Whales and human-related activities overlap in African waters

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In the waters off the coast of Gabon, a humpback whale lunge-feeds in the near vicinity of an offshore oil platform. In a recently published study in *Conservation Biology*, scientists have quantified the overlap between humpback whales using Africa's coastal waters and several forms of ocean industries and ocean-based pollution, primarily offshore oil platforms, shipping lanes, and potentially harmful toxicants. Credit: T. Collins/Wildlife Conservation Society.

Scientists with the Wildlife Conservation Society, Oregon State University, Stanford University, Columbia University, and the American

Museum of Natural History have found that humpback whales swimming off the coast of western Africa encounter more than warm waters for mating and bearing young; new studies show that the whales share these waters with offshore oil rigs, major shipping routes, and potentially harmful toxicants.

With the aid of satellite tags affixed to more than a dozen whales, the researchers have quantified the amount of overlap between hydrocarbon exploration and extraction, environmental toxicants, shipping lanes, and humpback whales occurring in their nearshore breeding areas. The scientists also identified additional parts of the whales' breeding range and migratory routes to sub-Antarctic feeding grounds.

The study appears in the latest edition of the journal *Conservation Biology*. The authors are: Howard Rosenbaum of the Wildlife Conservation Society and the American Museum of Natural History; Sara Maxwell of Stanford University; Francine Kershaw of Columbia University; and Bruce Mate of Oregon State University.

"Throughout numerous coastal and offshore areas, important whale habitats and migration routes are increasingly overlapping with industrial development, a scenario we have quantified for the first time in the eastern South Atlantic," said Dr. Howard Rosenbaum, Director of WCS's Ocean Giants Program. "Studies such as this one are crucial for identifying important habitats for humpback whales and how to best protect these populations from potential impacts associated with hydrocarbon exploration and production, shipping, and other forms of coastal and offshore activities."

Rosenbaum added: "From understanding which habitats are most important to tracking their migrations, our work provides great insights into the current issues confronting these whales and how to best engage ocean industries to better protect and ensure the recovery of these

leviathans."

A breaching humpback whale in the Gulf of Guinea. Researchers used satellite tags to track the movements of more than a dozen whales as they traveled between breeding areas and distant feeding grounds in sub-Antarctic waters. Credit: T. Collins/Wildlife Conservation Society

Growing to approximately 50 feet in length, humpback whales are characterized by their long pectoral fins, acrobatic behavior, and haunting songs. Like other great whales, the humpback whale was hunted for centuries by commercial whaling fleets, with experts estimating a reduction of possibly 90 percent in its global population size. The International Whaling Commission has protected humpback whales globally from commercial whaling since 1968.

While migration patterns of humpbacks have been the subject of extensive study in other ocean basins and regions, the migratory behaviors of humpbacks along the western African coast in the eastern South Atlantic are poorly described. To better understand the movements of humpback whales in the Gulf of Guinea, the researchers deployed satellite tags on 15 individual animals off the coast of Gabon between August and September of 2002.

"This study demonstrates clearly that all of the countries on the west coast of Africa need to work together on a range-wide humpback whale conservation strategy and consider the possibility of creating a whale sanctuary," said Professor Lee White, CBE, director of Gabon's National Parks Agency. "Gabon supports the concept of a South Atlantic Whale Sanctuary and will continue to work with other nations in the region to this end."

Dr. Bruce Mate, who pioneered the satellite-monitored radio tagging of large whales, said: "This technology allows the science and conservation communities to discover detailed seasonal migration routes, timing and destinations, so we can characterize these important habitats and reduce potential impacts of human activities, even in the harshest possible marine environments."

The major goal of the study was to elucidate the unknown migratory movement of whales from breeding areas off western Africa to areas where the whales likely feed in Antarctic or sub-Antarctic waters. Overall, the tagged whales collectively traveled more than 40,545 kilometers (25,193 miles) with each whale traveling an average of 3,116 kilometers (1,936 miles). Tags transmitted data for up to 104 days, and two whales traveled astonishing long-distance migrations of more than 8,000 kilometers from near the equator to the edge of the sub-Antarctic ice shelf around Bouvet Island.

One surprising discovery contradicted expectations: while several whales predictably remained in the offshore waters of Gabon or traveled south, nearly half of the tagged group (including two females with calves) moved north into previously undocumented breeding grounds. The team also sought to assess overlap between whale movements and the extent of human activities, including oil platforms and shipping lanes.

"Whales make some of the most fascinating migrations of any animals in the world," said Dr. Sara Maxwell, a researcher affiliated with the Stanford Woods Institute for the Environment and a study co-author. "As part of this study, we uncovered previously unknown migration routes of some of the world's largest whales, showing that even today we are still in an age of discovery for these ocean giants."

Overall, the whales spent nearly 76 percent of their time within the Exclusive Economic Zones (defined as 200 nautical miles from the coast) of 13 different African countries, but mostly in the Exclusive Economic Zones (EEZs) of Cameroon, Gabon, Nigeria, and Angola. Humpbacks traveling north from and remaining in the coastal waters of Gabon spent an estimated 41 percent of their time in the presence of oil and gas platforms.

"There are indications that oil production in these regions has and will increase in the coming years, so gaining a better understanding of the movements of whales and quantifying the degree of overlap with human activities will help assess the potential risks to this population, and help us to identify and implement the most effective mitigation strategies and conservation programs," concluded Rosenbaum.

Provided by Wildlife Conservation Society

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