



**U.S. Department of the Interior
U.S. Geological Survey
Western Ecological Research Center
Santa Cruz Field Station**



September 18, 2015

To: Lilian Carswell
Southern Sea Otter Recovery & Marine Conservation Coordinator
US Fish and Wildlife Service, Long Marine Laboratory
100 Shaffer Rd. Santa Cruz, CA 95060

Subject: Support for California State Coastal Conservancy proposal entitled “Advancing southern sea otter (*Enhydra lutris nereis*) conservation through education and outreach”

Dear Lilian:

I am writing to express support, on behalf of US Geological Survey Western Ecological Research Center (USGS-WERC), for the grant proposal “Advancing southern sea otter (*Enhydra lutris nereis*) conservation through education and outreach” to be submitted to the Coastal Conservancy for competition in the 2015 Sea Otter Recovery Grants Program. The USGS-WERC has long been a key contributor to research on sea otters in California, and our research team collaborates closely with partner agencies and other research groups to provide the most up-to-date science on the factors affecting recovery of the southern sea otter population.

I am highly supportive of the proposed project, which aims to mitigate the impacts of direct human disturbance on sea otters. The proposed research is situated within a larger framework of our ongoing collaborative partnerships among groups working towards sea otter recovery in California. In particular, this project follows up on previous outreach efforts to engage the general public in sea otter recovery. Moreover, it is logical extension of our previous field and captive-animal research that indicates that sea otters are highly susceptible to disturbance due to their elevated metabolism and thermoregulatory strategies, which means that any disturbance that interferes with their natural resting behaviour and increases their activity is likely to exert increased energetic costs and thus pose a health risk. The work proposed here represents a very tangible step towards reducing these risks, and doing so in a way that has a high likelihood of success and will have measurable outcomes.

I look forward to collaborating with the US Fish and Wildlife service personnel involved with this project, and I encourage the Coastal Conservancy to support it.

Sincerely,

Dr. M. Tim Tinker
Research Biologist, Field Station Principal Investigator,
and Adjunct Professor of Ecology and Evolutionary Biology, UC Santa Cruz



**Monterey Bay
Aquarium**

886 CANNERY ROW
MONTEREY, CA 93940
831.648.4800

September 16, 2015

Doug Bosco, Chair
Coastal Conservancy
1330 Broadway, Suite 1300
Oakland, CA 94612

Dear Mr. Bosco,

I'd like to offer my strong support for the project titled, "Advancing southern sea otter (*Enhydra lutris nereis*) conservation through education and outreach: the *Be Sea Otter Savvy* program," which is being submitted for funding under the Sea Otter Recovery Grants program.

Despite the close cooperation and extraordinary efforts of many groups and agencies working on southern sea otter research and recovery—including the U.S. Fish and Wildlife Service, the U.S. Geological Survey, the California Department of Fish and Wildlife, Friends of the Sea Otter, the Monterey Bay Aquarium, and other academic and non-governmental institutions—southern sea otters continue to suffer significant levels of disturbance and harassment from human recreational and commercial activities along the California coast. With the increasing numbers of people moving to the coast and with the expected growth and expansion of the sea otter population, the potential for disturbance will increase unless we make a concerted effort to educate people about the effects of their activities on sea otters and to encourage responsible wildlife viewing. The *Be Sea Otter Savvy* program will adapt positive mechanisms and strategies used elsewhere to mitigate the disturbance and harassment of marine wildlife.

A key element of the program involves having an experienced sea otter biologist develop a comprehensive education and outreach strategy for addressing intentional and unintentional disruption of sea otters by humans, particularly in embayments, harbors, and estuaries. This person will also establish an integrated plan to improve communications among other wildlife groups, law enforcement personnel, and habitat managers. Along with benefitting sea otters, this program should foster a stronger environmental ethic among recreational users of coastal areas and improve the behavior of these people around all coastal wildlife.

I have no doubt that using donations generated through the California Sea Otter Fund to support the *Be Sea Otter Savvy* program will aid sea otter conservation in California. I urge the State Coastal Conservancy to grant the requested funds to this important project.

Sincerely,

A handwritten signature in blue ink that reads "Andrew B. Johnson".

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

Exhibit 2: Project Letters



State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Office of Spill Prevention and Response
Marine Wildlife Veterinary Care & Research Center
1451 Shaffer Road
Santa Cruz, CA 95060
<http://www.dfg.ca.gov/ospr>

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director



Mr. Doug Bosco, Chair
State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612

September 18, 2015

Dear Mr. Bosco:

I'm writing to express my strong support for the proposal "**Advancing southern sea otter (*Enhydra lutris nereis*) conservation through education and outreach: The *Be Sea Otter Savvy* program,**" submitted by Lilian Carswell of the USFWS for the 2015-16 Coastal Conservancy Sea Otter Recovery Program. Over the last several years, state and federal agency personnel, as well as NGO partners working with sea otters, have increasingly been contacted regarding observed disturbance to southern sea otters. These disturbances violate state and federal regulations and likely cause harm to sea otters. At the same time, a growing body of scientific evidence has established that southern sea otters have extremely high energetic demands, and anything that adds to these demands may increase their physiological stress to the point at which they cannot survive. Based on this information, it has become clear that increased effort from conservation agencies or organizations is needed to reduce the level of disturbance to sea otters in California.

The *Be Sea Otter Savvy* program was recently established through a collaboration of the Southern Sea Otter Research Alliance to address the problem of disturbance to southern sea otters. Initial seed funds from the USFWS have allowed for initial development of the program, but additional funding will be critical to the full development and success of the program. The California Department of Fish and Wildlife, along with other members of the Southern Sea Otter Research Alliance, agrees that human disturbance of southern sea otters is one of the most pressing conservation concerns for the subspecies.

I strongly support this project, and I look forward to assisting with the project through collaboration from the California Department of Fish and Wildlife. I believe this project will make substantial progress toward restoring Southern sea otters.

Sincerely,

A handwritten signature in blue ink, appearing to read "Laird Henkel".

Laird Henkel
Senior Environmental Scientist (Supervisor)
Director, Marine Wildlife Veterinary Care & Research Center
Phone: 831-469-1726



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:
08EVEN00-2015-B-0226

September 11, 2015

Mr. Doug Bosco, Chair
Coastal Conservancy
1330 Broadway, Suite 1300
Oakland, California 94612

Dear Mr. Bosco,

I am writing to express the support of the U.S. Fish and Wildlife Service (Service) for the grant proposal "Improved diagnosis of sea otter intoxication from algal blooms – a next step in sea otter recovery," to be submitted to the Coastal Conservancy for competition in the 2016 Sea Otter Recovery Grants Program. The proposed research will be led by Dr. Woutrina Smith, Faculty Veterinarian, Epidemiologist, and Microbiologist at the University of California, Davis (UC Davis) Wildlife Health Center, and completed by her Epidemiology PhD student, Veterinarian Dr. Rita Bong. The work will be conducted in collaboration with the California Department of Fish and Wildlife - Marine Wildlife Veterinary Care and Research Center (CDFW-MWVCRC).

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. Sound management decisions require reliable information regarding the numerous sources of mortality that affect the southern sea otter so that their relative significance to the population can be assessed. Although toxic cyanobacterial blooms have been implicated in the deaths of dozens of sea otters and are of potentially increasing concern in light of continued nutrient pollution of the nearshore environment and warming due to climate change, both of which exacerbate toxic blooms, accurate detection of microcystin intoxication in sea otters has proven to be difficult and inconsistent using biochemical methods.

In order to identify cases more accurately and understand the impacts of microcystin on sea otter populations, we need optimized, widely accessible, and cost-effective detection methods. The proposed research will use a comparative testing approach to evaluate whether immunohistochemical tissue testing could serve as a more economical but similarly sensitive method to liquid chromatography-tandem mass spectrometry when screening sea otter tissues for microcystin intoxication. Microcystin immunohistochemistry shows promise, not only for facilitating confirmation of microcystin exposure, but also for optimizing assessment of microcystin-associated pathology.

Doug Bosco

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We believe that the proposed research represents an important and appropriate use of the sea otter tax check-off funds administered by the Conservancy, and we look forward to facilitating the efforts of Dr. Smith and Dr. Bong in their collaboration with CDFW-MWVCRC. Please do not hesitate to contact Lilian Carswell, of my staff, at (805) 612-2793 if you have any questions.

Sincerely,



^{FOR}
Stephen P. Henry
Field Supervisor



U.S. Department of the Interior
U.S. Geological Survey
Western Ecological Research Center
Santa Cruz Field Station



September 9, 2015

To: Dr. Woutrina Smith
Associate Professor of Infectious Disease Epidemiology
Vet Med: One Health Institute
1089 Veterinary Medicine Dr.
University of California, Davis
Davis, CA 95616

Subject: Support for California State Coastal Conservancy proposal entitled “Improved diagnosis of sea otter intoxication from algal blooms – a next step in sea otter recovery”.

Dear Dr. Smith:

I am writing to express support, on behalf of US Geological Survey Western Ecological Research Center (USGS-WERC), for the grant proposal “Improved diagnosis of sea otter intoxication from algal blooms – a next step in sea otter recovery” to be submitted to the Coastal Conservancy for competition in the 2015 Sea Otter Recovery Grants Program. The USGS-WERC has long been a key contributor to research on sea otters in California, and our research team collaborates closely with UC Davis and other research groups to provide the most up-to-date science on the factors affecting recovery of the southern sea otter population.

I am highly supportive of the proposed work to improve diagnostic procedures for detecting microcystin exposure in sea otters. The current lack of a robust, standardized test for the presence of this algal toxin means that many cases of intoxication may go undetected in sea otters. By developing such a diagnostic tool, it will be possible to detect exactly where and when this toxin is getting into sea otters and their marine ecosystem, and thus guide appropriate mitigation and management activities.

The proposed research is situated within a larger framework of our ongoing collaborative partnerships among groups working towards sea otter recovery in California. The UC Davis School of Veterinary Medicine and Marine Wildlife Veterinary Care and Research Center have proven to be valuable and productive partners in this work that has included investigations into sea otter mortality, coastal water quality, and mitigation approaches for reducing pathogen pollution flowing from land to sea. The newly proposed research led by the University of California will be mutually beneficial and is positioned to make important contributions to sea otter recovery and coastal ecosystem health initiatives.

I look forward to collaborating with University of California, Davis and the Marine Wildlife Veterinary Care and Research Center on this important research topic, and I encourage the Coastal Conservancy to support it.

Sincerely,

Dr. M. Tim Tinker
Research Biologist, Field Station Principal Investigator,
and Adjunct Professor of Ecology and Evolutionary Biology, UC Santa Cruz



Linda S. Adams
Acting Secretary for
Environmental Protection

Exhibit 2: Project Letters
State Water Resources Control Board

Division of Water Quality

1001 I Street • Sacramento, California 95814 • (916) 341-5455
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
FAX (916) 341-5463 • <http://www.waterboards.ca.gov>



Edmund G. Brown Jr.
Governor

September 15, 2015

Dr. Woutrina Smith
Associate Professor of Infectious Disease Epidemiology
1089 Veterinary Medicine Drive
University of California, Davis
Davis, CA 95616

Dear Dr. Smith,

SUBJECT: LETTER OF SUPPORT FOR SEA OTTER RECOVERY PROPOSAL

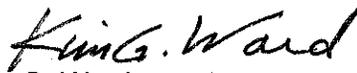
I am writing to offer support for the grant proposal "Improved diagnosis of sea otter intoxication from algal blooms – a next step in sea otter recovery" to be submitted to the Coastal Conservancy for competition in the 2015 Sea Otter Recovery Grants Program.

Previous investigations, funded in part by the State Water Resources Control Board (State Water Board), have established that the threatened southern sea otter population has been declining due to factors such as algal toxins such as microcystins reaching coastal waters from watersheds adjacent to the Monterey Bay National Marine Sanctuary. However, improvements in current methods available for investigating apparent cases of intoxication are needed to fully reveal the extent of this recurrent problem.

The proposed research is situated within a larger framework of our ongoing collaborative partnerships among groups working towards sea otter recovery in California. The UC Davis School of Veterinary Medicine and Marine Wildlife Veterinary Care and Research Center have proven to be valuable and productive partners in this work that has included investigations into sea otter mortality, coastal water quality, and mitigation approaches for reducing pathogen pollution flowing from land to sea. The newly proposed research led by the University of California will be mutually beneficial and is positioned to make important contributions to sea otter recovery and coastal ecosystem health initiatives.

I look forward to supporting the efforts of the University of California, Davis and the Marine Wildlife Veterinary Care and Research Center on this important research topic, and believe it also merits the support of the Coastal Conservancy.

Sincerely,


Kim G. Ward
Environmental Scientist
Division of Water Quality

California Environmental Protection Agency

EDMUND G. BROWN JR.
GOVERNORMATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

San Francisco Bay Regional Water Quality Control Board**September 11, 2015**

Dr. Woutrina Smith
Associate Professor of Infectious Disease Epidemiology
Vet Med: One Health Institute
1089 Veterinary Medicine Dr.
University of California, Davis
Davis, CA 95616

Dear Dr. Smith,

Re: LETTER OF SUPPORT FOR SEA OTTER RECOVERY PROPOSAL

I am writing to offer support from the San Francisco Bay Regional Water Quality Control Board for the grant proposal "Improved diagnosis of sea otter intoxication from algal blooms – a next step in sea otter recovery" to be submitted to the Coastal Conservancy for competition in the 2015 Sea Otter Recovery Grants Program.

The State and Regional Water Boards have been working through the Surface Water Ambient Monitoring Program (SWAMP) to develop a statewide cyanobacteria monitoring and assessment program for California. As you know, over 30 sea otters have died in Monterey Bay due to cyanobacteria poisoning. Others have been recovered, but no resources have been available to determine cause of death. By developing an inexpensive method to analyze for cyanotoxins in sea otter tissue, the cause of death can be determined for otters that are recovered in the future. When the cause of death is determined to be cyanotoxins the Water Boards, as well as other agencies, can more easily conduct an investigation into the source of these toxins and start remediation efforts.

The proposed research is situated within a larger framework of ongoing collaborative partnerships among groups working towards sea otter recovery in California. The UC Davis School of Veterinary Medicine and Marine Wildlife Veterinary Care and Research Center have proven to be valuable and productive partners in this work that has included investigations into sea otter mortality, coastal water quality, and mitigation approaches for reducing pathogen pollution flowing from land to sea. The newly proposed research led by the University of California will be mutually beneficial and is positioned to make important contributions to sea otter recovery and coastal ecosystem health initiatives.

I look forward to collaborating with University of California, Davis and the Marine Wildlife Veterinary Care and Research Center on this important research topic, and I encourage the Coastal Conservancy to support it.

Yours sincerely,

Karen Taberski

Karen Taberski
Senior Environmental Scientist

DR. TERRY F. YOUNG, CHAIR | BRUCE H. WOLFE, EXECUTIVE OFFICER

1515 Clay St., Suite 1400, Oakland, CA 94612 | www.waterboards.ca.gov/sanfranciscobay



September 9, 2015

Dr. Woutrina Smith
Associate Professor of Infectious Disease Epidemiology
Vet Med: One Health Institute
1089 Veterinary Medicine Dr.
University of California, Davis
Davis, CA 95616

Dear Dr. Smith,

Re: LETTER OF SUPPORT FOR SEA OTTER RECOVERY PROPOSAL

I am writing to offer the City of Watsonville's support for the grant proposal "Improved diagnosis of sea otter intoxication from algal blooms – a next step in sea otter recovery" to be submitted to the Coastal Conservancy for competition in the 2015 Sea Otter Recovery Grants Program.

The City has been struggling to deal with toxic algal blooms at Pinto Lake for over a decade. Pinto's blooms have been linked to the deaths of sea otters, birds and fish as well as human health impacts. These blooms are not limited to Pinto Lake. Toxins associated with these algal blooms have been detected in several rivers that discharge to areas inhabited by sea otters.

The proposed research is situated within a larger framework of our ongoing collaborative partnerships among groups working towards sea otter recovery in California. The UC Davis School of Veterinary Medicine and Marine Wildlife Veterinary Care and Research Center have proven to be valuable and productive partners in this work that has included investigations into sea otter mortality, coastal water quality, and mitigation approaches for reducing pathogen pollution flowing from land to sea. The newly proposed research led by the University of California will be mutually beneficial and is positioned to make important contributions to sea otter recovery and coastal ecosystem health initiatives.

I look forward to collaborating with University of California, Davis and the Marine Wildlife Veterinary Care and Research Center on this important research topic, and I encourage the Coastal Conservancy to support it.

Yours sincerely,

A handwritten signature in black ink, appearing to read "A. [unclear]", is located below the "Yours sincerely," text.

Senior Utilities Engineer



14 September 14, 2015

**Florida Fish
and Wildlife
Conservation
Commission**

Commissioners

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Karen Ventimiglia
Chief of Staff

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Dr. Woutrina Smith
Associate Professor of Infectious Disease Epidemiology
Vet Med: One Health Institute
1089 Veterinary Medicine Dr.
University of California, Davis
Davis, CA 95616

Dear Dr. Smith,

Re: LETTER OF SUPPORT FOR SEA OTTER RECOVERY PROPOSAL

I am writing to offer analytical support for the grant proposal "Improved diagnosis of sea otter intoxication from algal blooms – a next step in sea otter recovery" to be submitted to the Coastal Conservancy for competition in the 2015 Sea Otter Recovery Grants Program.

The Fish and Wildlife Research Institute (FWRI), the research arm of the Florida Fish and Wildlife Conservation Commission (FWC), is responsible for monitoring marine and freshwater resources, wildlife, and habitats in Florida. Two of our oldest research and monitoring programs are Fish and Wildlife Health and Harmful Algal Blooms, where staff respond to and investigate aquatic animal mortality and disease events in Florida's coastal waters. One component emphasizes investigation of the effects of HAB toxins on marine mammals. More specifically, we investigate the effects of cyanobacteria and their toxins on a range of fish and wildlife and have developed immunohistochemical methods to aid in the detection of microcystins in a suite of tissues.

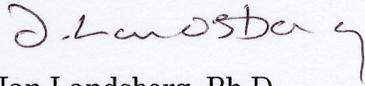
The proposed research is mutually beneficial to programs working towards marine mammal recovery in the USA and to develop a broader understanding of the significant effects of cyanobacteria toxins in on marine mammals. The UC Davis School of Veterinary Medicine and Marine Wildlife Veterinary Care and Research Center have proven to be valuable and productive partners in this work that includes investigations into sea otter mortality, coastal water quality, and mitigation approaches for reducing pathogen pollution flowing from land to sea. The newly proposed research led by the University of California will be mutually

Exhibit 2: Project Letters

beneficial and is positioned to make important contributions to sea otter recovery and coastal ecosystem health initiatives.

I look forward to collaborating with the University of California, Davis and the Marine Wildlife Veterinary Care and Research Center on this important research topic, and I encourage the Coastal Conservancy to support it.

Yours sincerely,



Jan Landsberg, Ph.D.
Research Scientist
Fish and Wildlife Health Program
Fish and Wildlife Research Institute
Florida Fish and Wildlife Conservation Commission
100 Eighth Avenue SE
St. Petersburg, FL 33701-5095
Tel # 727-502-4880
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jan.landsberg@myfwc.com
<http://research.myfwc.com/>

Exhibit 2: Project Letters



State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Office of Spill Prevention and Response
Marine Wildlife Veterinary Care & Research Center
1451 Shaffer Road
Santa Cruz, CA 95060
<http://www.dfg.ca.gov/ospr>

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director



Ahmad Hakim-Elahi, PhD, JD
Executive Director, Research Administration
Office of Research, Sponsored Programs
University of California
1850 Research Park Drive, Suite 300
Davis, CA 95618

September 14, 2015

Dear Dr. Hakim-Elahi:

I am writing to confirm that the Department of Fish and Wildlife (CDFW) is planning on contributing CDFW resources for Dr. Woutrina Smith and Dr. Melissa Miller's project (proposed for funding by the California Coastal Conservancy) "Improved diagnosis of sea otter intoxication from algal blooms – a next step in sea otter recovery". As described in the project proposal, the CDFW will provide in-kind support in the form of:

- A portion of CDFW salary for Dr. Miller and for one or more CDFW Lab Tech II (Pathology) totaling approximately \$13,000;
- Costs for standard sea otter histopathology and microcystin IHC testing, needed (estimated \$24,000 through an existing diagnostics contract with UC Davis Veterinary Medicine Teaching Hospital);
- Facilities and equipment for sea otter necropsy, tissue trimming, sample archiving, microscopic examination and compilation of spreadsheets and summary reports (no cost estimated).

We look forward to this collaborative study on diagnostic testing for microcystin in marine wildlife. Please let me know if you have any question about the CDFW's involvement in this project.

Sincerely,

A handwritten signature in blue ink, appearing to read "Laird Henkel".

Laird Henkel
Senior Environmental Scientist
Director, Marine Wildlife Veterinary Care & Research Center
Phone: 831-469-1726