Leatherback Sea Turtle Mating Filmed for First Time

John Pickrel
for National Geographic News
February 12, 2004

This story is one of a series looking at National Geographic Crittercam research. Crittercam is a research instrument worn by wild animals and equipped with a video camera and other information-gathering equipment. (Get the basics on underwater and terrestrial Crittercams.) For more on this story, tune in to the Crittercam: Leatherback Sea Turtles *episode on the National Geographic Channel in the U.S. Watch video previews online.*

In 1989 some 1,400 leatherback sea turtles *(Dermochelys coriacea)* heaved themselves ashore to nest at Playa Grande beach in Costa Rica's Las Baulas National Marine Park. By 1995 the number emerging from the surf to deposit their eggs was less than half this number. Last year fewer than 50 females waded on to the beach. Those shocking figures reflect a worldwide trend—frequently snagged in fishing nets, leatherbacks may have declined by as much as 95 percent in the last two decades or so.

Nesting is one of the few times that female leatherbacks, which often grow to the size of an office desk, ever leave the ocean. These nesting bouts allow researchers a rare opportunity to gauge their health and population numbers. Over the last few years, scientists working with a National Geographic Crittercam team in Costa Rica have attached underwater Crittercams to leatherbacks, documenting the world's largest living reptile in its seldom seen underwater environment. The resulting footage has shed light on rarely seen mating behavior, captured on film perhaps for the first time.

Rare Opportunity

"Most of what we know about leatherbacks is from the beaches," said Richard Reina, star scientist in the *Crittercam: Leatherback Sea Turtles* documentary and one of several principal investigators who have worked to save Costa Rica's nesting turtles since 1988. "Now, Crittercam has given us a great perspective on what leatherbacks do in the undersea environment."

Leatherbacks migrate across entire oceans and dive as deep as whales, making them nearly impossible to find and study. Once hatched, females return to their hatching beach every few years to deposit eggs. Males never come ashore again. Attaching an unobtrusive camera to a landed female offered an opportunity difficult for researchers to ignore.

Reina, a conservation lecturer at Monash University in Melbourne, Australia, is part of the team that monitors and electronically tags Las Baulas's leatherbacks. The coastal park (four miles, or six kilometers, long) is one of around seven major nesting sites left worldwide, and the largest in the Pacific Ocean. Reina and his colleagues assess the status of the population and protect it from poachers and predators. The researchers' painstaking work has helped alert the world to the species's dramatic decline.

The work at Las Baulas is critical to the survival of the Pacific leatherback … with every nest receiving maximum protection," said Todd Steiner, director of the Sea Turtle Restoration Project, based in Forest Knolls, California. "Beach protection efforts are essential to slowing the slide towards extinction," agreed sea turtle expert Larry Crowder at Duke University in Raleigh, North Carolina. "The level of protection in Costa Rica is as good as it gets … and [is] the ideal situation we'd like to see at all nesting beaches," he said.

Lacking Romance

Taking their beachbound work one step further, Reina, the Crittercam team, and *Crittercam* television series host Mike Heithaus, have attached Crittercams to nesting females over several years. These Crittercams also collect information on dive duration, dive depth, and water temperature. The devices, attached by suction cup to the turtle's leathery shell, automatically detach after six hours and float to the surface for retrieval. A radio transmitter allows the team to locate the floating prize.

Crittercam footage revealed that females conserve energy by resting 40 to 70 meters (130 to 230 feet) deep on the seafloor. Nesting is exhausting, and females return to the beach up to seven times (at ten-day intervals) to lay eggs each season. Crittercam's most exciting footage revealed aggressive attempts by males to mate with females returning to the open ocean. "This indicated that mating activity is occurring near the nesting beaches and not prior to the lengthy migration," Reina said. This was a revelation for the team.

Also surprising was the force involved in mating. Footage shows that males repeatedly strike and bite females and prevent them from returning to the surface to breathe. If immediate steps aren't taken by the international community to save the leatherback, this could be one of the last opportunities to collect this kind of data at Las Baulas.

Grim Picture

From the 1970s to the early 1990s, organized nest poaching was the greatest threat facing Costa Rican nesting turtles—their eggs are still a delicacy in some parts. "For maybe 15 or 20 years nearly all the eggs were stolen," Reina said. "These were sold either for cooking purposes or to be drunk with a shot of alcohol."

To put a stop to this practice, the Las Baulas conservation project was initiated in 1988 by Frank Paladino of Indiana University-Purdue University in Fort Wayne and James Spotila of Drexel University, Pennsylvania. The national park was created in response to the data on declines they presented to the Costa Rican government. Now park guards and conservation workers patrol nightly during the October-to-February nesting season.

Though poaching is no longer a severe threat in Costa Rica, sea turtles in the Pacific and elsewhere face a new menace. "There's a totally unsustainable rate of adult mortality," Reina said. "We need to change our fishing practices immediately so that turtles are either not caught by nets or longlines, or don't drown if they are caught."

One study in the November 2003 edition of the science journal *Marine Ecology Progress Series* tracked tagged sea turtles by satellite. The report estimated that up to one in three turtles are unintentionally killed at the hands of fishermen each year. Another study suggested that longline and gill net fisheries killed as many as 1,500 leatherbacks each year in the Pacific during the 1990s. Longlines from a single boat can trail over 40 miles or more (65 kilometers) and are rigged with thousands of hooks that ensnare and drown turtles alongside tuna and swordfish.

"Tens of thousands of sea turtles … are caught and killed by industrial longliners … [these] place two to ten billion hooks a year into our oceans," said the Sea Turtle Restoration Project's Todd Steiner. "This technology is slaughtering our ocean wildlife, including sharks, whales, dolphins, and sea birds by the millions."

Researchers are now in a race against time to collect data they can use to make what Reina calls "more informed management choices" and help save the leatherback sea turtle. Almost nothing is known about leatherbacks' growth from hatchlings to adults, for example, and researchers have little idea where leatherbacks go and what they do when away from the nesting beaches, according to Reina.

Crittercam may have helped shed some light on mating practices, Reina added, "but there are many fundamental aspects of their biology that we still don't understand."

Read this article on National Geographic website.
(http://news.nationalgeographic.com/news/2004/02/0212_040212_leatherbackcam.html)