Before the Secretary of Interior
United States Fish and Wildlife Service

PETITION TO LIST THE ALASKA STOCK OF SEA OTTERS AS DEPLETED UNDER THE MARINE MAMMAL PROTECTION ACT

CENTER FOR BIOLOGICAL DIVERSITY
Petitioner
August 9, 2001

Notice of Petition

Gale Norton, Secretary
U.S. Department of Interior
1849 C Street NW
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Regional Director
U.S. Fish and Wildlife Service
1011 East Tudor Rd.
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Petitioner Center for Biological Diversity formally requests that the U.S. Fish and Wildlife Service ("FWS") conduct a status review of the Alaska stock of the northern sea otter (*Enhydra lutris*) for the purposes of determining if the stock qualifies as a depleted species under the federal Marine Mammal Protection Act ("MMPA").

The petition is filed under 5 U.S.C. § 553(e) of the Administrative Procedure Act and 16 U.S.C. § 1383b of the MMPA. FWS has jurisdiction over this petition. This petition sets in motion a specific administrative process as defined by 16 U.S.C. § 1383b placing mandatory response requirements on FWS.

The Center for Biological Diversity is a non-profit environmental organization dedicated to the protection of native species and their habitats in the Western Hemisphere. The Center for Biological Diversity submits this petition on its own behalf and on behalf of its members and staff, with an interest in protecting the sea otter and the sea otter's habitat.

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Introduction

Pursuant to 16 U.S.C. § 1383b and 5 U.S.C. § 553(e), the Center for Biological Diversity ("CBD") hereby petitions U.S. Fish and Wildlife Service ("FWS") to conduct a status review of the Alaska stock of northern sea otter and to list this stock as depleted under the Marine Mammal Protection Act.

The U.S. Fish and Wildlife Service ("FWS") currently manages the sea otters in Alaska pursuant to its authorities under the Marine Mammal Protection Act ("MMPA") as a single stock. The MMPA requires FWS to designate any stock of marine mammals under its jurisdiction that is below its Optimum Sustainable Population ("OSP") as "depleted" and develop and implement a Conservation Plan for the stock. A species is generally considered below its OSP if it numbers less than 60% of its historic abundance.

Until recently, the vast majority of sea otters in Alaska (>90%) occurred along the Aleutian Islands and the overall population of otters in Alaska was estimated to be between 100,000 and 150,000. This compares to a pre-exploitation abundance of between 150,000 and 300,000 otters. However, recent surveys have indicated that sea otter numbers have declined precipitously in the Aleutians since the 1980's. Surveys show that sea otters have declined by 70% since 1992, with a 95% or more decline throughout much of the Archipelago since the 1980's. Currently, it is estimated that only 6,000 sea otters remain in the Aleutian Islands. When this estimate is combined with recent estimates of the number of otters elsewhere in Alaska, the current population size of the sea otters in Alaska is approximately 38,000. This total is well below the stock's OSP. Based upon this information, it is clear that sea otters in Alaska meet the statutory definition of "depleted." FWS should take prompt action to designate the Alaska stock as "depleted" and prepare and implement a conservation plan.

The Marine Mammal Protection Act

The purpose of the MMPA is to protect marine mammals "to the greatest extent feasible," consistent with sound resource management, by "maintain[ing] the health and stability of the marine ecosystem." 16 U.S.C. § 1361(6). The primary means of meeting this purpose is conserving the "optimum sustainable population" of each marine mammal species or stock. Id. Any stock that falls below its optimum sustainable population must be classified as "depleted," 16 U.S.C. § 1362(1)(A), and FWS must prepare and implement a conservation plan to restore the stock to its optimum population. 16 U.S.C. § 1383b(b).

"Optimum sustainable population" is defined as "the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem.…" 16 U.S.C. § 1362(9). The National Marine Fisheries Service ("NMFS") has further defined "optimum sustainable population" as "a population size which falls within

a range from the population level of a given species or stock which is the largest supportable within the ecosystem to the population level that results in maximum net productivity. Maximum net productivity is the greatest net annual increment in population numbers or biomass resulting from additions to the population due to reproduction and /or growth less losses due to natural mortality." 50 C.F.R. § 216.3. The numeric threshold for OSP has been interpreted by NMFS and FWS as being above 0.6K (i.e. greater than 60% of K, or carrying capacity). (Barlow et al. 1995). In other words, a stock that dropped in numbers to below 60% of K would qualify as "depleted" under the MMPA. Pre-exploitation abundance is generally used as the most readily available proxy for K. (Barlow et al. 1995).

Species Description of the Northern Sea Otter (*Enhydra lutris kenyoni)*

The northern sea otter is the largest member of the family Mustelidae—which includes skunks, weasels, and badgers—but is the smallest of all marine mammals. It can weigh as much as 100 pounds and reach lengths of nearly 60 inches. It has a long, heavy body, making terrestrial travel clumsy and slow. It has long, soft fur with delicate, sparse guard hair. The claws of its forepaws are short and retractile, while its hind feet are flipper-like, webbed to the tips of its toes. There is a loose flap or pouch of skin under each foreleg that extends partially across the chest. The tail is somewhat flattened and is usually shorter than one-third of the otter's body length. It has an external ear that resembles the ear of an eared seal more than it does the ear of its closest relative, the river otter. (Kenyon 1969).

The sea otter is clumsy on land, and is seldom seen on shore. On the ocean surface, sea otters usually swim belly up, with forepaws on their chests and paddling with their hind feet. Under water, sea otters propel themselves through the ocean using an undulating swimming motion, not unlike other marine mammals. Sea otters sleep in kelp beds or in calm water while floating on their backs. The forepaws are used to groom the fur, to gather and grasp food, to break the shells of mollusks and crustaceans against a rock held against the chest, and to pass food to the mouth. The loose flap or pouch under each foreleg is used to hold food until the food is consumed. (Kenyon 1969).

The sea otter is the only member of the genus *Enhydra*. There is some debate about the taxonomic classification of sea otters on the species and subspecies level. Kenyon (1969) did not believe that there was enough difference between sea otter populations to categorize them as distinct subspecies. However, Kenyon did reserve his judgment by stating that additional research should be conducted before definitive conclusions about sea otter races were reached. Recent studies have indicated that there are significant genetic differences between several sea otter populations. (Wilson et al. 1991; Sanchez 1992; Cronin et al. 1996). The FWS generally has recognized three subspecies of sea otter: *E. lutris kenyoni* and *E. lutris lutris*, both commonly referred to as northern sea otters, and *E. lutris nereis*, commonly referred to as the southern sea otter or California sea otter. *E. lutris kenyoni* is found along the Aleutian Islands to Oregon, while *E. lutris lutris* is found in the Kuril Islands, Kamchatka Peninsula, and Commander Islands in Russia. *E. lutris nereis* is found in coastal waters along California. (Meehan 2000).

Current Classification of the Alaska Sea Otter Stock

All sea otters in Alaska are currently classified as a single "stock" under the MMPA. (Ferrero et al. 2000). The MMPA defines a "population stock" or "stock" as "a group of marine mammals of the same species or smaller taxa in a common spatial arrangement, that interbreed when mature." 16 U.S.C. 1362. The phylogeographic approach of Dizon et al. (1992) is used in classifying stocks. This approach involves a four-part analysis of (1) distributional data, (2) population response data, (3) phenotypic data, and (4) genotypic data.

In February 1998, FWS published a draft revision of the Alaska sea otter stock assessment report. (FWS 1998). Based on distributional data and genetic studies, this revision identified three Alaska sea otter stocks: (1) a southeastern stock with a minimum estimated population of 8,709, located from the U.S.- Canadian border to Cape Yukataga; (2) a south-central stock, with a minimum population of 20, 948, located between Cape Yukataga and the east coast of Cook Inlet; and (3) a southwestern Alaska stock, with a minimum population estimate of 65, 761, located from the west side of Cook Inlet through the Kodiak Archipelago, the Alaska Peninsula, and the Aleutian Islands. (MMC 1999).

In August 1998, the Alaska Sea Otter Commission requested that FWS hold a formal hearing to review the basis for the Service's decision to reclassify Alaska sea otters into three separate stocks. In July 1999 the Alaska Sea Otter Commission and FWS entered into a memorandum of agreement specifying the steps that would be taken by March 1, 2000 to identify and obtain scientific peer review of the best available information concerning the differentiation of sea otter stocks in Alaska. On August 12, 1999 the Chair of the Alaska Sea Otter Commission officially withdrew the Commission's request for a formal hearing regarding the FWS's decision to reclassify Alaska sea otters as three separate stocks. (MMC 1999). Given that the proposed reclassification of sea otters in Alaska into three discrete stocks was never finalized by FWS, all sea otters in Alaska are currently managed as a single stock. This petition therefore seeks the designation of the entire Alaska stock of sea otters as "depleted."

Population Status of the Alaska Sea Otter Stock

The worldwide distribution of sea otters before commercial exploitation is estimated to have been between 150,000 and 300,000 individuals. (Kenyon 1969; Johnson 1982). Extensive commercial hunting of sea otters began following the arrival in Alaska of Russian explorers in 1741, and continued during the 18th and 19th centuries. By the time sea otters were afforded protection from commercial harvests by international treaty in 1911, the species was nearly extinct throughout its range, and may have numbered only 1,000 to 2,000 individuals. (Kenyon 1969).

The remaining sea otters were distributed as 13 isolated remnant populations scattered throughout the historic range. Once commercial harvests ceased, these populations began to grow and recolonize their

former range. In the Aleutian Islands, two remnant populations existed; one in the Rat Islands and the other in the Delarof Islands. The period of recolonization was marked by high reproductive rates and range expansion. Survey data indicate that by the 1980s, the Aleutian population was the largest sea otter population in the world, with sea otters present in every island group in the Aleutians. (Brueggeman et al. 1988).

In 1995, FWS published an Alaska sea otter stock assessment report. (FWS 1995). In 1998, a draft revision of this stock assessment was published for public review. Based on distributional data and genetic studies, the Alaska population was divided into three different stocks with the total Alaska population 95,418. (FWS 1998). FWS further stated that both the range and the population size of the Alaska sea otters were continuing to grow. (FWS 1998).

However, a survey of the entire Aleutian archipelago conducted in 1992 indicated that the sea otter population was again threatened with extinction. (Evans et al. 1997). The survey showed that sea otter density and abundance in the Rat, Delarof, and western Andreanof Islands had unexpectedly declined by more than 50%. Boat-based surveys of sea otters at several islands in the Near, Rat, and Andreanof Islands further documented an ongoing decline of sea otters during the 1990's, resulting in nearly an order-of-magnitude overall reduction in population by 1997. (Estes et al. 1998).

These surveys concerned biologists because they showed far fewer sea otters in the Aleutians than expected. These declines were not to be the last recorded by scientists in the area. During the 1990's, severe local declines in sea otter abundance were documented in portions of the central Aleutians by the United States Geological Survey. The areas most severely affected by these declines are those islands located in the central Aleutians.

In 1996, FWS advised the Marine Mammal Commission that sea otter abundance in the Adak Island vicinity had declined dramatically and that the causes of the decline were unknown. At the November 1997 Commission meeting, FWS advised the Commission that the sea otter decline may also have occurred in adjacent areas, and that researchers from the Biological Resources Division of the U.S. Geological Survey were seeking funding for studies to determine the cause and extent of the decline. (MMC 1999).

In April, 2000, FWS's Marine Mammals Management Office replicated the 1992 aerial survey in the Aleutians. These surveys showed that the sea otter decline was continuing. Overall, the survey showed that sea otters in the Aleutian Islands have declined by 70% during the 8-year period from 1992 to 2000 (2,442 vs. 8,048). (FWS 2000). The largest declines occurred in the Rat Islands (-87%) and the central Aleutians (-71%). As few as 6,000 sea otters may remain in the Aleutians today. (FWS 2000). This corresponds with a 95% decrease in sea otter population since the highs of the 1970's in the Aleutian Islands.

Elsewhere in Alaska, sea otter numbers appear to be stable or increasing. In 1998 FWS estimated 8,807 otters in Southeast Alaska and 22,867 in Southcentral Alaska. (FWS 1998) When these numbers are combined with the recent estimate of only 6000 otters remaining in the Aleutians, a total of fewer than 38,000 otters may remain in Alaska. Even if this estimate is low, the otter population in Alaska is certainly well below the lowest reasonable threshold for OSP of 60,000 otters.

The Alaska Stock of Northern Sea Otters is Depleted Under the MMPA

Section 3 of the MMPA (16 U.S.C. 1362(1)) defines the term "depleted" as any case in which:

> (A) the Secretary, after consultation with the Marine Mammal Commission and the Committee of Scientific Advisors on Marine Mammals determines that a species or population stock is below its optimum sustainable population (OSP); or
> (B) a state, to which authority for the conservation and management of a species or population stock is transferred determines that such species or stock is below its OSP; or
> (C) a species or population stock is listed as an endangered species or a threatened species under the Endangered Species Act of 1973.

Historically, the maximum net productivity has been expressed as a range of values (generally 50-70% of K) determined theoretically by estimating what size stock in relation to the original stock size will produce the maximum net increase in population (42 Fed. Reg. 12010). In 1977, the midpoint of this range was used to determine if a stock was depleted (42 Fed. Reg. 64548). The 60% value was supported in the final rule governing the taking of marine mammals incidental to commercial fishing operations (45 Fed. Reg. 72178). Today, the standard measure of a depleted stock is one that declines below 60% of its carrying capacity. (Barlow et al. 1995).

Determinations of depleted status are to be made "solely on the basis of the best scientific information available," 16 U.S.C. § 1383b(a)(2), a standard which does not require numeric certainty prior to action.

While FWS has not determined a specific numeric "optimum sustainable population" for the Alaska sea otter, an approximate value for OSP is still readily determinable. The global pre-exploitation population of sea otters has been estimated at between 150,000 and 300,000 individuals (Kenyon 1969; Johnson 1982). In 1976 the estimated Alaska sea otter population was 100,000 to 150,000. (Calkins and Schneider 1985). The most recent Stock Assessment Report ("SAR") for the Alaska stock of sea otters estimates the current minimum population of sea otters in Alaska at approximately 100,000. (Ferrero et al. 2000). The SAR estimate, however, does not take into account the recently documented dramatic decline of the species in the Aleutian Archipelago. Taking these estimates as the "best available science" a conservative estimate of K for sea otters in Alaska would be 100,000. The lower threshold of OSP for the Alaska stock would then be 60,000 otters. If the stock were to drop below 60,000 individuals it would

appropriately be classified as "depleted." With a less conservative estimation of K of 150,000, the stock would be depleted if it fell below 90,000 individuals. As detailed above, the population of otters in Alaska has declined to approximately 38,000 individuals, well below any reasonable calculation of its OSP, and therefore the stock warrants listing as "depleted."

It is beyond doubt that the current population of sea otters in Alaska are far below those that should exist in a healthy ecosystem. Absent compelling evidence to the contrary, historic population levels best represent the carrying capacity of a stock. The Alaska population recently comprised over 100,000 sea otters. Today, however, there are fewer than 40,000 sea otters remaining in the in all of Alaska. This severe population decline qualifies the Alaska stock of sea otters as depleted under the MMPA. The best available evidence indicates that current populations of northern sea otters in Alaska are severely below the "optimum sustainable population," and they should be designated as depleted under the MMPA.

Listing the Alaska stock of sea otters as "depleted" is entirely consistent with previous designations of "depleted" species under the MMPA. For example, on October 19, 1999, NMFS designated the Cook Inlet beluga whale as "depleted" under the MMPA. NMFS conducted annual surveys of the Cook Inlet beluga whale from 1994 to 1998. Based on aerial surveys and abundance estimates, NMFS concluded that there was a 71% probability that a 40-percent decline in population occurred between the June 1998 abundance survey of the Cook Inlet stock of beluga whales and the June 1994 survey. (64 Fed. Reg. 56298). The estimated abundance dropped from 653 animals in 1994 to 347 in 1998. Id. This decline, comparable percentage wise to that of the otter, meant that the Cook Inlet stock of beluga whales was below its "optimum sustainable population," and NMFS subsequently listed the beluga whale as depleted under the MMPA.

Similarly, the Atlantic bottlenose dolphin has also been designated as depleted under the MMPA. Historically, nearly 15,000 bottlenose dolphins were recorded in the mid-Atlantic coastal records. However, in a 1987 population survey, an estimated 350 to 1,300 animals were recorded in the coastal mid-Atlantic. This population decline was attributed to the summer and fall of 1987 and 1988, when an unusually large number of bottlenose dolphins were found dead along the shore of the U.S. east coast from New Jersey to Florida. Based on the best information available, NMFS concluded that the coastal-migratory stock of bottlenose dolphins in the mid-Atlantic probably declined by more than 50% as a result of the 1987-88 die-off. Responding to a petition, NMFS designated the coastal-migratory stock of bottlenose dolphins along the mid-Atlantic coast of the U.S. as depleted under the MMPA. (58 Fed. Reg. 41654, 41656). Again, the magnitude of this decline is comparable to that of the sea otter in Alaska.

NMFS also listed the Pribilof Island population of North Pacific fur seals as depleted under the MMPA. NMFS concluded that the Pribilof Island population was probably below 50 percent of its carrying capacity based on a comparison of current population levels and those observed in the 1940s and early 1950s. The fur seal population was believed to be below a level which can maintain maximum net productivity, the lower bound of the "optimum sustainable population" range, and was listed as depleted

under the MMPA on December 30, 1986. (51 Fed. Reg. 47156).

In sum, an Alaska sea otter population that once numbered well over 100,000 has been reduced to perhaps 40,000 remaining otters. This decline is attributable to the precipitous drop in otter numbers that has occurred in the Aleutian Islands in the past twenty years. Since sea otters in Alaska are currently managed as a single stock, and overall numbers of otters in Alaska are well below the stock's OSP, all sea otters in Alaska should be promptly designated as "depleted' under the MMPA.

The Investigation into the Causes of Decline in the Sea Otter Stock Should Focus on Increased Predation, Habitat Destruction, and other Human-Induced Factors

The causes of the sea otter decline have been explored by reviewing available data on sea otter reproduction, survival, distribution, habitat, and environmental contaminants. Estes et al. (1998) concluded that the observed sea otter declines were most likely caused by increased adult mortality. While disease, pollution, and starvation may all influence sea otter mortality, there is no evidence at this time to suggest these factors are contributing to the decline. Several lines of evidence, including a recent increase of observed interactions between killer whales (*Orcinus orca*) and sea otters indicates predation may be one of the leading causes of the sea otter decline in the Aleutian Islands (Hatfield et al. 1998).

The hypothesis that killer whale (*Orcinus orca*) predation is causing the sea otter decline suggests a mechanism which extends further throughout the Bering Sea ecosystem. Preferred prey species of killer whales are Steller sea lions (*Eumetopias jubatus*) and harbor seals (*Phoca vitulina*). Both species have been in decline throughout the western North Pacific, which may have prompted killer whales to begin preying on sea otters. While the cause of sea lion and harbor seal declines is the subject of much debate, it is likely that changes in composition and abundance of forage fish as a result of climatic changes and commercial fishing practices are major factors.

Three lines of evidence point to increased predation by killer whales as a reason for recent sea otter declines. First, although killer whales and sea otters have been observed in close proximity for decades, the first attack on a sea otter was not seen until 1991. Subsequently, nine more attacks have been reported. The probability of these sightings to be skewed toward recent sightings due to random chance or varied searching effort was calculated as .006 by Estes et al. (1998). Thus, the killer whale predation hypothesis cannot be dismissed on the basis of differing search techniques or be attributed to random chance.

Second, the rate of mortality of sea otters in areas inaccessible to killer whales is far below the mortality rate for sea otters in areas accessible to killer whales. For example, studies of Clam Lagoon, an area uniquely inaccessible to killer whales, and adjacent Kuluk Bay, an open coastal environment, show that inaccessible Clam Lagoon had stable populations in the 1990's while Kuluk Bay populations declined

by 76%. (Estes et al. 1998). These changes in population were controlled for migration; almost no migration between the two study areas has been observed.

Finally, the total amount of killer whale predation necessary to bring about the magnitude of sea otter decline currently observed is proportional to the number of killer whale attacks on sea otters that have been observed. That is, the number of expected attacks on sea otters based on the number of observed attacks is correlated with the total amount of killer whale predation that would be necessary to drive the current sea otter population dive. Estes et al. (1998) calculate that a single killer whale could consume 1825 sea otters per year, meaning that a relatively small killer whale population could have a significant range-wide impact on the species.

Both natural fluctuations and human activities have caused environmental changes in the Bering Sea. Climate variability occurs at several scales; the El Nino Southern Oscillation, which is a seasonal event; the Pacific Decadal Oscillation, often referred to as a regime shift; and global climate change, which is characterized by long term, progressive change. Interaction between these factors is significant and appears to affect many ecosystem components. Human-induced change is also significant, largely related to resource exploitation of both marine mammals and fish. As a result, the Bering Sea fish assemblage probably became pollock-dominated in the late 1960's and early 1970's, which may be responsible for decreased abundances of forage fish. Concurrent with these basic changes in ecosystem components are changes in seabird and marine mammal abundances, which likely reflect changes to their primary food resources.

Tissue concentrations of total PCBs and DDT in sea otter liver samples from the Aleutian Islands (primarily from Adak and Shemya) were significantly higher than those of otters from Southeastern Alaska, and total PCB values were higher than those found in California otters. (Estes et al. 1997). Although the toxicity of PCBs in sea otters is unknown, the concentrations in liver of Aleutian otters were similar to or higher than those causing reproductive failure in captive mink. (Estes et al. 1997). Potential sources of these organochlorine compounds include local sources on specific islands and remote sources outside of Alaska. Initial population survey data suggest that reproduction in sea otters is not being suppressed in the Adak Island population. (Tinker and Estes 1996). Since PCBs are normally thought to inhibit reproduction rather than increase adult mortality, these findings do not suggest a reproductive impact due to contaminants, however samples sizes were limited. Data needed to fully evaluate the potential role of environmental contaminants in the observed Aleutian sea otter decline are incomplete and a conclusive link to specific pollutants has not been established.

Activities associated with the exploration, development, and transportation of oil and gas have the potential for adversely impacting sea otter habitat in Alaska. The Exxon Valdez oil spill in March 1989 illustrates the impact that oil spills can have on sea otters. In Prince William Sound, estimated mortality due to the oil spill was approximately 750 sea otters to 2,650 sea otters. (Garshelis 1997; Garrot et al. 1993). Spill-wide, 3,905 sea otters may have died in Alaska as a result of the spill. (DeGange et al. 1994).

Ongoing research on the post-spill recovery of sea otters has found that densities of sea otters are up to an order of magnitude lower in areas of Prince William Sound where oiling was most severe and persistent, and where acute sea otter mortality was high, suggesting that complete recovery has still not occurred.

Based on the NMFS program requiring fisheries to keep logbooks of marine mammal interactions and to allow observers on vessels to track marine mammal interactions, no sea otter kills were reported in 1990 or 1991 through the observer program. The 1990 logbook shows 1 kill and 7 injuries in the Prince William Sound drift gillnet fishery. However, logbook data is considered as a minimum estimate of mortality, and due to the lack of data, seasonal or area differences in the fishery's incidental mortality rate and trends in mortality rate are not possible to determine. (Ferrero et al. 2000). NMFS recently observed take of sea otters in the Bering Sea and Aleutian Islands groundfish trawl and reported take in the Kodiak set gillnet fishery. (Angliss et al. 2001).

The MMPA exempts Alaska Natives from the prohibition on hunting marine mammals. Today, Alaska Natives can take sea otters for subsistence use or for selling and creating authentic Native articles of handicrafts. FWS data from the mid 1990's shows an increase in Native harvest of otters, with over 1200 harvested in 1993.

Conclusion and Requested Actions

The best available information proves dramatic declines in the populations of the Alaska stock of sea otters in the past twenty years. Petitioners request that you immediately undertake a status review of this stock and publish a proposed rule listing this stock as depleted under the MMPA as soon as practicable consistent with the procedural requirements of that Act.

Petitioners also request that you immediately begin preparation of an updated Conservation Plan for this stock and implement the plan concurrently with the listing of this stock as depleted. In particular, this plan should examine the coincidence of the decline of the Alaska stock of sea otter with the decline of Stellar sea lions and harbor seals, which may have prompted killer whales to begin preying on sea otters.

We look forward to your actions.

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