# Southwest Alaska Distinct Population Segment of Northern Sea Otter *(Enhydra lutris kenyoni)*

## 5-Year Review: Summary and Evaluation

**U.S. Fish and Wildlife Service**
**Fisheries and Ecological Services**
**Marine Mammals Management**
**Anchorage, Alaska**

# 5-YEAR REVIEW
# Southwest Alaska Distinct Population Segment of Northern Sea Otter
# *Enhydra lutris kenyoni*

## GENERAL INFORMATION

**Species:** Southwest Alaska distinct population segment of northern sea otter, *Enhydra lutris kenyoni*

**Date listed:** August 9, 2005
**FR citation(s):** 70 FR 46366

**Classification:** Threatened
**Critical habitat/4(d) rule/Experimental population designation/Similarity of appearance listing**: 74 FR 51988 52012. Designation of Critical Habitat for the Southwest Alaska Distinct Population Segment of the Northern Sea Otter.

**Methodology used to complete the review:**

In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a 5-year status review is to assess each threatened species and endangered species to determine whether its status has changed and it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants. The U.S. Fish and Wildlife Service (Service) evaluated the biology and status of the Southwest Alaska Distinct Population Segment (DPS) of northern sea otter as part of a Species Status Assessment (SSA) to inform this 5-year review.

A Service Writing Team developed the SSA (USFWS 2020). The SSA represents the Service's evaluation of the best available scientific information, including the resource needs and the current and future condition of the species. The team developed three future scenarios of environmental and management conditions to discuss the viability of the species in the future. Independent peer reviewers and partner representatives reviewed the SSA report before it was used as the scientific basis to support the 2021 5-year status review decision-making process (USFWS 2021).

In 2026, the Service conducted an additional literature review to identify any newly published information that has become available since the SSA (USFWS 2020) and the most recent 5-year status review (USFWS 2021). The literature review was conducted by the lead sea otter biologist in the Service's Marine Mammals Management Program in Anchorage, Alaska. The biologist reviewed all literature that had been shared by Federal, State, Tribal, university, and non-profit organization partners over the past five years. Following the notice of initiation in the Federal Register for the 5-year status review, the Service received one comment letter and additional literature from the Alaska Department of Fish and Game, which are summarized below. The biologist also conducted a literature review search on Google Scholar to identify any other publications of relevance to northern sea otters in the Southwest Alaska DPS.

**FR Notice citation announcing the species is under active review:**
91 FR 17810 17811. Initiation of 5-Year Status Reviews for the Eskimo Curlew, Spectacled Eider, and Southwest Alaska Distinct Population Segment of the Northern Sea Otter. April 8, 2026.

## REVIEW ANALYSIS

### Application of the 1996 Distinct Population Segment (DPS) policy

In the 2005 final rule for listing, the Southwest Alaska DPS of the northern sea otter was determined to have met the standards to qualify as a DPS as outlined in the 1996 DPS policy.

### Updated Information and Current Species Status

Biology and Habitat:

Tinker et al. (2021) evaluated the ecological variables associated with the Southwest Alaska population collapse to refine understanding of the cause of the decline. They determined the primary demographic cause of sea otter decline was elevated mortality (reproduction remained steady), but there was little evidence to suggest this was caused by disease/health, food availability, contaminants, or genetics. The collective results indicated that predation by killer whales (or another density independent factor) remains the most plausible cause of the decline, supporting results outlined in the listing decision and Recovery Plan (2013). The current distribution of sea otters in Southwest Alaska in shallow waters, close to shore, and in sheltered bays differs substantially from sea otter distribution in the area prior to the decline and from sea otter distribution across the rest of their range. Further research by Tinker et al. (2023) and Monson (2021) supports this finding. They found that the remaining populations of sea otters in the Western Aleutians are highly fragmented within islands in a manner indicative of "predation refuges", whereby sea otters occur primarily in isolated patches in shallow water, close to shore, and in areas protected from open water exposure. This reduced distribution may hinder recovery through reductions in ecological connectivity among islands and genetic health of the population overall (Monson 2021).

Flannery et al. (2021) recently evaluated the population genetics structure across the five Southwest Alaska DPS Management Units (MUs) and found that they were consistent with the current MU boundaries. They also found genetic similarities between the Bristol Bay and South Alaska Peninsula MUs, indicating some dispersal between these two areas. There is also evidence of some gene flow between the Southcentral and Southwest stock in and around Kodiak Island and Cook Inlet.

An assessment of sea otter mortality from 2002 – 2012 was conducted on opportunistically collected sea otter carcasses (n=780) across Alaska (Burke et al. 2021). The majority of carcasses were obtained from the Southcentral stock (70%), which overlaps with the largest human population centers in the state and the marine mammal stranding network. A small subset of the carcasses analyzed originated from the Southwest Alaska DPS (106 of 778 = 13.6%). The most common cause of death was systemic streptococcosis (*Streptococcus lutetiensis*; "Strep

syndrome"), with sea otters from the Kachemak Bay region of Southcentral Alaska nearly 4 times more likely to die of Strep syndrome than sea otters from Southeast Alaska or the Southwest Alaska DPS. A detailed evaluation of fresh carcasses (n=144) indicated other less common causes of death beyond Strep syndrome, including neurologic diseases (10%), trauma (8%), nutritional diseases (7%), cardiovascular diseases (7%), gastrointestinal diseases/parasites (6%), undetermined (5%), septicemia (3%), and neoplasia (3%). Small sample sizes for the Southwest Alaska DPS limited more detailed assessments of mortality.

Opportunistic carcass surveys of sea otters in Katmai National Park indicated a higher-than-expected proportion of prime-age sea otters compared to other Alaskan sea otter populations (Monson et al. 2022). Researchers investigated whether brown bears could be the cause of observed high prime-age mortality. Using camera traps, they observed brown bears hunting sea otters on 22 occasions, of which nine resulted in sea otter predation events (41%). A population model based on the resulting data from predation events, age at death carcass collection, and aerial surveys indicated that mortality from brown bear predation is not resulting in a population decline at the local level. The sea otter population along the Katmai coast continues to remain at approximately 7,000 animals, which is considered close to carrying capacity (Monson et al. 2022).

A skiff-based population survey of northern sea otters was conducted in the Western Aleutians MU in 2021. This survey resulted in a current estimate of 2,405 sea otters (95% CI = 1,734 – 3,238). Model results included a new estimate of carrying capacity, 11.8 otters/km$^2$ based on data from the pre-decline era. This carrying capacity estimate is lower than the original 15 otters/km$^2$ used in the Recovery Plan (Tinker et al. 2023). Overall, this MU population size has been low and stable since the decline that led to listing under the Act at densities far below carrying capacity.

The Recovery Plan outlines demographic criteria for delisting (i.e., <5% probability of becoming endangered in 25 years) and uplisting to endangered (i.e., >5% probability of becoming extinct within 25 years). Based on a Population Viability Analysis (PVA) for the Aleutian Island MUs, the Recovery Plan recommended using population abundances of 49% and 4% of carrying capacity (K) as the thresholds for delisting and uplisting to endangered, respectively (USFWS 2013). Based on results from the Western Aleutians MU, the PVA was updated in the SSA (USFWS 2021), and it was recommended that these thresholds be updated to population abundances of 14% and 1% of K for delisting and uplisting to endangered, respectively. It was recommended that the 14% and 1% thresholds be applied to the other four MUs in the absence of a PVA developed for these units. For the Western Aleutians MU, we present delisting and uplisting thresholds from an updated PVA following the 2021 sea otter survey (Tinker et al, 2023). For the remaining four MUs, we present values using the 14% and 1% thresholds (Table 1).

Table 1. Estimated available habitat, equilibrium density, carrying capacity (K), the most recent sea otter abundance estimate, and delisting and uplisting to endangered abundance thresholds based on recommendations from the Recovery Plan (2013) and Species Status Assessment (SSA; 2021). For the Western Aleutians Management Unit, we present delisting abundance from a Population Viability Analysis and the 14% and 1% values in parentheses.

| Management Unit | Available Habitat ($km^2$) | Equilibrium Density ($km^2$) | Carrying Capacity (K) | Recent Abundance Estimate | Recovery Plan Delisting Abundance (49% of K) | Recovery Plan Uplisting Abundance (4% of K) | SSA Delisting Abundance (14% of K) | SSA Uplisting Abundance (1% of K) | Current Status (%K) |
|---|---|---|---|---|---|---|---|---|---|
| W. Aleutians (Tinker et al. 2023) | 4,260 | 11.8 | 50,268 | 2,405 | 24,631 | 2,556 | 10,000 (8,946) | 500 (639) | 5% |
| E. Aleutians (Wilson et al. 2021) | 2,046 | 15 | 30,690 | 8,593 | 15,038 | 1,228 | 4,297 | 307 | 28% |
| Bristol Bay (Beatty et al. 2021) | 12,299 | 3 | 36,897 | 9,733 | 18,080 | 1,476 | 5,166 | 369 | 26% |
| South Alaska Peninsula (Beatty et al. 2021) | 11,159 | 3 | 33,477 | 546 | 16,404 | 1,339 | 4,687 | 335 | 2% |
| Kodiak, Kamishak, Alaska Peninsula (Garlich-Miller et al. 2018, Cobb 2018, Coletti et al. 2025) | 15,362 | 3 | 46,086 | 29,629 | 22582 | 1,843 | 6,452 | 461 | 64% |
| Total | 45,126 | N/A | N/A | 50,906 | 80,834 | 8,442 | 20,601 | 1,472 | N/A |

**Threats Analysis (threats, conservation measures, and regulatory mechanisms)**:

In the SSA, a list of potential threats was identified and ranked as low, moderate, high, or unknown (USFWS 2020). These are as follows, organized by the factors in the Act:

**Factor A: the present or threatened destruction, modification, or curtailment of its habitat or range**

- Benthic habitat and prey communities
- Oil spills
- Coastal development

**Factor B: overutilization for commercial, recreational, scientific, or educational purposes**

- Fisheries bycatch
- Subsistence harvest
- Illegal take

**Factor C: disease or predation**

- Disease
- Marine predators, including killer whales
- Land/avian predators

**Factor D: the inadequacy of existing regulatory mechanisms**

- None

**Factor E: other natural or manmade factors affecting its continued existence**

- Commercial activities
- Ocean acidification (OA)
- Sea surface temperature (SST)
- Extreme weather
- Pollution/contaminants
- Low genetic diversity

Nearly all of the threats were considered to have a low impact on resiliency, with some support for moderate risk from low genetic diversity (Table 2). Although the SSA stated the current risk from predation by killer whales was unknown, recent work by Tinker et al. (2021, 2023) and Monson et al. (2021) indicates that killer whale predation risk continues to be the most likely cause of the sea otter decline and factor hindering recovery.

Table 2. List of potential threats to the Southwest Alaska DPS of northern sea otter and intensity of each stressor, including low, moderate (mod), and unknown (unk). (Adopted from Table 4.11 in the Species Status Assessment, USFWS 2020).

| Management Unit | Benthic Communities | Ocean Acidification | Sea Surface Temperature | Extreme Weather | Disease | Pollution/ Contaminants | Oil Spill | Marine Predators | Land/Avian Predators | Commercial Activities (including oil & gas) | Coastal Development | Fisheries Bycatch | Subsistence Harvest | Illegal Take | Genetic Diversity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kodiak, Kamishak, Alaska Peninsula | low | low | low | low | mod. | low | mod | unk | low | mod | low | low | mod | mod | low |
| Bristol Bay | low | low | low | low | mod | low | low | unk | low | low | low | low | low | low | mod |
| South Alaska Peninsula | low | low | low | low | low | low | low | unk | low | low | low | low | low | low | mod |
| Eastern Aleutians | low | low | low | low | low | low | mod | unk | low | low | low | low | low | low | mod |
| Western Aleutians | low | low | low | low | low | low | low | unk | low | low | low | low | low | low | mod |

The SSA identified potential stressors (i.e., threats) that may affect the resiliency of the Southwest Alaska DPS population in the future, including an expected increase in threats due to ocean acidification and sea surface temperature (Factor E), oil spills (Factor A), coastal development (Factor A), disease (Factor C), and commercial activities (Factor E). The ability of the Southwest Alaska DPS to adapt to or cope with increasing stressors in the future is a topic of uncertainty. While sea otters are adapted to living in a dynamic environment, increasing stressors may negatively affect the population to an unknown extent.

The SSA team combined current sea otter densities and trends with expected future conditions under two climate scenarios. In the first scenario, following the Representative Concentration Pathway (RCP) 8.5 trajectory, they determined there would be increased levels of ocean acidification due to increased greenhouse gas (GHG) concentrations in the atmosphere, increased sea surface temperature, increased disease prevalence, and increased risk of oil spills relative to current conditions for sea otters. They also stated this scenario would include increased intense storm events due to elevated sea surface temperature and reduced sea ice, which would reduce overall kelp coverage for the Southwest Alaska DPS. Furthermore, they expected increases in commercial activities and increased marine predators (USFWS 2020). In the second future scenario (RCP 4.5), GHG concentrations followed the RCP 4.5 trajectory, resulting in a lower magnitude of threats compared to the first scenario. In this scenario, the SSA team identified climate-related stressors (i.e., ocean acidification, sea surface temperature, intense storms, and disease prevalence) would increase relative to current conditions, as would the threat of pollution, contaminants, and oil spills; all threats would be of a lower magnitude than the first scenario (USFWS 2020).

Based on these scenarios, the SSA team classified resiliency for each MU as low, moderate, or high for current and future conditions. The Kodiak, Kamishak, and Alaska Peninsula; Bristol Bay; and Eastern Aleutians MUs were classified as having moderate resiliency, and the South Alaska Peninsula and Western Aleutians MUs were classified as having as low resiliency. In all but one MU (Western Aleutians), future threats did not increase enough to change resiliency. Overall, South Alaska Peninsula and Western Aleutians MUs have low resiliency now and into the future; Kodiak, Kamishak, and Alaska Peninsula and Bristol Bay MUs have moderate resiliency now and into the future; and the Eastern Aleutians MU has moderate to high resiliency (Table 3).

Table 3. Summary of potential future conditions of Management Units of the Southwest Alaska DPS of northern sea otter under two plausible future scenarios forecasts to 2050: (1) Status Quo (RCP 8.5) and (2) Less pressure of climate change stressors (RCP 4.5). (Adopted from Species Status Assessment, USFWS 2020).

| Management Unit | Current Condition | Scenario 1: RCP 8.5 | Scenario 2: RCP 4.5 |
|---|---|---|---|
| Kodiak, Kamishak, Alaska Peninsula | Moderate | Moderate | Moderate |
| Bristol Bay | Moderate | Moderate | Moderate |
| South Alaska Peninsula | Low | Low | Low |
| Eastern Aleutians | High | Moderate | High |
| Western Aleutians | Low | Low | Low |

**Recovery Criteria**

Recovery Plan: U.S. Fish and Wildlife Service. 2013. Southwest Alaska Distinct Population Segment of the Northern Sea Otter (*Enhydra lutris kenyoni*) - Recovery Plan. U.S. Fish and Wildlife Service, Region 7, Alaska. 171pp.

The Sea Otter Recovery Team identified three recovery criteria, which include demographic, ecosystem-based, and threat-based criteria (USFWS 2013; Table 4). The demographic criterion for delisting is the probability of each of the five MUs becoming endangered within 25 years is <5%. The ecosystem-based criterion addresses the close connection between sea otters, sea urchins, and kelp forests through a trophic cascade (Estes and Duggins 1995). In the rocky coastlines of the Eastern and Western Aleutians MUs, sea otters would meet the ecosystem-based delisting criterion if they are ecologically functional, defined as occurring at sufficient abundance to suppress sea urchins that consume kelp, thereby allowing kelp forests to dominate at >50% of islands. The threats-based criterion stipulates that delisting can occur if the threats to sea otter populations are mitigated to prevent further declines.

Table 4. Summary of the demographic, ecosystem-based, and threats-based criteria for delisting the Southwest Alaska DPS of northern sea otters. (Adopted from Species Recovery Plan, 2013).

| Delisting Criterion | Western Aleutian | Eastern Aleutian | Bristol Bay | South Alaska Peninsula | Kodiak, Kamishak, Alaska Peninsula |
|---|---|---|---|---|---|
| Demographic | Probability of becoming endangered within 25 years is <5% | Probability of becoming endangered within 25 years is <5% | Probability of becoming endangered within 25 years is <5% | Probability of becoming endangered within 25 years is <5% | Probability of becoming endangered within 25 years is <5% |
| Ecosystem-based | >50% of islands are in the kelp-dominated state | >50% of islands are in the kelp-dominated state | None proposed | None proposed | None proposed |
| Threats-based | Threats are adequately mitigated | Threats are adequately mitigated | Threats are adequately mitigated | Threats are adequately mitigated | Threats are adequately mitigated |

Demographic Criterion

The Recovery Team recommended using < 5% probability of becoming endangered within 25 years as the criterion for delisting and >5% probability of becoming extinct within 25 years as the criterion for uplisting to endangered. PVAs, which can be used to estimate these probabilities, currently only exist for the Western Aleutians MU. The most recent version accounted for inter-island fragmentation and inter-island + intra-island fragmentation (Tinker et al. 2023). The first PVA model considered inter-island fragmentation and determined that the

risk of the Western Aleutian MU population becoming endangered was <5% when there were at least 1,500 otters (95% CI = 1,200 – 2,100). Results of this model set the uplisting threshold from threatened to endangered at 500 sea otters for the Western Aleutians MU and a delisting threshold of 2,100 sea otters. The current estimate of 2,405 sea otters falls above these two thresholds. The second PVA model, which accounted for the restricted distribution of sea otters to shallow waters close to shore and in sheltered bays, i.e. "predation refuges" (likely from killer whales), indicated the probability of the population becoming endangered increased to >10% and the delisting threshold increased to >10,000 sea otters, which is nearly 5 times higher than the estimate (2,100) for the model that accounted only for inter-island fragmentation. As a result, accounting for both inter-island and intra-island fragmentation indicates this MU population is still at risk.

In the absence of PVAs to estimate the probability of becoming endangered or extinct, the Recovery Team and SSA team developed delisting and uplisting thresholds. The original thresholds in the Recovery Plan estimated carrying capacity (K) as the product of the available high density sea otter habitat ($km^2$) multiplied by the estimated equilibrium density (otters/$km^2$) (Table 1; Burn et al. 2003). They then defined the delisting threshold as 49% of K per MU, and the uplisting to endangered threshold as 4% of K per MU, based on results from the Western Aleutians MU (Table 1). Following an updated version of the Western Aleutians PVA (SSA 2020), these delisting and uplisting thresholds were set at 14% and 1%, respectively.

Based on the thresholds established in the Recovery Plan and SSA, the status of sea otters in each of the five MUs using the best-available information to classify their status based on demographic criteria is as follows (Table 5):

Kodiak, Kamishak, and Alaska Peninsula: Current population estimated at 64% of K. This value exceeds uplisting thresholds (Recovery Plan: 4%, SSA: 1%). This estimate also exceeds the delisting thresholds (Recovery Plan: 49%, SSA: 14%).

Eastern Aleutian: Currently estimated at 28% of K. This value exceeds uplisting thresholds (Recovery Plan: 4%, SSA: 1%). This estimate exceeds the SSA delisting threshold (14%), but not the Recovery Plan threshold (49%).

Bristol Bay: Currently estimated at 26% of K. This value exceeds uplisting thresholds (Recovery Plan: 4%, SSA: 1%). This estimate exceeds the SSA delisting threshold (14%), but not the Recovery Plan threshold (49%).

Western Aleutian: Currently estimated at 5% of K. This value exceeds uplisting thresholds (Recovery Plan: 4%, SSA: 1%). This estimate is below the delisting thresholds (Recovery Plan: 49%, SSA: 14%).

South Alaska Peninsula: Currently estimated at 2% of K. This value exceeds the SSA uplisting threshold (1%), but not the Recovery Plan threshold (4%). This estimate is below the delisting thresholds (Recovery Plan: 49%, SSA: 14%).

Table 5. Current sea otter population status as a percentage of K based on delisting and uplisting to endangered criteria in the Recovery Plan and SSA. For the Western Aleutians MU (indicated by *), a Population Viability Analysis (PVA) provided additional information on the probabilities of endangerment and extinction.

| Management Unit | Current Status (%K) | Delisting criterion met based on 49% of K (Recovery Plan) | Delisting criterion met based on 14% of K (SSA) | Uplisting criterion met based on 4% of K (Recovery Plan) | Uplisting criterion met based on 1% of K (SSA) |
|---|---|---|---|---|---|
| W. Aleutian* | 5% | No | No | No | No |
| E. Aleutian | 28% | No | Yes | No | No |
| Bristol Bay | 26% | No | Yes | No | No |
| South Alaska Peninsula | 2% | No | No | Yes | No |
| Kodiak, Kamishak, Alaska Peninsula | 64% | Yes | Yes | No | No |

Ecosystem-based Criterion

Sea otters can have a substantial impact on nearshore ecosystems by feeding on sea urchins and other invertebrates, which, in turn, regulates the pressures of herbivory by sea urchins on kelp forests (Estes and Duggins 1995). This trophic cascade was documented through a combination of spatially and temporally replicated sea otter population surveys and scuba-based assessments of macroalgae (kelp), sea urchins, and other benthic invertebrates populations (Estes and Duggins 1995). Documenting the ecological function of sea otters on their ecosystem when they were abundant (pre-decline) and sparse (post-decline) provided further evidence of their keystone role (Estes et al. 1998). At the time of listing, scientists and managers determined that recovering sea otters to such an extent that they restored their ecological functional role in nearshore ecosystems should be a criterion for delisting. As a follow up to this criterion, Estes et al. (2010) outlined a sampling strategy to help scientists and managers determine whether islands were in a kelp or urchin-dominated state to assess sea otter status under the ecosystem-based criterion. At the time of publication (post-sea otter decline), most evidence suggested the majority of the Western Aleutian Islands were in a kelp-depleted state (‘urchin barren’), and thus not meeting this criterion for delisting. Currently, the Service does not have any additional evidence to suggest that the majority (50%) of islands have returned to a kelp-dominated state.

Threats-based Criterion

At the time of listing, predation by killer whales was considered to be the most plausible explanation for sea otter population decline. As determined by Tinker et al. (2021, 2023) and Monson (2021), there is little evidence to suggest that the threat from killer whale predation and predation risk has declined in the Western Aleutians MU. The status of this threat is less certain in the other MUs. Results from the resiliency assessment in the SSA indicate that the threats

from predation and other stressors for two MUs indicate low resiliency (Western Aleutians and South Alaska Peninsula), two have moderate resiliency (Bristol Bay and Kodiak, Kamishak, Alaska Peninsula), and one has moderate to high resiliency (Eastern Aleutians).

**Synthesis**

At the time of listing, sea otter populations across the Southwest Alaska region had declined substantially and ecosystem-level effects were apparent, particularly in the Aleutian Islands. The primary, most probable cause of the decline was identified as killer whale predation (USFWS 2013). Periodic sea otter surveys have revealed that sea otters across the five MUs are following different trajectories. There is little support for uplisting to endangered based on Recovery Plan and SSA criteria (Table 5). Support for delisting is minimal, with four of five Management Units falling below Recovery Plan delisting thresholds and two of five falling below SSA delisting thresholds. Additionally, the SSA's assessments of resiliency into the future based on the threats from different climate scenarios indicate that two MUs have low resiliency, two have moderate resiliency, and one has moderate to high resiliency.

Recent research has supported that killer whale predation is the most plausible cause of the decline (Tinker et al. 2021). Additionally, the current low abundance and fragmented distribution around the Western Aleutian Islands indicates that remaining sea otters in the region are isolated to shallow waters close to shore and in sheltered bays (Tinker et al. 2023, Monson 2021). This indicates that sea otters are experiencing some form of predation or predation risk effects that are hindering population growth and spread across the Western Aleutians. The Service currently has little information to quantify the impact of killer whale predation and predation risk effects in the other four MUs.

The Service predicts that the current threats to sea otters in the Southwest Alaska DPS will continue and possibly increase in magnitude due to the changing climate. Although changing climate conditions could open up areas for sea otters to expand their range (e.g., Bristol Bay), the overall expected impacts of an increasing trend in ocean temperature and ocean acidification are of conservation concern. Given that sea otters expend a lot of time and energy feeding to maintain thermal neutrality in a cold ocean, any increase in sea ocean temperatures could be beneficial by reducing that constraint. However, the extent to which the Southwest Alaska DPS of northern sea otters can persist and expand their populations will depend in part on the ways in which the local ecosystems respond to elevated water temperatures and ocean acidification. These changing conditions will have implications on the composition and diversity of primary producers and benthic organisms that will propagate through the ecosystem via the food web. Oil and gas exploration, development, and shipping traffic are likely to expand in Lower Cook Inlet and across the Southwest Alaska region. A large oil spill (e.g., similar to Exxon-Valdez in 1989), while unlikely, could have a large, negative impact on populations already deemed to have low to moderate resiliency.

Overall, based on recent scientific research, the SSA, and Recovery Plan criteria, the Southwest Alaska DPS of northern sea otter does not appear to meet demographic, ecosystem, or threat-based criteria indicative of recovered populations.

## RECOMMENDATIONS FOR FUTURE ACTIVITIES

1. Conduct a range-wide population survey of sea otters across all five Management Units in the Southwest Alaska DPS. An aerial survey was used to document the spatial extent and magnitude of the Southwest Alaska sea otter decline, but a comprehensive survey using standardized methods has not been repeated in nearly 25 years.
2. Further evaluate the extent and magnitude of killer whale predation and predation risk on sea otter abundance and distribution across the Southwest Alaska DPS.
3. Explore historical estimates of sea otter equilibrium density and carrying capacity using modern analytical approaches.
4. Develop Population Viability Analyses, or similar analytical approaches, to estimate the risk of sea otters becoming endangered or extinct across all five Management Units.
5. Evaluate sea otter demographic rates using tagged animals to estimate reproductive and survival rates.
6. Evaluate sea otter dispersal and connectivity using tagged animals to determine the extent to which populations are fragmented and the potential risks to population genetic health across the region.
7. Determine ecosystem health by assessing the status of kelp forest and sea urchin populations in the Eastern and Western Aleutian Management Units.

**U.S. FISH AND WILDLIFE SERVICE 5-YEAR REVIEW**
**of the Southwest Alaska Distinct Population Segment of northern sea otter**

**Current Classification**: Threatened

**Recommendation resulting from the 5-Year Review**:

____ Downlist to Threatened
____ Uplist to Endangered
____ Delist (Indicate reasons for delisting per 50 CFR 424.11):
_X__ No change needed

**Appropriate Listing/Reclassification Priority Number, if applicable**:

**Review Conducted By:** Marine Mammals Management

**FIELD OFFICE APPROVAL**:

**Marine Mammals Management, Field Supervisor, Fish and Wildlife Service**

Approve ALICE GARRETT Digitally signed by ALICE GARRETT Date: 2026.09.01 12:45:01 -08'00'

**REGIONAL OFFICE APPROVAL:**

**Assistant Regional Director – Fisheries and Ecological Services, Fish and Wildlife Service**

Approve PETER FASBENDER Digitally signed by PETER FASBENDER Date: 2026.09.01 14:32:13 -08'00'

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