

U.S. FISH AND WILDLIFE SERVICE - SPOTLIGHT SPECIES ACTION PLAN
2010-2014

Common Name: Southern Sea Otter

Scientific Name: *Enhydra lutris nereis*

Lead Region: Region 8, Pacific Southwest Region

Lead Field Office: Ventura Fish and Wildlife Office

Species Information:

Status: Threatened (42 FR 2965)

Recovery Priority Number: 9C

Recovery Plan or Candidate Assessment Form: Final Revised Recovery Plan for the Southern Sea Otter (2003)

Most Recent 5-year Review: None (in draft)

Other: Research Plan: California Sea Otter Recovery (2007), Stock Assessment Report for the Southern Sea Otter (2008)

Threats: Growth of the southern sea otter population appears to be limited by elevated mortality rather than by a reduced birth rate or emigration. Southern sea otters die from many causes, including shark attacks, malnutrition, incidental entanglement in fishing gear, oiling, boat strikes, shooting, and exposure to neurotoxins caused by extreme proliferations of harmful algae. Infectious diseases comprise a particularly large proportion of sea otter deaths, a pattern that has been attributed to immune deficiencies, elevated parasite loads, and pathogen exposure, as well as to increasingly limited food resources in portions of the central California range. Persistent organic pollutants and low genetic diversity may be contributing to suppressed immune function. Oil spills are not responsible for the current high rates of mortality, but the possibility of a catastrophic oil spill remains an important threat that could negatively affect southern sea otter recovery.

Target: Species status maintained. The 5-year target is to identify and begin to mitigate the drivers of high southern sea otter mortality in the current range in order to increase overall population size and range and advance the long-term goal of delisting. Whereas the status of the species will improve if range expansion continues and the mortality rate decreases in the currently occupied range, it is unlikely that the southern sea otter could be delisted within the next 5 years given its current population size of 2,826 (the 3-year running average for 2006-2008). The delisting criterion in the recovery plan requires that a 3-year running average population size of 3,090 be reached and maintained for 3 consecutive years in order for the species to be considered for delisting.

Measure: Increase population size.

Actions: The actions below are primarily designed to better understand the underlying causes of the high mortality levels occurring in southern sea otters and to assess the

relative importance of each threat, with the ultimate goal to reduce mortality and increase population size. These actions are necessary to design and implement effective management actions to mitigate the causes of high mortality.

Action	Threat	Listing Factor	Responsible Parties	Cost	Target Date
Collect and analyze tissues for evidence of stress or disease (Recovery Plan Task 4.3.4)	Disease	C	USGS-BRD FWS CDFG MBA	\$311K	2010
Evaluate causes of otter mortality; evaluate the effectiveness of fishing regulations for preventing sea otter take; evaluate the potential for incidental take in trap/pot fisheries (Recovery Plan Tasks 1.2, 3.1.2, 3.1.3)	Incidental take in fishing gear	D	USGS-BRD FWS CDFG NOAA/NMFS MBA	\$35K + portion of \$515K (for Task 1.2) + TBD	2010
Monitor USCG vessel management plan (Recovery Plan Task 2.1.1)	Oil spills	E	USCG NOAA FWS	\$24K	Ongoing
Evaluate causes of otter mortality; analyze tissues from southern sea otters for environmental contaminants and archive tissues for future analysis; determine contaminant levels in sea otter prey and habitat (Recovery Plan Tasks 1.2, 4.3.1, 4.3.3)	Contaminants	E	USGS-BRD FWS CDFG NOAA/NMFS MBA EPA	\$466K + portion of \$515K (for Task 1.2)	2011
Evaluate causes of otter mortality; minimize intentional	Intentional take	E	USGS-BRD FWS CDFG	Portion of \$515K	Ongoing

take (Recovery Plan Tasks 1.2, 3.2)			NOAA/NMFS MBA	(for Task 1.2) + TBD	
CDFG = California Department of Fish and Game EPA = Environmental Protection Agency FWS = U.S. Fish and Wildlife Service MBA = Monterey Bay Aquarium NOAA/NMFS = National Oceanic and Atmospheric Administration/National Marine Fisheries Service USCG = U.S. Coast Guard USGS-BRD = U.S. Geological Survey, Biological Resources Division					

Role of other agencies: The cooperation of several other agencies is critical to southern sea otter recovery. USGS-BRD leads monitoring and research efforts; CDFG conducts necropsies of recovered carcasses; and MBA supports research with personnel, equipment, and funding and coordinates efforts related to live-stranded sea otters. Researchers at University of California, Davis and University of California, Santa Cruz are conducting research on disease, contaminants, and demography in support of recovery efforts. For example, researchers at these universities collaborated to determine that high levels of infection with the protozoal pathogens *Toxoplasma gondii* and *Sarcocystis neurona* were linked to the behavior, prey choice, and habitat use of individual animals (Johnson *et al.* 2009). In addition, non-governmental organizations, such as Defenders of Wildlife, play a key supportive role in garnering public interest and support and in securing funding for recovery efforts.

Role of other ESA programs: Section 6 grants have been important as supplementary funding for the necropsies and analyses of disease conducted by the State. Section 7 consultations will likely continue to play a role in ensuring that projects are conducted with minimal impacts on southern sea otters. If the specific pathways of land-borne pathogens and contaminants are identified, section 7 consultations and HCPs may become important tools to mitigate the influx of these disease agents into the nearshore environment.

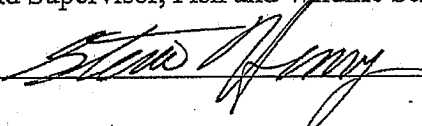
Role of other FWS programs: Wetlands and other coastal habitat restoration projects conducted under the Partners program could assist efforts to control land-sea transmission of pathogens and contaminants by sequestering these inputs before they enter the nearshore marine environment. A coastal program, if implemented, would likely result in nearshore water quality improvements that would benefit sea otters.

Additional funding analysis: Additional funding could be used to fund the development of new tagging/tracking technology to monitor sea otters more efficiently and effectively while reducing the invasiveness of tagging and stress for individual sea otters. An enhanced ability to follow sea otter movements would greatly enhance our understanding of how and where sea otters are being exposed to pathogens and contaminants and whether they are being incidentally killed in fishing gear. Because an entirely different form of technology is needed, the costs of research and development are uncertain, but the amount needed would likely be \$500,000 to \$750,000. Any new technology developed would likely have benefits for other species. Additional funding will also be

necessary to mitigate sources of pathogens and contaminants once the specific pathways have been identified. However, these funding needs cannot be determined at this time. With additional funding, it is likely that the goal of increasing population size (and eventually, delisting) would occur faster. The responsible parties are FWS, CDFG, USGS-BRD, MBA, NOAA and others (TBD).

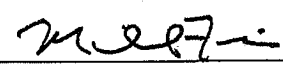
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Literature Cited:

Johnson, C.K., M.T. Tinker, J.A. Estes, P.A. Conrad, M. Staedler, M.A. Miller, D.A. Jessup, and J.A.K. Mazet. 2009. Prey choice and habitat use drive sea otter pathogen exposure in a resource-limited coastal ecosystem. *Proceedings of the National Academy of Sciences* 106(7):2242-2247.