



WILDLIFE AND OFFSHORE DRILLING

The 2010 Gulf of Mexico Disaster: Coastal Wetlands



COASTAL MARSH, VENICE, LOUISIANA © KRISTA SCHLYER/DEFENDERS OF WILDLIFE; OIL RIG © U.S. COAST GUARD

The wetlands bordering the Gulf of Mexico provide vital habitat for a remarkable variety of wild animals—including several threatened and endangered species. These same wetlands also serve as nurseries for many important commercial species of fish and shellfish, as well as acting as pollution filters, shoreline stabilizers and storm buffers. Oil from BP’s Deepwater Horizon disaster poses another challenge for crucial habitats already threatened by human-caused destruction and climate change.

GULF COAST WETLANDS

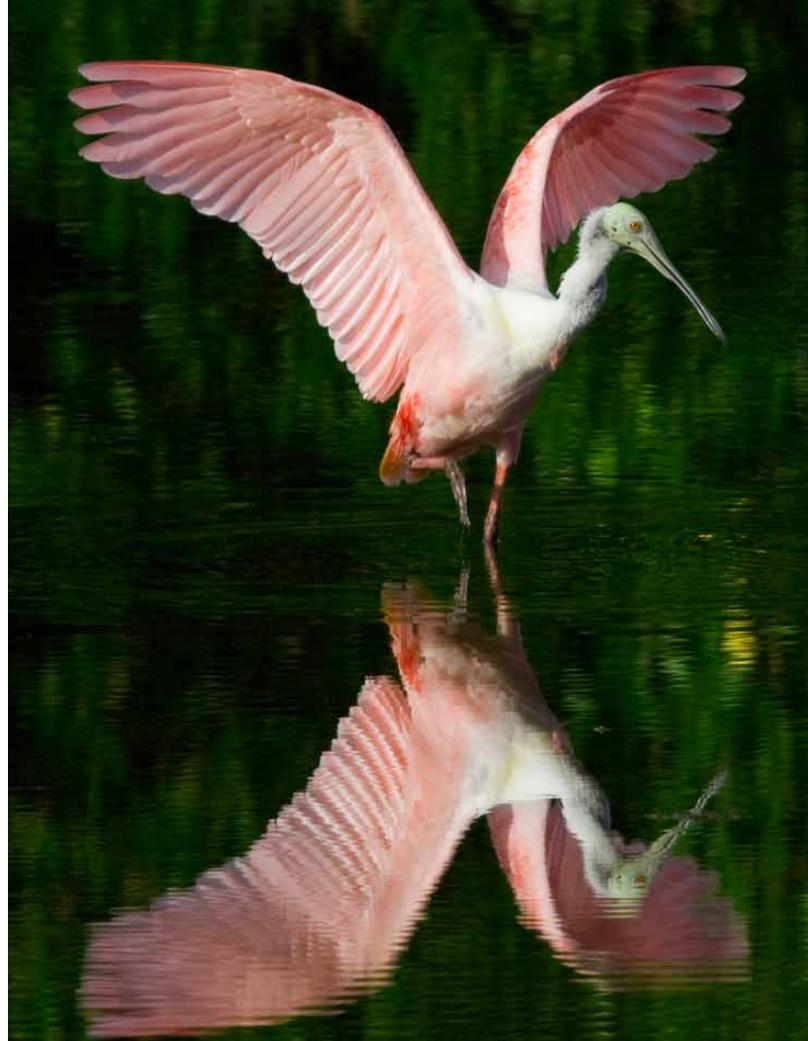
There are two dominant wetland types bordering the Gulf and its estuaries: saltwater marsh and mangrove forest (or swamp). Saltwater marsh (also referred to as salt marsh or tidal marsh) can be found in the intertidal areas of the entire Gulf coast from Texas to Florida. Mangrove forests and fringe are also found in the intertidal zone, most densely in Florida but also occurring along the Gulf coast all the way to Texas. While these two wetland types look different, they serve many of the same functions and harbor many of the same creatures. Both are associated with estuarine areas and contribute heavily to the extraordinary productivity of the estuaries. Because they are dependent on periodic (not constant) inundations of salt

water, both wetland types are also vulnerable to sea-level rise associated with climate change.

Wildlife of the wetlands and estuaries

Many species of wading birds—including rails, herons, egrets, wood storks, ibis, limpkins and roseate spoonbills—use the salt marshes and mangrove swamps for foraging, nesting and roosting. Pelicans and many species of raptors, ducks, shorebirds and songbirds also use coastal wetlands. Other species that use both coastal wetland types are the American alligator, the state-protected diamondback terrapin, endangered and threatened species of sea turtles, endangered Florida manatees and dolphins. The endangered

The Gulf Coast's wetlands are important foraging, nesting and roosting habitat for wading birds such as the roseate spoonbill (right). An abundance of fish, including the threatened Gulf sturgeon (below), are also found in Gulf wetlands and nearshore waters.



Lower Keys marsh rabbit is found only on the mangrove islands of the lower Florida Keys. The Florida salt marsh vole, one of the most endangered mammals in the United States, is found only in the vicinity of Florida's Cedar Key. The endangered smalltooth sawfish—once common in the region—is now found only in shallow waters of bays, estuaries and river mouths in Florida. Gulf sturgeon (federally listed as threatened) are found in the Gulf from Louisiana to Florida, often in nearshore bays and estuaries.

Shellfish—including shrimp, crab and spiny lobster—are both commercially and recreationally important as well as essential as food for other animals. In fact, more than 70 percent of recreationally and commercially important fishes, crustaceans and shellfish spend part of their lives in the coastal wetlands of estuaries, usually when they are young. The shallow water, salt marshes, seagrasses and mangrove roots provide excellent hiding places from larger, open-water predators. Some species grow in estuaries for a short time; others remain there for life.

Salt marshes

A salt marsh habitat is an intertidal wetland area between land and a bay, estuary or other salty body of water. Because of the harsh conditions created by routine inundation from tidal waters, plant species diversity is relatively low. Salt marsh is dominated by plants such as cordgrass, needlerush, sawgrass, saltwort, saltgrass and glasswort. Coastal salt marshes are often associated with estuaries and occur along waterways between coastal barrier islands and the inner coast. They serve important functions such as slowing erosion along the shoreline, buffering stormy seas and filtering pollutants before they enter oceans and estuaries.

Salt marshes rank among the most productive ecosystems on Earth. Fish, crabs and shrimp live in salt marshes where plant stems, leaves and roots provide food and shelter from predators. Salt marshes also provide excellent habitat for birds, with many places for feeding, reproducing and roosting.

Salt marshes have not always been regarded as valuable resources. Almost half of the marshes in existence along many areas of the Atlantic and Gulf coasts of the United States in 1900 have disappeared. Dredging, filling and draining of salt marshes probably destroyed most local areas before the 1970s, when their ecological importance became better understood. Federal and state laws and regulations now reflect a better appreciation for the value of marshes; however, they are still declining in many areas, particularly where they are not in public ownership.

On a global scale, sea-level rise and development are the major forces driving most coastal marsh losses. Since the mid-1850s, the rate of world sea-level rise has accelerated, outstripping, in many cases, the ability of the coastal marshes to grow upwards. Even though many laws protect coastal marshes from development, marshes are still shrinking in area.

Mangrove swamps

Mangrove forests occur in tropical and subtropical regions along estuarine and marine shorelines. This habitat is dominated by mangrove trees and other shrubs that have adapted to life in wet soils, salty habitats and periodic submerging by tides. Mangroves provide habitat for a diverse set of plants and animals. They also help maintain and build shoreline and control coastal erosion.

Three species of mangrove—red, black and white—occur along the U.S. Gulf Coast. All of these species may grow

along the same shoreline, but may occur in different areas within the tidal zone. Because of their sensitivity to sub-freezing temperatures, mangroves in the continental United States are generally limited to Florida and isolated areas of southern Louisiana and south Texas, although they are moving north in recent years, possibly as a result of climate change.

The mesh of mangrove roots serves as a valuable habitat and nursery area for many species of shrimp, crabs and fishes—including those important to commercial and recreational fishing industries. These habitats provide a rich source of food while also offering refuge from predation. Mangroves also provide a habitat for many types of birds. Wading birds such as herons, egrets, bitterns, spoonbills, limpkins and ibis visit mangroves and adjacent estuarine shallow waters and mudflats in search of food. Floating and diving birds such as ducks, grebes, loons, cormorants and pelicans feed on fishes, plants and invertebrates of the mangrove habitat. Birds of prey including southern bald eagles, ospreys and peregrine falcons also depend on mangrove habitats for food and shelter. Many of these birds also roost or nest in the mangrove tree canopy.

Mangrove forests have also been declining over time. As with salt marsh, their value was little understood until recent years—and even with current protections, they are still in poor condition, declining in number and threatened by sea-level rise.

Seagrasses

No discussion of Gulf coastal wetlands is complete without mention of the seagrass communities found in the estuarine waters of the Gulf of Mexico. Seagrasses can occur in both subtidal and intertidal habitats and are particularly susceptible to human impacts such as pollution, dredging and trampling. As such, they are useful indicators of ecosystem stress or health. Seagrass beds serve a number of important roles, including trapping and stabilizing bottom sediments, recycling

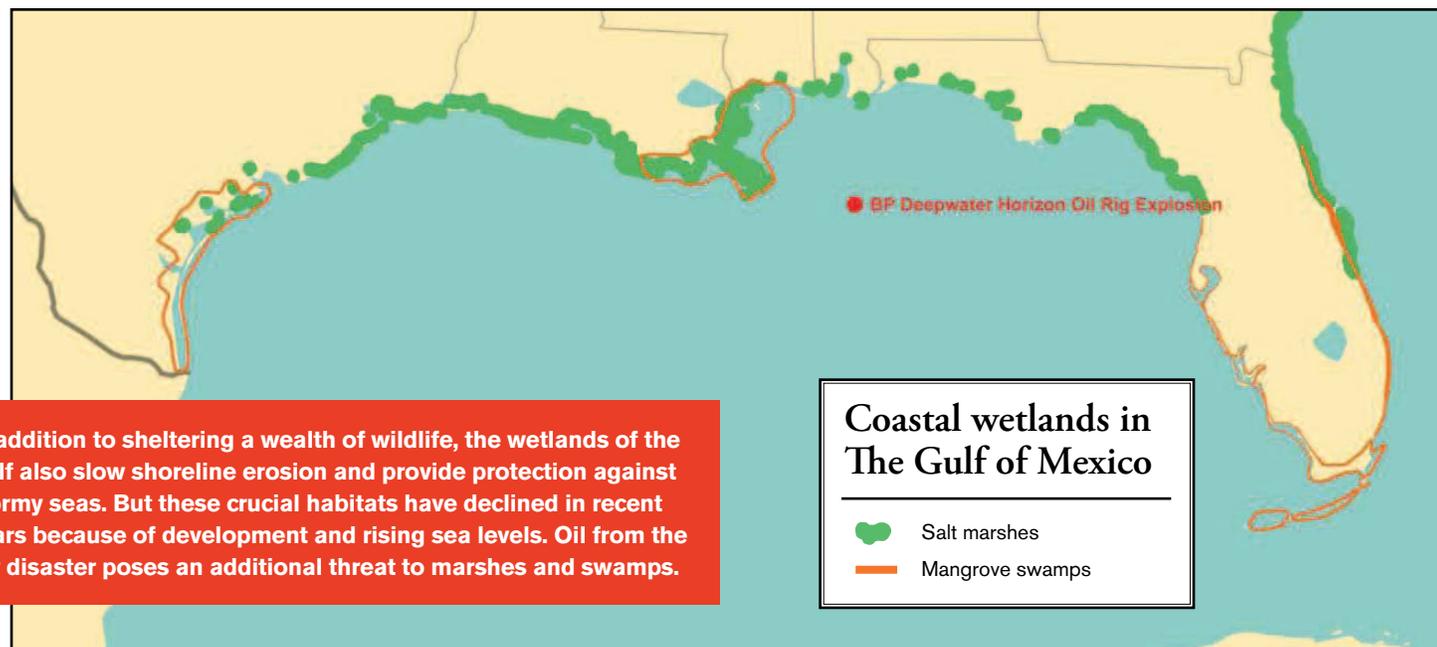
nutrients and providing habitat for a wide variety of plants and animals. They also help provide food for young fish and invertebrates, as well as manatees and green turtles. The most common seagrasses in the Gulf estuaries are turtle grass, manatee grass and shoal grass. Widgeon grass is also present and is more tolerant of freshwater so is often found in greater abundance at the mouths of rivers entering the estuary.

IMPACTS OF OIL

The immediate impacts of oil on salt marshes can be devastating, but the longterm effects are less well-documented. One study found that residual, undegraded oil can last for decades with the potential for chronic, lingering effects. The degree of impacts to both wetland types is dependent on the magnitude and duration of the spill and the type of oil spilled.

Mangrove trees are highly susceptible to oil exposure and can be devastated by oil washing into intertidal areas. Mangrove species produce aerial root systems that are specially adapted to survive in intense sunlight, low-oxygen soils and variable salinities. When oil coats these aerial roots, the trees can effectively suffocate. Oil cleanup can be difficult and may cause more harm than good. Cleanup workers can damage root systems and reoil cleaned areas by slogging through the swamps and sloshing standing water. Tidal influx can also reoil previously cleaned roots. Many experts recommend that mangroves be allowed to recover naturally—but they are slow-growing species and can take decades to mature. If the root systems are heavily impacted by oil, recovery could be very slow.

Seagrass ecosystems can be damaged by oil through direct suffocation or fouling of organisms or destruction of food sources or habitats. The effects of oil dispersants on seagrass communities are not known. The normal recovery of





The immediate impacts of oil on wetlands can be devastating as it coats and kills roots and leaves. Residual, undegraded oil can persist in marshes for decades, causing lingering harm to plants and animals.

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- Pass comprehensive climate change legislation that addresses the impacts of global warming on wildlife and our natural resources.
- Impose greater safety and environmental standards on existing offshore drilling operations and develop comprehensive spill response plans.
- Ensure that long-term restoration of coastal wetland systems affected by this disaster, including their full complement of species and natural communities, is funded and implemented.

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seagrass systems from oiling depends on the extent of damage to sediments. The degree to which oil negatively impacts seagrasses seems to be dependent on the water depth where they are located. Seagrasses in very shallow waters within the intertidal zone are most affected due to tidal flux and wave action that brings the oil in contact with the grasses. As long as the oil stays on the water's surface, seagrass beds at greater depths may be relatively unaffected. However, the use of oil dispersants may cause oil droplets to precipitate to the bottom and accumulate on seagrass blades and into the substrate where the plants are rooted.

WHAT CITIZENS CAN DO

- Urge your elected officials to pass comprehensive climate change legislation that addresses the impacts of global warming on wildlife and our natural resources.
- Urge elected officials to enact policies that secure coastal wetlands from development and improve coastal management policies.
- Avoid boating over shallow seagrasses and dredging seagrass beds with propellers.
- Strictly curb your use of household and lawn chemicals that eventually find their way into sensitive wetland areas.
- Try to limit the amount of oil you use by taking steps such as combining car trips and using less air conditioning and heating.

WHAT POLICY MAKERS CAN DO

- Make sure that coastal wetlands and estuarine resources are protected during oil spill cleanup operations.
- Ensure that coastal wetland areas receive sufficient supplies of oil containment booms, boats and other supplies to prevent damage to these sensitive habitats.
- Ensure that local, state and research entities receive adequate funding to address additional threats to wetlands and the sensitive species found there, such as climate change and development.

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