



# United States Department of the Interior

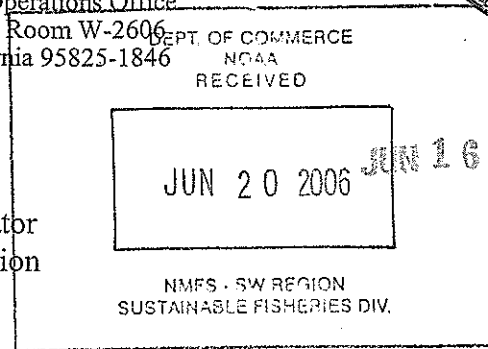


## FISH AND WILDLIFE SERVICE

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In reply refer to:  
CNO-ES

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Subject: Biological Opinion on the Allocation of the Pacific Sardine Harvest Guideline - Amendment 11 under the Coastal Pelagic Fishery Management Plan (1-8-F-06-24)

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed Amendment 11 under the Coastal Pelagic Species (CPS) Fishery Management Plan (FMP) (Allocation of the Pacific Sardine Harvest Guideline (Amendment 11)) and its effects on the federally endangered southern sea otter (*Enhydra lutris nereis*, otter), in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.). Your request for formal consultation was received on March 30, 2006.

This biological opinion is based on information which accompanied your October 26, 2005, request for informal consultation, including your biological assessment of the *Allocation of the Pacific Sardine Harvest Guideline - Amendment 11 under the Coastal Pelagic Fishery Management Plan* (NMFS 2005; updated on March 30, 2006), personal communications with National Marine Fisheries Service (NMFS) staff and otter experts, and information from our files.

### CONSULTATION HISTORY

On September 14, 2005, in response to your August 4, 2005, request, we provided you with a list of endangered, threatened, proposed, and candidate species, and their designated or proposed critical habitat in accordance with section 7 of the Endangered Species Act, for implementation of Amendment 11 under the CPS FMP.

On October 28, 2005, we received NMFS' October 26, 2005, request for our concurrence, in accordance with section 7 of the Act, for implementation of Amendment 11 under the CPS FMP.

On November 30, 2005, we received additional information regarding the Pacific sardine (*Sardinops sagax*, sardine) Fishery, including sections of the CPS FMP and the June 2005 Stock Assessment and Fishery Evaluation, and an original description of a June 29, 2005, otter interaction that occurred within the CPS fishery.

On December 2, 2005, we provided to you our letter of concurrence for the endangered tidewater goby (*Eucyclogobius newberryi*), threatened western snowy plover (*Charadrius alexandrinus nivosus*) and Santa Ana sucker (*Catostomus santaanae*), and designated critical habitat for all three species

On March 23, 2006, we received new information that effectively expanded the action area to include coastal maritime waters of California.

On March 30, 2006, we replied (via email) to the March 23, 2006, email from your staff indicating that changes in the project description would require formal consultation on the otter. This email effectively initiated formal consultation on the proposed action.

On April 26, 2006, we provided your staff (via email) a draft timeline for completion of the subject biological opinion.

On May, 30, 2006, we provided you our letter of concurrence for the endangered short-tailed albatross, California brown pelican, and California least-tern; the threatened marbled murrelet, bald eagle, and the bull trout; bull trout critical habitat; and the candidate Xantus's murrelet.

## BIOLOGICAL OPINION

### DESCRIPTION OF THE PROPOSED ACTION

The sardine fishery (Fishery) in the Economic Exclusion Zone (EEZ) (3+ miles) off the coasts of Washington, Oregon, and California is managed by the NMFS under the authority of the Magnuson-Stevens Fishery Conservation and Management Act. The Pacific Fisheries Management Council (FMC) sets standards and restrictions for west coast fisheries. The proposed action, implementation of Amendment 11 of the FMP, will set such standards and restrictions for the Fishery. The NMFS is responsible for implementation of the FMC decisions.

The Federal rules apply to both Federal (EEZ) and State (0 – 3 nautical miles (nm)) waters. Washington prohibits the Fishery from operating in State waters, while Oregon allows the Fishery, but with added restrictions (e.g., vessel hold grates) to protect salmonids. California also allows the Fishery to operate within State waters. The Fishery activities in State waters are interrelated with the Federal standards because the FMC has oversight responsibilities in State waters. The States each run their own programs in a manner consistent with the Federal plan. The current managed Fishery and associated bycatch monitoring program began operating in Washington and Oregon in 2000, and operated from about 35 nm south of the Columbia River, in Oregon, north to about Grays Harbor, Washington. The Fishery in California is historic and has operated entirely south of Monterey Bay. This Fishery operates at night and is typically completed in the predawn hours.

The FMP establishes an environmentally-based harvest guideline for sardines. This is accomplished by means of a formula that, after overall biomass is determined, takes into account forage and ecosystem-related goals and objectives when determining the guideline number. The

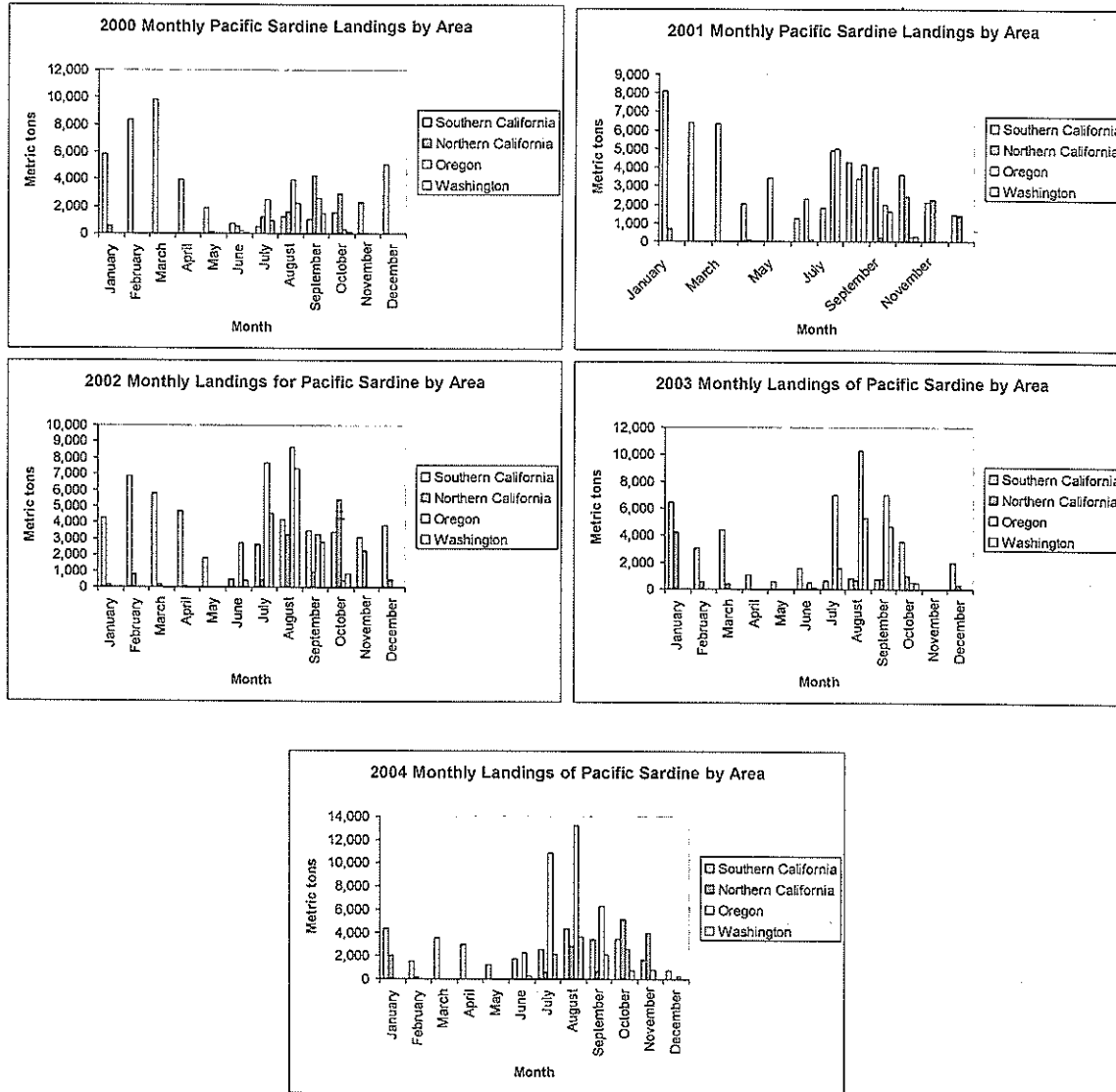
sardine is an important source of forage for a large number of birds, marine mammals, and fish not managed by the FMP. The harvest guideline formula provides adequate forage for these dependent species by subtracting a “cutoff” number from the overall biomass number. This “cutoff” number is established in the FMP as 150,000 metric tons (mt) and represents the lowest level of biomass at which a directed harvest is allowed. The formula also takes into account what is known as the “harvest fraction.” This is the percentage of the biomass above 150,000 mt that may be harvested. This fraction varies between 5% and 15% and is based on current ocean temperatures. The higher fraction is allotted for harvest when ocean temperatures are warmer and sardine production is greater, while the lower fraction is used when ocean temperatures are cooler and sardine production is decreased.

Amendment 11 will revise the allocation framework for apportioning the annual sardine harvest guideline, as described below. Amendment 11 will not affect the guideline determination process, as described above.

Amendment 11 to the CPS FMP divides the Fishery into a federally managed limited entry Fishery, which occurs south of 39 degrees North latitude (Southern subarea), and an open access Fishery, which occurs north of 39 degrees North latitude (Northern subarea) (this Fishery actually operates north of 45 degrees North latitude). The latter is managed by the individual states of Oregon and Washington. From 2003 to 2005, the harvest guideline had been allocated one-third for Northern subarea, and two-thirds for Southern subarea beginning on January 1. On September 1 of each year, the remaining harvest guideline had been pooled and reallocated to 80% for the Southern subarea and 20% for the Northern subarea. On December 1, all unharvested sardine that remain are reallocated to a coast-wide harvest guideline until the fishing season ends on December 31.

The two management subareas (Northern & Southern) that make up the Fishery have different temporal characteristics. Sardine landings in the Southern subarea occur throughout the year with a majority of the Fishery operations occurring in the winter months (Figure 1). A majority of the sardine landed in the Northern subarea occur from June-September. The Northern subarea Fishery operates in an area approximately 45 nm north and 30 nm south of the Columbia River and extends approximately 35 nm offshore. Fishing depths range from 7 fathoms (approx. 42 feet) to over 400 fathoms (approx. 2,400 feet). No specific data is available to characterize the geographic range of the Southern subarea Fishery except that the majority of sardine is landed in the Southern California area (Figure 1.).

Figure 1. Monthly landings of Pacific sardine by area for 2000-2004. Note: Data were taken from Pacific Fisheries Information Network (PacFIN) for years 2000-2003, and from the NMFS-Southwest Region for the year 2004 (NMFS 2005).



The new allocation scheme detailed in Amendment 11 to the FMP will begin with implementation of the 2006 Fishery on January 1, 2006. At their June 2005 meeting in Foster City, California, the FMC adopted a preferred option for the allocation of sardine that creates a seasonal, coastwide allocation scheme, which provides the following allocation formula for the non-tribal share of the harvest guideline:

**Coastwide Allocation in Three Periods**

Season: January 1–December 31

Initial allocation: On January 1, 35% of the harvest guideline is allocated coastwide.

Reallocation: On July 1, 40% of the harvest guideline (plus any unharvested portion from the initial allocation) is allocated coastwide.

Second reallocation: On September 15, 25% of the harvest guideline (plus any unharvested portion from the first reallocation) is reallocated coastwide.

### Purse Seine Fishing Operations

The gear traditionally used in the CPS fishery is a purse seine. A typical purse seine net measures 185 fathoms long (1,110 feet), 22-28 fathoms deep (132-167 feet) (Lutz and Pendleton, 2000, as cited in NMFS 2005). Purse seines are large nets that encircle the target species. Depending on the size of vessels, nets generally vary from 1/4 mile to one mile in circumference. During deployment of gear, the net forms a circular wall of webbing around the school of fish. The net must be deep enough to reduce the likelihood of fish escaping underneath, and the encircling must be done rapidly enough to prevent the fish from escaping before the bottom is secured ("pursed") shut.

A set is initiated when a skiff is released from the stern of the purse seiner, anchoring one end of the seine. The targeted fish are contained in a vertical cylinder of webbing after the seine vessel encircles the targeted school and rejoins the skiff. The bottom of the net is then pursed by hauling the cable that is threaded through rings on the bottom of the net. After the net is pursed, it is retrieved until the diameter of the net compass and the volume of water inside the net decreases to a point when, in both space and time, fish are sufficiently concentrated that they can be hydraulically scooped ("brailed") into wells onboard the vessel.

### Current Management Measures in Place to Reduce Bycatch and Protected Species Interactions

The Fishery has current management measures in place to reduce interactions with protected species. This is principally a monitoring program, although Oregon requires additional measures on sardine fishing vessels to reduce bycatch.

The NMFS Southwest Region started a pilot observer program in the Southern subarea of the CPS fishery (all species, not just sardine) in July of 2004. The pilot observer program was put in place to document the type and amount of bycatch, and to validate bycatch rates provided by California Department of Fish and Game (CDFG) dockside sampling. The state of Oregon allows fishing in state waters but requires fisher logbooks and grates to be placed over fish holds to minimize the take of incidentally caught species. Additionally, during the first two years (2000 & 2001) Oregon Department of Fish and Wildlife (ODFW) placed observers on the vessels, but after 2001 the observer program was halted due to a lack of funding. Observer coverage was between 4% and 7% for the state of Oregon (Table 1).

Unlike California and Oregon, the State of Washington does not allow fishing in state waters. Washington implemented a no fishing zone within state waters to minimize bycatch of salmon and to minimize the interaction between the Fishery and recreational salmon fishers. The State of Washington had an observer program in place continuously from January 1, 2000, until December 31, 2004. Observer coverage in the Washington Fishery has ranged from 24% to 27%

(Table 1.). Additionally, in 2000 and 2001, Washington monitored dockside landings for bycatch - in particular, they were looking for incidental catch of juvenile salmon. After two years of dockside sampling, the Washington Department of Fish and Game (WDFG) ceased dockside monitoring because of a low incidence of general bycatch and they specifically never observed bycatch of juvenile salmon (Culver, pers. comm., 2005, as cited in NMFS 2005). WDFG also has a mandatory logbook program.

Table 1. Summary of observer coverage in the Pacific sardine fishery off Oregon and Washington (Culver & Henry, 2004, McCrae, 2001, and McCrae, 2002, as cited in NMFS 2005), shown as a percent of trips observed of the total trips that landed Pacific sardine.

Year	Percent of Observer Coverage In Oregon	Percent of Observer Coverage In Washington
2000	7%	24%
2001	4%	24%
2002	no observer program	24%
2003	no observer program	27%
2004	no observer program	27%
2005	no observer program	no observer program

## STATUS OF THE SPECIES

The otter was listed as threatened in 1977 (42 *Federal Register* 2965); critical habitat has not been designated for the species. The factors leading to the listing included increasing tanker traffic and oil spills, municipal pollution, and increasing harassment caused by use of near-shore areas for a variety of human activities (e.g., fishing, recreation).

Unless otherwise noted, the following information on the otter is from Riedman and Estes (1990).

### Distribution and Population Size

Otters occupy nearshore waters along the mainland coastline of California from just southeast of Point Conception, Santa Barbara County, north to about Half Moon Bay, San Mateo County. A small experimental population of otters also exists at San Nicolas Island, Ventura County as a result of translocation efforts initiated in 1987.

Historically, otters ranged from Punta Abreojos, Baja California, Mexico to northern California (Wilson *et al.* 1991) or Oregon, or possibly as far north as Prince William Sound, Alaska (Riedman and Estes 1990). Historically, the number of otters was estimated at 14,000 individuals. During the 1700s and 1800s, the killing of otters for their pelts extirpated the

subspecies throughout most of its range. A small population of otters survived near Bixby Creek in Monterey County, California, numbering an estimated 50 animals in 1914 (Bryant 1915). Since receiving protection under the International Fur Seal Treaty in 1911, those 50 otters have increased in number and gradually expanded northward and southward along the central California coast. The current population is still well below the estimated carrying capacity of California of approximately 16,000 animals (Laidre *et al.* 2001). Otters currently inhabit shallow waters along the coast of California in San Mateo, Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara counties and at San Nicolas Island in Ventura County.

### Natural History

Unlike most other marine mammals, otters have little subcutaneous fat; they depend on their clean, dense, water-resistant fur for insulation against the cold. Otters also maintain a high level of internal heat production to compensate for the lack of blubber. Consequently, their energetic requirements are high and they are estimated to consume an amount of food equivalent to 23 to 33 percent of their body weight per day.

Most otters remain within 1.2 miles (2 kilometers) of shore. They generally forage in both rocky and soft-sediment communities in water depths of 80 feet or less, although individuals occasionally will move into deeper water. Rocky habitats that are topographically heterogeneous and support kelp forests are likely to support the greatest diversity and abundance of otter food resources, which include abalone, rock crabs, sea urchins, kelp crabs, clams, turban snails, mussels, octopus, barnacles, scallops, sea stars, and chitons. Fish are not an important component of the otter's diet in California.

Male otters have larger home ranges than females. Compared to males, most female otters are rather sedentary. Occasionally, females travel long distances; 3 tagged adult females routinely moved between Monterey and Santa Cruz, a distance of 25 to 30 miles, for over 4 years. Juvenile males move further from natal groups than juvenile females; aggressive behavior exhibited towards the juvenile males by older males may be partially responsible for their more extensive travels. Most male otters leave the central portion of the range and travel to its southern end during the pupping season, which occurs in the winter and spring (Riedman and Estes 1990).

The northern and southern portions of the population seem to exhibit different mating peaks. A peak period of pupping occurs from January to March; a secondary pupping season occurs in late summer and early fall. Pupping is seasonally uniform in the Monterey Bay area (Riedman *et al.* 1994). Parental care is provided solely by the female.

### Mortality Factors

The USGS Biological Research Division (BRD) has analyzed the number of carcasses found to determine whether relative mortality patterns varied during periods of population increase and decline. BRD found that mortality was roughly constant at 5 percent per year during periods of population increase but was "somewhat" higher during periods of decline. Periods of increased

mortality and decline include the early 1980s and 1995 to 1999. Prior to 1980, data from otters found stranded on beaches were not being analyzed.

Between 1968 and 1989, the cause of death could not be determined for 56 percent of the 1,680 otter carcasses examined. Between 1982 and 1985, 29 otters were known to have drowned in gill and trammel nets; however, because only a small portion of the nets were sampled, the actual number of individuals that drowned was possibly larger. Eleven otters (0.7 percent of 1,680 carcasses) are known to have drowned as a result of being tangled in fishing lines. Drowning is nearly impossible to detect in necropsies; all or nearly all of the carcasses for which drowning was attributed as the cause of death were either taken from nets or had net fragments attached to them.

The live finfish trap Fishery expanded in central California during the mid-1990s; in 1999, the trap fishing effort in the southern half of the range of the otters decreased, possibly as a result of new regulations enacted by the CDFG (Hatfield and Estes 2000). Experiments conducted at the Monterey Bay Aquarium demonstrated that otters will enter fish traps and can become trapped in them (Hatfield and Estes 2000). However, reports of mortality of otters in fish traps are unconfirmed.

Forney *et al.* (in press) estimated that set gillnets in the Monterey Bay area killed between 17 and 125 otters from 1995 through 1998. Forney *et al.* attribute the elevated mortality estimates to the increased use of set gillnets in the Monterey Bay area and the documented use of deeper waters by otters during the late 1990s. Although no take of otters resulting from entanglement in set gillnets was documented during the period from 1995 through 1998, no monitoring of potential otter/gillnet entanglement was undertaken during this period. Forney *et al.* notes that the highest estimate of 125 individuals taken is likely an overestimate because the maximum number of nets that can be set per day are usually not used. Since April 1999, one otter is known to have died in set gillnets in Monterey Bay (NMFS 1999, as cited in NMFS 2005).

In 1998, three dead otters were found with wounds that were caused by the propellers of boats; one additional individual had wounds that may have been caused by a propeller. Three of these individuals were found in the vicinity of Elkhorn Slough in Monterey County and the other was near Morro Strand in San Luis Obispo County. No such wounds were observed in 1999. We have no additional information to indicate whether mortality from collisions with boats is a substantial cause of mortality.

Great white sharks, killer whales, and bald eagles are known to kill otters. In California, among these species, only great white sharks are known, from evidence of bite marks and scrapings on bones, to attack otters. Between 1968 and 1989, 195 of 1,680 deaths (11.6 percent) of otters were likely due to shark attacks. Shooting was known or suspected to be the mortality factor in 77 of 1,680 carcasses (4.6 percent) during this same time period.

When discussing the factors that may affect the size of the population of the otter, Estes *et al.* (1986, in Riedman and Estes 1990) believed that starvation was not an issue in California because: (1) the amount of time that otters spent foraging was equivalent to that observed in



below-equilibrium densities elsewhere; (2) unoccupied habitat occurred at both ends of the range; and (3) the mortality caused by set-nets was estimated at 7 or 8 percent of the total population each year (Wendall *et al.* 1985, *in* Riedman and Estes 1990). Ralls and Siniff (1988, *in* Riedman and Estes 1990) disagreed with this conclusion because they observed that Ajuvenile females in the central part of the range spent more time foraging and experienced higher mortality than other age and sex classes, with the exception of adult males, which experienced the lowest rates of survival. Riedman and Estes (1990) speculated that density-independent factors may be more important at the northern and southern limits of the range where entanglement in set-nets, shark attacks, and shooting are more common than in the central portion of the range.

The BRD concludes that the incidence of infectious disease may have been high throughout this century and that disease could be the responsible agent for the otter's relatively slow rate of population growth. The BRD has found that the rate of infectious disease has not increased since 1992, except for the incidence of acanthocephalan parasites. However, the general rate of infection seems to be greater than would be expected in a wild population and it may account for the slower growth rate of the otter population in relation to populations elsewhere. The source or cause of the high infection rate is not known.

An examination of the environmental baseline for the otter must also consider the potential effects of environmental contaminants on the status of the species. Sources of potential environmental contaminants may be natural or anthropogenic. Riedman and Estes (1990) conducted a review of the presence of contaminants in the environment and their effects on otters; they note that adverse effects of environmental contaminants had not been documented although various types of materials occur in tissue samples taken from otters. Otters consume as much as 33 percent of their body weight per day. This high forage rate leaves them potentially vulnerable to contaminant loading through the intake of food. Because they forage close to the coast the otter is at risk of dietary exposure to contaminants that may originate on the mainland.

The synergistic effects of these chemicals, even those found at concentrations sufficiently low that they alone would not cause concern, and parasites must also be considered. Kannan *et al.* (1998) and Nakata *et al.* (1998) report that otters that died from infectious diseases and other causes, such as neoplasia, emaciation, and esophageal impaction, contained greater concentrations of polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT). Absolute correlations among various pollutants and diseases and mortality have not been developed; however, the widespread presence of a variety of contaminants in otters and the increasing prevalence of infectious disease warrant further examination and consideration in evaluating the status of the taxon.

## ENVIRONMENTAL BASELINE

The action area for this consultation encompasses the entire range of the otter. It follows the mainland coastline of California from just southeast of Point Conception, Santa Barbara County, north to about Half Moon Bay, San Mateo County. It also includes the experimental population of otters at San Nicolas Island, Ventura County.

Data on the population size of the otter have been gathered for more than 50 years. In 1982, a standardized survey technique was adopted to ensure that subsequent counts were comparable (Estes and Jameson 1988). This survey method involves shore-based censuses of approximately 60 percent of the range, with the remainder surveyed from the air. These surveys are conducted twice each year (in spring and fall). Based on the 2004 spring survey, the minimum size of the otter population is 2,825 individuals, excluding the experimental population at San Nicolas Island (U.S. Geological Survey unpub. data). The San Nicolas Island colony numbers about 30 animals (U.S. Geological Survey unpub. data).

Three-year running averages are used to characterize population trends to dampen the effects of anomalous counts in any given year (U.S. Fish and Wildlife Service 2003). Based on three-year running averages of the annual spring counts, the otter population has increased gradually by about 1 percent per year from 1998 to 2002 (U.S. Geological Survey unpub. data). Until the mid-1990s, the number of otters along the central coast of California had been generally increasing at a rate of approximately 4 to 6 percent per year.

## EFFECTS OF THE ACTION

Competition for forage fish is not a concern for otters. The species feeds primarily on invertebrates it collects in fairly shallow water (80 feet or less, although some otters have been known to dive deeper).

Of concern for the otter is the possibility of entanglement in nets. Researchers report some mortality of otters in other nets; however, the types of net in which these mortalities have occurred are not the purse seine type used by the Fishery. Otters have died in set gill nets and become entangled in fishing lines and mortalities are suspected for other types of set traps (e.g., set live finfish traps) but are not confirmed.

The likelihood that an otter would become entangled in a purse seine net is small; however, such events are most likely to occur within Monterey Bay due to the strong overlap of the Fishery and otters due to the combination of suitable depth and habitat for the otter and the availability of target species for the Fishery. From July 2004 through January 2006, 52 purse seine nets were set in Monterey Bay to catch squid, anchovy, and sardine (26 nets were set for squid and 26 for anchovy and Sardine). One of these included an incident of two otters entering and leaving a purse seine net unharmed (NMFS 2005). Of the 26 purse seine nets set for anchovy and sardine, 15 were located more than 2 miles offshore, while 19 were more than 1 mile offshore. Seven of the nets were set within 1 mile offshore. The conclusion is that the majority of the nets (approx. 73 percent) were set beyond the distance offshore where otters normally occur (1.2 miles). A similar pattern is expected in the future.

The Fishery would generally occur in waters deeper than the 80 feet or less used by otters (purse seine nets used are more than 130 feet deep and would not be deployed in shallower waters). We examined charts within the range of the otter and found most depths within the sardine fishing area of the FMP were deeper than that typically used by otters, except for portions of Monterey Bay (as discussed above). The small mesh size (1 ¼ inches) and rapid deployment of the purse

seines further minimizes the chances that otters would be caught within the nets. Although there is a potential for otters to become entangled in purse seine nets used by the Fishery, such instances are expected to be very rare because, to date, no such entanglements have been recorded in the action area. For that reason, otters are not likely to become entangled.

A capture event that results in otters needing human assistance in escaping a net, while rare due to limited overlap between the Fishery and otters, is expected to occur in the action area. While we have no records of capture in the action area, the single known incident reported above did indicate that initial escape attempts through the net were unsuccessful until the otters apparently realized they could simply jump over the net. Those two otters were able to escape without assistance. However, had the net been closed or nearly-closed during this event, the otters likely would have needed human assistance to escape. Therefore, we anticipate the eventual capture of up to two otters in a single event is likely to occur given the ongoing nature of the proposed action.

Collision with boat propellers is also cited as a cause of injury and mortality in otters. As many as four such occurrences are recorded since records on otter mortality have been kept. Due to the scarcity of deaths or injury due to boat propellers, and the fact that it would be nearly impossible to attribute such an injury specifically to a sardine fishing vessel, we do not consider this effect to be likely to occur.

#### CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

We have no information on future non-Federal actions within the action area that could affect otters. Ongoing actions that could be having an effect on otters include recreational and commercial fishing, boating, shipping, scuba diving, safety and rescue operations, and other ocean-oriented activities; however, we have no indication that these activities are having more than a minimal effect on the species. Other activities that have contributed to the slow recovery of otters (e.g., oil spills, outfall from treatment facilities) are subject to Federal oversight and are not part of the cumulative effects analysis.

#### CONCLUSION

After reviewing the current status of the otter, the environmental baseline for the action area, the effects of the proposed Amendment 11 to the CPS FMP, and the cumulative effects, it is the Service's biological opinion that the amendment, as proposed, is not likely to jeopardize the continued existence of the otter. We reach this conclusion because:

1. The likelihood of an otter becoming entangled in a purse seine net used in the Fishery is very low due to the minimal overlap of the Fishery and the distribution of the otter.

2. The purse seine nets used in the Fishery are deployed rapidly and have a small mesh which further discounts the potential for entanglement of otters.
3. Boat propeller injuries are generally rare and have not been specifically attributed to the Fishery, therefore, we anticipate such injuries are unlikely to occur.
4. Otter capture due to the Fishery is not likely to cause significant impacts to the otter population because the otters would presumably be released unharmed and such occurrences would be rare.

No critical habitat has been designated for this species; therefore, none will be affected.

### INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the NMFS so that they become binding conditions of any grant or permit issued to the (applicant), as appropriate, for the exemption in section 7(o)(2) to apply. The NMFS has a continuing duty to regulate the activity covered by this incidental take statement. If the NMFS (1) fails to assume and implement the terms and conditions or (2) fails to require the Sardine fishers to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any permit or authorization, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the NMFS must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR '402.14(i)(3)]

We anticipate the following level of take may result from the proposed activities:

The Service anticipates that no more than two (2) otters will be taken in the form of capture in deployed purse seine nets in a single event as a result of this proposed action. For the purposes of this biological opinion, capture is defined as any incident in which an otter is encircled by a purse seine net and is unable to escape without assistance.

This incidental take statement does not exempt any activity from the prohibitions against take contained in section 9 of the Act that is not incidental to the action as described in this biological opinion. Otters may be taken only within the defined boundaries of the action area as described in the Environmental Baseline section of this biological opinion.

## REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of otters:

1. The NMFS must require sardine fishers to implement measures to minimize the potential that otters will be trapped in a purse seine net.
2. The NMFS must ensure that take will be reduced through education, monitoring, and reporting.

## TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the NMFS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions implement reasonable and prudent measure 1:

- a. If one (1) otter is captured (as defined in the Incidental Take Statement above) in a net being operated for sardine fishing, the NMFS must contact the Ventura Fish and Wildlife Office, Ventura, California, within 48 hours so we can review the project activities to determine if additional protective measures are needed. Project activities may continue during this review period, provided that all protective measures proposed by the NMFS and the terms and conditions of this biological opinion have been and continue to be implemented. Any injury or mortality resulting from such incidents must be reported within 24 hours to the Service's California/Nevada Operations Office, Sacramento, California, and to the appropriate Law Enforcement Office of the Service.
- b. Sardine fishing boat operators must be advised not to deploy their nets if an otter is observed within the area where a purse seine would be opened. Only upon when the otter is out of harm's way should the net be deployed.

The following terms and conditions implement reasonable and prudent measure 2:

- a. With the inception of the subject Fishery amendment, the NMFS must provide education and instructions to sardine vessel operators in California that at minimum includes: identification of an otter; a description of the regulations

protecting otters; the requirements of both the CPS FMP and this biological opinion to minimize and avoid adverse affects to the otter; the consequences of not implementing these requirements; any precautions that the NMFS can impose on the vessel operators to prevent capture of otters in the nets; and monitoring and reporting requirements. This educational program can be a formal presentation or published material, or both. The Service will be provided the subject educational materials upon finalization.

- b. The NMFS must require sardine fishers to look for and record otter observations if any interaction (defined as otters within encircled nets or coming into contact with nets or vessels, including but not limited to capture events) with the purse seine net(s) or vessel(s) is noted. With the exception of a capture event, which will be initially reported as described in term and condition 1.a. above, observations made pursuant to this term and condition will be reported by NMFS to the Service's California/Nevada Operations Office, Sacramento, California, by March 30 of each year. Reporting of casual observation of otters is not necessary.
- c. The NMFS will provide an annual report (by March 30 each year) to the Service's California/Nevada Operations Office, Sacramento, California, on data submitted by vessels (in addition to the initial reports as described in term and condition 1.a., above) regarding their interactions with otters, and including any available information regarding dockside or other bycatch reporting efforts. Reporting requirements are summarized below.

## REPORTING REQUIREMENTS

The NMFS must require any sardine fishing vessels to report instances where interactions (as described in term and condition 2.b. above) with otters have occurred, regardless of whether incidental take results. Interactions resulting in take (i.e., capture) must be reported to the Service's Ventura Fish and Wildlife Office, Ventura, California, within 48 hours (as described in term and condition 1.a. above). Any injury or mortality resulting from such incidents must be reported within 24 hours to the Service's California/Nevada Operations Office, Sacramento, California, and to the appropriate Law Enforcement Office of the Service.

The NMFS will also report to the Service's California/Nevada Operations Office, Sacramento, California, by March 30 of each year the proposed Amendment 11 is in effect, the following: (1) the number of sardine fishing vessels that operated within the action area; (2) locations where the vessels operated, including maps if possible; (3) any observations of otters recorded pursuant to the terms and conditions above; (4) along with the otter annual report NMFS will include a summary of any incidents involving sardine fishing vessels and other listed species (e.g., brown pelican, etc.), if it is known/available; (5) a summary of the manner in which any protective measures were implemented and their effectiveness; and (6) provide recommendations for other protective measures that could be implemented, such as the Conservation Recommendations below.

## DISPOSITION OF INJURED OR DEAD SOUTHERN SEA OTTERS

If any otter is injured or killed, the vessel operator must record the location, date, time, and cause of death or injury, if known, and immediately notify the Ventura Fish and Wildlife Office (805-644-1766) and the appropriate U.S. Fish and Wildlife Service Law Enforcement Office. This information must remain with the animal, whether injured or killed, until final disposition.

You must ensure that injured otters are handled with care and provided effective treatment. Injured animals must be transported to a qualified veterinarian. Should any treated otter survive, the Service must be contacted regarding the final disposition of the animal.

You must ensure that dead animals are preserved in the best possible state. You must endeavor to place the remains of the intact otters with educational or research institutions holding the appropriate State and Federal permits per their instructions. If such institutions are not available or the skin has been damaged, the information noted above must be obtained and the carcass left in place. You must make arrangements regarding proper disposition of potential museum specimens with the institutions as soon as possible.

## CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends that NMFS implement the following actions:

1. The NMFS should develop a CPS wide assessment of potential impacts to fish and wildlife resources in an effort to address the CPS programmatically.
2. The NMFS should work with the CDFG to establish a consistent monitoring program to evaluate bycatch, including otters and other non-fish species. The data provided by on board monitoring is the best source of such information, which is critical to the maintenance of the marine ecosystem in the face of increasing harvest pressure.
3. The NMFS should work with CDFG to limit the Fishery to the Federal EEZ (3-12 nm offshore), and outside of the state waters (0-3 nm offshore). Most of the conflict with otters could be avoided by limiting the Fishery to distances offshore beyond which otters normally occur.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats.

## REINITIATION NOTICE

This concludes formal consultation on the action outlined in your consultation package (NMFS 2005). As provided in 50 CFR '402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Daniel Brown at the Pacific Regional Office (503) 231-6281, or Rick Farris at the Ventura Fish and Wildlife Office (805) 644-1766 ext. 316.

Sincerely,



Paul Henson, Assistant Manager  
Ecological Services

cc: Field Supervisor, Ventura Fish and Wildlife Office (Attn: Rick Farris)  
Assistant Regional Director-ES, Pacific Regional Office, Portland, Oregon  
(Attn: Daniel Brown)



## REFERENCES

- Bryant, H.C. 1915. Sea otters near Point Sur. California Department of Fish and Game Bull. 1:134-135.
- Cameron, G.A. and K.A. Forney. 2000. Preliminary estimates of cetacean mortality in California/Oregon gillnet fisheries for 1999. Paper SC/S2/O24 presented to the International Whaling Commission, 2000 (unpublished). 12 pp. Available from NMFS, Southwest Fisheries Science Center, P.O. Box 271, La Jolla, California, 92038, USA.
- Carretta, J.V. 2001. Preliminary estimates of cetacean mortality in California gillnet fisheries for 2000. Paper SC/53/SM9 presented to the International Whaling Commission, 2001 (unpublished). 21 pp. Available from NMFS, Southwest Fisheries Science Center, P.O. Box 271, La Jolla, California, 92038, USA.
- Cronin, M.A., J. Bodkin, B. Bellachey, J.A. Estes, and J.C. Patton. 1996. Mitochondrial-DNA variation among subspecies and populations of sea otters (*Enhydra lutris*). J. Mammal. 77:546-557.
- Estes, J.A. 1990. Growth and equilibrium in sea otter populations. J. Anim. Ecol. 59:385-401.
- Estes, J.A. and R.J. Jameson. 1988. A double-survey estimate for sighting probability of sea otters in California. J. Wildl. Manage. 52:70-76.
- Estes, J.A., B.B. Hatfield, K. Ralls, and J. Ames. 2003. Causes of mortality in California sea otters during periods of population growth and decline. Marine Mammal Science 19(1):198-216.
- Forney, K.A., S.R. Benson, and G.A. Cameron. 2001. Central California gill net effort and bycatch of sensitive species, 1990-1998. Pages 141-160 in Seabird Bycatch: Trends, Roadblocks, and Solutions, E.F. Melvin and J.K. Parrish, eds. Proceedings of an International Symposium of the Pacific Seabird Group, University of Alaska Sea Grant, Fairbanks, Alaska, 212 pp.
- Hatfield, B.B. and J.A. Estes. 2000. Preliminary results of an evaluation of the potential threat to sea otters posed by the nearshore finfish trap fishery. Unpublished. 6 pp. + appendices.
- Herrick, S.F. Jr. and D. Hanan. 1988. A review of California entangling net fisheries, 1981-1986. National Oceanic and Atmospheric Administration Technical Memorandum. National Marine Fisheries Service. NOAA-TM-NMFS-SWFC-108. 39 pp.
- Jameson, R.J. 1989. Movements, home range, and territories of male sea otters off central California. Marine Mammal Science 5:159-172.

- Kannan K., K.S. Guruge, N.J. Thomas, S. Tanabe, J.P. Giesy. 1998. Butyltin residues in southern sea otters (*Enhydra lutris nereis*) found dead along California coastal waters. *Environmental Science and Technology* 32:1169-1175.
- Kooyman, G.L. and D.P. Costa. 1979. Effects of oiling on temperature regulation in sea otters. Yearly progress report, Outer Continental Shelf Energy Assessment Program.
- Kreuder, C., M.A. Miller, D.A. Jessup, L.J. Lowenstein, M.D. Harris, J.A. Ames, T.E. Carpenter, P.A. Conrad, and J.A.K. Mazet. 2003. Patterns of mortality in southern sea otters (*Enhydra lutris nereis*) from 1998-2001. *Journal of Wildlife Diseases* 39(3):495-509.
- Laidre, K.L., R.J. Jameson, and D.P. DeMaster. 2001. An estimation of carrying capacity for sea otters along the California coast. *Marine Mammal Science* 17(2):294-309.
- Larson, S., R. Jameson, J. Bodkin, M. Staedler, and P. Bentzen. 2002. Microsatellite DNA and mitochondrial DNA variation in remnant and translocated sea otter (*Enhydra lutris*) populations. *J. Mammal.* 83(3):893-906.
- Mayer, K.A., M.D. Dailey, and M.A. Miller. 2003. Helminth parasites of the southern sea otter *Enhydra lutris nereis* in central California: abundance, distribution, and pathology. *Diseases of Aquatic Organisms* 53:77-88.
- Nakata, H., K. Kannan, L. Jing, N. Thomas, S. Tanabe, and J.P. Giesy. 1998. Accumulation pattern of organochlorine pesticides and polychlorinated biphenyls in southern sea otters (*Enhydra lutris nereis*) found stranded along coastal California, USA. *Environ. Poll.* 103:45-53.
- National Marine Fisheries Service (NMFS). 2005. Endangered Species Act Consultation Package for U.S. Fish and Wildlife Service on the Effects of Amendment 11 to the Coastal Pelagic Species Fishery Management Plan. October 13, 2005. National Marine Fisheries Service, southwest Region, Sustainable Fisheries Division.. Long Beach, California.
- Ralls, Katherine, Brian B. Hatfield and Donald B. Siniff. 1995. Foraging patterns of California sea otters as indicated by telemetry. *Can. J. Zool.* 73:523-531.
- Ralls, K., T.C. Eagle, and D.B. Siniff. 1996. Movement and spatial use patterns of California sea otters. *Can. J. Zool.* 74:1841-1849.
- Riedman, M.L. and J.A. Estes. 1990. The sea otter (*Enhydra lutris*): behavior, ecology, and natural history. U.S. Fish and Wildlife Service, Biol. Rep. 90(14). 126 pp.
- Riedman, M.L., J.A. Estes, M.M. Staedler, A.A. Giles, and D.R. Carlson. 1994. Breeding patterns and reproductive success of California sea otters. *J. Wildl. Manage.* 58:391-399.

- Sanchez, M.S. 1992. Differentiation and variability of mitochondrial DNA in three sea otter, *Enhydra lutris*, populations. M.S. Thesis, University of California Santa Cruz.
- Siniff, D.B. and K. Ralls. 1991. Reproduction, survival, and tag loss in California sea otters. *Marine Mammal Science* 7(3):211-229.
- Siniff, D.B., T.D. Williams, A.M. Johnson, and D.L. Garshelis. 1982. Experiments on the response of sea otters, *Enhydra lutris*, to oil contamination. *Biol. Conserv.* 2: 261-272.
- U. S. Fish and Wildlife Service (Service). 2002. Final Revised Recovery Plan for the Southern Sea Otter (*Enhydra lutris nereis*). Portland, Oregon. xi + 165 pp.
- U.S. Fish and Wildlife Service. 2003. Final Revised Recovery Plan for the Southern Sea Otter (*Enhydra lutris nereis*). Portland, Oregon. xi + 165 pp.
- Wade, P.R. and R. Angliss. 1997. Guidelines for assessing marine mammal stocks: report of the GAMMS workshop April 3-5, 1996, Seattle, Washington. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-OPR-12. 93 pp.
- Wendell, F.E., R.A. Hardy, and J.A. Ames. 1985. An assessment of the accidental take of sea otters, *Enhydra lutris*, in gill and trammel nets. California Department of Fish and Game, Mar. Res. Tech. Rep. No. 54, 31 pp.
- Wilson, D.E., M.A. Bogan, R.L. Brownell, Jr., A.M. Burdin, and M.K. Maminov. 1991. Geographic variation in sea otters, *Enhydra lutris*. *J. Mammal.* 72(1):22-36.