

# Even small amounts of oil made birds near Deepwater Horizon sick, researchers say

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Doctoral student Jesse Fallon spent countless hours in the laboratory analyzing blood samples as they were shipped to Blacksburg from the Gulf of Mexico. Credit: Nicole Newman

Photos from the Deepwater Horizon Oil Spill on April 20, 2010 show heartbreaking images of deceased or soon-to-be-deceased sea life—birds, fish, sea turtles, and mammals—cloaked in thick black grime.

However, even small amounts of oil exposure impacted the health of [birds](#) in the Gulf of Mexico, according to a Virginia Tech research team. Their findings were published October 12 in the journal *Environmental Toxicology and Chemistry*.

The team examined samples shipped to them from hundreds of birds—a mix of American oystercatchers, black skimmers, brown pelicans, and great egrets—in the months following the [spill](#). Blood samples taken by first responders showed that individuals exposed to small amounts of oil from the spill suffered from hemolytic anemia—a condition that occurs when toxins enter the blood stream and damage [red blood cells](#) that carry oxygen to tissues. Anemia can affect growth, alter organ function, reduce reproductive success, increase risk of disease, and even cause death in birds.

The research team's findings could not be published until now because they were used in the legal settlement that was finalized last year, in which the oil company BP was ordered to pay state and federal natural resource agencies \$8.8 billion for restoration efforts.

"Our findings suggest that [adverse effects](#) of oil spills on birds are much more widespread than estimates based on avian mortality or severe visible oiling," said co-author William A. Hopkins, a professor of wildlife in the College of Natural Resources and Environment and director of the Global Change Center at Virginia Tech. "Because remarkably small amounts of oil exposure injured birds in the Gulf, our research changes the way we think about ecological damage from [oil spills](#) and influences how we document adverse effects after future

spills."

Hopkins is an expert in wildlife ecotoxicology, studying how environmental stressors impact animals' physiological processes such as reproduction, thermoregulation, and immune function. His past research has examined adverse effects of environmental pollutants on the physiology of diverse wildlife species. His work involves collaboration with state and federal agencies as well as industry, and includes numerous high-profile chemical spills and natural resource damage cases, including the historic Tennessee Valley Authority coal fly ash spill in nearby Tennessee and a massive release of mercury from an industrial site in the Shenandoah Valley.

Jesse Fallon of Morgantown, West Virginia, a doctoral student in Hopkins' lab in the Department of Fish and Wildlife Conservation, was the first author on the paper. Fallon is also a practicing veterinarian who received his DVM from the Virginia-Maryland College of Veterinary Medicine before pursuing his Ph.D. with Hopkins. He determined which physiological parameters would be most valuable to quantify in exposed birds during early development of the project, developed the sampling protocols, and trained teams on proper sample collection and handling. Fallon spent countless hours in the laboratory analyzing blood samples as they were shipped to Blacksburg from the Gulf of Mexico.

"Even birds with relatively limited exposure to oil from the Deepwater Horizon spill sustained damage to circulating red blood cells and had evidence of anemia," Fallon said. "Our results help scientists, industry, and government agencies understand the far-reaching effects of the Deepwater Horizon spill, and will inform future damage assessment efforts."

Provided by Virginia Tech

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