

# STEPS IN OIL SPILL RESPONSE AND REHABILITATION

## 1. Activation of the OWCN

Following notification of the California Department of Fish and Game, Office of Spill Prevention and Response (OSPR), wardens or biologists will evaluate the oil spill event and the potential impacts to wildlife and their habitat. If the spill poses a threat to animals, the OWCN is placed on alert. Should wildlife impacts occur or seem imminent and the Incident or Unified Command (IC or UC) deem it necessary, the OWCN is activated. At this point, the OWCN response coordinator is contacted and he or she mobilizes the response, including notification of a specific response center and contacting trained OWCN staff.

## 2. Search and Collection

Trained OWCN staff search for and collect both live and dead oiled wildlife in affected habitats. Location of capture is documented by global positioning system units, and animals are transported to the nearest OWCN facility. In certain situations, such as a long distance from a facility or large magnitude of a spill, the OSPR Mobile Veterinary Laboratory is brought in for on-site triage and stabilization prior to transportation to a definitive care center.

## 3. Intake and Stabilization

Animals are given a physical examination; a blood sample is taken and analyzed; the animal is evaluated for extent of oiling and photographed; a feather/hair/oil sample is collected; temporary tags are placed on animals for identification; and they are orally medicated with a combination of Toxiban® (chelating agent that binds ingested oil and aids excretion) and Pedialyte® (hydration solution). After a thorough medical assessment, animals with a poor prognosis may be euthanized.

Stabilized animals are medically treated then fed and hydrated up to 8 times per day. When exposure involves highly volatile or caustic compounds, these substances may be removed immediately through a quick-wash. Once individuals have rested (2-5 days after intake), blood samples are taken for evaluation and, if medical criteria are met, animals are washed.

## 4. Cleaning

Animals are washed in a series of tubs filled with dilute Dawn® dish detergent and hot (103-105°F), softened water. Then affected animals are rinsed using water under high pressure. Washing and rinsing can take as long as an hour per bird and several hours per otter. Animals are then placed in covered pens equipped with pet dryers until completely dry.

## 5. Recovery and Pre-release Assessment

Individuals are placed in outdoor pools or species-appropriate housing to allow them to feed and groom their feathers or haircoat to restore waterproofing. This process can take 3–10 days. Prior to release, animals in pools are evaluated for waterproofing, their ability to maintain body temperature, body condition, species-appropriate behavior, interaction with other individuals, foraging ability, weight, and normal blood values.

## 6. Release

If an animal meets release criteria, federal bands or tags are placed for permanent identification. Animals are released into clean habitat appropriate for the species.

Should the spill conditions warrant further follow-up, the OWCN supports pre-identified, qualified researchers to perform post-release survival studies on released animals. Projects often use radiotelemetry techniques developed specifically for the species of interest to monitor survival and track animal movements.



Wildlife Health Center  
University of California  
Davis, California 95616 USA  
(530) 752-4167 (For all media contacts)  
[www.owcn.org](http://www.owcn.org)

## FACTS ABOUT OILED WILDLIFE

### **Q: What are the primary effects of oil on birds?**

**A:** The primary problem involves physical alteration of the feather structure. When oiled, feathers lose their ability to trap air and repel water. As a result, birds can no longer maintain body heat; they become hypothermic; and their need for food increases. At the same time, due to oil on their plumage, birds do not float well; their swimming and foraging ability decreases; and they often cannot fly and will haul out of the water.

### **Q: What are the primary effects of oil on marine mammals?**

**A:** There are different effects on different classes of marine mammals. Heavily furred animals, such as sea otters and fur seals, are more severely affected by oiling because these species rely on their thick haircoat to maintain warmth and buoyancy. The fur traps a thin layer of air adjacent to the animal's skin (in a similar fashion to birds), and this air layer prevents the skin of the animal from coming into contact with the cold ocean water. When exposed to oil, the alignment of the hair is altered; the air layer is destroyed; and mammals rapidly become hypothermic. For marine mammals without heavy haircoats (such as other species of seals, sea lions, dolphins and whales), problems associated with hypothermia are less of a concern because their thick blubber protects them from the cold, with the exception of juveniles that have not yet developed this protective layer. However, problems associated with fume inhalation, dermal exposure, and ingestion are still concerns for these species, as they are in birds and fur-bearing marine mammals.

### **Q: Can the ingestion of oil by wildlife be toxic?**

**A:** Yes. External oiling almost always leads to some oil ingestion. Birds, fur seals, and sea otters preen or groom themselves meticulously to maintain a feather or hair alignment that creates the insulating air layer. Marine mammal pups can ingest some oil while nursing. Depending on oil intake, this internal exposure has been shown to cause disruption in normal internal organ function in birds and otters, as well as effects on the reproductive and immune systems.

### **Q: What are the long-term effects associated with oil exposure after care in a response center?**

**A:** Long-term effects are difficult to assess because limited research has been done thus far following spills using OWCN protocols. This lack of information, however, is actively being addressed by the OWCN through the funding of selected post-release research studies. One such study on western gulls suggested that birds survived for long periods of time following oil exposure and rehabilitation. A common murre study that is currently underway suggests much better survival than previously reported. Other studies conducted following rehabilitation (using non-OWCN protocols) have found variable survival rates and behavioral effects of oiling and rehabilitation in pelicans, coots, murrelets, and penguins.

### **Q: What are the effects of oil on wildlife reproduction?**

**A:** Studies on the effects of a single drop of oil on eggs from different species of birds have shown significant mortality and developmental defects in affected embryos. Studies on mink (the research model for sea otters) exposed to petroleum products have shown decreased whelping rates and pup survival.

### **Q: What are the steps involved in an OWCN response?**

**A:** 1) Activation of the OWCN; 2) Search and collection; 3) Intake and stabilization; 4) Cleaning; 5) Recovery and pre-release assessment; and 6) Release. A more detailed explanation of these steps is provided in the handout titled "Steps in Oil Spill Response and Rehabilitation."



Wildlife Health Center  
University of California  
Davis, California 95616 USA  
(530) 752-4167 (For all media contacts)  
[www.owcn.org](http://www.owcn.org)

**Q: Do different types of oil have different effects on wildlife?**

**A:** Yes. The lighter, more volatile petroleum products (such as kerosene and jet fuel) can cause significant burns, eye irritation, neurological signs, and lung damage from inhalation of fumes. The heavier products (such as crude oil) most obviously affect waterproofing, but also cause other physiological problems when ingested or absorbed through the skin. It should also be remembered that even non-toxic oils, such as vegetable oil and fish oil, can be extremely damaging to wildlife because they affect the plumage of birds and hair of fur-bearing mammals and cause a loss of waterproofing similar to petroleum oils.

**Q: How long does it take to rehabilitate a bird?**

**A:** On average, rehabilitation requires 1–3 weeks. The time in captivity depends on a number of factors, including the number of animals affected, the terrain to be searched, weather, and characteristics of the spill (i.e., type of petroleum product, manner of spillage, success of containment, etc.).

**Q: What factors might influence the survival of oiled wildlife cared for in response centers?**

**A:** Many different factors affect the ultimate survival and release of oiled wildlife. These include the proximity of an appropriately equipped response facility to the spill site, water and air temperature, species and age of affected animals, toxicity of the petroleum product, how rapidly animals are captured from the environment and availability of trained personnel.

**Q: How many OWCN facilities are there in the state?**

**A:** Currently there are 23 participating Network organizations throughout California. These include facilities constructed specifically for oiled wildlife response (including facilities in Arcata, the San Francisco Bay Area, Santa Cruz, Los Angeles, Huntington Beach, and San Diego), facilities that have been renovated or improved in order to allow for oiled wildlife care, and existing organizations who have been provided supplies, equipment and training in order to assist in the response in oil spill emergencies. During non-oil spill periods, facilities built or improved by the OWCN are used for general wildlife rehabilitation research; primary, secondary and professional education; and other activities by the participating organizations.

**Q: How is the OWCN supported?**

**A:** The OWCN is a joint program between the California Department of Fish and Game Office of Spill Prevention and Response and the UC Davis School of Veterinary Medicine Wildlife Health Center. It is financially supported by interest earned on the state of California's Oil Spill Response Trust Fund funded by fees assessed to the oil transportation industry.

**Q: How many trained personnel participate in the OWCN?**

**A:** The OWCN maintains a trained cadre of over 200 people affiliated with our participating organizations through an annual training program. We employ a relatively small core of veterinarians and administrative personnel to manage the Network and to supervise activities during oil spill events. The Network also contracts with the International Bird Rescue Research Center to be the primary rehabilitation organization during events involving birds. The OWCN works closely with the California Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service during spills. Ultimately, the Network relies on a large number of trained volunteers (who are associated with participating organizations) to assist during spill events. These volunteers are trained by the OWCN in basic animal handling, care and rehabilitation techniques, as well as OSHA-certified HAZCOM/HAZWOPER practices and Incident Command System procedures.



Wildlife Health Center  
University of California  
Davis, California 95616 USA  
(530) 752-4167 (For all media contacts)  
[www.owcn.org](http://www.owcn.org)

## RELATED INTERNET SITES

### **American Petroleum Institute**

API is the major national trade association representing the entire petroleum industry: exploration and production, transportation, refining, and marketing.  
[www.api.org](http://www.api.org)

### **California Department of Fish and Game, Office of Spill Prevention and Response**

[www.dfg.ca.gov/Ospr](http://www.dfg.ca.gov/Ospr)

### **California Coastal Commission**

See “Boating and Clean & Green Campaign” and “California Clean Boating Network”  
[www.coastal.ca.gov](http://www.coastal.ca.gov)

### **California Environmental Resources Evaluation System (CERES)**

[www.ceres.ca.gov](http://www.ceres.ca.gov)

### **International Marinelife Alliance**

Dedicated to the protection of marine life and the conservation of their habitats.  
[www.imamarinelife.org](http://www.imamarinelife.org)

### **Marine Wildlife Care Center**

Humboldt State University, Arcata, California  
[www.humboldt.edu/~mwcc](http://www.humboldt.edu/~mwcc)

### **NOAA Oil Spill Reports**

Detailed synopses of past oil spills; listed by federal fiscal year then Coast Guard District (Choose District 11 for California spills).  
<http://response.restoration.noaa.gov/oilaid/spillreps/spillreps.html>

### **Oil Spill Web**

An international oil spill resource and information center.  
[www.oil-spill-web.com](http://www.oil-spill-web.com)

### **Sea Shepherd Conservation Society**

The SSCS is a nonprofit nongovernmental organization involved with the investigation and documentation of violations of international laws, regulations, and treaties protecting marine wildlife species.  
[www.seashepherd.org](http://www.seashepherd.org)

### **Tromso Satellite Station's Oil Spill Detection**

[www.tss.no/services/](http://www.tss.no/services/)

### **States/British Columbia Oil Spill Task Force**

[www.elp.gov.bc.ca/eeeb/taskforc/tfhome.htm](http://www.elp.gov.bc.ca/eeeb/taskforc/tfhome.htm)

### **U.S. Coast Guard Marine Safety and Environmental Protection**

[www.uscg.mil/hq/g-m/gmhome.htm](http://www.uscg.mil/hq/g-m/gmhome.htm)

### **U.S. EPA Oil Spill Program**

[www.epa.gov/oilspill](http://www.epa.gov/oilspill)

### **Wildlife Health Center, UC Davis School of Veterinary Medicine**

[www.vetmed.ucdavis.edu/whc](http://www.vetmed.ucdavis.edu/whc)



Wildlife Health Center  
University of California  
Davis, California 95616 USA  
(530) 752-4167 (For all media contacts)  
[www.owcn.org](http://www.owcn.org)

## **FURTHER OIL SPILL REFERENCES**

### **Wildlife Response Plan for California**

This wildlife response plan describes the responsibilities and capabilities of Wildlife Operations (Dept. of Fish and Game, Office of Spill Prevention and Response), including the procedures to be used and the personnel and equipment necessary to meet the wildlife protection responsibilities of the federal and state governments during California oil spills. Three Acrobat format documents. [www.dfg.ca.gov/Ospr](http://www.dfg.ca.gov/Ospr)

### **Pollution Incidents in and Around U.S. Waters. A Spill/release Compendium 1969–1998**

[www.uscg/mil/hq/g-m/nmc/response/stats/aa.htm](http://www.uscg/mil/hq/g-m/nmc/response/stats/aa.htm)

### **Oiled Wildlife Response in California: A Summary of Current Knowledge of Populations at Risk and Response Techniques**

A comprehensive literature review of current baseline information available for effective oiled wildlife response in California. 124 pages. Available in pdf at [www.owcn.org/pdfs/summaryall.pdf](http://www.owcn.org/pdfs/summaryall.pdf) or obtain a spiral-bound hardcopy by calling (530) 752-3854.

### **Understanding Oil Spills**

A thorough and non-technical, 48-page booklet containing chapters that outline and explain oil spills, their potential effects on the environment, how they are cleaned up and how agencies prepare for spills. [www.epa.gov/oilspill](http://www.epa.gov/oilspill)

## Participating Organizations in the Oiled Wildlife Care Network



### FOR MEDIA INQUIRIES

For answers to questions about the OWCN, contact one of the following people at (530) 752-4167

**DIRECTOR**  
Jonna Mazet

**WILDLIFE VETERINARIANS**  
Scott Newman  
Mike Ziccardi

**GRAPHICS OR IMAGES**  
Nancy Ottum

For answers to questions about the San Mateo Mystery Spill, contact:  
Karen Benzel, International Bird Rescue Research Center: 510-814-7227  
Sylvia Wright, UC Davis News Service 530-752-7704 [swright@ucdavis.edu](mailto:swright@ucdavis.edu)  
Lt. Tim Callister, U.S. Coast Guard 510-437-3143 [tcallister@d11.uscg.mil](mailto:tcallister@d11.uscg.mil)  
Dana Michaels, OSPR Public Affairs: 916-327-9948 [dmichael@ospr.dfg.ca.gov](mailto:dmichael@ospr.dfg.ca.gov)  
For directions to bird release site, visit our website at [www.vetmed.ucdavis.edu/owcn](http://www.vetmed.ucdavis.edu/owcn)