Scientists studying blue whale DNA uncover an epic journey by 'Isabela'

June 11 2015

Isabela's dorsal fin in the waters west of the Galapagos Islands in 1998. Credit: Paula Olson/NOAA

Scientists studying blue whales in the waters of Chile through DNA profiling and photo-identification may have solved the mystery of where these huge animals go to breed, as revealed by a single female blue whale named 'Isabela,' according to a recent study by the Chile's Blue Whale Center/Universidad Austral de Chile, NOAA and the Wildlife Conservation Society.

The researchers have discovered that Isabela—a female animal named after the lead author's daughter and a major Galapagos Island of the same name—has traveled at least once between Chile's Gulf of Corcovado and the equatorial waters of the Galapagos Islands, a location more than 5,000 kilometers away and now thought to be a possible blue whale breeding ground. The journey represents the largest north-south migratory movement ever recorded for a Southern Hemisphere blue whale.

The study titled 'First documented migratory destination for Eastern South Pacific blue whales' appears today in the online version of the journal *Marine Mammal Science*.

'Efforts to protect blue whales and other ocean-going species will always fall short without full knowledge of a species' migratory range. Moreover, with this kind of findings we encourage eastern south Pacific governments to think about the creation of a marine protected areas network for the conservation of this and other migratory species' said lead author Juan Pablo Torres-Florez of the Universidad Austral de Chile and the Blue Whale Center. 'Isabela points us in the right direction for further research.'

Isabela's dorsal fin taken in Chile's Gulf of Corcovado in 2006. Credit: Rodrigo Hucke-Gaete/Blue Whale Center.

'The discovery emphasizes the benefits of collaboration between scientists and research organizations from different countries,' said Paula Olson of Southwest Fisheries Science Center.

'The discovery of Isabela traveling between southern Chile and the waters of Ecuador is important and very timely as we work to promote the recovery of the largest species to ever inhabit the earth,' said Dr. Howard Rosenbaum of WCS's Ocean Giants Program. 'The movement of this one whale provides important information that will enable us to look further at these important areas for blue whales with goal to ensure their long-term protection.'

It is unknown how old Isabela is, or if she has produced any young, but she is at least 82 feet in length and may weigh up to 100 tons.

Seeking to establish links between populations of blue whales in the Gulf of Corcovado and other regions, the researchers examined DNA collected from the skin of blue whales with biopsy darts fired from crossbows across the eastern South Pacific. The team also used data from recorded sightings and photographs in their attempt to connect individual animals to different locations.

Isabela surfacing in the waters of Chile's Gulf of Corcovado. Credit: Rodrigo Hucke-Gaete/Blue Whale Center

The analysis produced a genetic match between a female whale observed and sampled off the coast of southern Chile in the Austral summer of 2006; it turned out the same whale sampled the waters of the Galapagos

eight years earlier by NOAA scientists. The team then found that photographs taken of both whales revealed the same distinctively curved dorsal fin and blotchy blue-gray patterns on the back, confirming that both whales were in fact the same animal.

The authors note that blue whales are frequently observed in equatorial Pacific just west of the Galapagos and that a more detailed study might confirm the location as a wintering and breeding ground for at least some of the blue whales of southern Chile.

Reaching nearly 100 feet in length, the blue whale is thought to be the largest animal that ever existed. Blue whales were nearly hunted to extinction by commercial whaling fleets before receiving international protection in 1966. A blue whale calf can measure between 23 and 27 feet in length at birth and weigh almost 3 metric tons.

More information: First documented migratory destination for eastern South Pacific blue whales, DOI: 10.1111/mms.12239

Provided by Wildlife Conservation Society