

## **HOW *EXOTIC* DOES AN EXOTIC INFORMATION AND EDUCATION INITIATIVE ABOUT THE IMPACT OF NON-INDIGENOUS SPECIES NEED TO BE?**

William F. Hammond  
5456 Parker Drive  
Ft. Myers, FL 33919

Providing individuals with effective information, programs, and educational materials about “exotics” or non-indigenous species is generally not a very effective way to get people to act to control, eliminate, and restore damage from exotic species to native ecosystems. Information tends to inform the motivated and educated. Educational research and marketing research agree that information is not enough to motivate most people to action. The key ingredients to engaging people to act are (1) to develop a sensitivity (deep feelings for) to the environment and to the specific problem; (2) to develop knowledge about the environment (ecosystems), the specific problem (invasive exotics), and how people have successfully controlled or eliminated them; (3) to develop a set of skills related to how to take effective action; (4) to develop a sense of “ownership” of the problem (a personal recognition that he/she or their property is being impacted by invasive exotics); (5) to provide an opportunity to act (available resources, time, and support are present); and (6) to nurture a locus of control that is internalized. Research in education, learning, and cognitive science affirms that not all people perceive or process external stimuli in the same way. These unique differences among people may be associated with characteristics labeled as learning styles, brain dominance, cognitive processing, and personality traits. The point being that a single approach to engaging a community of people addresses a diverse audience and is not as likely to succeed as one that is designed and produced in format to reach the community’s diverse members or to segment the community into subgroups. The key remains to create a supportive environment in which each person believes he/she can make a difference because he/she internally believes he/she is prepared to act with a reasonable chance for success.

This perspective sets up a dilemma for agencies, such as the USDA Forest Service, the South Florida Water Management District, or any other federal, state, or local agency attempting to enlist citizens and businesses to help address the problem of invasive exotic species. Just telling people there is a problem and even explaining the problem is not enough to make a significant difference on the resource—even though the “telling” is an important element of the larger process that must occur if an effective program is to be established. Research information on this topic is of great importance if it is timely, credible, and in a translated format that the educated public can understand. The research information becomes a critical cornerstone for educators and motivated members of the community to begin to build a solid “exotics” education program or shorter term campaign upon that is grounded in the best science available. Workshops, forums, presentations at garden councils, native plant conventions, horticultural business gatherings, and land management agency and organizational meetings, provide effective access into larger arenas of impact on program implementation.

Once quality information is available in a public form, the strategy for growing the information investment into a full program to address non-indigenous species may take a variety of patterns, depending upon the context of the community in which it is to be applied. The most effective programs I have observed have been those tailor-made to their specific community rather than generic national or state programs designed in a one-size-fits-all approach. The key resources that shape the variables of program implementation are:

- *resources* - people, budget, materials;
- *time* - amount of time it takes to enlist people and to actually implement and complete projects;
- *energy* - applied to the project in terms of leadership, people, money, and other resources;
- *need* - the degree of perceived impact in the local area on individuals, and public and private land;

and finally what I call. . .

- *focus* - a clear plan of action that is strategically subdivided into attainable objectives and projects leading to the specific goal(s) of the group.

Factors that relate to these program implementation variables are the degree to which “exotics” are viewed as a problem or as an issue in the context that the program is to be implemented. In the environment/education field, we define problems as those situations where there is a discrepancy between what we think conditions should be and what they actually are, based upon available data and information. An issue is defined as a recognized problem upon which people of good intention differ on what they believe the appropriate solution should be. In effect, problems are data based and issues are values based. Thus, additional information from informed sources is usually all that it takes to solve a problem, while an issue is far more complex to address and ultimately find a solution for. Just think about it. People will often tell you non-indigenous species or “exotics” are: aliens, beautiful, a disaster, dancers, invaders, tropical islands, scary, water hogs, costly, useful, natural, wildlife threatening, under/over regulated, a cancer on native communities, part of the pattern of nature, no big thing! There are even individuals who will argue all of these points at a public meeting. How does one proceed?

The following discussion and recommendations grow from more than thirty-seven years, both within formal education systems and from the nonformal sector of “slow learning,” watching, and participating in public information, and action programs that attempt to enlist citizens to take action on significant public projects. There are a number of key strategies I highly recommend for consideration.

1. The best guiding strategy I know of is the one that is described as the “Monday Group Commandments” used by the Lee County School System (in the 11th and 12th grade environment education seminar classes for the past 26 years). The Monday Group Guidelines have proven very effective at supporting student and adult implementation of action-research programs.

They are:

Take only positive positions—do not just tell people what you do not like or do not want to tell them—tell them what you wish—what you want to see as conditions of the solution;

Do your homework—become an expert. Read at least three papers and interview three experts on the topic and you will know more than most people;

Avoid stereotyping—stereotypes limit possibilities rather than encourage positive engagement;

Analyze the “force field”—seek out supporters, doubters, and opposition, and get to know firsthand what their ideas, thoughts, and perspectives are (they may have a more thoughtful view than your own or, if you differ, you will understand why). This will better inform your position and strategy;

If at first you don’t succeed—RECYCLE! The second cycle starts at a much more informed position than the first initiative did—each cycle is built upon the learning reflections of the previous work—and informs it;

Persistence is the key to success—most problems and issues did not develop overnight and usually cannot be solved quickly. Patience, focus, and persistence are the key to success on a significant project.

2. Build a coalition of partners...think diversity! A meaningful partnership is generally strengthened when all participants have a key common interest at stake. Collaboration is the key to optimizing very limited resources experienced by most public agencies and private organizations today. If the USDA Forest Service were to partner with the National Science Teachers Association for distribution of materials and information, the reach of the agency would grow exponentially. The same is true of partnerships with the National Council of State Garden Clubs or groups at the local level. My experience is the more diverse the partnership, the more powerful the potential benefits.
3. Celebrate rather than lament and whine! People respond far more positively to celebration by tending to feel more empowered than they do to predictions and lament of pending disaster from invading exotics which demonstrations often leads to a sense of dread, futility, and hopelessness. The focus of celebration needs to be on the wonders of the native community and its wonderful local/bioregional adaptations, and integrated benefits to the community which is formed from the sensitive balance of local species in a community. The idea that exotics are simply “great” non-indigenous species not adapted to local habitats is a positive way to characterize them. The emphasis should be that these species did not evolve in the local ecological community and, are

thus likely to stimulate change in local conditions for years, and maybe even centuries, before integrating into the local ecosystem, depending on how invasive or benign their specific characteristics express themselves in your local area.

4. Establish projects that clearly succeed and demonstrate how to successfully control or eradicate invasive species. That implies keeping the scale of specific project goals and objectives broken down into manageable project elements so that local people can experience success in completing and seeing a finished product in a reasonable time period. Our local motto, when working with citizens or students clearing areas of exotics by working in ten x ten meter square quadrats or pixels, is work one meter at a time!
5. Document your projects with before- and after-video, photos and slides, then catalog and place them into a safe but accessible archive (library, nature center, or government agency file). It is always amazing how many times the documentation materials will be called into use, sometimes many years later. Take advantage of your documentation resources to inform people in your community of your success and what needs to be done, and how it can best be accomplished. This kind of information tends to encourage locus of control.
6. Celebrate results and invite the media! Spreading the word of success is a critical part of making the management of exotics an integral part of your local culture. The news media usually finds citizens out clearing or controlling exotics good human interests, community improvement projects filled with good photo opportunities. Be prepared with a spokesperson who can succinctly explain the project in front of a live TV camera in the field.
7. Build your next element upon your previous success by always trying to engage new participants to mix with the experienced to address a new area or aspect of the problem on which you are working. Margaret Mead once told us how important and powerful it is when you mix different generations of people on the same project. Experience has affirmed her wisdom. As the learning curve zooms, so does the richness of the experience and pride of accomplishment when people of different ages are voluntarily brought together to work on addressing a common problem.
8. Never, never, never GIVE UP! (Winston Churchill). There are so many examples of successful projects to manage, control, eliminate, and restore the impacts of exotic species management projects, things are really encouraging. The difficulty of living in a semi-tropical region is the continual pressure of new species being introduced, many of which have invasive characteristics and potential, creating a never-ending vigil and effort relative to managing exotics.

One of my earliest encounters with *Melaleuca* trees was with students surveying a newly acquired local nature center site infested with the trees at about a 30% level. Working with a hundred students, we cleared fifteen acres in two days with very little regeneration. The regeneration that did occur was easily controlled over the next year until no trees existed in the work area. We found that even upper elementary students could pull young trees that were up to about a meter and a half tall during the dry season. On this size tree, the tap root is almost as deep as the tree is tall. When the trees reach two to six inches in diameter, the tap root tends to degenerate and typically three or four lateral roots become dominant. We found that high school students with a pointed shovel could pop the lateral roots and push or "ride" the tree down. If they then completely covered the remaining in-

ground roots, preventing light access, roots would not sprout. While this is a slow process, it works and it involves students directly in the solution in a way that they get full satisfaction from their sweat while seeing visible results. Students have worked with girdling *Casuarina* on seaturtle nesting beaches, removing Brazilian Pepper (*Shinus*), Air Potato, and Downy Rose Myrtle and many other plants in lesser numbers. They have also worked with reducing populations of non-native animals, especially reptiles and amphibians. Most student field trips into locations with exotics stop and spend time “pulling exotics” and hanging their roots high to dry—the message is this is a never-ending task that takes commitment to succeed.

I am a firm believer in minimal use of chemical treatment for exotics and only as a last resort for critical management. Integrated management techniques are the key to long-term success and public acceptance. A great citizen example of this type of effort is the comprehensive program of the Sanibel Captiva Conservation Foundation’s extensive effort to eliminate invasive exotic plants through a control strategy that uses flooding into management impoundments, burning, and both hand and mechanical removal techniques with topical spraying of some stumps where they cannot reasonably be removed. Over the past thirty years, they have changed public attitudes from being very reluctant and opposed to any removal of shade trees or other “pretty” exotics to a very strict adherence to the city’s local comprehensive plan that protects native vegetation and requires removal of exotics on the island.

“Pepper Busters” are a volunteer group from the Sanibel Captiva Conservation Foundation that consults with local landowners on how to get rid of exotics and also volunteers to “bust” the Brazilian Pepper infestation on the island, which greatly changes the island’s character and impacts wildlife in significant ways.

The local Calusa Nature Center provides the Native Plant Society free meeting space provided they conduct a series of exotic plant removal days during the year—bartering is a nice and effective strategy to engage people.

In California, I have seen middle school students clear a creek of bullfrogs that were displacing native frogs in months when the public agencies had written the prospect off.

There is no end to the stories of success and engagement that can be told about children and adults, in institutional settings and in nonformal settings, making a major impact on the invasive exotics in their community. The message continues to be simple—it happens one plant or animal at a time and one meter at a time secured!

The South Florida Water Management District has one of the most extensive invasive exotic plant control and eradication programs in scope and intensity of funding of any regional agency in the world. They sponsor an extensive aquatic weed control program, using mechanical, chemical, and biological controls on thousands of miles of canals, lake shores, and wetland areas. Their *Melaleuca* removal project covers almost all of the Everglades. They cooperate with federal and other state agencies for exotic removal throughout their extensive landholdings in all or part of 16 counties in South Florida. This is a massive effort and requires a great deal of public education and information to sustain public support for the effort and for the very significant funding this program requires.

This is a time when the public is growing more conscious and concerned with the application of chemicals and their impacts on the environment, themselves, and family; while they also gain more concern about the impact of control burns on air quality and public health. This clearly means professional managers of lands containing invasive exotic species face even more difficult management challenges.

In South Florida, just as in so many other areas of the nation and planet, we see local native communities being converted into lake and golf course frontage, residential development, creating stressed habitats in the surrounding areas that are ripe for exotic invasions. The usual fix is to go to the cheapest chemical methods to control the problem and bring the waters to aquarium clarity devoid of the aquarium life. The challenge and task will accelerate and grow rather than decline in the future as exotics travel via modern technology, transported by commuters and goods traversing the “global village.”

As we examine the elements of an effective information and education program about acting to minimize the impact of exotic or non-indigenous species, the basic lesson is to follow Nature’s lead. The most effective programs are not the exotic-glitzzy media campaigns and slick materials produced by public relations firms that are served up in a blitz campaign that raises public awareness for a time—although they may serve in a useful narrow niche. The successful programs are those built upon sound research and information that take the time to integrate themselves into their community structure. They, in fact, become a part of the community’s accepted culture. This takes time, but gets consistent results, as opposed to quick impact programs that do not establish long-term maintenance, sustainability, and acceptance. A successful program has a greater chance of success if it avoids or minimizes the “exotic” and follows the longer, more stable, path of natural models.

**The fundamental rule is Nature Knows Best—and always bats last!**