

Exhibit R-055

The Leatherback Trust,
“Las Baulas Conservation Project: Turtle Biology,”
available at
http://www.leatherback.org/turtle_biology.html

July 9, 2014



The Leatherback Trust

"Their future is in our hands"

5736 Kinlock Place, Fort Wayne, IN 46835



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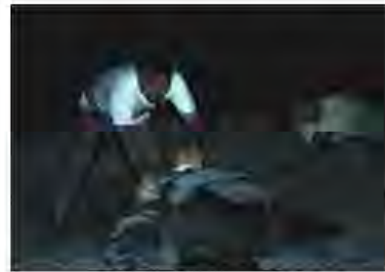
Nightly beach census work is the major part of the conservation project. Scientists and volunteers patrol the beach looking for leatherback turtles in order to protect, identify and count them. The individual turtles who come onto the beach to nest are identified with small electronic PIT (Passive Integrated Transponder) tags which are injected into the muscle of the shoulder. Each turtle receives one of these the first time she nests and it identifies her with a unique number. The PIT tag remains in place for the lifetime of the turtle and is easily detected with a small handheld scanner. In this way we can identify the turtles who nest each night, find out how many times each turtle nests during the season and how many days apart each nesting event is.

Data Collection

The data collected permit scientists to make calculations on the population size in areas where the turtles are not observed but the nests can be seen. While the teams are on the beach, nests are protected from poachers and predators to maximize the number of hatchlings produced. The teams also measure turtles, count eggs, measure the temperature of nests to determine hatchling sex, and record the level of human activity on the beach.

To see the day-by-day record of turtles counted on the beach at Playa Grande, go to [FIELD REPORT](#)

Measuring the turtle's shell length



Measuring nest temperature information using a thermal probe placed into the nest when the turtles lays the eggs



Leatherback sea turtles are the largest living marine reptiles and live almost their entire lives at sea. The only times that they are on land is when the female turtles lay eggs, and when hatchlings emerge from the nest and make their way to ocean. We estimate that they are sexually mature at about 10 years or age and may live to be 40 years old. Studying their biology is very difficult due to the nature of their intermittent visits to land, juvenile and male turtles are almost never seen at all. Consequently,

most studies and protection efforts have focused on nesting females and hatchlings.

Leatherback turtles are different from other sea turtles in that they have a soft, cartilaginous shell rather than a hard bony one. It is from the appearance of the shell that the "Leatherback" name comes. They have a more streamlined shape and larger flippers than other sea turtles, reflecting their more migratory and pelagic lifestyle.

Nesting Development and Hatching The Leatherback at Sea

Nesting

When the female turtles come ashore to nest, they choose beaches which have particular types of conditions. They are generally free from rocks and have a gentle slope. The turtle emerges from the ocean at night, usually close to the high tide and crawls up the beach until she is above the high tide mark. There she selects a site free from wood, vegetation and other debris and digs a pit for her body. She does this by throwing sand with powerful strokes of her front flippers until her body sits in the hole created.



Crawling up the beach is a slow and tiring process.



The body pit is dug with the front flippers.

Then with her rear flippers she delicately excavates a chamber about 70 cm deep for the eggs. The sand must be of the right texture so that the nest cavity doesn't collapse while it is being dug. She alternates with her rear flippers to reach into the hole and scoop out the sand which is then flicked to the side. When the hole has been dug as deep as the flippers will reach, she starts to lay.



Carefully reaching into the hole to scoop out more sand



The eggs are leathery and bounce as they fall in.



During the period when the eggs are being laid, she becomes very unresponsive to her environment and this is typically when biological information is collected. About 70 large, fertile eggs and 40 small infertile eggs are laid, the function of the smaller eggs is not clear. The turtle then gently packs sand into the hole with her rear flippers and disguises the location of the nest by throwing more sand with her front flippers, possibly to hide the location of the nest from predators of the eggs.



The sand is gently pressed back over the eggs



A lot of sand is thrown when covering the nest

With the nesting process is complete, she returns to the ocean about 2 hours after she first emerged and takes no further part in care of the eggs or hatchlings. Female turtles nest on average 7 times in the season, at intervals of about 9 days.
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Development and Hatching

The incubation period is around 60 days, and the temperature of the surrounding sand determines the sex of the hatchlings during a critical phase of embryonic development. At Playa Grande, temperatures above 29.5 degrees C produce female hatchlings, while below 29.5 C the hatchlings are male. The hatchlings break out of their eggshells under the sand and begin to dig their way to the surface, to emerge in groups at night. The crawl to the water is a dangerous time for the hatchlings, but it may also play an important role in allowing them to "fix" the location of where they are so the females can return there to nest as adults. We have very little information on what happens to the hatchlings after they enter the ocean, but very few survive to become adults, perhaps only a few in a thousand.



As the hatchlings reach the surface they slowly break through the sand and emerge in a group.



At the surface they struggle to pull themselves free so they can head for the water.



Although they come out in a group, the hatchlings don't stay together as they crawl to the water's edge.

The Leatherback at Sea

We know very little about the life of leatherback turtles after they leave the beach as hatchlings. They appear to migrate long distances between feeding and nesting areas. Their main diet is jellyfish and leatherbacks have special spiny structures in the oesophagus to trap them there. They have remarkable diving abilities and are able to dive below 1400 metres and to remain submerged for nearly an hour. Useful information is being gained by satellite tracking of adults to try and determine their migration routes. Leatherbacks are extremely powerful swimmers, with all the work done by the front flippers while the rear flippers aid in steering.



This turtle had a satellite tracker attached to it for a short time.

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