U.S. Coral Reef Task Force

Sunia Internship

(2014 and 2015)

Silmarie Padron- DOI-USFWS
Kristine Buchianeri- AS-CRAG
Yogani Govender- Para La Naturaleza
Alexandra Galindo- Sunia Intern 2014
Nancy Cardona- Sunia Intern 2014
Yasiel Figueroa- Sunia Intern 2014

U.S. Coral Reef Task Force
2015

2014 Update

- Applications: 50 applications
- Number of interns: 5 students
- Area covered: Maui and Puerto Rico
  - American Samoa postponed to summer 2015
- Partners:
  - DOI-OIA, DOI-FWS, NOAA, USDA-NRCS, Tri-Isle Resource Conservation and Development Council, Inc. , Maui Land and Pineapple's Pu`u Kukui Preserve, nd West Maui Ridge to Reef, American Samoa Coral Reef Advisory Group, and American Samoa-EPA.
- Budget:
  - DOI (OIA and FWS) to cover summer 2014 and 2015
- Mentors:
  - Caribbean (NOAA, EPA, Para la Naturaleza and FWS)
  - Maui (FWS and West Maui Ridge to Reef)

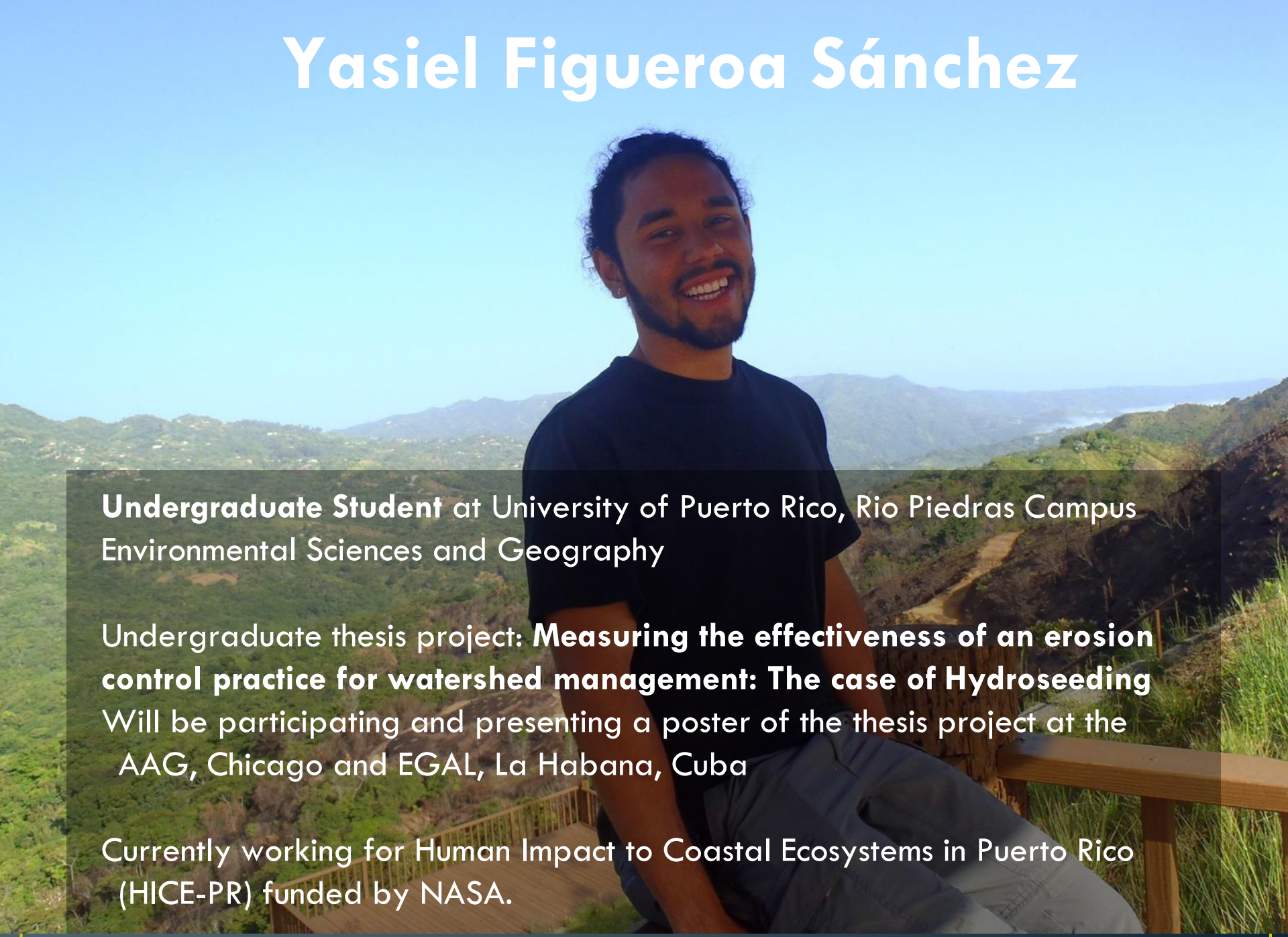
Sunia Internship 2015

- **Education and Outreach Working Group**
  - **Keep working with our partners within the three watershed priorities initiative to:**
    - **Identify projects, mentors, and assist in the selection process**
  - **Expand the internship to cover other areas (USVI and other Pacific Islands)**
  - **Challenge:**
    - Identify champions in other areas to help implement the internship
    - Identify projects, mentors and partners to help with the selection process.
    - Future of the Program?
      - Commitment from other UCRTF members

Where are the former interns?

- Austin Shelton – Sunia Intern 2007 (Hawaii DNR)
- Jeselyn Calderon- USDA Forest Service Quarantine Laboratory Facility and the Volcano weather - Hawaii
- Jeiger Medina- Coordinator of Environmental Initiatives
- Maria Crisitina Lopez- Para la Naturaleza (local NGO in PR) as Environmental Educator
- Mariana Carely Lopez- MS student, Biological Oceanography (UPR- Mayaguez)
  - Thesis: Assessing Spatial and Temporal Changes in Seagrass Habitat Cover using Historic Aerial Photography and Multispectral Imagery

Yasiel Figueroa Sánchez



Undergraduate Student at University of Puerto Rico, Rio Piedras Campus Environmental Sciences and Geography

Undergraduate thesis project: **Measuring the effectiveness of an erosion control practice for watershed management: The case of Hydroseeding**
Will be participating and presenting a poster of the thesis project at the AAG, Chicago and EGAL, La Habana, Cuba

Currently working for Human Impact to Coastal Ecosystems in Puerto Rico (HICE-PR) funded by NASA.

SUNIA Projects Assigned

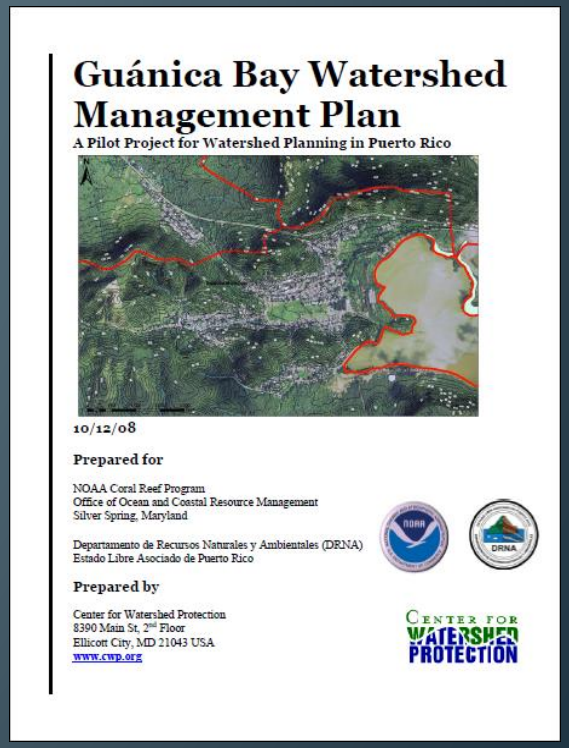
1. Monitoring of Hydroseeding Sites in Rio Loco Watershed
2. Monitoring of habitat restoration projects developed by past SUNIA students (2012 & 2013)
3. Assist Refuge Staff on greenhouse activities and coordinate tree deliveries with farmers under NRCS conservation contract
4. Collaborate on initial efforts to develop a biodiversity monitoring protocol for private lands where conservation practices are implemented

Mentors:

Lisa Vandiver, Dave Eslinger, Shan Burkhalter, Rob Ferguson (NOAA)

Ana Román, Iván Llerandi (FWS)

Guanica Bay Watershed Management Plan (2008): Critical Issues and Recommendations



Guánica Bay Watershed Management Plan

A Pilot Project for Watershed Planning in Puerto Rico

10/12/08

Prepared for

NOAA Coral Reef Program
Office of Ocean and Coastal Resource Management
Silver Spring, Maryland

Departamento de Recursos Naturales y Ambientales (DRNA)
Estado Libre Asociado de Puerto Rico

Prepared by

Center for Watershed Protection
8390 Main St, 2nd Floor
Ellicott City, MD 21043 USA
www.cwp.org

Main issues

1. Upland erosion in the coffee growing regions;
2. Reservoir sedimentation and transport;
3. In-stream channel erosion;
4. Loss of Historic Guánica Lagoon;
5. Legacy contaminants;
6. Sewage treatment.

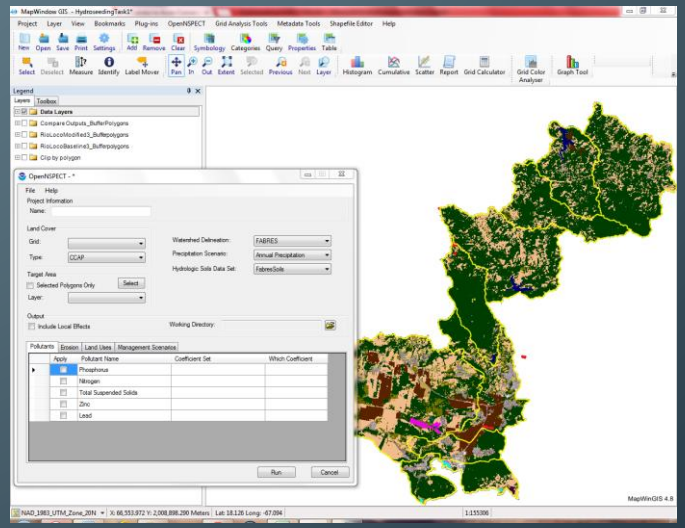
Recommendations

#3 Hydroseeding of areas with bare soil associated with roads or clearing of home sites in high elevation erodible soil areas	Sediment loss of highly erodible clay is filling reservoirs and remaining in suspension and reaching Guánica Bay	$20-30k	USFWS, USDA, Ag Consultants	High elevation areas in Loco and Lucchetti

Monitoring of Hydroseeding Sites in Rio Loco Watershed

- Use OpenNSPECT to determine the effectiveness of the hydroseeding practice reducing runoff and pollutant loadings at the practice and downstream of the practice.

- According to OpenNSPECT changing an area from bare land to grassland reduces sediment loadings and runoff at the practice by approximately 83% and 73% respectively.



data.nodc.noaa.gov/coris/library/NOAA/CRCP/other/other_crcp_publications/Hydroseeding_Report_FigueroaSanchez_Final_Jan_19_15.pdf

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Measuring the effectiveness of an erosion control practice for watershed management: The case of Hydroseeding

Photo by Protectores de Cuenca Inc.

Yasiel A. Figueroa Sánchez

SUNIA Intern

NOAA Restoration Center

NOAA Coastal Services Center

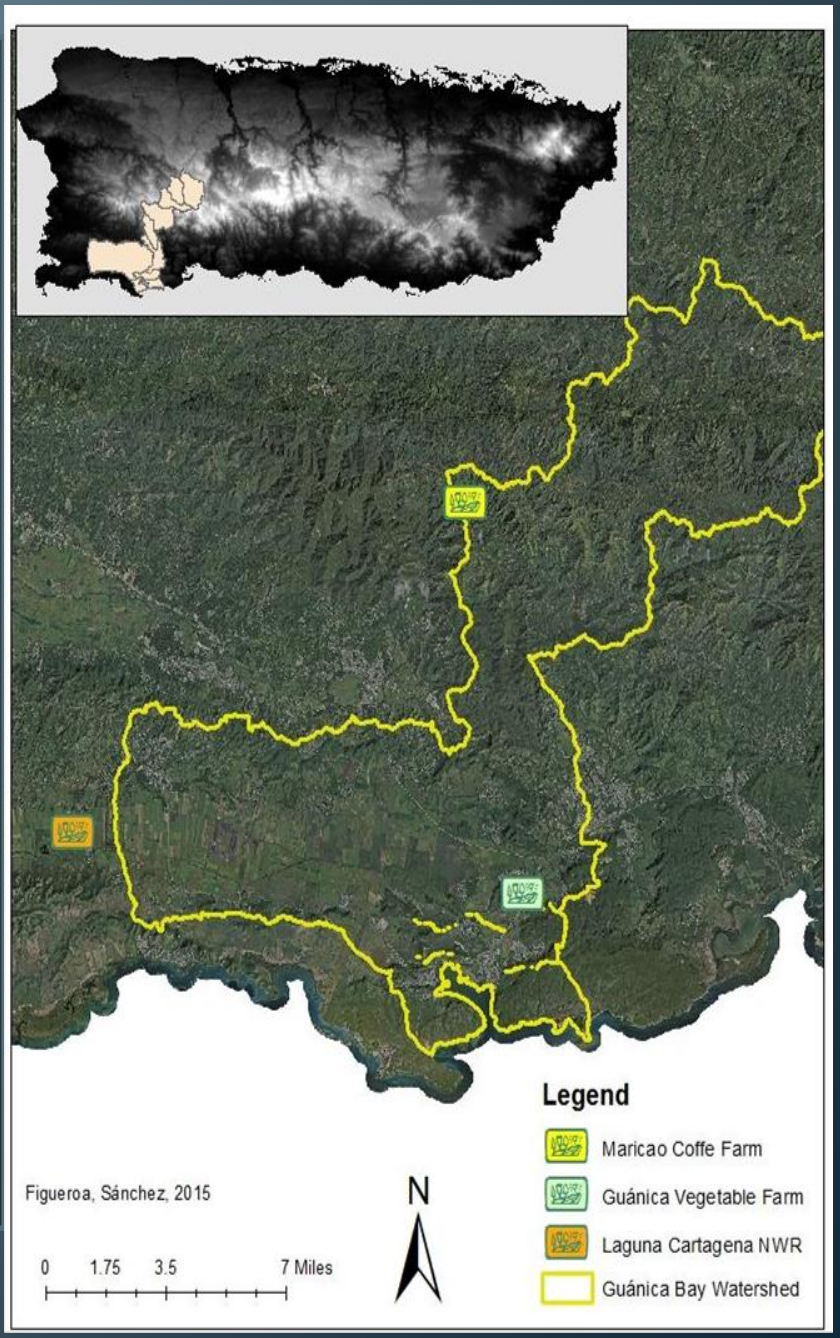
Rio Loco Watershed Partnership Initiative

Monitoring of habitat restoration projects developed by past SUNIA students (2012 & 2013)

Key results:

Survival Percentages:
-Maricao: 29% survival
-Guánica: 28% survival
-Laguna Cartagena: 70% survival

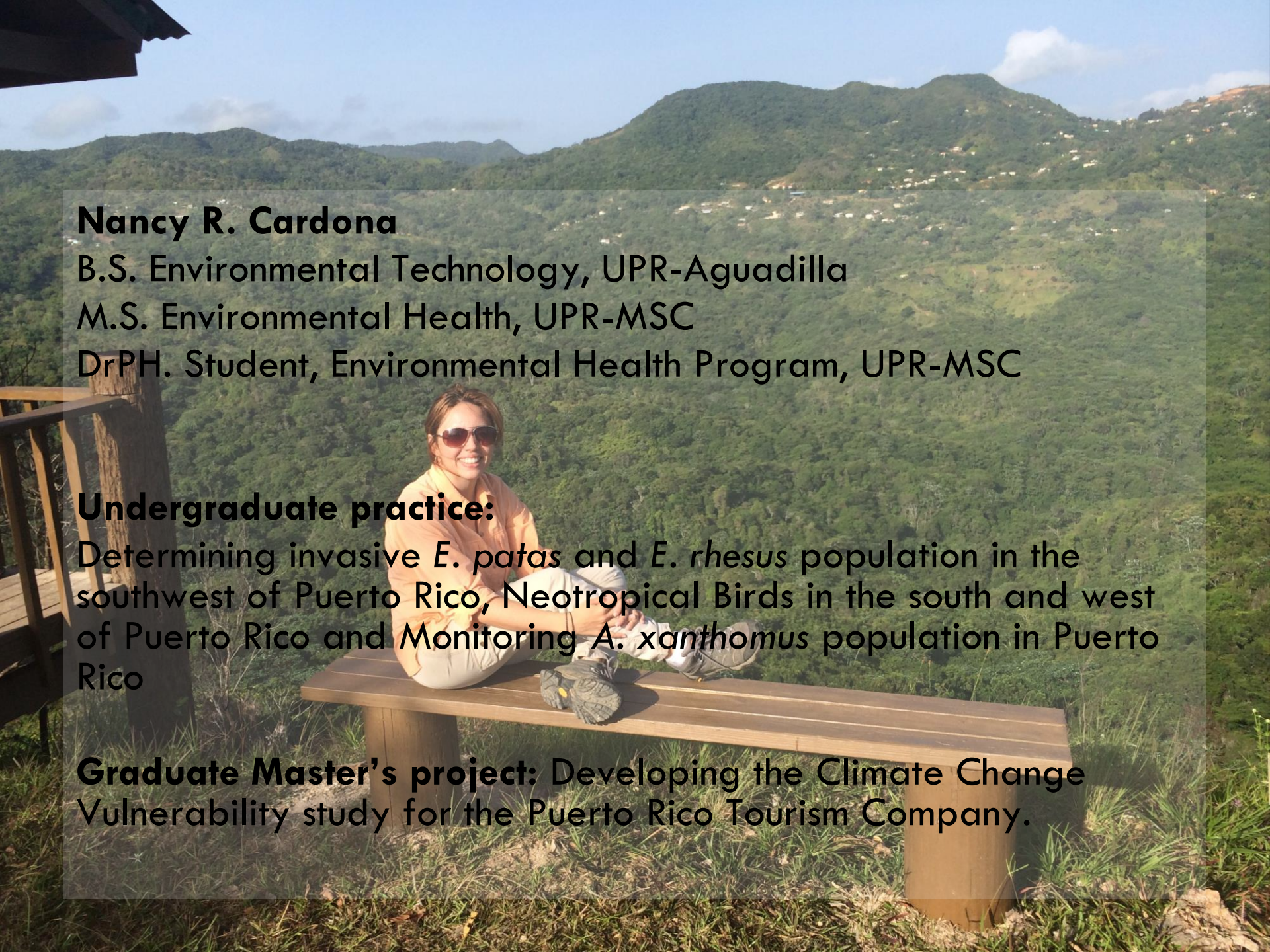
Planting under a canopy is effective
Need of effective maintenance and irrigation strategies



Assist the Cabo Rojo National Wildlife Refuge Staff on greenhouse activities and coordinate tree's pickup with farmers under NRCS conservation contract

1,245 trees delivered in 2 months

Photo by N. Cardona

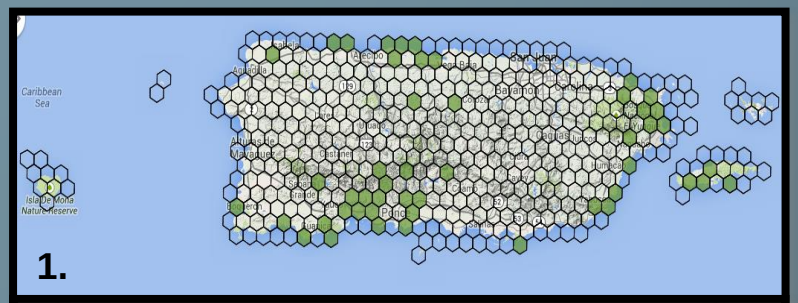


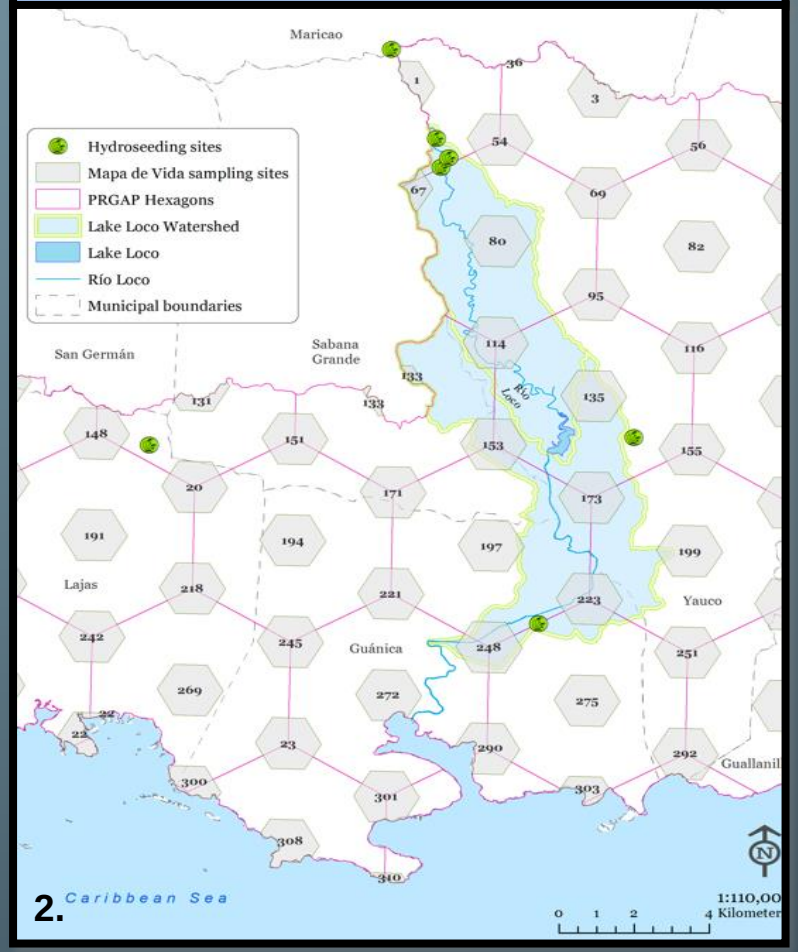
Nancy R. Cardona
B.S. Environmental Technology, UPR-Aguadilla
M.S. Environmental Health, UPR-MSC
DrPH. Student, Environmental Health Program, UPR-MSC

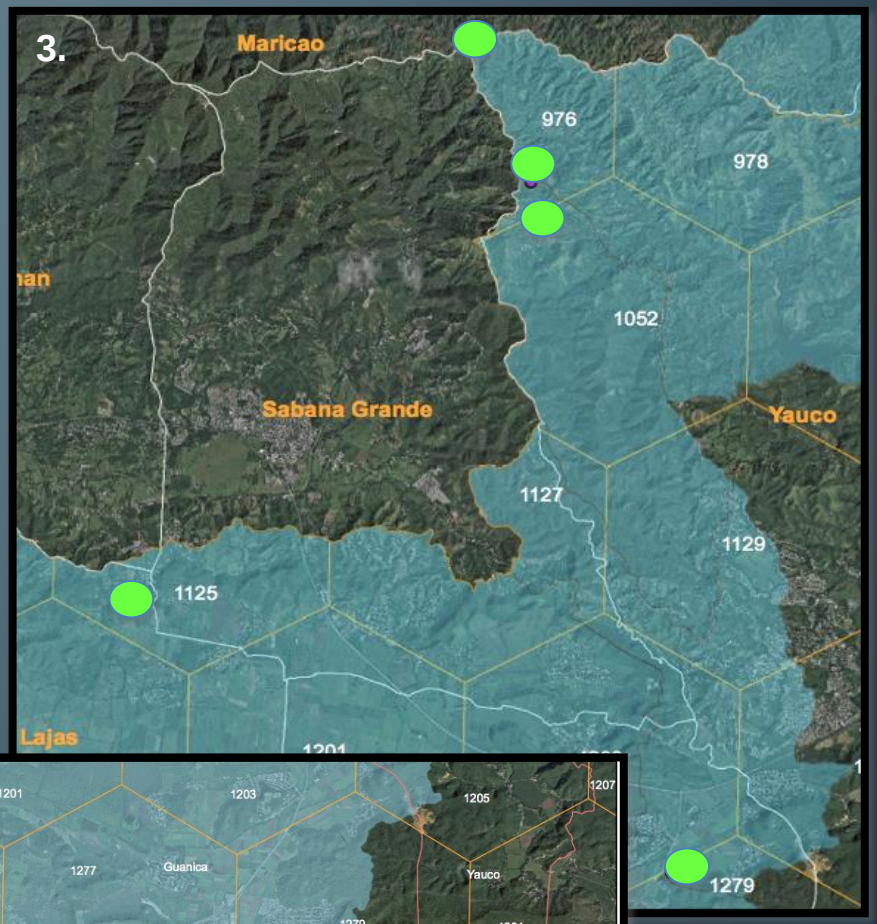
Undergraduate practice:
Determining invasive *E. patas* and *E. rhesus* population in the southwest of Puerto Rico, Neotropical Birds in the south and west of Puerto Rico and Monitoring *A. xanthomus* population in Puerto Rico

Graduate Master's project: Developing the Climate Change Vulnerability study for the Puerto Rico Tourism Company.

Map of Life Project

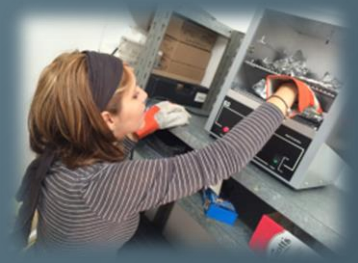






Sandy Beaches Protocol-Guánica Bay

Evaluation of site → Select sample site → Description of area → Establish transects → Take coordinates, elevation and slope → Measure beach profile → Wave study → Water quality tests → Sediment samples → Datasheet revision



Sandy Beaches Protocol-Guánica Bay

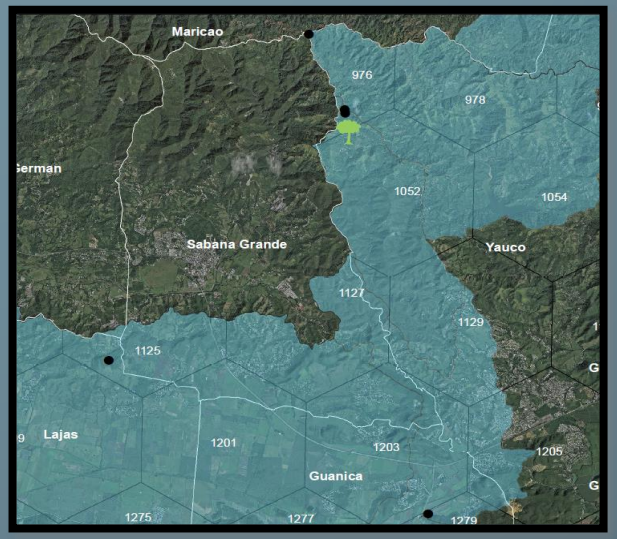
Biophysical Parameters

Point	Tempetature(° C)	DO (mg/L)	pH	Turbidity(JTU)	Salinity (PSU)
Playa Santa	29.8	8.6	8.0	32.0	27.9
Jaboncillo	30.8	6.5	7.7	41.7	23.0
Tamarindo	-	-	8.6	26.0	22.0
Los Congres	26.6	8.7	8.2	60.0	28.0
Bahia Ballena	28.5	8.9	8.1	37.6	29.2
Atalladora	29.0	9.6	8.1	20.4	28.7

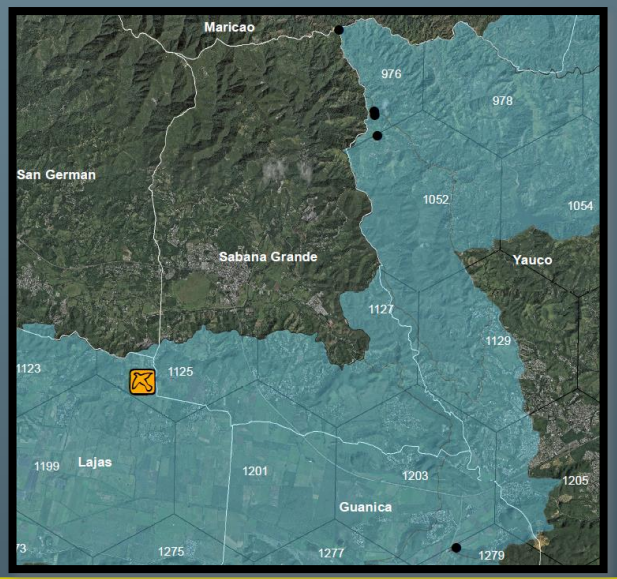
Sediment Sample Analysis- Average amount of sand sizes in grams (g)

Zone	2mm	1mm	0.5mm	0.35mm	<0.35mm
Dry	20%	-	20%	-	60%
Wet	-	-	20%	-	80%
Submerged	-	20%	20%	-	60%

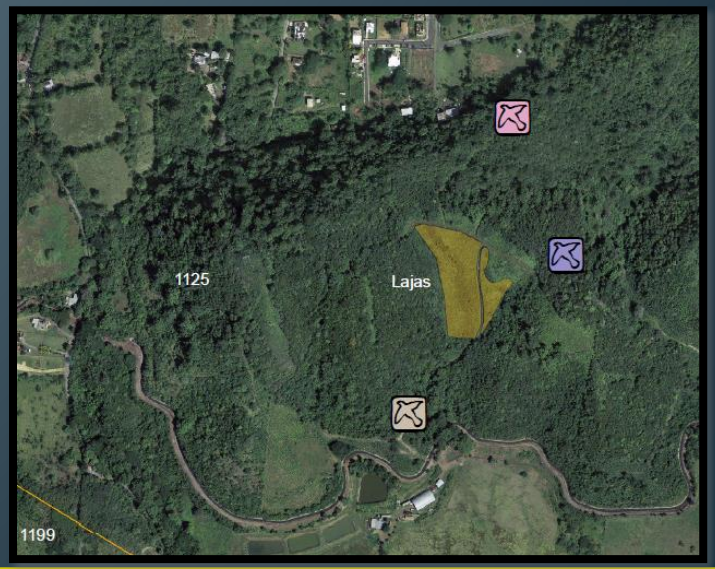
Biodiversity Assessment
Vegetation Protocol & Bird Protocol



Hacienda Maria Bonita, Yauco, Puerto Rico, Hexagon 976

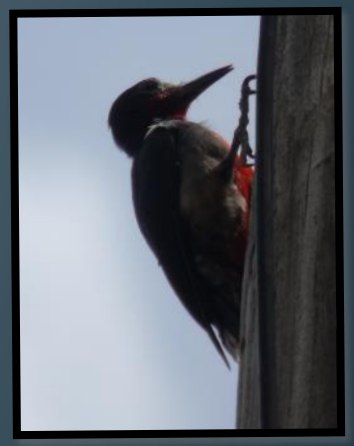


Hacienda La Paz, Lajas, Puerto Rico, Hexagon 1279



Vegetation and Bird Protocols

Results of Bird Protocols	
Total species observed	**39**
Endemic	10
Native	26
Introduced	3



Results of Vegetation Protocols	
Total Species observed	**11**
Native	4
Introduced	7

Conclusions

- **Vegetation:**
  - Upper and lower watershed had agriculture and introduced species.
  - Upper watershed location had more diversity of species.
- **Birds:**
  - More diversity of birds was found at the lower watershed.
  - Out of 16 endemic species, 10 were identified along the watershed.

Recommendations

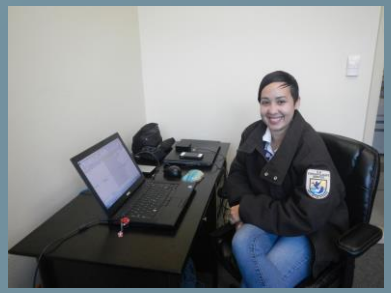
- Return to sampling sites and verify changes in biodiversity.
- Include new beach protocol sites.
- Highly recommend next year student carry out EPA wadeable stream protocol to understand physical and chemical characteristics of Río Loco of Guánica.
- Create a Biodiversity index to include more seasons.

Alexandra Galindo

B.S. Biology, UPRM
M.S. Candidate Biology, UPRM

Thesis project: A morphological and molecular contribution on benthic ostracods with emphasis on the populations of Caribbean mesophotic reefs

Will be participating and presenting a poster of the thesis research at the annual ASLO Aquatic Sciences meeting in Granada, Spain.



SUNIA projects assigned

Mentors

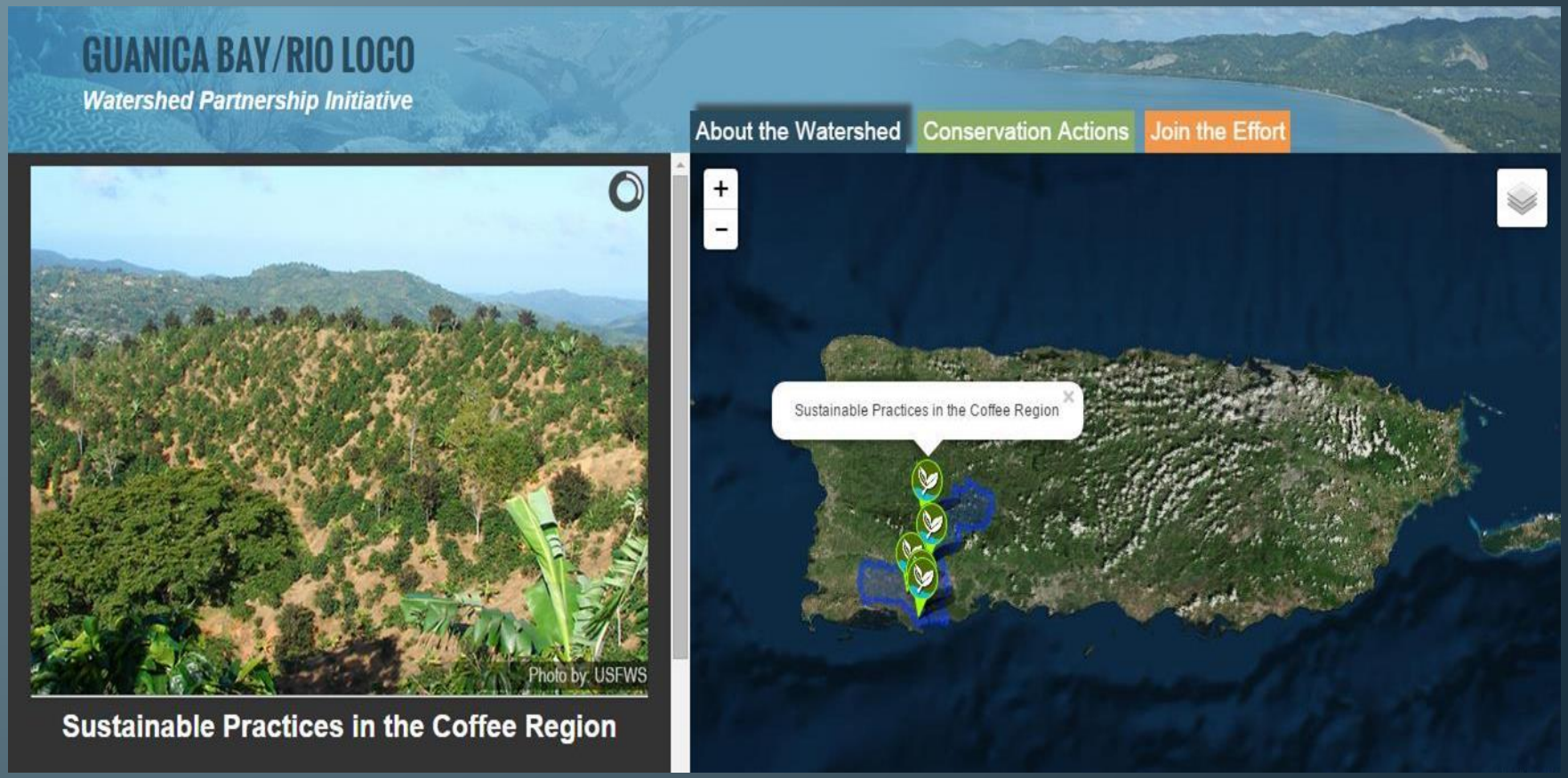
Patricia Bradley (EPA), Dr. Deborah Santavy (EPA) and Ana Román (FWS)

Projects assigned

- Develop a Coral Reef Species' Sensitivity Database (CRSSD) for the Caribbean Area.

- Update spreadsheet regarding partners' contribution within the Guánica Bay/Río Loco Watershed Initiative.

Partners' contribution within the Guánica Bay/Río Loco Watershed Initiative



Story Map Link: http://www.fws.gov/southeast/rioloco/

Workshops for Educators

Are provided free of charge to teachers and community and environmental leaders.

para la Naturaleza

Summer Camps

para la Naturaleza

Collaboration with Partners Sunia Interns

para la Naturaleza

Acknowledgements

Ana Román
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