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Oceanographic Systems Laboratory, WHOI:

In 2013, WHOI engineers Amy Kukulya and Roger Stokey from the Oceanographic Systems Lab took a specially equipped REMUS "SharkCam" underwater vehicle to Guadalupe Island in Mexico to film great white sharks in the wild. The captured more than they bargained for.

See more video footage from REMUS SharkCam on the Discovery Channel's Shark Week website (where it is called "Jaws Strikes Back Cam").

Learn more about the 2013 trip to Guadalupe Island on "Jaws Strikes Back," on the Discovery Channel, Monday, August 11, 2014, at 9:00 p.m. EDT.

REMUS SharkCam is a specially outfitted REMUS-100 autonomous underwater vehicle (AUV) equipped with video cameras and navigational and scientific instrumentation that enable it to locate, track, and film up close a tagged marine animal, such as a North Atlantic white shark (great white). The vehicle is pre-programmed to home in on a signal from a transponder beacon attached to the animal at depths up to 100 meters (330 feet) and in a variety of patterns and configurations.

REMUS SharkCam uses an omni-directional ultra-short baseline (USBL) navigation system to determine the range, bearing, and depth of a tagged animal. It then closes on the animal to a pre-determined stand-off distance and position (left, right, above, or below) and to film it swimming and interacting with its environment with minimal interference with the animal's behavior. Another system on the vehicle permits it to communicate with scientists on the surface every 10 to 20 seconds and to receive commands from the surface to change speed, depth, or other mission parameters as necessary.

REMUS SharkCam has been tested on white sharks and basking sharks near Cape Cod and on white sharks near Guadalupe Island on the West Coast of Mexico. Plans are currently underway to use the system to follow other large marine animals such as sea turtles. Visual and numerical data from the vehicle promise to open up new ways of studying the behavior of marine animals in the wild interacting with their natural habitat.

Specifications

Length: 2.03m (80 in.)

Diameter: 19cm (7.5 in.)

Weight: 45kg (100 lbs.)

Maximum depth: 100m (328 ft.)

Maximum speed: 5 knots

Maximum range: 36 nautical miles (at 4.5 knots)

Mission duration: Up to 8 hours

Instrumentation:

- 6 REMUS GoPro video cameras providing 360° field-of-view
- Omni-directional USBL navigation system
- Acoustic communication system (ACOMMS), modem, and transducer
- Acoustic Doppler Current Profiler (ADCP)
- GPS/Wi-fi/Iridium antenna
- Conductivity and temperature probe

Enlarge Image

SharkCam provides a 360-degree field of view for filming sharks and other marine animals in the wild. (Big Wave Productions)

Related Multimedia

REMUS SharkCam deployed off Chatham, Mass., in 2012

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The Ocean's Hidden Predators: Revealed

5 Questions about Sharks
5 Questions about Sharks

Related Links

» SharkCam Interactive Tour

» WHOI engineers Amy Kukulya and Roger Stokey discuss REMUS SharkCam

» The Ocean's Hidden Predators: Revealed
Marine biologist Greg Skomal and engineer Amy Kukulya discuss the importance of sharks in the ecosystem, the threats they are under, and how new technology--the SharkCam, is helping researchers learn more about these top predators.

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