



The Marine  
Mammal Center

[Report a Distressed Marine Ma](#)

[Adopt-a-Seal](#) | [Events](#) | [Latest News](#)

[What We Do](#)

[Get Involved](#)

[Science](#)

[Education](#)

[Patients](#)

[Volunt](#)

## Oil Spill Response and Marine Mammals

### Rescue

[Why Marine Mammals  
Strand](#)

[Marine Mammal Protection  
Act](#)

[Our Rescue Range - 600  
Miles of California Coast!](#)

[Our Rescue Teams](#)

[What To Do If You Find a  
Stranded Marine Mammal](#)

[Our Rescue \(Stranding\)  
Network](#)

» [Oil Spill Response and  
Marine Mammals](#)

[Rescue FAQs](#)

### Rehabilitation & Release

### Science

### Education

News of the April 22, 2010 sinking of the Transoceanic rig 130 miles southeast of New Orleans had all of the makings of a disaster. It was just how devastating the effects would be on the environment and the fisheries along the coast.



A family walks along an oil covered beach in Gulf Shores Alabama, June 12, 2010.

© Dan Anderson/EPA

## At the Ready!

On July 20, 2010 NOAA showed the oil plume 80 miles from Pensacola and 100 miles from Panama City. With nearly 34.4 million gallons of the oil-water mixture recovered and some 40,000 people on the ground to assist in rescue and cleanup, the ramifications of the oil spill are just beginning.

"While The Marine Mammal Center has a [rescue range](#) that focuses us on the California coast, our reach, our interest, and our concern go far beyond that



Trained staff from The Marine Mammal Center assist the OWCN in rescuing oiled birds from Rodeo Beach in the Marin Headlands during the 2007 Cosco Busan oil spill.

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Our hearts and minds are with the people on the Gulf Coast who are there to act in the best interest of the local wildlife. Having experienced the Cosco Busan oil spill two years ago, and serving as a primary care facility with the Oiled Wildlife Care Network, the Center's staff and volunteers are well trained and well prepared to assist if called upon. While we focus on the current high patient load at our Sausalito hospital, we stay in touch with our colleagues on the Gulf coast and are ready to support them."

#### **Dr. Jeff Boehm**

Executive Director, The Marine Mammal Center

**Update July 16, 2010 :** The National Marine Fisheries Services has contacted the Center to request staff support in response to the Deepwater Horizon spill in the Gulf of Mexico. The Center is putting together a team of individuals to be deployed to the region. Work may be water-based, and could involve cetaceans, sea turtles or other wildlife, and may often be focused on post-mortem collection and evaluation. The Marine Mammal Center has, in the past, assisted agencies by rescuing marine mammals and birds caught in the toxic goo. The Center is a member of the [Oiled Wildlife Care Network](#) (OWCN), which was established in 1994, and is part of the [California Department of Fish & Game's Oil Spill Prevention and Response Program](#) (OSPR). Most recently, in 2007, when an oil tanker crashed into the Bay Bridge, spilling [58,000 gallons of bunker fuel](#) into the San Francisco Bay, trained oil spill response volunteers from the Center assisted in rescuing birds and cleaning up the oil from Rodeo Beach in the Marin Headlands. Hundreds upon hundreds of birds were rescued, but sadly, many more died. Some marine mammals were impacted as well - mostly harbor seals. Additionally, The Marine Mammal Center's Veterinarians and volunteers traveled to [Valdez in 1989](#) to assist in rescues during that major oil spill to help rescue harbor seals.



## How Oil Spills Affect **Marine Mammals**

Oil in or on the water is extremely dangerous to wildlife. For instance, when an animal lands in an area affected by oil, it will try to preen or clean itself and ingest the toxic petroleum product, causing severe damage to internal organs. Ingesting oil will greatly disrupt the reproductive process, and animals that have

survived oil spills may suffer the long term effects of breeding problems and result in deformed offspring.

**From the OWCN website:** 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.

When a bird becomes coated with oil, the oil will clog the bird's feathers making it impossible for the bird to fly. Oil can also make the feathers so heavy that bird will be unable to float, and may end up sinking and drowning.

Fish and shellfish larvae — and other micro-organisms, like plankton — are extremely sensitive to even small amounts of oil and other petroleum products. One gallon of used oil spilled in one million gallons of water will kill half of all exposed Dungeness crab larvae. (Washington State Dept. of Ecology)

There are cumulative impacts to sensitive shoreline organisms (e.g. clams, crabs, macro invertebrates) which die or bio-accumulate the toxic components of petroleum products. This toxicity moves up the food chain negatively impacting reproduction,

shortening life span and leading to mortality of larger animals (birds and mammals) that may prey on these organisms.

[Top](#)

## **Facts About Oil in Our Environment - Pollution Produced by People**

The U.S. Environmental Protection Agency (EPA) estimates that Americans generate 1.3 billion gallons of used oil annually; of that amount, 193 million gallons are generated by households.

- One drop of oil, when spread over water, will cover the area of a two-car garage.
- One pint of oil released onto the water can cover one acre of water surface area.
- One quart of oil can cover two acres of water surface, the equivalent of nearly three football fields.
- U.S. households improperly dump the equivalent of 17 Exxon Valdez oil spills, each year.
- Approximately four million gallons of that are dumped into municipal sewers.
- According to the National Research Council, humans cause approximately 29 million gallons of petroleum to end up in North America's ocean waters annually.
- According to Oil in the Sea III: Inputs, Fates, and Effects, a report by the National Academies' Ocean Studies Board and Transportation Research Board's (TRB) Marine Board, nearly 85 percent of the 29 million gallons of petroleum that enter North American ocean waters each year as a result of human activities come from land-based runoff, polluted rivers, airplanes, and small boats and jet skis. Less than 8 percent comes from tanker or pipeline spills. By comparison, pipeline and oil tanker mishaps spill about 2.7 million gallons in our waters.
- According to the Pew Oceans Commission, every eight months nearly 11 million gallons of oil run off our nation's streets and driveways into our waters – the equivalent of the Exxon Valdez oil spill. (America's Living Oceans: Charting a Course for Sea Change, June 4, 2003)

## **Pollution Produced by Vessels - The number of pollution incidents from vessels are broken down as follows:**

According to the U.S. Coast Guard, from 1993 – 1996, 34% of oil spills in U.S. waters were from vessels; 31% from facilities; and 35% were mystery spills, with

sources unknown. Vessels spilled the greatest volume of oil – 44%; facilities spilled 13%; and 43% of oil spilled in U.S. waters came from unknown sources.

- Between 1978 and 1992, there were 17 tanker spills of more than 10 million gallons, each (world-wide). In 1983, a tanker dumped 78.5 million gallons in the waters off Cape Town, South Africa. (For comparison, the Exxon Valdez spilled nearly 11 million gallons.)
- The International Tanker Owners Pollution Federation Limited (ITOPFL) also found that the Mediterranean and the Caribbean are the two regions with the most spills. Southeast Asia and the Northwest Pacific Ocean are two other areas with some particularly risky locations.

## **Rescuing Wildlife - 58,000 Gallons of Oil Spill Into The Bay's Waters**

On November 7, 2007 an outbound container ship struck the Bay Bridge in San Francisco. Approximately 58,000 gallons of bunker fuel spilled into the bay, the largest oil spill in the San Francisco Bay since 1996. The Marine Mammal Center, following protocol, worked with the Oiled Wildlife Care Network (OWCN) to assist where needed. On November 8, the Center assisted in collecting many living and dead birds at Rodeo Beach in the Marin Headlands, which were turned over to the OWCN for further medical attention and cleaning. While it responded to numerous reports and inquiries from the public and media, the Center did not need to rescue any marine mammals directly following the event. It is unknown what the long term effects will be on the San Francisco Bay ecosystem, however, and The Marine Mammal Center continues to work with other area responders to increase monitoring of Bay Area harbor seals following the spill.

### **Top**

Although this news is promising at first glance, the long-term overall outlook is guarded. The cap is a temporary solution that will hopefully stop the flow of oil, or at least capture the flowing oil until a permanent relief well is finished. Government officials, scientists and other experts are conducting tests and reviewing data to decide which of the two functions the new cap will serve.

Unfortunately, the ramifications of the oil spill are just beginning. Even if the flow of oil has been contained, there are still millions of gallons of oil in the ocean. As the oil makes its way through the food chain, the consequences of the spill will appear in diverse ways again and again. People's way of life on the Gulf coast has been

inexorably changed, and the cumulative negative effects of the spill on wildlife will be felt for years to come.

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