

Lesson Plan

Manatees

Reading in the Refuge Resources:

Books:

1. **Mary Manatee -A Tale of Sea Cows** by Suzanne Tate, illustrated by James Melvin. Book is #7 of Suzanne Tate's TELL-TALE NATURE SERIES. (It features Mary Manatee and her son Mikey who are West Indian sea cows, Tirchechus manatus. Mary was worried about BOATS. She called Mikey to her side).
2. **Sam the Sea Cow** by Francine Jacobs, illustrated by Laura Kelly. (A Reading Rainbow Book Chapter Book originally published as Sewer Sam, the Sea Cow. Book follows the adventurers of a manatee, or sea cow, from birth till after he leaves his mother).
3. **A Manatee Calf Grows Up** by Katie Marsico, photos mainly by Brandon Cole Marine Photography. (Information book that describes growth and development of manatees with great photos. Book is small, may be difficult for group to see pages. Grade 1-2 reading level).
4. **Manatees-Our Wild World Series** by Kathy Feeney, illustrations by John F. Mc Gee. (A book with lots of Fun Facts*Up-Close Photos* Color Illustrations* Index and * Internet Sites, upper elementary/adult).

Materials:

From Education Lab:

- Manatee skull (2), normal & calcified rib bones, mother and baby manatee (stuffed animals), plastic container of fishing line (monofilament), boat propeller, flipper/finger bones on wall poster.
- Assorted manatee posters on wall or in poster storage:
- Gulf Coast Marine poster behind poster holder (shows many animals on Florida's Gulf Coast).
- Manatee coloring books in cabinet under manatee display
- Table for props, brown cloth/blue cloth, and black felt, tripod to hold posters.
- Signs: **Blue Goose, “Dump No Waste- Protect Your Water, Mind You Waterway”** signs (small poster) found in the information folder.
- Information about “Save the Manatee Club” and places for visitors to see manatees is in information folder.

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- Large wooden floor puzzle –in cabinet under manatee display. (Only for special groups)

Decide on craft and get supplies organized.

In Education Center:

- Remind visitors to visit the Marvelous Manatee exhibit and learn about the fate of J. Mullet.

Procedure:

- Set up manatee specimens/discussion items on table covered with cloth. Set up tripod with Gulf Coast Marine poster. Place additional posters & signs nearby.
- Invite audience to sit close so they can see and hear better. While waiting to begin program engage audience by asking where they are from and if they have been to the refuge before.
- **Welcome** to J.N. “Ding” Darling NWR! My name is ____; I’m a US Fish and Wildlife ____ (Refuge Ranger, Intern, or Volunteer).
- Mission of USFWS is to work with others to **conserve, protect, and enhance** *fish, wildlife and plants and their habitats* for the continuing benefit of the American people.
- **Show Blue Goose sign.** Whenever you see this sign you know it is refuge property.
- **Does anyone know** how a refuge is different from a park? Parks are for people; wildlife refuges are for wildlife.
- On a refuge, **Where WILDLIFE Come First!** That means we do not feed the animals, touch them or disturb them.
- **What can** we do? We can watch them from a safe distance then read, write and draw pictures about them.

Introduction of Manatee Program:

- Today we will be talking about the Florida Manatee, also known as a West Indian Manatee.
- **Raise your hand to tell me: What you know about manatees?”**
Call on few visitors/children. Listen to comments.

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If time permits and it is age appropriate make a T chart on board with two columns:

What We Know About Manatees / What We Learned About Manatees

What Do Manatees Look Like?

(Use pictures on posters, stuffed animals, or specimens to demonstrate)

- They are grayish brown in color.
- They have thick, tough, spongy, wrinkled skin with sparse hairs and stiff whiskers on snout. The whiskers on snout are very sensitive.
 - Whiskers are called **VIBRISSAE** and are sensitive like human fingers!
- Skin continually sloughs off or sheds to reduce algae buildup.
- Their front flippers are paddle shaped, with 3-4 nails.
- Bones in flippers-like bones in a human hand(show poster w/specimen).
- Jointed finger bones of flipper help them steer or sometimes crawl through shallow water, or climb halfway onto river banks to bring food to its mouth or hold objects.
- No hind limbs.
- They have powerful flat tails that help propel their large, heavy bodies through the water. They pump their tails like we pump our legs to go higher on a swing.
- They have small eyes with a special eyelid that acts like goggles.
- No eyelashes or eyelids like most mammals.
- They see far away, but not as well close up. They can't put on glasses like humans can. **What can they do?**
- Their stiff whiskers on lips and snouts act like sensors .When they brush against plants they usually find food in muddy water.
- Lack outer ear- looks like slits on side of head. No earlobes, but have large ear bones so they hear quite well.
- Have 17-19 solid ribs on each side (Compare to diver ballast).
- Lungs lie along backbone instead of along rib cage-helps manatee stay buoyant .
 - Manatees have neutral buoyancy (think scuba diver)
- Length:10-12 feet.

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- Weight: 1,500-1,800 pounds.
- Females are larger than males.
- Once we thought they were related to walrus because of the way they look.
- Today scientists identify animals using genetics and they believe they are closely related to elephants.
- Lives 50-60 years in the wild.
- Maybe 60-70 years in captivity (may choose to tell them places to view them: Manatee Park (N. Fort Myers), Disney's Epcot Center, Homosassa Springs, South Florida Museum/parker Aquarium in Bradenton)
- **Rehabilitative Centers to observe manatees:** Mote Marine Aquarium (Sarasota), Lowry Park Zoo (Tampa), Miami Seaquarium-Sea World rehabilitative center.
- Females are larger than males.

Where do they live? What is the place called where an animal lives? ... habitat

- Found in shallow slow moving waters all around Florida...rivers, bays, estuaries and coastal waters in winter. (Point to Gulf Marine poster).
- Avoid currents over 3mph
- They have no permanent home, they do not protect a specific area or territory.
- Can migrate as far north as Carolinas or Louisiana in summer.
- One traveled to NY, another swam up the Mississippi River, and have been spotted as far north as Rhode Island and as far south as Brazil!
- Can live in fresh, salt or brackish water. Point to Florida coast on Gulf Coast Marine poster.
- Prefer warm water above 68 F because it helps them digest their food.
- Manatees head for the warmer waters found in springs or power plant discharge canals in FL when water is colder than 68F.

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- FL Power & Light Company, Manatee Park –favorite winter spot for Manatees from Nov.-March
- Name some places to view them in the wild on west coast: Manatee Park, Exit 141 on US 75, Crystal River NWR, Orange River & FPL Discharge Canal, St Rd 60, Ft. Myers, Mote Marine & Aquarium, Sarasota.

Reading in the Refuge procedure:

The title of the book is **Mary Manatee -A Tale of Sea Cows** by Suzanne Tate, illustrated by James Melvin. This is a story about a manatee that the author calls Mary and her baby called Mikey. Lets see if the poem helps you connect with the story share.

- “When I read this story I want you to do 2 things.
(1) **Look** carefully at the pictures and
(2) **Listen** carefully as I read. There are 4 things we are going to review or learn: (1) what manatees’ look like (2) where manatees live (3) what they eat and (4) how they behave.
If young visitors are present you may say:
(3) What are we going to do? Repeat LOOK and LISTEN ... make sign-making circle with fingers over eyes and hand behind ear.”
(4) Read the story.
- **After the story:** Use stuffed animals and specimens to demonstrate facts.

WHY DO HUMANS CALL MANATEES AN “EATING MACHINE?”

- They are herbivores – they eat by **grazing** marine and freshwater plants. They may eat up to 60 different kinds of aquatic/water plants.
- Favorite foods include sea grasses, sea lettuce and water hyacinths. Also eat mangrove leave that fall in water (show pictures of plants and a mangrove leaf).
- Stomach has special bacteria to help digest these tough, chewy plants.

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- Another name for manatees is “**sea cow.**” **Can you guess why?** Because they graze for plants under water like cows do on land.
- Manatees eat for 6-8 hours a day, about 10-15% of their weight. That’s like eating 200 heads of lettuce a day.

Did you know they use their front flippers to hold the food like raccoons do?

- Two more cool facts are that the manatee’s mouth and teeth are specially adapted to eating vegetation (herbivorous life).
- First, lets see how the mouth helps the manatee eat all their vegetables! The plants are torn with their large, strong, bristly, split upper lip. Lips look like end of elephant’s trunk.
- The left and right sides can move independently, to move the food into place.
- That means their lips can move in two different directions at a time so they can hold the plants.
- Behind the lips are special ridge pads that break food into smaller pieces before the food moves into the mouth and the molars grind it up.
- The second amazing adaptation is that they have “marching molars!”

What does that mean? Can their teeth move ? Yes .

- They do not have front teeth like us. Just a mouth full of molars like our back teeth.
- Like elephants, they have 4 sets of 6-8 molars=24 to 32 molars
- When they grab the plants on the bottom of the water they also pick up some sand. **How do you think the sand feels? Coarse and rough.**

What do you think the sand does to their front molars?

- Chewing on those fibrous plants and sand wears them down and they fall all out.
- Then the molars in the back “come forward” like an escalator to replace the ones that are lost.
- We call their teeth “marching molars” **Really COOL!**

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- Kind of like that song...the ants... the author calls this one

Marching Molars...

**The Molars Go Marching 2 by 2, Hurrah, Hurrah
The Molars Go Marching 2 by 2, Hurrah, Hurrah
The Molars Go Marching 2 by 2
One falls out, but no one says Boo
“Cause another one is
Marching into view!** (by Christina Starkey)

- Amazingly manatees keep growing new molars their whole life.

Did you ever wonder if manatees clean their teeth? Can you imagine!
They roll small rocks around their in mouths and then spit out the rocks! Or sometimes they use an anchor rope like dental floss (see page 17 in Manatees- Wild World Series).

Additional Facts :

- They breathe air just like us but because they are underwater they must surface to breathe about every 3-5 minutes (Demonstrate with stuffed animals).
- Nostrils on top of their face help them breathe. Lips stay closed – keeping water out.
- When resting they can stay underwater for about 15-20 minutes.
- Manatees often sleep on their sides or upside down on their heads.
- Females are called cows and baby is a calf because they eat grass like cows.
- Manatees are mammals and their baby goes underwater to suck mothers milk (demonstrate with stuffed manatees).

How do Manatees Behave? It is fun to watch and study manatees. But if you can't see one up close, its fun to learn fun facts about them.

Do you wonder why people call them “gentle giants.”

- They move very slowly. Peaceful personality, mild mannered prefer to swim away from trouble. Often shy and reclusive. But will swim in herds during mating season.

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- Spend most of their time eating, resting, playing, or traveling.
- Very curious, always investigating new things that come in their habitat, like a school of fish. Do you know another animal that is curious? (raccoon, _____?)
- They cannot turn head sideways because they only have 6 neck bones not 7 like other mammals therefore- they must turn their whole body around to look behind them.
- While they may hear or see a motor boat approaching, they cannot move fast enough to get out of the way. **What do you think happens?**
- Mother manatee is a good mother. She pushes her baby to the surface of the water to get its first breath. Then shows him how to back down by pushing him several times.
- A baby manatee swims next to his mother, sleeps under mom's flipper, back, or tail. Mother teaches him which plants to eat, how to migrate to warm water and how to play. She will even swat him with her tail to teach him how to behave!
- Slow to reproduce- 1 calf every 2-5 years.
- Baby stays with mother for at least 2 years.
- No system of defense, completely harmless.
- They exercise when they play just like humans do.
- **Did you know that they: bend, flex, stretch, twirl, barrel roll and do somersaults?**
- **Can you imagine seeing them ride the water current like they are body surfing or balancing on their heads or tails (demonstrate with stuffed animals).**
- Manatees are tactile – touch things and each other.
- Greet on another by pressing their snouts together or touching tails. Swim together by holding each others flippers.
- Chase members of herd and give each other friendly bumps. ..just like boys on the playground!
- Communicate by making sounds like chirps, grunts, squeaks, squeals , and whistles.
- Groan when they stretch. Each sound sends a different message.

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What Problems Do Manatees Face?

Keeping warm is a real problem.

- Their cylindrical bodies help conserve heat but do not have blubber like other marine animals.
- Metabolism is low, so they don't generate a lot of body heat.
- Get cold when water temperature falls below 70F.
- Develop pneumonia, get too sluggish to eat, and can die.
- Behavior helps them survive!
- They seek out natural warm springs, coastal rivers, or electric power plants that discharge warm water.

Losing their habitat due to:

- building of homes
- more people using their habitat for swimming and boating
- water pollution or destroying their food source.

How do boats cause them problems?

- Propellers hurt their bodies –cause scars, hurt bones, or cause death.

What problems do people cause?

- Building homes along the waterways takes their habitat.
- More people using their habitat for swimming and boating.
- Approaching, petting, feeding them **WHY is this bad?**
- They won't look for own food, our food may make them ill.
- No known predators-some may hurt/harass them.
- Pollution, litter, trash.
- Tangled or caught in fishing line-monofilament, hooks, crab lines. In the story, what did Mikey get caught in- canal gate (show picture in story).

How Can We “MIND OUR MANNERS AROUND MANATEES” and help them stay on the ROAD TO RECOVERY?”

They are on the Endangered Species List. What does that mean? If we don't protect them they will become extinct...like dinosaurs.

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- Watch manatees quietly from a distance (no touching, feeding or giving them water).
- Learn and obey waterway signs when you are boating (turn off motor and move slowly with pole).
- Clean up trash (fishing lines, hooks, crab traps).
- Join the *Save the Manatee Club*-funds go toward public awareness, education, research and lobbying savethemanatee.org/adopt.
- Buy a special manatee license plate.
- Sign up for Paddle Tales, free E-Newsletter savethemanatee.org/enews_signup.htm.
- Join the E-mail Action Alert Team. Savethemanatee.org/action
- Call the Florida Marine patrol to report an injured, dead, harassed, tagged, or orphaned manatee. 1-800- DIAL-FMP.

Craft: Follow up with craft of your choice in Resource drawer.

PLEASE REMEMBER:

In a Wildlife Refuge, Wildlife comes first! Please do not stray from designated trails, other authorized areas, or your parents/ guide. Do not disturb the wildlife - this is their home. Take only memories.

How can you make a memory if you can't take any animals, plants, or other natural materials with you?

- You can take a picture with a camera or you can draw a picture to remember your visit.
- You are also welcome to stay and do the craft and take it home.

Thank you for being such a great audience. Promote other programs, tours, and hand out schedule.

If available give participants a Manatee Coloring Book to take home. Share with your family, friends and neighbors all that you learned about the Florida Manatees.