

FIELD NOTEBOOK

for

DAUPHIN ISLAND

March 20-27, 2004

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Spring 2004

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Journal

Day 1, March 20, 2004:

9 am: Our group of 22 is on their way to Dauphin Island, Alabama. Although this is a class, it is my first college spring break trip. It is nice to just be able to sit back and observe the scenery outside the van. I am not sure when we are expected to start noticing things. Our initial journey is passing through our home, from the west edge of the Ozarks into the heart of the Ozarks. Oaks, oaks, and more oaks (Genus *Quercus*) is all you can seem to notice from a vehicle, but it is interesting that we are following the Spring River as we head for Mammoth Springs for lunch. The closer we get to Mammoth Springs the more pine trees there are. I have also learned that Mammoth Springs is the origin of the Spring River; if asked, I would have always placed the origin up north somewhere.

While stopped for lunch, I was able to observe gray squirrels playing and fish crows, *Corvus ossifragus*, flying overhead. The park is characterized by many pines mixed with oak trees. There are also wildflowers in bloom, another of my favorite sites of spring and another reason I always wanted to take plant taxonomy. It is good to have Barb along; she knows a lot of the scientific plant names. A National Fish Hatchery is located here in Mammoth Springs, Arkansas.

After lunch we journeyed on into the hills and curves of the Boston Mountains. Sandstone is still noticeable and makes one feel at home. Along the way, fishermen are visible. There appears to be more maple trees and hickory trees the deeper we get into the mountains.

By late afternoon we are out of the Boston Mountains and have entered the flood plains of the Mississippi River, also known as the Mississippi Alluvial Plain. Here the rice fields are evident. The front vehicle reports a cotton field, but I missed that. Somewhere in my brain, it seems I should know cotton is grown in Arkansas (history or geography class), but I could not have listed it as an Arkansas crop. The pine trees continue to be more evident, but the oaks are still here. A few cypress trees are visible from the van. This is somewhat surprising because I usually only think of Florida and the other southern states with borders on the ocean. I honestly do not believe I have ever noticed this before today.

It is good to be with a group that believes in regular rest stops. Thus far, my jumpy legs have been under good control. The rest stops can also be educational. Our last planned stop before Memphis, Tennessee introduced us to something called "pimp juice," containing horny goat weed extract. I realize that I can learn something new everyday; but, there are still things that just leave me shaking my head. (Investigation on my return reveals that horny goat weed, *Epimedium sagittatum*, was discovered by a goat herder. The goat herder believed his goats were more "frisky" after consuming this plant. It is advertised as a libido enhancer. Studies have shown that shortly after exposure sperm count does increase. However, it may be more important to note possible anti-coagulant properties as well as elevation of interleukins. If it were not for the observed effects on Libido, I wonder if any of the other possible uses would have been discovered or studied.)

We ran into rain which became heavier and heavier as we neared Memphis. Unfortunately, this greatly interfered with any observations. We definitely are at an advantage to be living and traveling in modern times. In addition to the speed, cellular

phones and weather channels allowed our drivers to track the rain storm. The plan had been to camp outside of Memphis. However, continued rain and possible hail led our fearless leaders to elect to continue south to see if we could get out of the storm. Our next stop was in Mississippi, after 6 p.m. Here pine trees, short leaf pine (*Pinus echinata*), were the predominate tree. A campground was found south of Grenada, Mississippi. On arrival to this pine forest, the site of our camp in the Holmes County State Park, we were greeted with a serenade by Spring Peepers, *Pseudacris crucifer crucifer*, members of the tree frog family, Hylidae. Despite the darkness, time was around 9 p.m., we were able to get our tents up before the rain reached us. The sweet gum burrs, from *Liquidambar styraciflua*, were very thick, and despite our best efforts to clear our campsite, we ended up sleeping on a few.

Day 2, March 21, 2004:

5:45 a.m.: I could sleep no longer and had to get up to loosen my stiff muscles. The wind last night had misled me into believing we had more rain. Things were surprisingly dry and dusted with yellow powder, pine pollen. The wonderful thing about traveling south of Kansas is receiving an early start on the sights and smells of Spring. My early awakening was rewarded by a few of my favorite sites, wild violets and the redbud, *Cercis canadensis*, and dogwood, Genus *Cornus*, trees in bloom. I also noted green brier, *Smilax*, and small cedars between the pines, more plants we have back in Kansas. A hawk was hunting breakfast, I was unable to identify due to my lack of birding skills, and a black vulture, *Coragyps atratus*, was also up early. I was able to hear other familiar bird songs, but could not find the birds. (I would certainly starve if I depended totally on hunting skills.)

8:00 a.m.: We have had breakfast and by helping each other break camp, we are on the road again for our ultimate destination, Dauphin Island, Alabama. As we head for the costal plains the pine trees thin out with clear areas that remind me of our pasture back home complete with grazing beef cows. We also receive word that Memphis was hit by golf-ball size hail; the decision to continue south was a wise one. Before we arrive in Jackson, Mississippi, the terrain levels out as we leave another set of hills behind us. .

South of Durant, Mississippi Saw Palmetto, *Serenoa repens*, and swamp. Also, large magnolia trees (*Magnolia grandiflora*) are visible. I know we have them in Kansas, but not as large as in the South. There is a bamboo like plant called "lady bamboo," apparently it is not a bamboo species. There is also mistletoe growing in the tops of the trees. The ubiquitous sparrow, *Spizella passerina* or *Melospiza melodia*, and fish crows or common crow, *Corvus brachyrhynchos*, are visible. Wisteria and Spanish moss are noted as we cross the Pearl River. We also continue to see an unidentified yellow vine which appears to climb up to the tops of the trees.

11:15 a.m.: We are near Hattiesburg and the Live Oaks, *Quercus virginiana*, are definitely visible. We are seeing evidence of the logging. There are young forests and replanting visible. I just wonder how long it is before they get the fields replanted, and if some will remain clear for building. We worry about the destruction of the rain forest, but we need to be concerned and responsible here in our own country. When we stopped at Wal-Mart, I asked the greeter if she knew what they were. She said it was Yellow Honeysuckle (*Lonicera flava*); it took over and killed her fig tree. She said if we smelled it we would know. We had to explain the difficulty of "practicing botany at 70 mph." I

have not noticed any Kudzu vines; maybe the battle to stop this “noxious weed” imported from Japan was successful. We passed what appears to be a turf farm and have noted large fire ant mounds (approximately a foot across).

12:00 noon: We are passing through the DeSoto National Forest with longleaf pine, *Pinus palustris*, and more dogwood trees in bloom. Apparently, we have missed the turn for the State park that was to be our lunch stop; thus, we stopped to use the Wal-Mart parking lot.

We finally are nearing the coast and the coastal highway, I-10. Before we reached Gulfport, Mississippi, gulls are visible. Sara says these are laughing gulls, *Larus atricilla*, and then a Great Blue Heron, *Ardea herodias*. Salt flats and salt marshes are visible on our right (south of the highway). We opened the windows to smell the air. Back waters are also visible from the van. We are near our destination and in the coastal plains, certainly different from the Kansas plains.

2:15 p.m.: We are crossing the Escatawpa River and are very close to Dauphin Island, Alabama.

3:00 p.m.: We are almost there; marshes are present and one can see the natural gas derricks offshore. Barges are on the waterways, and on close observation, the Brown Pelicans, *Pelecanus occidentalis*, are flying overhead.

3:15 p.m.: We are on the island. There are large, noisy black birds greeting us, Boat-tailed Grackles (*Quiscalus major*), and the much quieter and pleasant White-winged Doves or Mourning Doves (*Zenaida asiatica* or *Zenaida macroura*). The first job is unpacking and setting up our tents. Then, Barb and I decided to explore and find the beach.

BEACH WALK: We found the beach clean and different from other beaches we both have seen. (I have been to Florida beaches, Virginia Beach, and a beach in Charleston, South Carolina. I was also fortunate to attend a meeting on Hilton Head Island, but it did not appear to have the dune system Dauphin Island has.) It was good to stretch our legs and get our first look at the island. We saw Brown Pelicans, Blue jays, Doves, Sanderlings or Peeps (*Calidris alba*), Great Blue Heron, and a pair of male Mallards (*Anas platyrhynchos*). We also heard a woodpecker, but could not see it. I nearly missed it between my decreased hearing and the sound of the waves breaking. We also noted the Sea Oats, Saw Palmetto, pennyworts, Prickly Pear Cacti, creosote bush, greenbrier, sea oxide, pitch pine, and cypress. We also noted hermit crabs, *Clibanarius vittatus*, the coquina or bean clam, *Donax variabilis*, and barnacles. The dunes are an interesting picture. Remains of the former pine trees show where the edge of the island once was.

8:00 p.m.: Early to bed for me. I am going to try to review my ichthyology before I fall asleep.

Day 3, March 22, 2004:

5:30 a.m.: This is getting to be the pattern. My stiff muscles scream to get up, and I cannot go back to sleep with the “cooing and the laughing” (noises of the mourning doves and the gulls). Earlier, around 2:00 a.m., I thought I heard a Killdeer, *Charadrius vociferous*, clearly and endlessly calling “kill-Dee.” The shoes we leave outside the tent are dusted with yellow powder, the pine pollen. It was worth a walk down to the beach

south of camp. I enjoyed watching a group of five brown pelicans flying low over the water.

7:00 a.m.: Breakfast and then off to key fish that some of the younger in the group scooped up last night with the seine.

Banded Drum, or Banded Croaker, *Larimus fasciatus*

Silver Perch, *Bairdiella chrysoura*, (while working on the identity of the fish we found a parasitic isopod in its gill)

Bay Anchovy, *Anchoa mitchilli*

Black-Cheeked Tonguefish, *Symphurus plagiusa*

Speckled Worm Eel, *Myrophis punctatus*

White Mullet, *Mugil curema*

Frillfin Goby, *Bathygobius soporator*

Darter Goby, *Gobionellus boleosoma*

Gulf Menhaden, *Brevoortia patronus*

Mosquitofish, *Gambusia affinis*,

Sailfin Molly, *Peocilia latipinna*

Fat Sleeper, *Dormitator maculatus*

10:45 a.m.: We walked over to the Estuarium. It is part of the Dauphin Island Sea Lab and across from the campground. It is a very busy place and was an educational visit. I believe it shows Alabama's pride in the ecosystem of the Mobile-Tensaw Delta, as well as their attempt at educating the public on the importance of the estuary. It is too much to absorb in one visit, and I am glad I attempted to do some background reading before I left. I was happy to complete the answers to our assigned questions; however, the visit brought up more important ecology news. The zebra mussel is only one invader of the bay. The invasion of certain jellyfishes, or jellies, is causing problems. Most recently is the arrival of *Drymonema dalmatinum*, also called big pinkies. These jellies can reach 70 feet in length.

The walk at the Estuarium has a salt marsh represented. Small Cord Grass, Black Needlerush (*Juncus roemerianus*), swamp dewberry, and Marsh Periwinkle (*Littorina irrorata*) were the plants visible from the walk. It was worth braving the wind because there was a snowy egret, *Egretta thula*, visible from the boardwalk.

1:30 p.m.: Lunch is over and it is back to finishing keying out the fish, so we can go get some more, and we finally understand for certain what we are suppose to be looking for when the key says "gular plate."

2:00 p.m.: It is down to the beach south of the campgrounds to learn to seine for fish. There is a certain art to doing it properly. I feel a little useless because my muscles wear out so quickly; but, the "kill jar" seems to be easily forgotten, so I at least am a help by keeping track of that. The best was when the guys went further out and caught an Atlantic Sting Ray. The barb had gotten caught in the net and broke off. It was beautiful. After detangling it, it was released. Dr. Triplett told us it would be able to grow its barb back. After the little expedition, it was back to keying, then supper, then more keying.

Our seining at the beach resulted in the following fishes:

Atlantic Stingray, *Dasyatis sabina*, we released the large one, and then the guys found one washed up on the beach.

Silver Perch, *Bairdiella chrysoura*

Spot, or Flat Croaker, *Leiostomus xanthurus*

Striped Killifish, *Fundulus majalis*

Gulf Kingfish, *Menticirrhus littoralis*

Crested Cusk-Eel, *Ophidion welsbi*

Bay Whiff, *Citharichthys spilopterus*

Southern Kingfish, *Menticirrhus americanus* (There is some disagreement over this identity, but I am too tired to worry about it right now. Barb and I looked over the key several times and kept returning to the Southern Kingfish or Sea Mullet.)

Southern Stargazer, *Astroscopus y-graecum* (This was a tough one; Barb had worked on it for quite a while, so when we worked on it together we got it quickly. This is a very interesting looking fish.)

Bay Anchovy, *Anchoa mitchilli*

Broad Flounder, *Paralichthys squamilentus*

Yellowfin Menhaden, *Brevoortia smithi*

Sheepshead Minnow, *Cypinodon variegatus*

9:00 p.m.: Freeze warnings are announced. It is hard to think of it freezing, but I do understand it can happen here in the South. I am glad I brought a sweatshirt.

Day 4, March 23, 2004:

5:30 a.m.: Awake again, but I stayed in my sleeping bag as long as I could. By 7:30 a.m., I decided to go back to keying and look at the Bay Whiff again; this was another identity there is some disagreement over. It still comes back to the Bay Whiff when I key it out again.

8:30 a.m. to 10:30 a.m.: Most of the group went on the Audubon trail to see if we could see some birds. I do not know if it was the weather or the group being too noisy, but we did not see too many birds. But we did see some colorful, and different birds: Yellow-rumped Warbler and a Carolina Wren. (It seems one more easily sees the birds one is most familiar with; there were plenty of cardinals, blue jays, and mourning doves.) We did spy an alligator floating in the pond. Could this be the reason for a lack of birds at the pond? It was also a chance to see the bottom land trees up close: live oaks, palmettos, cypress, sassafras, yaupon, and persimmon. We also saw ferns (cinnamon and bracken), a variety of pennyworts, toadwort, holly, wax myrtle, and an unidentified plant that I hope I can identify from the photograph I shot (green with red outlining the leaves). The entomologists of the group turned over every possible log to find the treasure for which they sought. I tried to catch moths and butterflies for them, but really need the net. The herpetologists were willing to get off the trail to find the green anole.

1:00 p.m.: Our outing on the trawler, the research boat, was educational even if we did not get as many fish as we hoped to. Laughing and herring gulls looking for food followed the boat. Apparently, they too are having trouble finding food. Bottlenose dolphins were also interested in the catch. We were informed that the salinity of the water has been too low and therefore, the fish have not moved in resulting in our low catch and starving birds. The yield was richer in squid, which we threw to the gulls; it is amazing seeing how well they can catch. (We were also tossing back crabs we caught in the net.) We did get a 25 to 30 pound Black Drum that was released. (The scales were so

large. I understand they continue to grow throughout their life, but it is amazing to think how little they are when they start out.) We also released a Bighead Sea Robin (not intentionally). We also learned about the TED, turtle evacuation device. The other new fish we got on our outing were: (plus more Bay anchovies and another Spot)

Hardhead Catfish, *Arius felis*

Gulf Butterfish, *Peprilus burti*

Spotted Hake, *Urophycis regia*

Ocellated Flounder, *Ancylopsetta quadrocellata*

Striped Anchovy, *Anchoa hepsetus*

While on the boat we passed Fort Morgan and the site of the sinking of the ironclad *Tecumseh*, considered the last major battle of the Civil War. Then, on our return we took a behind the scenes tour of the estuary. Where we saw fish in quarantine for lateral line disease (neurological disease) as well as for the treatment of goiter. We also saw some of the things they have collected from the deep sea such as a Royal Shrimp, which is very large and expensive (maybe if I ever risk my shrimp allergy it might be worth it for something like that).

6:00 p.m.: Back to keying fish. Then, supper and back to keying more fish. There was some argument over the spotted hake, but we finally reached agreement. Off to bed as soon as I could.

Day 5, March 24, 2004:

5:30 a.m.: My usual bird wakeup call has me up; if it were a reliable wakeup call, I would have no need for an alarm clock. My walk to the beach this morning was rewarded by a beautiful sunrise. The sun was a ball of orange with streaks of white across the orange and blue. Of course, no camera, but I will hope the picture stays with me for sometime. If it were not for an over-developed sense of responsibility, I would find it very easy to be a beach bum; here, it is too easy to forget what else is going on in the world. Flocks of laughing gulls appear to be looking for breakfast on the beach. I was able to get within 6 feet of an Osprey, *Pandion haliaetus*. (Several saw one on our bird walk yesterday, but I missed it.) There it was sitting on a pine tree branch. Double-crested cormorants, *Phalacrocorax auritus*, were also fishing. (Barb told me the cormorants are also called "water turkeys." I am continually amazed at how close to the water surface they can fly, and even more impressed on how they can spot the fish. There were also Terns flying this morning (differentiated from the gulls by their more streamlined profile); I was unable to identify any more specifically and I can see why both the gulls and terns are together in family Laridae.

There are written rules at this campground, but there also seem to be unwritten rules, such as smile and say "good morning." The campground is very peaceful and a very friendly place. After breakfast, while keying out fish, two curious children from Columbia, Missouri came into the pavilion. I tried to give them a mini lesson on what we were doing and the different parts of a fish. It is good to see children interested in something other than video games.

9:15 a.m. to 11:20: This morning was our visit to Fort Gaines. The fort has been well preserved and was actually a good spot for bird watching. (I was able to get much

closer to the Brown Pelicans and gulls.) I made sure I saw everything and took plenty of pictures since I expect my son, the historian, to quiz me on my return home. Included at this Civil War fort was an exhibit concerning life on the island in the 1930's. When Fort Gaines was deserted, the islanders were very creative using the fort to graze and corral their goats and cattle. The fort also provided a place for the children to play and explore. Outside the fort is a large patch of Prickly Pear Cacti.

11:20 a.m.: Return to camp and Barb and I returned to the Bird Trails. Whether it was the warmer weather, or quieter with just the two of us, we were more successful in the number of birds we saw. (In addition to those seen on the previous walk, there were two different species of sparrows, a chirping and a ruff-edged; and flycatcher.

1:00 p.m.: This afternoon we visited the Shell Mounds. On the way we drove by Cadillac Square. Shell Mounds is an ancient Indian burial ground from 1000 B.C. Only royalty was buried there and was the reason Dauphin Island was first named Massacre Island. The mounds are all done in circles. The bodies would be brought down the Tombigbee River and would stop in "Silicon" where women would pick the remaining flesh from the bones (thus they were called the "Buzzard Women"). Descendants have returned to Shell Mounds from time to time and will hang pouches from the trees. There is still a woman on the island that will stay there at the mounds howling for hours. This site, along with the entire island, is very popular for bird watchers during spring migration. Dauphin Island is 800 miles north of the Yuccan Peninsula and the first land for the birds. "Fall out" is a common phenomenon observed (birds falling from the sky from exhaustion). Peak birding season is the last week of April. Our second guide, Mark, told us he could determine "the time of the year by the species of bird present."

During this tour we also learned that Dauphin Island was the first official capital of the Louisiana Territory (the entire mass of land obtained through the Louisiana Purchase). We were also shown part of the old Dauphin Island Dunes system destroyed in a 1717 hurricane. Our guide talked of her experience staying on the island through a hurricane. I guess it is like anywhere. You learn to adjust and survive. There, it is hurricanes; here, it is tornadoes. Just as things we try to cultivate back home, grow like weeds here to the point of irritation (Elephant Ears and Lantana).

We then were given a tour of the Marine Resources Lab. They showed us microscopic views of otoliths. The workers have gone to docks and obtain otoliths from catches. Then, they slice the otoliths and determine the age of the fishes being caught. The oldest fish was a 58-year-old Red Snapper, but the largest was a 21-year-old, 69.7-pound King Mackerel. We got to see an interactive computer and microscope, which provides the researchers with a much larger view with which to count the rings. (Wouldn't it be great to have in a classroom?) We also learned that the Red Drum grows fastest in its first 3 years of life, often reaching 26 inches in length; afterwards it only grows $\frac{1}{2}$ inch a year.

3:00 p.m.: Then we were off to the airport marsh to seine with feeble results. (Did learn that they have their own bird VIP's here. There was a mating pair of mallards at the marsh that are permanent residents.) Mainly we caught lots of baby shrimp jumping all over and Sea Lettuce. Then, went to another beach to try our luck at ocean seining. I was so exhausted I did not have the strength left to be very helpful. When returned to camp and it was my turn to help cook supper.

8:00 p.m. It was hit the shower and off to bed for me.

Day 6, March 25, 2004:

2:00 a.m.: Small pale green frog has taken up residence in the women's bathhouse.

5:45 a.m.: Down to the beach again, but I did not find this morning as pretty as yesterday. The birds seem to be in agreement, because I did not see a single bird. Back at the campground, even the grackles were absent from the top of their usual pine tree. The doves seem to be the only faithful bird this morning. I had to pick up the local paper, Mobile Register, because an article caught my eye. The Beach Mouse has been holding up construction around Fort Morgan for two years.

7:30 a.m.: It was time for me to key the fish we got yesterday. I was too tired to do it the night before. I wanted to go to the wildlife refuge, but I am afraid I will slow them down so I think I better stay behind and rest.

11:00 a.m.: Finally done keying and took a walk over to the tiny Magnolia Park. Apparently the noisy grackles were booked there for a concert.

12:00 noon: This day is almost half over and this trip is almost over. I have seen much, learned much and done much. It seems as if the time period should be longer, but it has passed quickly. Today is the best day yet. It has warmed up with a breeze and no dampness. If it were not for the dampness (due to the effect on my fibromyalgia) this would be a great place to live.

12:45 p.m.: Lunch will be late, but the first crew returns from the wildlife refuge. It does turn out that my decision to rest was the wise one. Barb brought me back the fruit of the prickly pear cactus. The flavor and seeds remind me of pomegranate. The second crew returned with an unexpected adventure. They arrived at the Marine Research Lab as they were getting ready to go out and do some sampling. The boat was smaller and rougher, but they returned with "more points":

Atlantic Cutlassfish, or Ribbonfish, *Trichiurus lepturus*

Bighead Sea Robin, *Prionotus tribulus*

Least Puffer, *Sp0hoeroides parvus*

Southern Hake, *Urophycis floridana*

Saltmarsh Topminnow, *Fundulus jenkinsi*

Fringed Flounder, *Etropus crossotus*

Star Drum, *Stellifer lanceolatus*

2:00 p.m. or close to it: Off to do an afternoon of seining on the causeways. We did get a few more new species. We had to climb over many oyster shells and watch out for rocks. Once again we were catching many little shrimp and a few crabs. We obtained another specimen of Yellow Fin Menhaden, Bay Whiff, and Red Drum, but we also got "points":

Hogchoker, *Trinectes maculates*

Skillet fish, *Gobiesox strumosus* (a rather cute fish which actually has me thinking that an aquarium would be great to have in a classroom)

Southern Flounder, *Paralichthys lethostigma*

On our way back to camp we stopped at a dock, hoping to get pictures of people's catches. No one was having any luck, but we visited with the people as we went. On

our return to the vans, one fisherwoman had caught a Shrimp eel, *Ophichthus gomesi*, which she was delighted for us to have.

Day 7, March 26, 2004:

5:30 a.m.: Could not sleep in, and I wanted to see what I could do to help clean up the pavilion we have been using. Barb agreed we should leave it cleaner than we found it. She also thought we should clean out the vans before we leave (attempt to leave as much sand as possible on the island). It has been a good trip, but we are both anxious to see that our teenagers have done well. It was still interesting to do my "people watching" as we broke camp. I believe the group has been cooperative, but there are always those that are content to sit and watch everyone else work, and only help if pushed to help.

Good-Bye to Dauphin Island: On our way to New Orleans we passed through Bayou Labotra. This place is world famous for building shrimp and fishing boats. As we neared the Pastagoola River, I saw approximately a dozen Snowy Egrets on the side of the road.

1:20 to 3:20 p.m.: I can now say I have been in New Orleans and that I have walked on Bourbon Street. I enjoyed seeing the architecture and the street performers, but I believe I could have lived the rest of my life without this experience. The best part of New Orleans was actually in a neighboring parking lot: see photograph.

Day 8, March 27, 2004:

Thanks to our drivers, we made it back to Pittsburg around 7 a.m. It was good to see the truck sitting there waiting for me. It meant that Tim was doing fine. (I believe Barb and I did quite well on the trip having each left a teenager at home alone.) I made it to the apartment, including unloading my gear before the rain started. Now, I just need to rest so I will be ready for Monday. Sara says the barrier island we will visit this summer is somewhat different from Dauphin Island. I am looking forward to comparing the two islands. I also think with this trip as an introduction that I should get more out of the summer class.

Questions

1. What four rivers does the delta in Alabama drain through
The delta drains through the Mobile, Blakeley, Tensaw, and Apalachee Rivers.
2. What non-native bivalve threatens the possible elimination of threatened species?
The zebra mussel, introduced by European merchant ships, threatens local species.
3. Why is this non-native species so successful?
The zebra mussel has no known natural predators; thus, they are very successful
4. What does SMZ stand for?
SMZ is **Streamside Management Zones**, and refers to the strip of land immediately adjacent to the body of water. Alabama is working to conserve this land for many reasons.
5. Name three ecologically important aspects of SMZ?
SMZ is important to (1) preserve soils, organic matter, and vegetation to filter surface and subsurface water; (2) maintain trees that provide shade and cools the water, thereby increasing oxygen for animals living in the water; (3) maintain the large diversity of plants and animals important to the ecosystem; and (4) decrease natural erosion.
6. What are the major rivers that drain into Mobile Bay?
The Warrior River, Tombigbee River, Coosa River, Tallapoosa River, Alabama River, and Mobile River are the major rivers draining into Mobile Bay.
7. What is a jubilee?
A bell or other signal calls the people to the beach to gather up the bottom dwellers that have crawled on to the beach. Crabs, flounders, and other bottom dwellers are driven by a lack of oxygen and get into the shallow water until they become beached. Although the lack of oxygen and an easterly wind are factors, the occurrence of a jubilee cannot be predicted.
8. How are sand dunes formed on barrier islands?
The formation of the sand dunes involves the work of the winds and the waves. Sand is carried by waves and deposited on the beach, moving sand in further with each wave. Sand is also carried by the wind; plants such as the sea oats and bitter pancum slow the wind and allow the deposit of sand. The root systems of the plants prevent erosion, and this allows the sand to pile up forming the dunes.

9. Name five species of plants characteristic of sand dunes?
There are many plants found on the dunes, but the species I found most plentiful includes:
- a. Sea Oats, *Uniola paniculata*
 - b. Short leaf Pine, *Pinus echinata*
 - c. Pennyworts, *Hydrocotyle* species
 - d. Coastal Panic Grass, *Panicum amarum*
 - e. Searocket, *Cakile edentula*
10. How are swamps and marshes similar?
Both marshes and swamps are wet, anaerobic environments, characterized by decaying plant material. They also both have a role in purifying water.
11. What characteristics allow plants, such as *Batis*, to tolerate high salt concentrations in the soil?
There are two major ways plants are able to tolerate high salt concentrations. *Batis maritima*, turtleweed, contains special glands allowing secretion of excess salt. Cord grass, *Spartina alterniflora*, regulates osmotic pressure to prevent water loss. It can increase the sodium chloride content to increase pressure, but isolates it in a vacuole to prevent damage to the enzymes and organelles in the cytoplasm.
12. How do savannas differ from Midwestern prairies?
The main difference is the Midwest prairie receives less rainfall and is drier. The savanna enjoys moist soil most of the year. The scattered trees of the savanna are usually pine, the rare trees of the Midwest prairie are oak or
13. Name 5 herbaceous plants common to both the gulf coastal region and Kansas.
Wild onion, *Allium canadense*
Prickly pear, *Opuntia spp.*
Kiss Me Quick, *Portulaca pilosa*
Panic Grass, *Panicum spp.*
Morning Glory, *Ipomoea brasiliensis*
14. Why are estuaries important to humans?
An estuary represents the transition from fresh water wetlands to the marine environment and serves as the nursery ground for many invertebrates and vertebrates. This has a major impact on commercial fishing with 95% of species depending on the estuaries for part of their life cycle. In addition to food, the estuaries filter water and trap nutrients. The estuaries are also important for flood control
15. Name 8 woody plants that are characteristic of both the coastal region and Kansas.

Blackjack oak, *Quercus marilandica*
 Redbud, *Cercis Canadensis*
 Sassafras, *Sassafras albidum*
 White Oak, *Quercus alba*
 White Elm, or American Elm, *Ulmus americana*
 Common Persimmon, *Diospyros virginiana*
 Osage Orange, *Maclura pomifera*
 Cottonwood, *Froelichia floridana*
 Sweet Gum, *Liquidambar styraciflua*

16. Name 5 birds characteristic of the gulf shoreline.
 Brown Pelican, *Pelecanus occidentalis*
 Great Blue Heron, *Ardea herodias*
 Laughing Gull, *Larus atricilla*
 Herring Gull, *Larus argentatus*
 Double-crested Cormorant, *Phalacrocorax auritus*
17. Name 5 invertebrates characteristic of the gulf region.
 Mole Crab, *Emerita benedicti*
 Moon Jelly, *Aurelia aurita*
 Bryozoans
 Eastern Oyster, *Crassostrea virginica*
 Shrimp, *Mantis spp.*
 Mud Crab, *Panopeus simpsoni*
 Marine Worm, *Diopatra cuprea*
 Ghost crab, *Ocypode quadrata*
 Bean Clam, *Donax variabilis*
18. Explain why marshes may smell like rotten eggs.
 Marshes are characterized by standing water; this combined with decaying plant matter creates an anaerobic condition. This produces hydrogen sulfides causing a “rotten egg” odor.
19. Name 8 animals, mammals or birds, common to both the gulf coastal region and Kansas.
 Raccoons, foxes, opossums, skunk, and coyotes are found both in the gulf coastal region and Kansas. Several birds are also common to both areas, including the American Robin, Mourning Dove, Blue jays, Red-winged Blackbird, and Barn Swallow.
20. What are the adverse affects of bulkheads?
 The adverse affects of bulkheads are numerous and include (1) providing a surface for encrusting organisms which feed animals not normally found in the area, and therefore, disrupting the normal ecosystem. (2) Although the bulkheads are built to prevent erosion, the problem is passed onto the neighbor’s property and the problem continues. (3) The bulkhead reflects

wave energy but causes a stronger current at the next bulkhead, speeding up the removal of plants and sediments next to the bulkhead. Most important, the bulkheads prevent gradual change from water to shoreline habitats.

Reflection on Educational Experience

It is difficult to summarize and explain why a trip such as this is important. In a society that has become global, a diverse range of experiences is a necessity. For a teacher, I believe diverse experiences transfer to the classroom as more effective, competent teaching. Experiences such as this increase my credibility as a teacher. Even when students have been able to travel, it is often not to study the biodiversity of an area; through my experience, I will be better able to bring diversity into the classroom. I have lived most of my life in Kansas and thus, my first hand ecology and outdoor field experience is here in the Midwest. Although I seek to keep informed on national and international issues, the firsthand experience creates an even greater sense of personal responsibility for preserving ecosystems around the world. In addition, this experience exposes me to future educational opportunities for my students and me.

Keeping a journal for this trip was also a good experience. I believe that asking students to write a report or journal entry on a field trip could increase their involvement and learning. It also encouraged me to do something I have been meaning to do for years, to start a bird watching log.