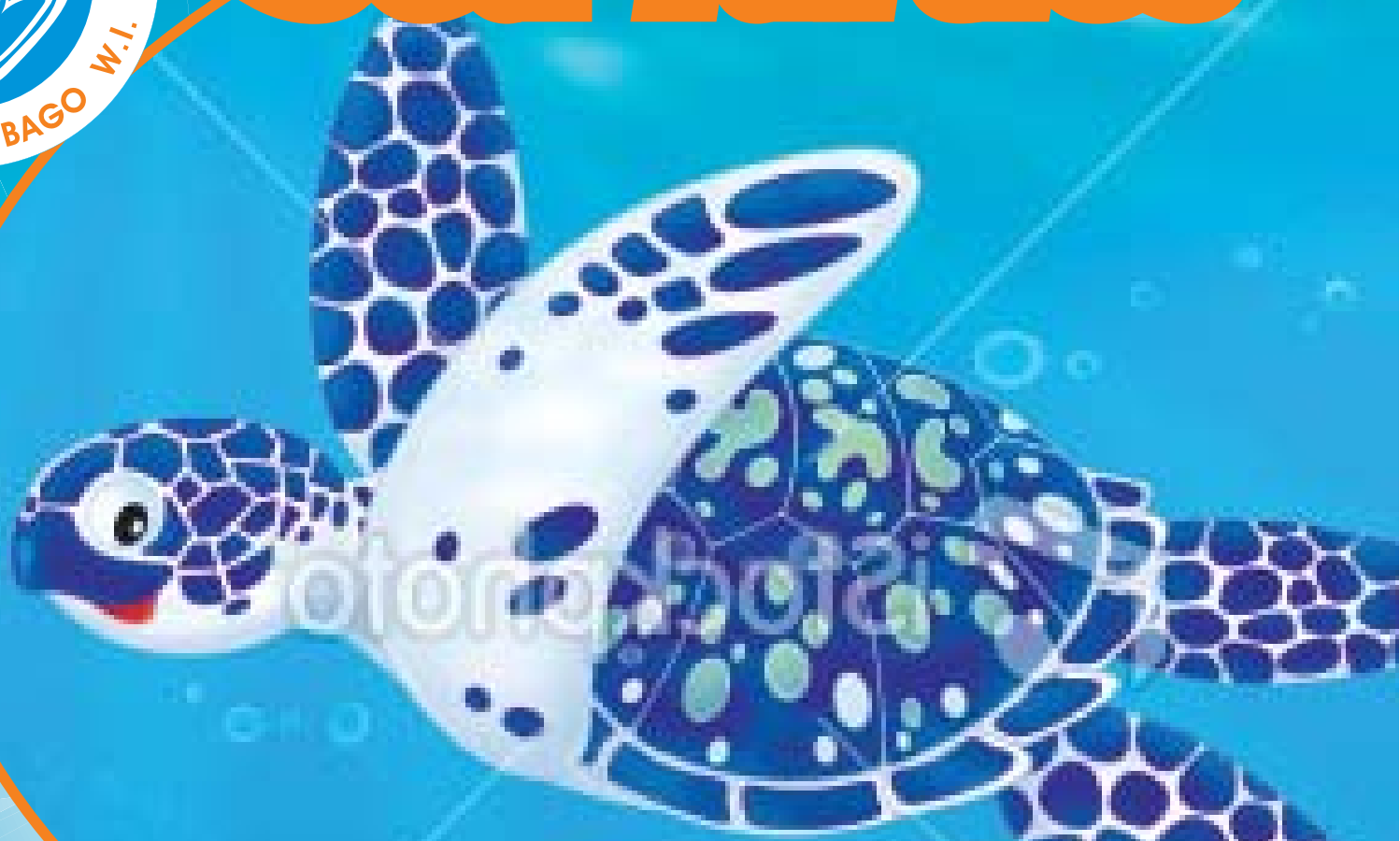
Understanding Sea Turtles



Educational & Activity Book

COMPILED BY
DR. ALLAN BACHAN

IN PARTNERSHIP WITH

Atlantic

Ministry of Housing
and the Environment

Turtle Village Trust Charter

As a steward, Turtle Village Trust (TVT) has an obligation to conserve, protect and manage living marine resources in a way that ensures their continuation as functioning components of marine ecosystems, affords economic opportunities, and enhances the quality of life for the Trinidad and Tobago public.

Vision:
Our vision is to place Trinidad and Tobago as the premier turtle tourism destination globally.

Mission:
The mission of Turtle Village Trust is to foster and strengthen strategic partnerships with turtle conservation groups and the wider coastal communities to protect the natural resources and create superior quality products and services for customers to achieve sustainable community growth.

Under this mission, the goal is to optimize the benefits of living marine resources to the nation of Trinidad and Tobago through sound science and management. This requires a balancing of multiple public needs and interests in the sustainable benefits and use of living marine resources, without compromising the long-term biological integrity of coastal and marine ecosystems.

The Turtle Village Trust represents a number of community groups that are actively involved in turtle conservation, research, awareness and advocacy throughout Trinidad and Tobago. We also promote and embrace the understanding that the fate and future of sea turtles in Trinidad and Tobago are inextricably linked to our own.

The Turtle Village Trust - through its work - complements and strives to improve the welfare of sea turtles through its own program of work and focus areas which include: protecting sea turtles from illegal trading and indiscriminate slaughter, the advancement of research, and preserving the critical habitats and nesting sites of the sea turtles.

Message to Students

Sea turtles have populated the planet for approximately 150 million years. They have outlived almost all of the prehistoric creatures with whom they once shared the earth. Why is it that now, after all these years, all seven species of sea turtles may be facing extinction?

Our Trinidad and Tobago turtles are special. The turtles that come to our island beaches are the children and grandchildren of other turtles who came to nest right here years ago. If the turtles are killed, there will be no new turtles to come back to our beaches and live in our coastal waters.

You can help to conserve sea turtles by keeping trash out of the ocean. When sea turtles mistake plastic for food, they can become sick and die. Every year, people of all ages pick up trash on beaches so that the turtles and other special marine life will have a clean and safe ocean. It will take many years for sea turtle numbers to increase to healthy numbers, but it will happen if we try.

There is hope for the sea turtle ... in you. Sea turtles can be saved in spite of all the dangers they face. If enough people care, if governments help, and if the efforts of conservationists (including children) succeed, sea turtles will live. Conservationists are people who study the problems of endangered animals, or plants, and try to solve them. We can help our Caribbean Sea turtle populations by stopping the hunting for eggs or adults. It can take more than 20 years for a sea turtle to become an adult and begin laying eggs. If they are allowed to live so that they can grow to become adults, mate and lay eggs for the next generation, there will be more turtles in the future.

Remember, all sea turtles are protected under law. These laws prohibit harassing, harming, killing or keeping sea turtles in captivity without a permit, allowing these activities for research or educational purposes. Divers should be aware that riding or hanging on to turtles, or chasing them, is illegal and puts these animals under stress.

We need to:

Respect them:	*We need to help Communities adapt to their environment in ways that safeguard their health and safety, optimize economic activity and enhance environmental quality.*
Preserve them:	*We need to advocate against domestic and global sources of pollution. Conserve them: We need to conserve biological diversity in healthy ecosystems by building shared sustainability strategies for our wildlife and ecosystems*
Support them:	*We need to provide support to our community conservation groups to ensure that our turtles are kept safe.*

Let Our Turtle Family Live! Let us respect our elders.

Dr. Allan Bachan

Preface

There are many learning / teaching activities that can be used in schools. Each teaching environment is also dependent on a range of factors, such as resources, teaching approaches, personal styles, school atmosphere or ethics, and others. Here are some activities that you can implement in your lesson plans to raise awareness of sea turtles and the marine environment in which they live.

The activities have been divided into categories around learning / teaching styles most commonly used in schools.

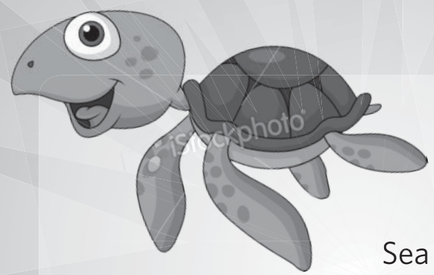
Turtle Village Trust would like to acknowledge The National Ocean and Atmospheric Administration (NOAA), as a reference source of material utilized in this educational booklet; Mary Beath as the source of the Illustrations; and the Wildlife Section of the Forestry Division, our partners in conservation.

Most importantly, Turtle Village Trust would like to acknowledge our sponsor, Atlantic, without whom this valuable resource would not be possible. This material is solely for educational and awareness purposes.

Atlantic

Moving a generation ahead

Ministry of Housing and the Environment



Sea Turtles

Sea turtles figure prominently in the lives of people living in the coastal communities of Trinidad and Tobago. Turtles are reptiles, the same as lizards, geckos and snakes. Like all reptiles, turtles have scaly, dry skin but, unlike their crocodile and snake relatives, turtles have no teeth. Turtles have a shell - called a carapace - that protects them from their enemies. Many turtles can pull their bodies into the shell, making it impossible for predators to harm them. Most turtles spend their lives on or near the land or in fresh water. There is one group of turtles, however, that spends almost all of its life in the
ocean: the sea turtle.

The sea turtle, unlike most other turtles, cannot pull its head and flippers into its shell and its legs change to become more like the fins of a fish. You can learn more about our sea turtles by reading this student booklet, doing the activities and coloring the pictures.

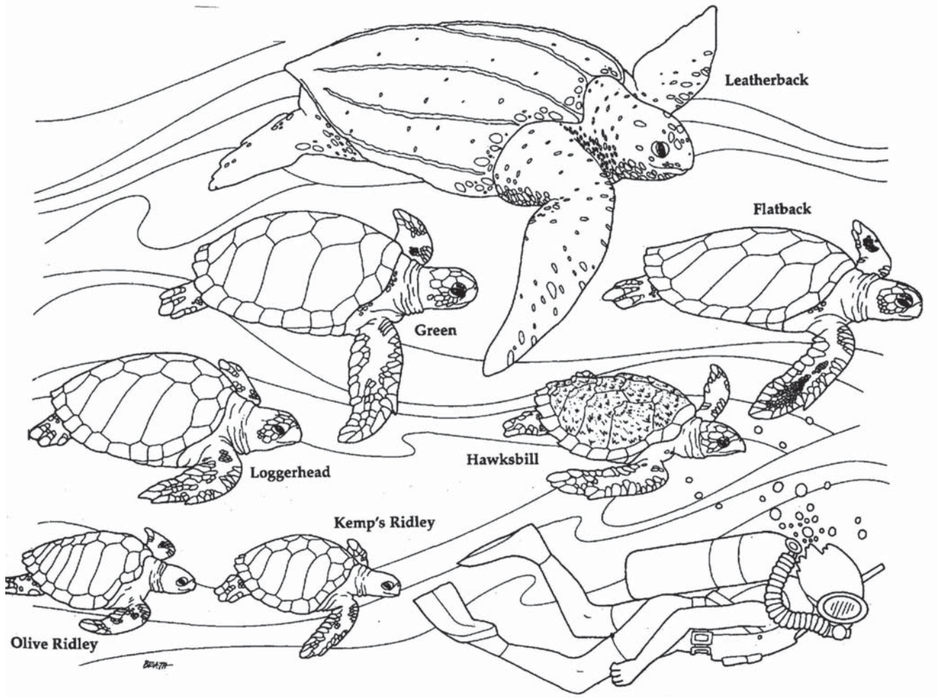
Have fun!

The Seven Species of Sea Turtles

Sea turtles have been around for 150 million years. Their ancestors were giant land turtles that entered the sea ages ago when the first dinosaurs lived. The first sea turtles did not look like those of today. It took millions of years for sea turtles to evolve, for legs to become flippers and for big bodies to flatten into streamlined shapes. The dinosaurs and the giant land turtles are gone forever; we can see only their fossil bones in museums.

But, somehow, sea turtles have lived on. Seven different kinds still swim in warm and temperate oceans around the world. They spend their lives in the water except for the short times when the females come on to land to nest and lay their eggs. However, in Trinidad and Tobago, at certain protected and undisturbed locations, sea turtles sometimes crawl up to sleep or "bask" along the shoreline. The sea turtles share the ocean with fish, whales and other sea creatures and with you and me.

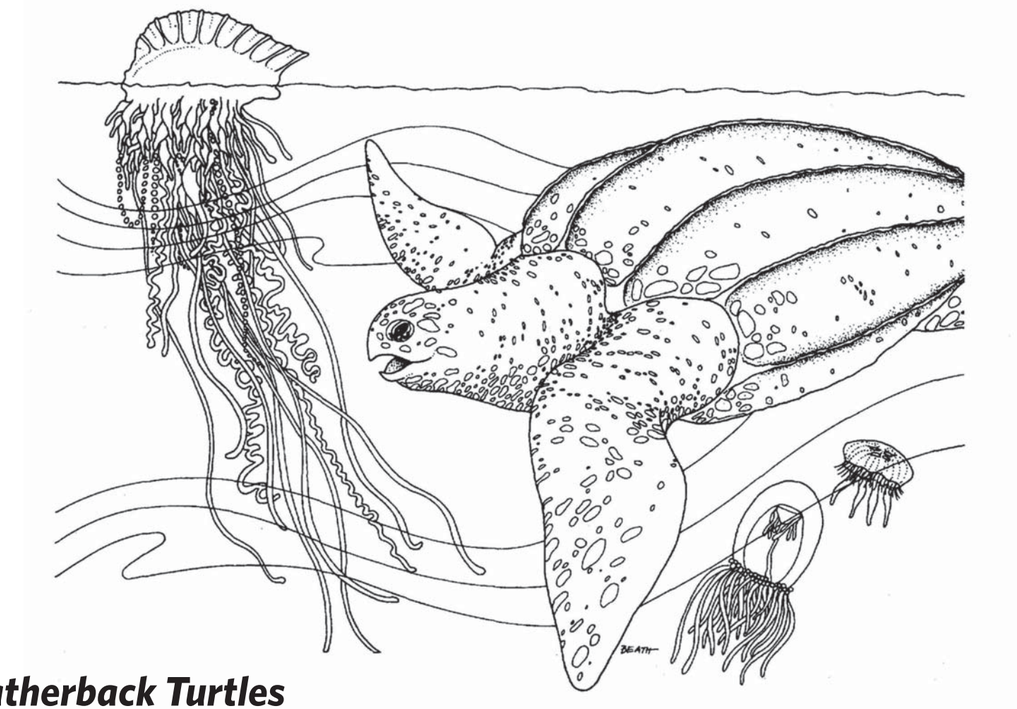
It is believed that there are currently seven species of sea turtles inhabiting the oceans and seas of the world. Though they share many common characteristics, the seven types of sea turtles are each unique and have adapted specific strategies for survival. Migratory routes, nesting habits and locations, feeding techniques and diet, and physical traits all help to distinguish between the different species.



Marine Turtles Nesting in Trinidad and Tobago

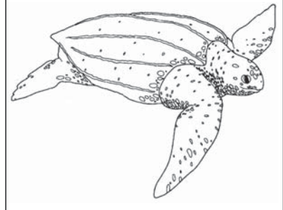
Five species of sea turtle occur around Trinidad and Tobago: the Loggerhead Caretta caretta, the Leatherback Dermochelys coriacea, the Olive Ridley Lepidochelys olivacea, the Green Chelonia mydas, and the Hawksbill Eretmochelys imbricata. All five species have been proposed as Environmentally Sensitive Species by the Environmental Management Authority (EMA) due to their international conservation status. The Loggerhead and Olive Ridley are relatively uncommon in Trinidad and Tobago, the former as migrant sub-adults along the north coast of Trinidad, the latter as an occasional nester. Only the Leatherback nests in relatively large numbers. The Leatherback population of Trinidad (and to a lesser extent Tobago) is of global significance, representing about one seventh of all nestings worldwide, but is currently receiving good protection in Trinidad (and to a lesser extent Tobago) from community-based ecotourism.

The Turtle Village Trust, in partnership with the Wildlife Section of the Forestry Division, has launched a National Monitoring Programme. This programme is sponsored by Atlantic and seeks to get a better understanding of sea turtles as well as to protect them on nesting beaches. The conservation status of Green and Hawksbill turtles in Trinidad and Tobago is of more immediate concern, as these species remain harvested under Fisheries legislation, despite protection near the shore and on nesting beaches. High density nesting beaches are found on the north and east coasts of Trinidad and on a few beaches in Tobago. Nesting by other species is reported to be largely centered along the north and east coasts of Trinidad and Tobago, as well as on the Bocas Islands. A turtle fishery in Trinidad and Tobago exploits both species for meat, and the Hawksbill potentially for tortoiseshell.



Leatherback Turtles

DERMOCHELYS CORIACEA
A.K.A. BATTALIE / COFFINBACK



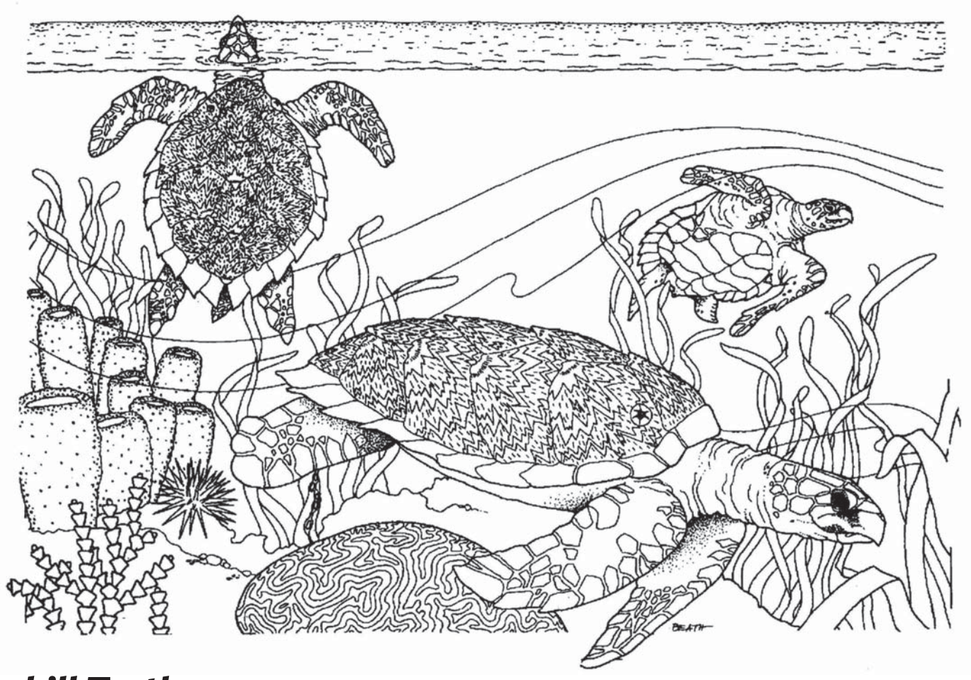
The Leatherback sea turtle is the largest and most endangered of the marine turtles, weighing up to 2000 lbs and measuring up to 8 feet in length! Its overall color is black. The Leatherback is the only sea turtle that does not have a hard top shell. It is protected instead by thick skin with seven long ridges along its back. Its leathery back gives the turtle its name. Due to its immense size, the Leatherback's only natural predators are sharks and man.

Average size and weight: Up to eight feet and 1,300 pounds (the largest was 10 feet and 2,019 pounds)

Diet: The Leatherback's favorite food is the jellyfish which most sea animals avoid - the poisonous Portuguese man-of-war. Like all sea turtles, the Leatherback has no teeth and uses its strong, sharp beak to catch food.

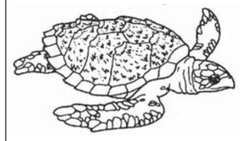
Range: Circumglobal - Their migratory routes take them as far north as Newfoundland and as far east as Africa, bringing them into local waters only during the mating and nesting season (April - September). Status: Critically Endangered. Unfortunately, here in Trinidad and Tobago, Leatherbacks are still seen as a traditional food source, and poaching during the closed season remains a huge threat to the species.

Fact(s): The largest, deepest diving and furthest traveled of all sea turtles, the Leatherback is a great wanderer. Its huge front flippers take it thousands of miles.



Hawksbill Turtles

ERETMOCHELYS IMBRICATA



The Hawksbill is one of the most beautiful sea turtles. It gets its name from its beak because the top of it hooks down much like the bill of a hawk. Its hard, elliptical shell is made up of overlapping amber plates streaked and mottled with brown, black, yellow and/or red. The skin of its head and flippers has brown patches rimmed in yellow.

Hawksbills and other sea turtles are reptiles, like turtles, that live on land. They have lungs and breathe air. Even though sea turtles can hold their breath for many minutes, they must come up to breathe.

Average size and weight: Hawksbills can weigh up to two hundred pounds and generally measure up to two and a half feet long.

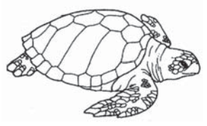
Diet: Sponges, anemones, squid and shrimp. Their hawk-like beak that inspires their name allows them to eat sponges, corals and other invertebrates, most of which are poisonous.

Range: Hawksbills are the most tropical of all sea turtles, preferring to live in the clear, relatively shallow water of coastal reefs, bays and lagoons.

Status: Critically Endangered worldwide and overhunting is their biggest threat. Fact(s): They were hunted to endangerment due to the desire for their shell. Traditional tortoise shell products and a variety of ornamental craft items are made from the shell of these turtles. Hawksbill meat is considered toxic in some areas due to the nature of their diet.

Loggerhead Turtles

CARETTA CARETTA



The Loggerhead hunts near coral reefs and rocks. You can recognize it by its large, wide head and broad, short neck. The Loggerhead, like other sea turtles, cannot pull its head into its shell, like land turtles. Its shell is like a suit of armor, but its head and flippers are unprotected. Certain sharks and killer whales may attack these parts, but the Loggerhead is big and fast and has few natural enemies. Adults tend to stay close to mainland shores, but may transit an ocean following migratory paths thousands of years old. They do this by using environmental cues, such as the Earth's magnetic poles. The Loggerhead was named for the size of its head, which houses a large set of powerful jaw muscles used for cracking hard shelled prey. The carapace has a reddish-brown color. This coloration is also found on the top side of its flippers and head, while the Loggerhead's underside is pale yellow to dull brown in color.

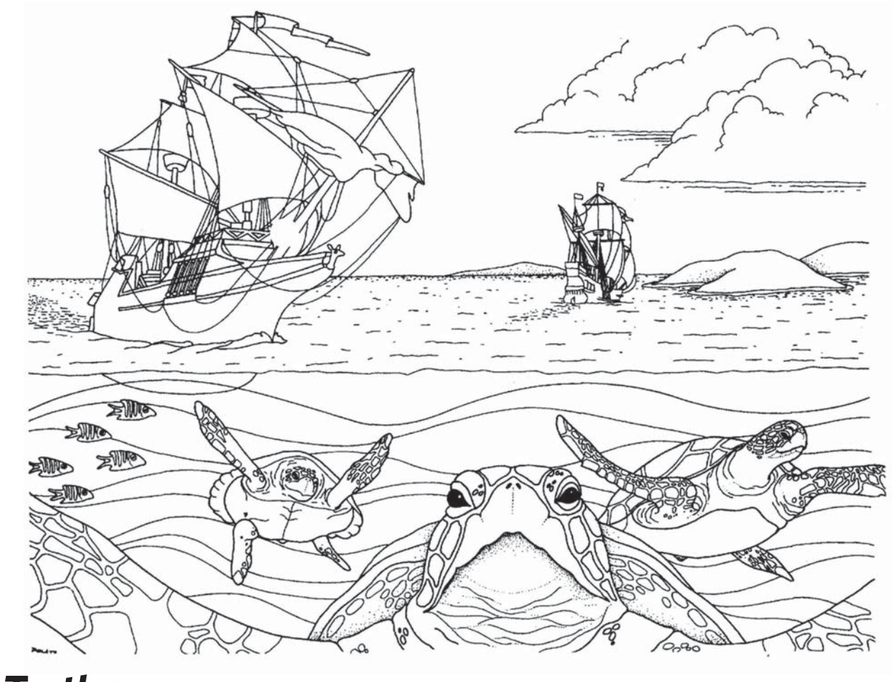
Average size and weight: The Loggerhead turtle is slightly smaller than the Green turtle. It measures 41 inches and can weigh up to 350 pounds

Diet: Primarily carnivorous, feeding on crustaceans, horseshoe crabs, clams, mussels and shrimp

Range: Circumglobal - ranging in most of the world's oceans; usually visible on continental shelves, in bays and estuaries and lagoons in temperate, subtropical and tropical waters

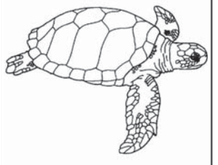
Status: Endangered

Fact(s:) Named for their very large head; the most numerous of the US Atlantic Coast sea turtles.



Green Turtles

CHELONIA MYDAS
A.K.A. GREENBACK



Green Turtles have a hard, oval shell which is usually olive brown with blotches or radiating streaks of subtle color. When western explorers began traveling to America and the Caribbean, there were millions of sea turtles in the seas. Traders, settlers and pirates who followed the first European explorers found that Green turtles had especially tasty meat and the gelatinous "calipee" was made into soup. Sailors could
easily capture the gentle animal. They would usually turn the turtle over on to its back so it was helpless, tie its flippers, and keep it aboard their ships to be slaughtered when they needed fresh meat. Today, hundreds of years later, Green turtles are still hunted by fishermen, especially in Tobago.

Average size and weight: Green Turtles can weigh approximately three to four hundred pounds and measure about four feet in length (the largest was five feet and 871 pounds).

Diet: It is the only sea turtle that lives solely on plants (strict herbivores), eating sea grasses and algae; juveniles eat worms and young sea creatures, as well as grasses and algae.

Range: They inhabit warm, shallow waters where there is an abundance of sea grasses.

Status: Endangered. Local populations remain in a critical state due to overhunting especially in Tobago.

Fact(s): The fat inside this turtle's body is green from the vegetation it eats, so it was named the Green turtle.

Student Activity 1

Match the description of the sea turtles with the pictures, then colour them the right colour.

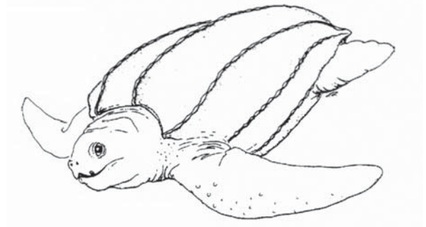
A. **The Kemp's Ridley** is the smallest sea turtle and the most endangered. Adults have a shell that is almost round and is a little over two feet long. They can weigh around 100 pounds. Kemp's Ridleys like to eat crabs. Baby Ridleys are black, but the adults are olive green.

B. **Green sea Turtles** aren't really green - they are different shades of brown and yellow. (They are named for a green coloured fat underneath their shell that was used in making turtle soup.) Green turtles do like to eat green thing, though - mostly seagrasses or algae. They are the only sea turtles that are herbivores (plant eaters). Eating only plants must be good because they grow to 3 or 4 feet long and weigh over 300 pounds!

C. This is the largest sea turtle of all. It can grown to over 6 feet long and weigh over 1000 pounds. It is black in colour and has seven ridges running down its back. It doesn't have a hard shell like other sea turtles. It is covered with a leathery skin. That's where it gets it's name - **Leatherback!** Leatherbacks like to eat jellyfish.

D. **Hawksbill Sea Turtles** like to eat sponges and they are named for their pointed "beack" that looks like a bird. They have a very beautiful shell that is many different colours of gold and brown. They are endangered because people used their shells to make jewelry. Hawksbills can grow to 200 pounds and get to be 3 feet long.

E. **The Loggerhead** is named for it's large head. It is a reddish brown colour. It also like to eat crabs and can weigh close to 400 pounds and grow to 3 or 4 feet long.



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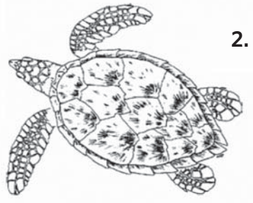

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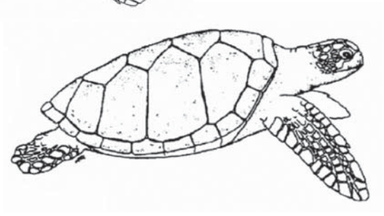

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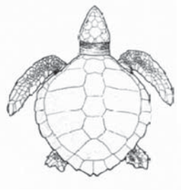

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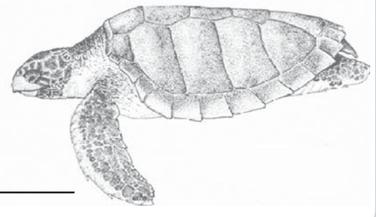


5. _____

Answers: 1. C; 2. D; 3. B; 4. A; 5. E.

Student Activity 2

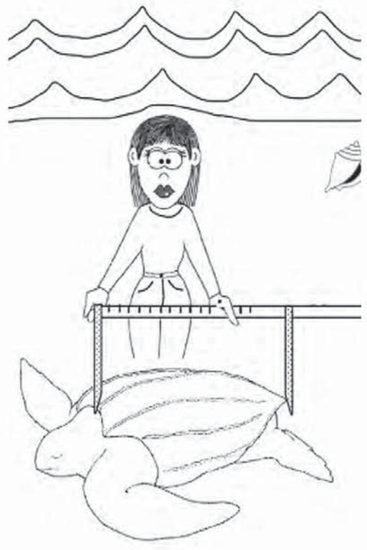
Subject: Math

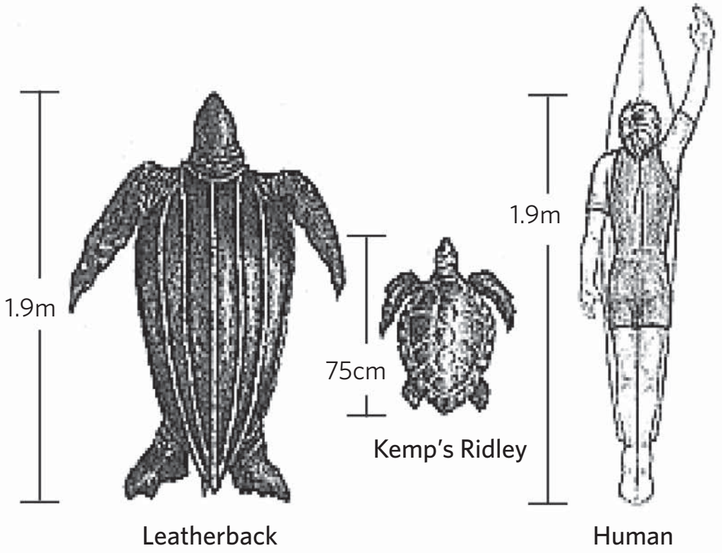
Objective: To compare a sea turtle's weight with that of a student.

Instruction:

1. Have the students weigh themselves individually (at home or bring a scale to class). Ask them to determine the average weight of their class members. Have them determine how many students it would take to balance a scale with the largest recorded Leatherback sea turtle (2,019 pounds or 878 kilograms). This may be extended by having them convert from pounds to kilograms.

2. Take into account the average life span of a turtle is 50 years: a turtle lives for 20 years before reaching sexual maturity: the average size of each clutch of eggs is about 120: the average number of nests per season is 2: and the frequency of their reproductive cycle is biennial. Using this information, have the students estimate the total number of eggs laid by one female Loggerhead during her lifetime.





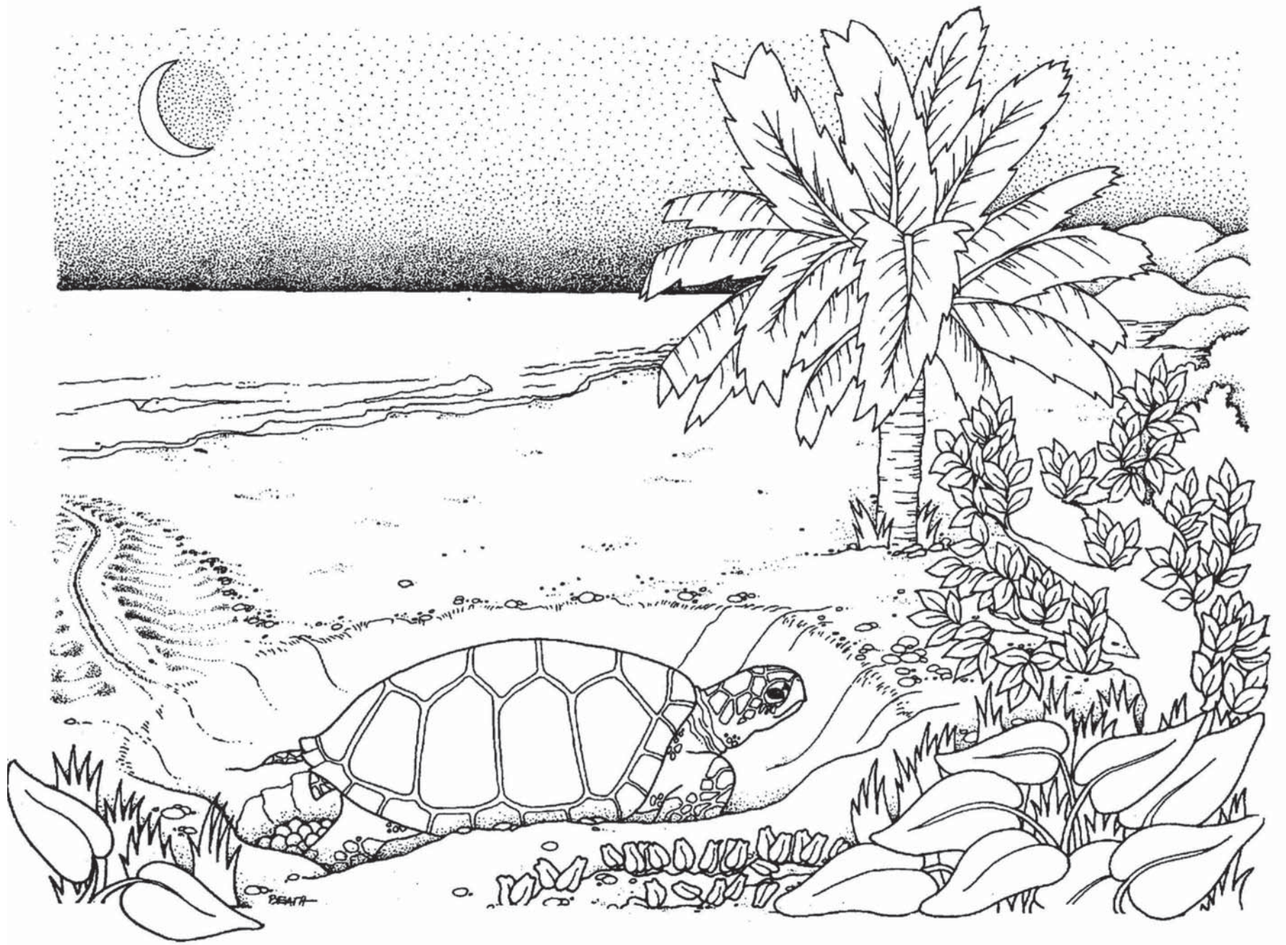
Sea Turtle Nesting

Sea turtles nest in a wide, warm belt around the world. They all return to the same beaches where they themselves hatched. Each kind of sea turtle has its own special place. For some, only one particular place will do. It is a wonder that sea turtles can remember where they were born and that they can navigate to find these places again.

A female turtle arrived offshore at her nesting beach alone at night. She mated earlier with a male Green turtle nearby in the water. It is time for her to lay her eggs. She might nest three or more times during a single nesting season. Though she is fast and well suited to the water, she is slow and in danger on land. The female dragged herself out of the sea and onto the beach up beyond the reach of high tide. She dug a pit for her body with her flippers. She nested in it and used her back flippers, like shovels, to scoop out a bottle-shaped hole. Now she drops about one hundred white, leathery eggs that look like
Ping-Pong balls into this hole. Locals say the 'mommas' cry when they lay their eggs because they know that they will never see their babies - but this is a myth.

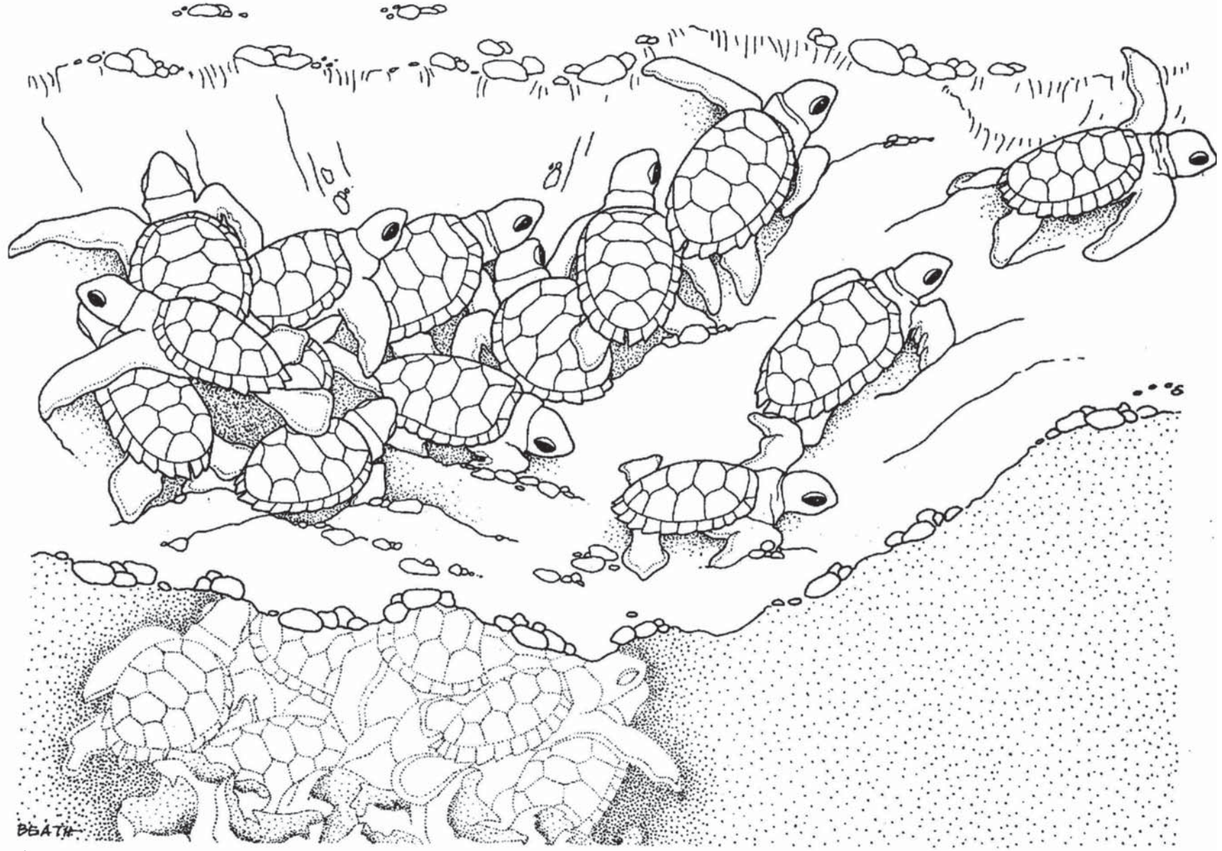
When she finishes, she will cover the nest with sand and slowly go back to the sea, leaving a trail behind her. 'Momma' sea turtles return to the same beach where they were hatched (called their natal beach) to lay their own eggs.

In Trinidad and Tobago, nesting occurs from April through October. Most females nest at least twice during each mating season; some may nest up to ten times in a season. A female will not nest in consecutive years, typically skipping one or two years before
returning.



The Hatchlings

The rays of the sun heat the beach, warming the turtle's eggs buried in the sand. The eggs develop in the nest. They are ready to hatch in about two months. The hatchlings, or baby turtles, peck at their shells with a small, sharp point at the front of their snout (this special part will disappear after hatching). The hatchlings cut open their leathery shells. All must hatch at almost the same time, for all must share the work in order to escape from the nest. The baby turtles scrape away at the sand overhead. The sand falls upon their empty shells, forming a platform that allows the hatchlings to rise. In a few days, they have scraped their way to the roof of the nest. Then, at night, or in the early morning when it is cool, little dark heads and flippers wriggle out onto the beach. Two-inch long hatchlings quickly crawl away to reach the sea.



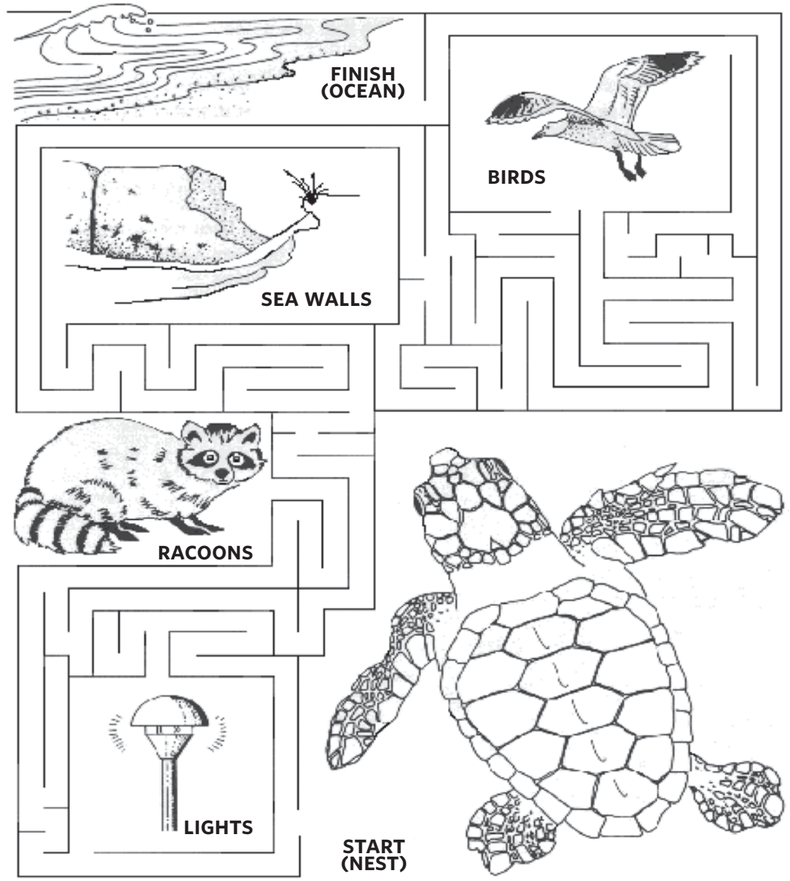
Race to the Sea

The hatchlings go towards the sea. The brightness over the water attracts them. They crawl from the nest and begin their race to the sea. Full of life, but defenceless, they race across the beach. Their shells are soft and offer little protection. In some places in the world, lizards, crabs and sea birds chase the tiny turtles and eat them. Many of the hatchlings that make it to the water may be eaten by fish. Only a few of the hatchlings may live to become adults. Where they go to spend their first few years is a mystery. It is one of nature's great secrets. Researchers do not yet know how long baby turtles spend in the open sea, or exactly where they go. They grow slowly and take between 15 and 50 years to reach reproductive maturity, depending on the species. There is no way to determine the age of a sea turtle from its physical appearance. Sea turtles live over a hundred years if not killed by humans.

Student Activity 3

Have the students complete the turtle hatchling maze which appears below.

1. Considering the number of eggs laid over a lifetime ask the students to account for why sea turtles are considered to be an endangered species.



SOURCE ; GRAY'S REEF NATIONAL MARINE SANCTUARY

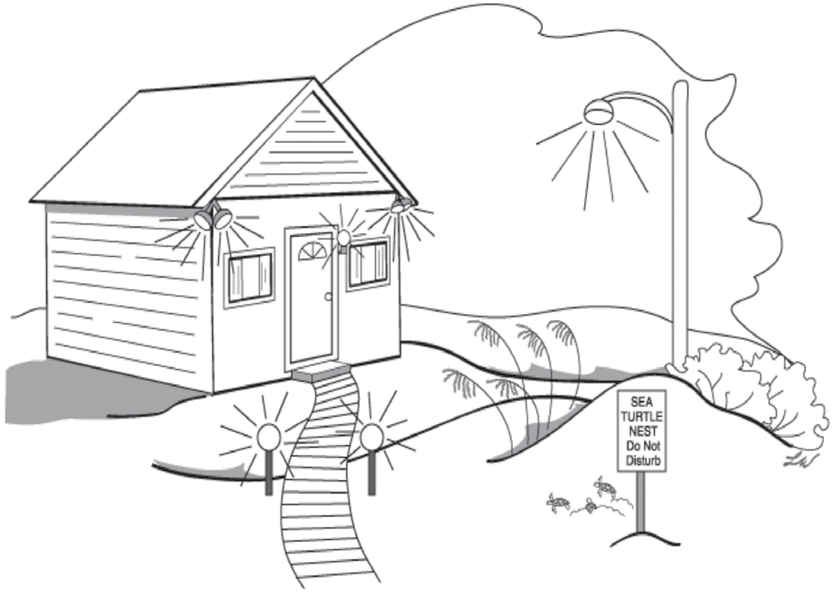
Student Activity 6

Instructions for Sea Turtles and Lights Colouring Sheets

Hatchling sea turtles come out of their nests at night. They find the ocean by following the area with the brightest light. On beaches where there are no people, this is the light of the moon and stars reflecting off the ocean waves. The turtles do not actually follow the moon, as many people believe. However, in areas where people live, lights on their houses and buildings appear very bright to hatchlings. The hatchlings follow these lights inland and do not often make it to the water. This is called disorientation. People can help the sea turtles by shielding or turning off their lights so that the turtles cannot see them.

Print out both sheets and color them. Both are of a beachfront house; one has lights that easily disorient sea turtles. The other has lights that have been modified to help prevent the disorientation of sea turtles. Circle the changes in each one. Can you describe how each change helps sea turtles? Answers are at the bottom of this page.

Answers for Sea Turtles and Lights Colouring Sheets



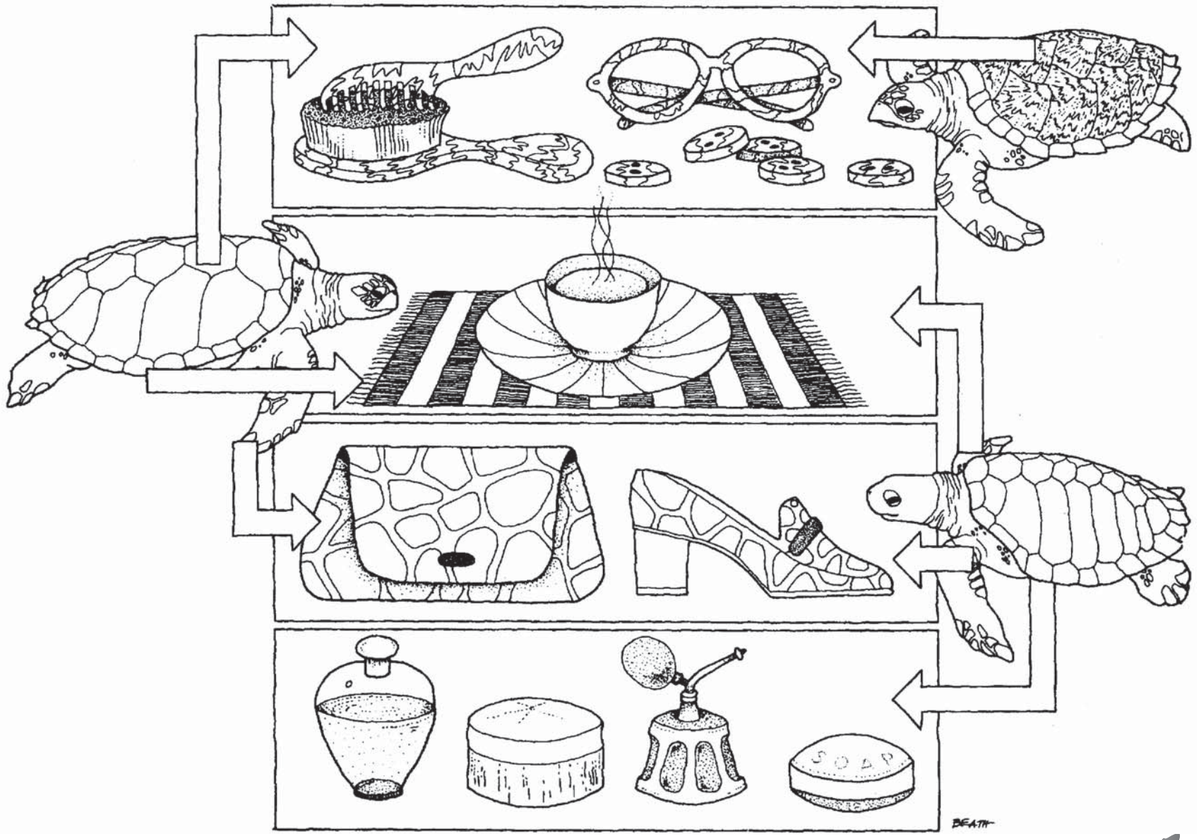
SOURCE: FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

Answers

1. The streetlight is shielded and lowered to prevent light from being seen from the beach.
2. The globe (round) walkway lights are changed to short lights that only shine down.
3. The globe porch light is changed to a shielded light that only shines light downward.
4. The spotlights are gone from the corners of the house.
5. The vegetation has been allowed to grow so that it blocks some of the light from reaching the beach.
6. The hatchlings are going the correct way instead of toward the lights.

Sea Turtles or Sea Products?

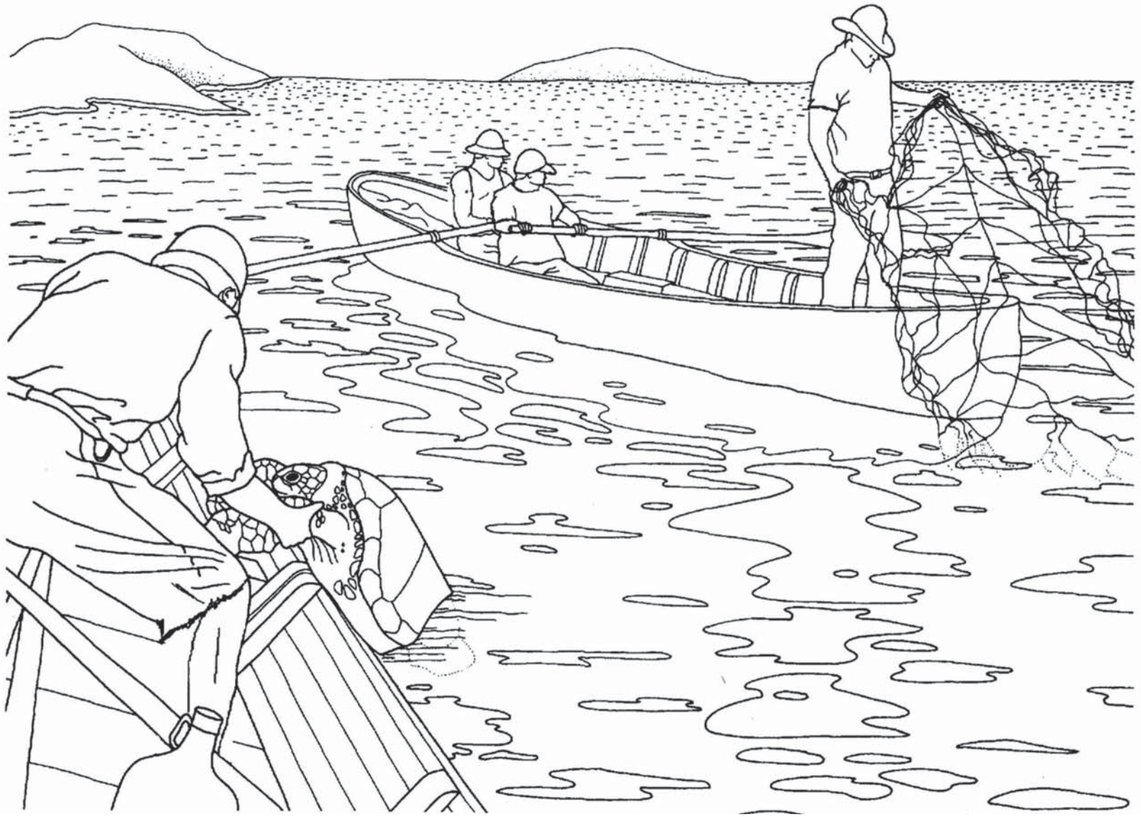
Sea turtles are disappearing in many areas. And once they are gone, it will be forever. One reason turtles are disappearing is because people use parts of turtles for food or to make different products. The Hawksbill is prized for its shell to make tortoiseshell combs, brush handles, eyeglass frames, buttons, hair clips and jewelry. Hawksbill and Green turtles are killed so they can be stuffed and hung on walls as decorations. Green turtles are slaughtered for their meat and to make turtle soup. The skin from the neck and flippers of Greens and Olive Ridleys is made into leather for purses and shoes. Fat from turtle bodies is used in soaps and makeup creams. Instead of using other resources that are more plentiful in abundance for these products, the world's remaining sea turtles are killed. In some countries, it is now against the law to kill or harm a sea turtle. If more countries begin to protect sea turtles, they will not disappear.



Turtle Hunting

Certain people around the world who live near the shore have always hunted sea turtles to help feed their families. A fisherman might spear a sea turtle and take it home to eat. Groups of hunters netted sea turtles when they rose to breathe and brought them back to their villages for food. For years, when there were many sea turtles, such hunting seemed to have little effect on their numbers. But more and more turtles were hunted. Money could be made from selling sea turtles. So, hunters took hundreds of turtles from the sea and even on the land, when they were nesting.

In Tobago, they used to be sold to restaurants, so that tourists could eat turtles. Fewer and fewer sea turtles were left ... until they were almost gone. Laws now protect sea turtles and forbid trade in turtle products. Turtles are now starting to increase in Trinidad and Tobago due to laws protecting them. However, not everyone obeys them.



The value of Sea Turtles

Ecological / Environmental Value

Sea turtles serve important roles in coastal and marine habitats by contributing to the health and maintenance of coral reefs, seagrass meadows, estuaries and sandy beaches. Because they migrate thousands of kilometers and take decades to mature, turtles are important indicators of the health of coastal and marine environments on both local and global scales.

The Biological importance of Leatherback turtles: Killing Turtles Affects Fishing and Tourism

Sea turtles have played a critical role in the ocean's food chain for millions of years. Their decline, and eventual extinction, has serious consequences for the sea upon which we depend for recreation and food. Leatherbacks feed almost exclusively on jellyfish, eating up to twice their body weight each day of the soft-bodied and often poisonous jellies. Jellyfish themselves have been known to feed on the eggs and larvae of spawning fish, as well as on the plankton that would otherwise nourish the surviving baby fish. Thus, this will certainly reduce the amount of fish caught by fishermen. Right here in Tobago and in Mayaro, the jellyfish swarms were responsible for clogging seines. Therefore, Leatherback Turtles can be very helpful to fishermen, yet fishing nets contribute to the highest cause of sea turtle mortality in the world. Without Leatherbacks, the jellyfish population thrives, thus endangering local and visiting bathers. This can have an impact on Tourism.

Social / Cultural

Sea turtles and humans have been linked for centuries. Once, turtles were only hunted in the Pacific as part of subsistence living. Increasing human populations, the introduction of new fishing technology, pollution and loss of feeding and nesting habitats in Trinidad and Tobago have resulted in reduced turtle numbers.

Economic Value

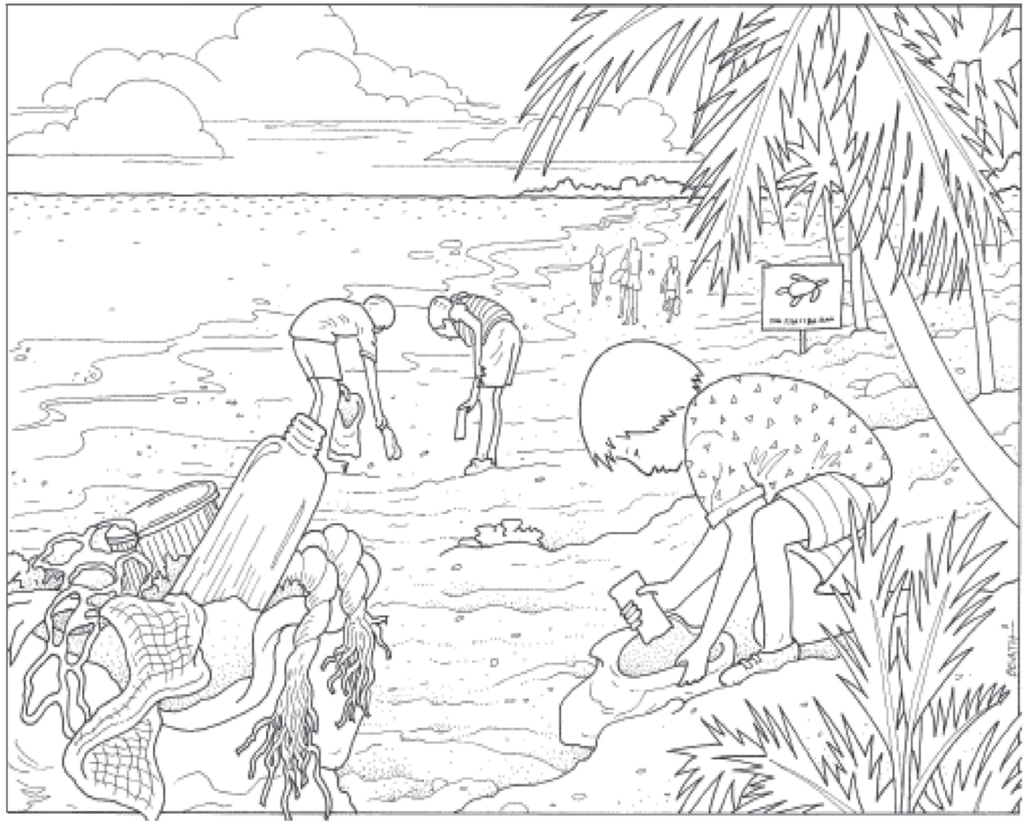
Thousands of people visit our shores each year to enjoy the natural environment and large diversity of marine animals, birds and other animals. This presents opportunities to generate revenue from tourism, which can support the local economy, and promote the conservation of our unique environment.

Our insatiable desire for 'wild meat' in every harvest pot is destroying what is left of our wildlife and may eventually destroy the very fishing and tourism industries on which we depend for survival. Sea turtles are just one more critical part of the web of plants and animals that make Tobago beautiful and unique. Without this natural abundance and variety, we would be living on nothing more than a barren rock in an empty sea with only ourselves for company ... with only ourselves to blame.

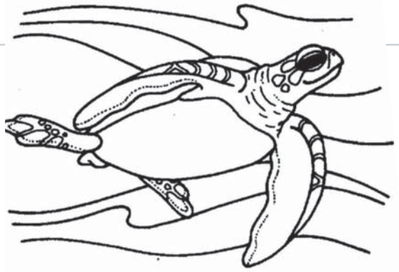
Hope for the Sea Turtle

Sea turtles can be saved, in spite of all the dangers they face. If enough people care, if governments help, and if the efforts of conservationists succeed, sea turtles will live. Conservationists are people who study the problems of endangered animals or plants and try to solve them. The best conservation programs try not to interfere with turtles. Sometimes, however, people have to interfere. In some places, sea turtle eggs are moved away from egg collectors or animals that would destroy the nests.

After many years of protection, some sea turtle populations are increasing. This is very good news. Conservation programs are needed everywhere to protect all of the world's species of sea turtles. To make beaches safe for little hatchlings, we can all work to keep the beaches clean.



Student Activity 8



The Old Man and the Sea

by Ernest Hemingway

Background

Santiago, the old fisherman in The Old Man and the Sea, loved the Green sea turtles and the Hawksbill turtles. He thought of them as his friends. He watched for them on the ocean as he spent long hours fishing alone off the coast of Cuba.

The story takes place before turtles became an endangered species. When Santiago was young, he worked on the boats that caught and sold turtles for profit. He and the other fishermen ate turtle eggs for strength, and turtle meat was a delicious food. People were not yet aware of the problems of pollution and over-fishing. They did not know that someday the only enemies of the once plentiful sea turtles would be sharks and man.

You will use the Internet to find information about sea turtles and learn what can still be done to save them from disappearing from the oceans of the world.

Task 1: Introduction

Santiago loved the Green sea turtles and the Hawksbill turtles, with their elegance and speed. He liked to watch the huge Loggerheads with their yellow shells that looked like armor. Because the turtles seemed defenceless in the sea, the old man felt sorry for all of them, even the Leatherbacks that were as long as his skiff and weighed a ton or more. Santiago would have been sorry to know that, today, sea turtles are threatened with extinction throughout the world.

The Task: Making a Conservation Poster

You will find information about sea turtles and create a conservation poster that tells what can still be done to save these magnificent creatures from disappearing from the oceans of the world.

Task 2: Introduction

The giant sea turtles were loved by Santiago, the main character in Ernest Hemingway's award-winning novel, The Old Man and The Sea. Santiago would be saddened to learn that the gentle creatures that he considered his friends on the sea are now in danger of extinction.

The Task: Writing an E-Mail Letter

Use the information you have learned in Activities 1 and 2 to write an e-mail letter to the Minister of Housing and the Environment, expressing your support for turtle conservation efforts throughout Trinidad & Tobago.

E-mail your support for turtle conservation efforts by writing to:
info@turtlevillagetrust.org.

Student Activity 9

Turtle Puzzle

See if you can find the words, listed in the box, in the Word Search Puzzle below. The Words can go up, down, across, diagonally or backward. Once you find all the words, see if you can explain what each has to do with sea turtles and the efforts to protect them. If you do not know, visit the Turtle Village Trust website at www.turtlevillagetrust.org to find the answer.

crabs	leatherback	endangered	migrate
pollution	plastic	nest	hatchlings
turtle excluder	habitat	loggerhead	shrimp nets
beach	sea wall	satellite	lights

H D A E H R E G G O L U N R
E A S H R I M P N E T S E M
R N T S L E P M I W Q D S R
A K D C O F L B C H U U T K
L M M A H C A E B L C K A C
I O I T N L E Y C Y H T S A
G O G U F G I X C R A B S B
H C R R L W E N P O B A E R
T W A T K E Q R G H I N A E
S A T E L L I T E S T E W H
E Z E T U W T A D D A O A T
T L R N P O C Q H D T T L A
A U R P L A S T I C I W L E
T S X E P O L L U T I O N L
A K H Y T V M O S W X Q Z P
O N B V O I U U H D Z M L J

Student Activity 10

Sea Turtle Quiz

Let us now test your knowledge of sea turtles.

1. What do Hawksbill sea turtles eat?
   - ❒ sponges
   - ❒ anemones
   - ❒ squid
   - ❒ all of the above

2. This turtle gets its name because of its exceptionally large head:
   - ❒ Leatherback sea turtle
   - ❒ Hawksbill sea turtle
   - ❒ Loggerhead sea turtle
   - ❒ Green sea turtle

3. The Pacific Green turtle is also called the:
   - ❒ blue sea turtle
   - ❒ black sea turtle
   - ❒ somewhat green sea turtle
   - ❒ red sea turtle

4. The upper part, or back, of a sea turtle's shell is called the:
   - ❒ plastron
   - ❒ carapace
   - ❒ scute
   - ❒ scale

5. When a female turtle crawls out of the ocean onto a beach, but for some reason does not nest, it is called a:
   - ❒ successful crawl
   - ❒ head start
   - ❒ false crawl
   - ❒ body pit

6. The lower part, or underside, of a sea turtle's shell is called the:
   - ❒ plastron
   - ❒ carapace
   - ❒ scute
   - ❒ scale

7. While a female sea turtle is nesting, she appears to shed "tears," but the turtle is really:
   - ❒ secreting extra water from her body
   - ❒ secreting extra salt from her body
   - ❒ secreting sand from her body
   - ❒ secreting sugar from her body

8. All sea turtles nest in these regions of the world:
   - ❒ arctic and temperate waters
   - ❒ temperate and subtropical waters
   - ❒ subtropical and tropical waters
   - ❒ tropical and arctic waters

9. Which sea turtle species dives the deepest, travels the furthest and grows the largest?
   - ❒ Leatherback sea turtle
   - ❒ Hawksbill sea turtle
   - ❒ Loggerhead sea turtle
   - ❒ Green sea turtle

10. Which of the following is not a human-caused threat to sea turtle survival?
    - ❒ capture in shrimp nets
    - ❒ beach front lighting
    - ❒ ghost crab predation
    - ❒ coastal armoring

Sea turtle facts

Did you know?
...sea turtles cannot retract their heads or flippers into their shells...

Did you know?

- The largest Leatherback on record (a male) became stranded on the coast of Wales in 1988 and weighed almost 2020 lbs (916 kg).
- Leatherbacks can dive deeper than 3900 ft (1200 m)!

Did you know?

- The Kemp's Ridley species is named after Richard M. Kemp, a fisherman from Key West, Florida, who first submitted the species for identification in 1906.
- Kemp's Ridleys are the only sea turtle species that nest predominantly during daylight hours.

Did you know?

- In the Caribbean, an adult Hawksbill eats an average of 1200 lbs (544 kg) of sponges a year!
- Hawksbills are capable of nesting faster than any other species of sea turtles and can complete the entire process in less than 45 minutes

Did you know?

- The Loggerhead can migrate over 7,500 miles (12,000 km) between nesting beaches and feeding grounds!
- During the 3 months or so that a female Loggerhead breeds, she will travel hundreds of miles to nest, lay 35 lbs (15.9 kg) of eggs or more, and swim back to her home foraging area, all without eating anything significant.
- From hatchling to adult, a Loggerhead increases its weight more than 6000 times!
- Although they are good swimmers, Loggerheads have callus-like traction scales beneath their flippers that allow them to "walk" on the ocean floor.

Did you know?

- A Hatchling weighs about 0.055 lbs (25 g) and is about 2 inches (50 mm) long. Adult Green turtles are the only marine turtles to exclusively eat plants!

Did you know?

- Trinidad has the largest accessible nesting population of Leatherbacks in the world!
- Grande Riviere has the most turtles nesting to space available in the world.
- In some societies, sea turtles are considered sacred, and killing one is forbidden.

Frequently Asked Questions About Sea Turtles

How many kinds of sea turtles are there?
Seven (7): Leatherback, Loggerhead, Green, Hawksbill, Kemps' Ridley, Olive Ridley and Australian Flatback.

Why are the Leatherbacks on the "critically endangered" list?
Leatherbacks are on the "critically endangered" list because the worldwide population has declined so rapidly in the last 20 years. They are expected to be extinct in the Pacific Ocean in the next 5 to 10 years. The Atlantic population may last only 20 to 30 years longer.

Why is that?
There are a number of reasons why their decline is at such a rapid rate, e.g. loss of habitat due to coastal development and beach erosion; pollution in our oceans such as oil slicks, red tide, etc. Plastic bags in the water look like jellyfish to a turtle. If the turtles eat the plastic bag (which is non-digestible), it sticks in their throats and causes them to suffocate. One of the biggest culprits is long lines laid for miles in the sea to catch tuna / swordfish. Turtles often become ensnared or entangled in these lines and, since they need to surface periodically to breathe, they end up drowning. Poaching of nesting females and eggs is another factor.

How long do sea turtles live?
It is thought that sea turtles have a lifespan of 75 - 100 years. However, due to the extreme conditions they now face (mentioned above), it is doubtful that many live that long. Here in Trinidad and Tobago, the nesting females are much smaller than 20 years ago.

How do you know the age of a sea turtle?
There is no way at present to determine the age of a sea turtle.

Do the male sea turtles ever come ashore?
No. Once the male hatchlings emerge from their nests, they head to the sea and remain there for the rest of their lives. The only time we might see males is prior to nesting season when they mate with the females, close to the nesting beaches, but still at sea.

Why do the turtles nest in Trinidad and Tobago?
The turtles that nest here were born in Trinidad or Tobago. Turtles always return to their beach of birth to lay their eggs. Although Leatherbacks travel to colder regions, such as Canada, Newfoundland, etc., they prefer the tropical and subtropical beaches to nest as they provide better incubation for their eggs. The temperature of the sand determines the sex of the hatchlings. If the sand is too cold, it will produce male hatchlings; if it is too warm, we get all females.

Why is "Turtle Beach" the favorite beach in Tobago for Leatherbacks?
Because it has a deepwater approach, the Leatherbacks are so large that it is easier for them to get closer to the shore at Turtle Beach and on to the beach more quickly. They would never nest at Pigeon Point as that beach is too shallow for such large reptiles. The turtles would be dragging on the bottom long before they reached the sand and would waste valuable energy just trying to reach the beach.

When in the day do sea turtles nest?
Most sea turtles nest during the night time. However, Kemp's Ridley sea turtles nest during the day. Also, large numbers of female Ridley sea turtles nest at the same time in the same location. This mass nesting is known as an "arribada" (Spanish for "arrival").

How old are the females when they start to nest?
Scientists believe females start to lay at about age 25.

Where do they mate?
All sea turtles mate at sea. Leatherback males start arriving in tropical waters up to a month before nesting begins and leave in mid-season to return to colder regions.

How often does a sea turtle nest?
A sea turtle will nest once every 2 to 3 years. When it is her "nesting" year, she will put down 7 to 10 nests at 10 to 12 day intervals. The amount of nests is dependent on the age and size of the turtle. The larger and/or older the turtle, the more eggs she is able to store inside her.

How many eggs does a sea turtle lay?
A female sea turtle lays around 100 eggs in each nest (the average number varies with each species). A female sea turtle will lay several clutches (or nests of eggs) in each nesting season, but she will not nest every year.

Why does the nesting turtle "cry"?
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 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 is an important part of their physiology.

Are sea turtle eggs hard?
Sea turtle eggs are flexible and pliable – not hard like a chicken's eggs. The size of the eggs varies with each species, but they are generally the size of a ping pong ball (1.5 to 2 inches across).

Why don't we just breed sea turtles in captivity or collect the eggs in a hatchery?
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. A temperature of about 30ºC produces roughly equal numbers of males and females. Therefore, careful round-the-clock monitoring is necessary to ensure that the natural gender balance is maintained, as a population of all males or all females would be unable to reproduce.

How do you know the difference between a male and a female turtle?
Mature male turtles have a distinguishable tail that extends well beyond the end of the carapace / shell, but it is virtually impossible to tell the difference at the juvenile stage by sight. This is one of the challenges to enforcement of our current Fisheries legislation.

Where do the babies go?
The juvenile years of a sea turtle are often referred to as the "lost years" because so little is understood about this critical phase of life. Studies to date suggest that many swim directly to the Sargasso Sea or other areas of convergent currents, where they can hide amongst the seaweed and other flotsam, while developing the strength and size to venture further afield. Most young turtles seem to eat anything at first and their diet becomes more specialized when they return to the habitat that they will inhabit for the rest of their lives, e.g. reefs for Hawksbills and seagrass beds for Greens. Juvenile leatherbacks are very rarely reported in nearshore waters.

Why are sea turtles "ambassadors of the oceans?"
They travel long distances to feed and nest, connecting many species and ecosystems of the ocean and land together.

How YOU Can Help!

Become Aware – Get Informed – Use Influence - and Be Responsible.

There are many things each of us can do to help sea turtles survive.

1. *Firstly, we must remember that we share the oceans and the beaches with many other species.*

2. *Secondly, we must be responsible for our actions and understand that we share the oceans and the Earth with many different living things. Become informed about the things that are killing sea turtles or destroying their habitat. Once we are aware, then we can become informed. Learn what is endangering and harming the environment and the organisms living around us.*

One way to keep informed about important issues is to join our Friends of the Sea Turtle Campaign and support our community groups like Nature Seekers, Grand Riviere Tour Guide Association, SOS Tobago, M2M Network and Fishing Pond Tour Guides. These groups monitor issues and encourage their members to get involved.

Use what you have learned to influence others ... by making your voice heard and your actions count.

3. *Lastly, be responsible. Pick up after yourself - dispose of waste correctly. Make environmental choices that are wise and beneficial, not cheap and convenient. Small changes can make a big difference in the sea turtles' journey for survival.*

Let Us Celebrate the species ... participate in its survival.

The Turtle Village Trust Conservation Kids are a group of young people on a mission!
Here's our special motto:
We, the Turtle Village Trust Conservation Kids, commit to spreading the word on turtle conservation to our friends, families and neighbors, and encourage everyone to make environmentally-friendly lifestyle choices!

Remember
You do not have to know everything about sea turtles to help out! Just learn some earth-friendly actions and spread the word!!

Kids can make a difference!

Together, we can create this legacy

"For, in the end, we will conserve only what we love.
We will love only what we understand.
We will understand only what we are taught".

-B. Dioum

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