Effects of Oil on Wildlife and Habitat

The U.S. Fish and Wildlife Service is the federal agency responsible for many of the nation's fish and wildlife resources and one of the primary trustees for fish, wildlife and habitat at oil spills.

The Service is actively involved in response efforts related to the Deepwater Horizon oil spill that occurred in the Gulf of Mexico on April 20, 2010. Many species of wildlife, including some that are threatened or endangered, live along the Gulf Coast and could be impacted by the spill.

Oil spills affect wildlife and their habitats in many ways. The severity of the injury depends on the type and quantity of oil spilled, the season and weather, the type of shoreline, and the type of waves and tidal energy in the area of the spill.

Oil can be categorized into five groups, ranging from very light to very heavy oils. Most oil has a density less than water, so it floats. Oil tends to spread into a thin layer on the water surface as a sheen. Once in the water, oil undergoes weathering, a process that describes the physical, chemical, and biological changes that occur when oil interacts with the environment.

FWS/Drew Wirwa

Weathering reduces the more toxic elements in oil products over time as exposure to air, sunlight, wave and tidal action, and certain microscopic organisms degrades and/or disperses oil. Weathering rates depend on factors such as type of oil, weather, temperature, and the type of shoreline and bottom that occur in the spill area.

Types of Oil

Although there are different types of oil, the oil involved in the Deepwater Horizon spill is classified as light crude. Light crude is moderately volatile and can leave a residue of up to one third of the amount spilled after several days. It leaves a film on intertidal resources and has the potential to cause long-term contamination.

Impacts to Wildlife and Habitat

Oil causes harm to wildlife through physical contact, ingestion, inhalation and absorption. Floating oil can contaminate plankton, which includes algae, fish eggs, and the larvae of various invertebrates. Fish feeding on these organisms can subsequently become contaminated through ingestion of contaminated prey or by direct toxic effects of oil. Larger animals in the food chain, including humans, can consume contaminated organisms as they feed on these fish.

Although oil causes immediate effects throughout the entire spill area, it is the external effects of oil on larger wildlife species that are often immediately apparent.

Birds and Mammals

Birds such as brown pelicans are likely to be exposed to oil as they float on the water's surface. Oiled birds can lose the ability to fly, dive for food or float on the water which could lead to drowning. Oil interferes with the water repellency of feathers and can cause hypothermia in the right conditions.

As birds groom themselves, they can ingest and inhale the oil on their bodies. While ingestion can kill animals immediately, more often it results in lung, liver, and kidney damage which can lead to death.

FWS/Tom MacKenzie

Sea turtles such as loggerheads and leatherbacks could be impacted as they swim to shore for nesting activities. Bird and turtle nest eggs may be damaged if an oiled adult lies on the nest.

Scavengers such as bald eagles, gulls, raccoons, and skunks are also exposed to oil by feeding on carcasses of contaminated fish and wildlife.

Long-term effects on birds and marine mammals are less understood, but oil ingestion has been shown to cause suppression to the immune system, organ damage, skin irritation and ulceration, and behavioral changes. Damage to the immune system can lead to secondary infections that cause death and behavioral changes may affect an animal's ability to find food or avoid predators. Long-term consequences can include impaired reproduction potentially impacting population levels.

Shellfish

Oil can be toxic to shellfish including bottom dwelling (lobsters, crabs, etc.) and intertidal (clams, oysters, etc.) species. The bottom dwelling species may be particularly vulnerable when oil

FWS/Drew Wirwa

becomes highly concentrated along the shoreline. Some can survive exposure, but may accumulate high levels of contaminants in their bodies that can be passed on to predators.

Fish

Fish can be impacted directly through uptake by the gills, ingestion of oil or oiled prey, effects on eggs and larval survival, or changes in the ecosystem that support the fish. Adult fish may experience reduced growth, enlarged livers, changes in heart and respiration rates, fin erosion, and reproductive impairment when exposed to oil. Oil has the potential to impact spawning success as eggs and larvae of many fish species are highly sensitive to oil toxins.

Plants

Marine algae and seaweed responds variably to oil, and oil spills may result in die-offs for some species. Algae may die or become more abundant in response to oil spills. Although oil can prevent the germination and growth of marine plants, most vegetation appears to recover after cleanup.

Habitat

Oil has the potential to persist in the environment long after a spill event and has been detected in sediment 30 years after a spill. On sandy beaches, oil can sink deep into the sediments. In tidal flats and salt marshes, oil may seep into the muddy bottoms. Effects of oil in these systems have the potential to have long-term impacts on fish and wildlife populations.

FWS/Drew Wirwa

The Service responds to oil spills to minimize impacts to trust resources. The Service's work continues long after a spill event occurs. Damage assessments of habitat and wildlife are conducted to find ways that will minimize long-term effects on new generations of wildlife.

Hotlines

For media: Joint Information Center: 985/902 5231 and 985/902 5240

To report claims related to damages: 800/440 0858

To volunteer: 866/488 5816

To report oiled or injured wildlife: 866/557 1401

On the web

The USCG Joint Incident Command: http://www.deepwaterhorizonresponse.com/go/site/2931/

Department of the Interior: http://www.doi.gov

U.S. Fish and Wildlife Service: http://www.fws.gov/home/dhoilspill

http://www.twitter.comUSFWSSoutheast/

Tweets related to oil spill under hashtag #oilspill

http://www.facebook.com/pages/US-Fish-and-Wildlife-Service/282/48315774

May 2010