Wi-do, Buan-gun, Jeollabuk-do on two occasions, gradually expanding its range in the offshore areas near Anma-do. On 12 November 2022, it headed north via the high seas, eventually reaching Gajipo Beach on the Taean Peninsula, Chungcheongnam-do. From there, it continued to explore various locations along the west coast of Chungcheongnam-do, including the Taean Peninsula, Wonsan-do, Boryeong-si, and more.

In December 2022, there was a focus on the inland sea of Cheonsu Bay, with Sol2208 remaining around Youngmok Port of Anmyeon-do and nearby uninhabited islands. Occasional visits to Wonsan-do and the offshore areas near Daecheon Port were also noted. This pattern persisted through January and February, with Sol2208 mostly remaining inside Cheonsu Bay, displaying limited movement to the high seas.

In March 2023, there was a shift as it started heading south. It passed the neighbourhood areas of Saemangeum and Yeonggwang Mud Flat before returning to Anma-do, where the tracker was attached. From there, it visited the neighbourhood areas of the sea of Yeonggwang-gun and the offshore areas of Amja-do, Shinan-gun, and other locations.

In April 2023 and May 2023, the behavior remained consistent, with visits to the offshore areas near Anma-do, Chilsan-do in Yeonggwang-gun, and Imja-do in Shinan-gun.

As of 18 May 2023, Sol2208 was found to be active in the offshore areas near Jaewon-do, Imja-myeon, Shinan-gun, Jeollanam-do.



Source: Supplementary EIA

Figure F-8 The Status of Movement of Sol2208

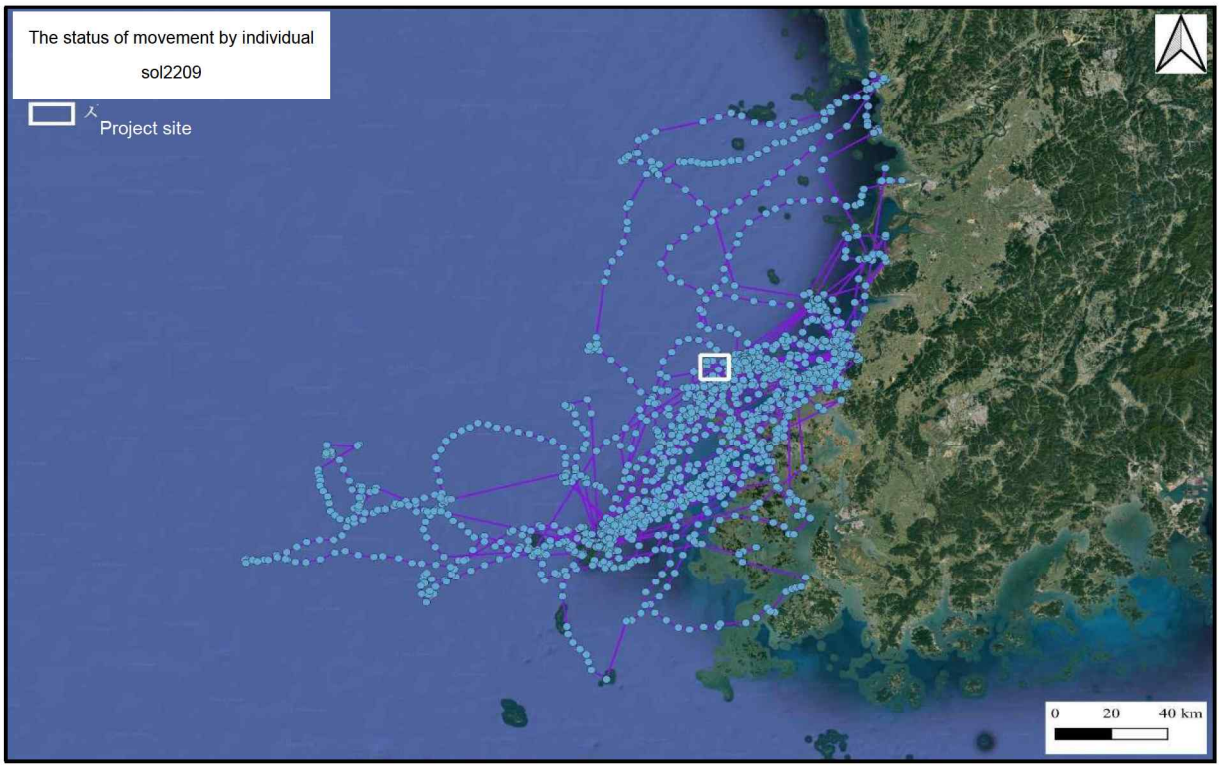
Sol2209

Between August 2022 and September 2022, Sol2209 primarily remained active in the vicinity of Anma-do, the location where the tracker was attached. In October 2022, its range expanded to include the coastal areas near Beopseongpo, Yeonggwang-gun, Jeollanam-do. By November 2022, Sol2209 embarked on more extensive journeys. It visited various places including Anma-do, Beopseongpo, Wi-do in Buan-gun, Jeollabuk-do. On 6 November 2022, it travelled north to Yubu-do, Seocheon-gun, Chungcheongnam-do, and Gaeya-do, Gunsan-si, Jeollabuk-do, then headed south again. From then on, it frequently visited and remained active around various locations, including the offshore areas near Wi-do, Buan-gun, Jeollabuk-do, Gyeokpo, Buan-gun, and the southern part of Saemangeum. The bird then started a northward journey through the high seas via Wi-do on 26 November 2022. It continued on this path, passing various areas until 1 December 2022, when it reached Heuksan-do.

In December 2022, Sol2209 focused its activity on the offshore areas near Heuksan-do, Shinan-gun, and Hong-do. It occasionally visited the inland sea near Aphae-do, Shinan-gun. The bird continued its movements through the West Coast, returning to Heuksan-do on 22 December 2022.

From January 2023 to May 2023, Sol2209 mainly stayed in the far-off sea around Heuksan-do, Shinan-gun, and Hong-do. It explored numerous islands and coastal areas, including those near Anma-do, Chilsan-do, Beopseongpo, Yeonggwang-gun, and the mud flats of the west coast. Additionally, it made sporadic visits to the inland sea of Shinan Mud Flat and Heuksan-do.

As of 23 May 2023, Sol2209 was found to be active in the offshore areas near Sonoin-do, Nagwol-myeon, Yeonggwang-gun, Jeollanam-do.



Source: Supplementary EIA

Figure F-9 The Status of Movement of Sol2209

Sol2210

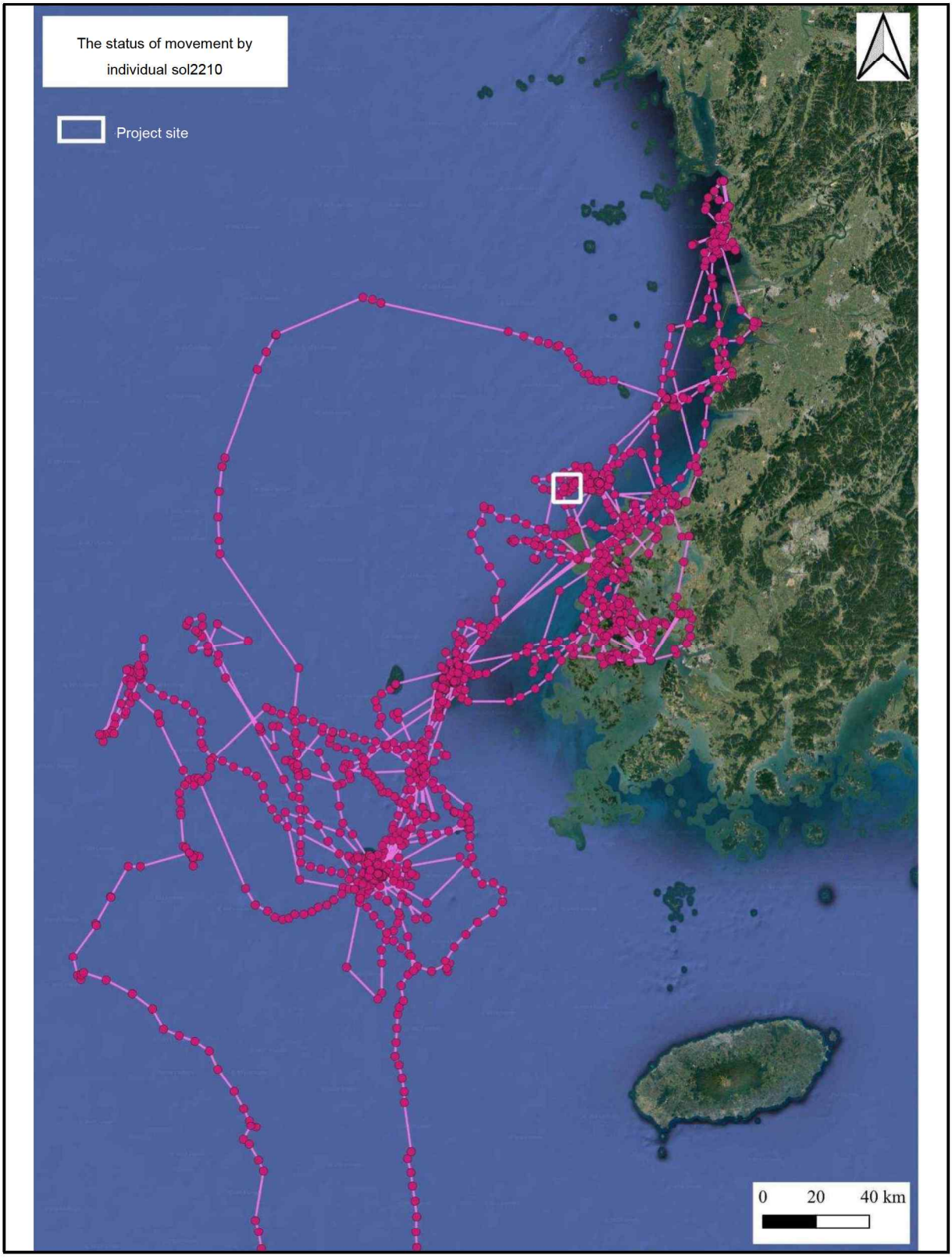
Between August 2022 and September 2022, Sol2210 primarily remained active in the neighbourhood areas of Anma-do, where the tracker was attached. In October 2022, its range expanded to include the coastal areas near Buan-gun, Jeollabuk-do, and certain islands of Shinan-gun, Jeollanam-do. It subsequently moved to Heuksan-do, Shinan-gun. Additionally, it made an extensive journey to the neighbourhood areas of Hong Kong in southern China, marking the farthest distance travelled.

In August 2022, the bird primarily centred its activities around the offshore areas near Anma-do, occasionally visiting the neighbourhood areas of the project site. Throughout September 2022, Sol2210 exhibited diverse activities around the nearby inland coast and islands, making several notable trips, including a round trip to the offshore areas near Wi-do, Buan-gun, Jeollabuk-do, and the southern part of Saemangeum. It eventually reached Heuksan-do on 20 September 2022.

During October 2022, after settling on Heuksan-do, the bird continued its explorations around the island and nearby high seas. In November 2022, Sol2210 primarily settled on the coast near Heuksan Port, visiting locations such as Damul-do and Daemun-do. The pattern was similar in December 2022, where it visited the coasts of Damul-do and Daedun-do near Heuksan-do and fish farms. Later in December 2022, it moved to Gageo-do, its activity centered on Gageo-do Port.

From January 2022 to April 2022, Sol2210 embarked on an overseas journey, visiting coastal areas in eastern China, settling offshore in front of Shenzhen, and being active around Macao. In May 2023, it remained active around Maryang Port, Seocheon-gun, and Chunjangdea, among other areas, making occasional visits to locations like Chilsan-do, Yeonggwang-gun, and Heuksan-do.

As of 23 May 2023, Sol2210 was known to be active in the coastal areas near Jinri Port, Imja-myeon, Shinan-gun, Jeollanam-do.



Source: Supplementary EIA

Figure F-10 The Status of Movement of Sol2210