Gulf species face unprecedented disaster

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The ultimate ecological impact of the oil spill on wildlife in the Gulf of Mexico is unknown, and will likely remain so for years to come. Still, two months into the worst oil spill in US history, indications are that the ecological impact will be nothing less than disastrous.

This was a key message from a group of scientists and officials testifying earlier this month before the US House of Representatives Oceans and Wildlife subcommittee. The testimony came as thousands of dead or oiled organisms are washing ashore and found floating at sea.

By the latest count, nearly 1,600 birds, 500 turtles and dozens of mammals suspected of oil contamination have been collected, most of which were dead or died. This represents a tiny fraction of the real mortality to date, since the spill area is so vast and much of the damage occurs under water and out of sight.

Even after two months, the disaster is in its early stages. “In all likelihood, we will see the consequences of the Gulf spill for decades,” Dr. Michael Fry, an avian toxicologist with the American Bird Conservancy, told the committee. He explained that oil is still present today in mussel beds and other sensitive habitats in Alaska’s Prince William Sound, 21 years after the Exxon Valdez spill.

Robert Barham of the Louisiana Department of Wildlife & Fisheries raised the truly frightening prospect that this time around the effects could linger even longer, since the deepwater dispersed oil is subject to extreme pressure and cold. “The transfer rate for mutually buoyant particles to surface is 300 years,” he stated.

On a more immediate level, the spill is currently proving lethal to wildlife in a number of ways. The most visible manner is through direct contact with oil, as oil-coated animals often die from hypothermia, drowning or suffocation. Oil is also lethal to many organisms when ingested (directly or through consuming contaminated food) or when inhaling the fumes.

The dispersants used to break up the surface slick and prevent oil from reaching the surface are themselves toxic and can lead to death in some organisms. In addition, Dr. Carys Mitchelmore, an assistant professor at the University of Maryland Center for Environmental Science, described potentially devastating sub-lethal effects from the dispersed oil, including reduced growth rate, mutations, behavioural changes and impaired reproductive ability. “These more subtle endpoints than death can nonetheless have huge consequences for populations,” he told the committee.

Several scientists have begun raising alarms about the impact of the oil and chemical dispersants on species low in the food chain, such as plankton. If these populations are severely affected, it will have untold consequences for the entire ecosystem.

The area affected by the spill is extremely rich in biodiversity. Scientists have documented over 8,000 species in the region of the spill. Many more remain undiscovered, particularly in the deep sea. For some, the ongoing disaster poses the threat of annihilation for the entire species.

The House committee heard testimony on the potential impacts on a wide variety of wildlife threatened by the spill, several of which are highlighted here.

Marine mammals

Sperm whales

An underwater canyon near the spill site is the primary feeding area for a subpopulation of the endangered sperm whales, which may be exposed to oil when breathing at the surface or from dispersed plumes underwater as they dive to hunt.

The Gulf population of sperm whales is extremely fragile, a point underscored by Aaron Viles of the Gulf Restoration Network in his testimony. “Current research suggests that if human-caused mortality exceeds three whales annually, then recovery of the Gulf sperm whale pod will be negatively impacted,” he noted.

Sperm whales can live to be 100 years old, but only reproduce every 15 years or so. The total impact on sperm whales is exceedingly difficult to assess, since finding carcasses is unlikely due to the expanse of their marine habitat. Nonetheless, a lifeless 25-foot juvenile was found last week floating just south of the spill site. Though scientists have yet to conclusively link the death to the oil spill, the observation is ominous.

Dolphins

Bottlenose dolphins are another celebrated species facing severe harm from the spill. Playful by nature, dolphins have been seen following response boats into contaminated water. Rather than avoiding contact with oil, their behaviour tends to increase the likelihood of contact.

To make matters worse, dolphins are also currently calving in shallow water near the extent of the surface oil. Aaron Viles reported to the committee that 30 dead dolphins have been counted by the response team. Dozens more have surfaced elsewhere in the spill region, representing a significant spike in dolphin mortality. Less-than-fatal impacts are also prevalent, as apparent inhalation of oil vapour triggers a confused response that can lead to stranding.

Birds

Brown pelicans

The state bird of Louisiana has become the most recognized symbol of the spill, due to the many disheartening images of oil soaked pelicans. The brown pelican was just removed from the endangered species list, after decades of conservation efforts restored population levels from a localized extinction in the 1960s. Brown pelicans nest in colonies on barrier beaches and marsh islands, where they have already encountered an onslaught of oil washing ashore. It is not only in their nesting grounds. Brown pelicans hunt for fish by diving into the sea. They may even be attracted to the oil slick, which makes the water look calmer.

Dr. Fry explained how the oil affects birds such as the brown pelican. “Oil, either fresh, weathered or chemically dispersed, destroys the insulation properties of feathers, and allows water to penetrate to the skin of birds.” He continued, “This causes loss of stored fat followed by muscle wasting, so that the birds are severely weakened, cannot fly, cannot feed, and rapidly deteriorate. If not recovered by rescue teams within a few days, they will starve to death. If oiled birds are far out to sea, many will drown and sink without ever being detected.”

Terns

Along with pelicans, terns also nest on barrier beaches and islands. Terns are exposed to oil when foraging for food in the coastal waters. Some species of tern, for example the endangered least tern, have low reproductive rates, making them particularly vulnerable to collapse. The risk is especially acute for tern chicks, which are susceptible to severe impacts from all levels of oil contamination, whether through direct contact in the nest or through consuming tainted seafood.

Migrating songbirds

Millions of migrant songbirds use the Gulf Coast as the last stopover before embarking on the 1000 kilometer sea crossing to Central America. These songbirds depend on a rich stock of healthy food and sufficient resting grounds prior to and after their crossing. Jane Lyder of the Interior Department laid out the likely long-term impacts: “We expect the oil to persist long-term in the food chain. When these migratory birds return to the Gulf Coast in the fall, they will likely be exposed to oil as they forage, or possibly face starvation as a result of depleted insect, marine and plant life due to oil incursion.”

Turtles

The spill occurred during peak breeding season for all five species of sea turtles present in the Gulf: the green, hawksbill, Kemp’s ridley, leatherback and loggerhead. All are listed as either threatened or endangered. Nearly 400 dead turtles have been found in the impact area since the explosion on April 20. Over 100 have been collected alive, most of them visibly oiled.

The largest number of sea turtles found so far is among juvenile Kemp’s ridleys, the most endangered of the five species. Unlike other turtles, they typically remain in the Gulf year round. The mouth of the Mississippi, a heavily impacted area, is a vital foraging area for them. Kemp’s ridleys typically feed on whatever food is available, and, like other sea turtles, show no signs of avoiding oil contaminated waters.

Fish and shellfish

Bluefin tuna

The Gulf of Mexico is one of two spawning grounds in the world for bluefin tuna, a species that has been decimated by overfishing in recent decades. Scientists estimate that since 1970, the bluefin population has declined by roughly 80 percent.

Mr. Viles explained the acute risk posed by the huge amounts of dispersed oil in the water column, particularly related to the reproductive capacity of the species. “April and May are the peak spawning time for this species, and researchers have found significant amounts of larvae in what is now BP’s impact area. This is troubling as fish eggs and larvae are highly sensitive to oil and dispersants. As a result,” he continued, “this year’s age-class of bluefin tuna, as well as many of the 42 federally managed species in the Gulf of Mexico, may suffer significant decreases to population size, which will in turn effect the commercial and recreational fisheries of the Gulf.”

Shellfish

Oil can be toxic to shellfish, both to those living on the seabed (such as crabs) and those residing in intertidal zones (such as oysters). With these species, BP’s decision to apply dispersants may prove disastrous. Dispersed oil droplets are comparable in size with the plankton consumed by oysters and other filter feeders. As such, they will likely consume oil droplets with which they come in contact.

For those oysters that survive, the chemicals tend to persist and accumulate, thereby also harming their predators. For crabs, which are higher up on the food chain, the risk comes primarily from consuming other organisms in which the toxins have already accumulated. Both crabs and oysters are important components of Louisiana’s fishing industry, which accounts for 20 percent of the entire US catch.