Erimo Area Kuril Harbor Seal Specified Rare Wildlife Management Plan

(Phase III)

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Ministry of the Environment, Government of Japan

INDEX

1 Species Designated as Specified Rare Wildlife

Kuril harbor seal (*Phoca vitulina stejnegeri*)

2 Background of the Management Plan

The Kuril harbor seal (*Phoca vitulina*) in Japan is distributed only in limited coastal areas from the eastern coast of Hokkaido to the vicinity of Cape Erimo. The species utilizes the same rocky reefs throughout the year and is one of the few pinniped species that breed stably within Japan.

Cape Erimo represents both the southernmost limit of the species' distribution in Japan (Inukai, 1942) and the southernmost limit in the western Pacific Ocean (Ito and Shukunobe, 1986). From the tip of the cape, a chain of dozens of reefs extends about 1.5 km to the southeast, and Kuril harbor seals haul out on approximately a dozen reefs, including Rousoku Rock and Tokkari Rock, making this area the largest haul-out site for harbor seals in Japan (Ito and Shukunobe, 1986).

The population breeding around Cape Erimo is considered to be genetically distinct from other Japanese populations distributed from Daikoku Island to the Habomai Islands (Nakagawa *et al.*, 2010). The number of haul-out sites has not increased, and approximately 50% of Japan's harbor seals inhabit the Cape Erimo area (Matsuda et al., 2015).

In the 1940s, it was estimated that at least 1,500 Kuril harbor seals inhabited the eastern coast of Hokkaido (Ito and Shukunobe, 1986). However, following World War II, overexploitation for meat and fur, along with habitat degradation caused by coastal protection works, led to a population decline to fewer than 400 individuals across Hokkaido by the 1970s (Marine Mammal Research Group, Sea Mammal Conference, 1973; 1975; 1980a,b; Hayama, 1988). A population survey conducted by the Marine Mammal Research Group in 1973 revealed that the species was on the brink of extinction along the coast of Hokkaido (Kobayashi *et al.*, 2014). Consequently, the species was listed as Endangered (EN) on the 1998 Ministry of the Environment Red List and became subject to legal protection.

Since 1980, seal hunting and coastal protection works that destroyed haul-out reefs have

ceased, and the confirmed number of individuals has shown an increasing trend. The maximum number of Kuril harbor seals observed hauling out along the Hokkaido coast reached 1,089 individuals in 2008 (Kobayashi *et al.*, 2014). Reflecting this recovery, in August 2012, the Red List category was revised from Endangered (EN) to Vulnerable (VU).

Further analyses by the Scientific Committee on Kuril harbor seals led to a reassessment of extinction risk by the Red List Review Panel of the Ministry of the Environment, and in September 2015, it was concluded that the appropriate Red List category for the species was Near Threatened (NT), meaning it no longer qualified as Endangered (EN) or Vulnerable (VU). The mean annual population growth rate over the past 30 years has been approximately 5% (Matsuda *et al.*, 2015).

According to the Ministry of the Environment, "rare wildlife species" are defined as bird and mammal species listed in the Red List as Critically Endangered (CR), Endangered (EN), or Vulnerable (VU), and their categorization is to be reviewed concurrently with revisions of the Red List. However, the Basic Guidelines for the Implementation of Projects for the Conservation and Management of Birds and Mammals (revised December 2014) specify that even species removed from the Endangered categories may still be treated as "rare species" if conservation or management methods have not yet been established and there remains a need for planned protection or management until such methods are developed. Once appropriate protection or management measures are established, their designation should be re-evaluated.

Although the Kuril harbor seal once faced the risk of extinction, its increasing population around Cape Erimo has caused severe fisheries damage, particularly to salmon set net fisheries. In fiscal year 2014, damage to salmon set nets alone in the Erimo area was reported to total approximately 63 million yen (Hokkaido Government). Additional reports indicate damage to other fisheries, such as octopus fisheries, likely resulting from the species' expanding habitat range. In recent years, however, reductions in total fish catches, not limited to salmon, have led to a continuing decline in both the number and proportion of Kuril harbor seals involved in fishery damage.

Meanwhile, Kuril harbor seals are also suggested to contribute to nutrient supply supporting kelp beds (Kuribayashi *et al.*, 2024) and are utilized as a regional tourism resource.

Therefore, it is necessary to establish appropriate conservation and management methods that both mitigate fisheries damage caused by Kuril harbor seals and ensure that the Erimo population does not again become an endangered species.

In light of these circumstances, based on Article 7 of the Wildlife Protection, Control, and

Hunting Management Act (Act No. 88 of 2002), the Governor of Hokkaido formulated a Specified Wildlife Protection Plan on May 9, 2014. The plan covered the period from May 9, 2014, to March 31, 2016, and aimed to assess the population viability of Kuril harbor seals in the Erimo area and to mitigate fisheries damage.

Furthermore, following the enforcement of Article 7-4, Paragraph 1 of the Act on the Protection and Management of Wildlife, and the Optimization of Hunting (hereinafter "Wildlife Protection and Management Act") in May 2015, it became possible to formulate Plans for Managing Specified Rare Species of Wildlife. Until management methods for the Kuril harbor seal are established, the species is designated as a "rare wildlife species" under Article 2, Paragraph 4 of the same act and subject to protection. Accordingly, focusing on the breeding population around Cape Erimo, the Erimo Area Kuril Harbor Seal Specified Rare Wildlife Management Plan (hereinafter "the Management Plan") was developed.

The first phase of the Management Plan was formulated in March 2016. Although the initial plan period was set at three years, poor fishery conditions during the period made it difficult to evaluate the plan's effectiveness; thus, in March 2019, the plan period was extended by one year, until March 2020. The second-phase Management Plan was formulated in March 2020, covering a five-year period through March 2025. A mid-term evaluation based on scientific evidence was conducted in fiscal year 2022, the third year of implementation.

The mid-term evaluation reported that by the end of the second phase (FY2024), the estimated population size was expected to be approximately 80% of that at the time of the first plan's formulation (2016); that acoustic deterrent devices had not produced clear repelling effects; and that although rope grid had shown some effectiveness, further testing and improvement were necessary for broader application.

3 Objectives of the Management Plan

The objective of this management plan is to promote the long-term coexistence between the Kuril harbor seal (*Phoca vitulina stejnegeri*) population in the Erimo area and the local coastal fishery communities, while reducing fishery damage caused by Kuril harbor seals and ensuring that the species will not again be classified as endangered.

This management plan has been formulated under the initiative of the Ministry of the Environment, in collaboration with Hokkaido Prefecture, the Town of Erimo, fishery organizations, fishermen, local residents, relevant associations, and academic and research institutions (hereinafter collectively referred to as “stakeholders”). The purpose is to advance adaptive management concerning population control and damage mitigation measures, and to establish effective management methods such as monitoring systems through cooperative efforts among these stakeholders.

4 Concept of Adaptive Management

Adaptive management consists of two complementary processes: adaptive learning (the deliberative phase), which includes periodic review and revision of the management plan, and feedback (the iterative phase), which responds to short-term changes in conditions (Figure 1). In the deliberative phase, discussions are held among stakeholders to assess issues and design management plans. The iterative phase includes developing detailed plans, implementing management actions, conducting monitoring, evaluating outcomes, and adjusting management policies as necessary.

Based on the concept of adaptive management (Figure 1), an annual Implementation Plan is formulated to ensure the appropriate execution of the Management Plan.
The results of each year’s activities are reviewed and reflected in the Implementation Plan for the following fiscal year.

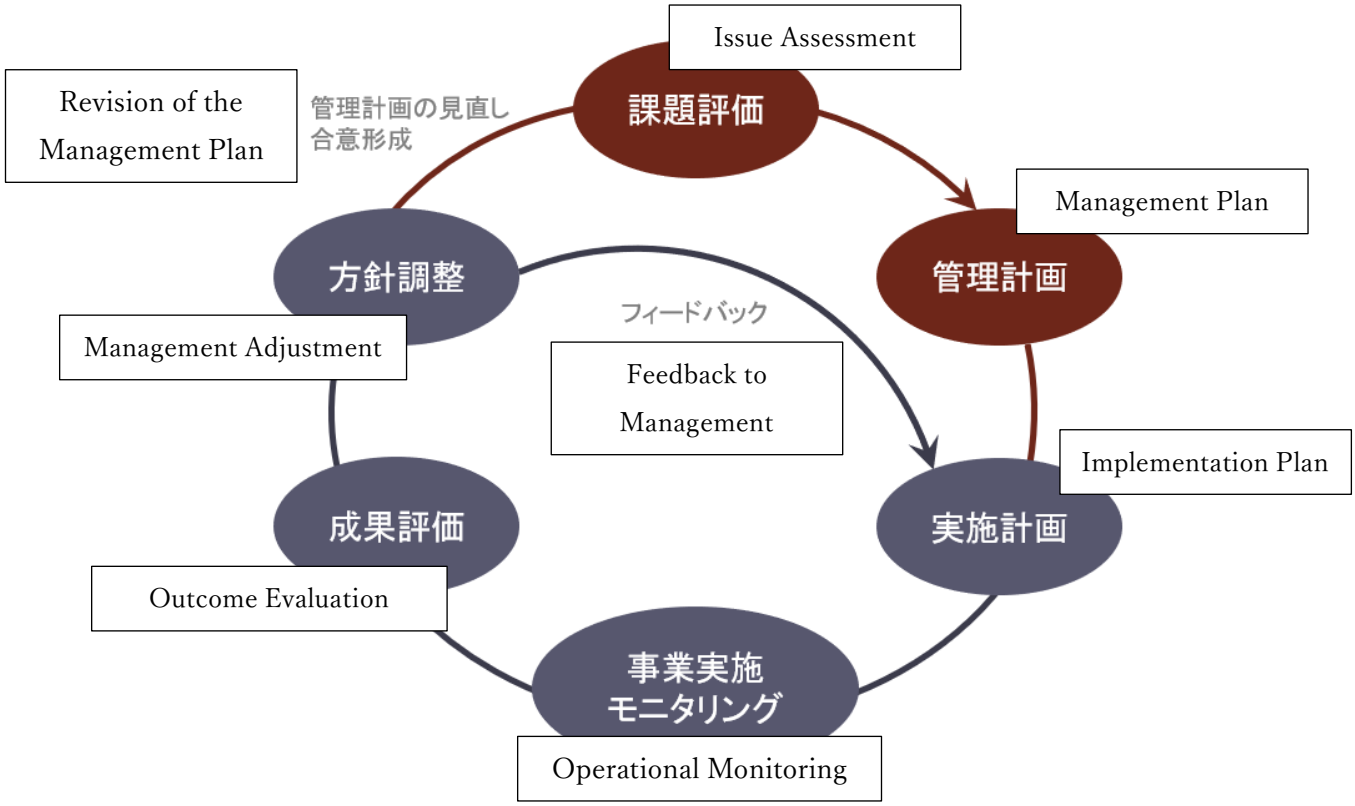

Figure 1. Conceptual framework of adaptive management (partially modified from Williams and Brown, 2014).

5 Duration of the Specified Rare Wildlife Management Plan

- The plan shall cover the period from April 1, 2025 to March 31, 2030.
- A mid-term evaluation based on scientific evidence shall be conducted approximately three years after the start of the plan.

6 Area Subject to the Management of the Specified Rare Wildlife

The area subject to management is defined as the habitat range of the Kuril harbor seal

population that breeds in the vicinity of Cape Erimo.

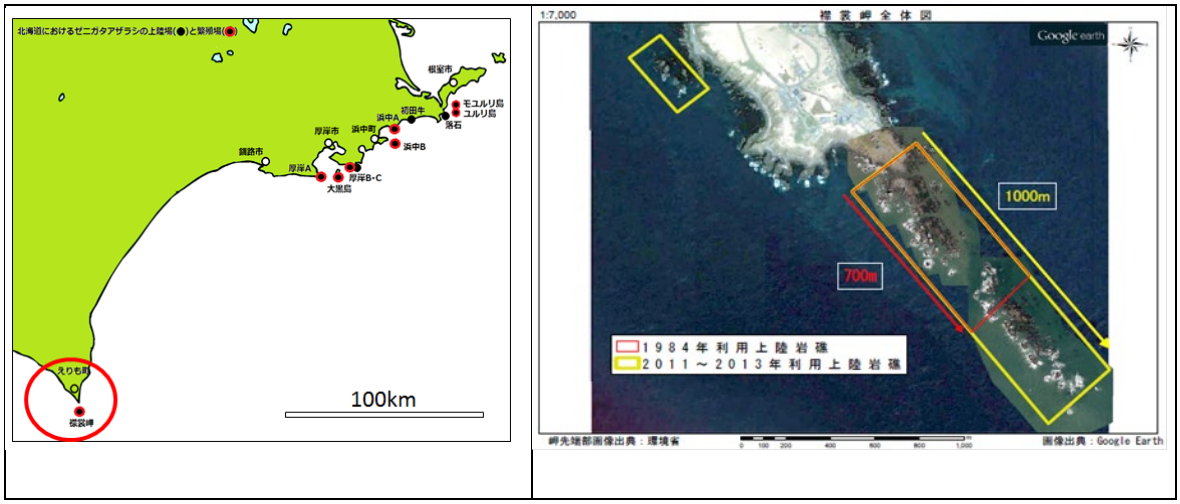

Figure 2. Locations of major haul-out sites of Kuril harbor seals (left) and an enlarged view of the Cape Erimo area, the largest haul-out site in Japan (right).

7 Management Objectives for the Specified Rare Wildlife

7.1 Objective 1: Maintaining a Sustainable Population Level of the Kuril Harbor Seal

- The management will continue to be implemented under the same premise as the second-phase management plan—namely, to ensure that the probability of extinction of the Erimo Area Kuril harbor seal population within the next 100 years remains below 10%, while also reducing fishery damage and preventing the population from being reclassified as endangered. Specifically, under the second-phase management plan, the population was reduced to approximately 80% of its estimated size at the time of the first plan's formulation (March 2016). As a general principle, this population level shall be maintained throughout the third-phase management period.
- In addition, the management objectives shall be reviewed as necessary in response to changes in the status of fisheries damage. If natural disasters or other factors are expected to substantially increase extinction risk, the management objectives may be reconsidered based on the mid-term evaluation.
- Efforts shall also be made to establish effective and efficient methods for population estimation and population viability assessment.

7.2 Objective 2: Reduction of Fishery Damage

- Non-lethal damage mitigation measures developed to date shall continue to be improved and promoted to reduce fishery losses.
- The effectiveness of mitigation measures shall be evaluated, and the results shall be fed back to the local community to encourage ongoing implementation of control efforts.
- Information gathering and examination of additional mitigation techniques shall also be pursued to support the establishment of effective fishery damage reduction methods.

7.3 Objective 3: Promoting Long-Term Coexistence with Local Communities

- Information on the ecological impacts of Kuril harbor seals on coastal ecosystems shall be collected from researchers and shared through the Kuril Harbor Seal Conservation and Management Council (hereinafter "the Council").
- Cooperation among stakeholders shall be promoted through the Council and related frameworks to support regional consensus-building and to facilitate the use of Kuril harbor seals as resources for tourism, education, and related community development activities.

8 Measures Necessary for the Implementation of the Management Plan

8.1 Population Control Measures

- In light of the fact that non-lethal damage mitigation measures alone are currently insufficient to prevent damage to fisheries caused by Kuril harbor seals, population control will be conducted through capture (transfer or culling) to reduce fishery losses.
- To enable adaptive management and to response to unforeseen events such as disease outbreaks, an annual capture target shall be established in the Implementation Plan developed each fiscal year.
- If the actual number of captures differs from the target, adjustments shall be made flexibly when setting the capture target for the following fiscal year.
- Even if the management objective is achieved, population adjustment and maintenance shall continue while considering the status of damage to fisheries.
- Capture operations shall be conducted in cooperation with local stakeholders, including fishers and other community members.
- Capture methods shall primarily focus on selective capture techniques targeting individuals that repeatedly enter salmon set nets, with supplemental use of gillnets and other methods as needed.
- Based on previous research demonstrating that damage to fisheries is mainly caused by

specific subadult and adult individuals, and not by pups that are more susceptible to bycatch, efforts shall be made to refine and establish capture techniques that selectively remove subadult and older individuals that exhibit set net site fidelity, while minimizing the bycatch of pups.

- Captured individuals shall be utilized as effectively as possible, including research use to support appropriate population management and planned transfer to zoos and aquariums for educational purposes.
- If lethal removal is conducted, it shall be performed using methods that minimize pain and distress.
- Information necessary to support appropriate population control shall be collected on an ongoing basis.

8.2 Non-Lethal Fishery Damage Mitigation Measures

- Non-lethal damage mitigation measures shall be promoted with full consideration of Kuril harbor seal behavioral ecology, including improvements to fishing gear (e.g., installation of rope grids) that physically separate salmon and Kuril harbor seals within set nets.
- In improving mitigation techniques, the opinions of fishers shall be incorporated and cooperative efforts shall be undertaken with researchers and other relevant stakeholders.
- Results from previously implemented mitigation techniques shall be reviewed, and improvements to current methods (such as fishing gear modifications and adjustment of capture timing) shall be pursued, taking into account social and operational conditions.

8.3 Monitoring and Research

- Ecological information, monitoring data, and records related to mitigation measures for Kuril harbor seals in the Erimo area shall be collected and organized to support conservation and management.
- Because accurate population assessment is essential for appropriate management, counts of hauled-out individuals using drone (UAV) imagery and land-based observation shall be conducted continuously, and improvements to automated image analysis and other efficient methods shall be pursued.
- Efficient development of population dynamics models, which form the basis of population estimation and population viability assessment, shall be promoted.
- The number of bycaught individuals shall be recorded annually. If the ratio of bycaught individuals to total population size changes substantially, updates to population dynamics models shall be incorporated in annual planning or mid-term evaluation.
- To evaluate the effectiveness of population management and mitigation measures and

incorporate findings into the management plan, the following items shall be periodically assessed:

- Additional monitoring items may be included when necessary for adaptive management, such as in response to mass mortality events.

(1) Population Size: Number of hauled-out individuals; estimated population size
(2) Capture Numbers: Number of individuals captured by sex and life stage
(3) Bycatch Numbers: Number of bycaught individuals by sex and life stage
(4) Fishery Damage: Extent and severity of damage (catch quantity, species-specific and fishery-type-specific damage, degree of loss), fisher perceptions, and the status of individuals repeatedly entering fixed nets
(5) Population Trends: Reproductive status, movement range, disease and infection in deceased individuals
(6) Habitat Conditions: Information on prey resources and habitat use
(7) Population Viability: Predictive evaluation using population dynamics models

8.4 Implementation Framework

- To establish effective management and monitoring methods, the Ministry of the Environment shall implement the management plan in collaboration with diverse local stakeholders, and also coordinate proactively with community-based initiatives that contribute to coexistence between Kuril harbor seals and regional society.
- Each fiscal year, the Ministry of the Environment shall gather input from stakeholders and prepare an Implementation Plan based on the management plan, and shall implement actions in cooperation with stakeholders.
- The Ministry of the Environment shall collect information on the implementation status of related activities by stakeholders, and shall actively exchange information with relevant agencies such as the Fisheries Agency and Hokkaido Prefecture, as well as with private organizations involved in wildlife protection and management.
- Results from actions conducted under the Implementation Plan shall be reflected in the Implementation Plan for the following fiscal year.
- A Kuril Harbor Seal Conservation and Management Council and a Scientific Committee shall be established to evaluate and review the management plan and Implementation Plan. Working groups may be established as needed for detailed technical examinations.
- The Scientific Committee shall consist of researchers studying Kuril harbor seals, local

survey personnel, and specialists in evaluation and analysis. The Committee shall conduct monitoring analysis and provide scientific recommendations to the Council.

- The Council shall include all stakeholders. It shall not only evaluate and review the management and implementation plans, but also promote collaborative initiatives, facilitate information sharing, and act as a platform for considering the use of Kuril harbor seals in tourism, education, and other regional contexts.
- Continued efforts shall be made to solicit opinions from diverse local perspectives and establish consensus on long-term population management in alignment with regional future planning.
- Public outreach shall be conducted to promote understanding of the significance of managing rare wildlife, including the outcomes of measures implemented under this management plan.

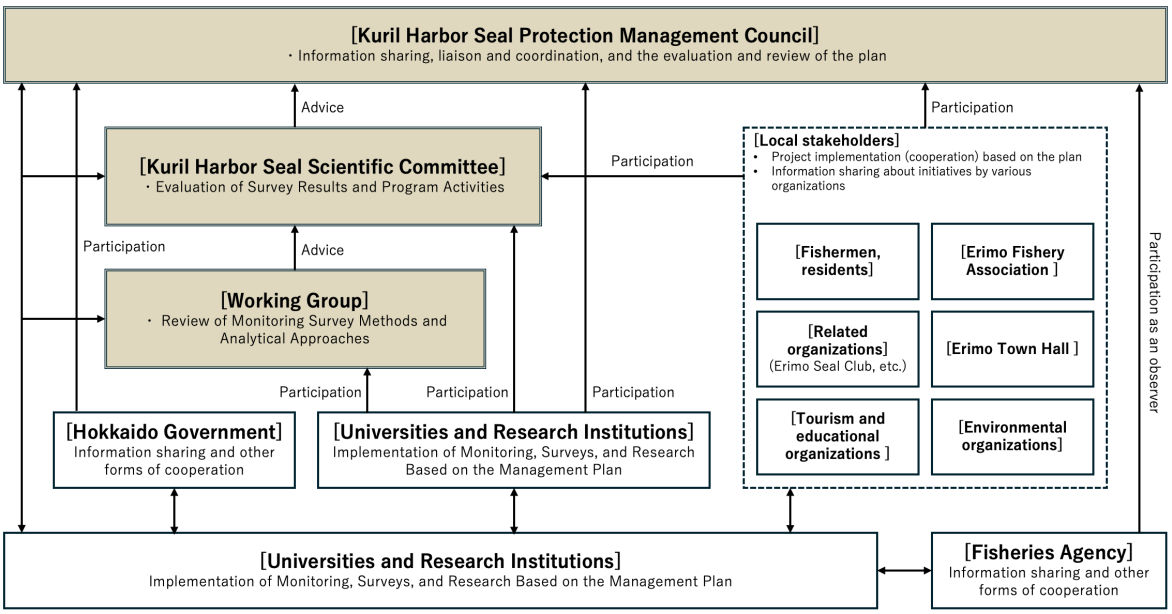

Figure 3. Implementation framework of the management plan.

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