



Manatee
Viewing Center

Tampa Electric's Manatee Viewing Center

Tampa Electric Company



- Has supplied the Tampa Bay area with electricity since 1899
 - Areas include Hillsborough, Polk, Pasco, and Pinellas counties
- Has more than 5,000 megawatts of generating capacity and over 765,000 residential, commercial, and industrial customers
- Has installed 600 MW of photovoltaic solar with the plans to add 600MW more
 - 7% of the energy produced by Tampa electric comes from the sun

Big Bend Power Station



- Located in Apollo Beach, Florida
- Why do manatee visit the Big Bend discharge canal?
- Manatees need water warmer than 68F to survive
- Big Bend uses water from Tampa bay to cool the power plant. This produces warm salt water which is then released into in the discharge canal where the manatee seek refuge from the cold. The sea walls contain the warm water and allow the temperature in the canal to return to ambient temperature before the water returns to the bay.

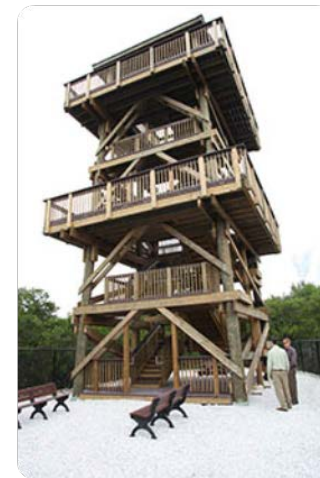
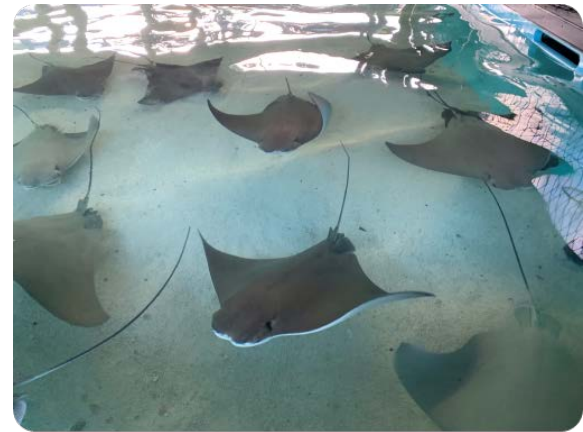
Manatee Viewing Center



- Open: Nov. 1 - April 15
- Hours: 10am-5pm, Nature Trails & Observation Tower close at 4pm
- Closed: Thanksgiving day, Christmas Eve at 3pm, Christmas day & Easter
- Admission: Free!
- Parking: Free!

Manatee Viewing Center

- Owned and operated by Tampa Electric Company
- Opened in December 1986
- Is a federal and state sanctuary
- 7 million visitors!
- Features: Manatee, ray touch tank, butterfly garden, nature trails & an observation tower

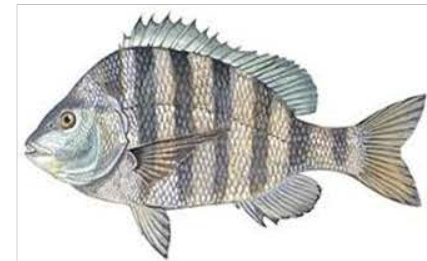




Newman Branch Creek History

- The MVC is located on roughly 500 acres
- The area was historically dredged to deepen and straighten the channel to facilitate drainage of agricultural lands upstream
- The spoil from mosquito ditches blocked tidal flushing allowing invasive species to thrive
- Newman Branch Creek restoration project restored tidal flushing, reestablished a meandering creek, and removed exotic species and planted native species
- In total TECO restored 100 acres of vital creek ecosystem

Animals You May See



Now, Let's Talk About the Manatees!



The Florida Manatee

- Marine mammal
- Native to Florida
- Order Sirenia
- Subspecies of the West Indian manatee
- Threatened species
 - 6,131 manatees counted in January 2018



The Florida Manatee

- The population is vulnerable due to:
 - Low abundance
 - Low reproductive rates
 - Thermally restricted home range
 - Human-related deaths due to boat strikes and harmful algal blooms



Red Tide photo credit: Tallahassee Reports

The Florida Manatee

- Breaths air
- Travels between saltwater and freshwater
- Needs water at least 68F to survive
- Sleeps 2 to 12 hours a day
- Can hold their breath for up to 20 minutes
 - When active they breath every 3 to 5 minutes



The Florida Manatee

- Average adult weighs 1,200lbs and is 10ft long
- Reach sexual maturity at about 5 years old
- Gestation period of 13 months
- Calves at birth are 3ft long and 60-75lbs



Manatee Habitat

- Shallow coastal waters
- Springs
- Power plants
- Sea grass meadows



How can you ID a manatee?



Skeg



Hull



Propeller



Cold Stress



Entanglement

- You can identify a manatee by their scar patterns
- Different injuries leave different scars
 - Scar Cause
 - Scar location
- Temporary/Seasonal:
 - Algae
 - Barnacles
 - Mud

Manatee Biology

- Live in warm shallow coastal waters
- Cold stress if the water drops below 68F
- 1" thick skin
- Very little (MM thick) body fat
- Lack blubber



Manatee Biology

- 3-4 nails on each flipper
- Body and face is covered in hair
- Mothers nurse young
- Eats 10-15% of their body weight in vegetation daily
- Have “Marching Molars” they replace teeth from the back of their mouth to the front



Manatee Behavior

- Manatees spend 2-12 hours per day resting
- Eat 6-8 hours per day
- They are asynchronous (they do not keep a normal schedule of waking and sleeping)
- Manatees can travel up to 30 miles in a day
- Usually solitary, except in warm-water refuges
- They are very tactile when together, often with body contact and nuzzling
- When in a herd, manatees will sometimes rise in unison

Behaviors



Surface Resting



Travelling



Socializing



Mudding



Mating



Nursing



Drinking



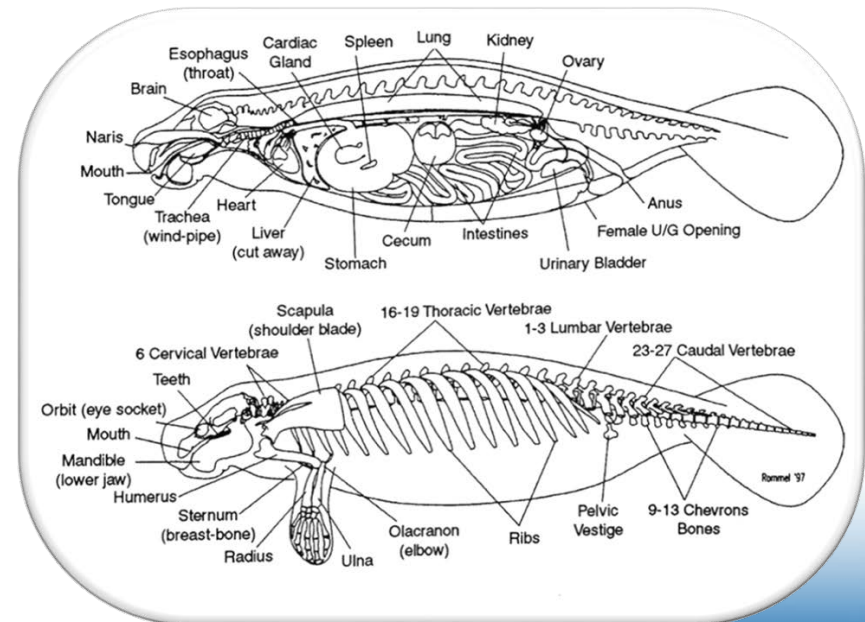
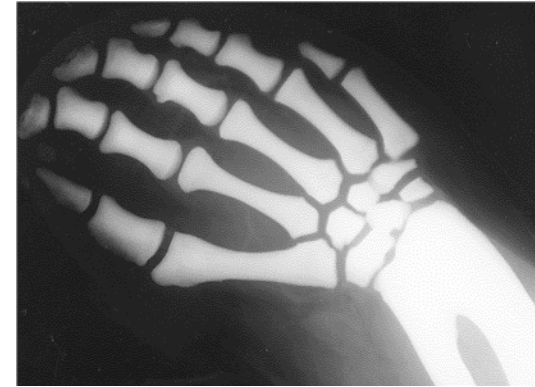
Symbiosis



Feeding

Manatee Anatomy

- Dense bones help offset the buoyancy of large lungs, intestines and skin
- Marrow is found in the sternum and vertebrae
- The bones in their flippers are like a human's hand bones

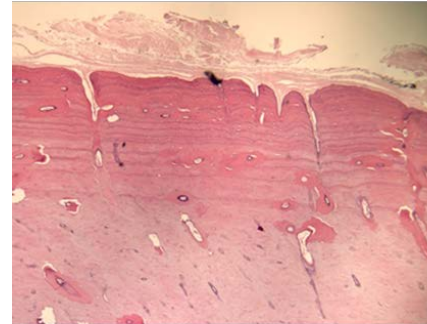


Manatee Anatomy

- Have excellent hearing
 - FWC researchers can age an animal by counting the rings in their ear bones
 - Just like a tree that has growth rings!
- Only have 6 cervical vertebrae
 - The only known mammals that don't have 7 neck vertebrae are manatee and sloths!
- Have poor eyesight
 - Would be considered legally blind if they were humans

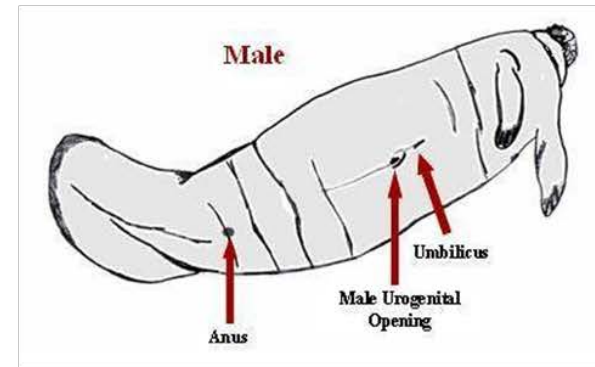
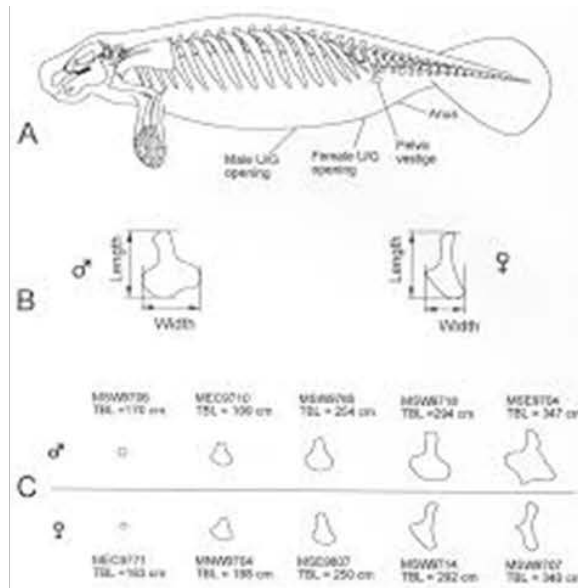
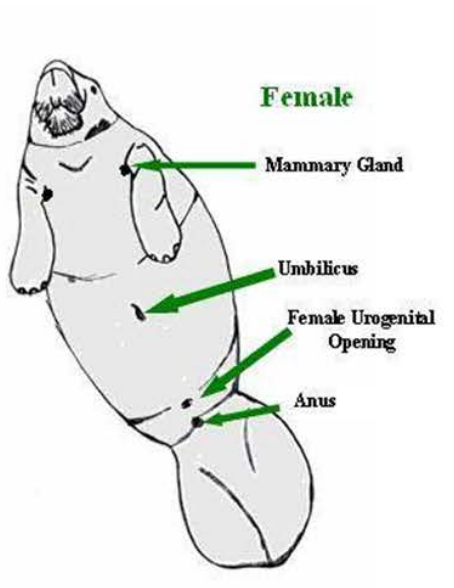


Manatee ear bone



Manatee neck bones

Manatee Anatomy



Manatee Anatomy

MALE OR FEMALE?



Manatee Anatomy

MALE!



Manatees...

- Are native to Florida
- Raise their calves for 2-2.5yrs
- Can go in-between fresh & salt water
- Can hold their breath for 20 minutes
- Spend about half of their day sleeping
- Have hair all over their body
- Live in warm shallow (coastal) waters
- Breathe air
- Are threatened due to human activities
- Eat 6-8 hours a day
- 3 species (West-Indian, Amazonian & African)
- Are closely related to elephants & hyraxes
- Eat 10%-15% of their body weight daily



Threats to Manatee

- Humans!
 - Boats
 - Flood gate/locks
 - Entanglement
- Red Tide
- Cold Stress



How Can I Protect Manatees?



- Wear polarized sunglasses
- Follow posted slow speed and no wake signs
- Don't offer food or water
- Don't touch
- Stay out of seagrass beds
- Recycle fishing line and rope

Thank you!

