

Air Potato Eradication Project:

A Teaching Model for the Management of Exotic Species

by Joshua Platt

Introduction

Today's high school students are tomorrow's voters, policy makers, environmental caretakers and concerned citizens. Faced with this certainty, it is of the utmost importance to instill in these individuals a sense of environmental stewardship and an awareness of current environmental issues. An educated society is perhaps the most important ally for our environment in the future. As exotic introductions are one of the most serious threats to our environment and to our native flora and fauna, it is imperative that students fully understand this issue. Traditional teaching methods, even with the addition of technology and other current techniques, still fall short of providing students with insight into the actual impact of these species. The **Air Potato Eradication Project** was designed to take students a step further and immerse them in a simulation of actual environmental management of an exotic invader. Students became the environmental managers as they learned about the problem of exotic species and accepted responsibility for the removal of species from an area of degraded cypress dome on campus.

Our study site was located at New Dimensions High School in Kissimmee, FL, across the street from a large Nature Conservancy preserve and adjacent to a large tract of unspoiled habitat. The cypress dome was in very poor condition, but it had value both as a wetland and as a buffer zone to the larger land area. As an edge habitat, it was vulnerable to exotic pest plant invaders and was accessible to students. The proximity to the school, the condition of the area and its potential value all contributed to making the site an excellent choice for our removal and restoration project.

The dominant invader in the area was air potato (*Dioscorea bulbifera*), which blanketed the understory and covered the trunk of 80% of the trees. This fast-grow-



ing and highly fecund vine had literally taken over the area, reducing the diversity of species and adversely affecting the condition of the other species present. Because of its ability to spread rapidly, this concentration of *D. bulbifera* in close proximity to the Nature Conservancy land presented a potentially important problem for them. The goal of the project was to remove this threat and restore the cypress dome to a more pristine state.

Project overview

From the Fall of 2002 through the Spring of 2003, 125 students in Environmental Science and Biology classes at New Dimensions High School participated in the **Air Potato Eradication Project**. The project consisted of three phases designed to expose students to all aspects of the exotic species management process. Students would follow the progression of tasks from identification and targeting of species, to land surveys, to design and implementation of a management plan and, finally, restoration of an area with native vegetation. Students began to learn about the problem of exotic species with introductory readings, activities, videos and a research project on exotic animal species. In the second phase, students were assigned an area within the study site, and were challenged to develop

and implement a viable management plan for removing *D. bulbifera* that could be used on a broader scale in the future. In the final phase, students were given the opportunity to participate in planning restoration work and planting native species in previously overgrown areas. The culmination of the entire project was an Exotic Species Day at school where students gave presentations on the results of their research and their management efforts.

The management simulation

As with any real management situation, students had to deal with choice of techniques, working within a fixed budget and working with a fixed amount of time and labor available. In pairs, students were assigned 3 x 3 meter plots within the study area that they would restore. Students were able to choose from all of the techniques available to land managers, from herbicide application, to physical removal, to various combinations of the two and anything they could dream up from their studies of the literature. Every method and tool was given a fixed cost and labor value designed to simulate their true benefits as seen by an environmental manager. A successful plan not only would eliminate the *D. bulbifera*, but also would minimize both the amount of money spent and the effort required. Thus, students managed their plots under the same constraints that a land manager would, and their results could be applied on a larger scale.

Results

Results were quantified using two separate indices. First the project was measured for its success as an educational experience. Student attitudes, as judged by attendance for project work and surveys of opinions, indicated that it was a favorable experience and increased student interest in science. Standardized test results were used as well since approximately half of the

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school population participated in the project. Our school was in the top three in Osceola County for Science FCAT scores and our overall school grade increased from a D to a C, indicating academic gains from this and many other projects at the school.

Removal of *D. bulbifera* was a success, though the project must continue in upcoming years if the species is to be com-

pletely eradicated. Overall, 237 pounds of tubers were removed from the site, with a maximum of 78 pounds in two hours one day. In addition, vines were stripped from every tree and removed from 85% of the ground. All plots showed less than 10% regrowth after eight weeks.

Partnerships

The entire project was made possible by grants and support from various organizations. In its early stages the project was supported by a grant from the Bingham Environmental Education Foundation (BEEF) at The University of Florida. Further funding was received from the Osceola Foundation for Education Grants for Great Ideas Program. And finally, funding of the current and most successful phase of the project was provided by a Florida Exotic Pest Plant Council Education and Outreach Grant.

New Dimensions High School has now formed a mutually beneficial partnership with The Nature Conservancy, working at their preserve in Poinciana, FL. Our student volunteers assist in their constant fight against exotic species on the property,

from removal of exotics, to seed collection from native species, and planting of native species. Over the course of 3 volunteer days last year, students contributed almost 400 volunteer hours. This partnership continues at the school, and has expanded into a second program promoting wetlands education and remediation.

Conclusions

This project was a tremendous success. By immersing students in the actual experience of managing an exotic invader, they learned first hand just how daunting a task it can be. This experience will leave a lasting memory of how devastating these species are to the environment. Perhaps most important, these individuals are now empowered by what they have accomplished to help the environment. They can see how a small contribution on their part can have a lasting effect on their world. In addition, many students who once lacked motivation in school now have found a renewed excitement for science.

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