

U.S. Fish & Wildlife Service

**Recovery Outline
for the
Southwest Alaska
Distinct Population
Segment of the
Northern Sea Otter
(*Enhydra lutris
kenyoni*)**



Photo courtesy of Randall Davis, Texas A&M University

October 2005

Common Name	Northern Sea Otter
Scientific Name	<i>Enhydra lutris kenyoni</i>
Listing Status and Date	Threatened; September 8, 2005 (70 FR 46366)
Lead Agency/Region	U.S. Fish and Wildlife Service, Region 7
Lead Field Office	Marine Mammals Management 1011 East Tudor Road, MS 341 Anchorage, Alaska 99503 (907) 786-3800
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Purpose of the Recovery Outline: This document lays out a preliminary course of action for recovery of the southwest Alaska DPS of the northern sea otter. It is meant to serve as interim guidance to direct recovery efforts and inform consultation and permitting activities until the comprehensive draft recovery plan has been completed. Recovery outlines are intended primarily for internal use by the U.S. Fish and Wildlife Service, and formal public participation will be invited upon the release of the draft recovery plan. However, we will consider any new information or comments that members of the public may wish to offer in response to this outline during the recovery planning process. For more information on Federal recovery efforts for the southwest

Alaska DPS of the northern sea otter, or to provide additional comments, interested parties may contact the lead biologist for this species, Douglas Burn, at the above address, telephone number, or e-mail.

Scope of Recovery and Available Information: The scope of this recovery effort is distinct population segment (DPS) for a single species. The data history of the southwest Alaska DPS of the northern sea otter is fragmentary, with surveys occurring in different areas, using different methods, at different time intervals. Within each study area, recent surveys were conducted using methods similar to those used in the past, so that counts or estimates would be as comparable as possible with baseline information for that area (Doroff et al. 2003; Estes et al. 2005; Burn and Doroff 2005). In February 2005, the Service co-hosted an Alaska sea otter population monitoring workshop to develop a monitoring plan to assess the status and trend of this DPS in the future.

The major data gap with respect to the southwest Alaska DPS of the northern sea otter concerns the cause of the population decline. Although the weight of available evidence suggests that increased predation by killer whales (*Orcinus orca*) may be responsible for the decline in the Aleutians (Estes et al. 1998; Springer et al. 2003), similar studies have not been conducted in other areas within the range of the DPS. Additional research into current and future threats, especially the cause of the decline, will be required in order to guide recovery actions.

OVERVIEW

Species Description and Life History

The sea otter is one of the smallest species of marine mammal in the world. Adult males average 130 centimeters (cm) (4.3 feet (ft)) in length and 30 kilograms (kg) (66 pounds (lbs)) in weight; adult females average 120 cm (3.9 ft) in length and 20 kg (44 lbs) in weight (Kenyon 1969). Sea otters lack the blubber layer found in most marine mammals and depend entirely upon their fur for insulation (Riedman and Estes 1990). Their pelage consists of a sparse outer layer of guard hairs and an underfur that is the densest mammalian fur in the world, averaging more than 100,000 hairs per square centimeter (645,000 hairs per square inch) (Kenyon 1969).

Sea otters have a relatively high rate of metabolism as compared to land mammals of similar size (Costa 1978; Costa and Kooyman 1982, 1984). To maintain the level of heat production required to sustain them, sea otters eat large amounts of food, estimated at 23–33 percent of their body weight per day (Riedman and Estes 1990). Sea otters are carnivores that primarily eat a wide variety of benthic (living in or on the sea floor) invertebrates, including sea urchins, clams, mussels, crabs, and octopus. Sea otters generally occur in shallow water areas near the shoreline. They primarily forage in shallow water areas less than 100 meters (m) (328 feet (ft)) in depth, and the majority of all foraging dives take place in waters less than 30 m (98 ft) in depth (Bodkin et al. 2004).

For additional life history information, consult the final listing rule (70 FR 46366).

Historical and Current Population Status

Historically, sea otters occurred throughout the coastal waters of the north Pacific Ocean, from the northern Japanese archipelago around the north Pacific rim to central Baja California, Mexico. Prior to commercial exploitation, the range-wide estimate for the species was 150,000–300,000 individuals (Kenyon 1969, Johnson 1982). Commercial hunting of sea otters began shortly after the Bering/Chirikof expedition to Alaska in 1741. Over the next 170 years, sea otters were hunted to the brink of extinction first by Russian, and later by American fur hunters.

Sea otters became protected from commercial harvests under the International Fur Seal Treaty of 1911, when only 13 small remnant populations were known to still exist. The entire species at that time may have been reduced to only 1,000–2,000 animals. Two of the 13 remnant populations (Queen Charlotte Island and San Benito Islands) subsequently became extinct (Kenyon 1969, Estes 1980). The remaining 11 populations began to grow in number, and expanded to recolonize much of the former range. Six of the remnant populations (Rat Islands, Delarof Islands, False Pass, Sandman Reefs, Shumagin Islands, and Kodiak Island) were located within the bounds of what we now recognize as the southwest Alaska population of the northern sea otter. All 6 of these remnant populations grew during the first 50 years following protection from further commercial hunting. At several locations in the Aleutian Islands, the rapid growth of sea otter populations appears to have initially exceeded the carrying capacity of the local environment, as sea otter abundance at these islands then declined, either by starvation or emigration, eventually reaching equilibrium density (Kenyon 1969).

The southwest Alaska DPS ranges from Attu Island at the western end of Near Islands in the Aleutians, east to Kamishak Bay on the western side of lower Cook Inlet, and includes waters adjacent to the Aleutian Islands, the Alaska Peninsula, the Kodiak archipelago, and the Barren Islands (Figure 1). Calkins and Schneider (1985) summarized estimates from survey data collected in southwest Alaska. Combining estimates for various survey areas, the sea otter population in the area encompassing the range of the southwest Alaska population was believed to have numbered between 94,050–128,650 as of 1976. Our current estimate of the size of the southwest Alaska population of the northern sea otter, is 41,865 animals, which is 52,185–86,785 lower (55–67%) less than the 1976 estimate. Some areas within the DPS (such as the Aleutian archipelago) have declined by over 90% (Doroff et al. 2003; Estes et al. 2005).

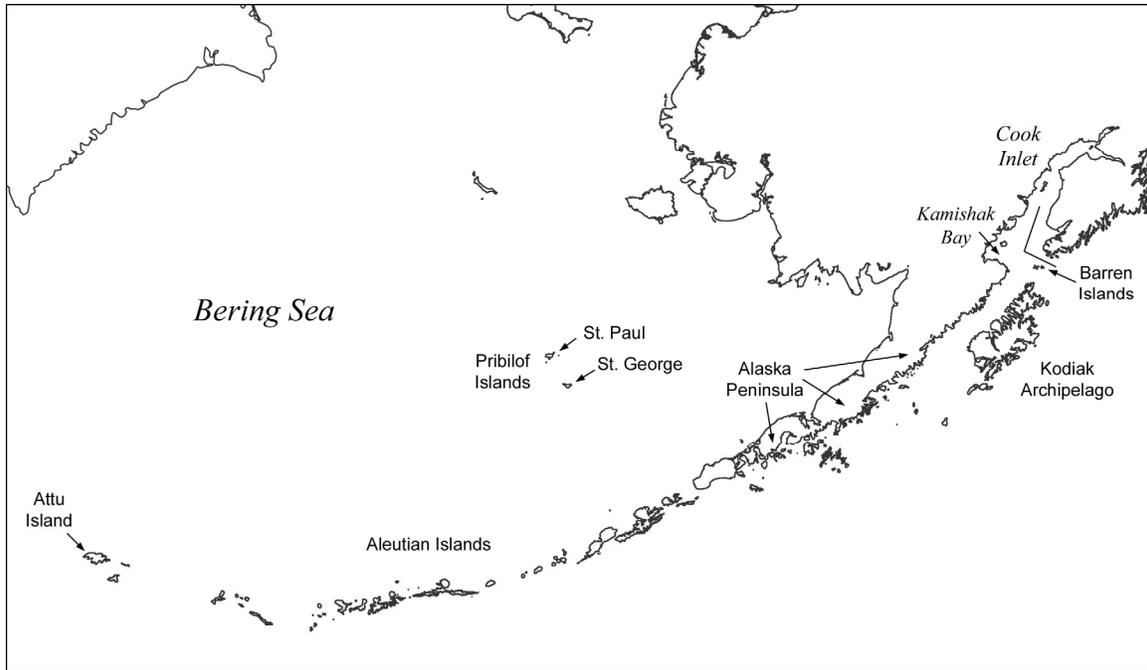


Figure 1. Range of the southwest Alaska DPS of the northern sea otter.

For additional information on population status, consult the final listing rule (70 FR 46366).

Habitat Description and Landownership

Much of the marine habitat of the sea otter in southwest Alaska is characterized by a rocky substrate. In these areas, sea otters typically are concentrated between the shoreline and the outer limit of the kelp canopy (Riedman and Estes 1990), but can also occur further seaward. Sea otters also inhabit marine environments that have soft sediment substrates, such as Bristol Bay and the Kodiak archipelago. As communities of benthic invertebrates differ between rocky and soft sediment substrate areas, so do sea otter diets. In general, prey species in rocky substrate habitats include sea urchins, octopus, and mussels, while in soft substrates, clams dominate the diet.

Due to their dependence on shallow water feeding areas, most sea otters in Alaska occur within State-owned waters, which include the area from mean high tide to 4.8 km (3 miles) offshore, and any that occur further offshore are within the U.S. Exclusive Economic Zone, which extends 370.4 km (200 nautical miles) seaward from the coast of the United States. The National Oceanographic and Atmospheric Administration Fisheries division (NOAA Fisheries) has recently designated the Aleutian Islands Habitat Conservation Area which encompasses more than 274,000 square nautical miles.

While sea otters typically rest in the water, they can also haul out and rest on shore (Kenyon 1969). The majority of adjacent coastal lands within the range of the southwest Alaska population of the northern sea otter are part of the Service's National Wildlife Refuge (NWR) system, including Alaska Maritime NWR, Izembek NWR, Alaska Peninsula/Becharof NWR, and Kodiak NWR. The National Park Service also has large

parcels of coastal lands in southwest Alaska, including Katmai National Park and Aniakchak National Monument and Preserve. The vast majority of remaining coastal lands in southwest Alaska are owned by the State of Alaska and Alaska Native Corporations. Privately owned lands constitute a very minor proportion of coastal lands in southwest Alaska.

Summary Biological Assessment

Although the southwest Alaska DPS of the northern sea otter has declined by over 50% in the past 20 years, it has not been extirpated from any portion of its range. The remaining population is distributed as something of a mosaic, occurring throughout much of southwest Alaska at reduced densities, with isolated areas of high concentrations. With the exception of these high concentration areas, the population appears to be well below the carrying capacity of the available habitat. Availability and quality of habitat does not appear to be a limiting factor to future recovery.

Recent survey information indicates that the decline continues in the Aleutian archipelago and Pavlof and Shumagin island groups, but not the Kodiak archipelago. In the 20th century, this species recovered from low numbers once they had been afforded protection from further hunting, therefore the potential for future recovery exists. The basic biology of the species is fairly well understood, however, the cause of the current decline is not. From a recovery planning context, the cause of the current decline may or may not pose a future threat to conservation of the DPS. Similarly, factors which may not have been involved in the decline to date may become future threats to conservation at reduced population levels. Therefore, additional research to identify current and future threats, including, but not limited to, the cause of the decline is a high priority to help guide recovery activities.

Listing Factors/Primary Threats to the Species

As identified in the final rule (70 FR 46366), the primary threats to the southwest Alaska DPS of the northern sea otter may be increased predation by killer whales, and increased vulnerability to catastrophic events such as disease epidemics and oil spills. A description of each of these threats is presented below; each is classified according to the five listing/delisting factors identified in section 4 of the Endangered Species Act (“Act”; 16 USC 1531 *et seq.*).

The present or threatened destruction, modification, or curtailment of its habitat or range (Factor A)

Oil Spills – sea otters are currently distributed at low densities throughout much of the range of the DPS, with several isolated areas of high concentrations. Catastrophic events such as oil spills, although not a common occurrence, could remove significant portions of the remaining sea otter population and destroy or adversely modify sea otter habitat.

Overutilization for commercial, recreational, scientific, or educational purposes (Factor B)

Subsistence Harvest – recent levels and geographic distribution of subsistence harvest do not appear to be a threat, however the impact of the subsistence harvest will continue to be evaluated in light of future population levels.

Disease or predation (Factor C)

Disease – the remaining high concentrations of sea otters may be more susceptible to disease epidemics that could remove significant portions of the remaining population.

Predation – although the cause of the decline is not definitively known, predation by killer whales is the most plausible hypothesis at this time.

Inadequacy of existing regulatory mechanisms (Factor D)

Marine Mammal Protection Act – although sea otters have been protected under the Marine Mammal Protection Act since 1972, the southwest Alaska DPS has declined by over 50% during the past 20 years, suggesting additional protections are necessary.

Other natural or manmade factors affecting its continued existence (Factor E)

Low Sea Otter Densities – recent surveys indicate the sea otter population in the Aleutians continues to decline, and now occurs at extremely low densities throughout the archipelago. At such low densities, it is possible that Allee effects, where animals have difficulty finding suitable mates, may occur.

Summary Threats Assessment

There is considerable uncertainty regarding the cause of the sea otter decline in southwest Alaska, therefore the most important threat to recovery of the population may as yet be unknown. It is possible that the cause of the decline itself is no longer a threat, and that factors which were not responsible for the decline to date may pose threats to conservation in the future. Without a thorough understanding of the cause of the decline and future threats, it will be difficult to identify recovery activities that will promote conservation of the DPS.

The most likely cause of the sea otter decline, predation by killer whales, is also the most intransigent. The killer whale predation hypothesis posits that transient marine mammal-eating killer whales increased their predation on sea otters in response to decreases in their preferred prey species, Steller sea lions and harbor seals (Estes et al. 1998; Springer et al. 2002). The apparent response to this increased predation pressure is that the remaining sea otters are found extremely close to shore and in sheltered habitats that may serve as refugia from killer whales. The current level of predation and its impact on the recovery of the sea otter population is unknown. At present, there are areas within the southwest Alaska DPS that have not shown evidence of a population decline, so it is possible that the range of this threat is less than the range of the DPS as a whole.

Killer whales are also protected from take by the Marine Mammal Protection Act (MMPA), so direct management actions, such as predator control, may not be practical. We note that the western stock of Steller sea lions that overlaps with the southwest Alaska DPS of the northern sea otter is already listed as endangered under the ESA, and recovery planning for this species is ongoing. Recovery of pinniped populations in the Bering Sea may reduce the predation pressure on sea otters.

The threat of extremely low densities may require the most immediate response, which should occur before sea otters become extirpated from portions of the range of the DPS. The southwest Alaska DPS contains the descendants of 6 remnant colonies that survived the commercial fur harvests of 1741-1911. Loss of sea otters from a portion of the range may also result in the loss of genetic diversity in the subspecies *E. lutris kenyoni*. Efforts to preserve the remaining sea otters in these low density areas and enhance the genetic diversity of the population should be explored.

Conservation Efforts

Based on the results of the April 2000 sea otter survey in the Aleutian Islands, we added sea otters in the Aleutians to our list of candidate species in August of 2000 (65 FR 67343). Additional sea otter surveys along the Alaska Peninsula and Kodiak archipelago, and the identification of multiple stocks of sea otters in Alaska prompted us to expand the candidate species designation on June 3, 2002, to include the geographic range of the southwest Alaska stock of the northern sea otter. Notification of this change was included in our June 13, 2002, notice of review of candidate species (67 FR 40657). On February 11, 2004, we published the proposed rule to list the southwest Alaska DPS of the northern sea otter as threatened (69 FR 6600). The final rule to list the DPS was published on August 9, 2005 (70 FR 46366).

In April 2002, the Service hosted a workshop to review available information about the sea otter decline in southwest Alaska. In April 2004, Service staff attended a similar workshop hosted by the Alaska SeaLife Center in Seward, Alaska. The focus of both workshops was to identify future research needs and priorities for the southwest Alaska DPS. The Service also co-hosted an Alaska sea otter population monitoring workshop in February 2005 with the Alaska SeaLife Center and the U.S. Geological Survey (USGS).

The Service and USGS have continued population monitoring efforts in southwest Alaska in order to document current sea otter population trends. The Service has also entered into grant agreements annually since Fiscal Year 2003 with the Alaska SeaLife Center to conduct research into the cause of the sea otter decline in southwest Alaska.

Summary Conservation Assessment

A limited amount of research has been conducted into determining the cause of the sea otter decline. Most of this research has occurred in the western and central Aleutians, and similar studies have not been conducted in other parts of the range of the southwest Alaska DPS. Although the Service has hosted and attended workshops to identify future research needs, availability of funding has been a limiting factor. Additional research

into current and future threats to the DPS, especially the cause of the decline, is perhaps the primary need at this time.

Virtually no direct management of the species and its habitat has occurred to date. As sea otters fall under the authority of the MMPA, they are protected from most forms of take. Section 118 of the MMPA provides an exemption for incidental take in commercial fisheries, however this exemption would not extend to sea otters from the listed DPS. Although not considered to be a major threat to conservation, development of a Habitat Conservation Plan may help mitigate the impact of incidental take in commercial fisheries.

Both the MMPA and the ESA contain exemptions for subsistence harvest by Alaska Natives. While the magnitude and geographic distribution of the harvest does not appear to be a threat at this time, the Service will continue to monitor the harvest relative to the remaining sea otter population. Although the Service does not believe that regulation of the subsistence harvest is currently warranted, Alaska Natives can develop harvest guidelines that may enhance the conservation of the DPS.

This species has an active conservation constituency that includes Defenders of Wildlife, Center for Biological Diversity, and the Sea Otter Defense Initiative (a project of Earth Island Institute). Roughly 99% of the public comments received on the listing proposal were from conservation organizations and their membership.

Summary Assessment of Recovery Status

The recovery potential of the southwest Alaska DPS is low. With the exception of the Kodiak archipelago and the Near Islands, recent surveys indicate the population continues to decline throughout much of the range. The three key recovery needs are: 1) additional research into current and future threats to recovery, especially the cause of the decline; 2) continued population monitoring to identify areas where otters may become extirpated in the near future; and 3) efforts to offset the extremely low densities of sea otters throughout much of the range. Additional impacts to sea otters in areas of low densities should be avoided to the greatest degree practicable.

Preliminary Recovery Strategy

Recovery Priority Number

The southwest Alaska DPS of the northern sea otter is assigned a recovery priority number of 6 on a scale of 1C (highest) to 18 (lowest; the “C” indicates the potential for conflict with human economic activities), based on the high degree of threat, a low potential for recovery as stated above, and its status as a distinct population segment (USFWS 1983a,b).

As the cause of the decline and future threats to recovery are unknown, we consider the degree of threat to be high. Similarly, the unknown nature of current and future threats gives this DPS a low recovery potential. Given the remote location of the DPS, we believe there is little to no potential for conflict with construction or other development

projects, or other forms of economic activity. The major economic activity in southwest Alaska is commercial fishing, and an independent analysis by the Alaska Department of Fish and Game concluded that the potential for interaction with fisheries is low (Funk 2002).

Recovery Goal and Objectives

The goal of the recovery program is to establish a framework within which recovery actions are undertaken to ensure the long-term survival of the southwest Alaska DPS of the northern sea otter and to control or reduce threats to the species to the extent that it no longer requires the protections afforded by the Endangered Species Act and therefore warrants delisting. Although subject to change, full recovery of the southwest Alaska DPS is currently envisioned as a cessation of further population declines with viable numbers of sea otters present throughout the current range of the DPS. Threats to the species will be adequately identified, and will have sufficiently abated to ensure the high probability of the survival of the southwest Alaska DPS for at least 100 years.

Initial Action Plan

The goal of the initial phase of recovery is to identify the cause of the decline and/or current and future threats to the southwest Alaska DPS, and eliminate or minimize these threats where possible. The primary objectives of the initial phase of recovery will be to: 1) conduct research to identify current and future threats, which includes determination of the cause of the decline; 2) conduct surveys to monitor population trends; and 3) eliminate or minimize future threats to the population. As some avenues of research may be limited by low sea otter densities, research activities should begin immediately while there is still time to conduct studies. The Service should be responsible for monitoring population trends, and should be an integral part of any research and enhancement activities. Objective 3 will be accomplished using the full range of protection tools available, including Section 7 consultations, incidental take requirements, and partnerships.

A secondary objective of the initial phase of recovery involves outreach with stakeholders, as heightened awareness through education may play a role in generating voluntary protection actions, such as self-regulation of the subsistence harvest.

Recovery Actions

- **Appoint Recovery Team** – the Service has already convened and/or attended several workshops to address research and monitoring needs. Several attendees of these workshops are potential recovery team members, and are already familiar with the background information regarding the sea otter decline.
- **Prepare Recovery Plan** – the Recovery Team would prepare a draft recovery plan within 18 months after listing takes effect.
- **Continue Population Monitoring** – the Service will coordinate continued population monitoring of the southwest Alaska DPS of the northern sea otter. Potential collaborators include the U.S. Geological Survey.

- **Conduct Research to Determine Current and Future Threats** – it is not known if the initial cause of the decline continues today. Additional research is needed to determine current and future threats to conservation. Potential research collaborators include the U.S. Geological Survey, Alaska SeaLife Center, Alaska Department of Fish and Game, and University of Alaska.
- **Implement Recovery Actions as Necessary** – pending a better understanding of current and future threats, recovery actions should be taken to prevent the extirpation of sea otters from areas within the southwest Alaska DPS. While sea otters can recolonize areas of vacant habitat through natural or translocation-assisted range expansion, preventing extirpation in the first place should be a high priority.

Preplanning Decisions

Planning Approach

Recovery team with Writing, Stakeholder, and Scientific Advisory Groups. The Writing Group will consist of a small number of individuals with the necessary expertise to write a recovery plan, thereby minimizing costs and logistical complexity associated with large meetings. The roles and responsibilities of each group will be clearly stated in the terms of reference for the recovery team.

Information Management

The administrative record will be housed at the U.S. Fish and Wildlife Service, Marine Mammals Management Office in Anchorage, Alaska.

Recovery Plan Schedule

Regional Office Review Draft	15 months after listing takes effect
Public Review Draft	3 months after delivery to RO
Public Comment Period	60 days following release of draft plan
Final Recovery Plan	1 year after release of public review draft

Stakeholder Involvement

Key stakeholders:

- Alaska Natives who hunt sea otters for subsistence
- Commercial fishermen who operate within the range of the southwest Alaska DPS
- Conservation organizations
- Communities within the range of the southwest Alaska DPS
- The State of Alaska

Stakeholder Involvement Strategy

The Stakeholder Group will provide input to the Writing Group. The Group will be informed about the process the Writing Group will follow, and will be given the opportunity to provide input prior to the initiation of the initial writing phase. The Writing Group will accept input from the Stakeholder Group at any time during the writing process. The Stakeholder Group will also have the opportunity to review and comment on drafts of the recovery plan prior to public release.

Approved:

Acty


Regional Director, Region 7
U.S. Fish and Wildlife Service

4 October 05

Date

Citation

U.S. Fish and Wildlife Service. 2005. Recovery Outline for the Southwest Alaska DPS of the northern sea otter. Anchorage, Alaska. 13 pp.

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