

**Erimo Area Kuril Harbor Seal Specified Rare Wildlife Management Plan
(Phase II)**

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Ministry of the Environment

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1. Plan establishment background

The Kuril harbor seal is distributed across an area stretching from the eastern coastline of Hokkaido to Cape Erimo; these seals display a high level of philopatry, using the same rocky shore reefs as haul-out sites throughout the year. It is believed that there were at least 1,500 Kuril harbor seals living on the Hokkaido coastline in the 1940s (Inukai 1942, Itoo and Shukunobe 1986). However, after World War II, with overhunting for meat and hides as well as habitat deterioration due to revetments along the coastline, etc., the number of confirmed individuals had fallen to less than 400 by the 1970s (Mammal Research Group Marine Animal Consultation Meeting 1973, 1979, 1980a, 1980b, Hayama 1988). According to the population survey reported at the 1973 Marine Mammal Research Group meeting, it became clear that the members of this species inhabiting the Hokkaido coastline were on the verge of extinction (Kobayashi et al. 2014), and they were assessed as being Endangered in the Ministry of the Environment Red List and became protected in 1998. Since 1980, both seal hunting and the construction of revetments, which destroys the rocky shore reefs where the seals haul out, have been stopped. As a result, the confirmed number of individuals has been on a growing trend, and the largest number of individuals of this species hauling out on the Hokkaido shoreline had recovered to 1,089 in 2008 (Kobayashi et al. 2014). In light of this situation, the assessment category of this species was changed from Endangered to Vulnerable in August 2012. At Cape Erimo, the largest haul-out site in Hokkaido, the largest recorded number of individuals hauling out was approximately 150 in the 1970s, but had risen to approximately 600 in 2013 (Kobayashi et al. 2014). Further, because there is some distance between Cape Erimo and other haul-out sites, the population breeding in the Cape Erimo area is thought to have a tendency toward genetic independence. Moreover, with the increase in the number of individuals of this species at Cape Erimo, the damage caused to the fishing industry by Kuril harbor seals, primarily to salmon in trap nets, has become a serious situation; in the Erimo area, ¥63,000,000 in damages was reported in FY 2014 for damage done to the catch in salmon trap nets alone (Hokkaido Government). In addition, other types of damage to the fishing industry are being reported, including damage to octopus fishing from seals eating octopus, and it is thought that these have newly originated as a result of the expansion of the Kuril harbor seal's range. Conversely, Kuril harbor seals are being used as a resource for tourism, and people are searching for ways of coexisting with this species.

In light of this situation, the Ministry of the Environment has been making efforts to assess the sustainability of the Kuril harbor seal in the Erimo area and to mitigate the damage to the fishing industry, and on May 9, 2014 a Specified Wildlife Conservation and Management Plan was formulated by the prefectural governor, as specified in Article 7 of the Wildlife Protection and Hunting Management Act (Act No. 88 of 2002), with its period until March 31, 2016.

Regarding mitigation of damage to the fishing industry, the Ministry of the Environment, working through partnerships with researchers and other local stakeholders, and with the understanding and cooperation of members of the fishing industry, made improvements to fishing nets, etc. from 2014 to 2015, with a certain level of effectiveness. However, the damage situation remains severe.

On May 30, 2014, with the enforcement of the Act on the Partial Revision of the Wildlife Protection and Hunting Management Act (Act No. 67 of 2006), the Wildlife Protection and Hunting Management Act was revised and renamed the Wildlife Protection, Control, and Hunting Management Act. With this revision, for rare wildlife whose population in specified areas is increasing and whose range is expanding, it has become possible for the Minister of the Environment to formulate Specified Rare Wildlife Management Plans based on Article 7-4,

Paragraph 1 of the revised law when such plans are deemed necessary for the stable maintenance and systematic management of the species and local populations of said rare wildlife, from the viewpoint of conserving biodiversity, preserving habitats and planning the sound development of agriculture, forestry and fisheries. Moreover, wildlife which has been removed from the list of threatened species but for which no procedure for protection and management has been established, and for which it is necessary to move forward with protection and management while considering procedures for systematic protection and management in the early stages, is now considered rare wildlife under Ministry of the Environment fundamental guidelines, which were amended after the enforcement of the above-mentioned revised law in December 2014.

In light of this situation, regarding the assessment of the sustainability of the Kuril harbor seal, in addition to the many years of observation records of the number of individuals hauling out from the Kuril Harbor Seal Research Group and others, the latest survey results, including aerial vehicle and transmitter tagging data, have provided corrected values for the data regarding discovery rates, haul-out probability and other specifics, and it has become possible to calculate the probability of extinction of this species using numerical analysis. Based on the results of the analysis done by the Kuril Harbor Seal Science Committee, among others, the Kuril harbor seal's extinction risk level has been reassessed by the Ministry of the Environment Red List Investigative Committee, and in September 2015 it was determined that according to the Red List assessment categories, Near Threatened was appropriate, and that this species did not qualify for designation as Endangered or Vulnerable. This was achieved as a result of many years of protection efforts and the understanding and cooperation of local stakeholders.

In light of this situation, leaving the Kuril harbor seal subject to protection as rare wildlife as prescribed in the ministerial ordinance based on Article 2, Paragraph 4 of the abovementioned revised law, until a management procedure has been established for them, the Ministry of the Environment decided to establish the Erimo Area Kuril Harbor Seal Specified Rare Wildlife Management Plan (hereafter the "Management Plan"), whose target is the population breeding in the Cape Erimo area.

The Management Plan was developed in March 2016 as a three-year plan, but in March 2019 it was extended by one year due to poor fish catches and other factors that made the plan's review impractical.

2. Plan goal

The objective of Kuril harbor seal management in the Cape Erimo area is to promote current and future coexistence between the Kuril harbor seal population in the Erimo area and the local community, including the coastal fishing industry, so as to prevent the Kuril harbor seal from once again becoming threatened. To this end, the Management Plan aims to establish procedures for monitoring population dynamics and the like while implementing population management and damage prevention measures through the Ministry of the Environment partnering with a variety of project commissioning entities.

3. Wildlife species to be managed

Kuril harbor seal (*Phoca vitulina*)

4. Plan term

- This plan's term begins on April 1, 2020 and ends on March 31, 2025.
- An interim review of the plan will take place after roughly three years based on scientific findings.

5. Zone in which the management of specified rare wildlife is to be performed

The zone inhabited by the population breeding in the Cape Erimo area

6. Specified rare wildlife management objectives

- (1) The first objective is to perform management aimed at sustaining the Kuril harbor seal population and also mitigating damage to the fishing industry.
 - In order to appropriately implement the Management Plan based on the adaptive management approach, a Project Implementation Plan (hereafter an “Implementation Plan”) will be established every fiscal year; additionally, the effects of the project’s implementation will be verified, and this will be reflected in the following year’s Implementation Plan.
 - Because prevention of non-lethal damage alone cannot provide protection from all damage, such as expansion in the scope of the damage done to the fishing industry following increases in the Kuril harbor seal population, some seals will be captured (for killing or transfer to zoos and aquariums) in order to mitigate damage to the fishing industry.
 - However, the sustainability of this population must be guaranteed, and the Ministry of the Environment intends to keep the probability of extinction within the next 100 years to below 10%.
 - If the probability of extinction of the local population is predicted to exceed 10% due to a natural disaster or other circumstances, the Ministry of the Environment will stop capturing Kuril harbor seals and monitor the recovery of their population. The Ministry will decide whether to resume capture based on the monitoring results.
 - Even if the goal for population size management is achieved during the Management Plan period specified in the Implementation Plan, the Ministry of the Environment will continue its efforts to adjust and sustain the population size in the light of the damage done to the fishing industry.
 - The maximum allowed annual combined capture and bycatch level will be reexamined and specified in the Implementation Plan from an adaptive management perspective and to allow responses to unforeseen circumstances such as epidemic outbreaks, based on the most recent assessment of the population situation, the number of deaths caused by humans up to the previous year, and the sex ratio and age composition of the seals that have died.
 - If the actual number of individuals captured in a certain year exceeds or falls below the planned number, the difference will be adjusted flexibly by changing the number of individuals to be captured in the following year.
 - The actions listed above will be carried out, while at the same time information necessary for the reevaluation of the plan will be collected, all with the goal of appropriate population management.
- (2) The second objective is to work toward mitigation of damage to the fishing industry through improvement in damage prevention procedures.
 - The Ministry of the Environment will verify the results of the various prevention procedures implemented to date, and establish improved procedures (including improvements in fishing nets and capture time) as well as new procedures. These procedures will be implemented in consideration of social conditions.

- These procedures are being implemented in collaboration with researchers and other related parties, and with adequate consideration of opinions from local fishermen.

7. Items pertaining to strategies for specified rare wildlife management

- It has become clear from surveys to date that damage is caused to salmon trap nets not by juveniles, which are easily bycaught, but by specific subadults and adults. For this reason, the Ministry of the Environment will strive to develop techniques that will preferentially capture subadults and adults that persistently attack trap nets and that will avoid and thus reduce juvenile bycatch. Through the establishment of these techniques, the Ministry aims to preferentially capture subadults and adults that persistently attack trap nets and reduce bycatch. If the actual number of individuals captured in a certain year exceeds or falls below the planned number, the difference will be adjusted in the annual Implementation Plan in consideration of the catch limits.
- The primary capture methods will be those which allow the selective capture of individuals that persistently attack trap nets, including but not necessarily limited to captures made directly through trap nets themselves and traps designed to capture seals. As supplementary capture methods, gillnets and other tools will also be used.
- Other methods (including the use of firearms) will also be considered as necessity dictates.
- The capture of seals will take place with the cooperation of local residents.
- To the fullest extent possible, the Ministry of the Environment will consider ways of effectively putting captured individuals to practical use, including use for research in order to gather data which will facilitate appropriate population management and use for educational and other purposes by strategically raising individuals and transferring them to zoos and aquariums. Moreover, in cases when captured individuals are to be euthanized, it is to be done in a manner which limits their suffering to the greatest extent possible.

8. Items pertaining to measures for the prevention of damage caused by specified rare wildlife

- The Ministry of the Environment will implement the following damage prevention measures. Their effectiveness is verified concurrently with their implementation in line with the habits and behavioral characteristics of the seals. The Ministry will also collect information to develop new damage prevention technologies and methods and implement them in consideration of social conditions.

(1) Improvement of fishing nets

- The Ministry of the Environment will continue to move forward with the improvement of fishing nets that prevent damage, through procedures to deter Kuril harbor seals from entering trap nets (such as installing rope grids) and procedures to separate salmon and Kuril harbor seals inside of trap nets (such as installing partition nets), all while considering the opinions of fishing industry members. Further, the Ministry will provide feedback to the local community about the results of attempts at improvement, and promote prevention initiatives.

(2) Ultrasonic wave repellent equipment

- The Ministry of the Environment will evaluate the effectiveness of ultrasonic wave repellent

equipment based on the results of previous studies regarding the reduction of damage to the fishing industry and the seals' behavior to avoid the equipment, and decide at an early date how best to use ultrasonic wave repellent equipment in consideration of its practicality in the fishing industry and other factors.

(3) Collection and organization of information about damage

- The Ministry will collect information about damage to salmon trap nets and other fishery damage, and will clarify various aspects of the nature of damage to the fishing industry.

9. Other items necessary for specified rare wildlife management

(1) Items related to habitat protection and the local community

The Kuril harbor seal is the only seal living in the Hokkaido region that displays a high level of philopatry, using rocky shore reefs for pupping. In Hokkaido, a total of 11 haul-out sites have been identified, including those at Nemuro, Hamanaka, and Akkeshi, with Cape Erimo being the southernmost point (Yoshida et al. 2011) (Fig. 1). Particularly, the Kuril harbor seals breeding in the Erimo area are concentrated around the rocky shore reefs at Cape Erimo, and in recent years the total area of the haul-out sites has been expanding (Fig. 2). Further, it has been pointed out that in the Erimo area, there are some new haul-out sites that are used only during breeding season.

Regarding the Kuril harbor seal's food sources, feeding habits surveys conducted at Hokkaido's Cape Nosappu have reported that bottomfish are their primary prey, and that they are highly dependent on the shallow ocean environments near the coastline (Nakaoka et al. 1986, Wada et al. 1992). In a 2014 survey conducted by the Environment Research and Technology Development Fund, bottomfish, which are potential prey of the Kuril harbor seal, were collected in the Cape Erimo haul-out site area, and it was shown that the *cottidae* are their primary food source during winter and early spring. Further, in an analysis of the stomach contents of individuals bycaught in trap nets, etc., *octopodidae*, Alaska pollock, saffron cod, *gadidae*, and other prey were identified, but salmon appeared infrequently. However, because the majority of bycaught individuals were juveniles, and because the survey was conducted during a limited period of time, there is insufficient data regarding what subadults and adults eat.

Further, the position of Kuril harbor seals in coastal marine ecosystems, and the interaction between Kuril harbor seals and their habitat (the effects of their habitation trends on coastal marine life, and so on) are unknown.

Moreover, in order to achieve coexistence with the Kuril harbor seal, both the point of view of their relationship with the fishing industry and its activities, and the point of view of their relationship with the local community, including use for tourism and applications in local education, are highly important.

For these reasons, the Ministry of the Environment will collect additional information regarding their habitat, sources of food, etc., and will conduct surveys on the type of environment that will allow the Kuril harbor seals to survive in this area, from the point of view of the relationship between the Kuril harbor seals and the local community, as well as from the point of view of habitat and marine resources in the Erimo area.

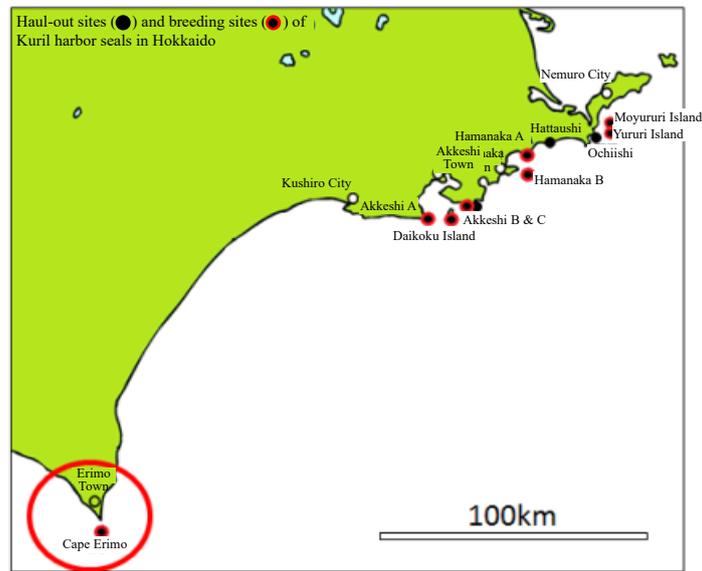


Fig. 1. Distribution of Kuril harbor seal haul-out sites in Hokkaido

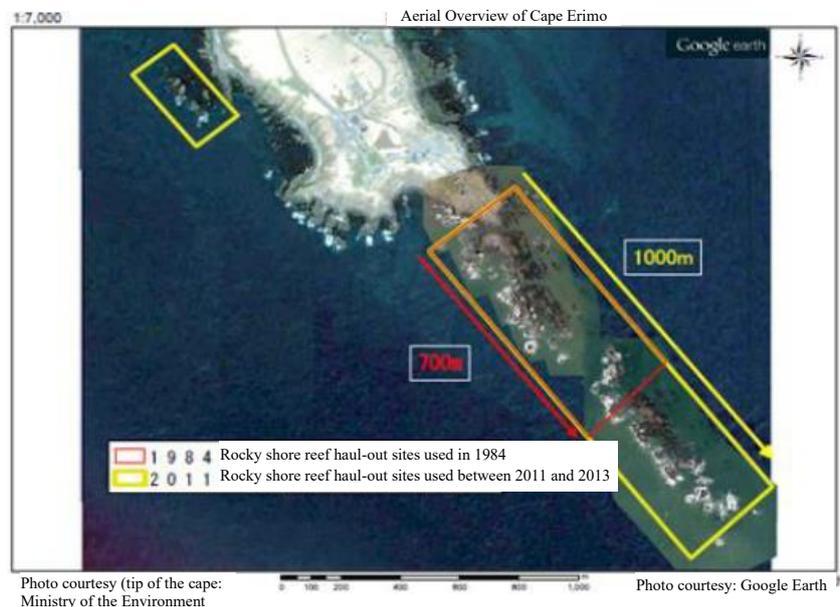


Fig. 2. Enlarged view of rocky shore reefs in the Erimo area where the seals haul-out

- (2) Collection and organization of information about the protection and management of the Kuril harbor seal
- The Ministry of the Environment will collect information about the ecology of the Kuril harbor seal in the Erimo area as well as related surveys and damage prevention measures, and organize the information to facilitate their protection and management.
- (3) Items related to monitoring
- In order to appropriately carry out the management of Kuril harbor seals according to this Management Plan, it is essential to grasp their population size; therefore, the Ministry of the Environment will carry out monitoring on a continuing basis and examine efficient monitoring methods.
 - Population conditions and the effects of management are being verified, and the following items will be periodically inspected in order to provide feedback about the Management Plan. Further, survey

items will be added as necessary for the performance of adaptive management.

1) Population size and composition

Counting with unmanned aerial vehicles (UAVs) like drones, by visual checks and the like, and ascertainment of population composition (age and sex composition)

2) Number of bycaught seals

Organized by sex and age; also used in the indices mentioned in 4 below

3) Number of caught seals

Organized by sex and age

4) Damage situation

Ascertainment of the scope and severity of damage (using multiple indices, including: type of fish, damage situation by fishing industry type [cost of damage, etc.], damage rate, amount of fish caught), feeding habits surveys (surveys of stomach contents, etc.), questionnaires about fishermen's feelings about the damage they have suffered, individual identification to ascertain the situation of individuals that persistently attack trap nets

5) Habitation trends

Breeding situation, range, etc.

6) Habitat

Sources of food, etc., and assessment of coastal ecosystems

7) Sustainability assessment

10. Items pertaining to the Plan's implementation system

- The Ministry of the Environment will establish each of the management and monitoring procedures necessary for the implementation of the Management Plan in cooperation with various local organizations. Further, outside of the scope of the projects implemented by the Ministry of the Environment, the Ministry will actively partner with initiatives from other organizations which facilitate coexistence between the Kuril harbor seals and the local community.
- Each fiscal year, the Ministry of the Environment will draw up a Project Implementation Plan based on the Management Plan, after listening to the opinions of a variety of stakeholders, including the Hokkaido Government, Erimo Town, fishing industry associations, members of the fishing industry, local residents, related organizations, and universities and research institutions (hereafter "stakeholders"), and will implement the project based on the Implementation Plan in partnership with the stakeholders.
- The Ministry of the Environment will gain the cooperation of stakeholders in collecting information about the operational situation of the projects being implemented by each organization. Concurrently, the Ministry will actively exchange information with institutions including the Fisheries Agency and the Hokkaido Government, as well as with related private organizations from the viewpoint of wildlife protection and management.
- Feedback is given regarding the results of implementing projects based on the Implementation Plan.
- As a system for assessing and reexamining the Management Plan and the Implementation Plan, the Kuril Harbor Seal Science Committee (hereafter the "Science Committee") and the Kuril Harbor Seal

Protection Management Council (hereafter the “Protection Management Council”) have been established.

- The Science Committee is composed of experts in assessment and analysis, people related to local surveys, and researchers conducting surveys of Kuril harbor seals, among others. It performs monitoring, analyzes and assesses survey results, and proposes procedures for these. Further, it offers advice to the Protection Management Council from a scientific perspective.
- The Protection Management Council is composed of all stakeholders. For the coexistence of the Kuril harbor seal and the local community, not only projects based on the Management Plan and the Implementation Plan, but also the furtherance of initiatives by various organizations is highly important. Further, establishing and maintaining systems for long-term initiatives is highly important from the point of view of continuing to perform population management, even after the conclusion of this plan. For this reason, the Protection Management Council performs not only assessment and reexamination of the Management Plan and Implementation Plan, but also the promotion of initiatives being implemented by each organization, as well as information exchange, and so on. Further, it serves as a platform for considering the relationship between the Kuril harbor seals and the local community, including their applications for education, tourism, and so on.
- The Ministry of the Environment will work to gain the understanding of the nation, increasing awareness both of the outcomes of the measures based on this plan, and of the significance of rare wildlife management.

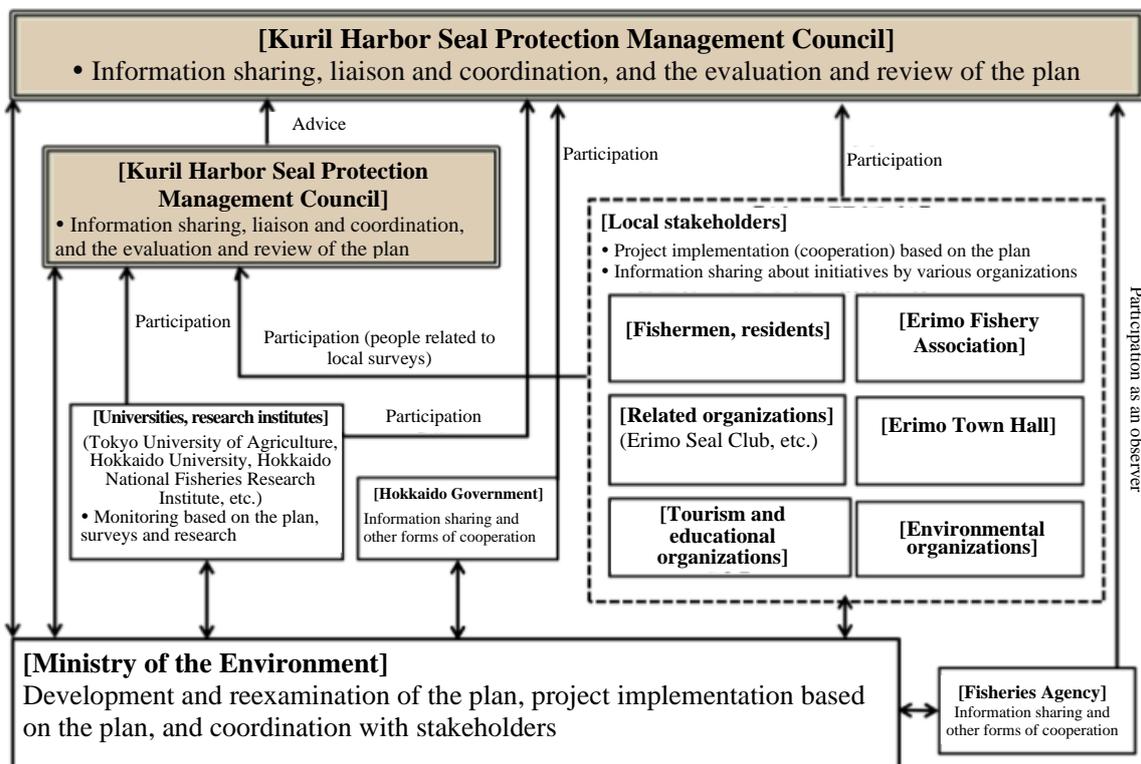


Fig. 3. The Plan's implementation system

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