

Sea Turtles

Amazing Reptiles of the Sea



SEATREK

Distance Learning Program

Sea Turtles: Amazing Reptiles of the Sea

Unit Overview

MAIN UNIT OBJECTIVES:

- Students will learn where sea turtles live and nest.
- Students will learn basic adaptations of sea turtles to marine life.
- Students will learn what conservation measures are being taken to protect sea turtles.
- Students will understand some of the issues of human encroachment on sea turtle nesting areas.

MAIN UNIT STANDARDS**:

1. (SC.G.1.2.1) Student knows ways plants, animals and protists interact.
2. (SC.G.2.2.1) Student knows that all living things must compete for earth's limited resources; organisms best adapted to compete for the available resources will be successful and pass their adaptations to their offspring.
3. (SC.G.2.2.3) Student understands that changes in the habitat of an organism may be beneficial or harmful.
4. (SC.H.3.2.4) Student knows that through the use of science processes and knowledge, people can solve problems, make decisions, and form new ideas.

** See Appendix A for National Standards and Appendix B for Sunshine State Standards.

UNIT OVERVIEW:

Sea turtles are an important part of tropical and sub-tropical marine ecosystems. They are one of a few marine animals that people come into contact with along the beaches.

The idea of marine reptiles intrigues many people. Sea turtles are well adapted to living in the water for most, if not all, their lives. The only ones who come ashore are the females, and then only to lay her eggs and return to the sea.

Sea turtles are herbivorous and carnivorous, depending on species. Because of their size and their shell, sea turtles are only prey to a few animals– sharks and humans. Humans are responsible for a large number of sea turtle deaths each year. Many conservation methods are employed to help people learn what they can do to help sea turtles keep swimming.

UNIT PRE-QUESTIONS:

1. What are sea turtles?
2. Why are they beneficial to ocean environments?
3. What types of conservation measures are being taken to protect sea turtles?
4. What can you do to protect sea turtles?



CONTENTS:

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Activity: Class discussion, research on internet or in print material	
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Description: This lesson will provide an interactive component with Mote educators to reinforce concepts about sea turtles.	
Activity: Videoconference	
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Description: This lesson will allow the students to use scientific data to draw conclusions and then debate conservation issues.	
Activity: Day 1– class discussion and research; Day 2– debate	
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UNIT EVALUATION:

Pre/post test

UNIT FOLLOW-UP DISCUSSION:

1. What are some of the major adaptations sea turtles have for living in the water?
2. What are some of the causes for sea turtles being threatened or endangered?
3. What can you do to help in the conservation of sea turtles?

Mote Marine Laboratory/SeaTrek grants the right to copy any or all of these materials for educational purposes.





Amazing Sea Turtle Websites!

Mote Marine Laboratory Sea Turtle Conservation

http://www.mote.org/~jerris/turtles/sea_turtle_rrc.phtml

Turtle Time

<http://www.swflorida.com/turtletime>

Caribbean Conservation Corp./Sea Turtle Survival League

<http://cccturtle.org/contents.htm>

Turtle Trax

<http://turtles.org>

Turtle Anatomy

<http://tofino.ex.ac.uk/euroturtle/clickt/clickt.htm#>

Florida Sea Turtles

<http://www.ces.fau.edu/library/info/turtle>

Gulf of Maine Aquarium

<http://octopus.gma.org/turtles/index.html>

Kemp's Ridley Sea Turtles

<http://www.nwf.org/wildalive/seaturtle/index.html>

Green Sea Turtles

<http://earthtrust.org/wlcurric/turtles.html>

Hawksbill Sea Turtle

<http://www.sheddnet.org/exhibits/reef/factsprinthehawksbill.html>



Lesson 1

Introduction to Sea Turtles

Objective: By the end of the lesson, the students will be able to explain basic information about sea turtles.

Purpose: To introduce basic information about all sea turtles species.

Time Required: 1 class period

Materials:

Copies of: Amazing Sea Turtles
 Egg-streme Nesting!
 It's a Big, Big World Out There
optional: word search

Procedure:

1. Review the differences between reptiles and other vertebrates.
2. Have students read the 3 reading pages individually or in groups.
3. Have students color the sea turtles on the first page and answer the questions on pages 2 & 3.



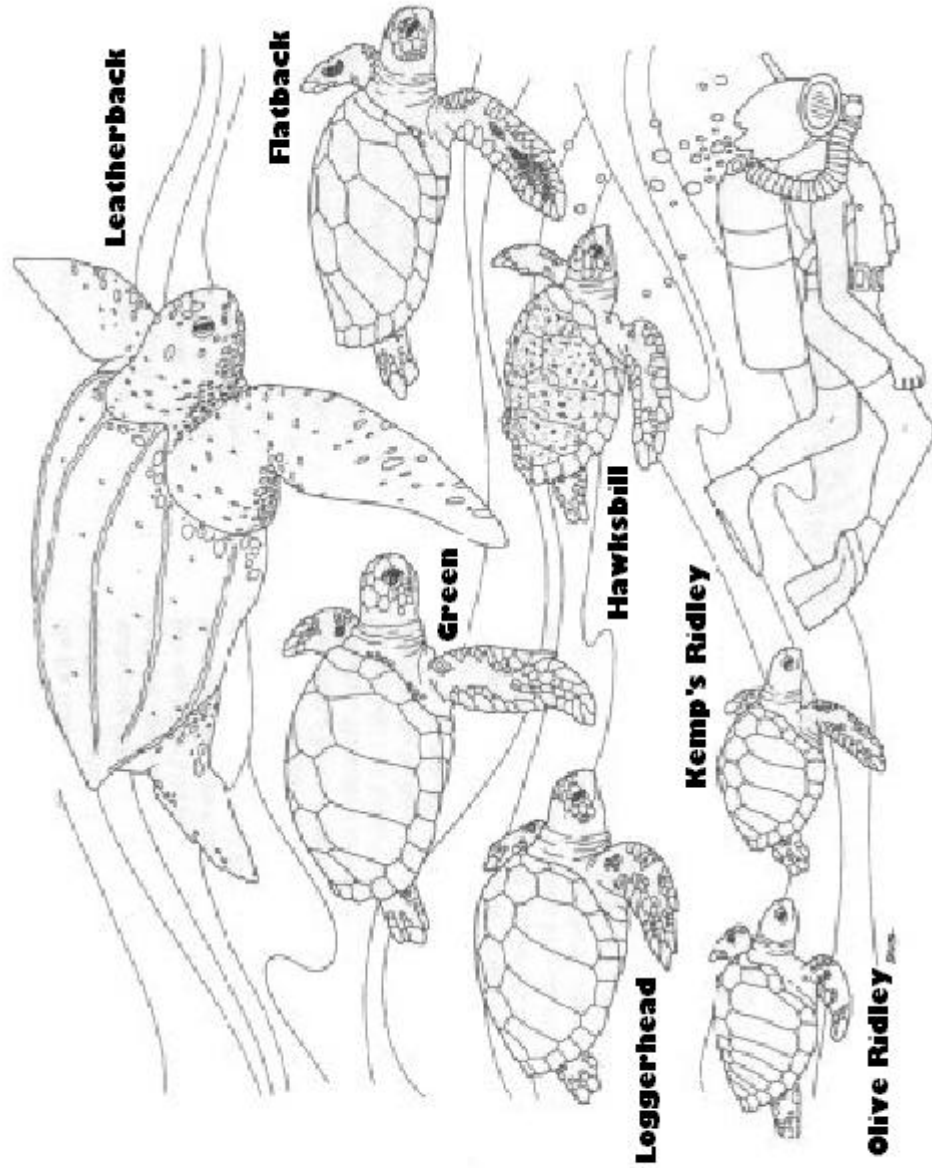
Amazing sea Turtles!

There are seven species of sea turtles. In general, sea turtles live their whole lives in the sea except for coming out to lay their eggs on the beach.

Sea turtles do not need to drink freshwater. They get plenty of water from the food they eat and they have a special salt gland to help their bodies remove salt.

Being reptiles, they have to stay in warm waters to keep their body temperature warm. Because of this, most sea turtles live only in warm oceans. The loggerhead is the exception to that; it lives in warm and cold parts of the ocean.

All species of sea turtles are protected. This is because humans pollute and destroy their habitat, collect their eggs, hunt the turtles, and accidentally catch them in fishing nets.

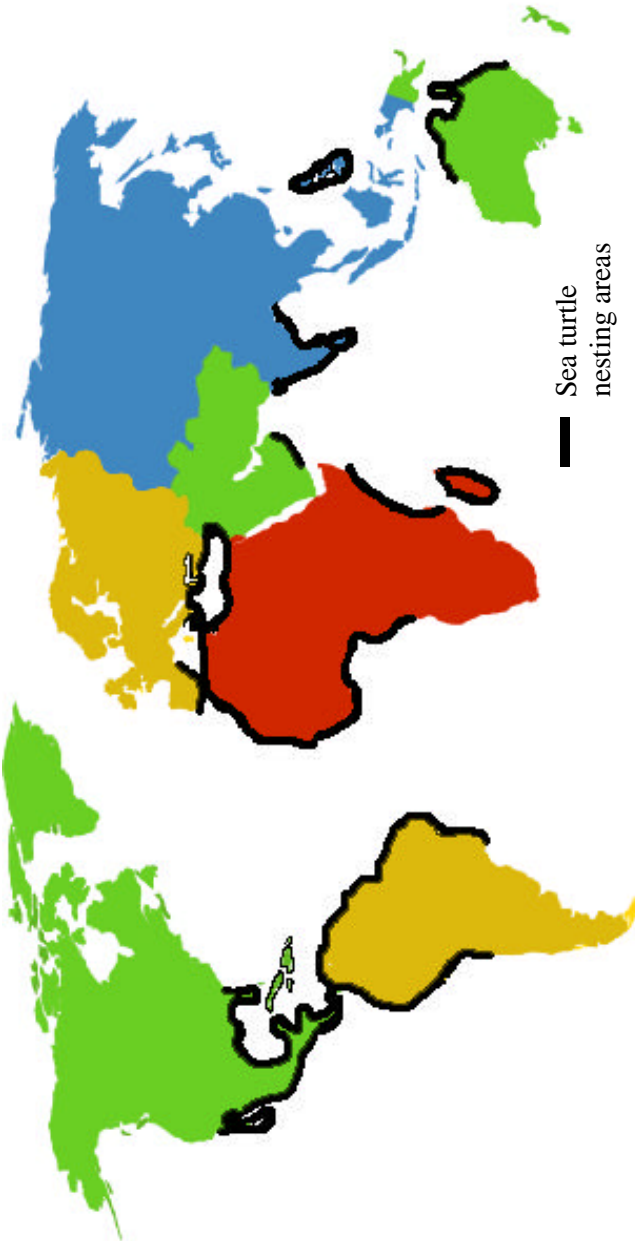


Where sea turtles live:



Sea turtles live in oceans all over the world. Although sea turtles swim in a large area, the female sea turtles will go back to the same place they were born to lay their eggs. The map on the left shows where major turtle nesting areas are.

When a female sea turtle goes on the beach to make a nest, she makes a pattern in the sand. Each of the species makes a different pattern, so researchers can know what kind of turtle made a nest by looking at the sand.



EGG-STRME NESTING!

Adult females typically lay a clutch of 80-120 eggs per nest and may nest up to

11 times in

a single

season

depending

on the kind

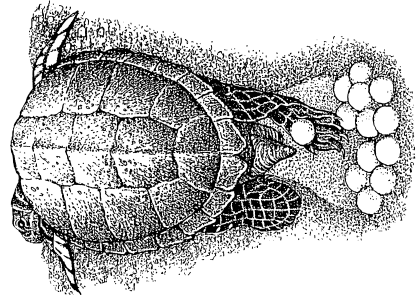
of turtle!

That's a lot

of eggs—

1,320 to be

"eggsact"!!



Questions:

On which continent do turtles not lay eggs? _____

Do sea turtles nest where you live? _____

Why are most nesting areas around the equator? _____

How do you know what kind of turtle laid the nest? _____



It's a

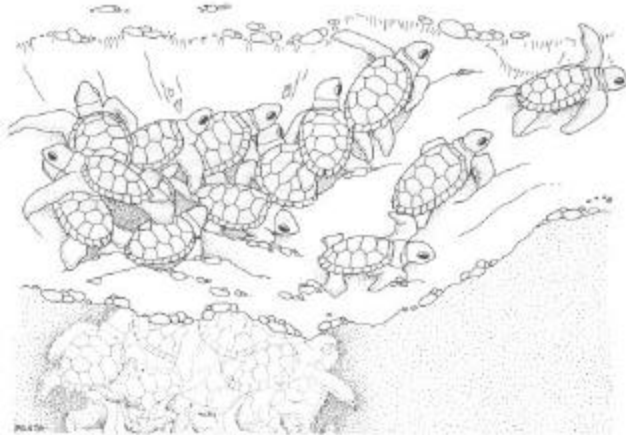
Big,

BIG

WORLD



out there...



When the hatchlings, or baby turtles, crawl out of the nest at night, they run towards the water. Their biggest threats getting to the water are ghost crabs, birds, and people. The hatchlings go towards the light of the moon reflecting on the water. If humans have lights on the beach, the hatchlings can get confused where to run. Sometimes they run away from the water and can die from exposure to heat.



Once in the water, they live in sargassum weed until they are several years old. This is called the "lost years." Scientists don't really know what happens during this time.

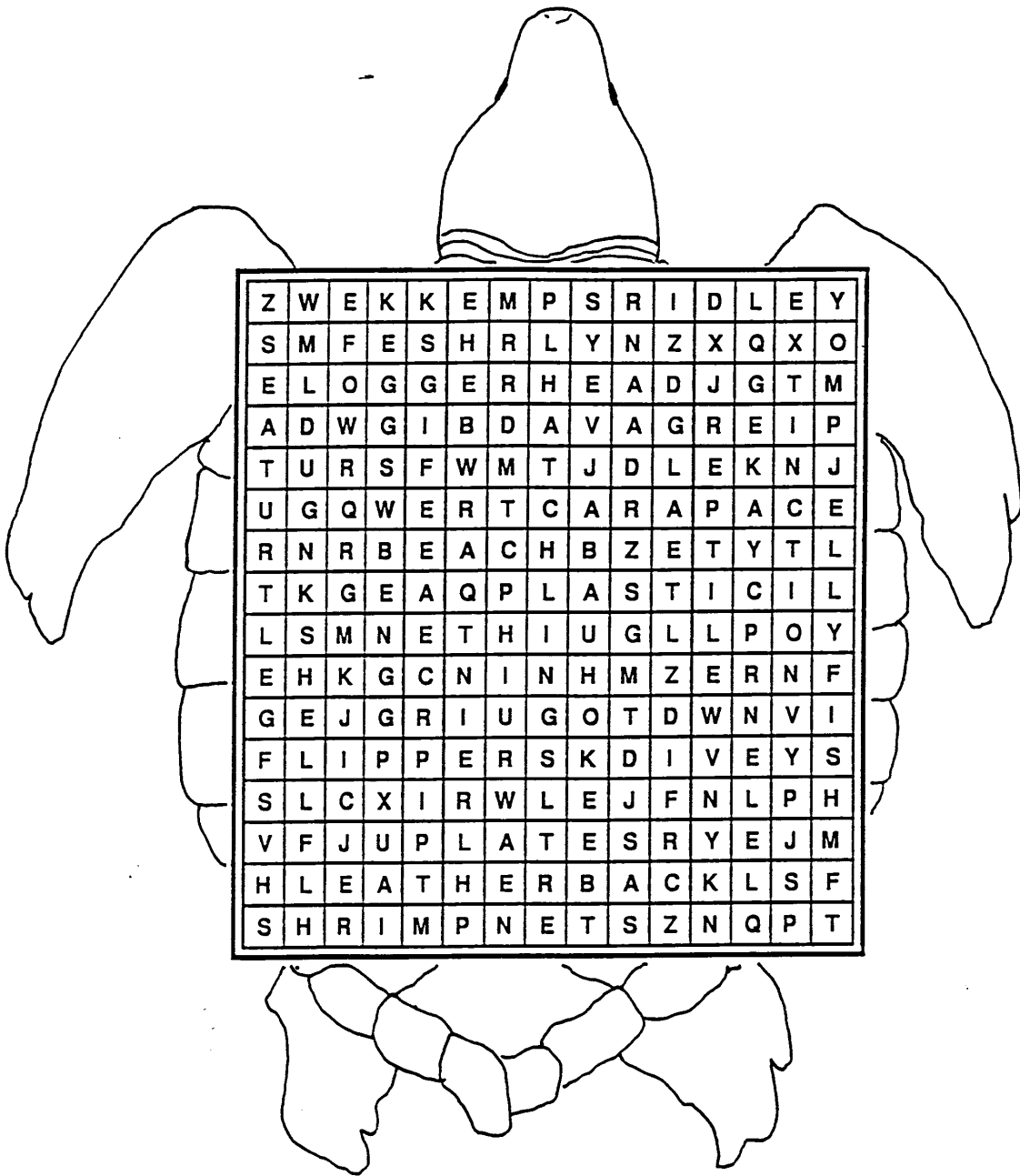
Questions:

What is a hatchling? _____

What is the "lost year"? _____



The Amazing Sea Turtle Word Search



Find and circle the following words:

Kemp's ridley
 plastic
 sea turtle
 loggerhead

jellyfish
 hatchlings
 beach
 green

shell
 flipper
 dive
 plates

shrimp nets
 carapace
 nest
 leatherback



Lesson 2

Sea Turtle Species

Objective: At the end of the lesson, each student will have researched one type of sea turtle using internet and print sources.

Purpose: To provide students an introduction to the seven species of sea turtles.

Time Required: 1 class period

Materials:

Sea Turtle Fact Sheet for each student (or group)
Access to internet or print sources for research

Procedure:

1. Review basic information about sea turtles.
2. Ask the students what species of sea turtles there are. If sea turtles are in your area, ask if anyone knows what kind(s) of sea turtles are found nearby.
3. Either assign or let students choose which sea turtle they will research. This research may be done in cooperative groups or individually.
4. You may have the students present their information or post their findings.

Note: A chart of all species of sea turtles is included as a check sheet.



Teacher Resources Sea Turtle Chart

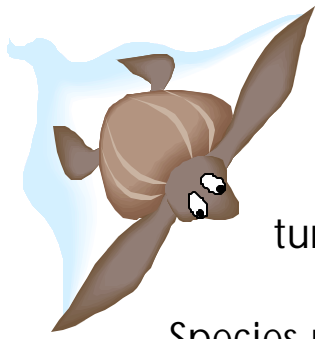
	Adult length	Adult weight	Habitat/Range	Nesting area	Food	Description
Loggerhead	33-40 inches	200-350 lbs.	Continental shelves of the Atlantic, Pacific and Indian oceans	Subtropics and north and south temperate zones	Clams, crustaceans, and creatures attached to rocks and reefs	Large, yellow and reddish brown, named for its large head
Hawksbill	30-36 inches	89-133 lbs.	Coastal reefs, bays, estuaries and lagoons in subtropical and tropical Atlantic, Pacific and Indian oceans	Eastern Caribbean	Specialize in feeding on sponges	Carapace is dark amber with radiating streaks of brown or black; thick overlapping scales; narrow head and strongly hooked beak
Leatherback	64 inches	800 lbs.	Eastern Pacific, Atlantic, and Indian oceans; as far north as Canada, Iceland, and Norway and as far south as New Zealand	Tropical Atlantic, Pacific and Indian oceans, especially northern coast of South America and Mexico	jellyfish	Large, elongate shell composed of a thick layer of oily, cartilaginous material strengthened by tiny bones; seven ridges along the length of the carapace; black with white spots; ark above and light below
Kemp's ridley	24-28 inches	78-100 lbs.	Coastal and estuarine waters of Gulf of Mexico	Rancho Nuevo and Veracruz in eastern Mexico	Crabs, clams, mussels, and snails	Olive green above and yellowish below; carapace is circular to heart-shaped



Teacher Resources Sea Turtle Chart

Type of turtle	Adult length	Adult weight	Habitat/Range	Nesting area	Food	Description
Olive ridley	22-30 inches	Less than 100 lbs.	Tropical waters of the northern Indian ocean, the Atlantic ocean, and along the eastern coast of the Pacific ocean	Mainland shores near the mouths of rivers or estuaries; most important colonies are one beach in Mexico, three in India, two in Costa Rica, and two in Nicaragua	Bottom-dwelling shrimp, crabs, snails, tunicates, sea urchins and other invertebrates; possibly jellyfish	Olive green, heart-shaped carapace with a yellow plastron
Green	32-39 inches	144-303 lbs.	Atlantic, Pacific, and Indian Oceans, as well as the Mediterranean Sea	Nicaragua, Brazil, Gulf of Oman, small areas of the South Pacific, near Japan, the South China Sea, Baja California, and eastern Pacific from Costa Rica to Peru	As juveniles, carnivorous- eating jellyfish, small mollusks, crustaceans, sponges, and other tiny creatures; as adults vegetarian- eating algae and sea grasses	Smooth carapace that varies in color from greenish or brown to black or gray; plastron is white or yellowish
Flatback	30-38 inches	Avg. 156 lbs.	Coastal waters of Australia	Northwestern Australia eastward along the coast of Queensland	Sea cucumbers, jelly fish, prawns, mollusks, and other invertebrates	The head is olive-gray above and cream colored below; the flattened carapace is olive-gray in color, oval in shape, and noticeably upturned at the edges





Sea Turtle Fact Sheet

Complete the following information for your assigned turtle:

Species name: _____

Scientific name: _____

Description (the way it looks): _____

Length: _____

Weight: _____

Habitat: _____

Range (where they live): _____

Major nesting area: _____

Food: _____

Why is it endangered? _____

Cool facts: _____

Attach a picture or drawing of your sea turtle.



Lesson 3

Videoconference

Objective: By the end of the lesson, the students will be able to discuss detailed information about sea turtles.

Purpose: To introduce more advanced information about all sea turtles species.

Time Required: 1 class period

In the videoconference, Mote Marine Laboratory will present a 50-minute media-rich videoconference on sea turtles.

Topics in videoconference:

- Taxonomy Talk
- Nesting
- Adaptations
- Types of sea turtles
- Sea Turtles at Mote
- Benefits of turtles
- Conservation



Lesson 4

The Great Sea Turtle Debate

Objective: The students will understand the impact they can have on conservation of sea turtles. In this lesson, students will role play individuals who represent different perspectives and interests. This lesson will allow the students to work with real data to apply what they have learned about turtle conservation. To do this, they will have to develop their critical thinking skills and interpret data.

Time Required: One class period for information gathering and one class period for the "TV show."

Materials:

- Argument & Questions Planning Sheets for each group
- Personal Data Card for each student
- Supporting Documentation

The Background:

Randy Overmeyer, a local developer, wants to build a new condominium on Siesta Key. The area on which he/she wants to build is a nesting area for loggerhead sea turtles. Because this area is currently owned by the City of Sarasota, the City Council must vote on whether or not to sell this property to Mr./Ms. Overmeyer. Although the land is not for sale, Mr./Ms. Overmeyer approached the City with a sizeable bid for the property and rights to build. Other than the members of the City Council, Mr./Ms. Overmeyer does have other people who support his/her plans.

Other people in the community, however, are opposed to the plans to bring another condominium to Siesta Key. They are concerned about the effect on all plants and wildlife, not just loggerhead sea turtles. Some members of the City Council are worried about getting re-elected if they approve the sale, as there have been many outspoken people who do not want more development on Siesta Key.

A hearing will take place at a City Council meeting before the City Council votes on the proposal. Before the hearing, a local TV station wants to do a 30-minute program on the issues of both sides.



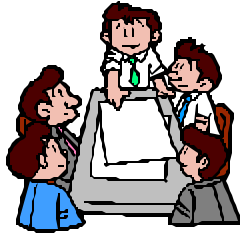
The Show:

Each side will get 5 minutes to talk about the costs and benefits of their thinking. Then, a question and answer period of 10 minutes will allow each side time to ask the other side questions. After the question-and-answer period, concerned citizens may ask questions of either side about the issue for another 10 minutes.

Procedure:

1. Provide students with the Argument & Questions Planning Sheets.
2. Students will be assigned to or volunteer for roles as the people involved in the debate over the land usage. Each of these students will receive a Personal Data Card describing his or her situation. The rest of the students will be assigned to or volunteer for roles as reporters, outside experts, concerned citizens, etc. These students may ask questions during the TV show.
3. The students should be given the Personal Data Cards. Those students who do not have a card should write one for him or herself.
4. The students should have time to prepare their presentations. How much time is dependent on the teacher's plans. Please make all data available to all students without telling them which data to use. Be prepared to explain some of the identities such as the Chamber of Commerce and Merchant Association characters.
5. During the show, the part of the classroom used should be set like a TV set— chairs for those who will be presenting, a table or chalkboard (if needed), a lectern or speaking area (if preferred) and any other equipment needed.
6. During the TV show, the moderator (TV anchor) is in charge of making sure the plan is followed, keeping everyone on time, and choosing speakers during the question-and-answer periods.
7. Have the students act out the TV show. You could possibly tape the show or invite other classes to see the show live.
8. After the show, ask the students to write:
 1. Name 2 reasons we should develop the land.
 2. Name 2 reasons we should not develop the land.
 3. Defend your answer: Should Randy Overmeyer be allowed to develop the land?
 4. Are there any compromises you can see that could be worked out so Randy Overmeyer can build the condominium?





ARGUMENT planning sheet

(first 5 minute presentation)

Our main presentation points will be:

1. _____

Supporting evidence or points:

1. _____

2. _____

3. _____

2. _____

Supporting evidence or points:

1. _____

2. _____

3. _____

3. _____

Supporting evidence or points:

1. _____

2. _____

3. _____

4. _____

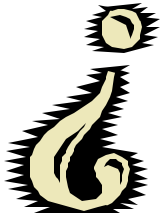
Supporting evidence or points:

1. _____

2. _____

3. _____





Questions

TO ASK



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____



Personal Data Cards

Stephanie or Stephen Ogden, golf course owner

You are the owner of a golf course located just down the street from the proposed condominium. You know that about half of the owners will play golf, so you are hoping for more money when they come play on your golf course.

Randy Overmeyer, developer

You are the driving force behind developing this land. You have built many condominiums on the beach before. Because of these, you have become very rich. You would love to add this wonderful property to your list of developments .

Joe or JoAnne Clements, Chamber of Commerce

You are in charge of promoting the area to people interested in moving there. You are happy to see another high-price condominium project, as those are the type of residences people are wanting.

Jack or Jackie Winter, Merchant Association

You are the president of the local merchant association. You know that more people living in your neighborhood means more money for the businesses there.

Henry or Henrietta Doakes, Tax Collector's office

You collect taxes for the whole area. The new condominium would collect taxes, and all the local businesses would be sending in more tax money from more sales.

Bobby Parks, banker

You are the person who would loan the money to Randy Overmeyer to build the condominium. You would also provide lending for those people who would want to buy one of these high-priced condos.

Ed or Eileen Pasqua, bird club president

You are the president of the local bird club. Your club conducts birding classes and bird watching trips. The condo would take away some wonderful bird watching places. Developing that area also means the birds would have to find a new home.

Michael or Mary Kilbank, sea turtle volunteer

You have been a sea turtle volunteer for 38 years. You have watched many sea turtle nests for predators and watched for hatchlings who needed help.



(More) Personal Data Cards

William or Wilma Finn, avid beach-goer

You go to the local access beach almost every day. If they build the condominium, you will now have to drive to another beach instead of walk to this beach.

Harold or Holly Deming, local walkers club

You are the president of the local walkers club. Your club has already been concerned about the increasing number of cars and traffic problems on the major road where the condominium is proposed.

Dr. Anthony or Ann Tracy, sea turtle biologist

You have been studying sea turtles for 20 years. Your current project is on the effects of close human habitation with sea turtle nesting areas.

David or Dana Ryan, TV anchor

You are the person who will be the moderator for the TV show. Your job is to make sure everything stays on time and that people are speaking only in turn. You should be familiar with both sides of the debate.

Pat or Patricia Moss, newspaper reporter

You will watch the TV program and report to the community what happened at the meeting.

Barney or Bernice Coppage, concerned citizen

You are concerned about the development of more land, but you aren't sure what all the issues are. You should watch the TV show and be ready to ask your questions.

Brandy or Bill White, park ranger

You work on the land Randy Overmeyer wants to develop teaching people about the plants and animals that live there.

Jason or Joleen Simmons, concerned citizen

You are concerned about the development of more land, but you aren't sure what all the issues are. You should watch the TV show and be ready to ask your questions.



Birds Found on Siesta Key



Reddish Egret



American Oystercatcher



Northern Bobwhite



Prairie Warbler



Kentucky Warbler



Prothonotary Warbler



Swainson's Warbler



Seaside Sparrow



Bachman's Sparrow



Brown-headed Nuthatch



Orchard Oriole



The View



A new beachfront property on Siesta Key!



Another new property from nationally-known developer Randy Overmeyer!

Construction beginning March, 2002

See sunsets like this one everyday from your new home on Siesta Key!

- 28 luxurious residences within a 14-story building
- Enclosed private two-car garages
- Gated entrance with 24-hour staff and hi tech security systems including monitored surveillance
- Expansive pool and spa area
- Floor-to-ceiling windows
- Gracious terraces
- Elevators opening into each residence
- A glamorous fitness center with a panoramic view
- His and hers sauna baths with dressing room and lounge area

Homes beginning at:

2 bedroom/1 bath	\$450,000
2 bedroom/2 bath	\$475,000
3 bedroom/2 bath	\$575,000
4 bedroom/3 bath	\$700,000

For more information on **The View**:

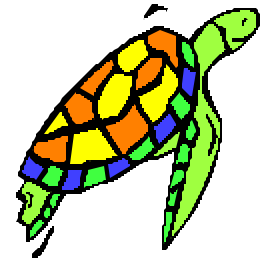
Randy Overmeyer and Associates
1444 Gotta Make Money Drive
Sarasota, Florida 23400

Phone: 941.555.1442
Fax: 941.555.1443


Randy Overmeyer



Sea Turtles in the News!



Tax Money Expected From New Condo

Siesta Key- The new development from Randy Overmeyer is expected to generate over \$50,000 in building taxes for the City of Sarasota. According to the mayor, this money would be saved towards building a library on Siesta Key. “There has long been a push for a library on Siesta Key, but finding money to do so has been difficult. I believe this could be a major push towards a new \$1.5 million library. The citizens of Siesta Key deserve the right to have a library close to their homes,” the mayor said in a speech on Wednesday.

Randy Overmeyer’s proposed condominium is set for Siesta Key in an area owned by the City. In addition to the building taxes, annual property taxes of about \$20,000 will be collected. The mayor did not specify where that money would go.

Sea turtle activists are against the proposed building, saying the building would disrupt a major loggerhead sea turtle nesting area. Channel 89 has announced they will air a debate this week.

New Research Shows Loggerhead Sea Turtles Sustain Dunes

In an article published last week on the Environmental News Network, a University of Florida student says her research shows that loggerhead sea turtles help sustain the vegetation along the beaches. Sarah Bouchard, a student at the University of Florida, monitored the beaches for essential nutrients such as nitrogen, phosphorus, and lipids left by sea turtle eggs. According to the article, beaches usually don’t have enough of these nutrients because sandy soil doesn’t hold them in and the salt spray can limit what grows.

Since sea turtles will swim up to 1,500 miles from their feeding places to the nesting beaches, they bring essential nutrients with them. When they lay their eggs, the eggs contain the nutrients. When the babies hatch, the nutrients are released into the ground. If the nest is invaded by predators, the nutrients get scattered across the dunes.

“Bouchard said studying these turtles and understanding the benefits they bring to the dune ecosystem can help improve management practices involving both the dunes and turtles and can lead to better regulation of the dunes and more turtle protection,” the article concludes.

Job Boom Seen on Siesta Key

Siesta Key- In anticipation of the new condominium by Randy Overmeyer, several new shops have been planned. In a phone interview, Randy Overmeyer said, “There will be several shops and two upscale restaurants in a nearby shopping center I have designed. Both J. Michael Shaw of The Eatery and Vincent Simon of Pastry Shops International have spoken to me about having businesses there. They have specific needs that can be addressed in this new shopping center.” These new shops and restaurants would give more jobs on Siesta Key and lessen the drive of residents to go off the island.

The plans for the shopping center are on hold for now until the City Council decides whether or not to grant Randy Overmeyer with the petition to build his new condominium. Construction is slated to begin this March.



Sea Turtles in the News!

THE LONGBOAT OBSERVER

LONGBOAT KEY'S WEEKLY NEWSPAPER SINCE 1978

www.longboatobserver.com

Thursday, July 12, 2001

IT'S FREE!



Turtle troubles continue

By SHAY SULLIVAN
City Editor

If the town of Longboat Key heeds the advice of Mote Marine Laboratory, a 3-foot-tall black cloth may be blocking the vista in the 3800 block of Gulf of Mexico Drive to keep turtles from mistaking man-made light for moonlight.

"The sea grapes have not grown enough to block the lights as intended," wrote MML turtle program manager Jerris Foote, who identified the open stretch of beach south of Lynchies Landing as a "major problem area for emerging hatchlings."

This time the disorienting light is coming from passing automobiles, not from the street

lights or buildings that have caused problems for turtles in the past.

Foote and the town hoped the row of sea grapes the town maintains in the area would grow higher than they have. Foote tactfully blamed the lack of growth on the recent drought. But, Public Works Director Juan Hernandez said he suspects residents across from the plants trimmed them to maintain the view.

Indeed, an inspection of the plants revealed several sheared branches.

Floresca is planning to recommend the installation of an opaque barrier in the area during turtle season to solve the problem. Town Manager Bruce St. Denis said he was not aware

of the suggestion, and could not comment yet. Foote said the barrier would be the best option for turtle protection. Some have suggested that putting up cloth around the nests themselves would block the light without blocking the view for humans.

"That does not work very often," said Foote. Even if material blocks light around the nest, turtles tend to crawl around the corner of the contraption and head away from the ocean anyway, Foote said.

There are also mesh cages that keep light from the nests, but Foote said there are drawbacks to

CONTINUED ON PAGE 4A



Sea Turtles in the News!

Turtles

CONTINUED FROM PAGE 1A

those devices as well. The cages are left open during the day and closed nightly by volunteers to keep light out. Therefore, hatchlings that want out at night must wait until the gate is reopened, Foote said.

The mesh cages also leave the hatchlings trapped and helpless against predators such as fire ants and crabs, Foote said. She hopes the town will agree that a "shield cloth" is needed in the area.

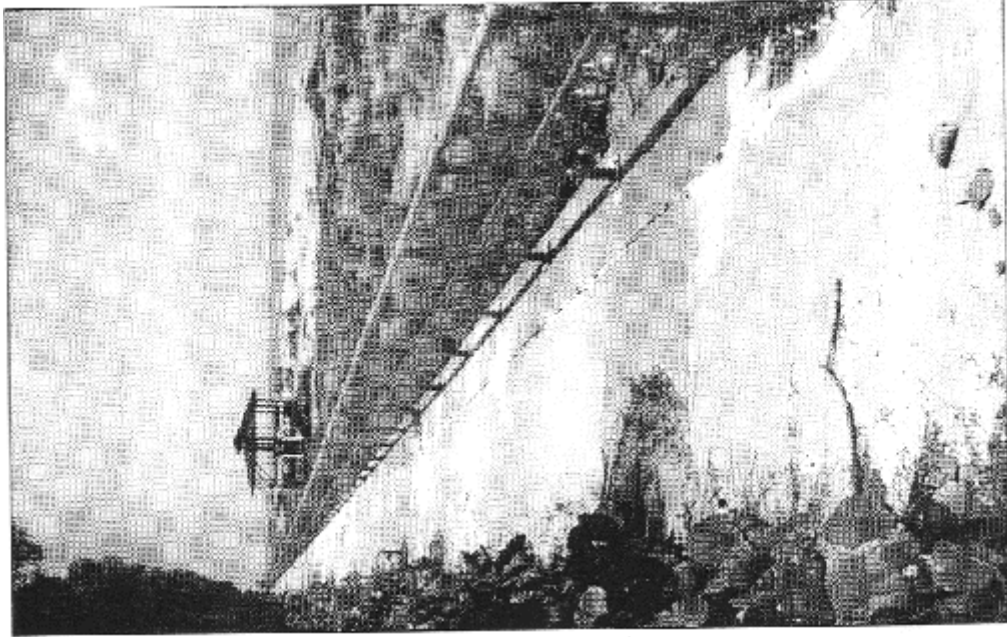
"Wouldn't that look nice," said Commissioner Ray Metz. "We'd look like a trailer camp for sure."

"It would look ugly as hell, but if the turtles are having problems, I think we need to do something," said Commissioner Ron Johnson, who would prefer to see something more aesthetically pleasing in the area, such as a wooden fence.

Despite the problems caused by headlights, Foote said Longboat Key is doing a good job in the turtle protection arena. "I'm very pleased with the effort being put out by the code enforcement officer, the community and Florida Power and Light," she said. "Lighting is much better there than it has been in the past."

"But," Foote cautioned, "there is always more to be done." In 2000, Foote logged a 78.2% success rate for the turtle nests on Longboat Key. Each nest produces about 100 hatchlings on average, Foote said, and there are currently four nests in the open stretch of beach in question.

Foote said a leatherback turtle nest, is being watched very carefully. It is the first recorded nest of its kind on the Gulf Coast of Florida. Fortunately, Foote said, the nest is further south than the sea grapes stretch and is afforded more protection from unnatural light. □



Shay Sullivan

The town is considering whether to string up a black cloth along this handrail to protect turtles from automobile headlights.



Sea Turtles in the News!

HOLMES BEACH

Light lures turtles to their deaths

By Tom Bayles
STAFF WRITER

A light meant to keep people from falling down a flight of stairs at the Blue Water Beach Club in Holmes Beach drew at least 70 sea turtle hatchlings away from the Gulf and to their deaths early Saturday.

"They all went backward," Suzie Fox of the Anna Maria Island Turtle Watch said Monday. "They went to the light on the side of the building. It was like 150 watts of bright, white light."

When hatchlings emerge from their shells, they naturally crawl toward the horizon with the greatest illumination. In a natural setting, the brightest horizon is the water, reflecting the moon and starlight. However, artificial lighting can draw them away from the water.

Saturday's incident demonstrated the difficulty of balancing the needs of hotel and restaurant owners who need light for security and their patrons' safety and turtle lovers who want the beaches to be dark.

Turtle Watch volunteers said they asked the Blue Water Beach Club's management to turn off the light Friday night. The volunteers said the light was off for a while and then went back on.

The club's managers said they turned off the light, but a turtle watch volunteer said it was OK to turn it back on because the managers agreed to change to a lower-watt bulb Saturday afternoon.

"I am all open to working with the turtle people," said Anna Johnson, manager of the club at 6306 Gulf Drive. "But the security light has to

be on. If someone falls down, it would be a very heavy lawsuit."

Fox said the Turtle Watch volunteers "were livid" after the light was turned back on. "I had to call the police because they were ready to lynch the owners," she said.

Some of the wayward hatchlings were crushed or eaten by seagulls. Others simply ran out of steam looking for the Gulf. Fox said a couple on the beach admitted to playing with the baby loggerheads — something turtle experts warn against.

Fox and Johnson met to discuss the situation, and the club managers offered to pay for a shielded, low-wattage light if Turtle Watch volunteers would install it.

"We're willing to work with the turtle people, absolutely," said Patty Bowling, a receptionist at the

club.

But Turtle Watch volunteers were still angry Monday.

"They were told to turn the light off, they knew the light should be off and they turned it back on," Fox said.

Fox, who holds a state permit that allows her to supervise Anna Maria Island's turtle nests, filed a "disorientation report" Monday with the U.S. Fish and Wildlife Service.

Federal and state laws, and a Holmes Beach ordinance carry penalties, including jail time and hefty fines, for harming hatchlings.

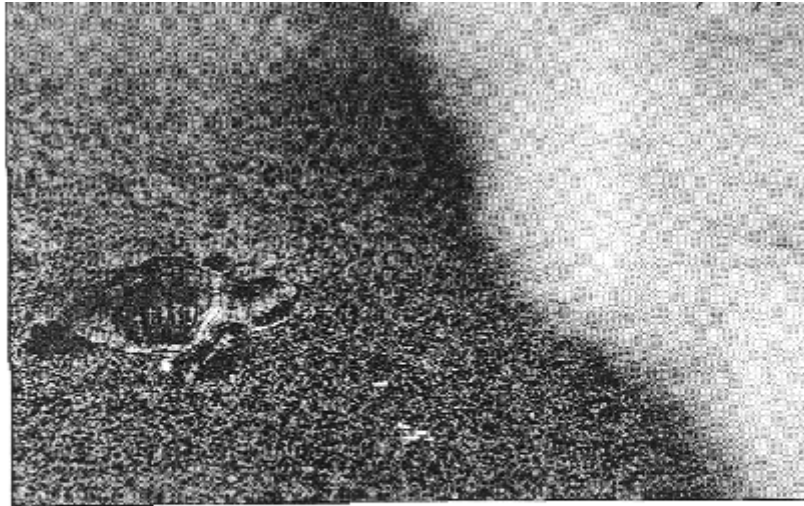
At least 15 nests are still within sight of the club, Fox said.

Staff writer Tom Bayles can be contacted at 742-6156 or tom.bayles@herald-trib.com.

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Sea Turtles in the News!



FILE PHOTO

A baby loggerhead turtle crawls toward the surf.

Who owns beach, us or turtles?

Our family has spent seven years as tourists on Siesta Key and we have been property owners for five years. It seems the "powers that be," who control the welfare of Siesta Key, have decided they no longer wish it to be a place for tourists to spend, enjoy and appreciate. It is heartbreaking to see the pride of the west coast, "the most beautiful beach in the world," become the grungiest and a stinkhole. We owners of property and investors must listen to the lament of the "red tide." Perhaps the red tide seeks its own kind and now resides at Siesta Key.

We owners and investors must tolerate the lullaby of the turtles. It would seem the Sarasota County commissioners may have to decide just who is running the store. It's obvious that the environmental extremists have control.

If one wishes to see thousands of turtles, every six inches — turtles who own an island, go to Palm Island near Englewood. The problem, you can only go by boat and humans are restricted. Must we endure the ruination of a gorgeous beach

much loved by many humans to accommodate some turtles? The beach cannot be turned and rejuvenated at regular intervals and the mold, grassy junk and gulf garbage rots and stinks on the shore and sand.

Sarasota County must decide whether we will have turtles or humans. We invested, registered our business in Sarasota County, paid high property taxes to the county, and we and the tourists pay a high rate of sales tax. We are keeping our end of the bargain, and you are selling us out.

If the county opts for turtles, buy up the property on the key and turn it into a sanctuary.

Nov. 1 is too late for the beaches. The winter people do not swim in the Gulf nor play on the beaches. Spring, summer and fall people would like to, but it has become a risk to human health. Residents, investors, and tourists pay the taxes, *not* the turtles.

Jean H. Bolser
Siesta Key





Memo

To: Suzy Smith, boss
From: Frieda Fanoozle, employee
Re: sea turtle numbers

Last week, you asked for the number of sea turtle nests over the past few years. Please note that, according to the scientists at Mote, the increase in nests is due to conservation efforts and having more volunteers out on the beaches. Here is the data I could get from Mote Marine Laboratory:

2000: loggerhead (245 nests, 183 false crawls)
1999: loggerhead (278 nests, 203 false crawls), Kemp's ridley (2 nests, 0 false crawls)
1998: loggerhead (272 nests, 204 false crawls)
1997: loggerhead (282 nests, 169 false crawls)
1996: loggerhead (198 nests, no data on false crawls)
1995: loggerhead (343 nests, 254 false crawls)
1994: loggerhead (201 nests, 191 false crawls)
1993: loggerhead (156 nests, 140 false crawls)
1992: loggerhead (91 nests, 56 false crawls)
1991: loggerhead (154 nests, 81 false crawls)



Appendix A

National Science Education Standards

Standard	Lesson 1	Lesson 2	Lesson 3	Lesson 4
<u>Science as Inquiry</u>				
Identify science questions				X
Use evidence to describe, explain, predict and model				X
Use critical thinking logic to relate evidence to explanations				X
Recognize and analyze alternative explanations				X
Use math in all phases of inquiry				X
<u>Unifying Concepts and Processes</u>				
Form and Function			X	
<u>Life Science</u>				
Structure and function in living systems		X	X	
Reproduction and heredity			X	
Regulation and behavior	X		X	X
Population and ecosystems			X	X
Diversity and adaptation of organisms	X	X	X	X
<u>Science in Personal and Social Perspective</u>				
Personal Health				
Populations, resources and environments		X	X	X
Natural hazards		X	X	X
Risks and benefits			X	
Science and technology in society			X	
<u>History and Nature of Science</u>				
Science as human endeavor			X	
Nature of science			X	X



National Council of Teachers of Mathematics

Standard:	Lesson 1	Lesson 2	Lesson 3	Lesson 4
Data Analysis and Probability				
Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them				X
Understand and apply basic concepts of probability				X
describe events as likely or unlikely and discuss the degree of likelihood using such words as <i>certain</i> , <i>equally likely</i> , and <i>impossible</i>				X

National Council of Teachers of English

Standard	Lesson 1	Lesson 2	Lesson 3	Lesson 4
Standard 1: Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.				X
Standard 4: Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.				X
Standard 7: Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.				X



National Geography Education Standards

Standard	Lesson 1	Lesson 2	Lesson 3	Lesson 4
Standard 1: How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information.	X			X
Standard 12: The process, patterns, and functions of human settlement.				X
Standard 13: How forces of cooperation and conflict among people influence the division and control of Earth's surface.				X
Standard 14: How human actions modify the physical environment.				X
Standard 16: The changes that occur in the meaning, use, distribution, and importance of resources.				X

National Technology Education Standards

Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4
<u>Social, ethical and human issues</u>				
Students practice responsible use of technology systems, information, and software		X	X	X
Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity			X	
<u>Technology productivity tools</u>				
Students use technology tools to enhance learning, increase productivity, and promote creativity		X	X	X
<u>Technology communications tools</u>				
Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences			X	
<u>Technology research tools</u>				
Students use technology to locate, evaluate, and collect information from a variety of sources		X	X	X
Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks		X		
<u>Technology problem-solving and decision-making tools</u>				
Students use technology resources for solving problems and making informed decisions				X
Students employ technology in the development of strategies for solving problems in the real world				X



Appendix B- Sunshine State Standards

Science Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4
SC.B.2.2 The student understands the interaction of matter and energy.			X	X
SC.B.2.2.1- knows that some source of energy is needed for organisms to stay alive and grow			X	X
SC.D.2.2 The student understands the need for protection of the natural systems on Earth.			X	X
SC.F.1.2 The student describes patterns of structure and function in living things.		X	X	
SC.F.1.2.2- knows how all animals depend on plants			X	
SC.F.1.2.3- knows that living things are different but share similar structures		X	X	
SC.F.2.2 The student understands the process and importance of genetic diversity.			X	
SC.F.2.2.1- knows that many characteristics of an organisms are inherited from the parents of the organism, but that other characteristics are learned from an individual's interactions with the environment			X	
SC.G.1.2 The student understands the competitive, interdependent, cyclic nature of living things in the environment.	X	X	X	X
SC.G.1.2.1- knows ways that plants, animals, and protists interact	X		X	X
SC.G.1.2.2- knows that living things compete in a climatic region with other living things and that the structural adaptations make them fit for an environment	X	X	X	X
SC.G.2.2 The student understands the consequences of using limited natural resources.		X	X	X
SC.G.2.2.1- knows that all living things must compete for Earth's limited resources; organisms best adapted to compete for the available resources will be successful and pass their adaptations to their offspring		X	X	X
SC.G.2.2.2- knows that the size of a population is dependent upon the available resources within its community			X	X
SC.G.2.2.3- understands that changes in the habitat of an organism may be beneficial or harmful			X	X
SC.H.1.2 The student uses the scientific processes and habits of mind to solve problems.				X
SC.H.1.2.3- knows that to work collaboratively, all team members should be free to reach, explain, and justify their own individual conclusions				X
SC.H.1.2.4- knows that to compare and contrast observations and results in an essential skill in science				X
SC.H.3.2 The student understands that science, technology, and society are interwoven and interdependent.				X
SC.H.3.2.1- understands that people, alone or in groups, invent new tools to solve problems and do work that affects aspects of life outside of science				X
SC.H.3.2.2- knows that data are collected and interpreted in order to explain an event or concept				X
SC.H.3.2.3- knows that before a group of people build something or try something new, they should determine how it may affect other people				X
SC.H.3.2.4- knows that through the use of science processes and knowledge, people can solve problems, make decisions, and form new ideas				X



Language Arts Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4
LA.A.2.2 The student constructs meaning from a wide range of texts.				X
LA.A.2.2.5- reads and organizes information for a variety of purposes, including making a report, conducting interviews, taking at test, and performing an authentic task				X
LA.A.2.2.8- selects and uses a variety of appropriate reference materials, including multiple representations of information, such as maps, charts and photos, to gather information for research projects				X
LA.C.1.2 The student uses listening strategies effectively.			X	X

Math Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4
MA.A.4.2 The student uses estimation in problem solving and computation.				X
MA.A.4.2.1- uses and justifies different estimation strategies in a real-world problem situation and determines the reasonableness of results of calculations in a given situation				X
MA.E.2.2 The student identifies patterns and make predictions from an orderly display of data using concepts of probability and statistics.				X
MA.E.3.2 The student uses statistical methods to make inferences and valid arguments about real-world situations.				X
MA.E.3.2.2- uses statistical data about life situations to make predictions and justifies reasoning				X

Geography Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4
SS.B.1.2 The student understands the world in spatial terms.				X
SS.B.1.2.1- uses maps, globes, charts, graphs, and other geographic tools including map keys and symbols to gather and interpret data and to draw conclusions about physical patterns				X
SS.B.2.2 The student understands the interactions of people and the physical environment.				X
SS.B.2.2.2- understands how the physical environment supports and constrains human activity				X
SS.B.2.2.3- understands how human activity affects the physical environment				X
SS.B.2.2.4- understands how factors such as population growth, human migration, improved methods of transportation and communication, and economic development affect the use and conservation of natural resources				X

