Planting a TREE: Exposing high school students to ecological research with reptiles

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Abstract

There is a serious dearth of female and minority representation in the sciences. To help remedy this problem, the U.S. Fish and Wildlife Service (FWS) is committed to developing the next generation of conservation and community leaders (Youth in the Great Outdoors Annual Report 2011) through a variety of programs and through empowering partnerships. One approach is a partnership developed between Iowa State University (ISU) and the FWS through the Turtle Camp Research and Education in Ecology (TREE) program. The fundamental goal of TREE is to immerse traditionally-underrepresented high school and undergraduate students in an atmosphere of professional ecological research. Foreseeable outcomes of this immersion program are enhanced student interest in ecological careers, and improved appreciation and understanding of the importance of ecological research. An additional broad goal of TREE is to educate student participants about the importance of conservation, and to give them the tools and confidence to share this knowledge with their peers, families and educators. The specific objectives of TREE are to guide students in performing ecological research, introduce students to key ecological concepts through reading and discussion, provide students an opportunity to deliver their new-found knowledge to the public, and expose the students to techniques and practices in mentoring. We seeded the program with high school students from Iowa and Illinois, along with undergraduate and graduate students, comprising an economically and racially diverse group. Participants converged at a field site (Turtle Camp) located in northwest Illinois on the FWS Upper Mississippi River National Wildlife and Fish Refuge and the Army Corps of Engineers Thomson Causeway Recreation Area during the summers of 2007-2011. At Turtle Camp, students worked toward four main goals: research experience, education, local outreach, and mentoring. To date, more than 35 high school, 25 undergraduate, 10 graduate students, and 2 post-doctoral researchers have participated in the program which has provided meaningful experiences for all participants. Anonymous surveys from high school participants has shown that TREE has provided an excellent environment for advancing interest in, and knowledge of, science and for influencing career plans of the participants. Several high school alums have gone on to pursue science-related degrees at local universities. This program is a model of the importance of near-peer mentoring and reflects the commitment of the FWS to engage Youth in the Great Outdoors.

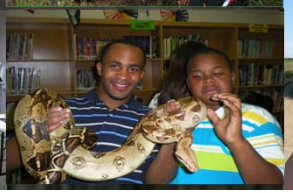
Reptiles

Diversity at field site

- 8 species of turtles
- 7 species of snakes
- 1 species of lizard

Outreach Properties

- Generally passive
- Ease of capture
- Human familiarity
- Abundance



Program Goals

Research

- All students participated in painted turtle research
- Teams of students also worked on the following research projects:
  1. Species richness and abundance surveys of the slough using turtle traps
  2. Painted turtle nest depredation and predator behavior
  3. Demography surveys of snakes and turtles in the sand prairie
  4. Radio-tracking ornate box turtles and hog-nosed snakes

Education

- Students read and discussed essays by famous ecologists and biologists

Outreach

- Students used turtles and docile snakes to relate to all ages: OUTREACH & EDUCATION

Mentoring

- Research teams consisted of 1graduate student, 1 undergraduate, and 2-3 high school students

Outcomes

- Students completed a short survey about their experiences at Turtle Camp (Fig. 1)

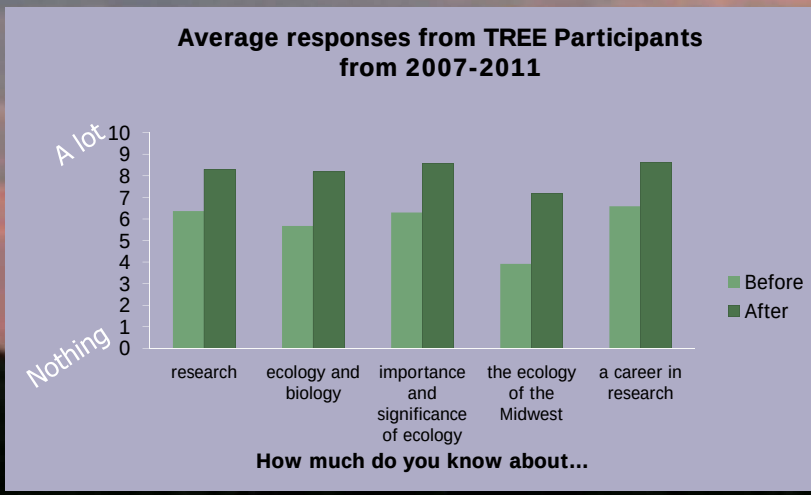


Figure 1. Results from the survey that participants were given at the beginning and end of Turtle Camp from the years 2007-2011.

- Students provided specific comments that affirm the success of the program, for example:
  - "I learned so much in these two weeks and had an amazing time! Looking into a career doing field biology"
  - "This experience made me think more deeply about what I want to become."

Acknowledgments:

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