

## Project Title: Big Cypress Watershed Project: Learning in Florida’s Environment

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### Project Summary

In less than five months, The LIFE- Big Cypress Watershed Project in Collier County (The Project) has engaged nearly 500 7<sup>th</sup> grade students and over 10 teachers in two field experiences in their watershed. In addition, two, day-long teacher professional development activities were conducted with a core group of six teachers. Pre/Post test assessments showed learning gains for each of the two field experiences.

**Field Experience I (5 October 2009-15 October 2009).** In October 2009, 450 students and 15 teachers from each of the three partner middle schools had the opportunity to join the LIFE program outside of the classroom on their respective school grounds. Students learned science by practicing science with three unique field labs where students explored a variety of topics from water quality, non-point source pollution, and invasive exotic plants. For this field experience, the following labs were developed and implemented:

1. Invasive and Exotic Plants
2. Micro-Watershed and NPS Pollution
3. Water Quality
4. Field Measurements
5. Observation and Inference



Figure 1: Students from GGMS conduct a dissolved oxygen test on local canal water.

**Teacher Professional Development: Project Planning (18 August 2009).** Along with field-based science programs for students, program teachers at each of the three partner schools have joined the LIFE program staff for several teacher professional development opportunities. Prior to the start of school, OEE Staff met with the three lead teachers (one from each school) to conduct project planning, curriculum integration activities, and pre-test labs for the first two field experiences.



Figure 2: Teachers conduct measurements of abiotic factors.

**Field Experience II (27 October 2009-6 November 2009).** In November, 455 students and 12 teachers joined the LIFE program for their second field experience at Florida Panther National Wildlife Refuge. At the FPNWR, students were able to experience Florida’s natural ecosystems through three different field labs focused on plant adaptations, ecosystem ingredients, and the endangered Florida Panther. Most importantly, students had the chance to get outside and explore a part of Florida’s natural environment that many had never been exposed to.



Figure 3: Students from MMS explore a cypress swamp in the watershed

**Teacher Professional Development: Project Planning (9 January 2010).** Nine teachers from the three participating schools participated in a second teacher professional development workshop at Rookery Bay NERR to field test the final set of field labs planned for April 2010. The afternoon was spent reviewing a cultural competency rubric and refining school service learning plans.



Figure 4: Rookery Bay Environmental Learning Center

**Service Learning.** Outside of the field experiences, students from each school will create a service learning project that will allow students to continue to learn about a topic of their choice while giving back to the community. Each of the three schools has selected a service learning topic and outlined a service learning plan. Students will have the opportunity to present their service learning projects and their experience with the LIFE program at the annual Dive into Oceans Day at Rookery Bay at the end of April. The following is a summary of the service learning projects for each school:

1. **Golden Gate Middle School: Water Quality in Local Canals.** Students will create brochures to educate canal-front homeowners about water quality in local canals. Students will also organize and conduct a canal cleanup.
2. **Immokalee Middle School: Effects of Motor Oil on Ground Water.** Students will team up with local auto parts stores to develop a poster project to raise awareness on the effect of waste motor oil on the local environment.
3. **Manatee Middle School: Energy Conservation and its Impact on Climate Change.** Students will create brochures to educate students and their families about energy conservation techniques. Students will also conduct an energy audit in their own homes with their parents.

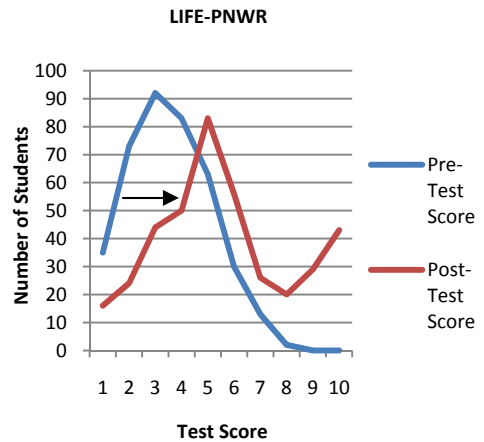


Figure 5: Students remove aerial tubers of the invasive plant: "Air Potato"

**Pre/Posttest Assessment Results.** A total of 343 and 391 students from Immokalee, Golden Gate, and Manatee Middle Schools took both the pre- and post-tests for the school based Field Experience (I) and Field Experience II held at Panther National Wildlife Refuge, respectively. Differences between pre- and post-test scores for all schools and both Field Experiences were significantly different (t-test).

Field Exp	Mean pre-test score	Mean post-test score	% Improved	% Scoring 80% or better post
I	5.51	7.19	72.22	47.08
II	3.58	5.49	63.85	21.95

Graph shows mean pre- and post-test score for FE II. Shift of curve to the right indicates improved performance.



**Project Promotion.** The project has been highlighted in the local media:

- NaplesNews.com: <http://www.naplesnews.com/news/2009/nov/30/collier-middle-schoolers-explore-panther-habitat-w/>
- Project Web page: <http://www.dep.state.fl.us/secretary/ed/life/collier/default.htm>



Figure 7: Naples Daily News

**Next Steps.** The project has a number of remaining activities:

1. **April 12-23:** Field Experience III at Rookery Bay NERR
2. **April 23:** Program Launch Event at Rookery Bay NERR
1. **April 29-May 1:** Dive Into Oceans Day
2. **May:** Complete student service learning projects
3. **May:** Administer online student and teacher survey and conduct project overview session at schools
4. **June 21-25:** Big Cypress Sumer Institute Teacher Professional Development Workshop



Figure 8: Dive into Oceans Day