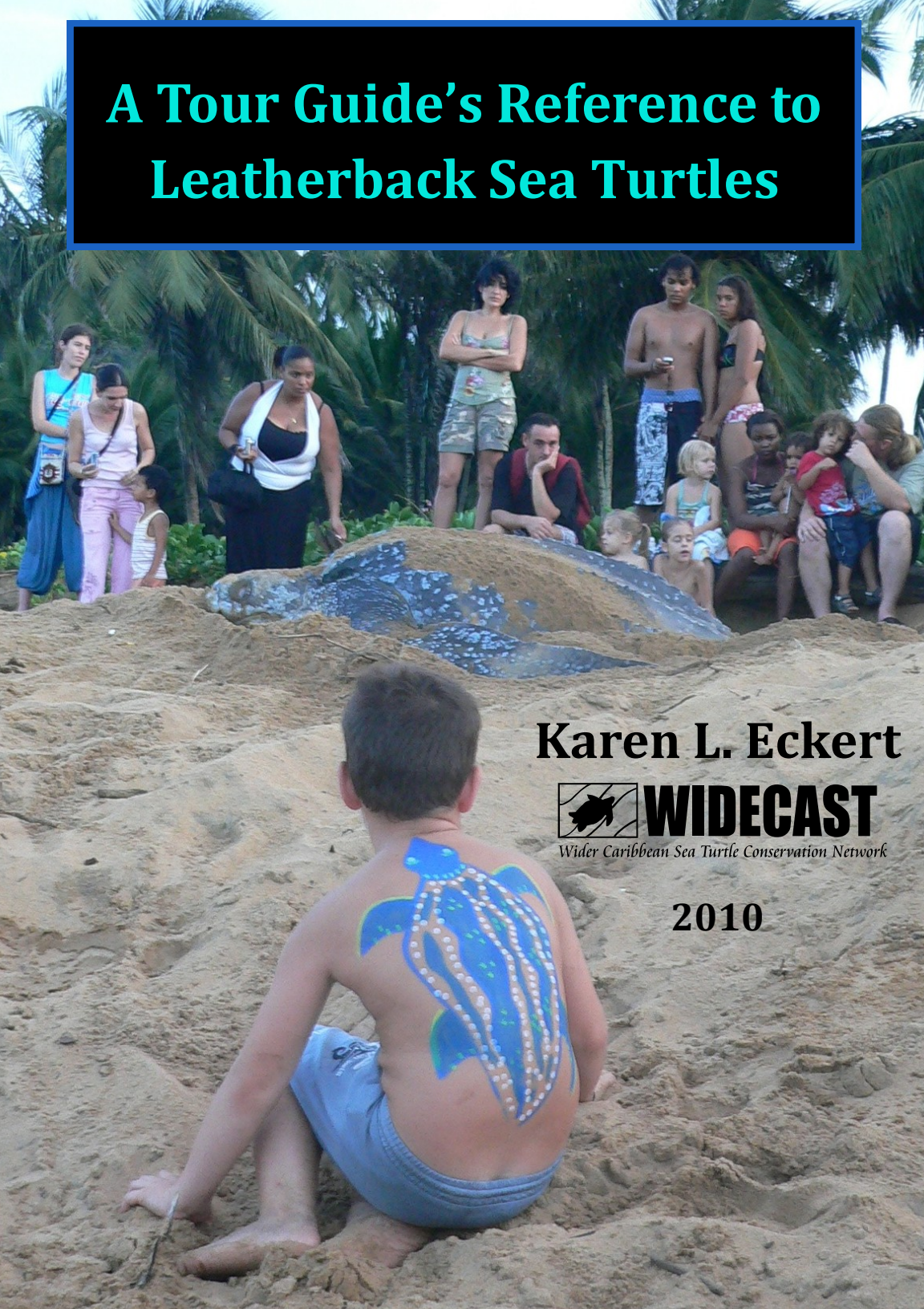
A Tour Guide's Reference to Leatherback Sea Turtles



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WIDECAST
Wider Caribbean Sea Turtle Conservation Network

2010

For bibliographic purposes, this document should be cited as:

Eckert, Karen L. 2010. A Tour Guide's Reference to Leatherback Sea Turtles. Wider Caribbean Sea Turtle Conservation Network (WIDECAST) Technical Report No. 13. Ballwin, Missouri. 27 pp.

ISSN: 1930-3025

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A Tour Guide's Reference to Leatherback Sea Turtles

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2010

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PREFACE

The **Wider Caribbean Sea Turtle Conservation Network** (WIDECAST), with Country Coordinators in more than 40 Caribbean nations and territories, offers a way for scientists, conservationists, natural resource users and managers, educators, policy-makers, industry groups, and other stakeholders to work together to develop a unified management framework, and to promote a region-wide capacity to design and implement science-based sea turtle conservation programs.

As a Partner Organization of the UNEP Caribbean Environment Programme and its Regional Programme for Specially Protected Areas and Wildlife (SPAW), WIDECAST is designed to address research and management priorities at national and regional levels, both for sea turtles and for their habitats. We focus on bringing the best available science to bear on contemporary management and conservation issues, empowering stakeholders to make effective use of that science, and providing an operational mechanism for co-operation among nations.

Network participants are committed to developing a collective capacity to sustainably manage shared sea turtle populations. In some cases, management plans are embracing the non-consumptive use of sea turtles through the development of "Turtle Watch Tours." At these sites, community-based groups receive training in small business skills, tourism and guest relations, marketing and management, group development and governance, and so on.

A successful Tour Guide knows the community, the animal, and the ecosystem well – and enjoys sharing his or her knowledge with visitors. The purpose of this book is to provide a user-friendly reference to aid in answering the wide range of questions that a guide is likely to be asked while in the field.

Dr. Karen Eckert
WIDECAST Executive Director
http://www.widecast.org/

THANK YOU

For **photographs** provided, I am very grateful to Rowan Byrne, Emanuel Dobran, Emma Doyle, Scott Eckert, Guillaume Feuillet, Jacques Fretey, KWATA (French Guiana), Loggerhead MarineLife Center (USA), Kim Maison, Alicia Marin, Projeto TAMAR (Brazil), David Southall, Seth Stapleton, Turtugaruba Foundation (Aruba), and YWF-Kido Foundation (Grenada).

For **peer-review** of the text, I am very grateful to Jessica Berkel (Sint Eustatius), Didiher Chacón (Costa Rica), Kester Charles (Grenada), Carlos Diez (Puerto Rico), Emma Doyle (Venezuela), Marianne Fish (WWF-LA/C), Blanca González (México), Dennis Sammy (Trinidad), and Richard & Edith van der Wal (Aruba).

The following **publications** inspired some of the questions asked and answered:

- Eng-Heng, C. & L. H. Chark. 1989. The Leatherback Turtle: A Malaysian Heritage. Tropical Press Sdn Bhd, Kuala Lumpur, Malaysia. 49 pp.
- Gibbons, W. & J. Greene. 2009. Turtles: The Animal Answer Guide. Johns Hopkins University Press, Baltimore. 163 pp.
- Gulko, D. & K. L. Eckert. 2004. Sea Turtles: An Ecological Guide. Mutual Publishing, Honolulu. 121 pp.
- Horrocks, J. A. & J. Baulu. 1986. The Marine Turtles of Barbados. Letchworth Press, Barbados. 30 pp.
- SOS Tobago: Frequently Asked Questions. http://www.sos-tobago.org/FAQ.html
- Adaptation to Climate Change for Marine Turtles. http://www.panda.org/lac/marineturtles/act

I am also grateful to Brendan Hurley (Conservation International) and Scott Eckert (WIDECAST) for **maps** on pages 6 and 15, respectively. The Columbus Zoological Park Association (USA), Diana Gardener and Judson Parsons (USA), Turtle Village Trust (Trinidad), and Nature Seekers (Trinidad) provided **financial support**.

GENERAL QUESTIONS

Q: WHAT IS A "TURTLE", EXACTLY?

A: Turtles are among the most recognizable groups of animals on earth – they all have a shell (more properly known as a "carapace"), four legs, and a tail, and they all lack teeth and lay shelled eggs, a combination of traits that separates them from all other kinds of animals.

Q: DO ALL TURTLES HAVE A SHELL?

A: Yes. A turtle cannot live without its shell. The backbone and ribs are embedded in the shell, so that the shell is essential for supporting and protecting the internal organs of the body.

Q: HOW MANY TURTLE SPECIES ARE THERE?

A: Scientists recognize about 320 different kinds (called "species") of turtle. However, most of these are not *sea turtles*. There are only seven (7) species of sea turtle, and six (6) of them live in the Caribbean Sea (the 7th species lives only in Australia).

Q: WHAT IS THE DIFFERENCE BETWEEN A "SEA" TURTLE AND A "REGULAR" TURTLE?

A: Sea turtles are ocean-adapted, which means that they are shaped for life in the sea: their "legs" are broadened into flippers to power them through the water, and their shells are reduced in weight and profile, meaning that they have lost the high, domed shell of the tortoise in favour of a lighter, more streamlined bone structure.

Q: ARE ALL TURTLES "REPTILES"?

A: Yes. All turtles, including sea turtles, are classified as reptiles. All reptiles have skin that is covered with scales to protect their bodies and reduce water loss. All reptiles breathe air through their lungs, like humans. All reptiles are "cold-blooded" (the more accurate term is "ectothermic"), meaning that the environment is the main source of heat for the body. Finally, all reptiles fertilize their eggs internally by mating between a male and a female.

GENERAL QUESTIONS

Q: IF REPTILES BREATHE AIR THROUGH LUNGS, HOW CAN SEA TURTLES LIVE UNDERWATER?

A: All sea turtles must come to the surface at regular intervals to breathe. They cannot breathe underwater, and this is why they often drown when caught in a fishing trawl or other type of net.

Q: ARE THERE OTHER MARINE REPTILES?

A: Yes, sea snakes are entirely marine and there is one species of marine iguana (a lizard) – but neither sea snakes nor marine iguanas live in the Caribbean Sea. In addition, alligators and crocodiles are good swimmers and sometimes enter the sea to catch their food or travel from place to place, generally near the shore.

Q: HAVE MARINE REPTILES BEEN ON EARTH FOR A LONG TIME?

A: Definitely! A great number of fantastic marine reptiles lived among the Dinosaurs, and even before. According to the fossil record, sea turtles have been swimming the world's oceans for more than 100 million years.

Q: CAN SEA TURTLES PULL THEIR HEAD AND FLIPPERS INTO THEIR SHELL WHEN SCARED?

A: No. Sea turtles have reduced shells (compared to land turtles) and very large chest muscles to power their swimming. This combination means there is no room inside the shell for the head and flippers. A sea turtle generally hides itself (for example, it may take shelter in a coral reef) or dives as deeply as it can to avoid a predator at sea. Leatherbacks cannot easily hide, but they are superb divers.

Q: HOW OLD ARE SEA TURTLES?

A: A sea turtle has approximately the same life span as a human – perhaps 50 or more years. But sea turtles mature very slowly. Depending on the species, a female will not lay eggs for the first time until she is 12 to 40 (or more) years old.

LEATHERBACK TURTLES: BASIC FACTS

Q: DO LEATHERBACKS HAVE OTHER NAMES?

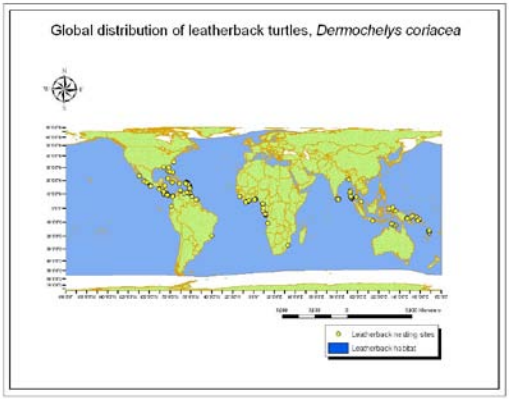
A: Yes! Scientists often use "*Dermochelys coriacea*" which refers to the leathery, scaleless skin of the adult. "Leatherback" is the most common name, but leathery turtle, trunk turtle, trunkback, coffinback, and caldong are also used. (*Related note:* In Spanish, the most common names are *tinglada*, *canal*, *cardon*, *siete filos*, *chalupa*, *baula, laúd*, and *tortuga sin concha*; and, in French, *tortue luth*.)

Q: ARE LEATHERBACKS LIKE OTHER TURTLES?

A: In many ways leatherbacks are similar to other sea turtles. They are skilled swimmers, they mature slowly and live for many decades, they travel long distances between feeding and nesting grounds, they lay eggs on dry land, breathe air, etc. But leatherbacks "super size" everything! They are larger (and lay larger eggs), swim faster, dive deeper, migrate farther, and tolerate colder temperatures than any other sea turtle.

Q: WHERE DO LEATHERBACKS LIVE?

A: Leatherbacks live in every ocean. They are found farther north (and farther south) than any other reptile. The map shows their entire range (blue), including major nesting grounds (yellow dots).



Q: WILL I SEE A LEATHERBACK WHEN I'M SNORKELING?

A: Probably not. Leatherbacks are easily cut and bruised. They usually avoid coastal reef and rock and shallow water in general, unless they are swimming to and from the nesting beach.

Q: DO LEATHERBACKS HAVE A BRAIN?

A: Yes, the brain is about the size of a human finger and is located beneath the "pink spot" visible on top of the turtle's head.

LEATHERBACK TURTLES: BASIC FACTS

Q: HOW LONG DO LEATHERBACKS LIVE?

A: Leatherbacks are 25 to 30 years old when they lay eggs for the first time. Some tagged females have returned to their nesting beaches for more than 20 years. Very few leatherbacks reach adulthood, but those that do may live to be 50 years old or more.

Q: HOW LARGE DO LEATHERBACKS GET?

A: Adult females nesting in the Caribbean Sea measure, on average, 150-160 cm (60-63 inches) in shell length and weigh 250 to nearly 600 kg (550-1,300 lb).

Q: ARE MALES LARGER THAN FEMALES?

A: Males are rarely seen, so it is difficult to answer this question. The largest leatherback on record is an adult male (drowned in a fishing net off Wales, U.K. in 1989) that weighed 916 kg (about 2,000 lb).

Q: DO LEATHERBACKS HAVE A SENSE OF SMELL?

A: All sea turtles can detect and respond to chemical cues in the water. How well leatherbacks smell (particularly on land) is an unanswered question.

Q: DO LEATHERBACKS HEAR?

A: Leatherback hearing has not been measured, but, based on studies in other sea turtles, they probably hear best in the range of 10 to 1600 Hz. They definitely hear human voices and the sound of the surf.

Q: DO THEY COMMUNICATE WITH SOUND?

A: Probably not. Adult females "sigh", grunt, and belch during nesting, but these noises may simply result from sudden expulsions of air from the lungs during strenuous activity on the beach.

Q: DO LEATHERBACKS SEE COLOR?

A: Yes — blue and green best; red perhaps not al all.

SWIM, DIVE, EAT!

Q: HOW FAST DO LEATHERBACKS SWIM?

A: Adults swim 0.6 to 0.8 meters per second, or about 45 to 65 km (28 to 40 miles) per day.

Q: HOW DEEP DO LEATHERBACKS DIVE?

A: Diving is important to leatherbacks – they dive for their food, and they dive to avoid predators. Adult females are known to reach depths of more than 1,200 meters (more than 4,000 feet!) in the Caribbean Sea, and they can stay underwater for an hour or more – but the average time spent underwater (before coming to the surface to breathe) is usually 5 to 15 minutes.

Q: WHAT DO LEATHERBACKS EAT?

A: Leatherbacks eat jellyfish and other soft-bodied marine animals, like ctenophores (comb jellies) and tunicates (salps). Leatherbacks spend most of their time in northern waters where jellyfish grow large — some have tentacles more than 200 feet long!

Q: DO LEATHERBACKS HAVE TEETH?

A: No. But notches in their upper jaw give the appearance of having "fangs". The notches are sharp and easily slice through jellyfish. Soft spines line the inside of the mouth, throat, and even farther into the digestive system (see photo insert); these help guide jellyfish into the stomach.

Q: ARE LEATHERBACKS STUNG BY JELLYFISH?

A: We do not know the exact answer to this question, but there is no evidence that the turtles are harmed by the jellyfish they eat.

Q: DO OTHER ANIMALS EAT LEATHERBACKS?

A: Because leatherbacks are so large, they have very few natural predators. In the Caribbean Sea, leatherbacks have been found in the stomachs of Great White sharks and Orca ("Killer") whales. In contrast, the much smaller hatchlings are eaten by many different kinds of predator crabs, fish, and birds.

COMING ASHORE

Q: WHY DO LEATHERBACKS COME ASHORE?

A: Sea turtles must lay their eggs on dry land or the baby turtles inside the eggs will drown.

Q: DO MALES COME ASHORE, TOO?

A: No, only females come ashore. Mating occurs at sea, and then the female returns to the coastline where she was born to lay her eggs. (*Related fact:* Mating occurs before the first clutch of eggs is laid. The female stores the sperm needed to fertilize the several hundred eggs she will lay that year.)

Q: WHY DOES THE FEMALE NEST AT NIGHT?

A: To avoid over-heating in the sun and reduce risks associated with predators hunting during the day.

Q: HOW DO FEMALES KNOW WHERE TO GO?

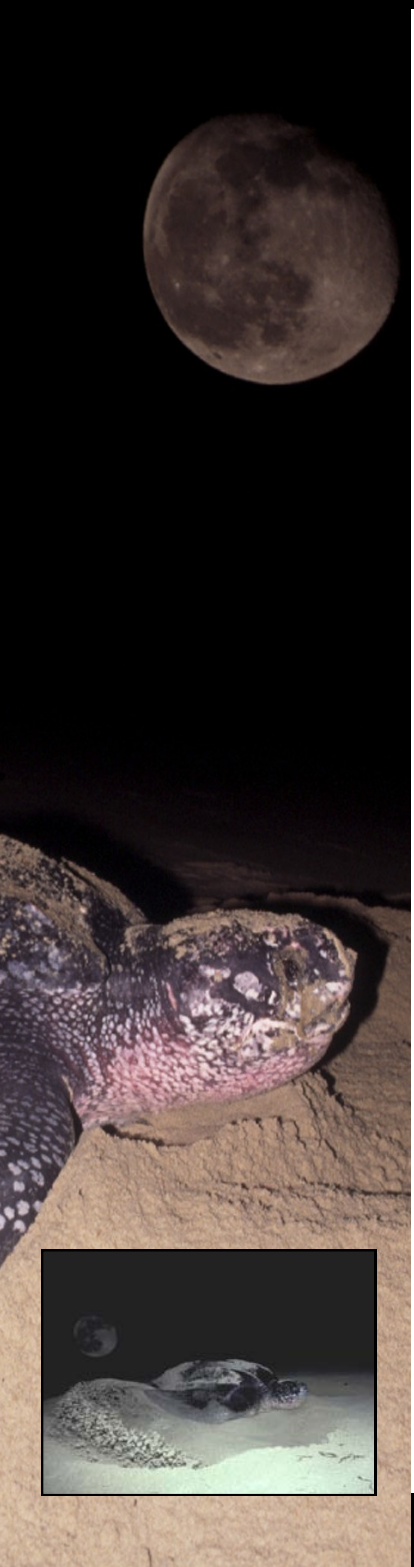
A: As adults, female sea turtles typically return to the beach (or coastline) where they were born. This instinct (scientists call it "natal homing") is passed from mother to daughter through genetic material called mtDNA. The exact mechanism used by the adult to locate the beach is less understood, but likely involves a magnetic compass sense.

Q: HOW MANY TIMES WILL THE FEMALE COME TO THE NESTING BEACH?

A: Leatherbacks typically lay 5 or 6 clutches of eggs (one every 9-10 days) during an annual nesting season which, in the Caribbean region, takes place between March and August (peak: May-June). A female does not nest every year – she will return to the nesting beach every 2 to 5 years. (*Related fact:* We have lots of information about nesting cycles because females are often tagged during nesting, meaning that individuals can be recognized later.)

Q: WHY DO TURTLES CRY DURING NESTING?

A: Sea turtles "cry" all the time, even when they are swimming! It is how the body releases excess salt.



CHOOSING A NEST SITE

Q: WHAT IS THE FEMALE LOOKING FOR?

A: We do not know for sure, but temperature, moisture, high water (tide) markings, beach slope, sand grain size, dune patterns and vegetation all seem to play a role in her choice. The nest must be placed in deep, clean sand, safe from flooding and wash-out.

Q: HOW DOES SHE PREPARE HER NEST?

A: She sweeps away the dry surface sand with her powerful front flippers, leveling the area and creating a "body pit" (see photo insert).

Q: WHAT IF SHE CHOOSES A BAD NEST SITE?

A: Fewer of her eggs will hatch. For example, if the eggs are laid too close to the sea, they may be washed away before incubation is complete.

Q: AFTER SHE CHOOSES A NEST SITE, DOES SHE ALWAYS LAY EGGS?

A: No. Sometimes she cannot successfully dig a nest hole in the place that she has chosen – perhaps there is water, garbage, a tree root, or another obstacle that blocks her from completing the hole. Or she might be scared away by a predator or by the lights and activity of people on the beach.

Q: IF SHE FINDS A GOOD NEST SITE, DOES SHE ALWAYS LAY HER EGGS IN THAT SAME PLACE?

A: A female leatherback returns to the same stretch of beach to lay eggs every 10 days or so during the nesting season, but she does not return to the exact spot where she laid eggs before, and she never returns to the nest to "check up" on her eggs or hatchlings.

Q: DOES SHE NEST EVERY YEAR?

A: No. A female is reproductively active every 2 to 5 years. Only during those years will she mate and make the long journey to her nesting beach. The rest of the time is spent feeding in the deep waters of the Atlantic Ocean, far from the Caribbean Sea.

EGG-LAYING

Q: HOW DOES THE FEMALE MAKE HER NEST?

A: After the "body pit" is complete (see previous page), her front flippers stop moving and the rear flippers begin the slow process of scooping sand from the beach, tossing each scoop of sand off to the side (so it does not fall back into the hole).

Q: WHEN DOES SHE STOP DIGGING?

A: When her rear flippers can no longer reach the bottom of the hole (ca. 50-70 cm, or 20-28 inches deep).

Q: HOW MANY EGGS ARE LAID IN EACH NEST?

A: In the Caribbean Sea, the most common number of eggs laid in each nest is 80-90. In addition, there are usually 20-30 smaller, often misshaped "yolkless eggs" that do not contain yolk (which is the nourishment for the embryo) and therefore will not produce a baby sea turtle. The yolkless eggs are laid last, and their exact function is not known.

Q: WHY SO MANY EGGS?

A: Hatchlings rely on each other's help as they dig out of the nest. The activity of each hatchling increases the space and room for movement within the nest, making it easier for them all to reach the surface of the beach when the time is right.

Q: WHY DO FEMALES NEST SO MANY TIMES?

A: A female must produce thousands of eggs during her lifetime because not all of her eggs will hatch, and very, very few of her hatchlings will survive their earliest years at sea. It is estimated that 1 in 1,000 eggs will produce an adult turtle.

Q: WHAT DO THE EGGS LOOK AND FEEL LIKE?

A: Leatherback eggs are large, on average 55 mm (2.25 inches) across. They are round, white, leathery (not hard), and warm. They are laid in a heavy mucus that keeps them moist, and they do not break when they are dropped into the nest hole.

INCUBATION

Q: WHAT HAPPENS DURING "INCUBATION"?

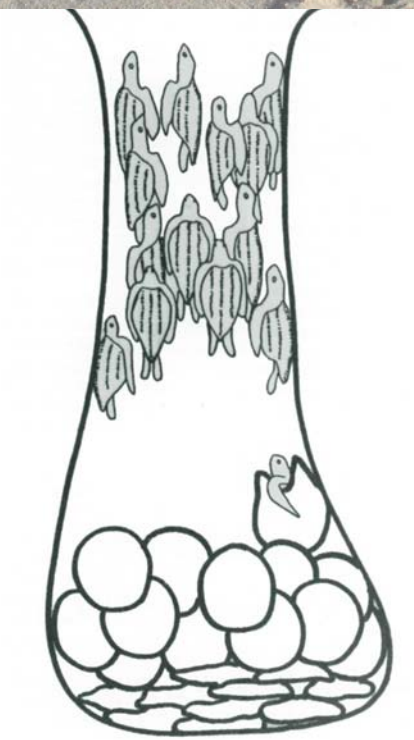
A: Incubation is the period of time when the eggs are buried deep in the sand, and the embryo within each egg is developing into a baby turtle. Sometimes incubation conditions are poor – maybe the beach sand is too dry or too wet, or a predator attacks the nest, or roots grow into the nest and ruin the eggs (in these cases, very few hatchlings will result).

Q: WHEN DO THE EGGS HATCH?

A: The baby turtles are fully formed in 50-70 days, depending on local conditions of temperature, rain, etc. They may rest in the nest for 1 to 7 days before digging to the beach surface.

Q: DO ALL OF THE EGGS HATCH?

A: No. In the Caribbean region, an average of 50% to 70% of the eggs in a nest will produce live hatchlings. There are several reasons for this – some eggs do not fully develop, and others are lost to erosion, predators, poachers, infertility, etc.



Q: WILL THE HATCHLINGS BE MALE OR FEMALE?

A: Nest temperature during the middle weeks of incubation is important in determining the proportions of male and female hatchlings that will emerge from the nest. Cooler temperatures favour males, while warmer temperatures favour females.

Q: HOW DO THEY GET OUT OF THE NEST?

A: Each hatchling must break free of the egg using a small, sharp "egg tooth" on the end of its nose, which later falls off. The hatchlings work together, wiggling slowly to the surface of the beach. If they approach the surface during the day, the hot temperature tells them to rest before finishing the journey. When the temperature cools, the hatchlings "know" that the hot sun is gone and that they must emerge from the nest and crawl quickly to the sea.

HATCHING

Q: HOW BIG ARE LEATHERBACK HATCHLINGS?

A: Leatherback hatchlings are about the size of the palm of your hand – usually 60-65 mm (about 2.5 inches) in carapace length and about 45g in weight.

Q: WHAT DOES A HATCHLING LOOK LIKE?

A: Leatherback hatchlings are black with white stripes, both on the top and the bottom (see photo insert). They are covered with small, bead-like scales that will soon be lost, revealing smooth black skin underneath. They have very long front flippers, hinting at the powerful swimmers they will become.

Q: WHY DO WE USUALLY SEE THEM AT NIGHT?

A: Hatchlings are sensitive to temperature. If, as they are digging to the surface of the beach, they feel the strong heat of the day, usually they stop digging, wait for cooler temperatures, and then begin digging again. They typically appear on the surface of the sand during early evening and night hours when they are safe from the hot sun and many predators.

Q: DO ALL HATCHLINGS EMERGE TOGETHER?

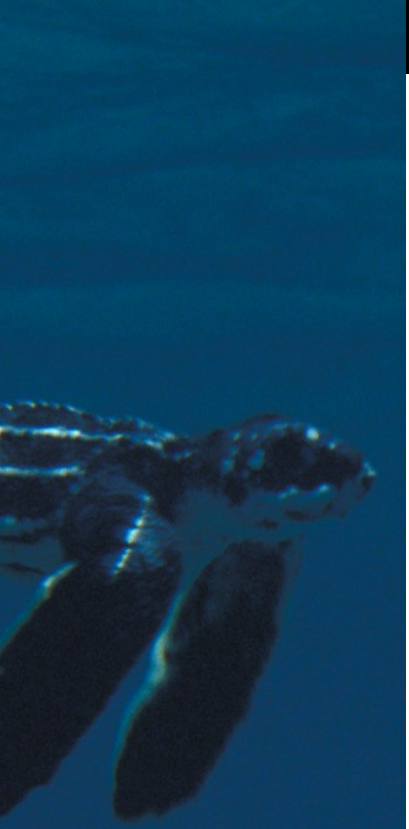
A: Typically the majority of hatchlings (from one nest) appear at the beach surface on the same night, but some nests emerge over several days.

Q: CAN WE "HELP" HATCHLINGS EMERGE?

A: No, it is best to let Nature take her course. This will ensure that the hatchlings are fully ready and energized, in their own time, for their long journey.

Q: HOW DO HATCHLINGS FIND THE SEA?

A: The tiny turtles probably use several pieces of information to guide them, but the main cue is light. Hatchlings are very sensitive to light and this instinct guides them to the horizon of the open sea, which is always brighter – even on a moonless night – than the darker dune line or vegetation in the landward direction.



FIRST YEARS

Q: WHERE DO LEATHERBACK HATCHLINGS GO?

A: Once they feel the force of the waves, they swim very fast for deep water. They orient directly into oncoming waves (using what scientists call a "wave compass") and continue this "swim frenzy" for at least 24 hours. The energy needed during this time is provided by the yolk – which fed the developing turtle inside the egg, and then was drawn inside the body when the turtle hatched from its egg.

Q: WHAT DO LEATHERBACK HATCHLINGS EAT?

A: Once they reach deep waters, far from reef fish and other predators, the hatchlings start to feed on small jellyfish, insects, snails, salps … basically anything smaller than themselves!

Q: CAN SCIENTISTS STUDY HATCHLINGS AT SEA?

A: There are almost no sightings of wild leatherback hatchlings once they reach the open sea, and almost nothing is known about this life stage. Most hatchlings are probably eaten by larger animals, including fish and seabirds.

Q: DO THE HATCHLINGS USE OCEAN CURRENTS?

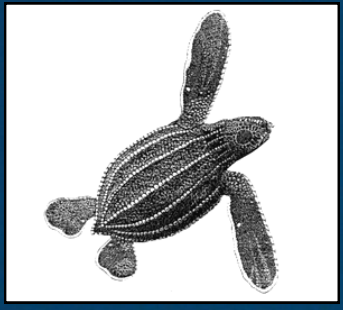
A: Yes, there is some evidence that they "ride" ocean currents, feeding on smaller animals that collect in large numbers in "drift lines" along the edges of these currents.

Q: HOW FAST DO THE HATCHLINGS SWIM?

A: Studies show that they swim faster when traveling below the surface than when near the surface; that they start diving almost immediately; and that they are very active – there are no periods of rest without movement. Exact speed is not known.

Q: HOW DO THEY KEEP THEIR BEARINGS?

A: An internal magnetic compass, calibrated during the initial swim offshore the nesting beach, helps to maintain the turtle's orientation in the open sea.



JUVENILES

Q: WHERE DO JUVENILE LEATHERBACKS LIVE?

A: Sightings of "teenage" leatherbacks are rare. A study made of 98 sightings worldwide shows that leatherbacks smaller than 100 cm (40 inches) in shell length stay in waters warmer than 26°C (between the red lines, below). As they grow larger, they can tolerate colder temperatures and, eventually, occupy their entire natural range (see map, page 6).

Q: CAN YOU TELL A MALE FROM A FEMALE?

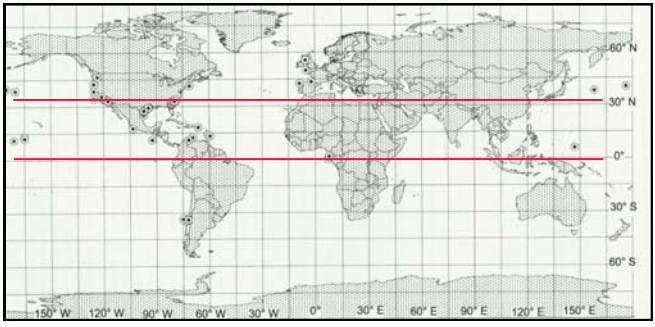
A: Not at the juvenile stage. Male and female leatherbacks look exactly the same until they become adults. However, once they are full grown and sexually mature, the male's tail is much longer than the female's tail – it is so long that it can be seen to extend beyond the length of the rear flippers!

Q: WHAT DO THEY EAT? DO THEY GROW FAST?

A: The diet is presumed to be the same as that of the adult – jellyfish and related soft-bodied marine animals found far out to sea. There is no information on growth rates for wild juveniles.

Q: WHAT HAPPENS TO THE WHITE STRIPES THAT WE SEE ON THE HATCHLINGS?

A: The stripes disappear. The photo (right) shows an intermediate stage where the scale pattern is still visible, but it will soon be replaced by smooth black skin. Where the white stripes once were, ridges form that help direct water flow and make the leatherback a very fast and efficient swimmer!



THREATS TO SURVIVAL

Q: ARE LEATHERABCKS ENDANGERED?

A: Yes, leatherback sea turtles are considered endangered throughout their global range, including the Caribbean Sea. All Caribbean countries protect nesting females and eggs at least part of the year, and more than 70% legally protect them year-round. Penalties for offenders include monetary fines, jail time, and/or the loss of boats or equipment used.

Q: WHAT DOES "ENDANGERED" MEAN?

A: Endangered means that if current threats continue, the species risks becoming extinct … which means that it disappears from the planet forever.

Q: WILL LEATHERBACKS GO EXTINCT?

A: This risk always exists for endangered species. The good news is that after many years of conservation, we are fortunate in the Caribbean Sea to have some of the largest remaining nesting colonies for this species in the world, some of which are increasing in size!

Q: WHAT THREATS DO LEATHERBACKS FACE?

A: Leatherbacks suffer mainly from the activities of man, which seem to grow every year and include: killing turtles for meat and oil, or when they become tangled in a valuable fishing net; loss of nesting beaches to erosion, sand mining, seawalls, and construction; and worsening conditions at nesting beaches due to vehicles, lights, noise, dogs, and obstacles (sunbeds, boats, fences). Threats at sea include entanglement and drowning in fishing trawls and other nets; oil spills and pollution; predators; and climate change.

Q: ARE THERE FEWER LEATHERBACKS NOW THAN THERE WERE 50 YEARS AGO?

A: Yes, more than half of all adult leatherbacks on the planet have been killed since 1980, mostly in the Eastern Pacific and Asia. This is why the populations that return to the Caribbean Sea to lay their eggs are so precious, and worth protecting.

INJURY, ILLNESS & CARE

Q: DO LEATHERBACK TURTLES GET INJURED?

A: Yes, mainly because they are not protected by thick scales or a hard shell (this is why leatherbacks prefer nesting beaches with no coral reef offshore). Injuries can be documented when the turtle is seen during nesting, or if the turtle washes ashore after being seriously bitten by a shark, struck by a boat or propeller, or injured through contact with a fishing line, net, or hook.

Q: DO THEY GET SICK?

A: Information related to this subject is scarce. Visible signs of illness (such as the tumors associated with fibropapillomatosis disease in this green sea turtle, see photo insert) are rarely observed in leatherbacks.

Q: IF A LEATHERBACK TURTLE IS INJURED, CAN IT BE CARED FOR IN A TANK?

A: As a general rule, leatherbacks should not be confined and are not seen in aquariums or zoos. Their enormous size (see "Leatherback Turtles: Basic Facts"), unique ecological requirements (deep diving, long-distance migrations across the open sea, etc.), and a jellyfish-based diet cannot be accommodated without specialized facilities and a highly trained and experienced staff.

Q: IF YOU FIND A SICK OR INJURED SEA TURTLE, WHAT SHOULD YOU DO?

A: Contact your local fish or wildlife officer, a veterinarian, or a conservation group that works with sea turtles in your area. Sea turtles are strong, even when injured, and they are usually protected by national law. For these reasons you should make every effort to enlist the help of a professional when attempting to handle or assist a sick or injured sea turtle. *Never* bring a sea turtle home with you, or back to your hotel.

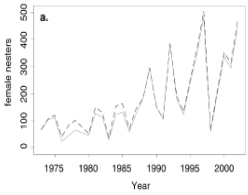
CONSERVATION

Q: WHAT DOES "CONSERVATION" MEAN?

A: Generally it refers to the care, protection, or management of natural resources. Conservation can take many forms, including legal protection, taking action to reduce threats, and promoting environmental awareness and stewardship.

Q: HOW CAN WE MEASURE SUCCESS?

A: Through field surveys we can collect information on the number of turtles nesting each year. This number fluctuates naturally, but if after several years the fluctuating numbers are tending upward, this is good news! Other positive signs may include higher hatch success, fewer turtles killed (or fewer turtles drowned in fishing nets), more habitat protected, fewer turtles disoriented by lights, etc.



Q: CAN RESEARCH HELP IN CONSERVATION?

A: Research is very important because good conservation is always based on good science! Research tells us what wavelengths of light are least harmful, what types of nets are less likely to trap a sea turtle, how to move eggs out of harm's way without distorting hatchling sex ratios, and so on.

Q: CAN "TURTLE WATCHING" HELP, TOO?

A: Definitely! A good Turtle Watch program can provide seasonal income to coastal communities, reduce poaching, involve local people in protection efforts, and raise public awareness.

Q: WHY CARE ABOUT LEATHERBACK TURTLES?

A: There is no "right" answer to this question, each of us has to answer it in our hearts. Consider: they eat poisonous jellyfish, they are ancient and beautiful (and cannot be replaced), they are worth more alive than dead, and they are a unique part of our heritage.

HOW PEOPLE CAN HELP

Q: HOW CAN I HELP SAVE SEA TURTLES?

A: All over the world, people are making a positive difference in the lives of endangered sea turtles. If you live in a country where leatherbacks come to lay their eggs, you may be able to participate directly in local conservation efforts. As a tourist, there are several things you can do to help – including being mindful of where you stay, what you eat, what you buy, and how you behave.

Q: WHAT IF I DON'T LIVE NEAR SEA TURTLES?

A: Even if you live far away from the sea and never travel to a country where sea turtles nest, you can still express your support through material or financial donations to sea turtle research or conservation projects, educating others about sea turtles and the threats they face, and personally and passionately advocating for policies designed to intelligently and sustainably manage our coastlines, seas, and oceans.

Tour Guides are in a special position to influence people's ideas about marine conservation, and about sea turtles in particular. Remember to talk about the following:

Use minimal lighting. Keep flashlights off until needed, then keep them dim and low and away from the turtle's face; flash photography of nesting sea turtles and their young is generally prohibited (or restricted to the egg-laying phase) at night

Do not frighten or harass turtles at sea or on land: approach quietly, be respectful, do not touch

Do not shine lights at turtles, over-turn or ride turtles, disturb their nests, or collect eggs or hatchlings

Do not purchase sea turtle products (menu items, jewelry, leather, cosmetics, eggs), and remember that international law prevents the transport of sea turtle parts and products across national borders

WHAT ABOUT CLIMATE CHANGE?

Q: WHAT IS '"CLIMATE CHANGE"?

A: Climate change is a change in average weather conditions (including temperature, wind, and rainfall) in a given area.

Q: WHAT CAUSES CLIMATE CHANGE?

A: The climate is affected naturally by the earth's position relative to the sun, volcanic activity, ocean circulation, and so on. Change can result from natural causes, as well as from human activities.

Q: DO WE KNOW THAT THIS CHANGE IS REAL?

A: Yes. There is lots of evidence that temperatures are rising, sea levels are rising, ice sheets and sea ice are melting – the Earth is definitely warming.

Q: ARE HUMANS CAUSING CLIMATE CHANGE?

A: Human activities like burning fossil fuels (coal, oil, natural gas), deforestation, and agriculture release carbon dioxide and other "greenhouse gases" into the atmosphere. As these gases build up, they trap heat and raise the planet's temperature.

Q: HOW WILL CLIMATE CHANGE AFFECT THE PEOPLE OF THE CARIBBEAN?

A: Climate change is more than just "global warming". The Caribbean will experience higher air and sea temperatures, but, perhaps more importantly, we will experience rising sea level and an increase in extreme weather events (heavy rainfall, extended drought, more intense hurricanes).

Q: IS CLIMATE CHANGE BAD FOR SEA TURTLES?

A: Most likely, yes. We know that higher temperatures and changes in rainfall can lower nest success and alter the ratio of male to female hatchlings, changing ocean temperatures will affect prey availability, and sea level rise will erode nesting beaches.

WHAT ABOUT CLIMATE CHANGE?

Q: HAVE SEA TURTLES ADAPTED TO AND SURVIVED CLIMATE CHANGE IN THE PAST?

A: We know that many species of plants and animals have gone extinct because of changes in the climate – perhaps the most famous are the Dinosaurs. Many sea turtle species have also gone extinct because of climate change in the distant past. But some sea turtle species definitely survived – these are the species that we still see today. How did they do it? Perhaps by shifting where or when they nested (in Florida, loggerhead sea turtles are already nesting earlier than they did 10 years ago), where and when they migrated, and/or where and what they ate.

Q: WILL LEATHERBACKS SURVIVE?

A: Only time will answer this important question. The challenge is that our climate is changing faster than ever before, there are fewer leatherbacks than ever before, and nesting grounds are already disappearing due to erosion, coastal development, pollution, etc.

Q: WHY CARE ABOUT CLIMATE CHANGE?

A: Climate change will affect every aspect of our lives – including weather (storms, droughts), agriculture (changes in food supply), health (tropical diseases moving northward), availability of fresh water, loss of coastal buildings and roads, etc.

Q: WHAT CAN WE DO ABOUT CLIMATE CHANGE?

A: REDUCE energy use (which reduces production of "greenhouse gases"); PLAN and PREPARE for changes in climate that are going to happen; WORK together!

Q: WHAT STEPS CAN I TAKE, PERSONALLY?

A: Walk or bike instead of driving, turn off lights and other electrical equipment when not in use, fly as little as possible, recycle as much as you can, be an advocate for the earth – educate, communicate!

PERSONAL QUESTIONS

As a professional **Tour Guide**, you should always be prepared to answer questions about yourself – for example, how (or why) you became interested and involved in sea turtle issues. Consider how you will respond to the following questions, and remember that *there is no "right answer" to questions on this (or the next) page … the answers must come from your experience, and from your community.*

Q: How long have you worked with sea turtles?

Q: How did you become involved in leatherback sea turtle conservation?

Q: What is it about the leatherback sea turtle that caused you to want to help?

Q: What is your most memorable leatherback sea turtle encounter or conservation experience?

Q: What is most challenging for you in your work?

Q: Who inspired you? Who do you admire most?

A **Tour Guide** should be informed (and work to stay informed) about more than basic sea turtle biology. For example, a visitor may have heard about using satellite telemetry to study long-distance movements, or about genetic studies that provide information on how "your" leatherbacks are related to populations in other countries. Consider:

Q: What types of new tracking methods are there for studying the movements of leatherback turtles?

Q: What is the longest period of time a tracking device has remained on a leatherback sea turtle?

Q: What is the farthest distance you have tracked a leatherback sea turtle?

Q: What do you learn from this kind of research?

Q: Have you been involved in genetic studies?

Q: What type of information can be (or has been) gathered from these studies?

Q: Has genetics research in your area provided any unexpected or otherwise interesting new information that has conservation value?

PERSONAL QUESTIONS

Visitors will be interested in more than just sea turtles! As a professional **Tour Guide**, you will very likely be asked whether people follow the laws that protect sea turtles in your country (and how offenders are treated), whether people think the laws are fair, and whether you, your community, and/or the sea turtles themselves have benefitted from current legislation, conservation action, research, tour guiding, and so on. Consider how you will respond to the following questions:

Q: Are sea turtles protected in your country?

Q: Do people think that the laws are fair?

Q: Does poaching still happen?

Q: Can you tell me about the latest poaching incident and when it happened?

Q: What happened to the poacher?

Q: What was the reaction in your community when sea turtle conservation efforts first started here?

Q: Can you describe any changes in attitudes since conservation and/or Turtle Watching first began?

Q: Is tour guiding contributing to sea turtle conservation or protection efforts? If so, how?

Q: Has the community seen positive results from the tour guiding program – for example, has the average income of people in your organization (or community) increased? Has violence (e.g., poaching) decreased? Do people care more about conservation in general (e.g., recycling)?

Q: What is the number of nesting females on your beach now compared to when conservation efforts and/or Turtle Watching first began?

Q: Do you get reports from other conservation groups of sea turtles that you have tagged? Do you see tagged turtles from other countries?

Q: How many hatchlings emerge each year? Is this number increasing? Why or why not?

Q: If the number of turtles or hatchlings is increasing, do you believe that this increase is related to your work? Why or why not?

GENERAL GUIDELINES

Check fishing nets frequently to ensure that turtles are not accidentally caught and drowned

Sea turtles must surface to breathe – **watch for them, as they can be struck and killed** by propeller-driven vessels, sail boats, and personal thrill-craft

Lighting disorients nesting females and hatchlings, leading them away from the sea – please turn off or redirect lights so they don't shine on the beach

Avoid driving on beaches (incubating eggs can be crushed and tire ruts trap hatchlings) and do not leave lounge chairs (sunbeds), sailboats, and other **obstructions on nesting beaches** at night

Do not trample on marked sea turtle nests, and **never remove hatchlings** from the beach!

Safeguard natural vegetation – it protects the shoreline from erosion, stabilizes sandy beaches, and provides sheltered nesting sites

Protect feeding areas by **not discarding plastic or other waste at sea**; never anchor on coral reefs or seagrass, or touch living coral when diving

Don't litter! Discarded cans and bottles can cause injury to nesting and hatching sea turtles . . . and plastic bags, mistaken for jellyfish, can make turtles sick

Support **management based on best practices**, including full protection year-around to adult turtles, and especially to egg-bearing females

Support **sustainable, non-consumptive alternatives** that bring income to local communities

Support sea turtle **conservation, basic research, and long-term population monitoring**

Report violations of regulations that protect turtles, their eggs and young, and the habitats they depend upon for survival

MORE INFORMATION

Books and reports on sea turtle biology and related topics, classroom units for teachers, and other useful materials are available from your local WIDECAST Country Coordinator (visit http://www.widecast.org/What/ProjectContacts.html, then click on your country). The Internet is also a good source of information—

Basic Biology of the Leatherback (WIDECAST)
http://www.widecast.org/Biology/Leatherback.html

Atlantic Leatherback Assessment (NOAA Turtle Expert Working Group)
http://www.sefsc.noaa.gov/PDFdocs/TM_555_DcTEWG.pdf

Leatherback Turtle, *Dermochelys coriacea* (NOAA Fisheries, Office of Protected Resources)
http://www.nmfs.noaa.gov/pr/species/turtles/leatherback.htm

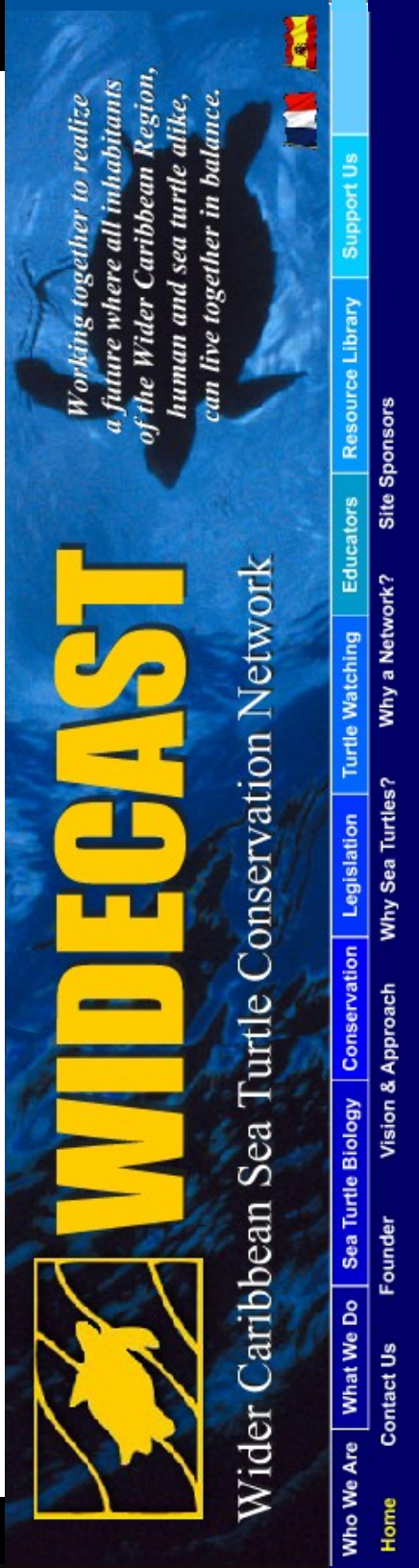
Leatherback Sea Turtle, *Dermochelys coriacea* (US Fish & Wildlife Service, North Florida Field Office)
http://www.fws.gov/northflorida/SeaTurtles/Turtle%20Factsheets/leatherback-sea-turtle.htm

Recovery Plan for Leatherback Turtles in the U.S. Caribbean, Atlantic and Gulf of Mexico
http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_leatherback_atlantic.pdf

Florida Sea Turtles (Florida Marine Research Institute, FFWCC)
http://research.myfwc.com/features/category_main.asp?id=1289

Adaptation to Climate Change (WWF)
http://www.panda.org/lac/marineturtles/act

Care of Sick and Injured Sea Turtles (WIDECAST)
http://www.widecast.org/What/Regional/Medicine.html



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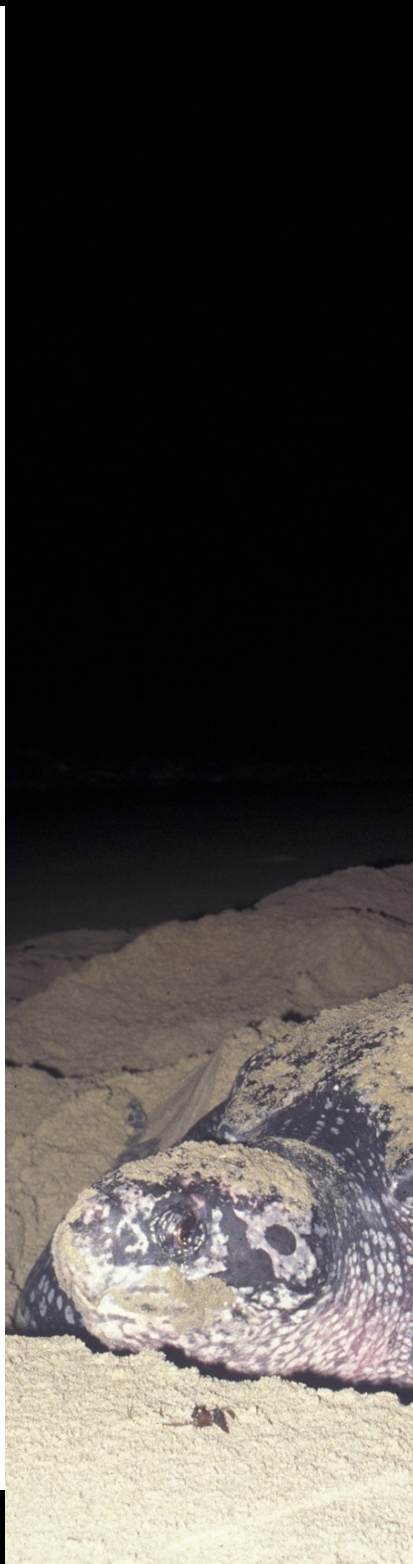

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The **Wider Caribbean Sea Turtle Conservation Network (WIDECAST)** is a regional coalition of experts and a Partner Organization to the U.N. Environment Programme's (UNEP) Caribbean Environment Programme. WIDECAST was founded in 1981 in response to a recommendation by the IUCN/CCA *Meeting of Non-Governmental Caribbean Organizations on Living Resources Conservation for Sustainable Development in the Wider Caribbean* (Santo Domingo, 26-29 August 1981) that a "Wider Caribbean Sea Turtle Recovery Action Plan should be prepared ... consistent with the Action Plan for the Caribbean Environment Programme." Today, with Country Coordinators in more than 40 Caribbean States and territories, WIDECAST is uniquely able to facilitate complementary conservation action across range States, strengthening and harmonizing legislation, encouraging community involvement, and raising public awareness about the region's six species of migratory sea turtles. As a result, most Caribbean nations have adopted a national sea turtle management plan, poaching and illegal product sales have been eliminated or dramatically reduced at key sites, many of the region's largest breeding colonies are monitored on an annual basis, alternative livelihood models—including tour guiding—are increasingly available for rural areas, and citizens are mobilized in support of conservation action. Visit **www.widecast.org** for more information.