



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2012-B-0137

May 8, 2012

Doug Bosco, Chair
Coastal Conservancy
1330 Broadway, Suite 1300
Oakland, California 94618

Dear Mr. Bosco,

The U.S. Fish and Wildlife Service (Service) encourages the California Coastal Conservancy (Conservancy) to approve a \$60,000 grant to the University of California at Santa Cruz to study potential risk factors for mortality to southern sea otters due to shark attacks.

Stranded carcasses retrieved along the California coastline during the past several years have provided evidence of a dramatic increase in shark bite as the primary cause of death. The three-year Monterey-Big Sur study, funded by the Conservancy, also revealed a sharp increase in the frequency of lethal shark attacks on sea otters. In fact, shark bite mortality appears to have become the single biggest driver of population trends.

As you know, the Service is charged with bringing the threatened southern sea otter (*Enhydra lutris nereis*) to recovery under the Endangered Species Act and to its Optimum Sustainable Population level under the Marine Mammal Protection Act. In order to identify potential management actions, if any, it is necessary to understand which risk factors predispose sea otters to death from shark attack.

We believe that the subject project, which is the result of a cooperative effort between members of the sea otter research alliance, represents an important and appropriate use of the sea otter tax check-off funds allocated to the Conservancy.

Please do not hesitate to contact Lilian Carswell, of my staff, at (805) 612-2793 or myself at (805) 644-1766 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen P. Henry".

Stephen P. Henry
Deputy Field Supervisor



Central Coast Regional Water Quality Control Board

May 9, 2012

Doug Bosco, Chair
Coastal Conservancy
1330 Broadway, Suite 1300
Oakland, CA 94618

Subject: Tinker et al., "Risk factors for shark bite mortality in southern sea otters"

Dear Members of the Coastal Conservancy Board:

I am writing to express my support for the proposed project to examine potential risk factors for mortality in southern sea otters due to shark attacks. Due to a recent spike in shark-associated mortality for sea otters in California and the clear population impacts of shark predation on this federal and state-listed threatened species, there is an urgent need to clarify possible factors that have contributed to this mortality surge, as well as potential options for mitigation.

I manage the Central Coast Ambient Monitoring Program, which is the monitoring and assessment program for the Central Coast Water Board. The proposed work will help the Water Board and other state, federal and local management agencies take appropriate management actions to reduce any controllable risk factors associated with sea otter mortality from shark attack. Many otter mortalities are attributed to shark attack that may have underlying controllable causes. For example, high inputs of nutrients from agricultural runoff may be exacerbating harmful algal blooms, which may in turn be impacting otter health and/or behavior in a way that increases their risk of shark attack. It is important for our agency to be able to clearly identify and communicate to our stakeholders and dischargers the existing and potential risks associated with surface water discharges. We can also better prioritize our own regulatory and management actions when we have a full understanding of these risks.

I urge you to favorably consider the UC Santa Cruz application for financial support. If you have any questions about our support for this proposed investigation, please feel free to contact me at (805) 549-3333 (or kworcester@waterboards.ca.gov).

Sincerely,

A handwritten signature in cursive script that reads "Karen Worcester".

Karen Worcester, Staff Environmental Scientist
CCAMP Program Manager



MONTEREY BAY AQUARIUM

April 24, 2012

Doug Bosco, Chair
Coastal Conservancy
1330 Broadway, Suite 1300
Oakland, CA 94618

Dear Mr. Bosco:

The Monterey Bay Aquarium supports the collaborative project “Sea Otter Recovery—Shark Bite Mortality Study” (Project No. 08-079-02) and urges the members of the Coastal Conservancy to approve funding for the project at their meeting on May 24.

Given the dramatic rise in sea otter deaths from shark bites and the potential impact this cause of mortality may have on the recovery of the species, we need to identify and evaluate the risk factors that predispose sea otters to shark-related death. The aquarium’s Sea Otter Research and Conservation program has worked within a phenomenal research alliance over the past decade, and this group—led by Dr. Tim Tinker and comprised of researchers and technical staff from the University of California, Santa Cruz, the U.S. Geological Survey, the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and the Monterey Bay Aquarium—has the desire and the expertise to accomplish this challenging project. The project aligns with the Coastal Conservancy’s selection criteria and strategic objectives, and the Conservancy’s approval to release the funds will allow investigators to begin this important work.

Please contact me if you have any questions.

Sincerely,



Andrew B. Johnson, Manager
Sea Otter Research and Conservation
831-648-7934
ajohnson@mbayaq.org



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

May 10, 2012

Doug Bosco, Chair
Coastal Conservancy
1330 Broadway, Suite 1300
Oakland CA 94618

Dear Chairman and Members of the Coastal Conservancy Board:

I am writing to express my support for the proposed project entitled "Risk factors for shark bite mortality in southern sea otters" submitted by Tinker, Miller, et al. Due to a recent spike in shark-associated mortality among southern sea otters in California, and the significant adverse impacts of shark predation on this federal and state-listed threatened species, there is an urgent need to investigate possible sources of this recent surge in mortality in order to identify potential options for mitigation.

The decades-long trend toward recovery of the southern sea otter population has been tempered by significant increases in mortality in the past several years. More recently, shark attacks have increased significantly, along with consequent increases in mortality.

Elucidation of the environmental, spatial/temporal, and/or health-related risk factors that may be responsible for increases shark-related mortalities will assist state, federal, and local resource conservation and management agencies in taking appropriate management actions. As an example, if some of the sea otter population are suffering from the neurotoxic effects of freshwater and/or marine biotoxins (e.g., domoic acid and microcystins) produced by harmful algal blooms are rendered more vulnerable to shark bites (e.g., through impairment of their ability to detect and evade potential predators), then a long-range management strategy to reduce excessive concentrations of nutrients entering adjacent coastal watersheds may be warranted.

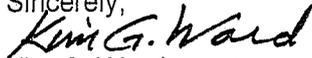
Although the neurotoxic effects of domoic acid on a variety of indigenous marine mammal species has been well-documented, more recent literature (e.g., Huiying et al. 2009, Li et al., 2012, and Feurstein et al., 2011) has also demonstrated that the microcystins can act as potent neurotoxins on the mammalian central nervous system.

Previous research conducted by U.C. Santa Cruz, U.C. Davis, and the Department of Fish and Game that was funded (in part) by the State Water Resources Control Board (State Water

Board) has confirmed that at least 21 southern sea otters have died from microcystin poisoning in the past several years. In addition, Dr. Miller demonstrated that microcystins can bioconcentrate in several coastal invertebrate species which southern sea otters typically rely upon for their primary prey species. Further research by Dr. Kudela has also established that microcystins, which are primarily produced by freshwater cyanobacteria (formerly known as "blue-green algae"), are present in coastal watersheds in the greater Monterey Bay area in which most of the confirmed sea otter microcystin poisoning cases have occurred.

Having managed the State Waterboard contracts which helped support the research mentioned above, I believe that an investigation into the recent increases in shark-related mortalities is urgently needed to help protect the fragile recovery of this threatened species, and that these U.C. Santa Cruz researchers are uniquely qualified to respond to this latest threat to this vulnerable population. If you have any questions about the State Water Board's support for this proposed investigation, please feel free to contact me.

Sincerely,



Kim G. Ward
Stormwater Section
Division of Water Quality