

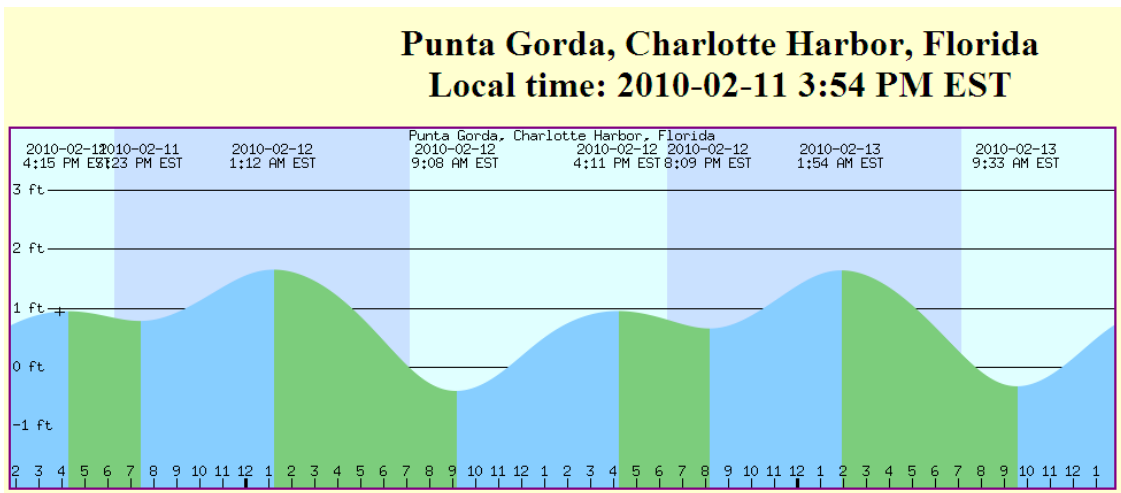


Mangrove Ecosystem: Ponce de Leon Park, Punta Gorda, Feb. 12. 2010

What causes tides?

What effect does this abiotic factor have on the mangrove ecosystem?

- export
- import
- predators
- prey
- soil oxygen



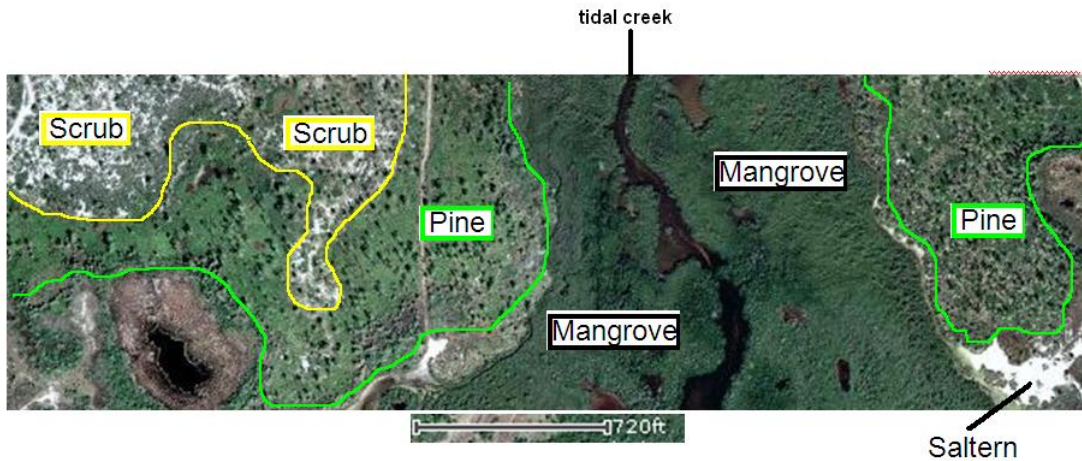
Map the northern limits of mangroves below.

What limits the growth of mangrove further north?

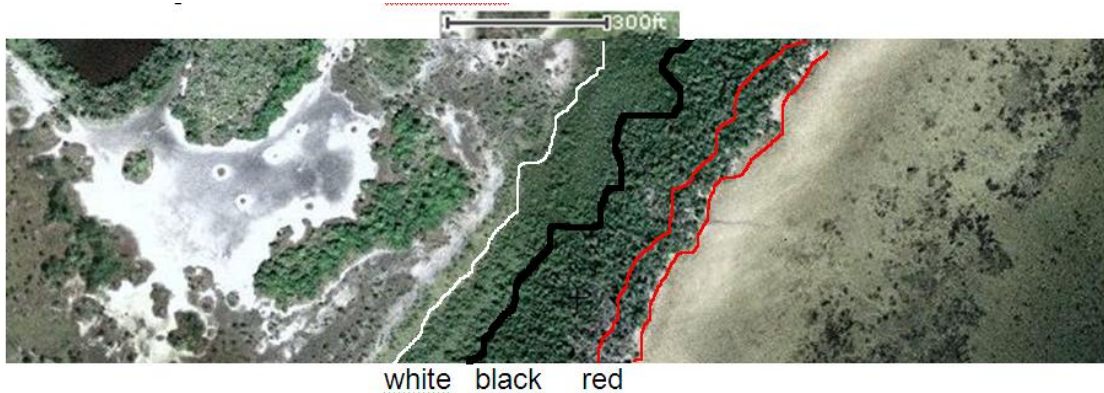
Why are there more mangroves on Gulf coast than Atlantic?



Mangroves in the landscape



Discuss mangrove *horizontal zonation*.



What limits the landward extent of the mangrove forest around the Harbor?

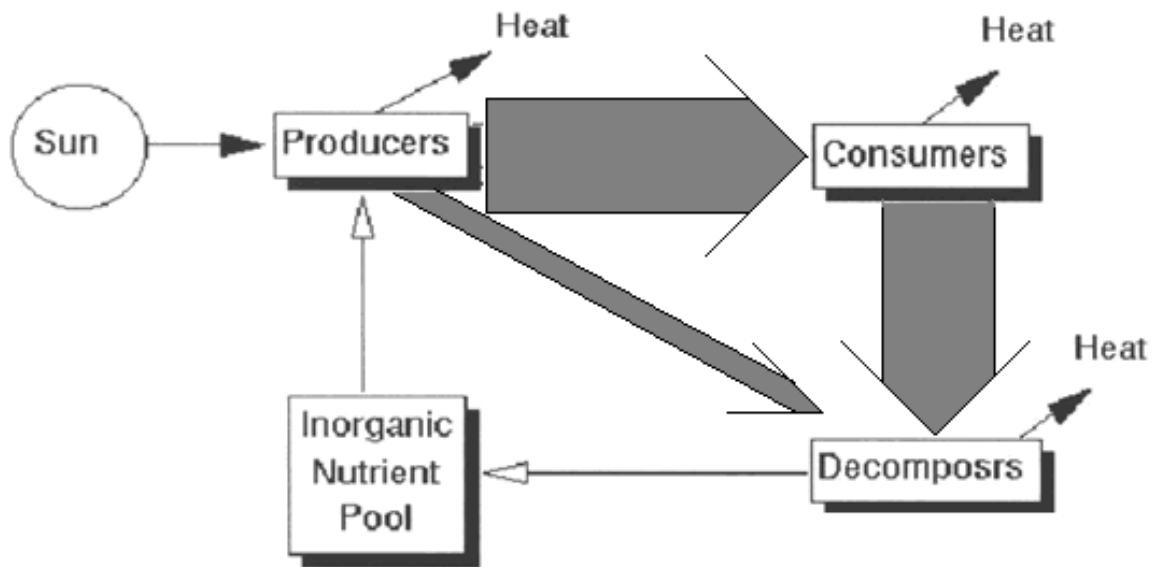
What happens to this mangrove forest as sea levels rise and fall? (Compare the mangrove response to the scrub ecosystem response.)

What is a mosquito ditch? What effect do mosquito ditches have on the ecosystem?

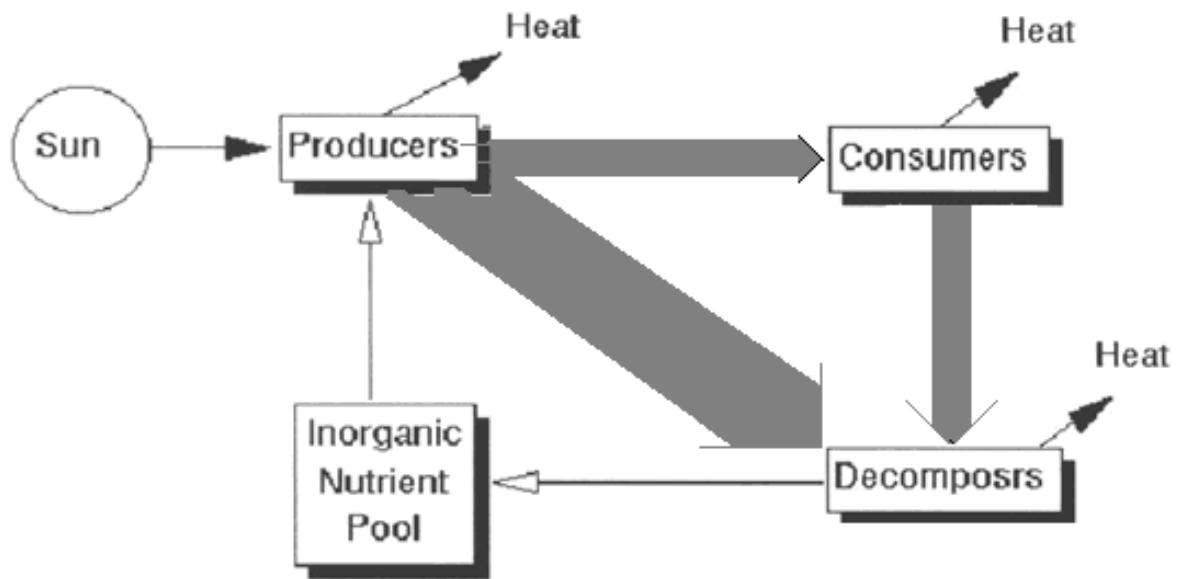


Salterns (salt flats, Salinas) the white area. How do they form?

Energy flows and matter cycles.



Scrub



Mangrove

| | |
|---|--|
| <p>Grazing Food Web. What do following eat?</p> <p>Insects</p> <p>Spiders</p> <p>Woodpeckers</p> <p>Oysters & Mussels & Barnacle</p> | <p>Detritus and the Detritus Food Web. What do the following eat:</p> <p>Crabs</p> <p>Snails</p> <p>Amphipods</p> <p>Oysters & Mussels & Barnacle</p> |
|---|--|

Mangroves: what makes a tree a *mangrove*?

What are the three species? _____, _____, _____

List the distinguishing characteristics of each.

| | Red | Black | White |
|--------------------|-----|-------|-------|
| leaves | | | |
| bark | | | |
| aerial roots | | | |
| seeds (propagules) | | | |

Propagules are not true "seeds," why?

Why **no tap roots** in the mangrove? Compare the turkey oak with the red mangrove.

What are **lenticels** for? (Effect of brief oil slick that washes in and back out?)

Mangrove Species

Non-vascular Plants

Algae

epiphytic algae

benthic algae

Vascular Plants

Red Mangrove

White Mangrove

Black Mangrove

Buttonwood

Coin Vine

Sea Daisy *Borrchia frutescens*

Arthropods

Blue Crab *Callinectes sapidsu*

Mangrove Tree Crab *Aratus pisonii*

Marine pill bug *Sphaeroma quadridentatum* (boring isopod)

Fiddler Crab *Uca pugilator*

Horseshoe Crab *Limulus polyphemus*

Barnacles *Balanus cherneus*

Insects:

Mangrove Skipper Butterfly

Salt Marsh Mosquitoes *Ochlerotatus taeniorhynchus* and *Ochlerotatus sollicitans* . [Aedes vigilax](#), [Aedes camptorhynchus](#) and [Aedes alternans](#)

<http://fme1.ifas.ufl.edu/Key/index.htm>

Dragonfly: Mangrove Darner (*Coryphaeschna viriditas*) -

Coryphaeschna viriditas <http://bugguide.net/node/view/146624>

Molluscs

Snails: periwinkle (*Littorina angulifera*) coffee bean snail (*Melampus coffeus*)

mangrove snail *Littorina anguillifera*

oyster drill *Urosalpinx cinerea*

moon snail *Polinices duplicatus*

virgin nerite *Neritina virginea*

Fish: 75% of [game fish](#), 90% of [commercial fish](#) species use mangrove ecosystem.

Snook *Centropomus undecimalis*

Redfish *Sciaenops ocellatus*

Tarpon *Megalops atlanticus*

Mosquitofish *Gambusia holbrooki*

Black mullet *Mugil cephalus*

Bivalves

Mangrove Oyster *Crassostrea rhizophorae*

Muscles sp?

Amphibians

Cuban Treefrog, *Osteopilus septentrionalis*

Squirrel treefrog *Hyla squirella*

Reptiles

mangrove water snake (*Nerodia clarkii compressicauda*)

Birds

Pileated Woodpecker *Dryocopus pileatus*

Mangrove Cuckoo *Coccyzus minor*

Yellow-Crowned Night-Heron *Nyctanassa violacea*

White Ibis *Eudocimus albus*

Snowy egret *Egretta thula*

Green Heron *Butorides striatus*

Dozens of bird species nest in rookeries in the mangroves, including many species such as wood storks, that feed in freshwater upland ponds.

Mammals

Carnivores residing in the mangroves of south Florida include:

- [Florida panther](#) (*Felis concolor*)
- gray fox (*Urocyon cinereoargenteus*)
- [bobcat](#) (*Lynx rufus*)
- [striped skunk](#) (*Mephitis mephitis*)
- [raccoon](#) (*Procyon lotor*)
- [mink](#) (*Mustela vison*)
- [river otter](#) (*Lontra canadensis*)

- black bear (*Ursus americanus*)
- bottlenosed dolphin *Tursiops truncatus*

Human Impacts

List some common human impacts on mangroves in Florida visible in the photograph below.



Notice the boat channel above providing navigation access to the canal front homes in PGI. The shore line around the channel has eroded back into a "V." The white line marks the shoreline as shown on aerials from the 1940's.

Speculate on what might have caused this erosion.

Speculate on what might be done to prevent further erosion north and south of the channel.

Place a check mark in the columns to indicate which ecosystem best demonstrates the ecosystem characteristic.

| Characteristic | Scrub | Mangrove |
|---|--------------|-----------------|
| Exports a lot of biomass to surrounding ecosystems | | |
| Substantial depth to soil water table | | |
| Detritus food web dominant | | |
| Grazing food web dominant | | |
| Substantial build up or dead and decaying organic matter | | |
| Little build up of dead and decaying organic matter in the soil | | |
| Low soil oxygen and slow oxidation of dead organics | | |
| High soil oxygen and rapid oxidation of dead organics | | |
| Significant diurnal temperature change | | |
| Less diurnal temperature change | | |
| Contributes greatly to the productivity of adjacent ecosystems | | |