

ECOLOGY LAB FIELD TRIP - EVERGLADES NATIONAL PARK

THINGS TO BRING/DO IN PREPARATION:

1. Wear old clothing. Long pants and long sleeves are recommended. Light cotton clothing will protect you and let you stay cool at the same time. Wear old shoes that you don't mind getting wet. In general, be prepared to get wet from the top down (rain) or bottom up (wading).
2. Bring sun protection. Hat, sunglasses, sunblock, or some other shield will be welcome.
3. You may want to bring insect repellent. Bugs are rarely bad in Everglades marshes, but may be bad in hardwood hammocks and mangrove forests (long sleeves help prevent insect bites).
4. Bring plenty to drink and a lunch.

WHEN AND WHERE: We will meet in the small parking lot between the OE building and the large greenhouse at 8:00 AM. We will be using the Biology Department van and will leave promptly at 8:00 AM. We will be back to FIU by 7:00 PM but that time is not fixed.

Before leaving FIU, everyone will be asked to sign a Liability Release Form. Be sure you do so before you get into the van

ABOUT THE FIELD TRIP

We will spend the day exploring the major habitats that comprise Everglades National Park (ENP). Think of the park environment, and what you see today, as a small sample of what the entire South Florida environment looked like 200 years ago. As you probably know, little of that historical landscape remains undisturbed today and most of what does is found in ENP. This park is the third largest wilderness area in the continental U.S., and it lies literally on the western doorstep of those of us living in Dade County! Notably, there are few places in this country, or the world, where you can go from the absolute isolation of a natural wilderness to a 5-star restaurant (on South Beach) in less than an hour. This proximity to human development has its costs as well, however. Think about this paradox of adjacency as you spend the day immersed (perhaps literally!) in the natural South Florida environment. After the trip, if you are interested in keeping up with Everglades environmental issues, visit the Everglades Information Network at <http://www.fiu.edu/~glades/everglades/>.

We will have several park maps available during the trip. Note the diversity of habitats and community types, including 1) freshwater slough marshes; 2) freshwater marl prairie marshes; 3) open water "alligator" holes; 4) mangrove forests, and 5) estuarine embayments. We will visit each of these habitats today. You will be asked to measure soil depth, soil characteristics (e.g., color, texture, amount of organic matter, water content), and water depth at ALL habitats that we visit. At each site, answer the following questions.

A. Just after entering the park, we will cross Taylor Slough and the Taylor river. This is an example of a freshwater slough marsh systems. Sloughs are the geomorphological equivalents of "valleys" in Everglades marshes. These marshes are flooded most or all of the time, and are often called "long hydroperiod" marshes. Activities and questions:

Describe the soil: _____

Soil Depth: _____ Water Depth: _____

What type of substrate underlies these marshes? _____

Look at a sample of periphyton and its submerged aquatic plant "host" (*Utricularia*). Locate the traps on individuals of *Utricularia*. What do these traps do? _____

How many plant species do you find in a representative (0.25 m²) area? _____

Are plants densely packed? _____

B. Next Stop - Anhinga Trail. This deep-water habitat is actually part of the Taylor River drainage system, but it is analogous to "alligator holes" found throughout Everglades marshes. These holes form by various means, but most often are simply sinkholes in the underlying carbonate rock. Activities and questions:

Estimate the water depth (don't collect soil data here!): _____

Is it now the wet season or dry season? _____ Beginning or end? _____

Do you expect these "alligator holes" to dry completely? _____

Note the fish and other animal assemblages you observe here. How might this system look in May or June? _____

How do current conditions compare with those expected in May or June? _____

What are the implications of these differences to predator-prey interactions throughout the Everglades ecosystem? _____

C. Next stop - a pineland forest along the road to the Research Center. This area burned recently. Most Everglades habitats have evolved adaptations to periodic fire disturbances. In some, fires may actually be essential to ecosystem maintenance. Activities and questions:

Describe the soil here: _____

Soil Depth: _____ Water Depth _____

What effect does the recent fire appear to have had on this habitat? _____

Look at the plants growing in the understory. The trees have several other plants (epiphytes) living on them. Describe the understory of the pineland: _____

D. Next stop - Long Pine Key (and trail). This area is similar to Site C, but did not burn recently. Activities and questions:

Describe the soil here: _____

Soil Depth: _____ Water Depth _____

What are the major differences and similarities between this upland habitat and the one we just visited? _____

What factors account for these differences? _____

E. Next Stop - Pa-hay-okee Overlook. As you walk out to the tower, you will cross an Everglades marsh that is not often flooded, and is in a region of the park known as the Rocky Glades. This type of marsh is often called "short hydroperiod" marsh. From the Pa-hay-okee tower, you will look north across the Shark River Slough--the major "valley" system of ENP. Activities and questions:

Describe the soil here: _____

Soil Depth: _____ Water Depth _____

How many plant species do you find in a representative (0.25 m²) area? _____

How does this, and plant density compare to what you saw in the Taylor Slough marsh? _____

Are their differences in periphyton abundance or distribution between this site and the Taylor Slough marsh? _____

Describe the landscape patterns you see in Shark River Slough from the tower: _____

F. Next stop - scrub cypress forests and cypress domes. The short hydroperiod marsh in this area is interspersed with numerous scrub cypress trees and occasional cypress domes. We will walk our and explore a cypress dome. Activities and questions:

Describe the soil here: _____

Soil Depth: _____ Water Depth _____

How do these compare to what you observed in the other forested habitats we visited? _____

Why are the scrub cypress trees so short? _____
 _____ Are they young or old? _____

Is the soil in cypress domes different to nearby areas? _____

What factors affect soil in cypress domes? _____

Why are they called cypress "domes" _____

What is found in the center of a mature cypress dome? _____

What is the distribution of ages within domes? Are older trees in the center or on the margins?

How does the understory of the dome compare to Sites C and D in terms of epiphytes? _____

Next stop - Mahogany Hammock. A boardwalk loop trail will take us through the heart of this upland hardwood hammock. Three islands and hammocks similar to this one are found throughout the Everglades marshes (you saw many in Shark River Slough, from the Pa-hay-okee tower). This heterogeneity of habitats plays an important role in the wide diversity of life and range of productivity observable in Everglades wetland ecosystems. Activities and Questions:

Describe the soil here: _____

Soil Depth: _____ Water Depth _____

How do these compare to what you observed in the other forested habitats we visited? _____

Compare the diversity of plant and animal species you see here to the other forested habitats we have visited. _____

How do understory and epiphytic growth compare to Sites C, D, and F? _____

Why do these kinds of upland habitats occur throughout Everglades marshes? _____

What does this tell you about the linkage between geomorphological setting and ecological pattern/process? _____

H. Next stop - West Lake. We have now moved south and into the zone of saltwater influence. The wetlands graded from freshwater herbaceous habitats to mixed marsh and scrub mangroves to full mangrove forests since Mahogany Hammock. At West Lake, we will follow a short boardwalk through a mangrove forest. Activities and questions:

Describe the soil here: _____

Soil Depth: _____ Water Depth _____

How do these compare to what you observed in the other forested habitats we visited? _____

What are some unique physiological features of mangrove trees? _____

What features distinguish the four mangrove species? _____

Compare the diversity of plant and animal species you see here, relative to the other forested habitats we have visited. _____

How do understory and epiphytic growth compare to Sites C, D, F, and G? _____

I. Next Stop - Florida Bay. We are now at the end of the road--literally. Florida Bay is an estuary; as you look south, the Gulf of Mexico is to the west. Subtropical vegetation is largely seagrass. Activities and questions:

Does Florida Bay, with its scattered keys surrounded by shallow seagrass meadows, remind you of any other Everglades landscape you observed today? Which? Why? _____

Knowing sea level rise rates for the last 3000-5000 years, and how deep Florida Bay is, how old do you think Florida Bay is? _____

As sea level continues to rise, what do you think will happen to Florida Bay? What will happen to the mangrove forest zone? _____

Given what we know about the seagrass die-off phenomenon in Florida Bay, would you tell someone that the Florida Bay ecosystem is dying, dead, or changing? _____

We hope you have enjoyed your visit to one of the worlds' unique ecosystems. We hope that you will return to visit ENP in the near future.