

# From Temperate to Tropical Islands: Learning Biology through the Partners in the Parks Program

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This year we organized and/or participated in two excursions with students sponsored by a unique partnership between the National Collegiate Honors Council and the National Parks Service called the Partners in the Parks. This partnership, eight years strong, was founded by Joan Digby, Honors Director at LIU Post. This program is interdisciplinary in nature, and weaves the history of place with knowledge about biological ecosystems of the areas. The two excursions we led were to the Boston Harbor Islands National Recreation Area and Boston National Historic Park and the U.S. Virgin Islands National Park. Activities included camping in tents or staying in rustic cabins, cooking meals, learning about the ecology and geology of the areas, and the history of Boston and the U.S. Virgin Islands.



Biology became especially relevant in the history of the U.S. Virgin Islands when pointing out that the decline of slavery and indentured servants was directly proportional to the decline of soil quality due to sugar cane growth on plantations. In Boston, students learned how the harbor became cleaner after an installation of a sewage treatment plant and how Spectacle Island was transformed from a dumpsite to a beautifully landscaped island complete with hiking trails after landfill restoration. Students also cleared invasive species from Peddocks Island under the direction of park rangers. On St. John in the U.S. Virgin Islands, students snorkeled and learned about coral reef, mangrove, and sea grass bed ecology, and about tropical plants indigenous to the area while hiking. The two experiential learning excursions were an effective way to infuse the curriculum with hands-on learning about biological concepts.

- Peddocks Island
- Invasive plant clearing—students learned about how plants such as Japanese Knotweed cover and choke other plants, and how they spread through underground rhizomes.

- Spectacle island was initially a waste dump site, and a glue factory (made from dead horses). Landfill from the Big Dig was used to build up two mounds with a narrow isthmus that connects them. On top of the mounds one can see the Deer Island sewage treatment plant. Students learned about how these mechanisms improved water quality through biology.



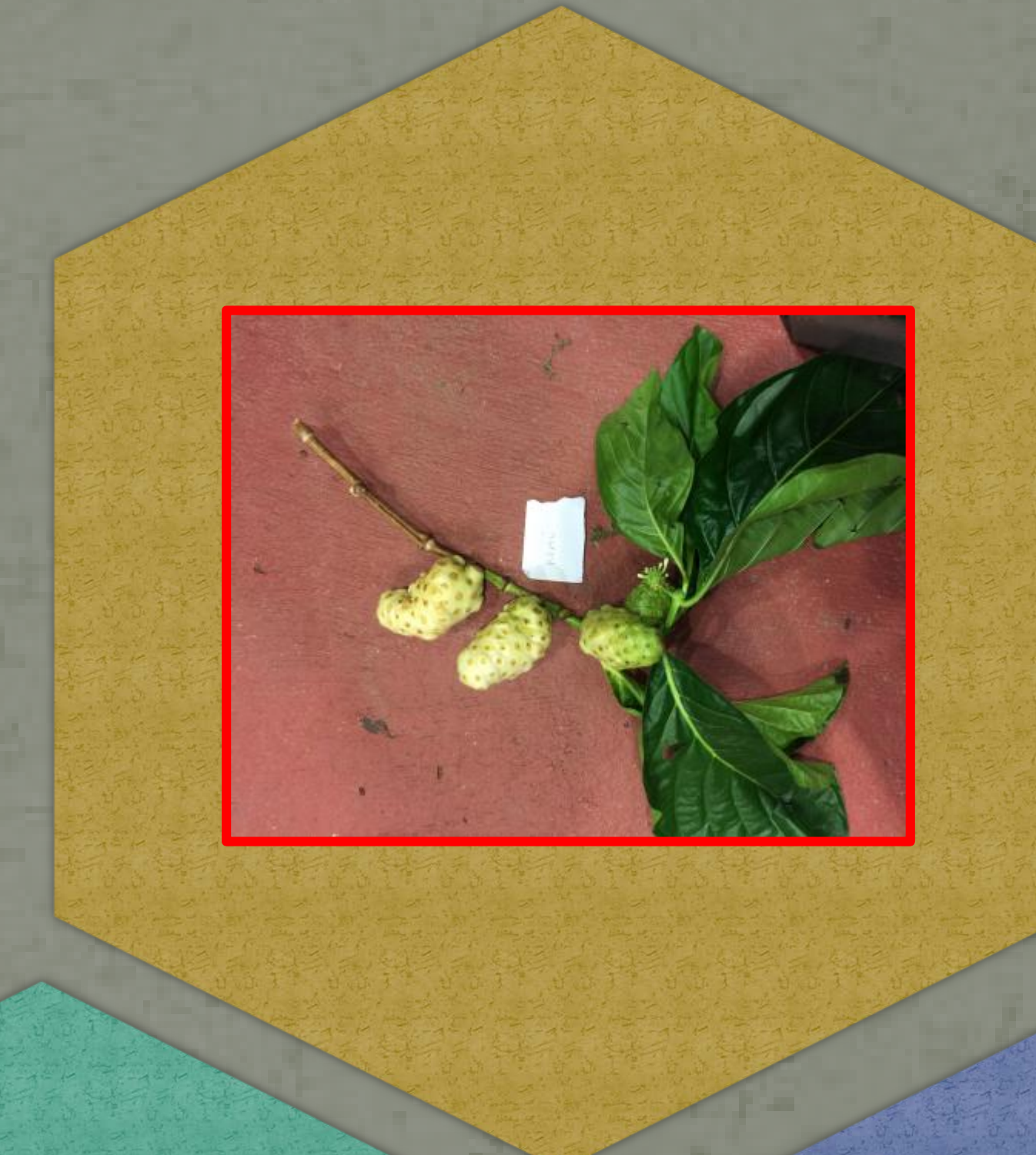
Peddocks shoreline—students learn about the importance of the littoral zone, and grasses that hold sand in place and provide habitat for crabs, and foraging for birds.

There are 34 Boston Harbor Islands, (BHI) which house many plant and bird species (note wild turkeys in upper right hand-corner---most students had never seen those. One intertidal study (Bell 2005) revealed 95 species of invertebrates, 70 marine algae, and 15 vascular plants. They learned about how the water was so dirty in the 1970's because of the dumping of waste and lack of sewage treatment plants. "Love that Dirty Water" by the Standells was a big song hit that accentuated the problem. Students learned about disturbed habitat such as fields, and the importance of the Boston Harbor Islands both as barriers that protect the mainland, and for fish and invertebrates such as crabs and clams. Also, the whales have returned to the Harbor (as was evident in the Boston ABE whale watching trip!). The New England Aquarium is also great for students to visit.

References  
Roman, C. T., Jacobson, B., & Wiggin, J. (2005). Boston Harbor Islands National Park Area: natural resources overview. *Northeastern Naturalist*, 12(3), 3-12.

Rynk, R. (2003). Compost remediates a landfill and grows a national park. *Biocycle*, 44(12), 34-38.

The Virgin Islands Environmental Resource Station (VIERS) provides a similar rustic experience, although we do get the greater protection of cabins. Three-minute showers with water heated by solar panels are the norm. We focused on dry, tropical forest with its surprising cacti, and hiked up to some wetter forest that could support large species like kapok trees. We snorkeled in bays and in mangroves—always on the lookout for turtles. We were occasionally rewarded with a viewing of these incredible creatures with their astounding breath-holding capacity. The mangroves were in very shallow water and revealed an abundance of oysters, sponges, and tunicates on their tree roots. We also learned the differences between white, red, and black mangroves. We saw juvenile angel, puffer, butterfly and schoolmaster fish among the roots, sea pearls, mermaid wine glass algae and barracuda and sea stars in the turtle grass beds. Ital, a native St. Johnian, picks fresh specimens for his presentations on medicinal plants. (KN took a few leaf fragments back to the lab for DNA barcoding.)



Dry tropical island with pipe organ cactus



What am I?



Acknowledgements

Thanks to all the students who participated in these courses with us!!

