

A serene landscape photograph capturing a sunset over a pond. The sky is filled with large, dramatic clouds, some of which are illuminated from within by the setting sun, creating a vibrant orange and yellow glow. The sun is positioned low on the horizon, partially obscured by a dense line of trees. The trees, including several tall pine trees and palm trees, are silhouetted against the bright sky. In the foreground, a calm pond reflects the colors of the sunset and the silhouettes of the trees. The water's surface is dotted with lily pads. To the right, a portion of a house with a screened porch is visible, its form softened by the low light. The entire scene is framed by a blue border, which is slightly darker at the corners, giving it the appearance of a slide or a framed print.

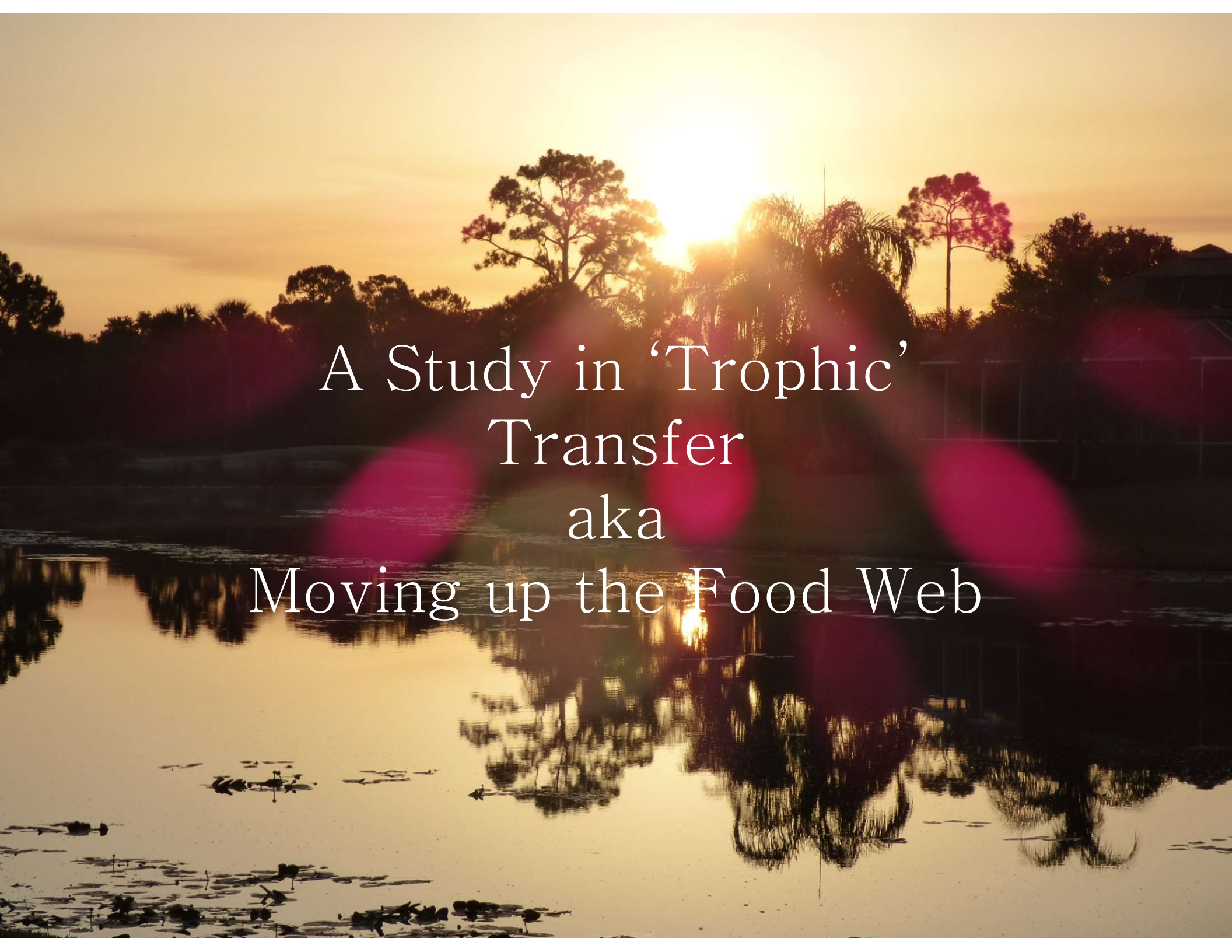
A Day in the Life  
Of a Pond

A serene sunset over a pond with lily pads and trees. The sky is a mix of orange, yellow, and blue, with scattered clouds. The trees are silhouetted against the bright sky, and their reflections are visible in the water. The water is calm, with lily pads floating on the surface. The overall mood is peaceful and contemplative.

How all the species share a  
Limited Resource?

A scenic sunset over a golf course. The sun is low on the horizon, casting a warm orange and yellow glow across the sky. The sun's reflection is visible in a pond in the foreground, which is covered with lily pads. The pond is surrounded by lush green grass and various trees, including palm trees and tall pines. A modern building with large glass windows is partially visible on the right side of the image. The overall atmosphere is peaceful and serene.

# A Study in Resource Partitioning

A serene sunset scene over a body of water. The sun is low on the horizon, casting a warm, golden glow across the sky and reflecting on the water's surface. Silhouettes of various trees, including palm trees and tall pines, are visible against the bright sky. The water in the foreground is calm, with some lily pads scattered across it. The overall atmosphere is peaceful and natural.

A Study in 'Trophic'  
Transfer  
aka  
Moving up the Food Web




Dawn

# Good Morning Pond



At the Edge



Size of Bird,  
Size of Beak



Tri-colored Heron

Great Egret

KB



# White Ibis and Great Egret

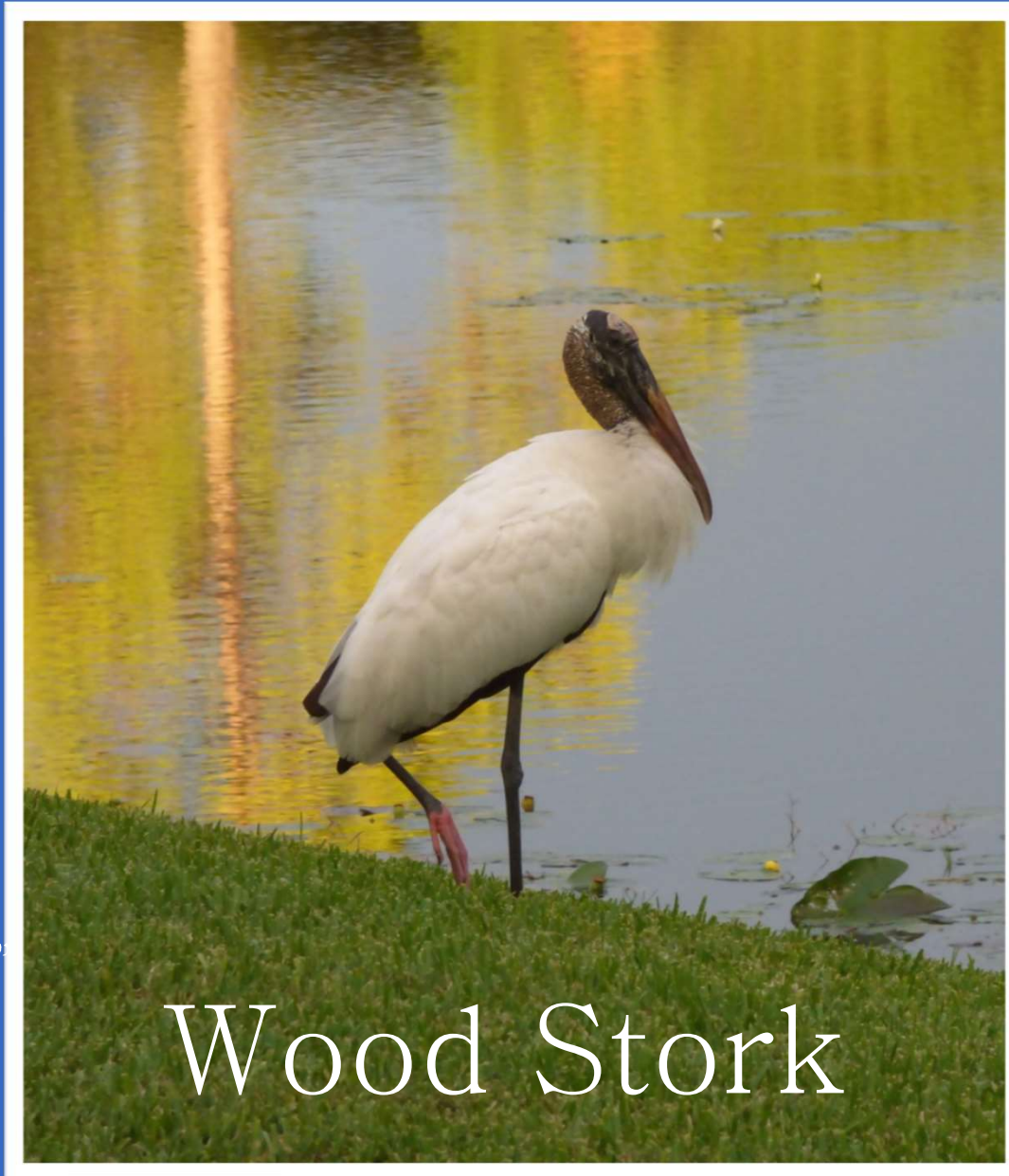


Shape of the Beak

# Method & Speed of Attack



# Distinctive Feeding Technique



“Barometer of  
The Everglades”

Wood Stork

# Similar Feeding Technique Different Sized Birds



Different  
Sized Prey



Belted  
Kingfisher



Osprey

# Those That Dabble



# & Those that Dive for Prey







# Conditions Change



Terns Inland  
In  
Cooler Weather



# Black-bellied Whistling Ducks



Killdeer

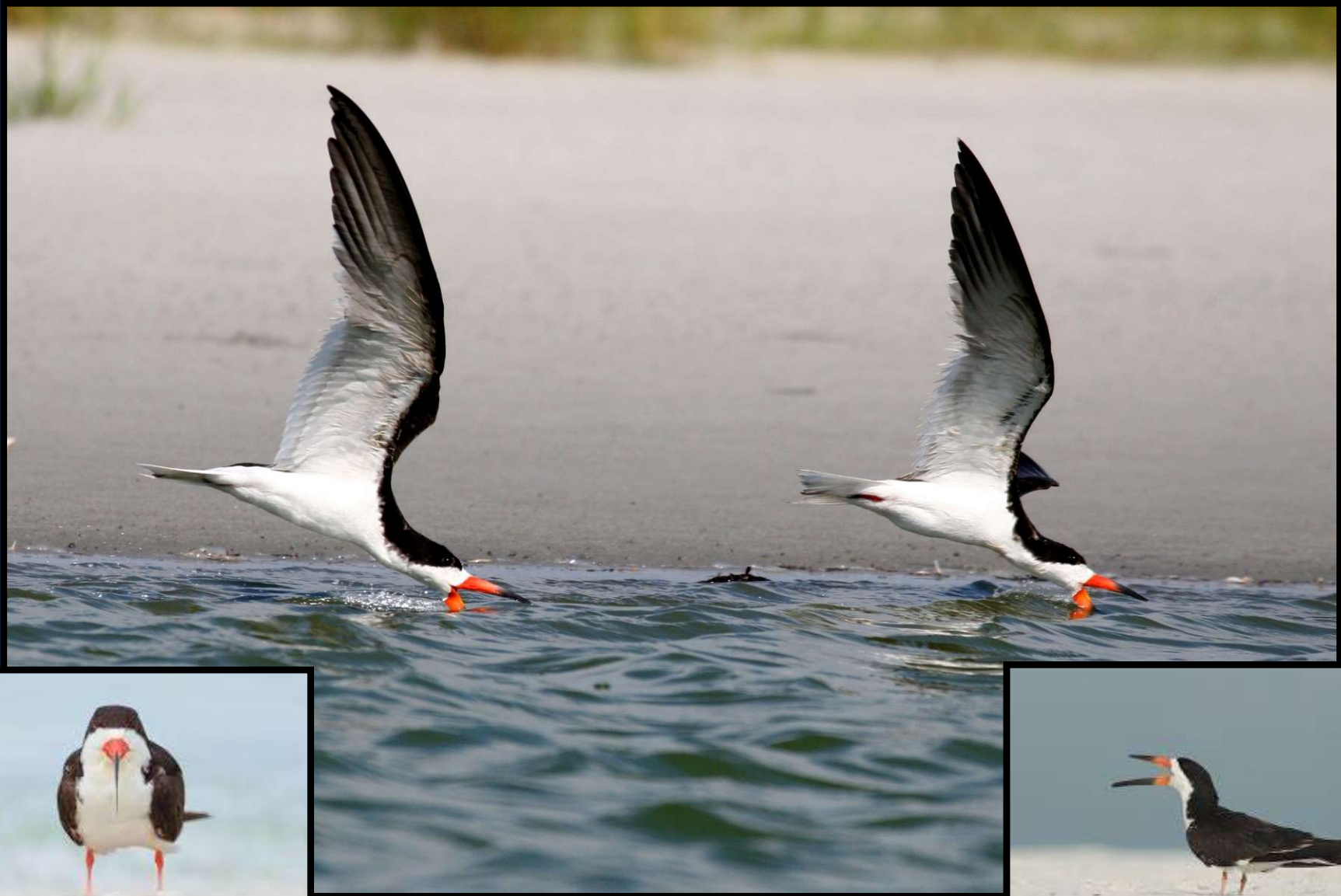


Black-necked  
Stilts

Lesser  
Yellowlegs



# Visiting Black Skimmers





# The Hunters

Multi-tasking Scavengers





# Successful Specialists













# The Other Hunters



American Kestrel  
*Falco sparverius*



Red Shouldered Hawk  
*Buteo lineatus*

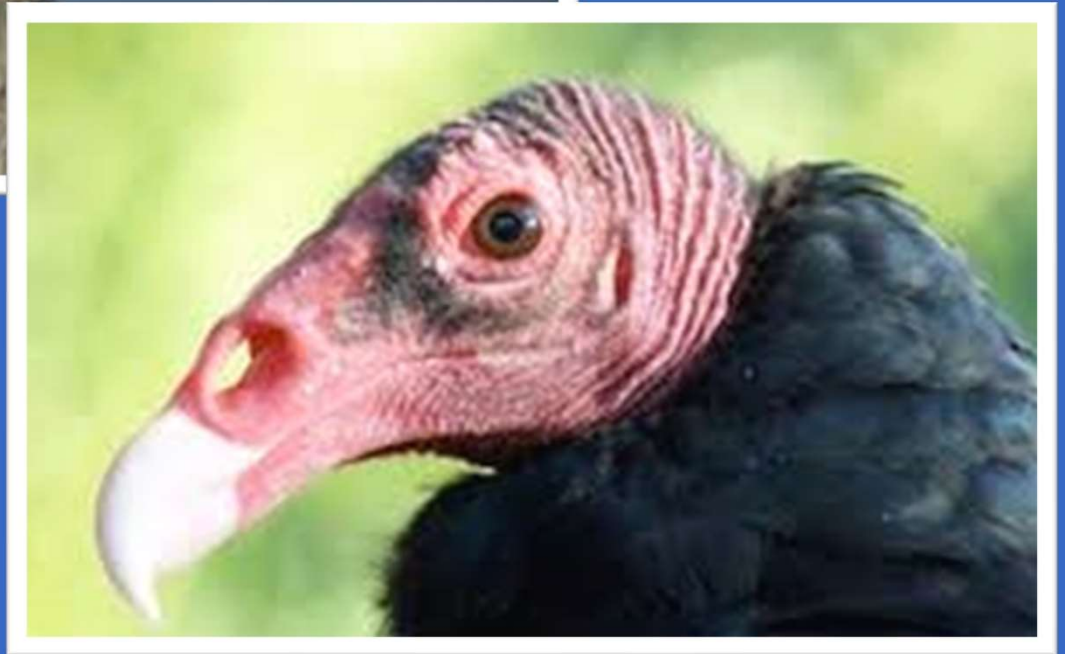
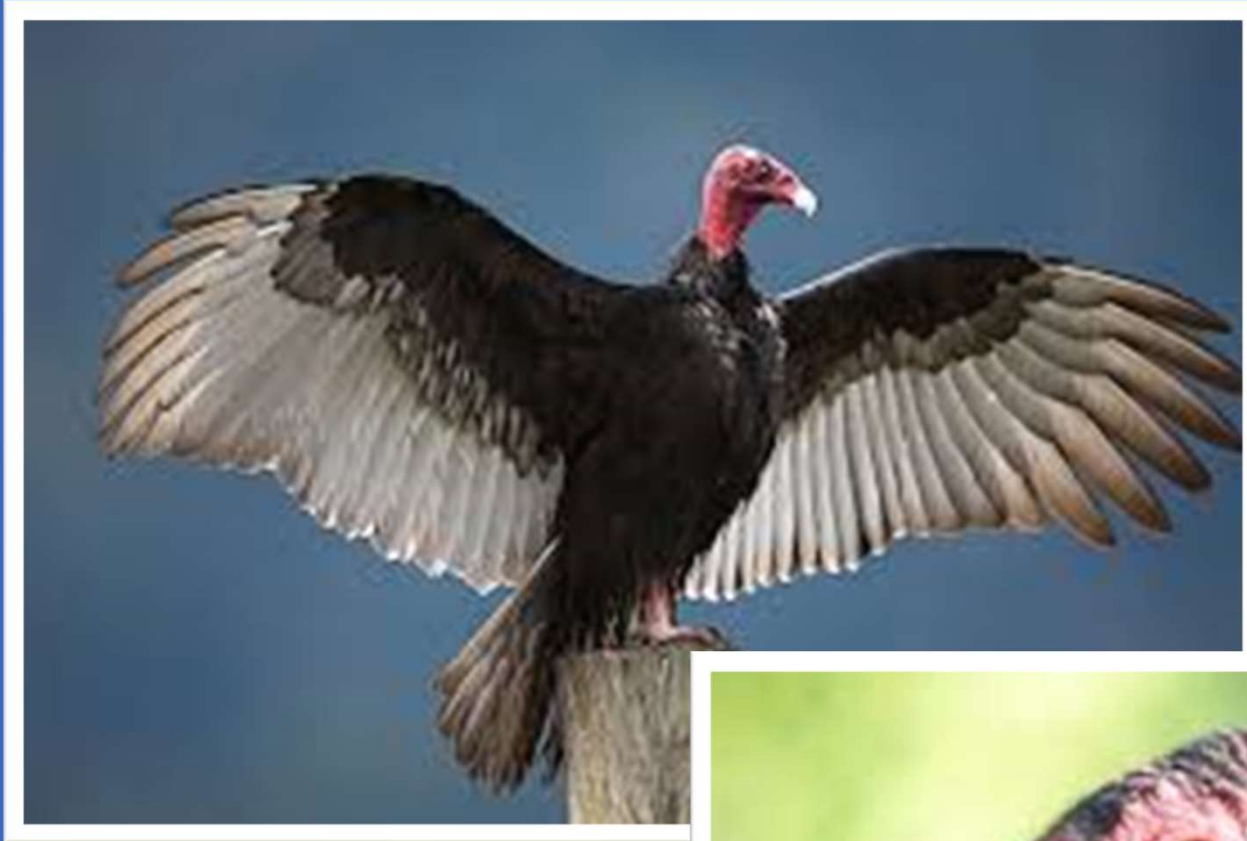


# The Gatherers



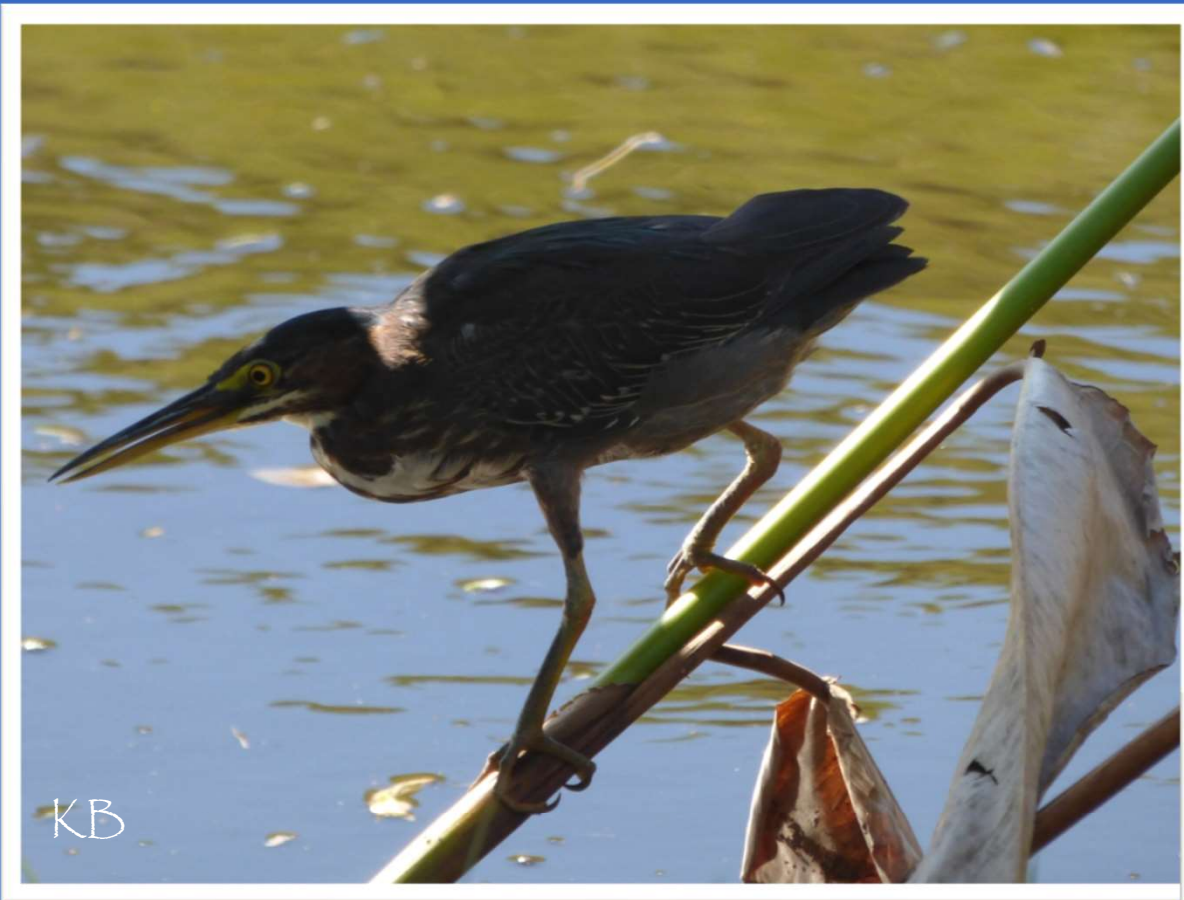
Black Vultures





# Turkey Vultures

# Solitary & Still . . . Or



Green Heron

Black-crowned NH



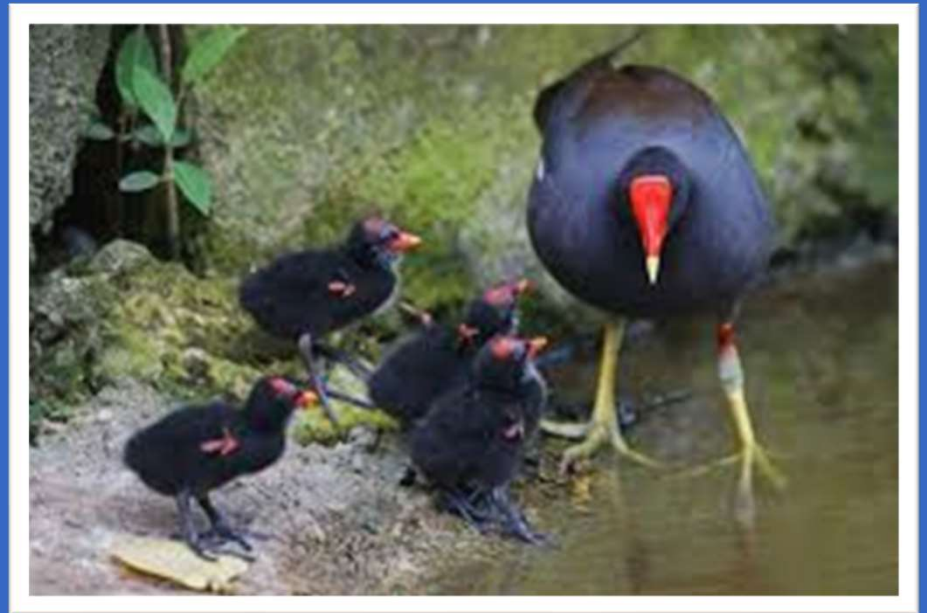


# Gregarious –

American Coot



Common Gallinule



Safety in Numbers



Walk on Water?

# Generalists



Snowy Egret

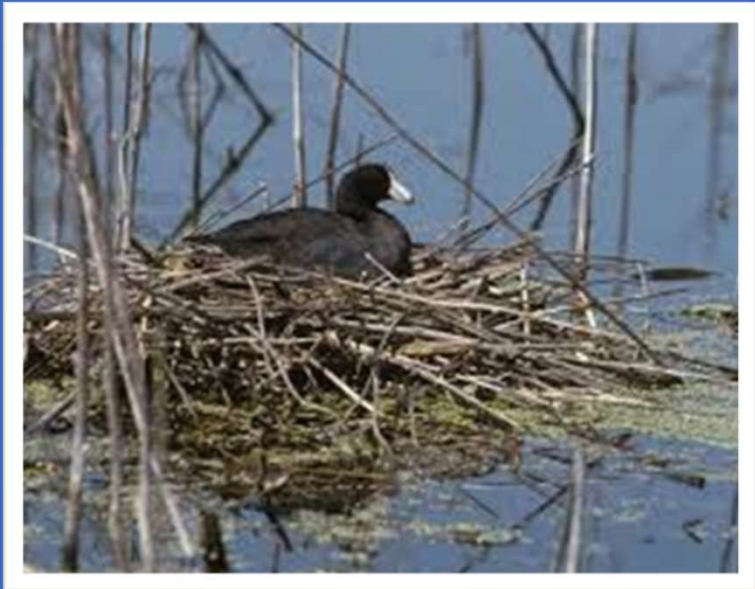


Great Blue Heron

# Specialists



Limpkin



# Nesters





Eyes to Big for Belly?



Afternoon

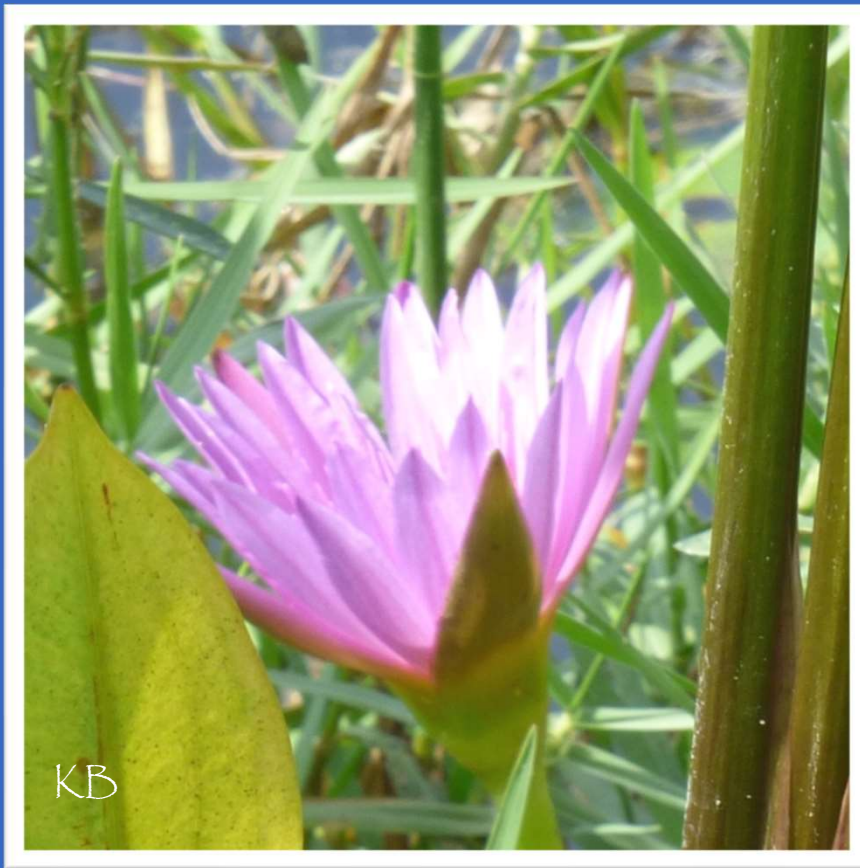
# Be Careful at the Edge!

Little Blue Heron

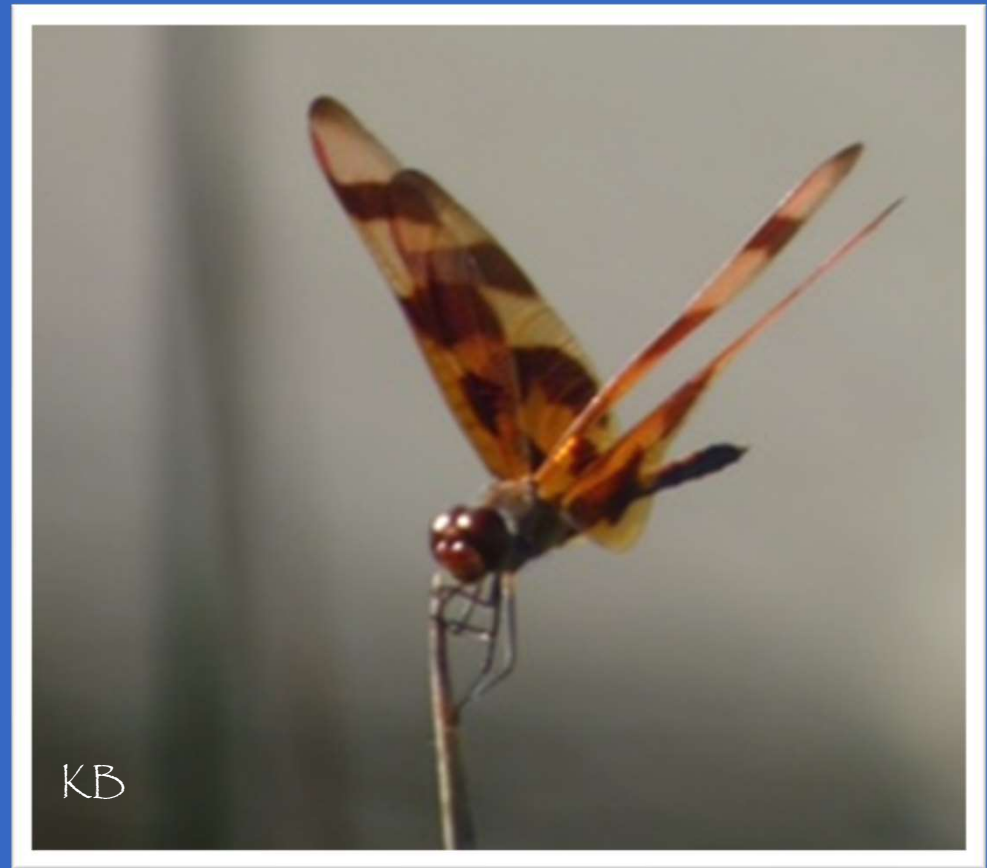




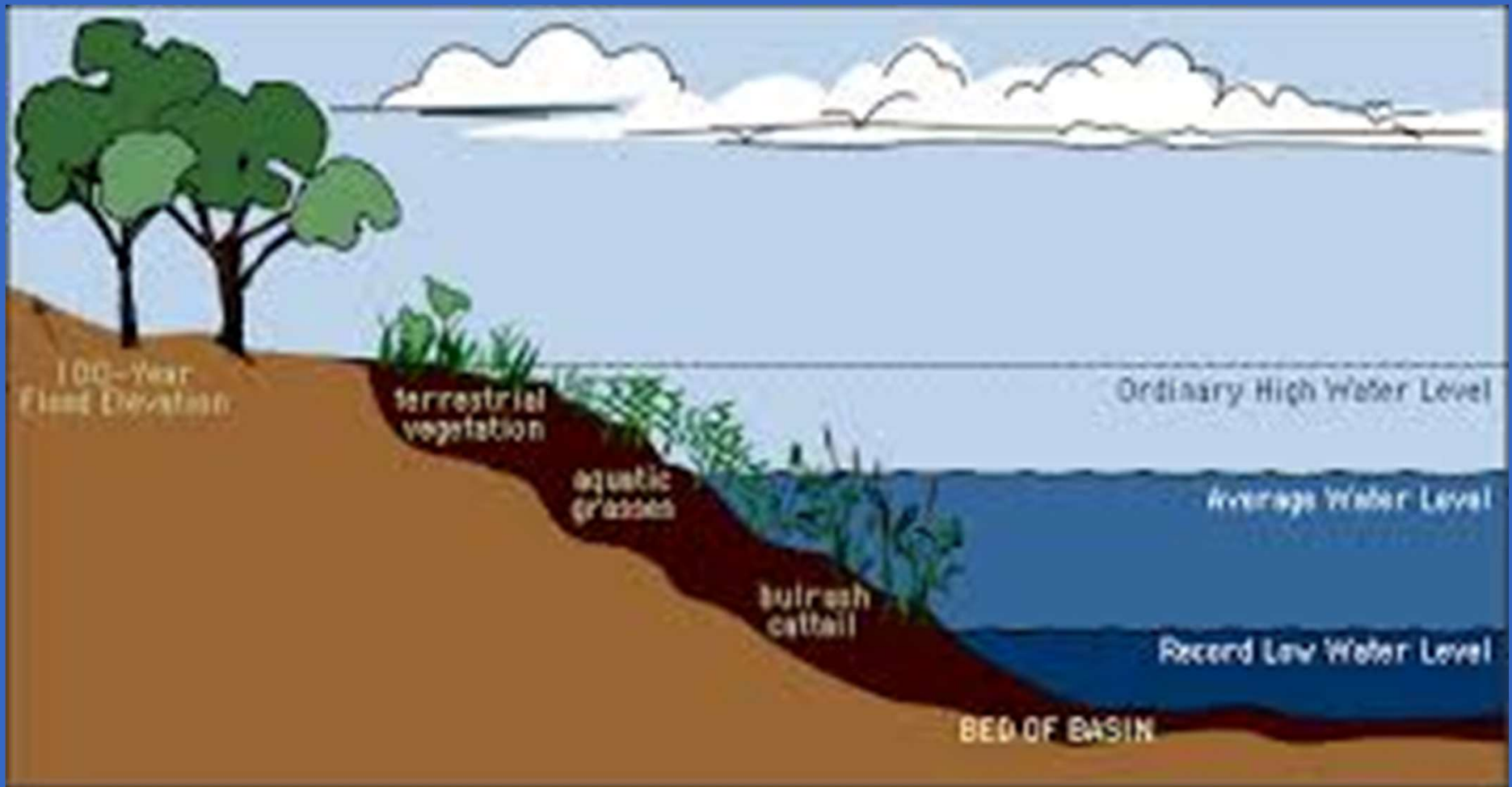
# The Littoral Zone



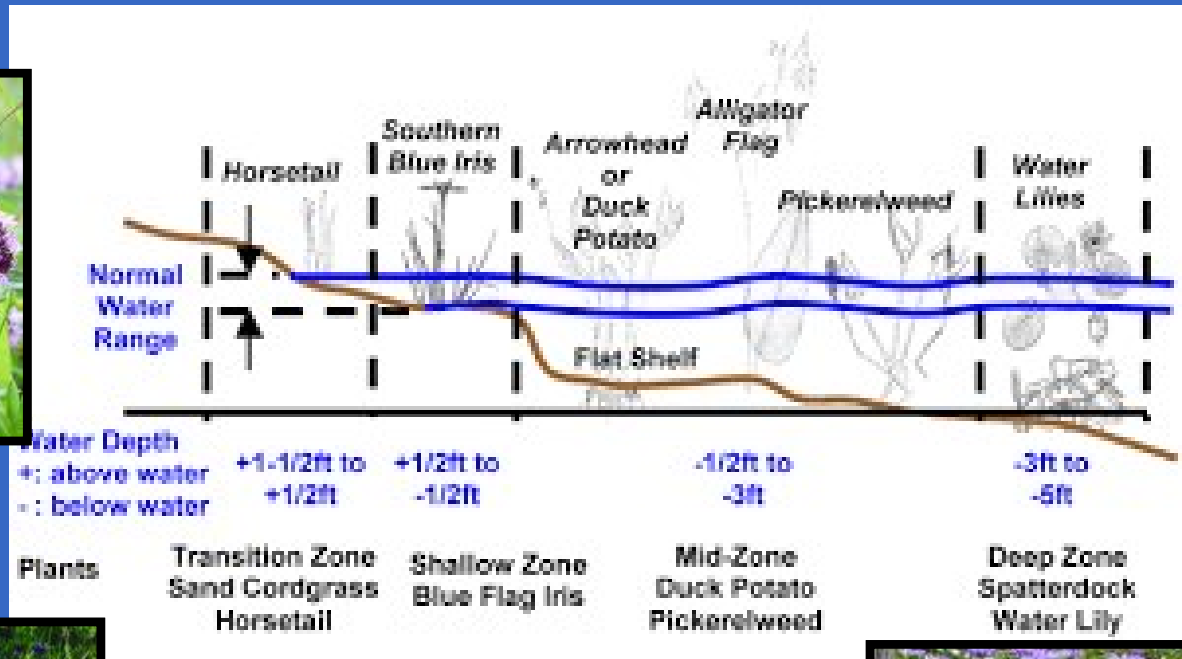
Pink Waterlily

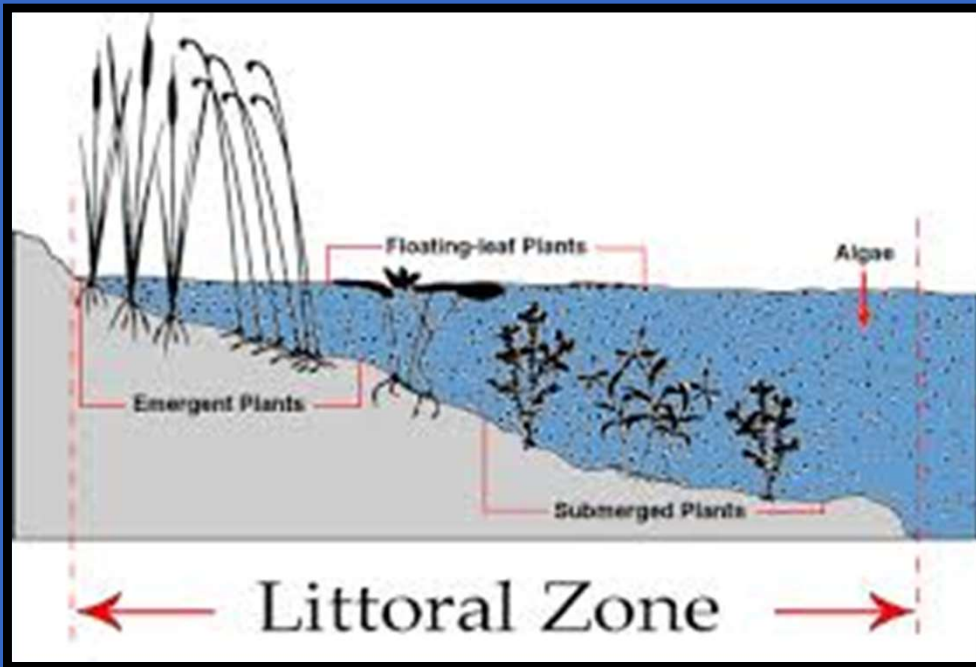


Halloween Pennant



Plants Must Adapt to Seasonal  
Water Fluctuation levels





## Plants' Function

Absorb & deflect wave energy

Roots prevent erosion

Absorbs nutrients

Lower algal growth

Provides wildlife habitat



# Odonata: The Toothed Ones



Blue Dasher (f)



Scarlet  
Skimmer

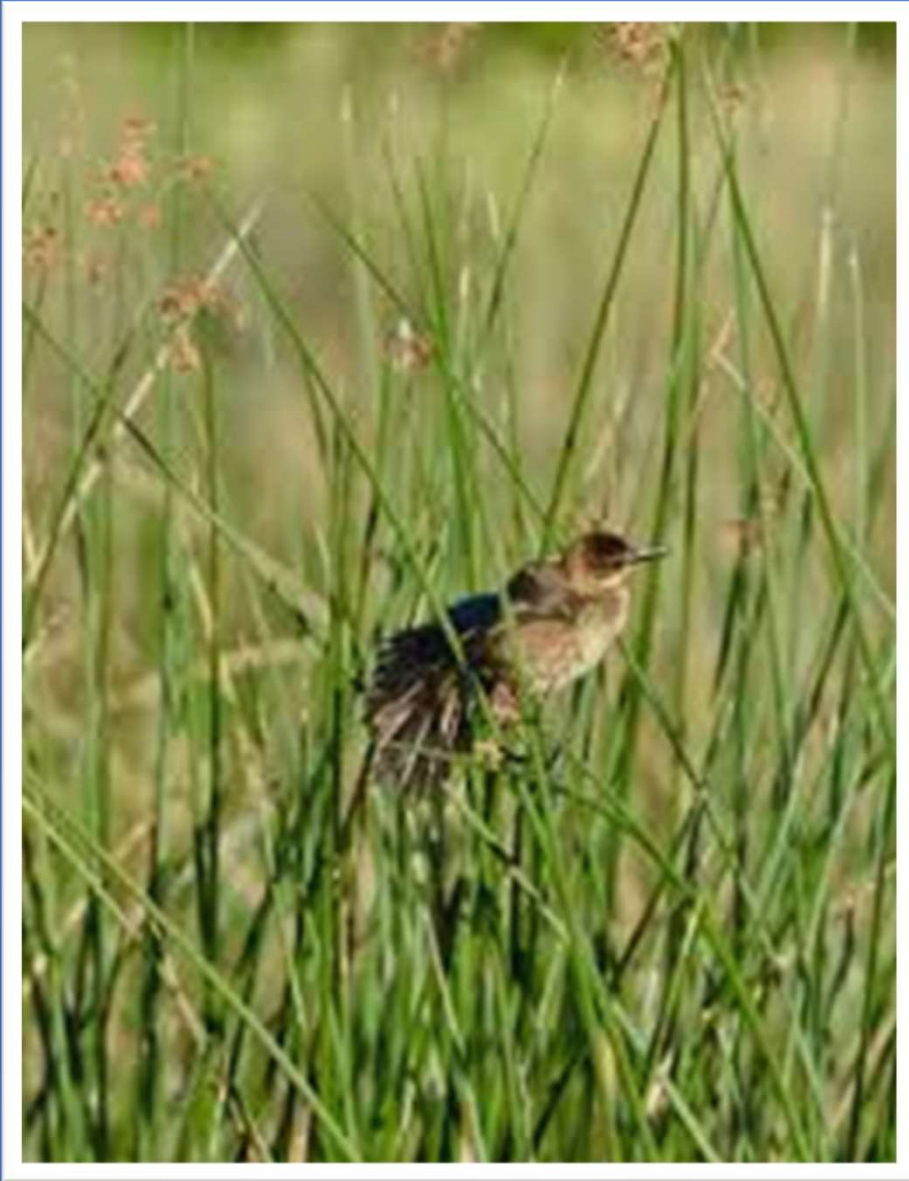
# Ferocious & Cannibalistic



Eastern Pond-hawk (f)



Common Green Darner (m)



Giant Bull Rush

Arrowhead



# Pickeralweed



# Iris/Flag

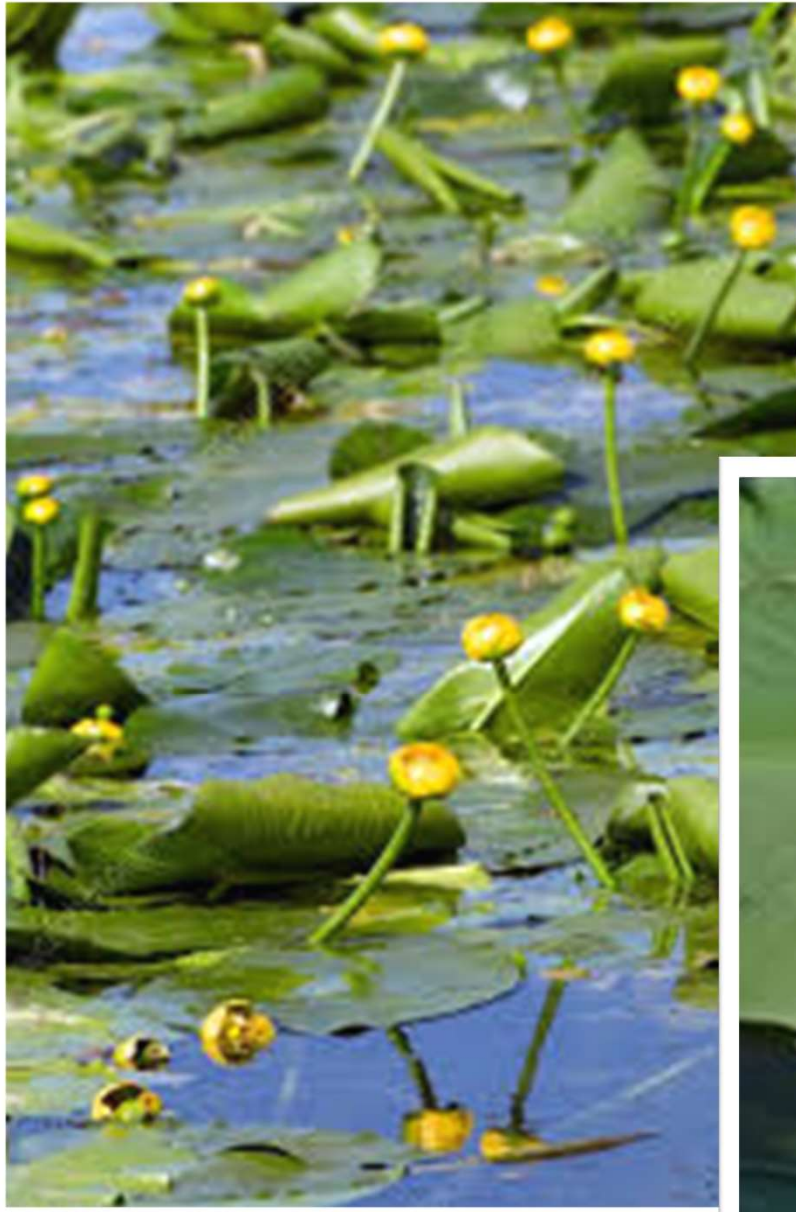




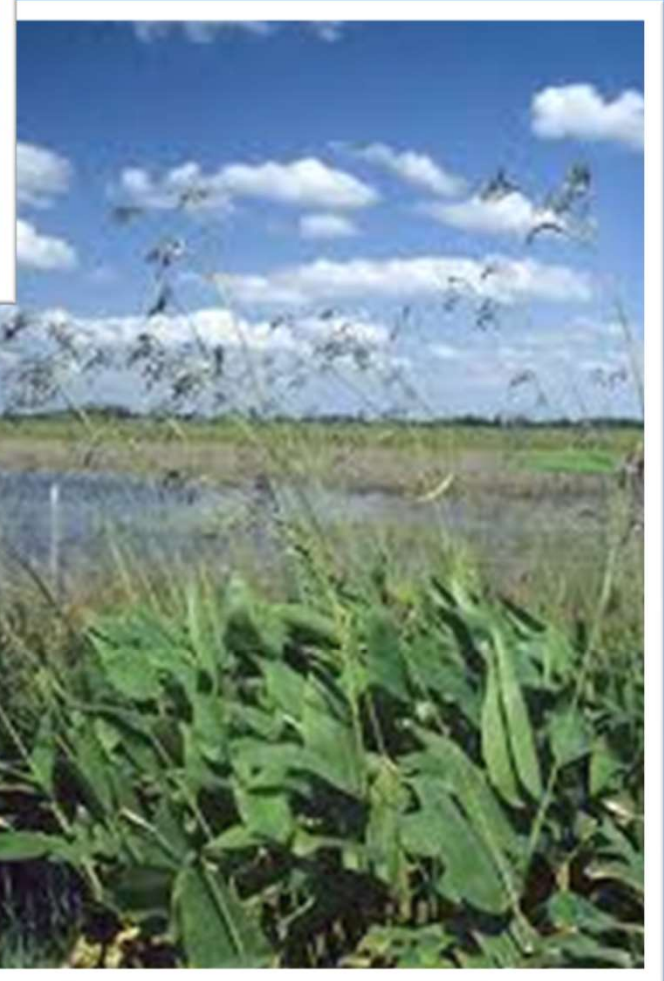
# Golden Canna Lily



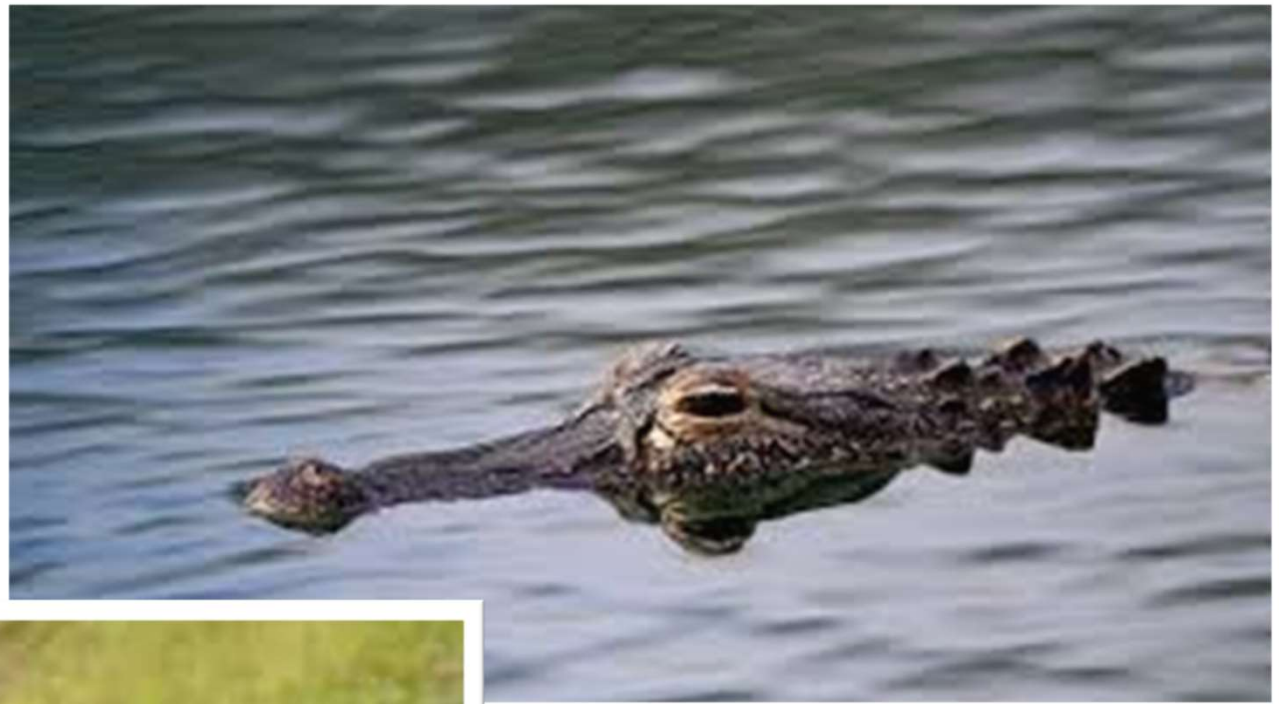
# Spatterdock



# Alligator Flag



Potentially  
Dangerous



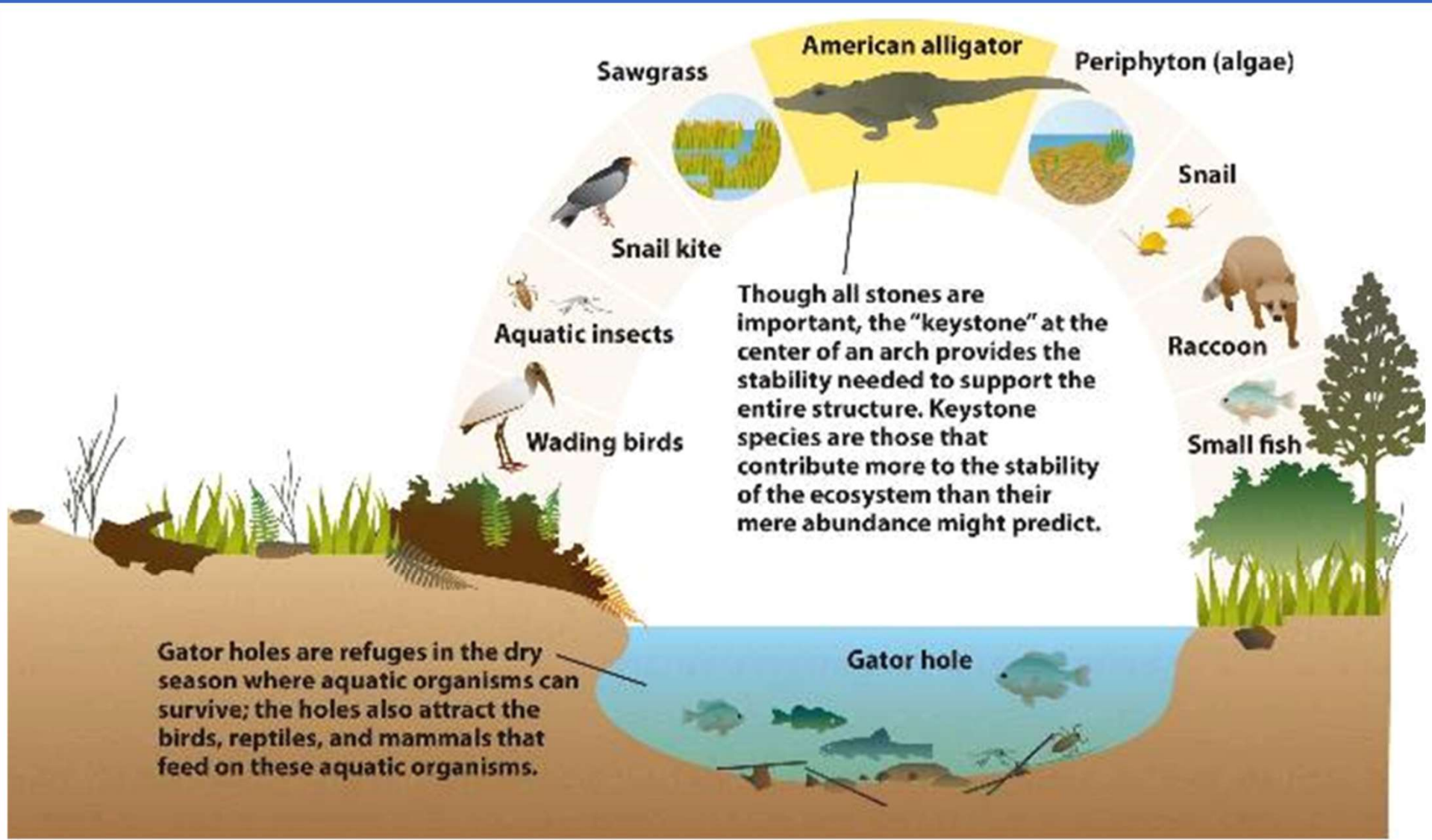
American  
Alligator





Apex Predator



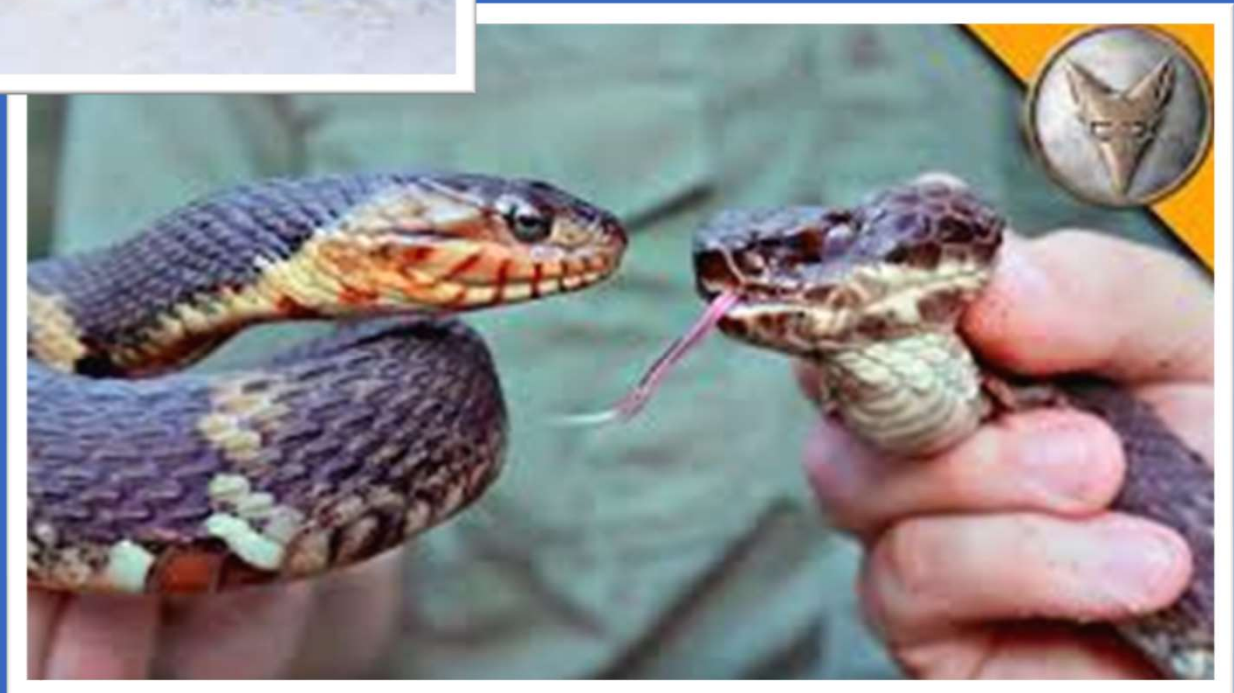


# Keystone Species



Florida  
Water Snakes  
Not Venomous

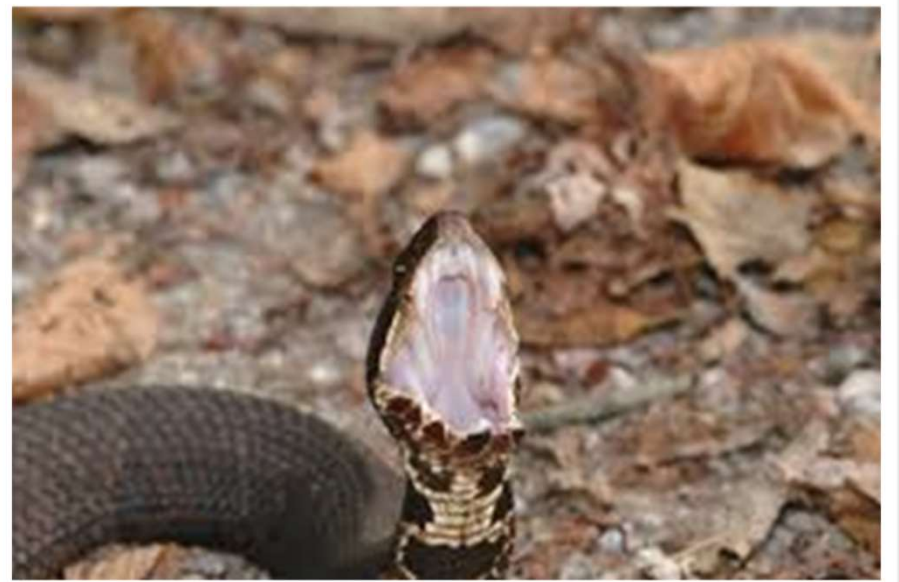
VERY  
NASTY



# Florida Cotton-mouth (Moccasin)



VERY NASTY &  
Venomous





# Alligator Snapping Turtle





Florida Softshell



Florida Red-bellied Cooter

# Peninsula Cooter



Pet Trade Favorite

Among 100 most  
Invasive species  
Worldwide



Red Eared Slider



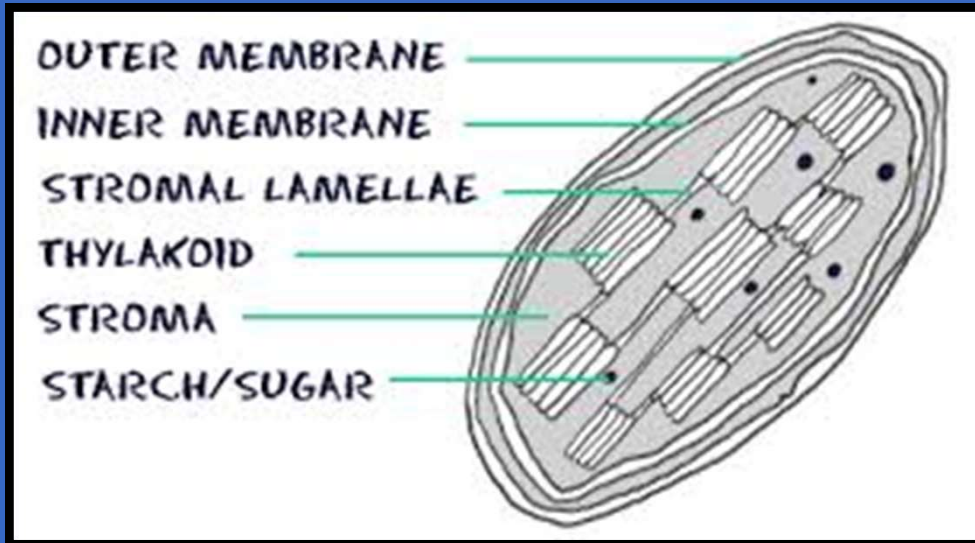
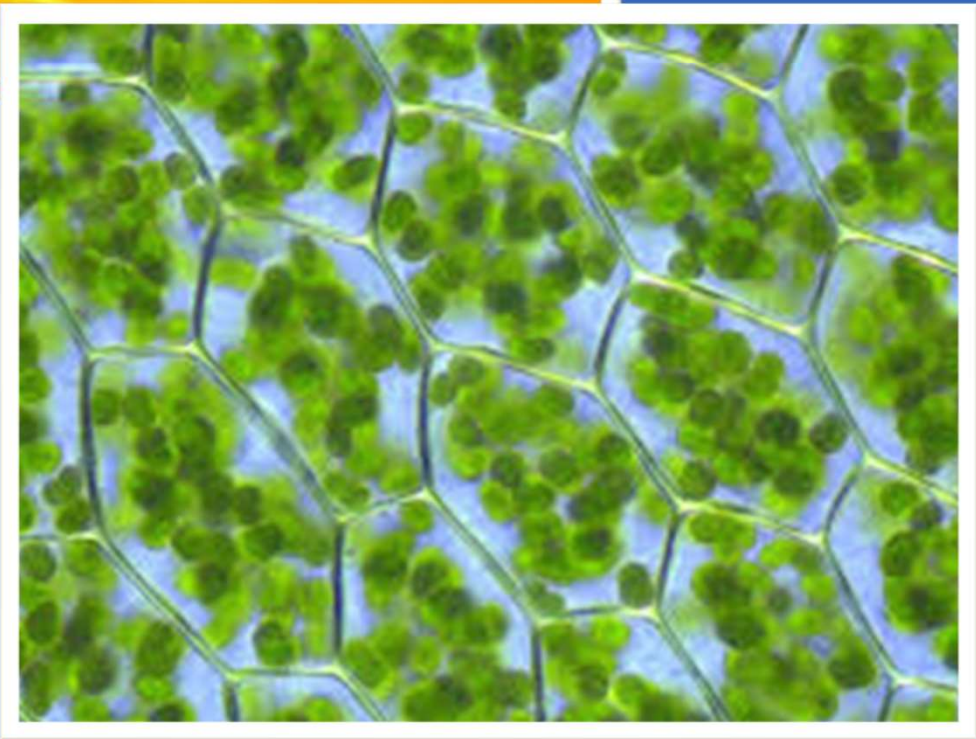
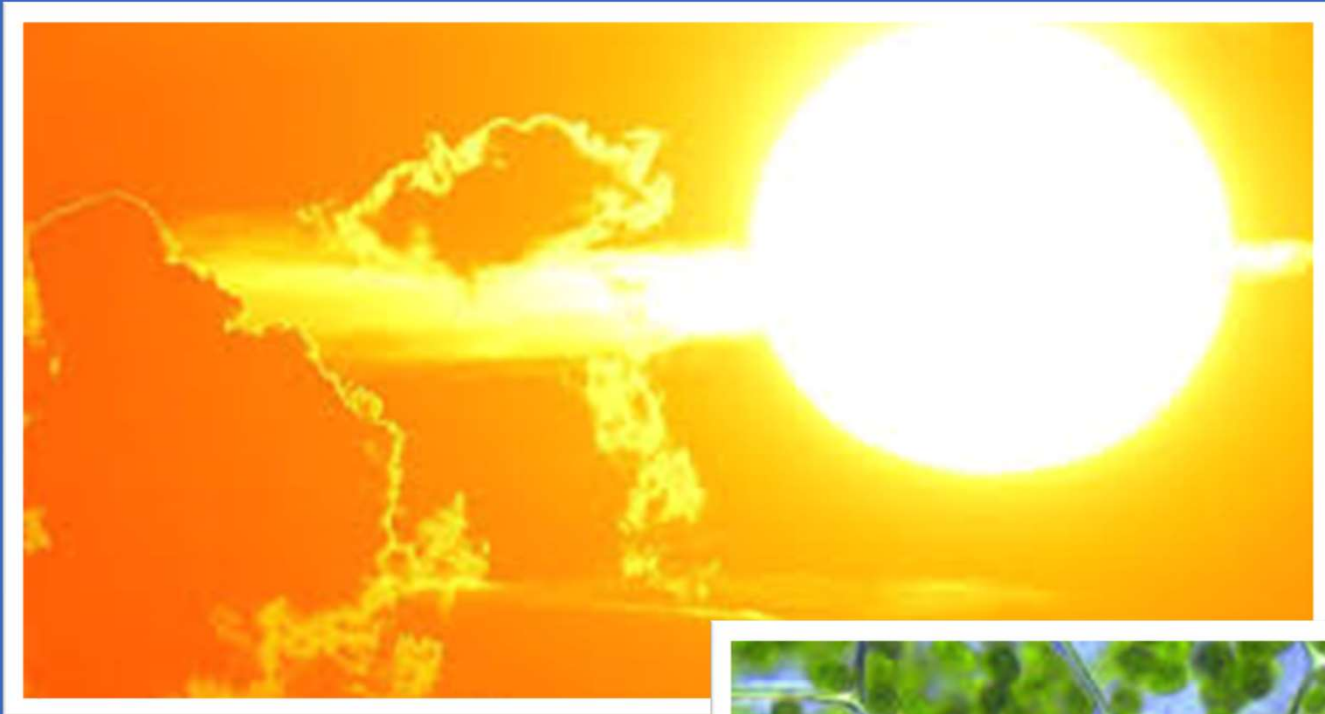
# Time to Eat

The Pond-wide Trophic Web  
Jumps Into Action



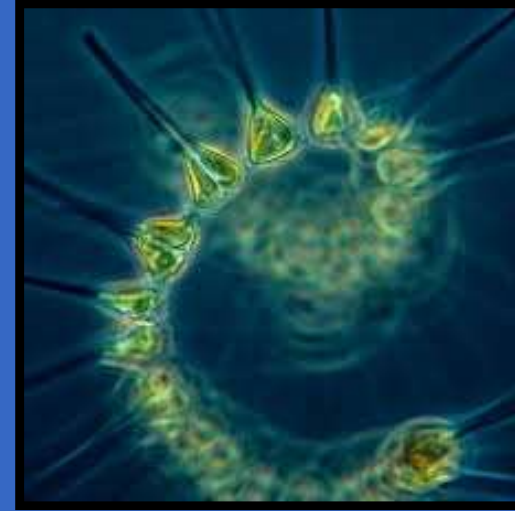
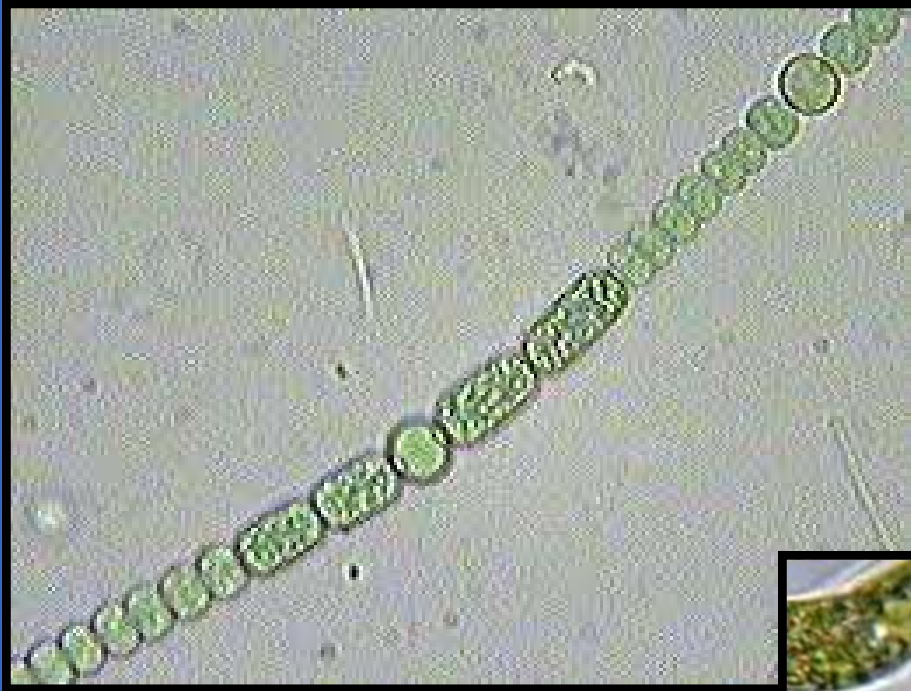
Let's  
Get  
Cooking!







# Phytoplankton: $O_2$ Algae and Cyanobacteria





*Cryptomonas*



*Scenedesmus*



*Pediastrum*



*Ankistrodesmus*



*Westella group*



*Dictyosphaerium*



*Actinastrum*



*Chlamydomonas*



*Oocystis*



*Phacus*



*Anabaena*



*Coelastrum*



*Microcystis*



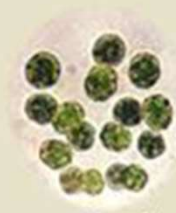
*Closterium*



*Micractinium*



*Cyclotella*



*Eudorina*



*Euglena*



*Chlorella*

# Zooplankton



*Brachionus*



*Asplanchna*



*Keratella*



*Filinia*



*Diaphanosoma*



*Cyclops*



*Diaptomus*



*Daphnia*



*Moina*



*Nauplius*



# Position in the Water Column



Water Boatman



Six –spotted  
Fishing Spider



Springtails

Dragonfly Larvae



Mollusks



# Location & Specialization

## Top Feeders

Giant Water Bug



Whirligig Beetle



## Active Hunters Of Live Prey



Predaceous Diving Beetle

## Detritivores



Water Scavenger Beetle

## Bottom Feeders

Net Winged Midge



Crawling Water Beetle

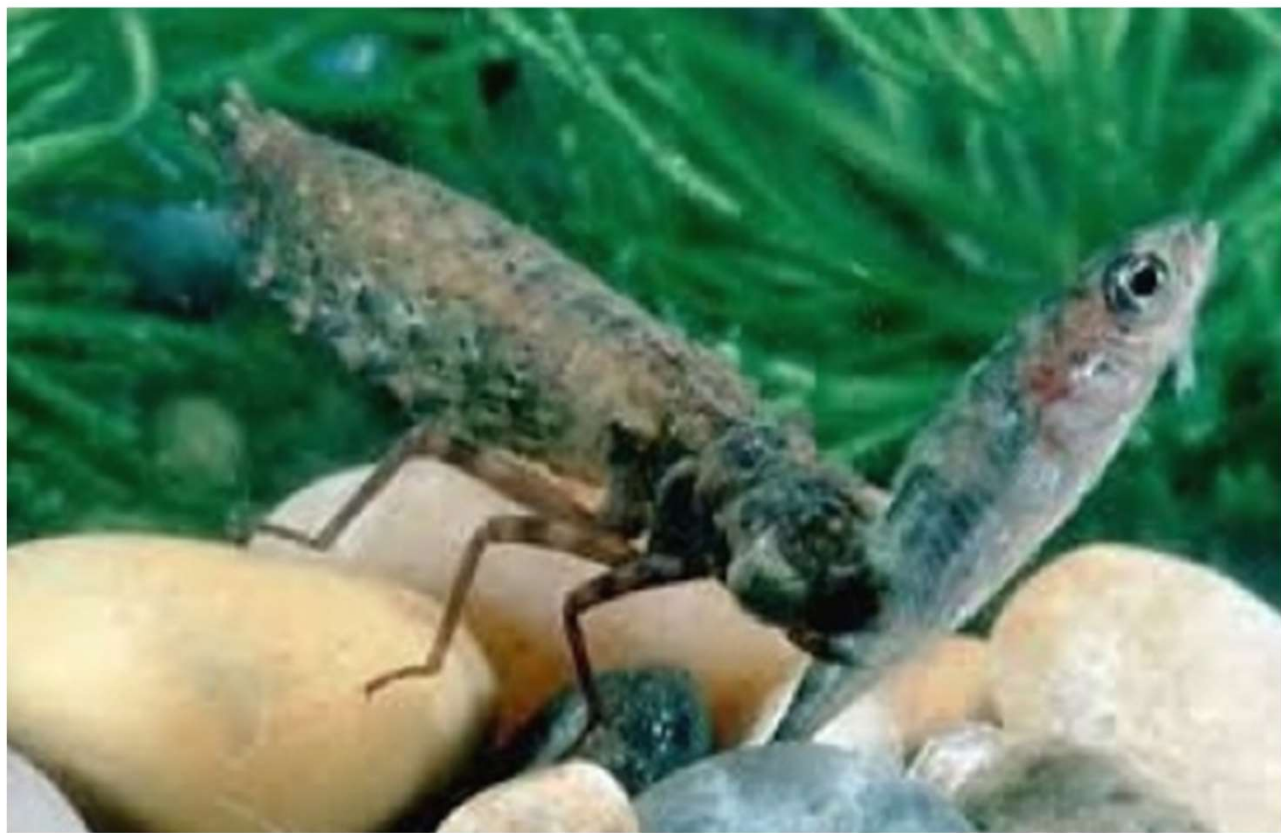
## Larval Phase



Mosquito



Caddisfly





A QUINCY COMPANY  
Freshwater Invertebrate S  
OF NORTH AMERICA



*J. Reese Vorhies, Jr.*  
*Illustrated by Amy Gordon Wright*

# Fish as Predators & Prey



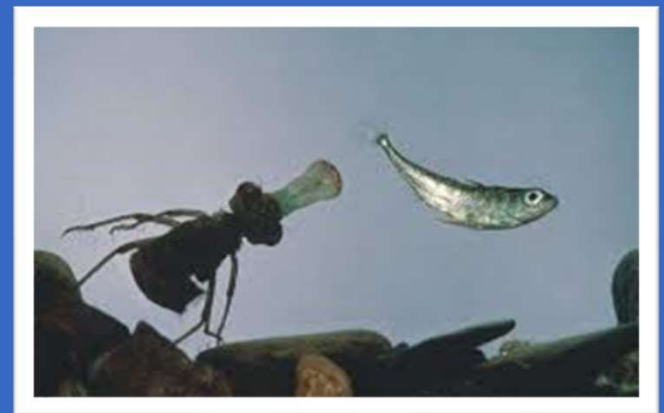
Tilapia



Mosquito Fish



Catfish



Unidentified Dragonfly Larvae  
chasing prey

# That Afternoon Snack?



Snatched by the  
Great Blue Heron

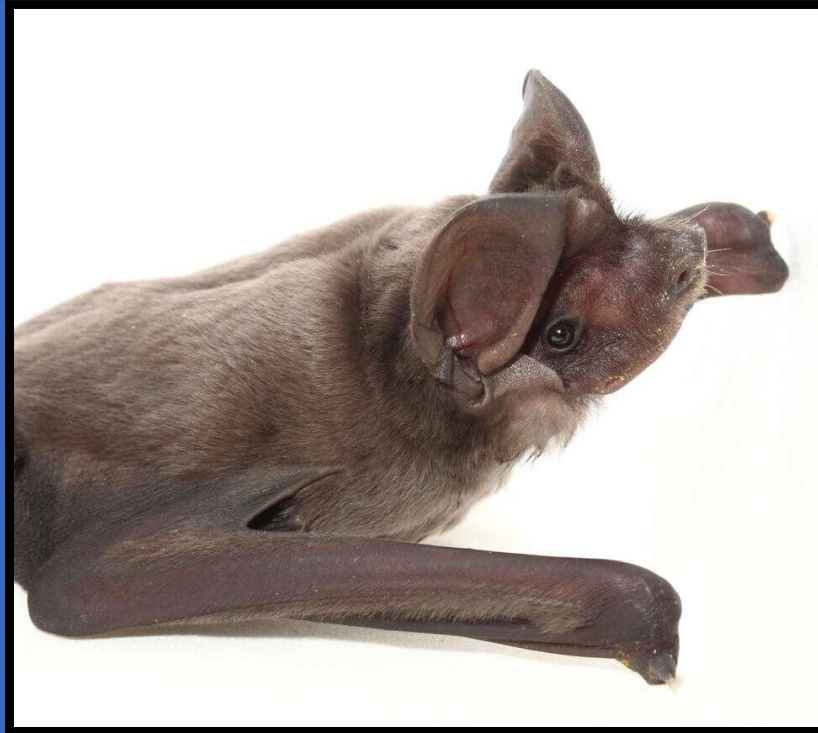


Dusk

13 Native Species  
Solitary and  
Colonial



Bug Control  
Pollination  
Seed Dispersal



- Bats are protected and may not be moved during maternity season
- Bats give birth to one pup a year and invest heavily in its care
- 13,000 Bat Species world-wide  
1/3 are 'Threatened'



- Bats fly as far as 25 miles
- Bats can eat their body weight in Insects each night

# Don't Do This

Before



Hurricane Cut







Moonrise





## The Dusk Singers



>106 decibels

19 Cicada species in Florida

# Evening Chorus



American Bullfrog



Southern Cricket Frog

Southern Leopard Frog



Bronze Frog



Aquatic Frogs



# Spring Peepers



# Exotic Invasive



Cuban Tree Frog

Cane Toad



# Barred Owl

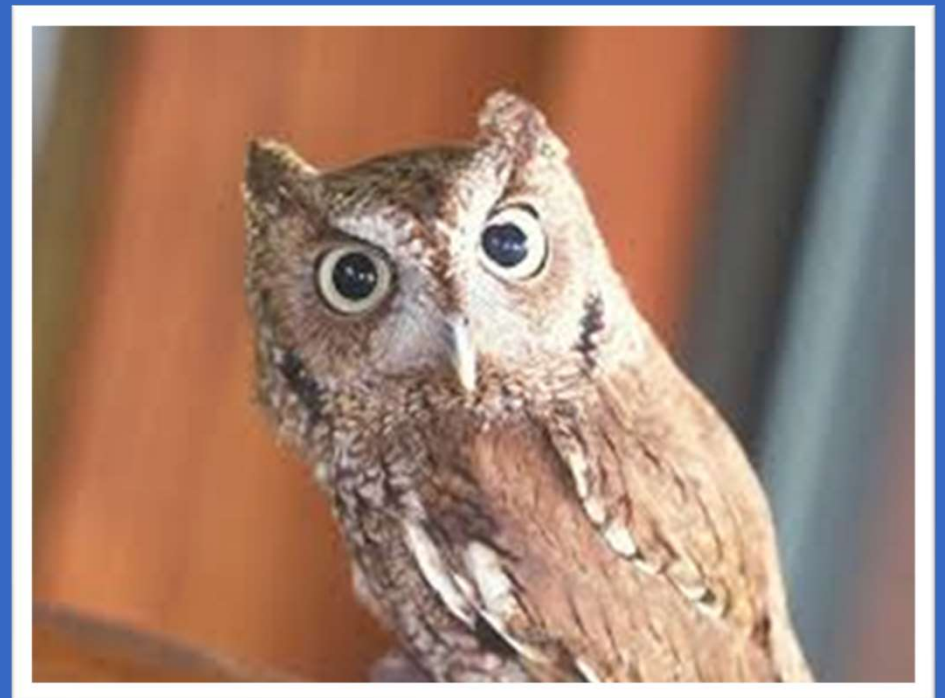






Great Horned Owl

Eastern Screech Owl





Goodnight to All  
The Nocturnal  
Animals

# Goodnight, Baby Nocturnal Animals





# Goodnight Moon



# Goodnight Moon





# Goodnight Pond







**FREE  
EVENT**

*Linda Soderquist*

**Venice Audubon  
Rookery Day**  
Saturday, March 19th  
9:00AM to Noon  
Venice Audubon Rookery Park  
4002 S. Tamiami Trail, behind R.L. Anderson Administration Center

**CONSERVATION DEMONSTRATIONS**  
NATURE STATIONS \* FLORIDA NATIVE PLANT SALE  
TREE GIVE-AWAY \* FUN FOR KIDS ,TOO!

Venice Area Audubon Society \* Sarasota Parks, Recreation,  
and Natural Resources \* Mangrove Chapter, Florida Native  
Plant Society \* Healthy Ponds Collaborative \* Peace River  
Butterfly Society \* FPL/Audubon Florida \* Florida Native  
Plant Nursery

**Join Us  
March 19<sup>th</sup>  
9 -12**

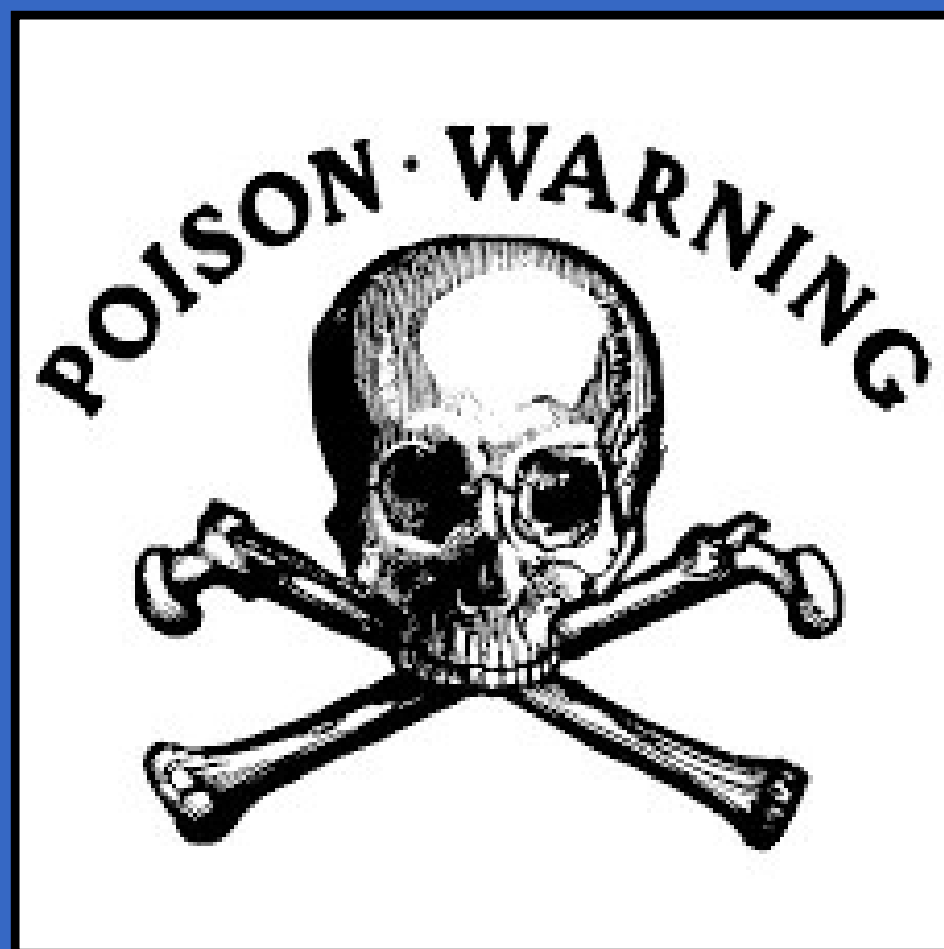
Any  
Questions?





Coontie *Zamia pulima*

'Relict' Gymnosperm 325 mya

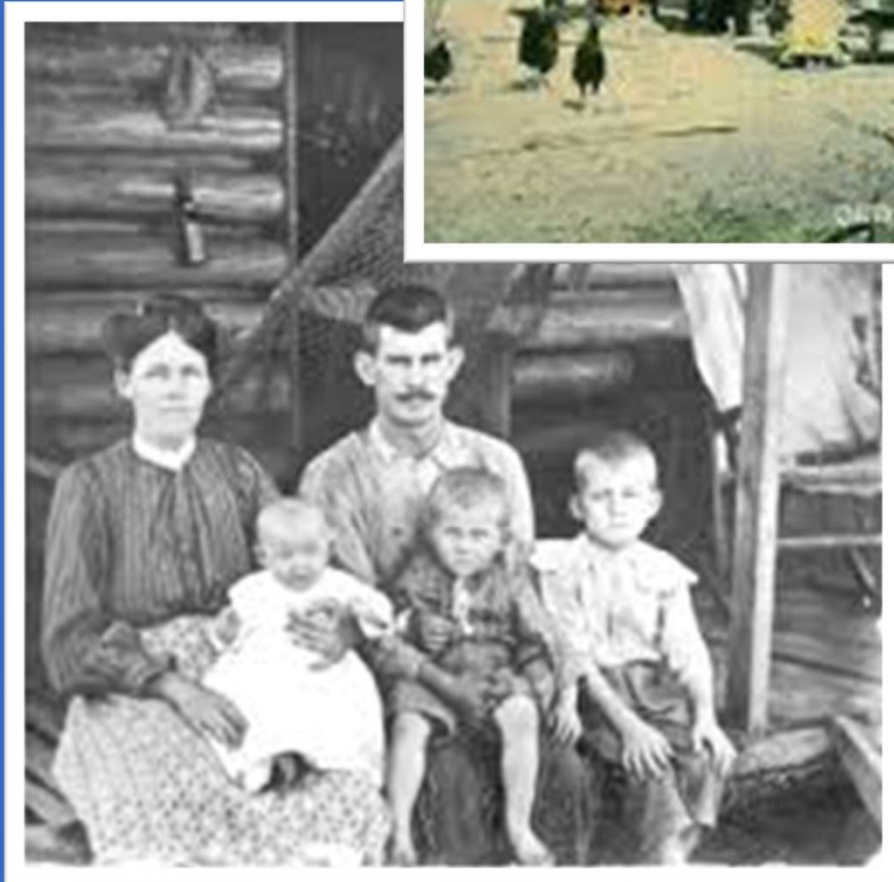












**ALL NATURAL**

**ARROWROOT**

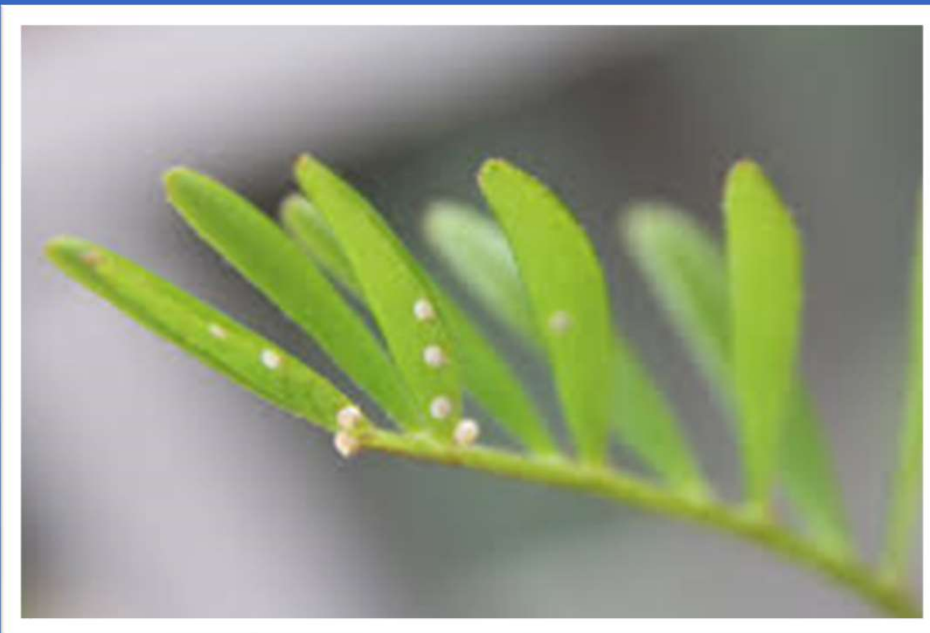
**STARCH / FLOUR**

Arrowroot is made from the dried root of a tropical plant. It is a thickening agent that may be used in place of cornstarch. As a thickener, it can be used for soups, stews and puddings. It has no flavor of its own and is the easiest starch to digest. Arrowroot is best used at the end of your cooking just before boiling, as continued heating will cause it to lose its thickening ability. It is also an excellent ingredient for gluten-free baking or breadings.

NET WT 20.07 (1 LB 4.07) 567g



Atala Blue (aka Coontie Hairstreak)

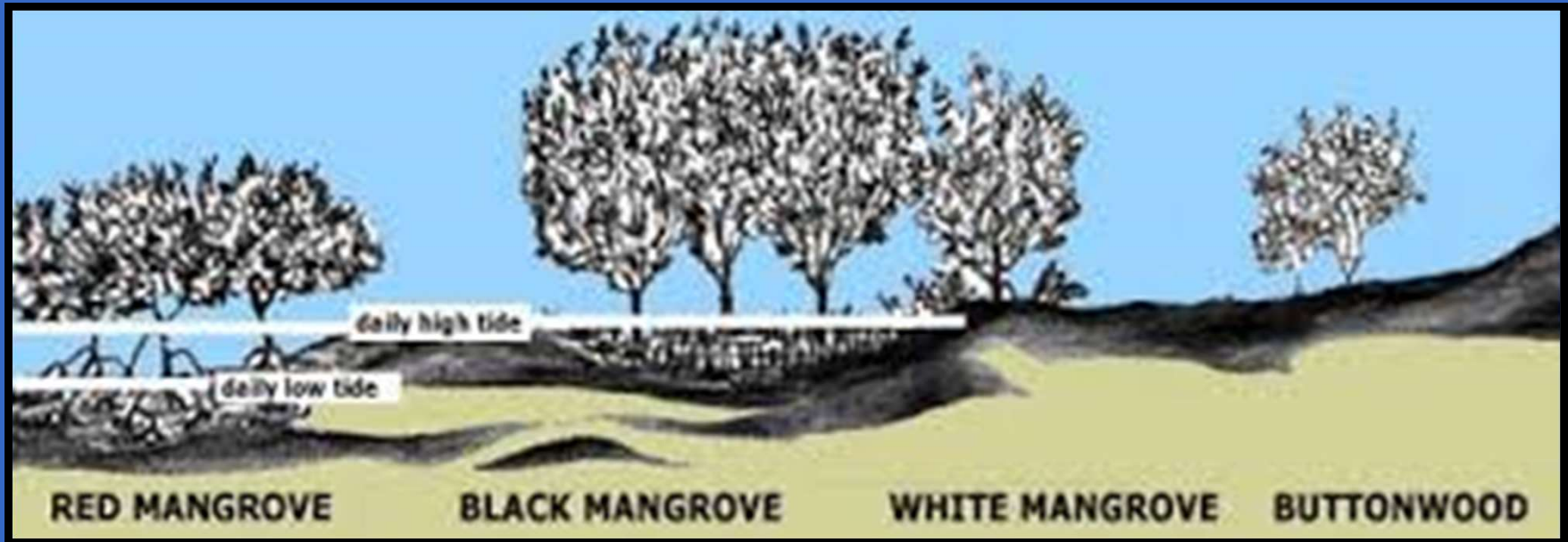




# Coastal Heartland National Estuary Partnership



- 4,400 Square Miles over 8 counties
- 5 National Wildlife Refuges
- 5 Aquatic State Preserves
- 86 Federal and State Protected Species
- Second largest Mangrove Forest in FL



Buttonwood *Conocarpus erectus*  
 [Combretaceae Family]

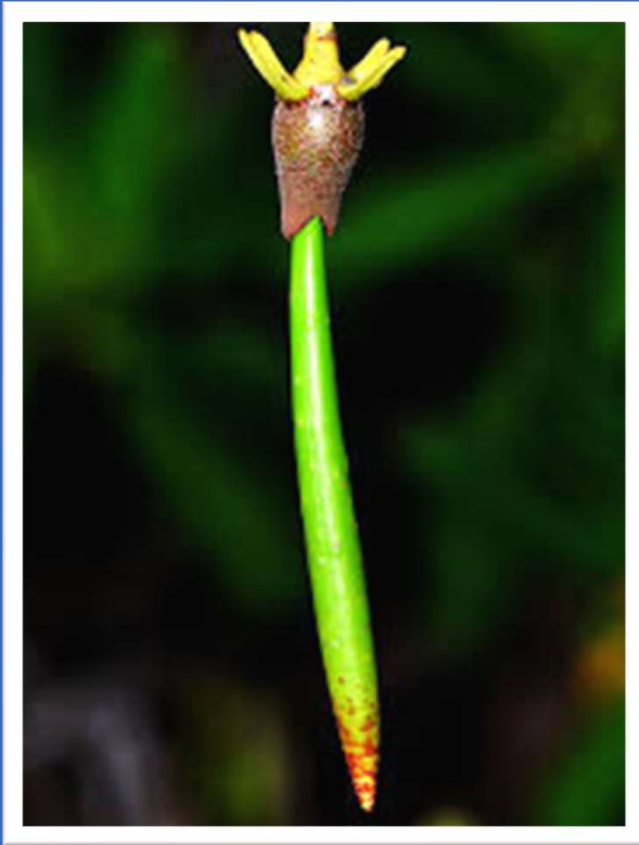
White Mangrove *Laguncularia racemosa*

Black Mangrove *Avicennia germinans* [Acanthaceae Family]

Red Mangrove *Rhizophora mangle* [Rhizophoraceae Family]

60% Determined by Tolerance to Salt  
 90%

'Viviparous'  
Propagules



Red Mangrove





Salt Excluder

Black Mangrove

Salt Excreter







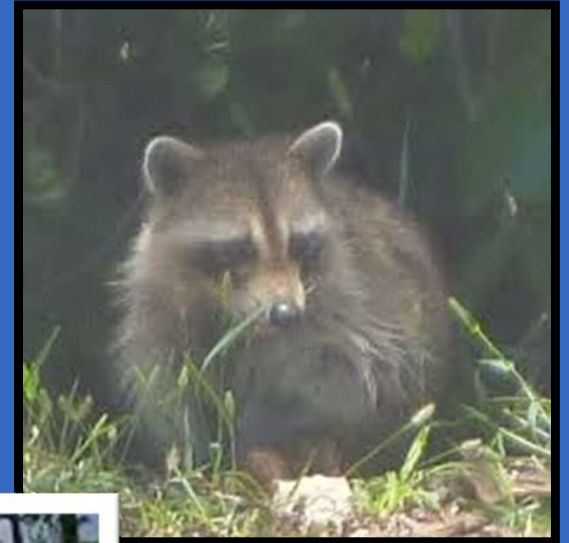
Pneumatophores

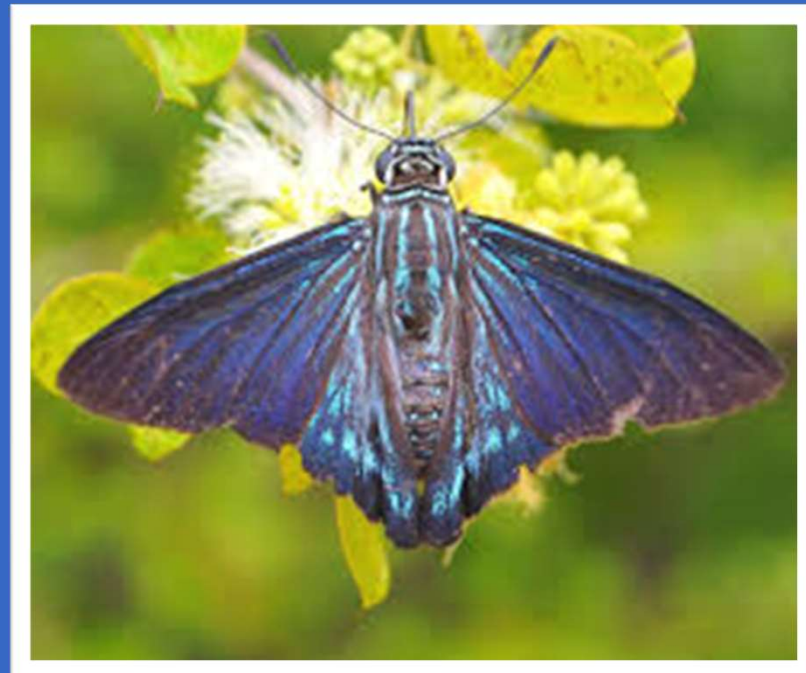
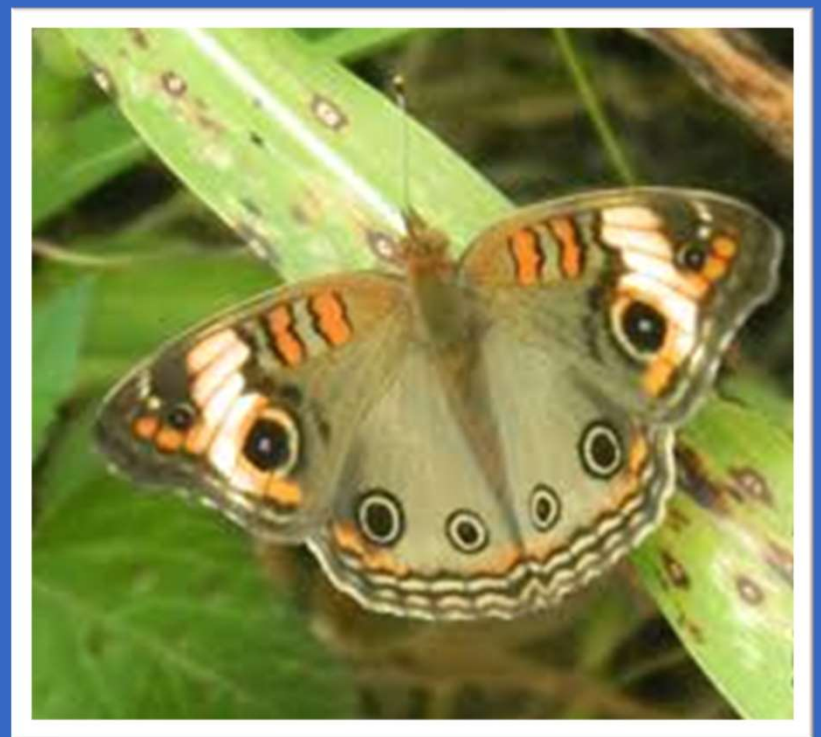




Absorb and Disperse Storm Energy











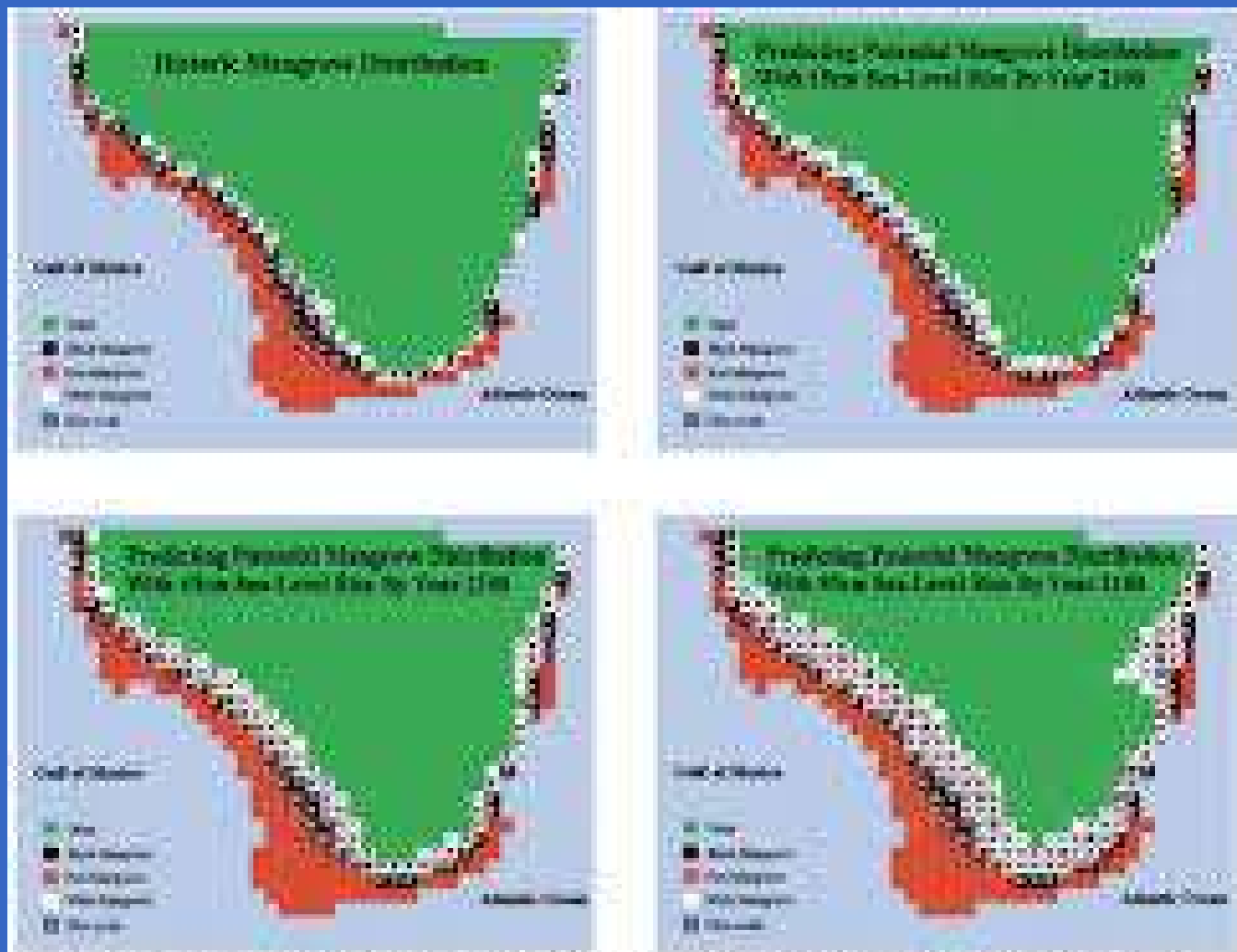
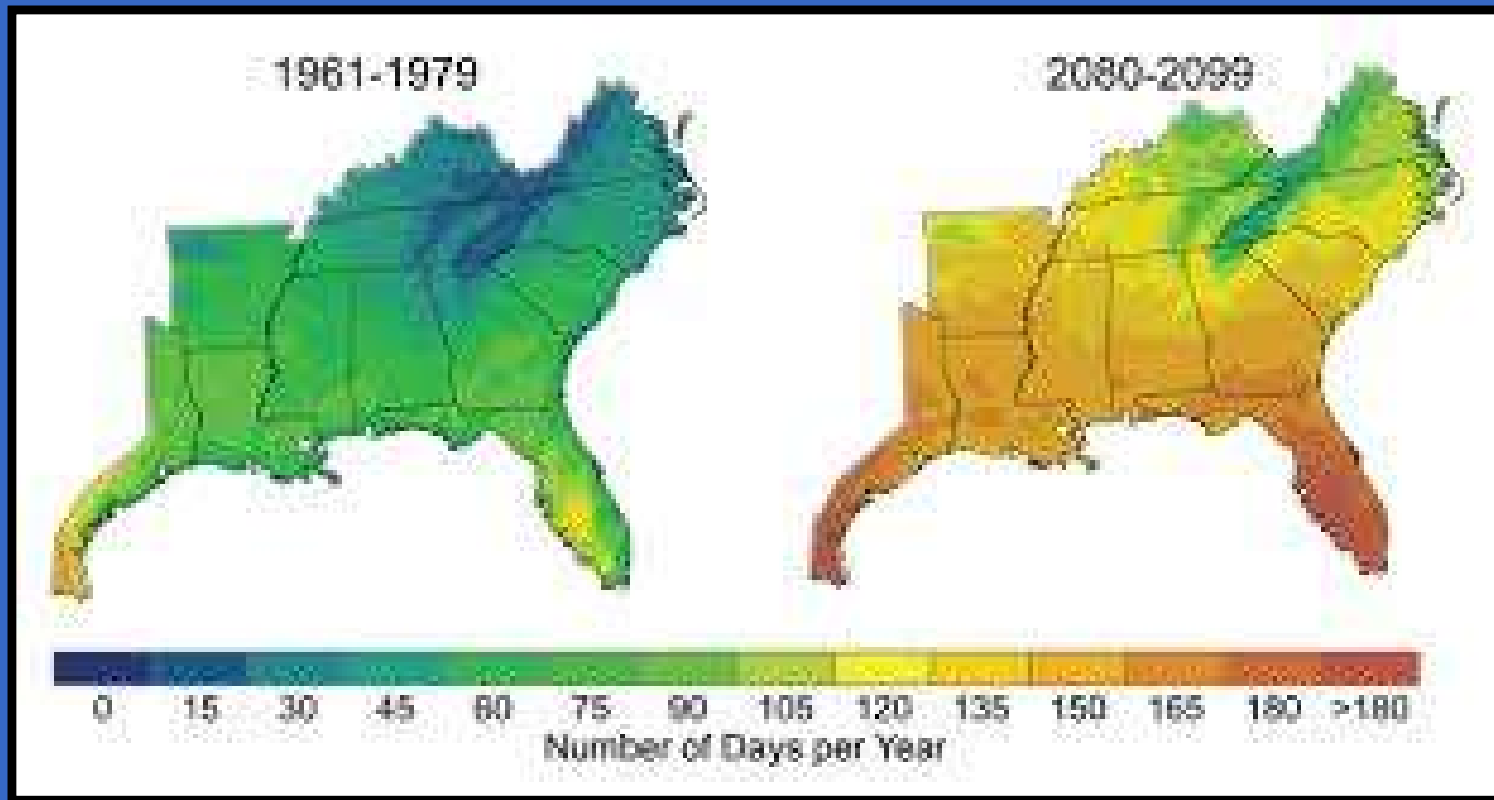


Figure 14. Contemporary and predicted distributions and species composition from inland mangrove migration under selected IPCC (1996) sea-level scenarios, low (17 cm), moderate (65 cm), and high (95 cm), expected by 2100.





Mangroves moved inland  
One Mile over Last 40 years  
Moving Northward warming Temps









