


Time for Action

Six Years After Deepwater Horizon





“One of the lessons we’ve learned from this spill is that we need better regulations, better safety standards, and better enforcement when it comes to offshore drilling.”

**President Barack Obama
June 15, 2010**

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Executive Summary

The Deepwater Horizon oil spill devastated the Gulf of Mexico's marine life, communities and economy.

Since the 2010 disaster, federal agencies have done little to improve the safety of offshore drilling using existing authorities and Congress has done virtually nothing to reduce the risk of another spill in our waters or on our beaches. Although investigations of the disaster resulted in detailed recommendations to strengthen the laws governing offshore drilling, no new laws have been passed.

To make better decisions about offshore energy, we must continue to learn from the ongoing impacts of the *Deepwater Horizon* oil spill six years after the disaster. This report highlights scientific studies, focusing on those released in 2015 and

2016, that show the damage the 2010 oil spill caused in the Gulf of Mexico. Scientists are still working to understand the scale of devastation to wildlife, fisheries and human health. These catastrophic outcomes could happen in any region of the United States where oil and gas activities are proceeding, especially as those activities are moving into deeper and more dangerous areas.

Key findings include the disaster's impact on the marine ecosystem:

- Mortality rates for common bottlenose dolphins living in Barataria Bay, Louisiana were 8 percent higher and their reproductive success was 63 percent lower compared to other dolphin populations.¹
- An estimated 600,000 to 800,000 birds died as a result of the spill.²
- Harmful oil and/or oil dispersant chemicals were found in about 80 percent of pelican eggs that were laid in Minnesota, more than 1,000 miles from the Gulf, where most of these birds spend winters.³
- Oil exposure caused heart failure in juvenile bluefin and yellowfin tunas,⁴ reduced swimming ability in juvenile mahi-mahi fish⁵ and caused gill tissue damage in killifish.⁶
- The oil plume caused bleaching and tissue loss in deep-water coral reefs over an area three times larger than Manhattan.⁷
- Endangered sea turtles that had migrated to the Gulf from Mexico, South America and West Africa died in the spill, demonstrating the global scale of impacts.⁸



Surface oil in the Gulf of Mexico following the *Deepwater Horizon* oil spill. May, 2010.

Julie Demansky



Oiled marsh in Barataria Bay, Louisiana following the Deepwater Horizon oil spill. September, 2010.

Julie Demersky

The oil spill also had a dramatic effect on human health:

- The 50,000 people involved in spill cleanup were exposed to chemicals that severely damage lung tissue.⁹
- Cleanup workers and their spouses reported increased depression and domestic disputes.¹⁰
- Even Gulf residents indirectly affected by the spill suffered from increased anxiety and depression.¹¹
- It can take a decade or more for oil spill victims to recover from the physical and psychological effects of an oil disaster.¹²

The economic losses from the spill were enormous:

- The impact of the oil spill on fisheries could total \$8.7 billion by 2020, including the loss of 22,000 jobs.¹³

- 10 million user-days of beach, fishing and boating activity were lost.¹⁴

Recommendations:

- President Obama should not allow additional leasing, exploration or development in frontier areas such as the Atlantic, Arctic and ultra-deepwater.
- President Obama should not allow offshore drilling in new areas or areas where vulnerable ecosystems will be at risk.
- The federal government should fully implement the well control rule and finalize Arctic-specific regulations.
- President Obama should not allow seismic airgun blasting, a technique used to locate oil and gas deposits, where marine life can be harmed.

- The United States should transition away from offshore oil drilling and instead invest in cleaner, safer technologies like offshore wind and other renewable energy sources.
- Scientists, decision makers, federal and state governments, and the public should continue to monitor and learn from the effects of the Deepwater Horizon spill so that we can restore losses and prevent future disasters.

Six years later, the lesson from the Gulf of Mexico oil spill is clear: Offshore drilling is not safe for the environment, the economy or human health. We therefore should not expand oil and gas activities in U.S. waters. Instead, we should rapidly develop clean energy options, including offshore wind power.

Introduction

On April 20, 2010, an explosion on the *Deepwater Horizon* offshore drilling rig killed 11 crew members and caused the worst oil spill in American history. The oil spill continued for 87 days as engineers tried and failed to stop it.¹⁵ By the time the well was sealed, more than 200 million gallons of oil had flooded into the Gulf of Mexico.¹⁶ By comparison, the 1989 *Exxon Valdez* spilled almost 11 million gallons of oil into Alaska's Prince William Sound, about one-twentieth the amount of the *Deepwater Horizon* oil spill.¹⁷

The Gulf spill had enormously negative impacts on the region, including on the offshore and coastal environments and the animals that live there. It also affected the economy, impacting tourism and the fishing industry. Drawing on the latest scientific studies, this report summarizes what we have learned about the effects of the oil spill six years later and highlights the most recent research published in 2015 and 2016.

Studying the effects of oil spills on marine life is more important than ever, as the U.S. government finalizes the 2017-2022

Outer Continental Shelf Oil and Gas Leasing Program. As the *Deepwater Horizon* disaster showed, even the "best" technology can fail – putting ecosystems, the economy and human health at risk. Oceana strongly recommends that oil and gas exploration and extraction activities not be expanded within U.S. waters. Instead, the U.S. should transition to renewable energy sources like offshore wind power. As this report highlights, the negative effects of the *Deepwater Horizon* oil spill continue to play out, even six years later.



Memorial on Grand Isle, Louisiana for crew members killed in the *Deepwater Horizon* disaster. April, 2015.

The Gulf of Mexico

The Gulf of Mexico is one of the most vibrant and important ecosystems and economic engines in the U.S. Its

1,631 miles of coastline¹⁸ cross five states and include estuaries, coral reefs, seagrass beds, mangrove swamps, barrier islands and the 5 million acres of coastal wetlands that make up the Mississippi River Delta ecosystem. This area includes almost 40 percent of the wetlands found in the lower 48 states.¹⁹ These habitats play a vital role in the food chain, providing spawning areas and breeding grounds for wildlife, including commercial and recreational species that are important to the tourism and fishing industries. A spawning ground is “a place where animals go to lay eggs”²⁰ and is therefore important to species survival.

The region is home to more than 15,000 species of animals,²¹ including 15 marine species protected under the

Endangered Species Act.²² Forty additional marine species in the Gulf area that are unprotected by federal laws are listed as threatened on the International Union for Conservation of Nature’s Red List.²³ The economic footprint of the Gulf of Mexico is enormous. More than 22 million people live in the Gulf’s coastal counties and parishes, many of them working in commercial seafood, shipping, tourism, and oil and gas production.²⁴ The Gulf’s 10 ports, which are among the 15 largest ports in the U.S., account for almost \$1 trillion in trade annually.²⁵

The Deepwater Horizon Disaster in Context

The Deepwater Horizon blowout produced the largest oil spill in U.S. history, but it is far from the only oil disaster to strike the country. The famous *Exxon Valdez* spill in 1989 released nearly 11 million gallons of oil near the Alaskan coastline, resulting in 35,000 bird deaths

and nearly 1,000 sea otter deaths.²⁶ More than 25 years later, we are still experiencing the effects of the *Exxon Valdez* spill. Despite a major cleanup effort, oil can still be found underneath some Alaskan beaches.²⁷

The disaster that claimed the title for the world’s worst spill prior to the *Deepwater Horizon* blowout, the *Ixtoc 1* oil spill, took place in 1979 in the southern part of the Gulf of Mexico, when an oil rig owned by the Mexican government suffered a similar failure. Oil flowed from the well for nearly a year, resulting in 140 million gallons of oil spilled into the Gulf.²⁸ Still, that disaster was ultimately dwarfed by the *Deepwater Horizon* spill. Since then, additional spills have been reminders of the continued threat of extracting oil resources from marine ecosystems. Just last year, on May 19, 2015, 21,000 gallons of crude oil spilled into the Pacific Ocean at Refugio State Beach near Santa Barbara, California.²⁹



Vessel skimming oil in the Gulf of Mexico following the *Deepwater Horizon* oil spill. April, 2010.

The Effects of the Deepwater Horizon Disaster

Oil is harmful to many plants and animals and has both immediate and long-term effects on ecosystems and economies. In addition, the subsequent clean-up attempts can backfire for wildlife. In this case, the chemical dispersant sprayed on the water to break down the oil after the spill was harmful, and in some cases, even deadly to marine life.³⁰ The long-term effects of an oil spill, however, are often invisible to the naked eye and can take years to be identified, much less fully understood. Scientists are still cataloging the extent of the damage caused by the 2010 spill.

This report summarizes what scientists and economists have learned since the 2010 spill, highlighting the most recent studies from 2015 and 2016. Below, we review the effects of the oil spill on marine mammals, birds, sea turtles, fish, corals, invertebrates and human health.³¹

Impacts on Marine Life

Marine Mammals

The *Deepwater Horizon* oil spill drastically affected marine mammals in the Gulf of Mexico, resulting in enormous numbers of animals found onshore that were dead or incapacitated. These events are referred to as “strandings.” The Gulf of Mexico is home to 29 species of marine mammals like dolphins, whales and manatees,³² including four whale species and one manatee species that are protected under the Endangered Species Act.³³ Because marine mammals must surface to breathe, they are at risk of direct contact with oil. The heavy metals in oil can damage DNA as they accumulate in wildlife, causing long-term and even intergenerational effects.³⁴ Large predators like whales and dolphins are especially vulnerable to accumulating chemicals in their tissue through respiration, ingestion or direct contact with contaminated water or sediment, a process known as bioaccumulation.³⁵

The number of whale and dolphin deaths in the Gulf following the spill is staggering. In fact, the number of dolphin and whale strandings was so high that the federal government dubbed it an “unusual mortality event.” It is impossible to know exactly how many marine mammals were killed as a result of the *Deepwater Horizon* oil spill, since only about 2 percent of all marine mammal carcasses are usually recovered.³⁶ This means that the death toll for marine mammals following an oil spill could be 50 times higher than what we observe with our own eyes, with many more whales and dolphins dying at sea. Due to a lack of long-term data sets, it is difficult to translate the number of marine mammal carcasses into effects on specific marine mammal populations.³⁷

Scientists are beginning to understand the magnitude of the disaster’s effects on whales and dolphins. By recording whale calls, researchers learned that



Dolphin stranded on Fourchon Beach, Louisiana following the *Deepwater Horizon* oil spill. May, 2011.



Oiled brown pelican in Barataria Bay, Louisiana following the *Deepwater Horizon* oil spill. June, 2010.

some endangered sperm whales left the area nearest the spill not long after the event.³⁸ Some marine mammals that did not abandon the area paid an enormous price. In addition to the more than 1,000 marine mammals that were found stranded, an unusual number of premature and stillborn dolphins were observed.³⁹ Several years after the spill, pregnant bottlenose dolphins only gave birth to healthy calves 20 percent of the time, compared to 83 percent prior to the oil spill, and also experienced an increased mortality rate of 8 percent, compared to other dolphin populations.⁴⁰ This research demonstrates high mortality and low reproductive success for dolphins in the heavily oiled habitat.⁴¹

Bottlenose dolphins living in Barataria Bay, Louisiana, which was heavily oiled during the spill, had moderate-to-severe lung disease at rates five times higher

than average.⁴² Many of these dolphins also had lower body weights or extensive tooth loss. More than half of the Barataria Bay dolphins studied were sick enough that scientists gave them a guarded-to-grave prognosis.⁴³ Scientists also found dead dolphins with adrenal gland and lung lesions caused by exposure to oil.⁴⁴ These findings indicate that the oil from the *Deepwater Horizon* spill has contributed to increased rates of Bottlenose dolphin deaths in Barataria Bay, Louisiana.

Birds

Oil from the *Deepwater Horizon* oil spill led to enormous levels of bird mortality and habitat devastation. Scientists estimate that 600,000 to 800,000 birds died as a result of the *Deepwater Horizon* spill.⁴⁵ One-third of the northern Gulf's entire coastal population of laughing gulls died.⁴⁶ Some scientists believe the number of

bird mortalities due to the spill was even worse, possibly 10 times higher.⁴⁷ More than 1 million migratory shorebirds, including 28 different species, were potentially exposed to oil from the spill.⁴⁸ In addition, oil contamination could affect future generations of birds.⁴⁹ Indeed, egg exposure to oil is known to cause mortality and birth defects in baby birds.⁵⁰ The Gulf of Mexico is an important breeding ground, and 56 percent of its bird and duck species breed or nest during the months the oil spill was at its worst (April to June).⁵¹ Two years after the spill, scientists found hydrocarbons from the *Deepwater Horizon* oil spill in 90 percent of pelican eggs tested in Minnesota, the summer grounds for many birds that winter in the Gulf of Mexico.⁵² The chemical dispersant used to degrade oil after the spill – also toxic to young birds – was found in 80 percent of the eggs.⁵³

The marshes in the Gulf of Mexico are important feeding and nesting habitat for shearwaters, northern gannets, frigates, royal terns and gulls.⁵⁴ Additionally, the barrier islands off of the southeastern coast of Louisiana are important nesting habitats for birds, including the brown pelican.⁵⁵ Two months after the disaster, International Bird Rescue had cleaned 600 oiled birds in its facility in Louisiana.⁵⁶

Sea Turtles

Endangered sea turtle deaths increased and nesting beaches were damaged by the *Deepwater Horizon* oil spill. About 75 percent of the dead sea turtles found following the spill were Kemp's ridley turtles, the smallest and most endangered sea turtle species worldwide.^{57,58} Kemp's ridley turtles' most important nesting beaches are in Texas and Mexico. Scientists estimate that up to 65,000 Kemp's ridley sea turtles died in 2010, more than four times as many as in the previous year.⁵⁹ Additionally, Kemp's ridley nests on their primary nesting beaches in Mexico dropped by 35 percent in the year of the oil spill, from 19,163 in 2009 to 12,377 in 2010.⁶⁰



Carolyn Cole/Los Angeles Times

Oiled Kemp's ridley turtle found near the *Deepwater Horizon* oil spill site. June, 2010.

Of the world's seven sea turtle species,⁶¹ five species are found in the Gulf of Mexico and are threatened or endangered, including the Kemp's ridley, green, hawksbill, leatherback and loggerhead species. The Gulf of Mexico waters include some of the sea turtles' most important habitat and foraging areas.⁶² In addition, scientists believe that the affected sea turtles include individuals from populations based in Costa Rica, Mexico, northern South America and even West Africa, suggesting that the effects of the spill on sea turtle populations extend far beyond the northern Gulf of Mexico.⁶³

Fish

Many fish, including sharks, tuna and shellfish, were exposed to oil from the *Deepwater Horizon* spill. Oil can cause damage to fish heart function and swimming ability, putting commercially and recreationally important fish species at risk. The Gulf of Mexico includes many shark species, such as the scalloped hammerhead, shortfin mako, silky, whale, bigeye thresher, longfin mako and oceanic whitetip, as well as other top fish predators such as the swordfish, white marlin,

blue marlin, yellowfin tuna, bluefin tuna, longbill spearfish and sailfish. Additional fish species found in oiled areas included red snapper, grouper, gray triggerfish, red drum, vermilion snapper, greater amberjack, black drum, cobia and dolphin (mahi-mahi), as well as coastal migratory

open water species like king and Spanish mackerel. Shellfish in the area affected by the spill included oysters, scallops, and shrimp and crab species.⁶⁴

The Gulf of Mexico is also a critical spawning ground for migratory species such as the valuable and overfished Atlantic bluefin tuna. After the *Exxon Valdez* spill, scientists learned that lingering exposure to oil can result in heart failure and other cardiovascular problems in fish embryos.⁶⁵ Exposure to oil can also cause gill tissue damage.⁶⁶ Even brief exposure to oil can reduce the swimming ability of juvenile fish weeks later.⁶⁷ After the *Deepwater Horizon* disaster, scientists demonstrated the cardiovascular effects of oil on bluefin and yellowfin tuna embryos.⁶⁸ The consistency of serious negative effects in embryonic heart development in tuna species indicates that many other large fish species spawning at the same time in the oiled areas also faced high rates of juvenile mortality, including swordfish and billfish.⁶⁹ These impacts could decrease health and availability of commercially and recreationally important fish species affected by the *Deepwater Horizon* spill.



Julie Dermansky

Dead oiled fish on Grand Isle, Louisiana following the *Deepwater Horizon* oil spill. May, 2010.



Oiled crab at Bon Secour National Wildlife Refuge in Alabama following the *Deepwater Horizon* oil spill. June, 2010.

Corals

The impacts on deep-water ecosystems from the *Deepwater Horizon* oil spill are at an unprecedented scale and depth. In 2014, scientists realized they had underestimated the damage from the spill on deep-water corals.^{70,71} Scientists determined the footprint of the oil plume spilling from the broken wellhead by testing seafloor sediments and found that the most severe impacts on the ecosystem took place within a 2 mile radius from the wellhead, or within about a 15-square-mile area.⁷² However, moderate and severe impacts from the oil plume were discovered over a 92-square-mile area, which is an area nearly three times as large as Manhattan.⁷³ The toxicity of oil and the chemical dispersants used to

break up oil damaged deep-water coral reefs,^{74,75} which grow extremely slowly.⁷⁶ More than 528,000 gallons of dispersants were sprayed into the Gulf in the weeks following the oil spill, and scientists are just now beginning to learn how damaging these chemicals are to marine ecosystems.⁷⁷

Invertebrates and Plants

The *Deepwater Horizon* oil spill disrupted marine ecosystems, including the invertebrates and plants that are the foundation of the food web. Oyster catches in Louisiana sharply declined for at least four years following the spill.⁷⁸ Louisiana's public reefs produced between 3 and 7 million pounds of oyster meat per

year before the *Deepwater Horizon* oil spill. In 2010 and 2011, production was only 2 million pounds, and in 2012, it dropped to just 563,100 pounds before increasing to 954,950 pounds in 2013, still well below its historic average.⁷⁹ Since 2010, Mississippi and Alabama have also experienced poor oyster production.⁸⁰

The northwestern Gulf of Mexico is home to the highest levels of red, brown and green seaweed diversity in the area.⁸¹ Many of the seaweed species sampled months after the spill experienced a dramatic die-off, up to more than 160 miles from the site of the blowout.⁸² This loss of seaweed habitat set off a cascade, contributing to a decrease in the abundance and diversity of crabs, shrimp and lobsters.⁸³

Impacts to Human Health, Communities and Economies

Human Health

In the last year, several landmark studies have demonstrated that the Gulf of Mexico oil spill is an ongoing public health disaster. Many residents of the Gulf region, as well as people involved in the cleanup, are still suffering from physical and psychological effects six years later.

After the spill, Gulf residents reported increased symptoms of depression, anxiety, serious mental illness and post-traumatic stress.⁸⁴ When re-evaluated years later, Gulf residents' mental and behavioral health symptoms had not improved.⁸⁵ People with incomes related to industries affected by the spill reported

higher levels of psychological distress,⁸⁶ but even residents of Gulf communities only indirectly affected by the spill reported depression and anxiety.⁸⁷ Some residents reported increased alcohol and drug use.⁸⁸ Similarly, after the *Exxon Valdez* disaster, nearby residents suffered from increased depression, anxiety and post-traumatic stress disorder for nearly a decade, suggesting that it will be years before residents of the Gulf region fully recover.⁸⁹

The 50,000 people involved in the oil spill cleanup have an increased risk of physical and psychological damage. Exposure to oil and/or oil dispersants can cause damage to lung cells, similar to those caused by asthma or chronic obstructive pulmonary disease.⁹⁰ Research shows that female partners of oil spill clean-up workers also experienced depression,

an increase in domestic partner fights, memory loss and lack of concentration.⁹¹

The Gulf Restoration Network, a local organization dedicated to uniting and empowering people to protect and restore the natural resources of the Gulf Region,⁹² has called for policymakers to consider the public health implications of oil spills, including water quality, seafood toxicity and pollution from the Gulf's oil and gas industries.⁹³ One thing is clear based on the most recent science: Gulf residents continue to feel the physical and psychological effects of the oil spill.

Fisheries Economy

The Gulf of Mexico is an enormous source of seafood, with more than 100 commercial fish, crustacean and mollusk species.⁹⁴ Gulf fishermen land 850,000



Oil-covered beach at Bon Secour National Wildlife Refuge in Alabama following the *Deepwater Horizon* oil spill. June, 2010.



Julie Demansky

Oiled waves and sand on Orange Beach, Alabama following the *Deepwater Horizon* oil spill. June, 2010.

tons of fish, worth about \$1.38 billion on average each year.⁹⁵ The most important species by weight are Eastern oysters, brown and white shrimp, blue crab and menhaden, a type of fish that is converted into agricultural feed.⁹⁶

In the weeks and months following the blowout, state and federal officials closed 88,522 square miles, an area larger than the state of Utah,⁹⁷ to commercial fisheries.⁹⁸ These closed areas are the source of more than 20 percent of the total U.S. wild seafood catch.⁹⁹ The impact of the oil spill on fisheries could total \$8.7 billion by 2020, including the loss of 22,000 jobs related to commercial, recreational and mariculture fisheries in the Gulf.¹⁰⁰

The recreational fishing industry was also affected. On average, 3.2 million recreational anglers fish in the Gulf each year, searching for sea trout, kingfish, red drum, red snapper and other species.¹⁰¹ In the months following the oil spill, recreational fishing took an enormous hit. Between May and August 2010, for-hire fishing trips declined in Mississippi (98 percent), Alabama (80 percent), Louisiana (60 percent) and western Florida (33 percent).^{102, 103} Angler trips in personal or rented boats during this time also declined 13-23 percent from the 10-year average in Alabama, Louisiana and Mississippi.^{104, 105, 106} Economists have estimated over 10 million recreational user-days were lost due to the oil spill.¹⁰⁷

Offshore Drilling Accidents Continue to Occur

The federal government reports that in the six years following the *Deepwater Horizon* spill, offshore drilling resulted in at least:

- 1,066 injuries
- 496 fires and explosions
- 22 losses of well control
- 11 spills of at least 2,100 gallons of oil each
- 11 fatalities directly related to offshore drilling.¹⁰⁸

Looking Forward

Despite new scientific studies demonstrating the ongoing negative effects of the 2010 oil spill, the health and safety risks from oil drilling have not been addressed. The *Deepwater Horizon* spill resulted in demands for Congress to modify the Outer Continental Shelf Lands Act and other statutes related to offshore oil and gas activities and response to spills.¹⁰⁹ The National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling recommended that “Congress should review and consider amending where necessary the governing statutes for all agencies involved in offshore activities to be consistent with the responsibilities functionally assigned to those agencies.”¹¹⁰ Recommendations were made to “remove or raise the Oil Pollution Act of 1990’s (OPA) \$75 million limit on a responsible party’s liability for

damages, improve the manner in which funds may be disbursed from the Oil Spill Liability Trust Fund, extend the 30-day deadline for reviewing exploration plans, codify the division of the Department of the Interior’s (DOI) planning, revenue, and enforcement functions, and better fund needed science.”^{111, 112, 113, 114, 115, 116}

Yet Congress enacted only one law, the RESTORE Act, which deals with restoration after the *Deepwater Horizon* spill and the distribution of administrative and civil penalties,¹¹⁷ but does not apply to the safety of offshore drilling.^{118, 119}

There have been some steps in the right direction, including a fundamental restructuring of the government agency involved. Following the spill, the Minerals Management Service (MMS) underwent

a complete reorganization in order to separate its conflicting responsibilities to ensure revenue generation while conducting effective regulatory oversight. In October 2011, MMS was reorganized into three independent agencies with clearly delineated missions: the Bureau of Ocean Energy Management (BOEM), the Bureau of Safety and Environmental Enforcement (BSEE) and the Office of Natural Resources Revenue.

Although BSEE has embraced new approaches to drilling safety, the inspections are still too sparse and the penalties too small. Even with new regulations to increase safety with engineering and technical fixes, it is important to note the safety culture of individual companies and the petroleum industry overall has historically been weak and will take time to change.



Oiled hand from Barataria Bay, Louisiana following the *Deepwater Horizon* oil spill. June, 2010.

Julie Dornansky

In October 2010, BSEE's Drilling Safety Rule went into effect. This rule set heightened standards for the well design, casing and cementing of offshore drilling projects.¹²⁰ In April 2015, DOI released a proposed rule, known as the Well Control Rule, to set tighter requirements for the design and maintenance of blowout preventers and require other measures to improve well safety. After much delay, DOI released a final rule on April 14, 2016. Although the rule is a step in the right direction, it is not sufficient to ensure safe drilling operations or protect our oceans. Specifically, the final rule fails to reduce compliance periods or improve the reliability of blowout preventers by requiring redundant blind shear rams (which can cut the drill pipe and stop the flow of oil).¹²¹

Additionally, in February 2015, BSEE and BOEM proposed a new safety and

spill prevention rule applicable to exploration in the U.S. Arctic Ocean. When finalized, this rule will codify important new requirements, like same-season relief well capability, production of an Integrated Operations Plan, and seasonal restrictions to account for ice cover. While important, the new safety and prevention requirements do not address all of the risks in the Arctic and do not take advantage of other opportunities to improve safety and response.

Finally, despite the reorganization of MMS and creation of BSEE as a separate agency to oversee offshore drilling safety and environmental enforcement, it is still clear that there are problems with the ability of the Bureau to effectively carry out these rules and its other responsibilities. According to a sharply critical report completed by the Government Accountability Office (GAO)

in February 2016, BSEE's ability to carry out investigations, ensure environmental compliance and conduct enforcement remains woefully inadequate.¹²² Although the report is new, GAO's concerns are not: "In February 2011, GAO added Interior's oversight of oil and gas resources to its list of programs at high risk of waste, fraud, abuse and mismanagement or in need of broad reform."¹²³

On April 13, 2016, the day before the release of the final Well Control Rule, the Chemical Safety Board (CSB) released a draft report summarizing its most recent investigation of the *Deepwater Horizon* disaster. The CSB found that six years after the disaster, "[A] culture of minimal regulatory compliance continues to exist in the Gulf of Mexico and risk reduction continues to prove elusive."¹²⁴ In its review of BSEE regulatory actions since the disaster, the CSB found that the agency has failed to hold industry truly accountable for risk, or adequately address the effects of industry and workplace culture on safety. The report concludes that BSEE regulations and actions, including the implementation of the Safety and Environmental Management System, "do not go far enough to ensure effective industry management and control of major hazards or prevent possible future Macondo-type incidents."¹²⁵

Coastal Opposition to Drilling

Coastal communities are expressing their opposition to expanding drilling in the southeastern Atlantic Ocean.

In January 2016, coastal leaders from Delaware to Florida met in Washington, D.C. for Oceana's Coastal Voices Summit to voice their opposition to offshore drilling exploration and development. As of that date, more than 100 East Coast municipalities, 100 members of Congress, 700 state and local elected officials and 1,000 businesses representing tourism, fisheries and a multitude of other interests



Dead dolphin washed up on the beach in Plaquemines Parish, Louisiana following the *Deepwater Horizon* oil spill. August, 2010.

formally opposed offshore oil and gas drilling and/or exploration. In March 2016, the administration responded to this outpouring of opposition by removing the Atlantic lease sale from the draft 2017-2022 plan for offshore oil and gas leasing.

Along the Atlantic coast, nearly 1.4 million jobs and more than \$95 billion in gross domestic product rely on healthy ocean ecosystems, mainly through fishing, tourism and recreation.¹²⁶

The Final Word

Six years after the Deepwater Horizon oil spill, scientists are documenting its continued impacts on marine ecosystems, the economy and human health. It will take many more years for the toll from this oil spill to be fully understood. What we do know – and have demonstrated in this report – is that opening new areas to offshore drilling poses dangerous and unacceptable risks.

Seismic Airgun Blasting in the Atlantic: A Dangerous Precursor to Offshore Drilling

In January 2015, the Obama administration proposed a plan for offshore oil and gas leasing for the 2017-2022 period that would have allowed drilling along the southeastern U.S. coast from Virginia to Georgia, a region that had previously been protected from offshore oil and gas exploration. Although the administration decided in March 2016 to remove the proposed Atlantic lease sale from the plan, the federal government is still reviewing applications for companies to use seismic airguns to search for oil and gas deposits deep below the ocean floor in an area twice the size of California, stretching from Delaware to Florida.¹²⁷

Seismic airgun blasting would pose significant threats to marine life in the Atlantic. Each airgun array contains approximately 12-48 individual airguns.¹²⁸ These seismic airguns fire every 10 to 12 seconds, 24 hours a day,^{129,130} and their explosive sounds are loud enough to significantly disrupt

marine wildlife.¹³¹ Seismic airgun noise can be heard up to 2,500 miles from its source, which is farther than the distance from Washington, D.C. to Las Vegas.¹³²

Seismic airgun noise can interfere with whale foraging and breeding and can interrupt communication between mothers and calves, increasing the risk of calves being separated from their mothers.^{133,134} Low-frequency ship noise can increase stress-related hormone levels in North Atlantic right whales. This suggests that the noise from seismic airguns could lead to chronic stress, which can reduce overall health or reproductive rates in North Atlantic right whales, of which only about 500 remain, as well as for other whale species in the area proposed for seismic surveying.¹³⁵

Seismic airgun noise can also have impacts on fish and mollusks, which could threaten the southeastern Atlantic's vital commercial fishing industry. Now that offshore lease sales in the Atlantic have been removed from the draft plan for 2017-2022, there is little need for seismic airgun data.



Oil-tinged waves on Orange Beach, Alabama following the Deepwater Horizon oil spill. June, 2010.

Recommendations

President Obama should not allow additional leasing, exploration or development in frontier areas.

Prevent additional leasing, exploration or development in frontier areas—such as the Atlantic, Arctic and ultra-deepwater—until and unless companies can show they can operate safely and without harming the health of the ecosystem and a plan is in place to transition to a clean energy economy.

President Obama should not allow offshore drilling in new areas or areas where vulnerable ecosystems will be at risk.

Engineers, technicians and scientists could not stop the oil from spewing from the broken *Deepwater Horizon* wellhead for three months. Other oil spills, such as the 2015 Santa Barbara spill,¹³⁶ suggest that we have not learned the lesson that oil extraction is risky. Since 2010, Congress has yet to address the dangers of offshore drilling in the U.S. Although agency rulemaking and industry initiatives have made some progress in increasing the safety of offshore operations, they fall short of the fundamental reform necessary to justify operations in the Atlantic Ocean or federal waters in the Arctic Ocean.

The federal government should fully implement the well control rule and finalize Arctic-specific regulations.

Once the federal government has completed these efforts, it should undertake comprehensive reform of the regulations governing five-year programs, lease sales, exploration and development.

President Obama should not allow seismic airgun blasting where marine life can be harmed.

The blasts from seismic airguns, which occur every 10 to 12 seconds, 24 hours a day, for weeks or even months, are devastating to marine wildlife, including commercially and recreationally valuable

species of fish.^{137,138,139} The recovery of endangered species and the sustainability of commercial and recreational fisheries is compromised by the search for oil. We should not subject marine environments to undue harm from seismic airgun blasting in areas that are not being considered for drilling.

The United States should transition away from offshore oil drilling and instead invest in cleaner, safer technologies like offshore wind and other renewable energy sources.

In a 2015 report on offshore energy, Oceana found that a modest and gradual development of offshore wind on the East Coast could generate enough power for over 115 million households.¹⁴⁰ We also found that over the next 20 years, offshore wind could create about 91,000 more jobs than offshore drilling, which is about double the job creation potential of offshore drilling in the same area.¹⁴¹

Decision makers, federal and state governments, and the public should continue to monitor and learn from the effects of the *Deepwater Horizon* disaster

so that we can restore losses and prevent future disasters.

Scientists have learned much about the effects of the *Deepwater Horizon* oil spill in the past six years, but our understanding of its impacts is still just beginning to take shape. We are still documenting the effects of the *Exxon Valdez* spill from decades ago. We need continued research and monitoring, as well as population modeling, to fully understand the ecosystems' losses and resilience. In the meantime, the best way to protect our coasts – and the people and wildlife living there – is to prevent disasters such as these before they happen.

Oceana thanks the Obama administration for removing the Atlantic from the 2017-2022 Outer Continental Shelf Oil and Gas Leasing Proposed Program and urges it to remove the Arctic Ocean as well. However, the only long-term solution to prevent the harm caused by offshore oil spills and accidents is to decrease our dependence on fossil fuels and transition to clean, renewable energy sources such as offshore wind power.¹⁴²



Oiled sargassum in the Gulf of Mexico following the *Deepwater Horizon* oil spill. June, 2010.

Georgia Department of Natural Resources

Endnotes

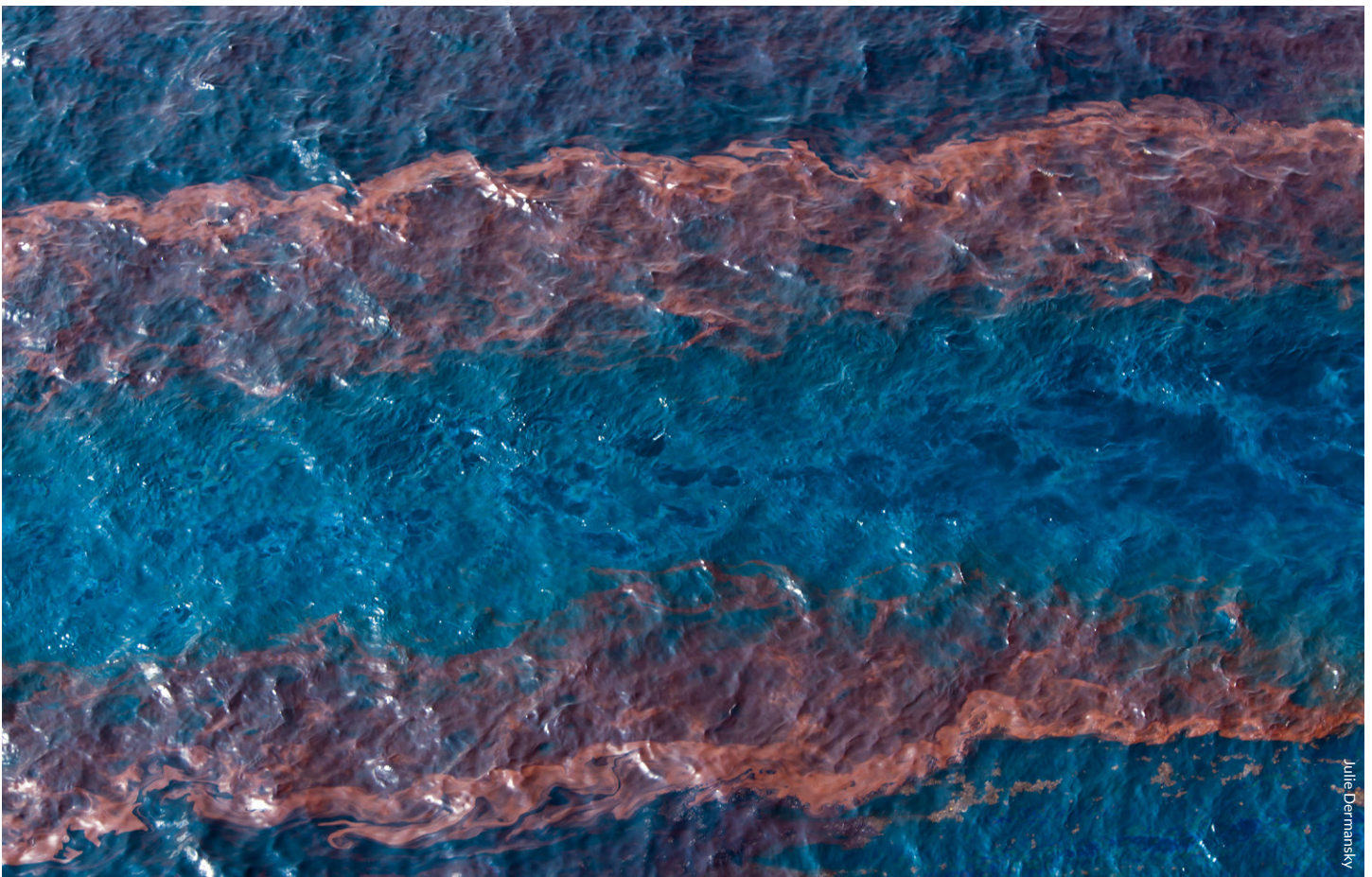
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