

# *Modern Mission To Save An Ancient Mariner*

*In the U.S. Virgin Islands, scientists  
have taken on an enormous task: studying the  
elusive, gigantic leatherback turtle*

By Mark Wexler

***M**IDNIGHT on a deserted beach  
in St. Croix. In the light of a  
full moon, the hulking shadow  
of a female leatherback turtle  
emerges from the sea. At the edge of  
the tide, she pauses and heaves a sigh.  
Then she begins flailing her flippers to  
move her huge body across the beach.  
Slowly, methodically, she edges for-*



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## Giving Credit Where It's Due

UNLESS YOU HAVE actually spent time in the field with scientists, it's hard to comprehend how strenuous wildlife studies can be. Every day in remote places throughout the country, men and women push themselves to the limit to gather data about wild animals. Consider the wildlife researchers currently studying endangered leatherback sea turtles on St. Croix.

No movie director could visualize a prettier setting than this study site in the U.S. Virgin Islands: every night, the scientists and their helpers work under starlit skies on a long, undeveloped tropical beach. But as the article beginning on the next page points out, the research team must continuously traverse the length of that beach for ten hours, from sundown to sunrise, looking for nesting turtles.

From March until August, they never take a night off, even in torrential downpours. And when they find the animals, their work really begins. Needless to say, they deserve much credit for their efforts.

This issue also contains articles about two other groups of dedicated people: the U.S. Forest Service law enforcement officers who spend countless hours tracking down criminals who defile the nation's woodlands (see page 12), and the citizen activists who work far beyond the call of duty for wildlife or the environment (see page 30). Our hats are off to all of you!

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**Back:** In his backyard in northern Virginia, Robert C. Simpson photographed a singing yellow-breasted chat, a member of the wood warbler family. Simpson used a Minolta X-700 camera, a Minolta 300mm zoom lens and Kodachrome 64 film.

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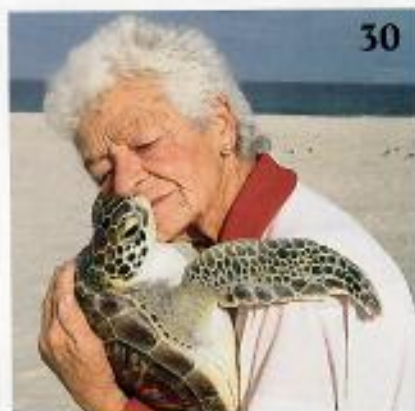
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*Photographs by Thomas A. Wiewandt*

Everything some bromeliads need to survive is blowing in the wind



ward. This is her night; nothing short of death will prevent her from completing the age-old task of perpetuating her species.

FOR MILLIONS of years, the leatherback sea turtle has been a survivor, returning annually to beaches in the Caribbean and elsewhere to lay its eggs under moonlit skies. It owes much of its evolutionary longevity to its size. Weighing as much as 1,500 pounds and measuring nearly 6 feet long, leatherbacks are among the largest living reptiles on Earth; they are safe from all ocean predators except the occasional shark or killer whale.

Leatherbacks can also range farther north—to the coast of Newfoundland—and swim greater distances than any of their oceanic relatives. They can dive deeper—to depths of 4,000 feet—than any other air-breathing animals. And remarkably, they can find their way through thousands of miles of water to nest on the same beach where they hatched many years before.

**"We can't afford to take a night off. We might miss a chance to study a turtle."**

Yet today, for all their power and navigational abilities, leatherback turtles are endangered creatures. "They are victims of a flaw in their evolution," says Ralf Boulon, endangered species coordinator for the U.S. Virgin Islands Division of Fish and Wildlife. "Like other sea turtles, they must leave the water to nest. And that makes them—and their eggs—vulnerable to people."

Indeed, because of poaching and habitat loss, the leatherbacks' numbers have plummeted in some areas in recent years. Currently, according to Florida Audubon Society biologist Peter Pritchard, a leading turtle expert, there are about 136,000 of the animals worldwide. But nearly half of them nest in concentrated areas along the Pacific Coast of Mexico, where they are increasingly losing beach sites to developers. Meanwhile, in the Caribbean, many leatherback nesting populations continue to decline. "The question is," says Boulon, "what can we do to help change the situation?"

In fact, Boulon already is doing something. For the past seven years, he has been coordinator of the most intensive leatherback turtle study ever undertaken. Conducted at Sandy Point, a mile-and-a-half-long peninsula in the southwest corner of St. Croix, the study is focusing on the largest aggregation of nesting female leatherbacks in U.S. territory.



Every year, from mid-March to early August, anywhere from 15 to 50 turtles come ashore under the cover of darkness to lay their eggs, some nesting five to ten times over the course of the season. And every year since 1982, under contract with Virgin Islands wildlife authorities, a pair of scientists assisted by teams of Earthwatch volunteers have been there to study and safeguard the animals.

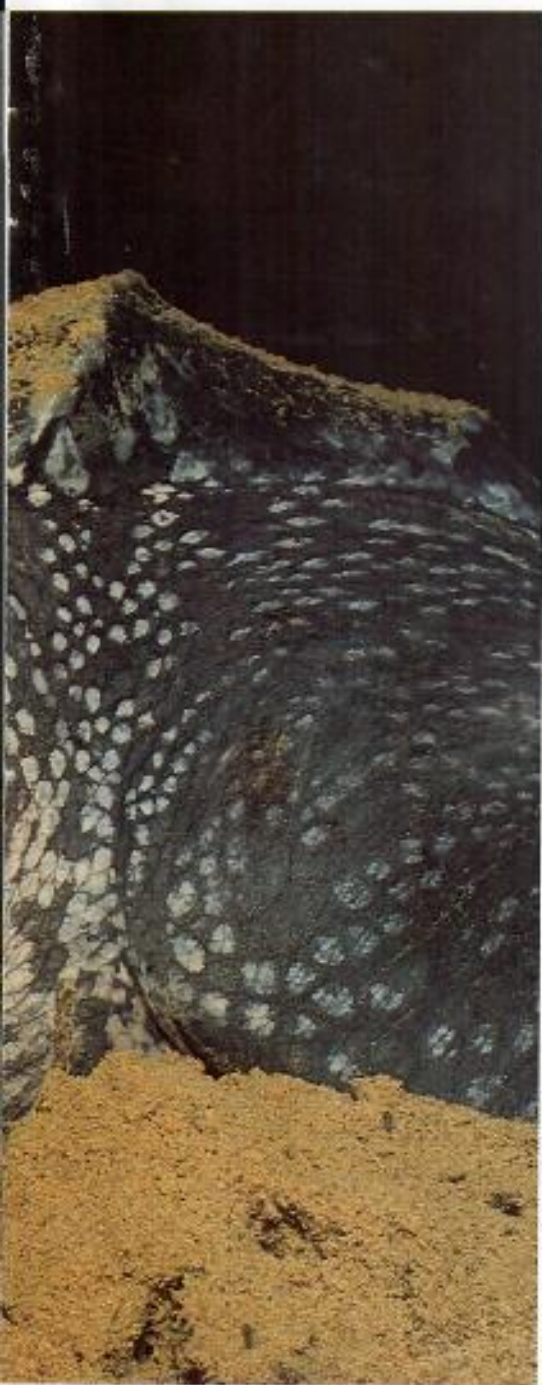
"Some people want to know how we can justify putting so much time and

money into studying only a few dozen leatherbacks," says New York Zoological Society researcher Robert Brandner, who, along with his wife, biologist Susan Basford, is conducting the Sandy Point study with Boulon. "But the fact is that because the St. Croix leatherback population is relatively small, it enables us to collect detailed data on individual turtles—data that would be impossible to gather if there were too many animals to deal with."

Without such detailed data, says Peter

Shedding tears to keep sand out of her eyes, a female leatherback turtle carves out a cavity on the beach, using her rear flippers (left). The giant reptile must leave the sea to nest, burying 100 or so eggs at a time on shore.

Earthwatch volunteers collect eggs and data on a turtle as she nests in an erosion zone on the island of St. Croix. The eggs are then transplanted to a safer location. Leatherbacks seem to be undeterred by such research activity.



Of those seven, the leatherback has remained the most elusive to scientists. "Compared to other sea turtles, we know very little about them," says Susan Basford. "One reason is that, unlike green turtles, it is almost impossible to study leatherbacks in captivity. They just can't survive. Thus, we still don't know such basic facts as when they mate, or how long it takes them to reach maturity."

Researchers do know, however, that the leatherback is the only sea turtle capable of surviving in the cold North Atlantic, where many of the animals live during winter. Unlike the hard, bony plates that form the carapaces of ridleys, loggerheads, hawksbills and green turtles, the leatherback has no hard shell; rather, it has tough, leathery skin on its back. And the animal's underside is covered with soft, smooth skin.

"It's no tougher than human skin. It's very non-reptilian," says Scott Eckert, a University of Georgia zoologist who conducted the Sandy Point study for four years with his biologist-wife, Karen, before Basford and Brandner took over in 1986. Combined with a hydrodynamic shape, says Eckert, "the smooth skin makes for perfect streamlining. Leatherbacks are designed for swimming."

During their migrations, the turtles

### Federation Fights For Endangered Species



*THE leatherback sea turtle is one of some 400 species of endangered or threatened U.S. animals and plants currently protected by provisions of the federal Endangered Species Act. Now, however, the law itself is in trouble.*

*Congress allowed the Act to expire in 1985, and has since failed repeatedly to reauthorize it. As a result, many of the country's endangered species programs and recovery efforts are now being maintained at only a minimum level.*

*"When you can't get authorization for the law, you can't get increased funding just to keep up with inflation," says Scott Feierabend, director of the National Wildlife Federation's Fisheries and Wildlife Division.*

*Recently, the Federation staff was instrumental in convincing members of the House of Representatives to pass a much-needed, stronger version of the 14-year-old law. "Now," says Feierabend, "the ball is in the Senate's court. If we lose this authorization, we lose a number of strengthening amendments. It's time for the Senate to act."*

Pritchard, "we can't find answers to puzzles that must be solved if we are going to effectively protect large leatherback populations in places like Mexico, French Guiana and Malaysia. That's why the St. Croix project is so important."

Long before the first dinosaurs appeared on Earth, numerous kinds of turtles already roamed the planet. At one time, possibly dozens of species of the creatures existed in the ocean; today, only seven are officially recognized.

travel great distances. One tagged leatherback, notes Pritchard, migrated more than 3,600 miles, from Surinam to Nova Scotia. The animals probably swim north in search of their primary food source: jellyfish, such as the huge Arctic *Cyanea*, which can measure nearly 10 feet across. Unfortunately, because of human carelessness, this diet preference has a drawback: in recent years, dozens of leatherbacks have died after eating discarded plastic bags that resemble jellyfish in the water.

Biologists do not know if leatherbacks mate in cold northern areas or in tropical waters, but they do know that females carry the male's sperm in internal chambers until they are ready to nest. Usually, a female will nest every other year.

After dragging her enormous body up the beach, the animal carves out a nest in

the sand and deposits about 100 billiard ball-sized eggs. Most mature females nest several times during a summer, and for good reason. Only about one in a thousand eggs will produce a hatchling that survives to adulthood.

Three years ago, the Eckerts temporarily attached depth recorders

to six female leatherbacks to find out where the animals go during the ten-day period between each attempt at nesting. All of the turtles, the scientists learned, dove repeatedly day and night. One dive, recalls Scott Eckert, "went off the scale." He estimates that the turtle went down about 4,000 feet—which would make it the deepest dive ever recorded for a marine vertebrate.

"We aren't sure if they're diving for deepwater jellyfish, to find colder water or to avoid predators," says Eckert. Such information, however, helps explain why leatherbacks do not have a rigid breastbone or plastron like other sea turtles. The enormous pressure experienced in such dives would crush a lung filled with air, as well as any bone around it.

The researchers believe that leatherbacks, like sperm whales and other deep-diving vertebrates, take little air into their lungs when they go down. Instead, they store oxygen in their muscles and tissues, and let their chests collapse.

Because leatherbacks do not have breastbones, their lungs bear the brunt of their weight when they are ashore, causing the animals to gasp as they maneuver over the sand. Nevertheless, on land, the turtles



**"Nobody thought about protecting turtles. It was the custom on St. Croix to collect the eggs."**

face a far greater threat than exhaustion; throughout most of the leatherbacks' range, poaching is a serious problem.

A decade ago, 32 countries, including the United States, signed an agreement—the CITES treaty—that prohibited the trade of any products made from sea turtles. Unfortunately, the ban did little to stop a thriving, international black market in turtle shells, hides, meat and eggs.

Though leatherbacks have no decorative shells to pillage and their meat is oily, their eggs are coveted for food and as aphrodisiacs. In some places, a poacher might receive as much as a half-dollar for each egg he collects. "Poaching was widespread for years on St. Croix," says Boulon. "Every nest at Sandy Point was being robbed."

The situation began to change in 1974,

when a local agent for the Virgin Islands Bureau of Environmental Enforcement, Otto Tranberg, began patrolling Sandy Point during his spare time at night. In those days, he says, "Nobody thought about protecting turtles. It was the custom on St. Croix to collect the eggs."

Though Tranberg was able to reduce egg theft, his work often was negated by an ineffective legal system. "I spent three years tracking a man who I knew was poaching," he says. "After I finally caught him in the act and arrested him, the judge only gave him two years probation."

While Tranberg was confronting poachers, local wildlife officials were becoming increasingly concerned about another threat: developers were making plans to build on Sandy Point, the largest unspoiled



After about two months of incubation, the three-inch hatchlings emerge from their nest on Sandy Point (left) and scurry to the water. Only one in 1,000 leatherback eggs will produce a turtle that survives to adulthood, 6,000 times its original size. Leaning down, researcher Susan Basford describes turtle biology to local schoolchildren on St. Croix (below), as part of the project's education program.



beach in the Virgin Islands. In 1981, with funds from the U.S. Fish and Wildlife Service's Endangered Species Program, they initiated a study to determine how critical the area is to leatherbacks. Eventually, Scott and Karen Eckert were contracted to do the job.

"One of the things we were told when we first arrived in St. Croix," says Karen, "is that the local people wouldn't accept us or the project. They were accustomed to going to the beach and digging up a turtle nest to get a meal."

The researchers soon discovered, however, that most island residents took pride in "their" turtles. "The people, especially the kids, were eager to learn about local wildlife," says Scott.

The Eckerts began visiting island

schools to give turtle presentations. Apparently, their efforts paid off. "During one of the early years," says Scott, "we received a call from the St. Croix police commissioner, who said he had arrested some turtle poachers after a woman tipped him off. Her son, who attended one of our presentations, had seen the poachers at work. That kind of tip, and the fact that the police responded to it, would have been unheard of a few years earlier."

Today, Basford and Brandner continue to conduct school programs and poaching is virtually nonexistent at Sandy Point, which is now protected as part of the U.S. National Wildlife Refuge System. "This is not the place to begin a poaching career," says Brandner, "There's too many of us on the beach at night."

Since 1982, the researchers have been assisted by dozens of teams of volunteers from Earthwatch, the Boston-based conservation group that helps support research by sending people into the field with scientists. "They've not only provided money," says Boulon, "but more importantly, they've supplied volunteers who are willing to work hard."

Every year, about 70 people pay some \$1,200 each for the right to spend ten days on St. Croix, walking the beach from dusk to dawn with the scientists. "On the few nights when the humidity is intense and the bugs are biting like crazy, you wonder if you can keep going," says Brandner. "Then you see a leatherback coming out of the surf and it's all worth it."

Between March and August, Basford

**A**fter an arduous hour ashore at Sandy Point, a female leatherback returns to sea at dawn. Scientists are not sure how a turtle can find its way through thousands of miles of water to nest on the beach where it hatched.

and Brandner log more than 1,500 miles on the beach. "We can't afford to take a night off," says Basford. "We might miss a chance to study a turtle."

Every leatherback that comes ashore must be measured and tagged, and if it nests in an erosion zone, its eggs must be relocated. Two months later, the 3-inch hatchlings emerge and scurry to the water. Every year since 1981, between 2,000 and 9,000 young turtles have hatched successfully at Sandy Point. The researchers do

not know exactly where the creatures go. None will be seen again until they are 6,000 times their original size.

"Initially, when we first took over the project, we really wondered what we had gotten ourselves into," says Basford. "We weren't pre-

pared for how strenuous this job can be." It wasn't long, however, before the couple had a change of heart.

"It happened on a night when we were in between Earthwatch crews, while the two of us were patrolling separate beaches alone," says Brandner. "I received a call from Susan on my walkie-talkie. 'Better get over here,' she said. 'I've got a turtle on the beach.'"

While en route, Brandner received a second call. "Better hurry up. I've got two turtles now," yelled Basford.

Soon, the scientists were on the ground, each behind a turtle, catching eggs for transplanting as the animals released them. "We both had flashlights in our mouths, and suddenly we looked at each other and started laughing," says Brandner. "Without saying a word, we both knew that, yes, we could handle this job. No question about it."

Now, as the researchers patrol the beach at Sandy Point, another question still lingers: can they learn enough about the leatherback's biology and behavior to help ensure a healthy future for one of the largest living reptiles on Earth? ■

*Managing Editor Mark Wexler visited with scientists on St. Croix during last year's turtle-nesting season.*

