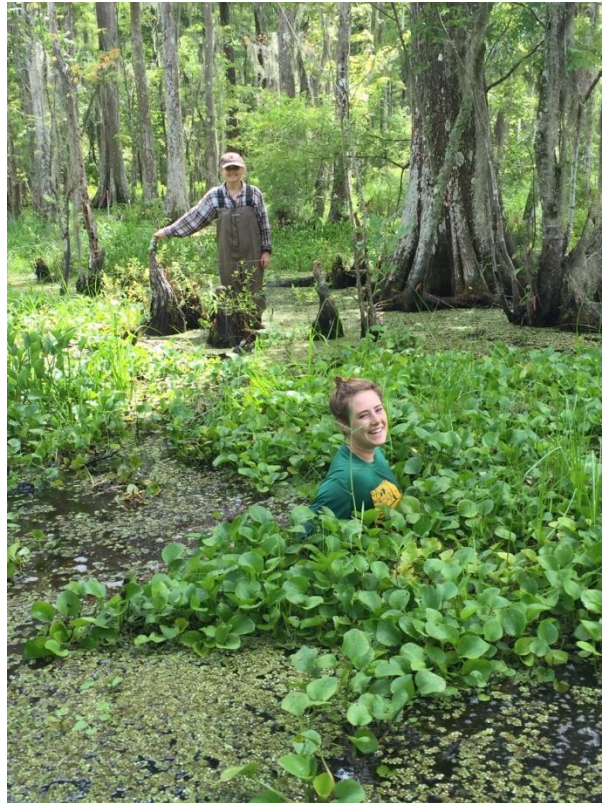


Citizen Invasive Species Monitoring at the Barataria Preserve, Jean Lafitte National Historical Park and Preserve (JLNHPP)

April 16, 2017

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A Report of the:

Barataria-Terrebonne National Estuary Program

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Final Technical Report

**Project Title: Citizen Invasive Species Monitoring at the Barataria Preserve,
Jean Lafitte National Historical Park and Preserve**

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Project Summary

Like most areas of intensive human management and modification, the subtropical coastal wetland landscape of the Mississippi River delta has become “home away from home” for an ever-increasing number of invasive species. Empowering and training citizens to monitor these species has the potential to greatly increase the spatial extent and frequency of monitoring effort in the Barataria Terrebonne estuary region. Jean Lafitte National Historical Park and Preserve (JELA) has experienced success in working with summer interns supported by the nationally-administered AmeriCorps Environmental Stewards program. Over the past four years a total of 7 interns working a combined total of 80 weeks have 1) helped monitor (including managing and monitoring biological control agents) invasive *Salvinia* species, water hyacinth, feral pigs and apple snails, 2) developed monitoring protocols accessible for park volunteers and 3) produced informative presentations and results summaries for diverse audiences. This project funds two additional Environmental Steward interns provided through Conservation Legacy to work under the supervision of the JELA Ecologist, Dr. Julie Whitbeck, to continue this work, further refine the invasive species monitoring protocols, and expand the education, outreach, and citizen science training aspects of the program.

Project Goal and Objectives

The goal is to build upon the Park’s invasive species-focused Environmental Stewards program by extending its reach through the Barataria-Terrebonne estuary, better coordinating monitoring efforts across this landscape, and by involving the public in this stewardship. The objectives are to 1) Train and build the expertise of two Environmental Steward interns in hands-on natural resource management of invasive species present in the Barataria-Terrebonne estuary region, 2) Extend effective invasive species monitoring programs in place at Jean Lafitte National Historical Park and Preserve’s Barataria Unit beyond Preserve borders into neighboring communities and to natural resource managers across the Barataria-Terrebonne estuary region, 3) Deepen Environmental Stewards’ and regional natural resource management personnel understanding of ‘citizen science’ and how to recruit and sustain citizen involvement in monitoring and managing focal invasive species, and 4) Design and develop a citizen science invasive species monitoring program that integrates training, hands-on monitoring, observational data management, data analysis, findings reporting and community-building natural resources stewardship investment.

Project Outcomes

Objective 1: Train and build the expertise of two Environmental Steward interns in hands-on natural resource management of invasive species present in the Barataria-Terrebonne estuary region.

The park is consistently able to recruit highly-motivated and well-prepared young people to its Environmental Steward program. Stewards report to us that grappling – in a hands-on, minds-on way – with developing and sustaining monitoring programs that address actual natural resource management needs is inspiring and fulfilling. They reflect that this immersive experience helps them to realize and affirm their ability, develop new skills, better understand coastal wetland ecology and natural resource management and develop an ‘insider’ understanding of the National Park Service.

Starting in Summer 2012, the park has relied on Americorps Environmental Stewards for the development and implementation of substantial parts of its invasive species monitoring and control program. Over the past 5 years, including the 2016 team, Stewards have designed and honed a floating aquatic vegetation (FAV) and *Salvinia* bio-control monitoring program, recruited and trained volunteers to assist with field sampling and with lab- and computer-based data processing, accomplished sophisticated data analyses and reported their findings to diverse groups including regional resource managers and educators. The FAV/*Salvinia* bio-control monitoring program has now run long enough to provide the park with rigorous regionally-relevant guidance for managing one target invasive species (Giant *Salvinia*, *S. molesta*). It also has provided 3 years of consistent data on the FAV community and water quality parameters that the park is likely to use as a baseline for future FAV management and/or public education endeavors.

In Summer 2016, Park/BTNEP Stewards developed a new invasive species monitoring protocol, focusing on the Maculata Apple Snail. I provide more information on this in subsequent sections.

Objective 2: Extend effective invasive species monitoring programs in place at Jean Lafitte National Historical Park and Preserve’s Barataria Unit beyond Preserve borders into neighboring communities and to natural resource managers across the Barataria-Terrebonne estuary region.

The 2016 Stewards mentioned the distinct challenges and rewards of designing and delivering invasive species-focused educational outreach to audiences ranging from 9 year old campers to interested ‘citizen scientists’ and naturalists to professional natural resource managers. In addition to their work sustaining the park’s floating aquatic vegetation/*Salvinia* bio-control monitoring program (which included recruiting and training a few dedicated park volunteers to undertake computer-based image analysis of invasive species presence and cover in this vegetation community, in addition to recruiting/sustaining volunteer field effort), this year the Stewards developed a protocol for monitoring, and potentially helping to control, another invasive species, the Maculata Apple Snail. Inspired by one of the park’s partner scientific investigators, with whose ongoing research they assisted during part of their term, they

implemented this effort in natural swamp habitat at the park's Barataria Preserve (see photo), and also at New Orleans City Park. In addition to involving volunteers in their field work for this project (at both locations), they presented short talks on this work to park 'science' campers (ages 9 to 15), to the BTNEP Management Conference (see photo), to an audience of Louisiana Master Naturalist (LMN) program participants plus park staff and partner scientific investigators, and to scientists & natural resource managers/practitioners attending the regional SWS/GERR professional meeting. LMN participants seemed eager to implement invasive Maculata Apple Snail egg mass scraping practices throughout the southeastern Louisiana region, and – after a test run with a group of boy scouts – the park has added this to our 'portfolio' of volunteer effort options.

The 2016 Stewards also developed two educational games that they 'field tested' with park summer campers. One game promoted recognition of common regional invasive species while the other asked kids to make links between rising sea level, ecosystem services and the viability of major coastal cities worldwide. Finally, they developed a poster style presentation (see photo) on invasive species displayed at the Barataria Preserve Visitor Center for the month of July.

We had anticipated that the 2016 Stewards might train resource management staff working for public lands in the region in utilizing one of the invasive species monitoring/management strategy evaluating protocols developed and implemented at the park's Barataria Preserve. The Stewards instead directed their effort toward developing and implementing the new invasive apple snail protocol and did not engage this part of this objective. Upon reflection, tasking short-term interns with this 'extension' objective was not a good match of skills and interests. Extension of practices is likely to be more effectively disseminated among peers, and perhaps at peer workshops and training events.

Objective 3: Deepen Environmental Stewards' and regional natural resource management personnel understanding of 'citizen science' and how to recruit and sustain citizen involvement in monitoring and managing focal invasive species.

The BTNEP-supported Stewards worked with two additional park-supported Stewards as a team. They drew upon their different experience and interest backgrounds -- including their own experiences at STEM and/or nature/science summer 'camps', serving as counselors and *ad hoc* teachers at these camps, and (for one Steward) working with national park staff in another country – as they brainstormed how to recruit and sustain volunteer citizen involvement in these invasive species monitoring programs. Reflecting on their experiences and the park's natural resource management team's experience over the past few years, a few 'lessons' emerge:

- Having fun and/or experiencing joy or well-being is an important component of the 'citizen science' experience.
- Feeling a sense of fulfillment by working toward a personal and/or a community purpose fosters continued interest and involvement.

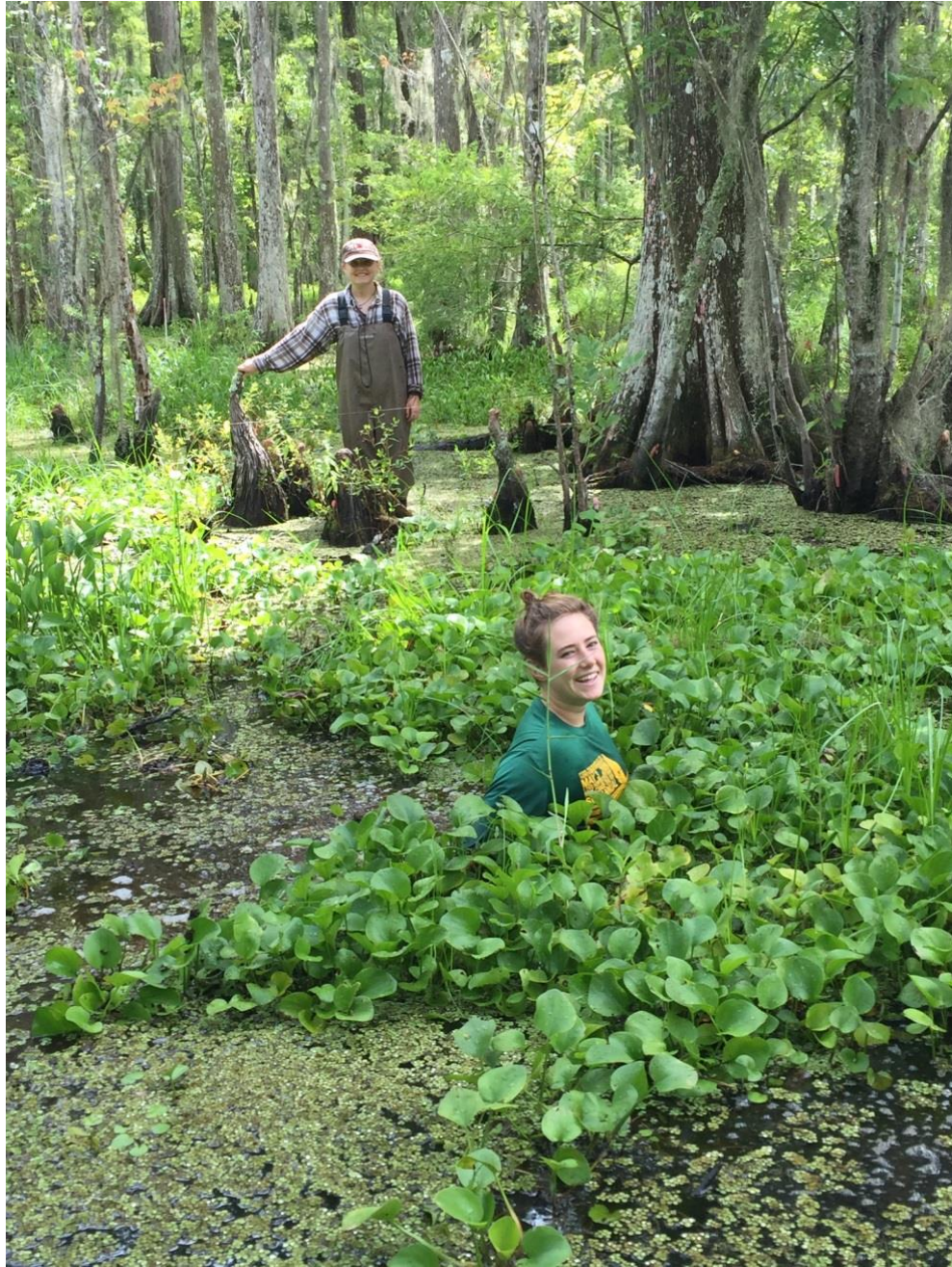
- Being able to perceive the impact of one's effort – “seeing” that one has ‘made a difference’ or made a contribution – helps sustain interest and contributes to this sense of fulfillment.

So, wearing chest waders, working as a team and walking off of boardwalk trails in the swamp in order to scrape egg masses of the invasive Maculata Apple Snail from cypress knees, other tree trunks and boardwalk supports was fun for kids and teens in the boy scout troop, and they and others could immediately perceive the impact of their effort. Likewise, the Stewards were successful recruiting sustained involvement and securing volunteer ‘citizen scientist’ effort for invasive species field work both at the Preserve and at their New Orleans City Park sites. Like park staff, they were less successful in recruiting and retaining volunteer effort for image analysis work supporting the park’s floating aquatic vegetation monitoring for focal invasive species and the impacts of a bio-control agent.

The Stewards and all of the natural resource management and education staff involved were able to get a taste of the kinds of work that help to foster citizen involvement. We have made great strides in developing and implementing effective and mutually-satisfying ‘citizen science’ projects and programs.

Objective 4: Design and develop a citizen science invasive species monitoring program that integrates training, hands-on monitoring, observational data management, data analysis, findings reporting and community-building natural resources stewardship investment.

The 2016 Environmental Stewards achieved much of this objective, but not – genuinely – its ‘citizen science’ focus or context. They engaged all of these sub-objectives via their own work, both with sustaining the floating aquatic vegetation/*Salvinia* bio-control monitoring program and in developing and implementing the invasive Maculata Apple Snail egg mass monitoring and scraping protocol. In retrospect, this single objective is huge and requires programmatic integration with sponsor organization annual goals and mission and engagement with a motivated steward group or community. Based on the 2016 Stewards’ achievements, and those of previous Stewards working with the park, Stewards can play key roles in each part of this process, and each part of this program, but our organizations require sustained and consistent effort and resources in order to achieve the goal of “community-building natural resources stewardship investment.”



2016 Stewards Clare Lister and Alexa Romersa are wading through the FAV in search of Apple Snail egg masses in a baldcypress swamp at the Barataria Preserve.

As Clare writes, “Above, you’ll see Alexa and I in one of our sites for the apple snail egg monitoring study. While only separated by about 10 feet, you can see the significant elevation change occurring under the swamp water and biota. I enjoy this photo for amusement and also for the reminder about the wide variance in elevation throughout the Barataria Preserve and Southeast Louisiana, where elevation is an extremely relevant topic.”



Stewards' invasive species poster in the Barataria Preserve Visitor Center: As per one Steward: "Here is a photo of the bulletin board presentation we created for the Barataria Preserve Visitor Center on invasive species found at the Preserve. We focused on 5 focal invasives: Chinese Tallow, feral hogs, apple snails, water hyacinth, and *Salvinia*. Our goal was to present the information in a visually appealing manner that allowed visitors to the park to get an idea of where they should look for each species in the wild just by glancing at our presentation. We received positive feedback that the bulletin board stirred up conversation in the visitor center."



Stewards presenting their Apple Snail Egg Viability Monitoring Study at the BTNEP Management Conference meeting

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