New Species of Hybrid Sharks Found Near Australia

by CAITLIN E. DEVOR

16 January 2011 – Researchers have discovered a new species of hybrid shark off the east coast of Australia which appears to be a cross between two other shark species common in the area. The discovery challenges several standing scientific shark behavior theories and may indicate that species are changing in response to climate change.

Hybrids and their offspring were found in five different locations along 1,243 miles (2,000 kilometers) of coastline—an unprecedented range—indicating the new species may be better able to tolerate a variety of temperatures than their non-hybrid peers—a valuable trait in a changing global climate.

"Wild hybrids are hard to find, so detecting hybrids and their offspring is extraordinary," said Jennifer Ovenden, a genetics specialist with Queensland Primary Industries and Fisheries and member of the scientific team that discovered the hybrids.

The hybrid sharks are a result of interbreeding between the Australian black tip shark, *Carcharhinus tilstoni*, and the common black tip shark, *C. limbatus*. *C. limbatus* is found in sub-tropical waters around the globe, while *C. tilstoni* is found only around Australia. The two species have overlapping migration ranges along the northern and eastern coasts of Australia, with *C. limbatus* favoring the temperate waters in the southeast, and *C. tilstoni* more common in the north.

Mix and mingle. Scientists have identified a new species of shark which they believe to be a hybrid of two common species near Australia.

Image: "Color line contact in Australia" by color line available under Creative Commons license at http://www.flickr.com/photos/sunrise/4064971/.

Jess Morgan of the University of Queensland and primary author of the report said both species of shark are a common catch for Australian fisheries, which will often sell the meat to the Australian market and export the fins to Asia.

The hybrids were first recognized through an inconsistency in species identification made by two separate groups of researchers working alongside each other with specimens obtained from the fisheries. According to Morgan, the study's original objective had been to monitor the shark population to ensure accurate management of the fisheries. Identification based on DNA sequences isolated from mitochondria, the energy-producing organelle inside all cells, was incongruent with identifications made from morphological measurements of the animals.

A total of 57 hybrid sharks were identified. Genetic analysis revealed that some of those individuals were first generation hybrids while others were a second generation of hybrid, meaning the offspring from *C. tilstoni* and *C. limbatus* matings are not sterile, unlike animals such as mules, which are the offspring of horses and donkeys.

Researchers do not yet know which species the hybrids are mating with. "Most likely the hybrids are back-crossing to the parent species of black tip, but we don't have the [necessary DNA] markers to tell for certain yet," said Morgan.

Since sharks must physically contact each other to mate, hybrid species of sharks are less common than hybrids of other marine animals that mate via spawning, including many fish, where egg and sperm cells are released en-mass into open water. However, discovery of hybrid species of black tip sharks indicates other closely related species of sharks and rays may be hybridizing as well.

Current research projects include studying the fitness of the hybrid sharks and the full extent of the area inhabited by these hybrids. Details regarding the prevalence and fitness of hybrid animals will be relevant to making accurate recommendations to fisheries for responsible population management of marine food resources.

The hybrid sharks were identified by researchers at the University of Queensland and James Cook University's Fishing and Fisheries Research Centre. The article "Detection of interspecies hybridization in Chondrichthyes: hybrids and hybrid offspring between Australian (*Carcharhinus tilstoni*) and common (*C. limbatus*) blacktip shark found in an Australian fishery" can be read online in *Conservation Genetics*. ■

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