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## Taking part in an ancient ritual

**Giant leatherback sea turtles have laid their eggs on beaches since the age of the dinosaurs. Assisting with a research project in Costa Rica may help them avoid a similar fate.**

By SARAH MILLER-DAVENPORT  
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[Photos courtesy of Earthwatch]

Researchers at Playa Grande in Costa Rica collect data on a nesting leatherback turtle. The eggs are gathered and moved if the turtle lays her eggs below the high tide line, where they may become inundated with water.

Until the moon

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appears, Playa Grande is pitch-black at night. The hotels and restaurants in nearby Tamarindo provide the only illumination on this near-pristine beach on Costa Rica's Nicoya Peninsula, while red lights from fishing boats hold sentry on the stark horizon.

The darkness makes it hard to see the mass emerging from the ocean. But then a flash of lightning brings it into form. A giant leatherback turtle lumbering her way through the waves and wet sand - this is why I came to Costa Rica.

Sea turtles come on land to lay their eggs. The leatherback is the largest, at up to 8 feet long and 1,500 pounds, and most mobile sea turtle species. They nest on beaches all over the world, from Latin America to New Zealand. It is one of the most ancient animals on earth. With an ancestry dating back more than 100-million years, it coexisted with tyrannosaurs. But its numbers are dwindling with alarming speed, and the leatherback is in danger of suffering the dinosaurs' fate.

For 10 days I joined a biology research team studying the nesting habits of the leatherback at Playa Grande. My trip was arranged by Earthwatch, an organization that recruits volunteers to assist field scientists in research projects around the world. The Costa Rican Sea Turtles expedition is one



Leatherback turtles are the largest sea turtles, up to 8 feet long. Since 1982, the turtle's numbers have fallen from an estimated 115,000 breeding females to 3,000.



Researchers measure a nesting leatherback turtle.

of Earthwatch's most sought-after and longest-running trips.

Blue Magruder, Earthwatch's public affairs director, attributes the popularity in part to the fact that volunteers get to work with the turtles so closely. "Volunteers get to learn so many different aspects of turtle biology, and of course, have the chance to help in the effort to save such a charismatic creature," she said.

The project, headed by professors from both Drexel and Purdue universities, is aided by Costa Rica's extensive national park system - almost one quarter of the country's total land area is excluded from development. Much of Playa Grande is protected as part of Parques Nacional Marinas Las Baulas ("baulas" is Spanish for leatherback), which was established with the help of the research team.

Guards walk up and down the beach looking for egg poachers, and only a limited number of tourists, accompanied by official guides, are allowed on the beach at night.

### **The numbers are grim**

The future of the endangered leatherback looks bleak. When the researchers began studying leatherbacks at Playa Grande in the early 1980s, they would spot around 200 turtles a night during the nesting season. Now they are lucky if they see 15.

Scientists estimate that the leatherback population in the Pacific Ocean has decreased by 90 percent in the past two decades. The turtle's numbers have fallen from an estimated 115,000 breeding females to 3,000 since 1982, and Conservation International has reported that leatherbacks will become extinct within a decade if nothing is done to reverse the trend.

Long-line fishing and egg poaching are the two main culprits responsible for this dramatic decline. According to Bryan Wallace, co-principal investigator for the project at Playa Grande, fishing boats that unintentionally pick up turtles or other marine life - known as by-catch - are threatening to deplete the oceans of whole species. Besides the leatherback, other sea turtle species, as well as sharks, seals and sea lions, are frequent casualties of fishermen's work.

"This top-down fishing is having a tremendous impact on global marine food chains," Wallace said.

Our nightly patrols began shortly before high tide - prime turtle nesting time - and would end in the early hours of the morning. The area where we were staying was a short drive to the beach along pitted dirt roads framed by lush overhanging trees. The potholes appeared as deep fissures in front of us as the van's headlights plunged into the dark.

The beach met us with a rush of balmy wind. Hours after sundown, temperatures at Playa Grande could still be in the 80s, the air thick with salt and humidity. The heat, coupled with the rhythmic sound of the breakers, can instantly induce a profound sense of lazy well-being. This is

not exactly good form for an amateur biologist. More than once I fell asleep stretched out on the sand during patrol breaks.

We split into three groups of two to cover the nearly 2.5-mile beach, the biologists using walkie-talkies to stay in touch. Inevitably, the turtles would all choose to nest within the boundaries of one section, overburdening the group in charge of it, and leaving the others with little to do. Since I was one of only two Earthwatch volunteers (usually there are eight), this meant that we had our work cut out for us.

### **Acting as turtle midwives**

The telltale sign of a leatherback's arrival on the beach is a pair of deep, dark flipper tracks, often easier to spot than the turtle. A sighting sets in motion a well-rehearsed routine. As the researchers and park guards launch into a flurry of communication over the walkie-talkies to ensure that the turtle is attended to, the guides jog back to their base at the north end of the beach to collect their charges. Within minutes, a chain of silhouetted tourists begins trudging to the nest site.

After making her way over the berm, the shelf of dry sand that marks the high tide line, the turtle begins creating a body pit, a process that takes about 15 minutes. The turtle grunts and breathes heavily, tossing sand into the air with her front flippers. Once firmly entrenched in the sand, she can start in on her nest.

We approached the turtles stealthily, trying to disturb them as little as possible so they would not get scared and retreat to the ocean. As we got closer, our flashlights, dimmed by a layer of red cellophane, made out a soft ridged carapace covered in barnacles. We could see the turtle's wizened head moving up and down in slow motion as its back flippers plowed into the sand.

Our most important task was to scan the turtles for identification tags - tiny chips implanted in their shoulders that allow the researchers to keep track of how often the turtles come on shore to nest. We also measured the width and length of the turtles' shells, which are usually between 4 and 8 feet long.

Earlier on in the night, we would often find ourselves performing before a group of tourists. The park limits their number to 120 a night, and with only 30 allowed per turtle, they sometimes have to wait hours for a sighting. As they maneuver to secure a good view, the guides narrate the nesting process, occasionally interrupting themselves to issue a reprimand for using a camera flash or touching a flipper.

The volunteers' job is complicated if the turtle digs her nest below the high tide line, which means that her eggs risk being inundated with water. In such cases, the eggs are moved to a nursery at the north end of the beach, where they are buried in pits the same depth and width as real nests.

Collecting the eggs is a humbling and weirdly intimate experience: lying belly-down with your face in the turtle's behind, holding a plastic bag

against the walls of the nest with one hand and fending off the turtle's flipper with the other, and clenching a flashlight in your teeth so you can see what's happening. All this while sand fleas gnaw your elbows raw and tourists crowd around your legs.

But just as you begin to wonder why you've gotten yourself into this awkward position, the turtle's tail will do a little wag, you feel the flipper contract, and four or five perfect white orbs, covered in goo and smelling like ocean, drop into the bag. The turtle will lay anywhere between 40 and 100 eggs in all.

The first leatherback I worked with had ugly scars around the base of one of her front flippers. One of the park employees told us she had been found on shore a few days earlier wrapped in a fishing net, barely able to move on the sand. Park guards had cut the net off her, named her Anita, and sent her back to the ocean. It was a good sign that she had come back to the beach with a clutch of eggs to deposit. These creatures are nothing if not resilient. They have work to do, eggs to lay, and the moon to draw them to land.

Shortly before the end of my volunteer stint, I was able to see a video of a leatherback in the open ocean. It swam gracefully and with ease; its flippers, which on land are such a hindrance, appeared like wings in the water.

On my last day at Playa Grande, I did an early-morning patrol of the beach to count the track marks from the night before. In the clarity of the dawn light, it looked like a fleet of tractors had stormed the shore.

I stopped to take pictures of a particularly striking set of flipper tracks. It is common for turtles to become confused after laying their eggs, and this one had made several frantic loops in the sand in her attempt to return to the water. I wondered how far out she was by now, swimming contentedly in the blue Pacific and feasting on jellyfish. She would need time to store up her energy and make more eggs. I hoped that she would come back to perform her arduous rite again.

-- Sarah Miller-Davenport is a freelance writer living in Brooklyn, N.Y.

#### **HOW TO TAKE PART**

Earthwatch refers to the fee it charges volunteers as "share of cost," which varies from project to project and covers lodging, meals, ground transport and excursions. About 60 percent of the volunteers' contributions go directly to support research and are tax-deductible. The price of the Costa Rican Sea Turtles expedition, \$2,095, includes 10 nights' accommodation, lunch and dinner provided by a local restaurant, and various leisure activities. It does not cover travel costs. Accommodations at Playa Grande are Spartan, with bunk beds and shared rooms. The project runs throughout the nesting season, from October through mid February. December is the best time to go, as the eggs will have begun to hatch. For information, visit [www.earthwatch.org](http://www.earthwatch.org)