

# **Learning Expedition in Belize - Environmental Studies, Landscape Restoration, Watershed Management, Indigenous Cultures, Rainforest Ethnobotany, March 6-15th, 2020**

This Learning Expedition Program is designed for:

- Undergraduate and Graduate Students looking to receive Academic Credit in Environmental Studies, Sustainable Management of Natural Resources based on Indigenous Practices, human-plant relationships, with a special emphasis on the Adaptive Management of Rainforests, Medicinal Ethnobotany, Conservation of Tropical Plants and Sustainable Permaculture Practices. This course should be interesting to students studying in the field of the environmental sciences, biology, social sciences, ethnography, indigenous studies and similar fields.

## **Overview and Course Description**

During this Program, students will get full academic and experiential immersion in Environmental Studies while traveling in Belize. Organized in cooperation with the non-profit TropicForest and the Wagiya Foundation of Belize, the program offers English-taught course in the format of a 10-day module with 45 contact hours (3 academic credits) in Environmental Studies. The course is taught by Ph. D. and M. Sc. level professors and reforestation experts, along with traditional Belize doctors, to allow for a full-range comparative learning perspective. Extensive field study trips to Punta Gorda, Seine Bight village and local farms are included to provide students with immersive hands-on experiences.

## **Itinerary**

### **Days 1-4**

We land in Guatemala and travel to Punta Gorda, Belize, where we will stay for the next three days. First day – opening ceremony, introductions, meeting local teachers and community. The schedule and topics for these days:

- ❖ Lectures:
  - Environmental issues, natural and anthropogenic disturbances specific to sea shores and broad-leaf tropical forests of Belize and sustainable solutions
  - Conservation of tropical plants and forests, medicinal plants, ethnobotany
  - Sustainable permaculture practices, native plant propagation, restoration and garden design
  - The importance of preservation and application of traditional knowledge as part of the sustainable solutions. The students will learn the basics of questionnaire development and participatory rural appraisal techniques
- ❖ Interviews of local Garifuna people; collecting and recording of data about indigenous medicinal plants and trees, planting protocols, traditional adaptive management of endangered species and low external input conservation methods.

- ❖ Developing an action plan for sustainable management of tropical plants and degraded sea shores of Belize through implementation of the data collected
- ❖ Field work in the community garden of Wagiya Foundation based on the action plan developed.

Extracurricular activities –

- ❖ Drum lesson and rattle making at the Garifuna Drum School
- ❖ Snorkeling and Beach time
- ❖ Visiting local farmers and gardeners
- ❖ Mindfulness Circles, reflecting on plant-human connections
- ❖ Local music performances

### **Days 5-7**

We move to Seine Bight.

- ❖ Field work. Restoration of the degraded shores, planting mangroves and other shore-repairing species
- ❖ Collaborating with local youth, hands-on projects together
- ❖ Meeting with town mayor, town council and youth to develop a plan for ecologically and economically sustainable future of Seine Bight addressing the community needs - waste management, fishing, tourism

Extracurricular activities –

- ❖ Participating in local festivals and talent shows
- ❖ Creative projects with local kids

### **Days 8-10**

Expedition up Columbia River to Maya Mountain Research Farm, San Pedro Columbia, Toledo District. We will stay at the cabins of Maya Mountain Research Farm

- ❖ Permaculture lessons and ecological tree and plant data collection techniques( transects, biodiversity, tree health and growth, degradation assessment)
- ❖ Learning about sustainable solutions that have been implemented by the Maya Mountain Research Farm, researching and planning replicability and further development
- ❖ Collaborations with local and international students, exchanging skillset
- ❖ Presentations, Journals, Final Reports

### **Why Belize**

Home to intact broad-leaf tropical forests stretching from the Maya Mountains to coastal mangroves and the Belize Barrier Reef, Belize is a vital link within the Mesoamerican Biological Corridor. Threats to Belize include disappearance of indigenous knowledge, unsustainable agricultural practices, deforestation, excessive burning, deterioration of sea shores, riverbanks

and coral reefs. In response, we are teaching sustainable alternatives to the above issues and offering hands-on practicums that provide educational value and skillset to the program participants, and benefit the environment and small farmers of indigenous Garifuna communities of Belize.

### **What Students Will Study**

The program allows students to explore topics in disciplines of Environmental Studies, Sustainable Management of Natural Resources based on Indigenous Practices, human-plant relationships, with a special emphasis on the Adaptive Management of Rainforests, Medicinal Ethnobotany, Conservation of Tropical Plants and Sustainable Permaculture Practices.

The course is about using ecological principles to manage ecosystems. Even though humans depend on ecosystem goods and services, e.g. for food, nutrient cycling and clean water, the human record of ecosystem management is mixed at best. Although small-scale human disturbances show ecosystems to be resistant and resilient, severe large-scale disturbances have resulted in ecosystem degradation. Students will learn how to best manage and restore the biotic and abiotic factors that makeup and interact over time to form complex systems. Though ecosystems are to varying degrees intricate, dynamic and unique, they can be managed using fundamental principles. These principles have wide application in the environmental sciences and for natural resource managers. Students will learn about the importance of adaptive management techniques, especially in the light of climate change and industrial developments which stress ecosystems.

Using the natural environment as a classroom, students will be immersed in discussion of the different tropical ecosystems while they track along the Columbia river from the shore mangroves and into the dense tropical forest of the Maya Mountains. They will learn to identify degraded ecosystems and compare them to pristine environments while discussing practical solutions for restoration of each particular environment. Students will learn the interconnectedness of animal, plant and human communities. The students will also learn from the indigenous Garifuna populations about their traditional sustainable practices. Students will learn to apply methods of Participatory rural data collection in order to gather and record indigenous knowledge about the plants and animal conservation.

The course is organized as a 10-day module. Faculty will take students on extended course-related trips around Belize. The courses are taught at a first-year graduate level but are appropriate for undergraduate students. Tutorial support is available.

### **Contact Hours**

45 hours (to qualify for up to 3 academic credits)

### **Language of Instruction**

English

### **Prerequisites**

Introductory university level courses in natural resource management, environmental sciences, enjoy the outdoors and be moderately fit for hikes and farm work.

## **Method of Presentation**

- Lectures
- Discussions
- Student presentations
- Group work
- Field studies

## **Required Work and Form of Assessment**

- Class participation – 10%
- Student Presentations – 30%
- Course-Related Trip Reports – 30%
- Final Exam – 30%

## **Learning Outcomes**

By the end of the course students will be able to:

- Identify and describe ecosystem components, functional roles and integration
- Explain the dynamics of ecosystem processes e.g. succession, nutrient cycling, realize that ongoing ecosystem change requires adaptive management techniques
- Explain why the best management practices are usually a balance between environmental, economic and social values
- Recognize the need for a multi-disciplinary approach to ecosystem management
- Observe, record and integrate indigenous practices of Garifuna people of Belize using participatory research methods
- Compare and contrast ecosystem management practices in Belize with those in the US
- Give a presentation (15 min.) based on a scientific article
- Present and defend a position in a debate
- Show the ability to work and contribute towards team goals
- Develop as an independent thinker

## **Required Reading**

- The Flowering Amazon, Margaret Mee Paintings

- Tropical Marine Ecology: A Field Guide to Belize
- Tropical Forests by Bernard A. Marcus <https://www.amazon.com/Tropical-Forests-Bartletts-Ecosystems-Biomes/dp/076375434X>
- IUFRO (International Union of Forest Research Organizations). 2015. Forest, trees and landscapes for food security and nutrition. A global assessment report. In: (eds. Vira B., C. Wildburger and S. Mansourian). International Union of Forest Research Organizations Vienna. <https://www.iufro.org/fileadmin/material/publications/iufro-series/ws33/ws33.pdf>
- [www.fao.org/3/W3241E/w3241e09.htm?fbclid=IwAR326dia2x74f6fEjtLpPw\\_PulP0SHHASRcVVRdXQnZjlz7ab9\\_wncdiBjg](http://www.fao.org/3/W3241E/w3241e09.htm?fbclid=IwAR326dia2x74f6fEjtLpPw_PulP0SHHASRcVVRdXQnZjlz7ab9_wncdiBjg)

### **Scholarships and Financial Considerations**

Students can apply for scholarships directly through Antinanco Earth Arts School. Awards are made based on need and/or merit and typically range from \$200 to \$500. Students may begin the scholarship application process while your application is under review. Scholarship applications are accepted on a rolling basis and will continue to be reviewed while funds remain available.

One \$500 Scholarship will be awarded to a student of Garifuna descent

### **Academic Credit**

The Program offers 45 contact hours that can be applied to qualify for up to 3 academic credits with students' schools. Antinanco Earth Arts School welcomes the opportunity to work cooperatively with schools seeking to grant academic credit for study abroad and internships. Students are encouraged to initiate arrangements for credit with their colleges and universities. Antinanco Earth Arts School does not grant academic credit.

### **Additional Highlights**

- Collaborations with local medicine people about practices of ancient earth-based Garifuna tradition
- Visit to the Maya Mountain Research Institute to learn permaculture and tap into the rhythms of the jungle
- Local music performances
- Hiking the hill to the Eladio Pop food forest and cacao groves
- Drum lessons and rattle making at Warasa Garifuna School
- Exploring Columbia River by boat and visiting Maya villages
- Exploring local culture, towns and beaches
- Insights on native plant propagation, restoration and garden design
- Familiarity with cultural elements of food and food processing, shelter, clothing