

Testing the force of a shark's bite

July 31 2007

Scientists are building a three dimensional computer model to test the 'bite force' of the Great White shark using data from a shark caught in beach nets off Australia's NSW Central Coast.

The 2.4 metre long Great White shark was stored at the NSW Department of Primary Industries' Cronulla Fisheries Research Centre of Excellence until researchers were ready to analyse its jaw and facial muscles last week.

A collaborative project involving NSW DPI, the Universities of NSW, Newcastle and Tampa, Florida, and led by Dr Stephen Wroe aims to reveal the cranial mechanics, bite force and feeding behaviour in the Great White Shark using high resolution 3-D computer simulations.

Last week Dr Wroe and his team dissected the five year old shark and measured the structure of its jaw and the muscles used in biting.

Underwater experiments with live sharks fail to adequately indicate the force of the Great White's bite, and the sharks have been known to bite through materials that require much greater force than that so far observed in situ.

According to NSW DPI shark scientist, Denis Reid, sharks generally test bite before applying a full-force bite.

"The test bite has much less force", he said.

The approach being taken in this project involves determining the maximum forces that Great Whites can exert using advanced mathematical and computing methods that were originally developed for the calculation of stresses in structures such as bridges.

The collaborating investigator in the project for NSW DPI, Dr Michael Lowry, said one of the project aims is to identify the shark species responsible for damage to submarine cables and towed arrays.

"Measurement of bite forces will help in testing and developing materials suitable for cabling and sensory equipment used in the marine environment."

US shark biologist Dan Huber is working with the Australian team to learn whether sharks such as the Great White are responsible for damaging submarine cables and communication systems on US Navy submarines.

Source: New South Wales Department of Primary Industries

Citation: Testing the force of a shark's bite (2007, July 31) retrieved 24 April 2024 from <https://phys.org/news/2007-07-shark.html>

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