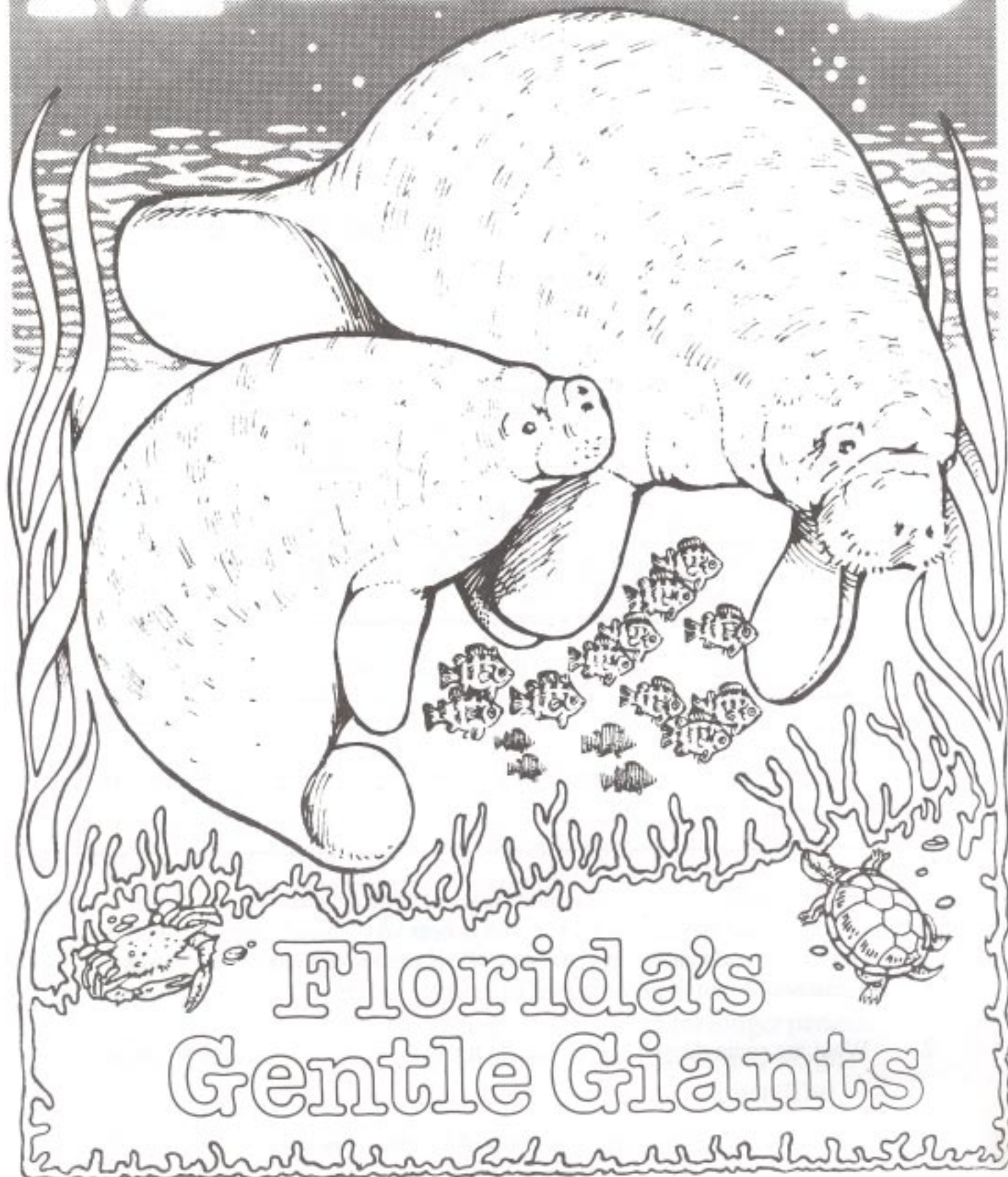


MANATEES



Florida's
Gentle Giants

Name: _____

Date: _____

The Florida Manatee “Before and After” Work Sheet

Before you start your lessons about manatees, take a few minutes to write down what you know about these animals. At the end of your session, write down what you learned and see how your two lists compare.

What I know about manatees now:	What I learned about manatees:

1. Based on what you learned about manatees, write a short story about the manatees that may live in the waterways near you. Include area landmarks, waterways and marinas in your story. How can these areas better protect manatees?
2. What are some things that you can do today to protect the manatee and its habitat?

Remember, you can make a difference.

What are Manatees?

Manatees (*Trichechus manatus*) are endangered aquatic mammals found in Florida's waterways. Manatee fossils found in Florida date back 45 million years. Recent fossil discoveries in Jamaica show that manatees evolved from a four-footed, wading, plant-eating land animal. The manatee's closest land relative is the elephant.



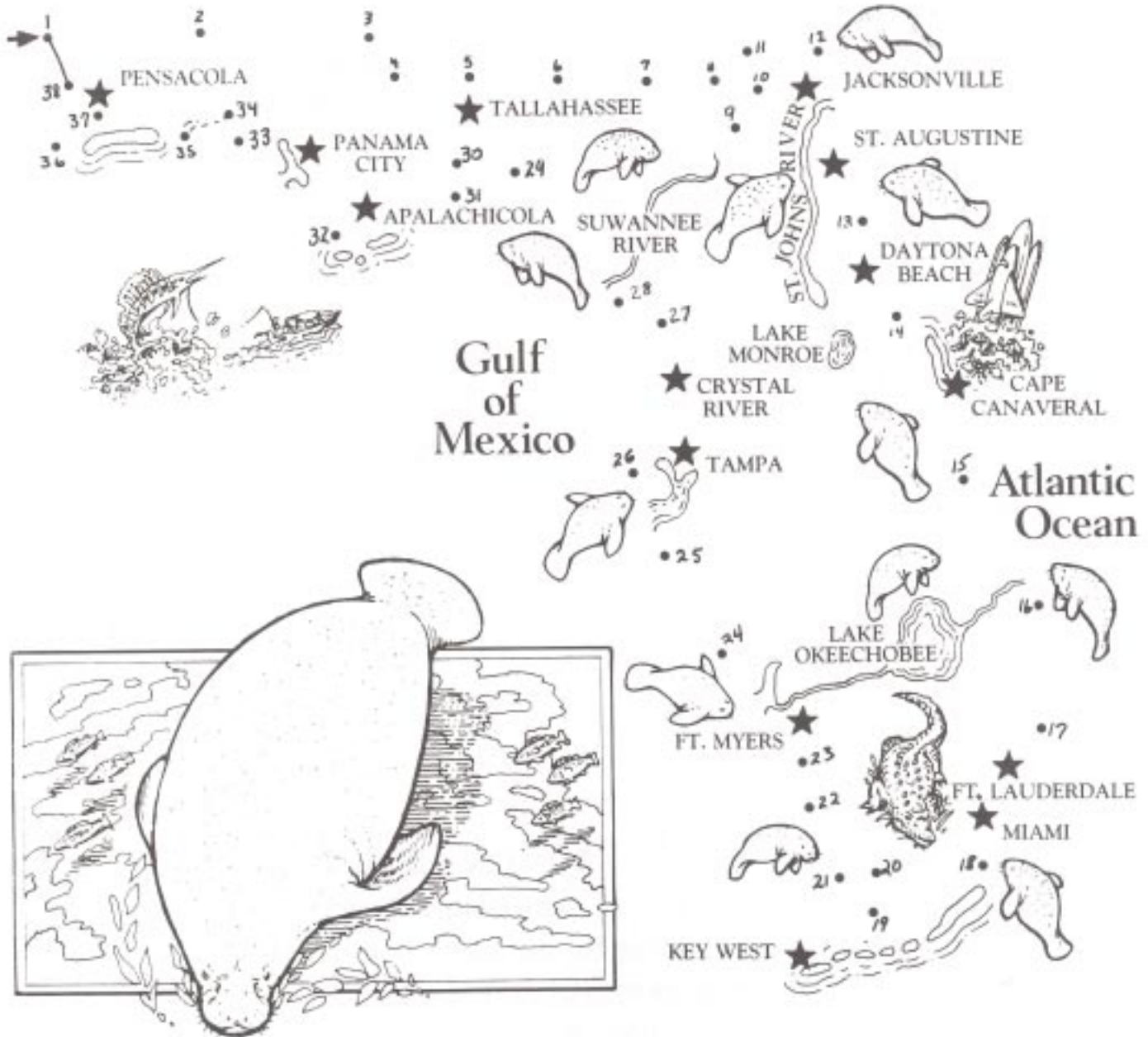
Female manatee (cow) and her baby (calf)

What does a Manatee look like?

Manatees are large, round and gray with leathery looking thick skin. From the blunt whiskered snout, the manatee's body rounds out to a torpedo shape and then tapers to a flat, paddle-shaped tail. Two forelimb flippers, with up to four nails, are located near its head. Like all mammals, manatees have hair on their bodies. Although the hair is very sparse, it exists in stiff short strands all the way down to the tail. Female manatees nurse their young from teats found just behind the base of their flippers. Manatees breathe air and must surface to breathe approximately every three to five minutes when traveling or eating. When resting, the manatee can stay down for longer periods of time. Although the average manatee is ten feet long and weighs about one thousand pounds, manatees can get much larger. The heaviest manatee scientists weighed was 3,600 pounds.

Where do manatees live?

Manatees are found in the shallow, slow-moving rivers, estuaries, saltwater bays, canals, and coastal areas of Florida, particularly where seagrass beds and other aquatic plants flourish. During the summer months, their range can be as far north as the Carolinas and as far west as Texas. When winter approaches, they are found in the warmer waters around Florida, congregating in springs or at power plants.



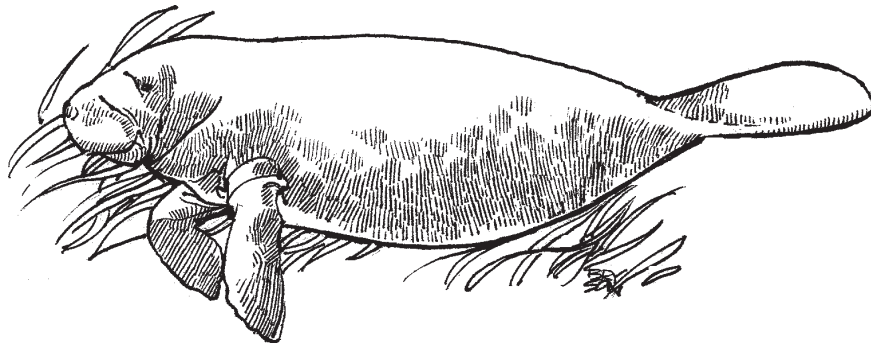
Connect the dots to see where manatees live in Florida's waterways.

What are the four basic elements of **HABITAT?**

(Fill in the blanks to find out the basic elements of habitat)

1. Manatees eat plants that grow in the water. These plants are called aquatic vegetation. Aquatic vegetation is the only type of F__O__ that manatees should eat.
2. Manatees seek out and drink fresh W__ T __ __ from natural resources. They do not need people to provide this drink for them.
3. Manatees are migratory animals. Their travel is influenced by seasonal changes. Travel corridors are necessary for the manatee to move back and forth between summer and winter habitats. People who use these corridors must respect the manatees' need for safe passage and provide adequate S P __ C __ for the manatee to reach its destination.
4. Manatees must have a safe, protected area, or S H __ L __ __ R, that they can go to, which keeps them away from harassment, boat traffic, strong currents and people. These areas are needed for manatees to feed, rest, play, mate or calve their young. In Florida, with the growing number of people and boats, this safe protected area is getting harder and harder for the manatee to find.

If any of these four elements (_____, _____, _____ or _____) are missing, the manatee cannot survive. It is up to all of us to help the manatee survive.



Answers:

The four elements of suitable habitat are: food, water, space and shelter.

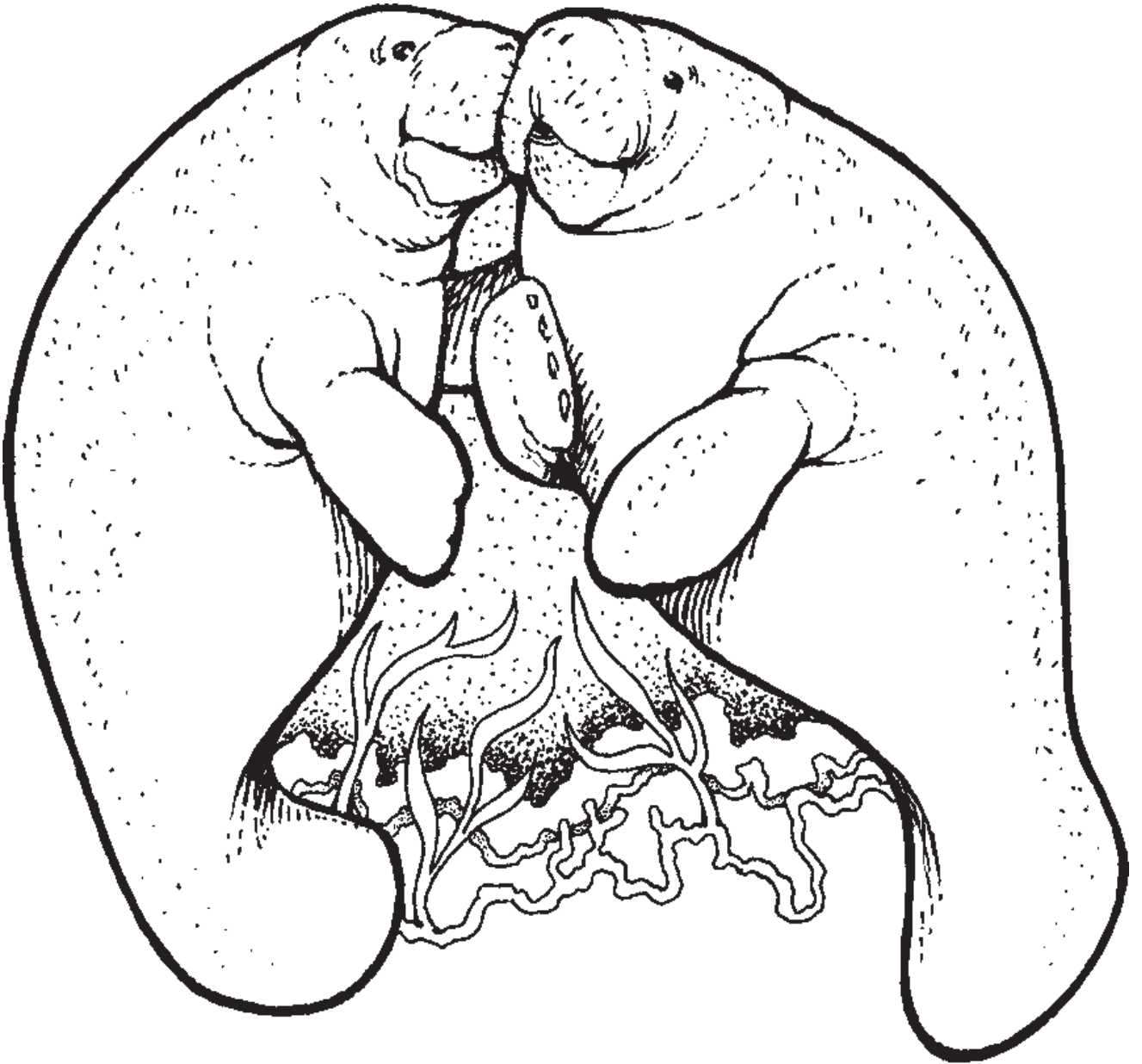


Find the Words in the Puzzle

MANATEE
 MAMMAL
 AQUATIC PLANTS
 SEAGRASS
 EAT
 PLAY
 REST
 TRAVEL
 AIR
 WATER
 FLORIDA

S	T	N	A	L	P	C	I	T	A	U	Q	A
S	E	S	M	M	O	A	T	T	E	O	R	A
A	M	A	N	A	T	E	E	R	I	L	E	D
M	G	F	G	I	O	A	E	E	A	R	S	I
P	L	A	Y	R	N	T	N	E	E	V	T	R
A	U	I	E	M	A	M	M	A	L	S	E	O
M	T	R	O	W	U	S	U	N	M	L	M	L
M	R	E	E	N	A	M	S	N	F	L	I	F

Words can be read frontward, backward, up, down and diagonally.



Manatee Trivia

- ✧ Manatees have no eyelashes or eyelids like most mammals.
- ✧ Muscles around a manatee's eyes close and open much like a camera aperture.
- ✧ A manatee's heart beats at a rate of 50 to 60 times per minute.
- ✧ Manatees sometimes groan when they stretch.
- ✧ A manatee communicates by squeaking.
- ✧ A manatee chews two times per second.
- ✧ A manatee cannot turn its head sideways--it must turn its whole body around.

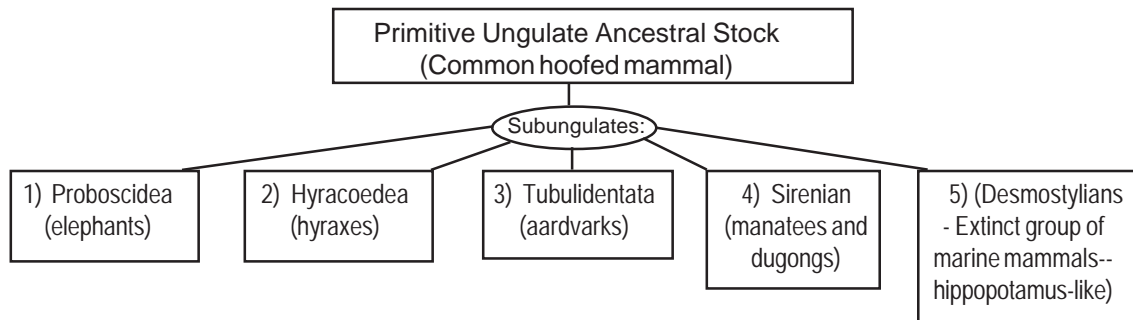
Phylogenetic Order

(Phylogeny - Evolutionary development of a plant or animal species)

One always hears that manatees are related to elephants. The following, hopefully, will help you understand the relationship.

Manatees are of the order Sirenia. Sirenians along with three other extant (still existing) orders of mammals and one extinct order are sometimes lumped together as “subungulates,” a series of orders that may be regarded as unusual evolutionary offshoots of a primitive ungulate ancestral stock.

Ungulate - *hoofed mammals (horses, cattle swine, deer), with teeth adapted for chewing plants.*



What determines the relationship between the subungulates?

1. Studies using biochemical analysis of proteins support a common ancestry.
2. Shared anatomical features:
 - dental characteristics
 - lack of a collar bone
 - presence of nails or hooves (rather than primitive claws)
 - all are plant eaters (herbivores) except the ant and termite-eating aardvark

What are the similarities between manatees and elephants?

- specialized dentition (teeth)
- lack of collar bones
- sparse hair on bodies
- skin type/color
- prehensile (capable of grasping) nature of manatee’s upper lip and tip of elephant’s trunk (used to grasp food items)
- large body size
- long gestation period (pregnancy)
- presence of nails on ends of appendages
- location of mammary glands under the forelimbs

Activity: Find pictures of the subungulates noted above. Draw what you think the Primitive Ungulate Ancestral Mammal might have looked like.

FOR MORE INFORMATION:
Department of Anatomy, College of Medicine, Howard University,
520 W Street NW, Room 1105, Washington, DC 20059

Prehistoric Information

- The Proboscidiens (elephants) and Desmostylians (hippopotamus-like) most resemble Sirenians (manatees and dugongs).
- Sirenians ancestral forms date back to about 55 million years ago.
- Sirenians are older than the Desmostylians, which only date from 5 million to 35 million years ago.
- Desmostylians are the only extinct order of marine mammals.
- Proboscidea and Sirenians share similar characteristics.



Sirenians of the World

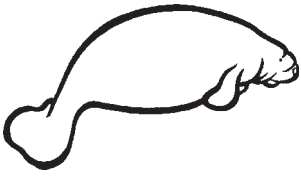
Sirenians have three species of manatees and one species of dugong in existence today:

- **West Indian manatee** - (*Trichechus manatus*)
- **Amazonian manatee** - (*Trichechus inunguis*)
- **West African manatee** - (*Trichechus senegalensis*)
- **Dugong** - (*Dugong dugon*)

- Steller's sea cow - (*Hydrodamalis gigas* - discovered by Georg Wilhelm Steller in 1741. The sea cow survived until 1768 before it was exterminated by hunters within 27 years of discovery--now extinct.)

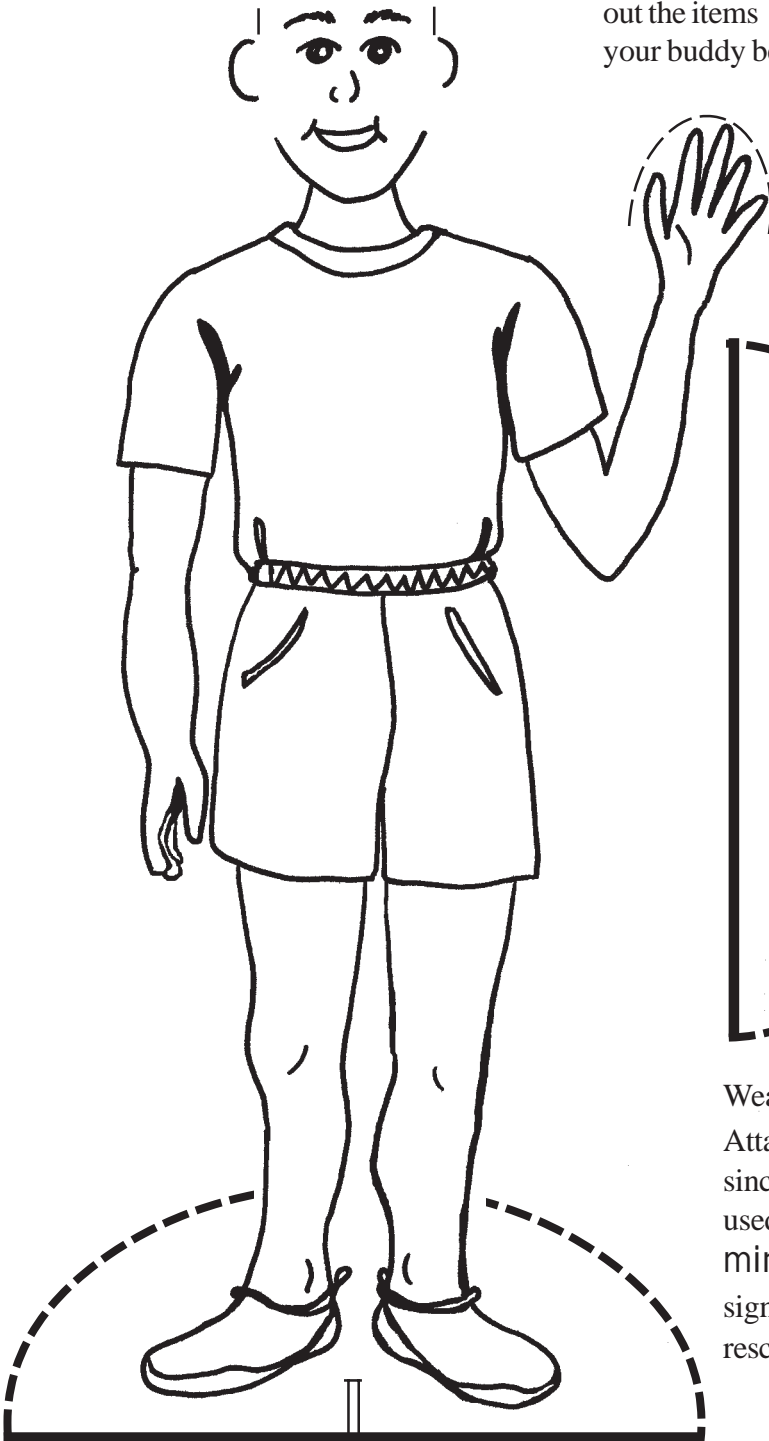
The traits that unite the various living Sirenian species include:

- stream-lined, fusiform (torpedo-like) body that externally lacks pelvic appendages
- reduced pectoral appendages (flippers)
- large, laterally expanded tail for locomotion
- bones that are pachyostotic (thick or swollen), osteosclerotic (hard and solid) and heavy
- lack of an externally distinct neck
- relatively small brain and cranial cavity
- specialized dentition (teeth)
- horny plates in the anterior (front) of the mouth to aid in crushing ingested plant materials
- very sparse body hair
- large body size

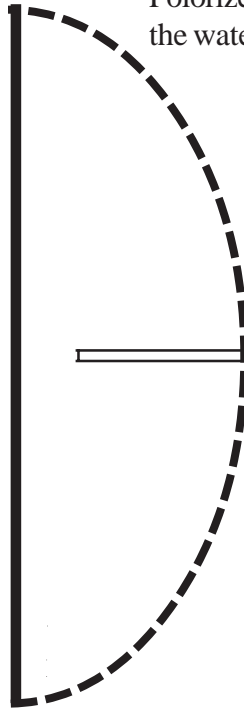


Life Jackets Help Save Lives

Draw some hair on your boating safety buddy and color the clothes and other accessories. Lightly glue the page to a stiffer sheet of paper. Cut out the items and place the items on your buddy by folding the tabs. Help your buddy be better prepared for a trip on the water.



Wear polarized sunglasses so that you can see objects just below the surface of the water (such as seagrass beds, manatees and even fish and turtles). Polarized lenses help cut the glare from the sun on the water and also protects your eyes.



Wear your life jacket when near shore or on a boat. Attach a whistle to your life vest that has a plastic ball inside since the cork balls do not work well when wet. The whistle is used to attract a rescuer's attention to your location. A small mirror placed in a pocket can be used to flash sunlight signals in emergency situations. Practice water safety rescues with your parents before an emergency happens.

A life jacket is also called a Personal Flotation Device or a PFD.

Wear the proper life jacket for your activity:

Type 1 - Off-shore life jacket (front and back floatation to help you float for a long time)

Type 2 - Near-shore life jacket (looks like an upside down U. Rescue time may be shorter)

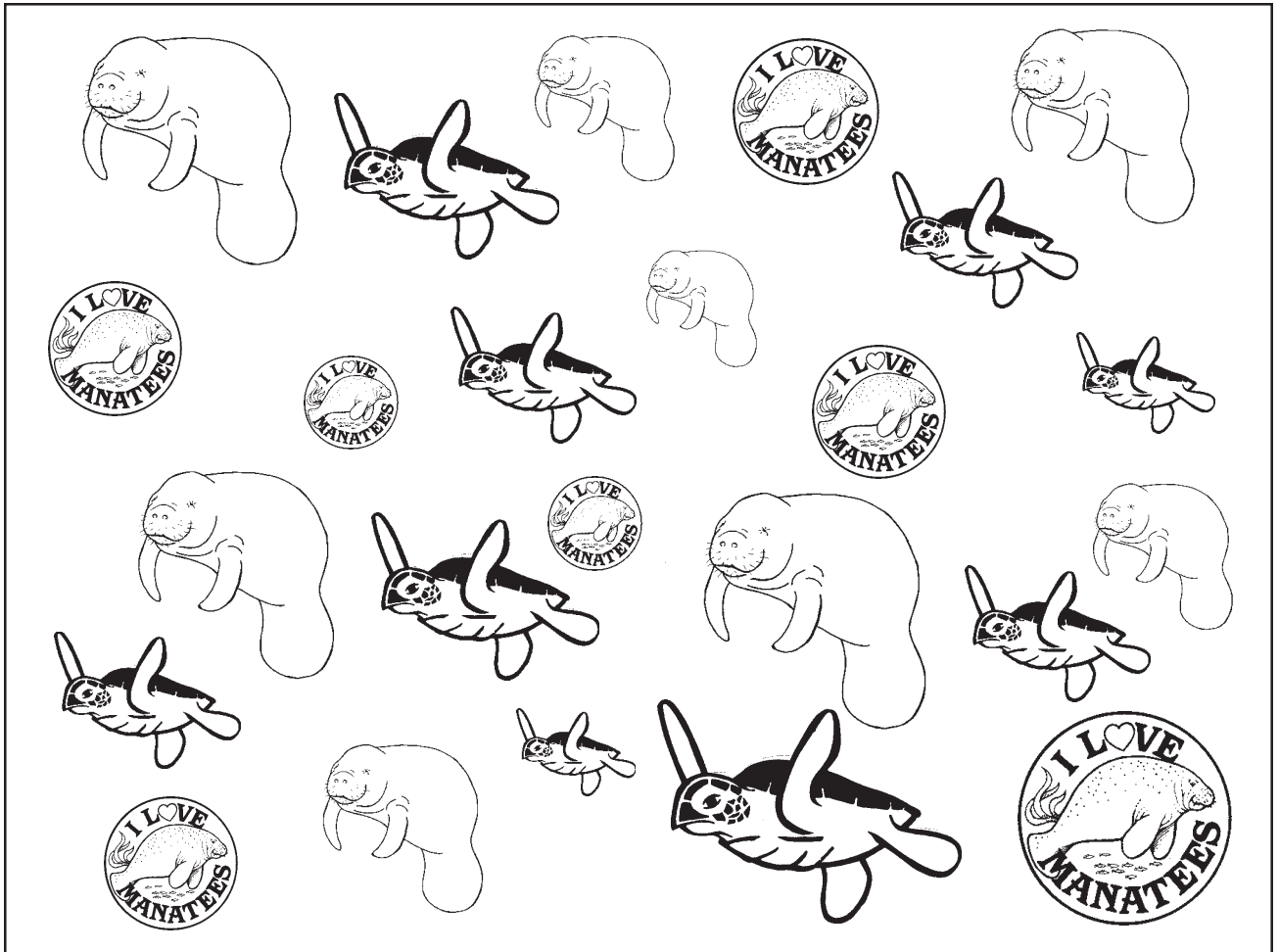
Type 3 - Sport life jacket (used for watersport activities--similar to Type 1 with more straps)


Type 4 - Throwable flotation (seat cushion, etc.-- throw to a person who needs help)


Make sure your life jacket is Coast Guard approved and fits well. Most important, remember to **Wear your Life Jacket!**

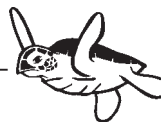
Manatees and Marine Turtles

Counting Activity



How many manatees do you see? _____ 

How many signs do you see? _____ 

How many turtles do you see? _____ 

Extra: How many pictures do you see in all? _____

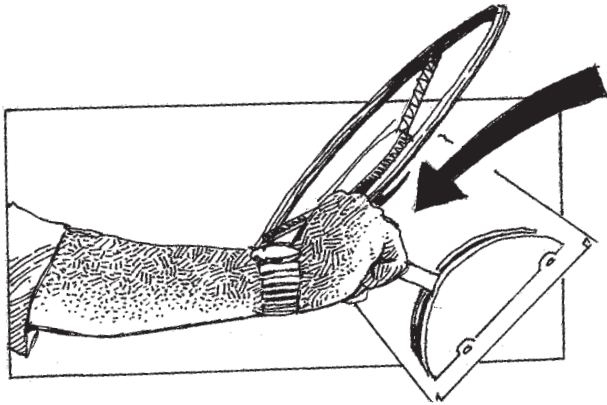


Did you know that there are only around 3,500 manatees that live in Florida's waterways? Think about how many students are at your school. If all of your schools' students went to Florida's coast and spread out, would it seem like a lot of students?

Fill in the blank spaces in the sentences below. Think about what the picture is “telling” you to do for manatee protection.

1 Manatees are wild marine mammals found mostly in Florida’s coastal areas. When you see manatees in the wild, please _____

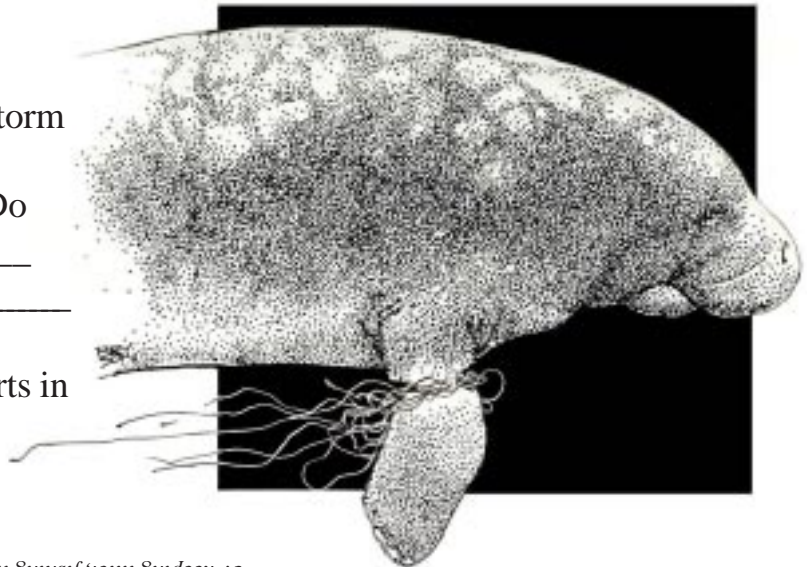
_____ as this could change the manatee’s behavior. Wild manatees should fear humans and swim away if approached. (If you see a group of manatees close to shore, it is probably a mating herd. DO NOT disturb the manatees.)



2 One of the ways that boaters could help manatees is by _____ the speed of their boats. When boaters follow the speed limits posted on waterway signs they are helping to protect Florida’s manatees.

3 Litter, fishing line and storm debris are found in Florida’s coastal waters. Do your part by _____

_____ and by helping with beach clean-ups or recycling efforts in your area.



Answers: 1. Do not touch manatees 2. “Reducing” or “slowing” 3. keeping litter, fishing line, garbage, etc. out of the waterways

Manatee Puppet

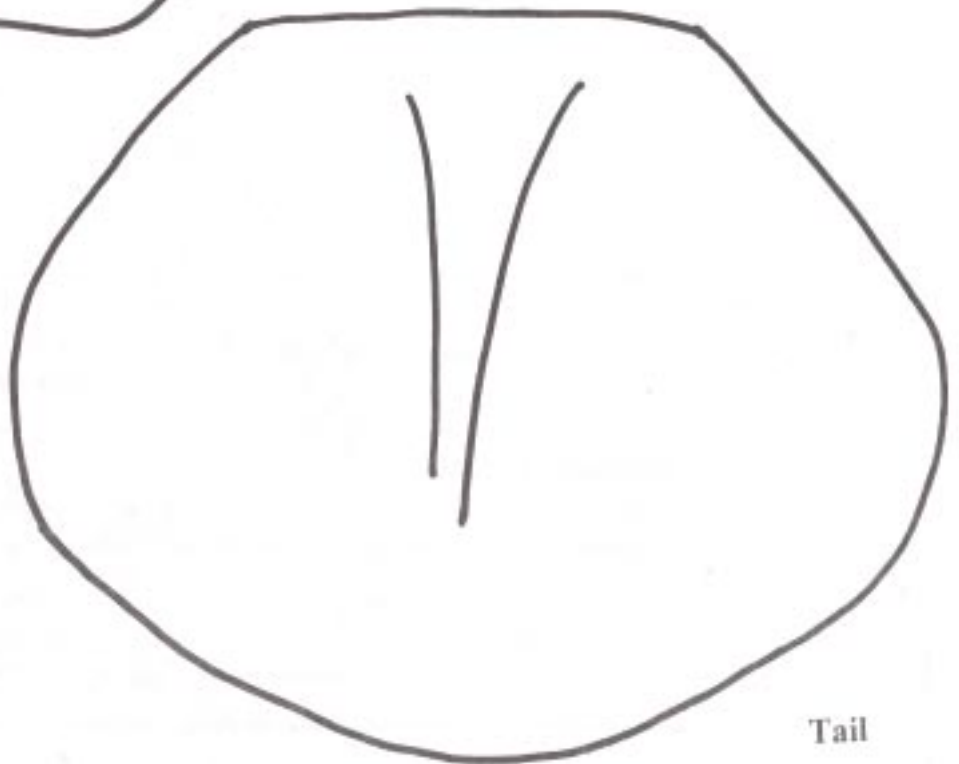
Directions: Color each of the pieces gray or brown. Cut the pieces out and glue them to a paper bag as shown below. Make sure you attach the head to the bottom of the bag so that you can open the manatee's mouth. Give your manatee a name and herd together with your other manatee friends. Manatees are great socializers!

(Puppet idea courtesy of the Florida Fish and Wildlife Research Institute.)



Bottom of mouth

(glue just under the flap of the paper bag)



Tail

Help manatees stay “on the road to recovery.”

Floridians support the Florida Fish and Wildlife Conservation Commission’s manatee conservation, research and educational efforts by purchasing a special license plate for their cars and trucks. The example below is a thank you to them. This particular plate is painted on the back of special trailers used in manatee research.

Directions: Color the manatee gray and the tall letters red. The sea grass, which the manatees eat, should be green. Color the area around the manatee a light blue.



By purchasing one of these speciality plates, people of Florida help manatees. (If your family has a Save the Manatee license plate, “THANK YOU for your support!”)



To find out more information about the Save the Manatee license plate, visit our website at:
www.MyFWC.com

What Should You do if You See a Manatee?

If you see a manatee and it is not injured, passive observation is encouraged. Manatees do not need us to provide them with food or water if they are in the wild.



Please do not attempt to touch or harm the manatee in any way. It is against the law to harass, harm, pursue, hunt, shoot, wound, kill, annoy or molest manatees.

Remember, if you see an injured, dead or tagged manatee, or one that is being harassed, please call the FWC Law Enforcement Unit at **1-888-404-FWCC (1-888-404-3922)** or dial #FWC on your mobile phone. (Note: Out of state cell phones may not work)

Manatees are protected under the federal Endangered Species Act of 1973 and the Marine Mammal Protection Act of 1972. The Florida Manatee Sanctuary Act of 1978 designates the entire state of Florida as a manatee sanctuary.



For more information:

Florida Fish and Wildlife Conservation Commission (FWC)

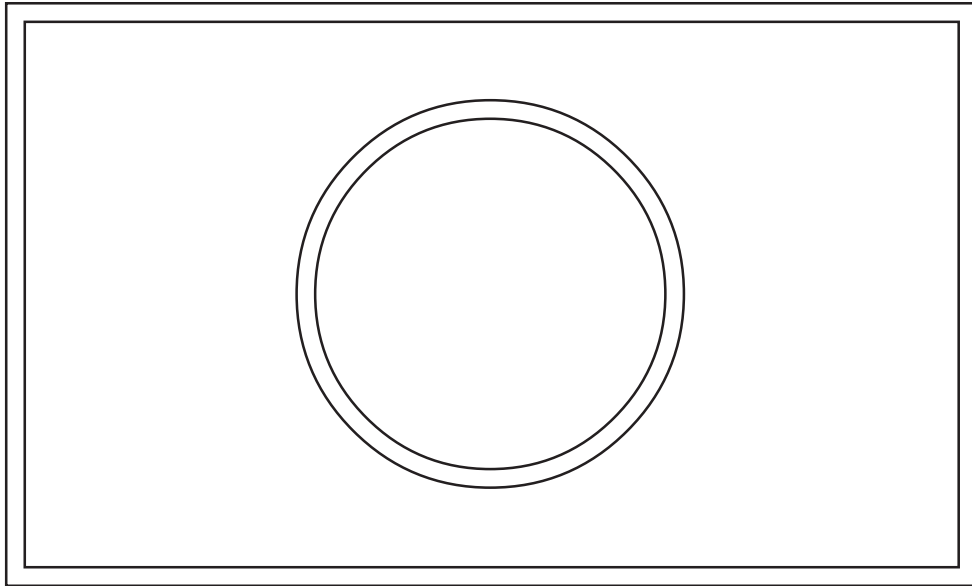
Habitat and Species Conservation - Imperiled Species Management
620 South Meridian Street, 6-A
Tallahassee, Florida 32399-1600

(850) 922-4330

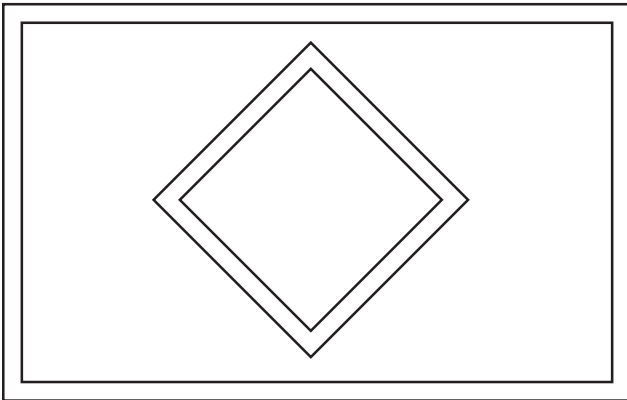
Internet address:
www.MyFWC.com

What do the Waterway Signs Mean?

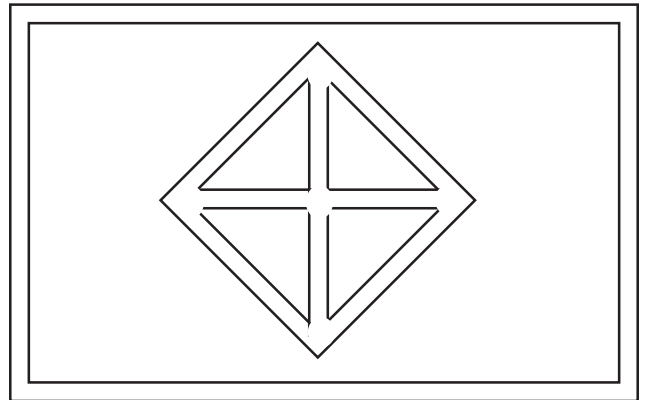
(Color the sign border and shapes orange. The sign background is white.)



A. A Circle Shape means - Follow the posted RULE on the sign.



B. A Diamond Shape means - DANGER!



C. A Diamond Shape with a Cross means - DO NOT ENTER! (All vessels)

Challenge Activity:

Match the following messages to the correct sign above. Write A, B or C next to the sign message below. Check your answers to see if you are right.

_____ Idle Speed - No Wake

_____ Rocks

_____ Slow Speed - Minimum Wake

_____ Manatee Refuge

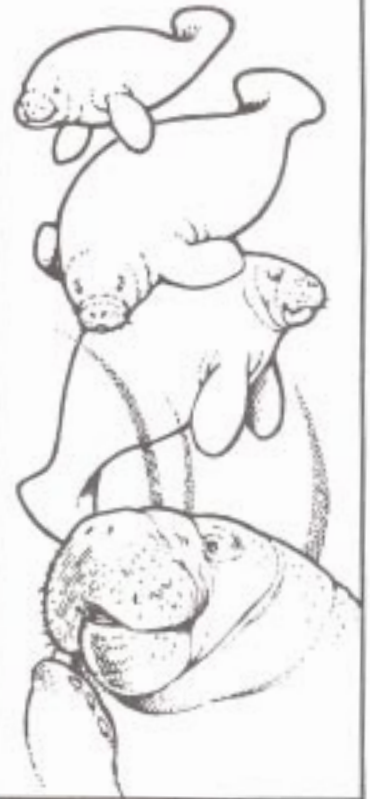
_____ Stump(s)

_____ Swim Area

C	A
B	B
C	A



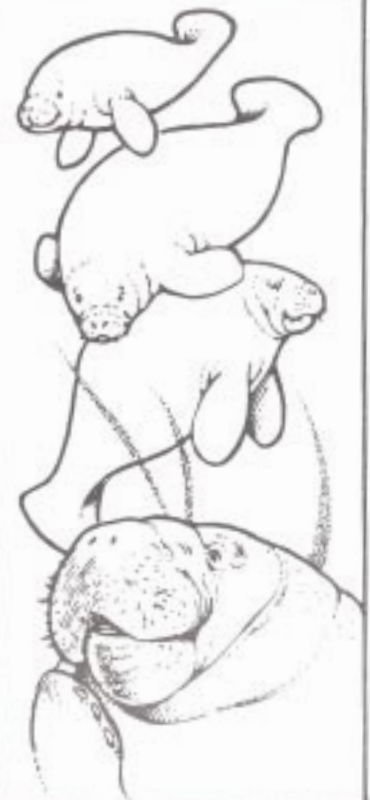
LOVE THE
MANATEES



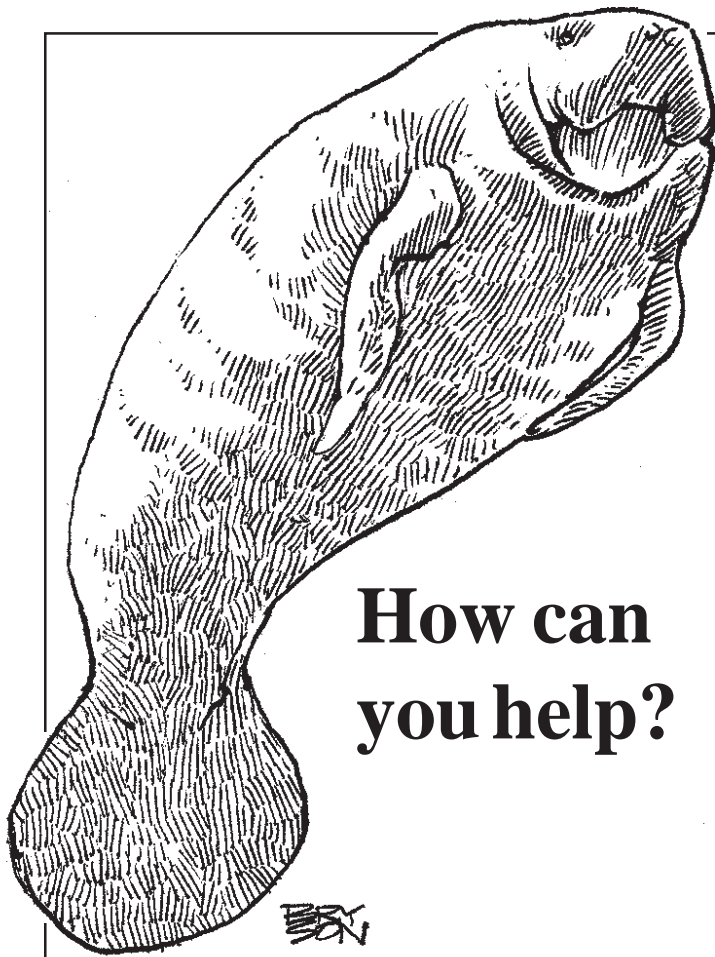
Buttons, Post cards and Bookmarks!
Color and cut these designs out!



LOVE THE
MANATEES



Cut on the dashed line if you want to create a postcard or card. Cut around the circle if you want to make a large button to wear. Make sure you glue all of your designs to a thicker piece of paper before using them.



How can you help?

A Note to Educators

The “*Manatees Florida’s Gentle Giants - A Coloring Activity Book*” was originally created by the Northeast Florida Regional Planning Council with input from the Save the Manatee Club and the Florida Department of Natural Resources. Several updates, additions and agency changes have occurred over the years. This issue incorporates some of the old material with new graphics and updated information. Please let us know if you have other suggestions to improve this booklet. Graphics in this booklet were created by Jerry Bulgrin, Bonnie J. Abellera, S. Butch Rommel and Brian Bryson. Please credit the Florida Fish and Wildlife Conservation Commission if you use any of the text or graphics from the booklet. The material is not copyrighted and may be copied for use in schools or environmental education facilities. **Donations to the Save the Manatee Trust Fund are always welcome if you are requesting bulk orders of any of our materials for your use (Go to the manatee pages on the FWC website to download a donation form for your contribution).**

Check out our Manatee Decal Collection!

Visit our web pages to see
the different designs available.

Your donation to the Save the Manatee Trust Fund

helps us with research, recovery, protection
plans, habitat protection, sign posting and
educational materials for the benefit of
Florida’s manatees.

Browse our site for more information:

MyFWC.com/psm



Florida Fish and Wildlife Conservation Commission
Division of Habitat and Species Conservation
Imperiled Species Management Section
(850) 922-4330

RV:09/05