University of Massachusett Amherst

News & Media Relations

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Digital Life Team Led by UMass Amherst Biologist Duncan Irschick Creates Great Hammerhead 3D Model

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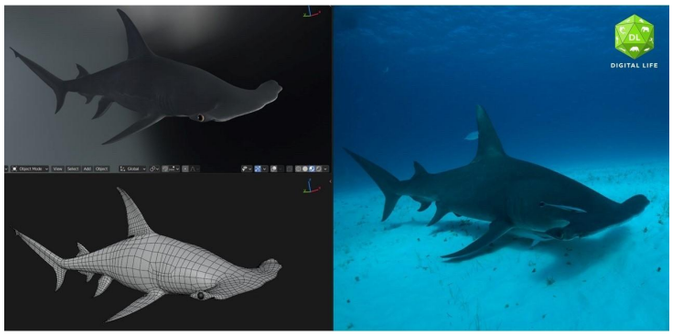
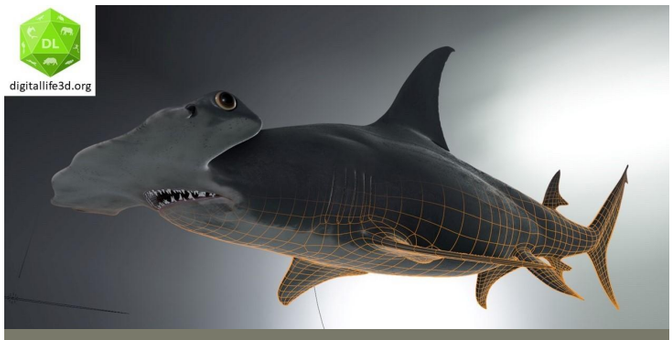
The Digital Life Project directed by UMass Amherst Biology Professor Duncan Irschick has partnered with the marine science nonprofit ANGARI Foundation and underwater camera pioneer Casey Sapp for a research expedition to Bimini, The Bahamas, to create an accurate 3D model of a great hammerhead shark to share with scientists, educators and storytellers.





The Digital Life team directed by Duncan Irschick worked with computer graphic artist Jeremy Bot to accurately recreate the distinctive body shape of a hammerhead shark using the open-source software over several months. It is now the only accurate 3D digital specimen of a great hammerhead shark for use in 3D computational modeling, education and shark body condition and health studies. Credits: Shark models courtesy of the Digital Life Project. Live shark courtesy of Annabelle Brooks, Earthwatch.

The object of their attention is no ordinary hammerhead, however. It's Nemesis, one of the many endangered great hammerhead sharks that spends her winters in Bimini. In the last decade, a sandy bank on the west side of the island has become a popular dive spot for people who want to experience these large apex predators up close.

The foundation's research vessel ANGARI spent several days on site where a multi-camera underwater system was set up, shark bait distributed and divers captured video and photos. Several hammerheads visited the site during the week, but Nemesis stood out as the obvious choice for modeling, the foundation points out.

Bimini Scuba Center shark handler Sean Williams says, "Nemesis has been a frequent visitor for several years and is known by hundreds of divers worldwide, in thousands of photographs and even tattooed onto at least one customer's arm. She is often the first to arrive and always stays until the end of the dives, whereas many other hammerheads come and go."

Irschick's Digital Life Project is a non-profit on campus that creates digital 3D models of living organisms using its trademarked Beastcam technology to support wildlife conservation, science and education. Its photographers, engineers, modelers and scientists regularly partner with scientists, zoos, and NGOs to ethically gain access to a wide array of animals for 3D scanning, including endangered species.

Dean Tricia Serio of the UMass Amherst College of Natural Sciences says the college is keenly interested in supporting and promoting such research projects. "The 3D model project and Duncan Irschick's nonprofit initiative Digital Life were created to support wildlife conservation efforts as well as education efforts about a variety of wildlife, many of which are endangered or threatened. This is a unique tool that increases accessibility

for people around the world to interact with animals up close and in a way that they normally would not get a chance to do."

Hammerheads are heavily fished for their large fins, which are extremely valuable in Asian markets, ANGARI points out. Overfishing has decreased their numbers significantly worldwide, and hammerhead species are listed as endangered globally by the International Union for Conservation of Nature.

Irschick says, "Now, it is more important than ever to support wildlife conservation and preserve the heritage of life on Earth. By creating high quality 3D models of living organisms, we can share animals and their stories with the public."

The Digital Life team worked with computer graphic artist Jeremy Bot, who pioneered software techniques to recreate the distinctive body shape of Nemesis in an accurate manner using the open-source software Blender, a process that took several months. The result was theonly accurate 3D modelof a great hammerhead shark which will be a valuable digital specimen for use in 3D computational modelling approaches, studies of shark body condition, health and education.

The Florida-based ANGARI Foundation is dedicated to creating a global community that is interested, knowledgeable and invested in marine and environmental sciences by directly supporting research initiatives that foster a greater trust and dialogue between scientists and the public.