What is the SPRP?

The SPRP stands for the Southeastern Louisiana University West Lake Pontchartrain Basin Research Program. Specifically, we are an interdisciplinary group of researchers and staff dedicated to research and restoring the western portion of the Lake Pontchartrain Basin.

The western part of our lake basin includes Lake Maurepas and the surrounding swamps, and the rapidly disappearing strip of land in-between the two that houses I-55: the Manchac land bridge. This area has lost 25% of its marsh between 1932 and 1990. To reverse a land loss trajectory of this magnitude will take an understanding of not only the ecology of the basin and its environmental stressors but also of the socioeconomics of its land worth and cultural heritage, all of which must be successfully communicated to those most impacted by the degradation of the swamps and marshes.

To this end, the SPRP research group has identified five major areas of study. We must (1) determine the ecological baselines of the Lake Pontchartrain Basin ecosystem, (2) identify the environmental factors (stressors) that negatively impact the Lake Pontchartrain Basin and determine the extent to which they affect that ecosystem, (3) determine the social, economic and governmental factors that must be considered in order to achieve environmental recovery and sustainability of the Lake Pontchartrain Basin ecosystem, (4) identify the methods for environmental recovery of the Lake Pontchartrain Basin ecosystem, and (5) develop and implement technology transfer and outreach programs for the stakeholders and decision makers who have the authority and financial resources to achieve restoration, the people of the basin, and their children.

We invite you to track our progress and contact us with any information need you may have.

SPRP Website Up and Running!

http://www.selu.edu/SPRP

Coastal loss happens in present-time, and science does little good when kept within the academic bubble. We want to make sure you have access to our progress and results as soon as they are available.

We plan to feature outreach efforts in addition to research results. Teacher workshops and seminars will be posted, in addition to a section on the history of the Maurepas region.
Health of Maurepas Swamps depends on fresh water flow
http://www.selu.edu/Academics/Faculty/teperkins/Manchac/Studies/ShafferHealth.html

Many questions remain about the impact of diversions upon the deteriorating swamps of Louisiana’s coast. What might the effect be of large amounts of Mississippi river water and sediment upon the vegetation and soils of the swamps?

To answer this question, Dr. Gary Shaffer and his research lab at Southeastern placed 40 study sites in the Blind and Amite river swamps (part of a highly degraded baldcypress-tupelogum system) and added fertilizer and sediments. Then they documented changes in tree growth, biomass, vegetation, salinity, water nutrients and soil organics, hoping to provide an overall assessment of (1) swamp health and (2) potential effects of a diversion.

They found most of the Maurepas swamp to be suffering from lack of flow from the rivers. Generally, the swamps separated out along four broad categories: Lake (close to the lake), Interior (sites deep within the swamp), Intermediate (neither particularly close to the lake nor deeply buried) and throughput (those near flowing water, like the rivers and Hope canal). Areas close to moving water appeared relatively healthy. However, areas closest to the lake were experiencing tree death and conversion to open water primarily from salt stress. As you proceed deeper into the swamp, the water becomes less salty but more stagnant—meaning toxins from the normal metabolic functions of the trees, normally flushed away by flowing water, stick around to harm the trees instead. Furthermore, these areas are intended to dry out a little from time to time, allowing the roots of the trees to breathe and absorb carbon. Instead, the water is permanently backed up into the swamps, overcoming the trees’ natural abilities to deal with flooding. Flood duration has doubled over the past half century.

Severe droughts complicate the issue. The drought in 1999-2000 killed almost a third of the mature trees measured by the Shaffer lab. A continuous or seasonal flow of fresh water would prevent such salt buildup. The proposed diversion is capable of replacing all the water in Lake Maurepas twice yearly, and all of this water must flow through Pass Manchac to reach Lake Pontchartrain. Therefore, it is likely that this effect would be felt as far from Hope Canal as Jones Island and the Manchac landbridge.

In addition to freshening the area, the sediment and nutrients the diversion would bring would filter through the Maurepas Swamps before emptying into the lake. Dr. Shaffer expects the minerals to strengthen the organic soil of the swamps by adding mineral material and to increase elevation. The controversial nutrients, he says, are likely to be filtered by the plants, as 94-99% of the experimentally added nutrients in this study were taken up and removed from the water. In addition, the plants grew to 3 times their usual level—important, because the eroding soils in the area are comprised of 60% roots. According to Dr. Paul Keddy (SLU), the exact duration and depth to cause the transition from swamp to marsh remains an interesting unresolved mystery. Without a diversion from the Mississippi river, however, the Maurepas swamp may soon resolve this issue all too clearly.
Ongoing Research

Parasites: Indicators of Pollution?

http://www.selu.edu/Academics/Faculty/teperkins/Manchac/Studies/Font.html

Environmental problems in West Lake Pontchartrain include petrochemical and heavy metal pollution of wetlands and bayous within the basin. Dr. William Font and his lab are embarking upon a project to see if fish parasites might indicate pollution levels.

As animals, such as fish, feel less healthy they become more susceptible to parasites. This sounds as though parasites should increase in polluted environments. This assumption, however, is not correct. This is because of a unique adaptation of the helminth parasites in this study: to mature, they must spend part of their life cycle in a snail, and the snails tend to decrease in number and diversity in the presence of pollution. Therefore, parasite richness (the number of different kinds of parasites) is expected to decrease in the polluted waterways.

A study just completed by Megan Collins indicated a decrease in “pickiness” of the parasites, which might indicate a decrease in host immunity. As the fish get sicker, the parasites become less choosy as to the species of fish they parasitize. Other ongoing studies are examining the intermediate snail hosts.

Teacher Workshops at Turtle Cove Scheduled for July

Phase 1 Teacher workshops titled “Exploring Your Environment: Eye on Southeast Louisiana”

http://www.selu.edu/Academics/Faculty/teperkins/Manchac/Studies/dardislevel1.html

Part of the outreach effort associated with SPRP is a multi-tiered curriculum of continuing education for public school teachers held at Turtle Cove, the beautiful research station in the swamp reachable only by boat. What sets this program apart from others of its kind is that rather than charging the teachers to attend, teachers are offered a small stipend to compensate for their time. “Educators are so poorly paid”, says Dr. Deborah Dardis, head of this outreach grant, “and yet they’re constantly urged to pay for continuing education. With this approach, they get paid for their time and effort”. The workshop is for teachers of middle school science, math, language arts and social studies, available to teachers in the parishes surrounding Lake Pontchartrain. There are 2 separate 3-day sessions (teachers need only attend 1) from July 6-9 and July 27-29. More than 30 hours of interdisciplinary activities will focus on environmental issues in southeast Louisiana.