



# WIDECAST

*Wider Caribbean Sea Turtle Conservation Network*

## ***“ENDANGERED SEA TURTLES OF THE CARIBBEAN”***



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# WIDECAST

*Wider Caribbean Sea Turtle Conservation Network*

Dear Friends,

This program was produced by the Wider Caribbean Sea Turtle Conservation Network (WIDECAST) to inform the public about the status of the six species of sea turtles inhabiting the Western Atlantic Region, including the Caribbean Sea. Financial support was provided by The Ocean Fund (Royal Caribbean Cruise Lines, Ltd.), the Caribbean Environment Programme of UNEP (Kingston, Jamaica), and the Columbus Zoo (Powell, Ohio).

The program features 66 images and a trilingual narration suitable for all ages. Slides can be added or subtracted, based on presentation motive and audience age. In addition to the images we have provided, we encourage you to insert images depicting sea turtles, their habitats, threats to their survival, and effective local conservation and management programs from your area or nation.

WIDECAST, founded in Santo Domingo, Dominican Republic in 1981, is committed to increasing the level of public awareness of sea turtles and their plight in the Caribbean region. All Caribbean sea turtle species are recognized internationally as “Endangered” or “Critically Endangered” on the World Conservation Union (IUCN) **Red List of Threatened Species**. Many populations are depleted, and some have disappeared entirely. Those that are currently rising have benefited from long-term, effective conservation action. Since most threats to sea turtle survival are local, it is our view that the best way to promote their survival is to encourage an informed citizenry.

WIDECAST includes volunteer Country Coordinators in more than 30 Caribbean States and territories. Because each Coordinator works closely with a national coalition of governmental and non-governmental stakeholders, WIDECAST embraces several hundred scientists, conservationists, resource managers, policy-makers, educators, and others. Our shared goal is to realize a future where the all inhabitants of the Wider Caribbean Region, human and sea turtle alike, can live together in balance. You can help by getting involved in local research and conservation initiatives, by becoming informed about marine and coastal issues in general, and by reporting illegal acts.

Because sea turtles are highly migratory by habit, they cannot survive without regional cooperation and coordination of conservation and management programs. The only region-wide program devoted to the conservation and recovery of Caribbean sea turtles is WIDECAST. Please visit our Internet home at [www.widecast.org](http://www.widecast.org) for more information on what you can do!

Enjoy the show!

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# NARRATION

## Slide#

- [1] **Title Slide – Welcome! Introductory comments at the discretion of the speaker**
- [2] **The oldest sea turtle fossil**, named Santanachelys, dates to 112 million years ago! Today only seven species of sea turtle inhabit the oceans of Planet Earth, but more than 100 different species have been described from the fossil record. Hence, over millions of years, sea turtles have been a diverse and widespread group of animals.
- [3] **Sea turtles are air-breathing reptiles**, very well adapted for life in the ocean. Their broad, paddle-like flippers slice the water cleanly and their smooth shells are streamlined for speed.
- [4] **Today most scientists recognize seven species** of sea turtle: the Green, Loggerhead, Hawksbill, Olive ridley, Kemp's ridley, Leatherback, and Flatback. As for the eighth turtle shown in this slide -- the "East Pacific Green" -- some biologists believe it to be a separate species, while others view it as a geo-graphically distinct subpopulation of the globally distributed Green turtle.
- [5] **Six species of sea turtle** are found in the Western Atlantic Region, including the Caribbean Sea. Only the Flatback and the East Pacific Green turtle do not occur in the Caribbean region. *[Note: if you are aware of the species found in your area or nation, please mention them for the audience at this time.]*

**Slide#**

- [6] **Loggerhead turtles**, known to scientists as "Caretta caretta", are named for their large head and strong jaws, a necessary adaptation to their carnivorous [meat-eating] diet of molluscs and hard-shelled crabs. They are colorfully marked in orange and gold, and often carry encrusting barnacles and other small sea animals on their carapace ["kar' a pas", or shell]. Adults generally weigh 200-350 pounds [90-160 kg].
- [7] **Most Loggerhead nesting** in the Wider Caribbean Region occurs in Florida (USA), with other important sites located in the Yucatán Peninsula of México, the Cuban archipelago, and Colombia. Minor nesting grounds have been identified in Central America and along the Atlantic coast of South America, from Venezuela to Brazil. Nesting in the Eastern Caribbean islands is extremely rare.
- [8] **Green turtles**, known to scientists as "Chelonia mydas", are about the same size as Loggerheads, but have a petite round head and a rather blunt beak. Green turtles are vegetarians, grazers actually, and they are often observed feeding on seagrasses in calm, shallow bays. "Green turtles" are not actually green. They were named because their body fat absorbs chlorophyll [the pigment that makes grass green] and thus they are green on the inside!
- [9] **Seagrass meadows** are critically important to the ocean ecosystem. They provide food for sea turtles, as well as food and shelter for a wide variety of fishes and invertebrates such as conch. They also produce oxygen and stabilize nearshore sediments. Green turtles have protozoa in their digestive tracts (just like termites do) that enable them to digest the cellulose and other structural materials in the grass and obtain nutriment.

**Slide#**

- [10] **Green turtles often migrate** vast distances between foraging grounds [feeding areas] and nesting beaches. In this slide scientists show us the many countries to which green turtles return after nesting at Tortuguero, Costa Rica, the largest nesting ground in our region. Each nesting turtle is marked with individually numbered metal flipper tags. In this way, if a fisherman catches her at the feeding ground and returns the tag to the scientist who placed it on her, we have one more record of a turtle nesting in one country and feeding in another.
- [11] **Green turtles nest at night**, as do most sea turtles. Females generally do not nest every year, but rather every 2-5 years. Adults have a remarkable ability to return to very specific nesting areas over the course of many years, and then return with equal precision to their preferred feeding ground, even if the two are separated by many hundreds of miles.
- [12] **Hawksbill turtles**, known to scientists as "*Eretmochelys imbricata*", prefer to live near coral reefs where their mottled coloration acts as camouflage. They are smaller than Green turtles, and adults rarely exceed 180 pounds [80 kg]. The narrow head and beak are distinctive, as is the fact that the "scutes" or colorful plates on their carapace overlap like shingles on a roof. They have an unusual diet, feeding largely on sponges and other reef invertebrates.

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- [13] **Hawksbills are highly tropical** in their distribution, and nest throughout the Caribbean Sea. Nesting typically peaks in late summer, but can continue at low densities throughout much of the year. Most females prefer to nest amongst beach vegetation. Nesting grounds often consist of small and isolated stretches of beach, often associated with shallow offshore reefs. This combination of traits can make it difficult for scientists to conduct nesting surveys on a regular basis.
- [14] **The Olive ridley**, known to scientists as "Lepidochelys olivacea", is one of the smallest sea turtles, rarely exceeding 100 pounds [45 kg]. The species is distinctive in having a variable and often uneven number of lateral scutes, the plates that appear along either side of the midline on the carapace [shell]. An odd characteristic of this species, which it shares with the Kemp's ridley, is the presence of pores on its underbelly [technically, "in the inframarginal scutes of the plastron"] ... the exact function of these pores, which some scientists believe produce mate-attracting chemicals, is still unknown.
- [15] **Nesting by Olive ridleys** in our region is confined to the Guianas and Brazil, with the principal area being Eilanti Beach in Suriname, close to the border with French Guiana. The number of nests laid each year in Suriname has dramatically declined over the past 20 years, with the principle threat being incidental capture by both artisanal and industrial fisheries. Other threats include natural erosion cycles, habitat destruction, predators such as jaguars, and poaching.

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- [16] **The Kemp's ridley**, known to scientists as "Lepidochelys kempii", is similar in size and appearance to the olive ridley. This species reaches maturity at 12-15 years of age, quite young for a sea turtle. Females often nest during the day, another unusual trait. But most unusual is the turtle's tendency to nest "en masse" in what biologists refer to as an *arribada*. As our region's only breeding population slowly recovers from near-extinction at its primary nesting grounds in México, we hope that one day these ancient creatures will once again awe us with an *arribada* performance.
- [17] **In the meantime**, we must be content with photos of *arribada*-style nesting by olive ridleys on the Pacific coast of Costa Rica. Neither the olive ridleys of Suriname nor the Kemp's ridleys of México currently survive in large enough numbers to produce this incredible sight, but with protection and careful management we may someday see an *arribada* again in the Caribbean Region.
- [18] **Leatherback turtles**, known to scientists as "Dermochelys coriacea", are perhaps the most spectacular of all sea turtles. Females nesting in the Caribbean often exceed 1,000 pounds [450 kg]! A male drowned in a fishing net off the coast of Wales, U.K., in 1988 weighed more than 2,000 pounds [916 kg].
- [19] **The Leatherback does not have a hard, bony shell**; rather, the leathery carapace is raised into ridges that streamline its spotted body. Leatherbacks nest in low numbers in most Caribbean countries, with the main areas being French Guiana, Trinidad, Costa Rica, the Dominican Republic, and Puerto Rico.

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- [20] **Leatherbacks eat soft-bodied animals** such as jellyfish. They are a beneficial predator in that they delight in eating Physalia, which we know as the poisonous 'Man-O-War' jellyfish. They also enjoy Cyanea, the 'Arctic jellyfish', which can be 6 feet [1.8 meters] across and have tentacles 260 feet [80 meters] long! Sharp cusps in their jaw slice through the soft prey, and the mouth cavity is lined with stiff spines to aid in swallowing.
- [21] **Long flippers and heavily muscled shoulders** make this species a powerful swimmer. Adults dive nearly constantly, and sometimes to depths exceeding 3,250 feet [1,000 meters]. Such diving skills are needed because the turtle lacks the protection of a hard shell. When threatened by a great white shark or an orca whale ('killer' whale), both known to eat Leatherback turtles, the only defense the turtle has is to out-swim, out-manuever, and out-dive the powerful predator!
- [22] **Leatherbacks are also credited** with some of the longest migrations on Earth, traveling over thousands of miles of open ocean between tropical nesting beaches and distant feeding grounds. This slide illustrates the post-nesting journey of three Leatherbacks after they finished nesting in Trinidad in 1996. Notice that one headed north to feed in international waters, while another headed directly east, eventually settling to feed in the Bay of Biscaye. After more than a year, both ended up in the vicinity of the Cape Verde Islands before their transmitters stopped working. [Source: S. A. Eckert/WIDECAST]



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- [23] **All sea turtles have the ability to orient** and to navigate. By conducting various experiments, scientists have shown that they use an internal "magnetic compass" ... meaning that they can sense magnetic field strength (which varies from east to west like longitude) and angle (which varies from the equator to the poles, like latitude). By evaluating a combination of magnetic field strength and field angle, sea turtles can estimate their location [their latitude and longitude] in an otherwise featureless expanse of sea!
- [24] **Sea turtles spend their lives at sea**, but adult females must come ashore to lay their eggs. Nesting is confined to tropical and subtropical areas because the eggs will only hatch successfully if they are incubated at the right temperature. One of the most interesting aspects of sea turtle biology is that the sex of developing embryos is determined by temperature! Female turtles are produced in warmer nests, males in cooler locations. The "pivotal temperature", so-named by scientists because nests incubating at this temperature produce roughly equal numbers of males and females, is about 30 °C.
- [25] **Once the gravid** [meaning "egg-bearing"] female has chosen a suitable site on a dark sandy beach, she will sweep the area smooth and create a shallow body pit with her flippers. A nest chamber is then excavated using the rear flippers alone. Sand is scooped with one flipper and then the other until she can reach no deeper. This rhythmic, timeless process is characteristic of all sea turtle species. If the sand is too wet or too dry, she will be unable to complete the chamber and she may have to select another site.

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- [26] **Sea turtles are shy** and cumbersome when out of their watery element. All species are sensitive to light and easily frightened. If you come upon a nesting sea turtle, it is essential that you remain still and leave your lights off! If you sit comfortably a short distance away, preferably behind and downwind of the turtle, you will find that your eyes adjust to the darkness and you can observe the nesting without disturbing her.
- [27] **With the egg chamber complete**, the female quickly lays 100 or more leathery-shelled white eggs. The exact number of eggs may vary from 50 to 250, depending on the species. Leatherbacks are unusual in that a number of small, often misshapen eggs are also laid. These are laid last and contain no yolk; therefore, they do not produce hatchlings. Most females nest 2-5 times per year, again depending on the species. The small Ridley turtles produce the fewest nests, while the much larger leatherback may, on occasion, deposit as many as 11 or 12 clutches of eggs during a single year!
- [28] **Nesting sea turtles appear to shed tears**, but in fact these salty secretions are the turtles' way of ridding the body of excess salt consumed at sea. There are tales told about how the mother is crying because the nesting process is so difficult, or because so many of her eggs are stolen by man and other predators, or because she will never see her tiny hatchlings. But the truth is that all sea turtles "cry", whether they are on land or in the sea. It's an important part of their physiology.

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- [29] **After the eggs are laid**, the turtle refills the nest chamber with sand and packs it firmly over the eggs. Sand is then flung in all directions, with the intent of confusing a potential egg-predator with an extensive area of disturbance. The exhausted female leaves her eggs to incubate in the warm sand, and she returns to the sea. She is unlikely to mate again, but rather will use sperm stored from matings earlier in the year to fertilize her next clutch of eggs, which, again depending on the species, will be ready for laying in about 8-15 days.
- [30] **It is difficult to mistake** a Leatherback nest site on the beach. The disturbance is 15-30 feet [5-10 meters] in diameter and of course includes a wide, symmetrical crawl leading to and from the ocean. Throughout the Caribbean region, local communities, conservation groups, and fisheries staff patrol nesting beaches in the morning to count crawls. With training, you can identify the species simply by examining the crawl width and pattern. Not every crawl represents a clutch of eggs, however, so it's important to know the ratio of successful to unsuccessful nesting attempts before the number of crawls can be converted to the number of nests.
- [31] **Since females lay multiple numbers of nests** during each reproductive season, the number of nests must be further divided by the average number of nests produced by each female in order to estimate population size. In an area where 100 beach crawls represents 75 successful nests, the total number of turtles, in the case of Leatherbacks, is only about 10 because each female is responsible for an average of seven nests per year (typically a 3-4 month nesting season). Accurate reporting of crawls, nests and/or tagged females is very important to Fisheries Officers and other wildlife managers.

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- [32] **The female never returns to check on her eggs.** If the eggs are not disturbed by man, eaten by predators, washed away or crushed by beach-going vehicles, the fully developed hatchlings will begin their journey to the beach surface after 45-65 days of incubation. Like baby birds, they break open their shells using a tiny "egg tooth" on their nose. As the first hatchlings break free from their eggs, their movements stimulate their siblings to hatch. Within a few days all the hatchlings are working together to dislodge the sand above them and slowly moving upward through the nest.
- [33] **Emergence from the nest is hard work.** The hatchlings rest often. Sometimes they lie for hours only inches beneath the surface, hidden and extremely vulnerable to beach-going vehicles, bonfires, sunbeds, and beach umbrellas thrust into the sand. As the sun sets and the beach cools, the tiny turtles break free from their nest, open their eyes for the first time, and scurry to the sea. Hatching typically occurs in the early evening, but continues throughout the night and sometimes occurs during the day.

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- [34] **An evening or night emergence** serves the hatchlings well because most predators are not active at night. In addition, the sand is relatively cool and the bright ocean horizon is a strong orientation clue. Contrary to popular belief, hatchlings do not orient toward the moon. Their eyes are very sensitive to light, and under natural conditions the open ocean horizon is always brighter than the darker landward vegetation. For this reason, artificial beachfront lighting is a serious threat to the newborns -- it confuses them and can direct them away from the sea.
- [35] **The number of hatchlings** that successfully make it to the sea varies from less than 1% to 50% or more of the eggs laid, depending on the characteristics of the nesting beach, the abundance of predators, the level of commercial development in the area, and so on. Those that make it to the sea begin a journey that will last for decades and, if the hatchling is a female, will include a return to this beach someday to lay the eggs of the next generation.
- [36] **A variety of animals**, including crabs, birds, and small mammals, take advantage of the seasonal abundance of small turtles. Once in the sea, predator birds and fish also consume the frantically swimming hatchlings. It is estimated that only 1 in 1,000 hatchlings survives to maturity. This is the natural cycle, for all living things must eat to survive and the selection process ensures that only the strongest turtles will eventually produce eggs of their own. To counter high levels of natural mortality, a female must lay thousands of eggs in her lifetime.

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- [37] **Once in the water, hatchlings** use incoming waves to orient themselves to the open sea. They fly through the water, using their front flippers to propel them and their rear flippers to steer. Once offshore, hatchlings often take shelter in floating mats of seaweed and other oceanic accumulations that provide food and refuge during the first few years of life.
- [38] **Green and Hawksbill turtles** spend an estimated 2-7 years in the open sea, returning to coastal seagrass and coral habitats at about 10 inches [25 cm] in shell length. Green, Hawksbill and Loggerhead turtles require 20-40 years to reach maturity, and travel throughout the region during their juvenile years, feeding in the waters of one nation and then another. Leatherback and Ridley turtles appear to mature in 12-15 years, but there is very little information on the juvenile stages of the Leatherback.
- [39] **Can you tell which hatchling is which?** Leatherbacks, largest even at birth, have flippers nearly as long as their body. The Green turtle is jet black, margined with white, and is uniquely characterized by a snow-white belly. Many small ocean creatures are "counter-shaded" in this way, meaning that they are dark above and light beneath. The camouflage means that a predator fish looking up at the hatchling may not see it against the light sky, and predator birds looking down will see only the dark water! Hawksbill, Loggerhead, and Ridley hatchlings [Hawksbill is shown] are uniformly brown or gray.

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- [40] **Never remove a live hatchling from the beach**, and take care not to disorient the little turtle by turning on a flashlight. Consider staying with the hatchling until he makes it to sea, and then report the sighting (including turtle size, color, and location) to a Fisheries Officer or local conservation group.
- [41] **Sea turtles will not survive** without your help. All six species of Caribbean sea turtles are classified internationally as "Endangered" or "Critically Endangered", and they are protected in some measure by national law. After centuries of unregulated harvest, their numbers have been reduced dramatically due to the demand for meat, eggs, shell, leather, oil, and other products. Today the most serious problems facing sea turtles may not be direct harvest, but rather incidental capture in fishing nets and the loss of important nesting and feeding habitat.
- [42] **Why do we need to be aware** of the biology and status of sea turtles in our country and region? Most of us take pride in knowing something about our natural heritage, but knowing about sea turtles is very important for another reason. Because they are "Endangered", they are of special management concern to Government. But without the support of an informed citizenry, the laws protecting sea turtles cannot be enforced ... and if conservation laws are ignored, we risk depriving the next generation of this wondrous creature.

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- [43] **Sea turtles were once abundant** throughout the Caribbean. It is written that ships could navigate to some islands by the persistent noise of countless turtles clanking their shells against one another! Archeological sites throughout the region demonstrate that turtles have been hunted for more than 1,000 years. In many places they were, and are, an important source of protein for coastal people. However, the harvest has often focused on adults, especially on egg-bearing females, and this has been particularly devastating for local populations.
- [44] **The collection of turtle eggs** has persisted for centuries in the Caribbean. Today this harvest, especially from declining populations, is a serious management problem for many nations. The eggs are often eaten raw, and are coveted by those who superstitiously associate them with an increase in sexual potency. The collection, possession and sale of sea turtle eggs is illegal in most Caribbean countries, but the laws are difficult to enforce.
- [45] **Hawksbills are further threatened** by the fact that people prize their beautiful shell, from which "tortoiseshell" items are fashioned. Bracelets, combs, belt buckles, key chains and earrings are among the items still offered for sale in some Caribbean countries, despite the fact that such sale is illegal in many countries and it is almost always illegal for a tourist to cross national borders carrying such items. In addition to the trinket trade, shells are sometimes sold whole as wall displays ... or the entire animal is stuffed as a curio. This illegal commerce is a serious threat to depleted Caribbean Hawksbill populations.



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- [46] **Because illegal commerce** in shell products continues to threaten Caribbean populations, educating tourists about the laws governing sea turtles and other protected wildlife is an important conservation strategy. International trade in sea turtles and many other protected species is forbidden by "CITES", the Convention on International Trade in Endangered Species of Wild Fauna and Flora.
- [47] **Another very serious threat**, which may surpass all other threats combined in some Caribbean nations, is the accidental entanglement and drowning of sea turtles in commercial and artisanal fishing nets. Sea turtles are air-breathers, just like you and me, and they drown when held underwater. It is likely that tens of thousands of turtles are killed in shrimp trawls, long lines, and drift and gill nets every year.
- [48] **This little Leatherback is hopelessly tangled** in a length of monofilament fishing line carelessly discarded. Styrofoam, plastics, fishing line, fabric, oil and tar balls are found in the stomachs of sea turtles and are often cited as the cause of death. Picnic trash, natural debris, and tire tracks can be significant obstacles to the tiny turtles. If one gets trapped or flipped over, it becomes easy prey for ghost crabs, dogs, mongooses, or night herons.

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- [49] **In addition to direct harvest** and incidental fisheries mortality, the loss of habitat for foraging and nesting is a serious obstacle to population recovery. Commercial, industrial, recreational, and residential projects compete, both among themselves and with native wildlife, for limited space. Too often we overlook the enormous contribution that pristine coral, seagrass, and mangrove habitats make to our economy; for example, as nurseries for commercially valuable lobsters, conch and fish and as shoreline stabilizers.
- [50] **Instead we view pristine coastal and marine habitats** solely as sources of development revenue or tourism income. And with this view we tend to destroy the very natural resources upon which we, the sea turtles, and all life depend. As shorelines erode due to beachfront construction, jetties and sea walls are often constructed ... but by interrupting the rhythmic cycle of sand transport and replenishment along the coast, erosion often accelerates rather than abates.
- [51] **Coastal development** also brings artificial beachfront lighting, which disorients both nesting females and emerging hatchlings. In this slide the tiny tracks tell the story of a group of hatchlings confused and misdirected into endless circles by shoreline lighting that prevented them from clearly identifying the ocean horizon. In this case the hatchlings never reach the sea, but rather are killed by predators or die of exhaustion in the morning sun.

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- [52] **Other threats**, such as indiscriminate sand mining, accelerate erosion, ruin recreational areas, disrupt aquifers, and degrade adjacent marine habitats. In severe cases, saline ponds are formed in unsightly pits left by mining operations, shoreline trees are lost to the sea, and entire beach habitats are eliminated. The loss of sandy beaches not only reduces the reproductive success of sea turtles, but endangers shoreline development and has serious economic implications for the future of vital industries, including fisheries and coast-based tourism.
- [53] **Similarly, indiscriminate anchoring**, blasting, dredging, and careless SCUBA divers break coral, uproot bottom vegetation, increase turbidity, and seriously degrade habitats that are critical to sea turtles, commercial fisheries, and sustainable tourism. This kind of damage, especially to sensitive coral reef environments, can be irreversible in our life times.
- [54] **We share our environment** with these gentle creatures, and we rely on many of the same things for our survival, including a clean coastal environment. From a purely selfish point of view, sea turtles are (or have the potential to be) enormously valuable to our economies in both consumptive and non-consumptive ways. Their extinction brings no benefit to current or future generations. Fortunately there are many ways in which we can help sea turtles!

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- [55] **Many threats to our environment** could be reduced through greater public awareness of the problems and the solutions. By understanding that sea turtles are "Endangered" and learning more about their lives, we can learn how to protect them and their habitats.
- [56] **Biologists have been studying the ecology** of sea turtles for decades, and a great deal has been learned about their survival requirements. The Wider Caribbean Sea Turtle Conservation Network (WIDECAST) is a region-wide network of sea turtle experts, community-based conservationists, policy-makers, and educators. The network sponsors research, habitat surveys, public awareness projects, training, and the development of standard field methods. Here a biologist is seen tagging a nesting turtle.
- [57] **In recent years, new technologies**, such as radio and satellite tracking, have provided exciting information on the behavior and movements of sea turtles away from the nesting beach. Advances in genetic research compliment the high-tech tracking studies by demonstrating, for example, that adults disperse from the nesting beach and return to resident foraging grounds hundreds or even thousands of miles away. Tracking and genetic studies provide managers with vital information on the full multinational range of a population of sea turtles.

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- [58] Scientists also work closely with fishermen** to develop new technologies to prevent sea turtles from drowning in fishing nets. Here a Loggerhead turtle safely escapes from a commercial trawl net. Such devices dramatically reduce sea turtle mortality and are mandatory in several countries.
- [59] You don't have to be a scientist to become involved!** Local beach clean-ups are a great way to show you care about your coastal environment. Thousands of people throughout the world participate in beach clean-up programs every year. Literally tons of garbage can be collected by enterprising volunteers in a single day. The sheer volume of garbage accumulating on our beaches emphasizes the need for each one of us to properly dispose of our plastics and other waste.
- [60] Hotel managers and coastal landowners** are increasingly aware of the potentially negative effects of artificial beachfront lighting, seawalls, exotic vegetation, inadequate sewage disposal, and other coastal insults. Many hotels, for example, have made a commitment to lighting which serves essential security and aesthetic purposes, while maintaining a naturally dark beach to attract nesting sea turtles.
- [61] There is no better alternative** than effective protection of eggs in their natural nests. However, in some places where enforcement of laws protecting eggs is difficult, hatcheries, if properly constructed and maintained, can be an important short-term conservation tool.

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- [62] Protecting habitat is also an important component** of any sea turtle recovery program. The support of the public in caring for a protected area, obeying its rules, and participating in its management ensures that these unspoiled areas will play a role in maintaining the integrity of the marine and coastal ecosystem, and promoting the survival of many species, including sea turtles.
- [63] Many communities are finding that sea turtles are worth** far more money alive than dead. Non-consumptive uses, including thoughtfully developed eco-tourism initiatives, provide long-term income to local communities, parks and other protected areas, and privately owned coastal properties. In these cases, income is derived from lodging, meals, transportation, tour-guiding, retail sales, and sea turtle conservation and protection activities, rather than from the sale of meat or other turtle products.
- [64] WIDECAST's goal is to realize a future** where all inhabitants of the Wider Caribbean Region, human and sea turtle alike, can live together in balance. We neglect the survival needs of sea turtles at our own peril, for we, too, ultimately depend upon the integrity of the natural environment for our own survival. Our watersheds, our forests, our fisheries ... and our sea turtles are part of our local and global heritage. They belong to all generations, present and future.

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- [65] William Beebe, an American naturalist** and author, once wrote, "When the last individual of a race of living things breathes no more, another heaven and another earth must pass away before such a one can be again." Let us work together to ensure that the last sea turtle will not disappear from the Caribbean Sea. Do your part! Put litter in its place, be respectful of nesting turtles and their eggs, do not purchase turtle products at home or abroad, and get involved in community conservation efforts!
- [66] Closing Side – Acknowledgements, final remarks -- Thank you for listening!**

**END**

***We would like to thank the following individuals for contributing photos to this presentation:***

***Sheldon I. Aptekar/Kingsborough Community College-City University of New York, Stephen E. Cornelius, Scott Eckert/WIDECAST, Dan Evans/CCC, Lianna Jarecki, Chris Johnson/Marinelifelife Centre of Juno Beach, John Mitchell/NOAA, Peter Pritchard/Chelonian Research Institute, Projecto TAMAR, Robert van Dam, and Ian K. Workman.***

## GLOSSARY

**Arribada**, A unique nesting strategy, characterizing the genus Lepidochelys (Kemp's and olive ridley sea turtles), where females approach the beach and nest *en masse*.

**Benthic**, Describing an organism that lives in the benthos, a biogeographical region referring to the bottom of an ocean, lake, or river.

**Bycatch**, Organisms caught incidentally, or by accident, during fishing operations for which the organism is not a target.

**Calipee**, Cartilage found inside a sea turtle; traditionally stewed with turtle meat to make soup.

**Carapace**, A bony shield or shell covering all or part of the dorsal (top) side of an animal, such as a turtle.

**Caretta caretta**, Loggerhead sea turtle. The generic name Caretta was introduced by Rafinesque (1814); the specific name caretta was first used by Linnaeus (1758). The name Caretta is a latinized version of the French word "caret", meaning turtle, tortoise, or sea turtle (Smith and Smith, 1980).

**Carnivore**, An animal that preys (feeds) on other animals; a meat-eater.

**Chelonia mydas**, Green sea turtle. The generic name Chelonia was introduced by Brongniart (1800); the specific name mydas was first used by Linnaeus (1758).

**Clutch**, The number of eggs produced (laid) by a turtle at one time.

**Corals**, Corals are animals, very delicate and often extremely slow-growing; they belong to a group of animals called "cnidarians", which includes corals, anemones and jellyfish. Coral reefs provide important habitat, including food and refuge, to sea turtles.

**Crawl**, See Track.

**Dermochelys coriacea**, Leatherback sea turtle. The generic name Dermochelys was introduced by Blainville (1816); the specific name coriacea was first used by Vandelli (1761) and adopted by Linnaeus (1766) (Rhodin and Smith, 1982). The name refers to the distinctive leathery, scaleless skin of the adult turtle.



**Eretmochelys imbricata**, Hawksbill sea turtle. The generic name Eretmochelys was introduced by Fitzinger (1843) and means "oar turtle". The specific name imbricata is attributed to Linnaeus (1766) and refers to the over-lapping nature of the carapace scutes.

**Fibropapillomas**, Lobulated tumors that grow on the skin, eyes, in the oral cavity, and on the viscera of sea turtles. This disease is life-threatening as these lesions can impair the turtle's ability to swim, eat, see, and even breathe.

**Hatchling**, Newly hatched turtle; yolk sac, or umbilical cord remnant, still visible.

**Herbivore**, An animal that feeds on plants; an herbivore.

**Lepidochelys kempii**, The Kemp's ridley sea turtle. Reportedly the turtle was named for Richard M. Kemp, a fisherman interested in natural history who submitted the type specimen from Key West, Florida. The species was allocated to the genus Lepidochelys (Fitzinger 1843) by Baur (1890) when it was realized that Kemp's ridley and the Indo-Pacific "olive" ridley, Lepidochelys olivacea, were congeneric.

**Lepidochelys olivacea**, The olive ridley sea turtle. The generic name Lepidochelys was introduced by Fitzinger (1843); the specific name olivacea was first used by Eschscholtz (1829).

**Omnivore**, An animal that feeds on both plant and animal matter.

**Pelagic**, An organism living in the open ocean; young sea turtles of most species have a pelagic phase prior to returning, as juveniles, to take up residence in coastal or continental shelf waters.

**Plastron**, The ventral (bottom) portion of a turtle's shell.

**Prefrontal Scales**, Thin, flattened, plate-like structures between the eyes that occur in pairs and can be used to help distinguish sea turtle species.

**Scute**, A horny plate, as on the shell of a turtle; the number and arrangement of scutes can be useful in distinguishing one species of sea turtle from another.

**Track**, Marks left in the sand by a sea turtle coming ashore to lay her eggs; track patterns vary in width and symmetry and can be useful in identifying sea turtle species.

**Turtle Excluder Device (TED)**, A type of gear modification required by shrimp trawls operating in U. S. (and some other nations') waters for the purpose of excluding sea turtles caught in the trawl net before they drown.

# THE PARTS OF A SEA TURTLE

The first drawing is the dorsal, or "top" view of the turtle, showing the carapace, or "shell". The second drawing is the ventral, or "bottom" view of the turtle, showing the plastron, or "belly". Scientists also look at the number of scales on the head to identify a turtle; in this case, notice that the Green turtle has two (and only two) large scales between the eyes. Drawings courtesy of Tom MacFarland © 1999.

