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A whale of a discovery in New Zealand

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A whale beached at Port Waikato, New Zealand on 13 January 2011. It is believed to be a gray beaked whale, although DNA is needed to distinguish it from similar species (Image: User: Avenue on Wikipedia Commons)

For 150 years, all that was known of the spade-toothed beaked whale (*Mesoplodon traversii*) was gleaned from two skull fragments and a jaw bone. Then in December 2010, two individuals - a mother and her male calf - washed up on a New Zealand beach. Although initially misidentified as the more common Gray's beaked whale (*M. grayi*), DNA analysis revealed their true identity as the world's rarest and most enigmatic marine mammal.

The two whales live-stranded and subsequently died on Opape Beach, New Zealand, a known hotspot for cetacean strandings. Staff from the New Zealand Department of Conservation arrived at the beach to photograph the animals and collect measurements and tissue samples. These procedures, along with DNA analysis, are done routinely as part of a 20-year program to collect data from beached whales in New Zealand waters.

At first scientists identified the animals as Gray's beaked whales, which are the most commonly beached whales in the region. But DNA analysis later revealed the whales to be spade-toothed beaked whales, a species with no known sightings. The only previously known specimens of the species were a single jawbone with teeth, collected from New Zealand in 1872, and two skulls without jawbones, one collected from New Zealand in the 1950s and one found in Chile in 1986.

The scientists cannot say with certainty why this species has remained so elusive. It may be because the South Pacific Ocean in which they live is so massive (covering around 14% of the Earth's surface) and poorly surveyed. They speculate that spade-toothed whales may spend most of their lives offshore in deep ocean waters, only rarely washing ashore. The South Pacific Ocean contains some of the deepest ocean trenches, and other beaked whale species are exceptionally deep divers, foraging for squid and fish and spending little time at the surface.

Even if the occasional spade-toothed whale washed ashore, it would be very difficult to distinguish from more common whale species without recent advances in DNA sequencing

technology. This discovery highlights the importance of DNA analysis and comprehensive reference collections of animal DNA for the identification of rare and physically similar species.

The scientists who provided the first description of the spade-toothed whale based on the two stranded individuals say it is the least known species of whale and one of the world's rarest living mammals. Their discovery is the first evidence that the spade-toothed whale is still alive and serves as a reminder of how much is still unknown about life in the deep ocean.

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