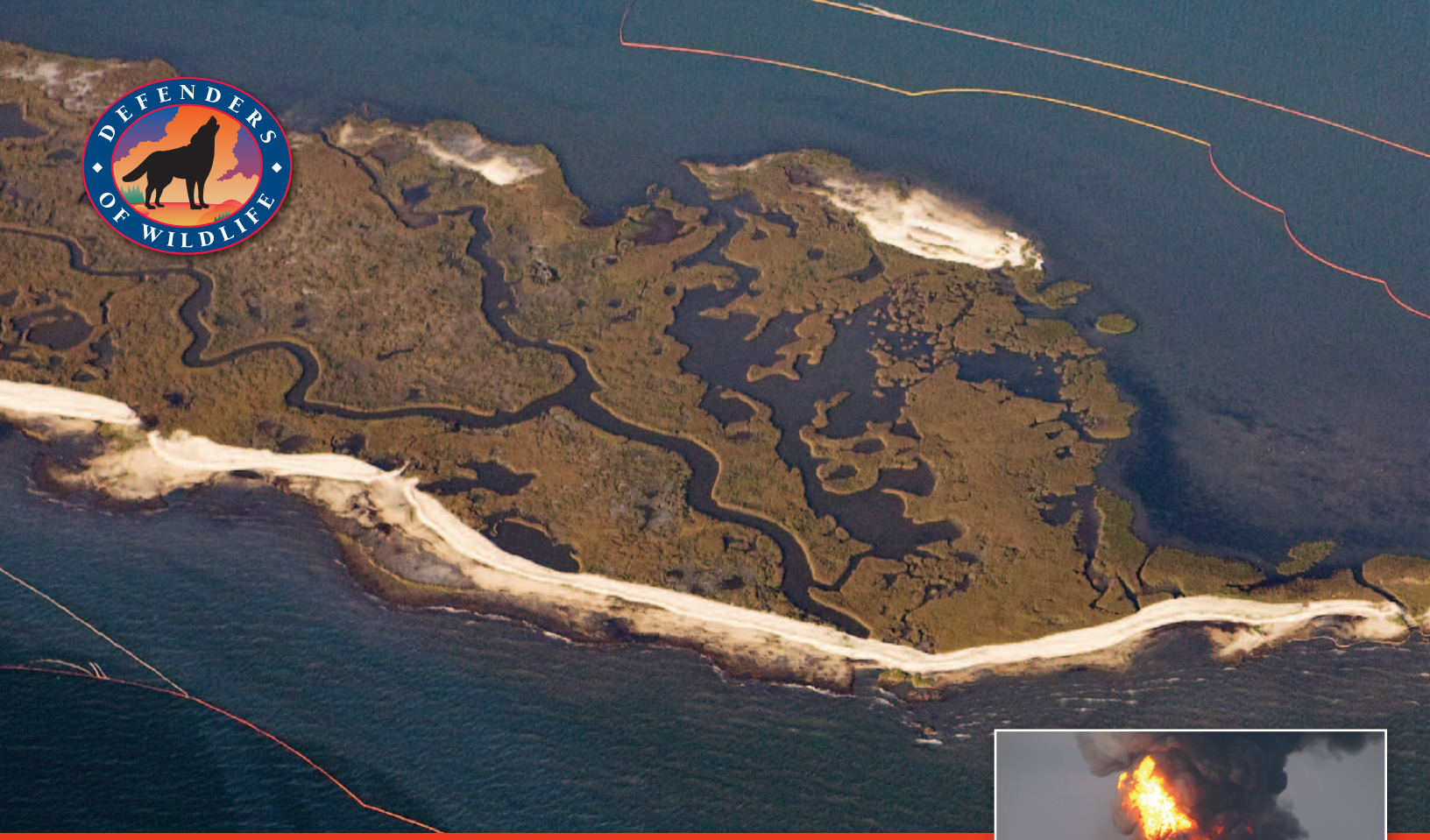


WILDLIFE AND OFFSHORE DRILLING

The 2010 Gulf of Mexico Disaster: Refuges

CHANDELEUR ISLANDS (BRETON NATIONAL WILDLIFE REFUGE) © KRISTA SCHLYER/DEFENDERS OF WILDLIFE; OIL RIG © U.S. COAST GUARD

The national wildlife refuges bordering the Gulf of Mexico are havens for a remarkable variety of birds, sea turtles, marine mammals and other wildlife–including at least 27 threatened or endangered species. Many of these refuges, and the native plants and animals they harbor, are in the path of spreading oil from BP's Deepwater Horizon spill. This disaster poses another challenge for a crucial set of protected areas that already faces serious problems.

NATIONAL WILDLIFE REFUGES IN THE GULF OF MEXICO

The National Wildlife Refuge System offers a crucial sanctuary for America's fish, wildlife and plants, and provides an estimated $26 billion in value to the nation's economy. There are 38 wildlife refuges along the Gulf of Mexico, protecting some of America's most extensive coastal salt marshes, barrier islands, mangrove swamps and pristine beaches. These habitats support a wide range of animals, from colonies of tens of thousands of nesting seabirds and pelicans to endangered sea turtles who come by the hundreds to lay their eggs each year on these protected beaches.

The refuge system, plagued by staffing shortages and a funding backlog of more than $3.7 billion, is already under pressure from the harmful impacts of climate change, invasive species, and oil and gas development within its boundaries.

The BP Deepwater Horizon oil spill threatens to place another enormous burden on the already stressed refuge system. The following refuges are among those at greatest risk from the spill.

Delta National Wildlife Refuge (Louisiana)

This 50,000-acre refuge near the mouth of the Mississippi River was set up specifically to provide habitat for migratory birds. Its marshes and stretches of open water are used by hundreds of thousands of waterfowl and shorebirds, as well as several sensitive species including the brown pelican, Arctic peregrine falcon, the threatened piping plover and Gulf sturgeon. Tropical storms and hurricanes, including Hurricane Katrina in 2005, frequently disturb the refuge, leading to erosion and wetland loss. Delta is one of dozens of wildlife refuges on which oil and gas development and

A wide array of plants, animals and fish are found in the 38 federally managed wildlife refuges along the coast of the Gulf of Mexico. Among the important species and habitats found there are (clockwise from above): threatened piping plovers; productive waters and mangrove forests at Key West refuge; North America's largest tern colony at Breton refuge; and one of the Gulf Coast's last undeveloped coastal ecosystems at Bon Secour refuge.

exploration occur. This can result in direct impacts, such as the April 2010 spill of about 18,000 gallons of crude oil from a Chevron-operated pipeline into waters at Delta refuge. It also can have indirect impacts, such as when canals dug for pipelines allow salt water into the marshes, which increases the erosion of remaining marsh.

Breton National Wildlife Refuge (Louisiana)
Established in 1904, Breton is the nation's second-oldest refuge and the only one visited by Theodore Roosevelt, founder of the refuge system. It consists of several barrier islands off Louisiana's southeast coast, including Breton Island and the Chandeleur Island chain. As a designated Globally Important Bird Area, it is a haven for dozens of types of seabirds, shorebirds and waterfowl—including North America's largest tern colony and one of its largest brown pelican colonies. It also harbors threatened piping plovers, and endangered least terns. Tropical storms and sea-level rise associated with climate change pose threats to the integrity of the refuge. Tropical storms and an oil spill in 2005 caused significant beach and marsh loss and took a heavy toll on the refuge's nesting brown pelicans. Toxic pollution from the BP Deepwater Horizon oil spill has already invaded this refuge, putting resident birds and other wildlife in jeopardy.

Grand Bay National Wildlife Refuge (Alabama/Mississippi)
Straddling the southern border of Mississippi and Alabama, this refuge and an adjacent federal preserve provide nearly 20,000 acres of protected habitat for gopher tortoises, American alligators, pelicans, and an occasional endangered manatee. The refuge's salt marshes, bayous and grass beds are crucial nursery and feeding grounds for shrimp, blue crabs and oysters, among other animals. These marshes and bayous are also extremely sensitive to disturbance, and oil from the BP Deepwater Horizon spill has the potential to disrupt the health, productivity and diversity of the refuge.

Bon Secour National Wildlife Refuge (Alabama)
Bon Secour protects nearly 7,000 acres of dune, marsh and forest habitats. The refuge is one of the last undeveloped coastal ecosystems along the Gulf Coast, and its five units are fragmented and stressed by development on the rapidly growing Fort Morgan Peninsula. The refuge is home to several

threatened and endangered species, including the Alabama beach mouse; piping plover; wood stork; and green, loggerhead and Kemp's ridley sea turtles. Several other species of concern inhabit the refuge, including the Mississippi diamondback terrapin, eastern diamondback rattlesnake, mimic glass lizard and northern yellow bat. Tar balls from the BP Deepwater Horizon oil spill washed up onto this refuge in mid-May.

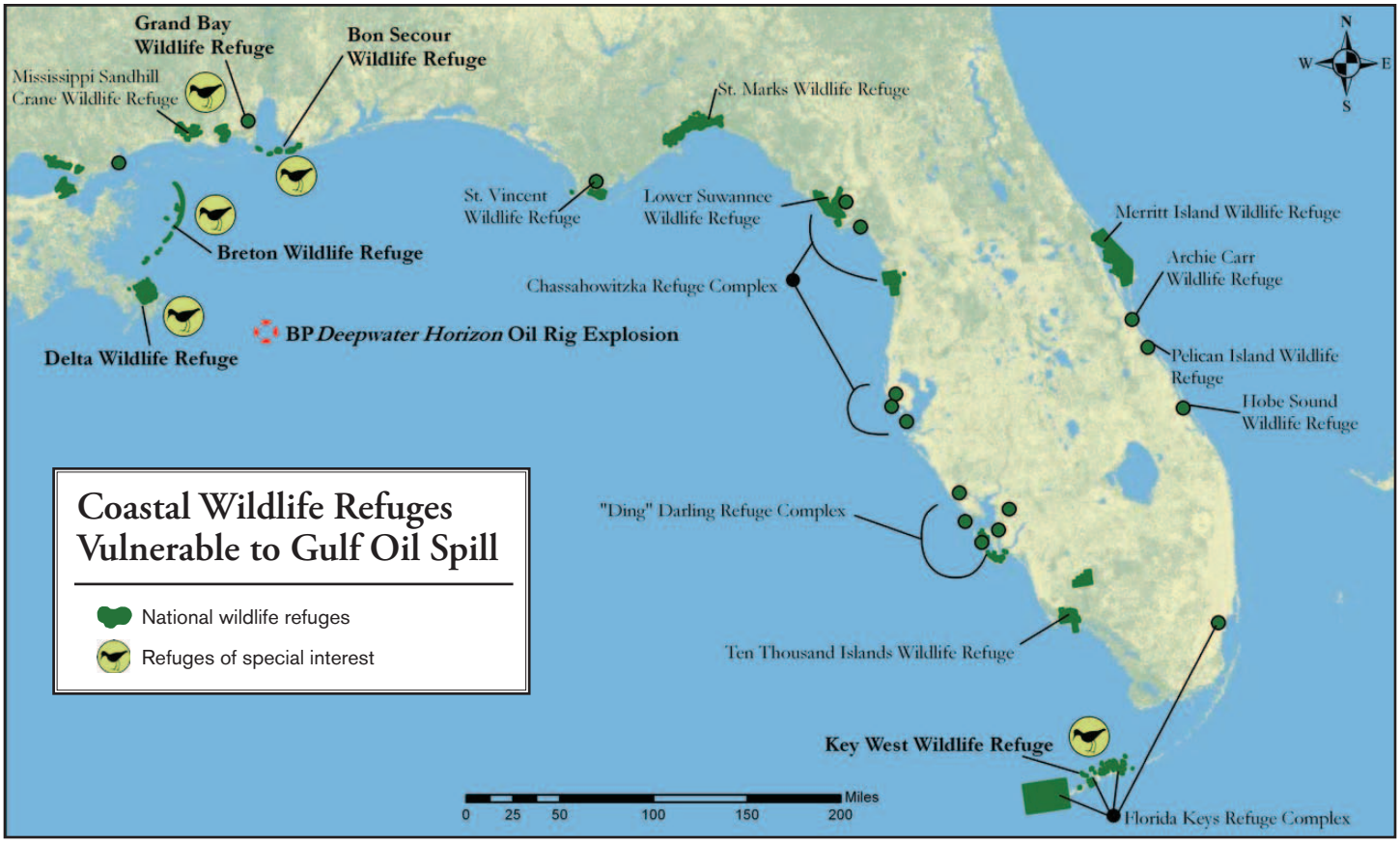
Key West National Wildlife Refuge (Florida)
Key West spans more than 200,000 acres, the vast majority of which is open water. Its 2,000 acres of land, consisting of more than a dozen keys, are dominated by mangroves. These forests play key ecological and economic roles, providing habitat for game fish and other commercially valuable species, and also buffering the harmful effects of hurricanes and climate change. In addition to sheltering more than 250 types of birds, this refuge safeguards many imperiled species, including the West Indian manatee, piping plover, five types of sea turtles, roseate terns, red knots, smalltooth sawfish and Miami blue butterflies. Adding to existing threats from coastal storms and sea-level rise, oil from the BP Deepwater Horizon spill could infiltrate and degrade this important ecosystem.

IMPACTS OF OIL

Oil from the BP Deepwater Horizon spill has already washed ashore at Breton and Bon Secour refuges, and the U.S. Fish and Wildlife Service says at least 30 additional Gulf Coast refuges are vulnerable to the spill. Even more refuges could be at risk if ocean currents carry oil around Florida and up the East Coast, or if hurricanes push the oil further inland.

Oil causes direct and immediate impacts to wildlife on refuges, particularly to birds and mammals that ingest or are coated by oil floating on the water's surface. Tens of thousands of waterbirds and shorebirds have now returned to these refuges to breed, putting both these animals and their offspring in harm's way. The 1989 *Exxon Valdez* oil spill in Alaska killed about 400,000 seabirds, and chronic exposure to oil put countless others at risk of lung, liver and kidney damage, along with reproductive failure. A similar occurrence in the Gulf could lead to population declines and potential loss of local wildlife populations. The Gulf Coast refuges also host crucial marine 'nursery' habitats that shelter young fish, sharks and abundant shrimp populations, all of which could be harmed. Fish whose planktonic eggs and larvae float in ocean currents will not be able to escape exposure to drifting oil even far off refuge shores.

Oil washing into refuges is likely to cause even more lasting harm to the sensitive habitats on which these species depend. Coastal wetlands in Louisiana are an amalgam of silt and mud that is held in place by sea grasses and marsh vegetation. Oil coming ashore will dramatically increase erosion of these marshes because it will kill off the grass that holds the soils together. Once oil enters these habitats, it will be impossible to remove and it may remain there for 30 years or more. The oil may also kill algae, oysters and eelgrass. The devastation will result in less resilient habitats; as ecosystems become degraded and lose key components, such as eelgrass communities, they



SOURCE: U.S. FISH AND WILDLIFE SERVICE

COURTESY P. R. HOAR/NOAA/NESDIS/NCDDC

The salt marshes and bayous of Grand Bay refuge, straddling the border of Alabama and Mississippi, are a crucial nursery for shimp, blue crabs and oysters. These productive habitats are extremely vulnerable to damage from oil.

lose their ability to rebound from other disturbances, including those brought on by climate change.

Oil and its byproducts are persistent toxins, and thus can enter the food chain to cause long-term damage. Algae and marine invertebrates like worms and crabs can accumulate these contaminants in their bodies, which are in turn passed on to bigger predators such as birds.

WHAT CITIZENS CAN DO

- Reduce the amount of garbage you produce, and clean up trash you see on the beach.
- Volunteer at your local wildlife refuge to help protect and restore habitat.
- Urge your elected officials to pass comprehensive climate change legislation that addresses the impacts of global warming on wildlife and our natural resources.

WHAT POLICY MAKERS CAN DO

- Ensure that national wildlife refuges receive sufficient supplies of oil containment booms, boats and other supplies to prevent damage to sensitive refuge habitats.
- Ensure that BP funds long-term restoration of marine and coastal habitats in all Gulf refuges affected by the spill, including compensation for the long-term loss of ecosystem services refuges provide for the public.
- Provide an additional $5 million to refuges to monitor conditions before oil comes ashore and after it arrives.
- Ensure that national wildlife refuges receive adequate funding to address additional threats to the sensitive species found there, such as climate change and oil and gas development.
- Issue regulations improving environmental and safety standards for oil and gas development on refuge lands to ensure that future on-refuge oil spills do not occur.
- Impose greater safety and environmental standards and develop comprehensive spill response plans on existing offshore drilling operations.
- Fund a study by the National Academies of Science to quantify the impacts of this oil spill on the ecosystem services provided by refuges.
- Prevent expanded drilling operations off the coast to limit future spill risks.
- Enact comprehensive energy and climate change policies to transition away from harmful oil and fossil fuels.

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