

Conservation In Practice

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WORKING WITH the Horticultural INDUSTRY

TO LIMIT INVASIVE SPECIES INTRODUCTIONS



EVERY WEEKEND, MILLIONS OF AMERICANS ESCAPE FROM THEIR DESKS to enjoy one of the most popular hobbies: gardening. Fresh air and flowers, a little exercise, and a lot of time spent with green and growing things—is this a peaceful picture or a cause for conservation concern? Every year, the horticulture/nursery industry imports thousands of new species and cultivars of trees, shrubs, and other plants. Over the years, some of these invariably become invasive pests in some parts of the U.S.

What do you do when one person's conservation problem is another person's livelihood? To many conservation professionals, dealing with non-native invasive plants is an eradication issue. Few are working directly at the source of the problem. Working at the source requires getting the attention and cooperation of a multibillion dollar industry whose lifeblood is continued importation of new plants. Dr. Sarah Reichard of the University of Washington's Center for Urban Horticulture is doing just that. Over the past thirteen years, she has worked with the horticultural industry not only to create awareness but also to change the way in which the nursery business operates. Her approach is a model for working positively with other industries on sensitive conservation issues.

What do you do when one person's conservation problem is another person's livelihood?

by KATHLEEN SNOW

Business responds to customer pressure far more quickly than it does to demands from outside groups or to scientific arguments.

Further Reading:

Reichard, S.H., and C.W. Hamilton. 1997. Predicting invasions of woody plants introduced into North America. *Conservation Biology* 11(1):193-203.

Reichard, S.H., and P. White. 2001. Horticulture as a pathway for invasive plant introduction in the United States. *Bioscience* 51:103-113.

Kathleen Snow

is Editor-at-Large for *Conservation Biology In Practice*

The Scope of the Problem

Gardeners on the lookout for the newest and best plants on the block drive the \$11.2 billion horticulture/floriculture industry. In this highly competitive business, new plant introductions are key, and growers and breeders constantly need to seek out new cultivars, varieties, and species.

Mail-order catalogs from specialty growers such as Forest Farm in Oregon or Heronswood in Washington will startle the uninitiated. These are not pretty color flyers of a dozen pages or so. They are densely printed botanic catalogs resembling a miniature New York City phone book, listing several thousand species of trees, shrubs, woody plants, grasses, and perennials.

Many of these species are innocuous. But the behavior of plenty of newcomers is untested and potentially problematic in the varied climates of North America. In fact, whereas plants have been introduced for centuries for a variety of purposes, 85 percent of the non-native woody species that have naturalized themselves in this country—everything from eucalyptus to English ivy—were originally introduced for the landscape trade. Consider, for example, the estimate (1) that if ten percent of the world's 260,000 vascular plants are good colonizers, then at least 26,000 weedy species exist. At present, only about 4,000 of these have been distributed around the world, leaving the potential for some 22,000 additional weeds to be introduced.

And for all practical purposes, we have left our door wide open. The U.S. Department of Agriculture has little control over new plant introductions. Importation regulations focus primarily on known agricultural pests—mostly insects and vertebrates. Although the Department screens a few plants and seeds arriving from abroad, they take a “dirty list” approach and concentrate on species already known to be a problem.

While collecting seeds in South America for the Washington State Arboretum in the late 1980s, Reichard wondered if any of the seeds she was bringing home could be a potential

problem. “I thought I’d look up how to evaluate them when I got home,” she remembers. But when she returned to the university, she discovered that no such screening process was available. In fact, some botanic authorities said it couldn’t be done.

Developing Usable Tools

Limiting plant introductions to known non-invaders would be ideal from a conservation viewpoint. But from an industry perspective, it would be crippling. Holding plants for extensive study would essentially halt new introductions to the nursery trade. Without legal regulations, this approach is currently infeasible as well as very expensive. The industry could take voluntary actions, but only if they knew what actions to take. Even with the best of intentions, no one in the horticulture industry could be expected to screen out potential problem plants when even the scientists can not predict what plants might become invasive years or decades after introduction.

Reichard decided to begin by developing just such a predictive tool. To be useful, the tool needed to meet two criteria. First, it had to be reasonably accurate in its ability to separate potential invaders from benign species. Second, it needed to be easy to use and practical for both business people and scientists. Any information on the plants had to be readily available either in the mainstream literature or by direct observation of the plant.

Reichard analyzed the traits of a number of woody species that had been introduced into the country long enough in the past to demonstrate invasive behavior. She used statistical analyses to identify the characteristics that best correlated with invasive potential and using these variables, she built a model that could predict which species would fall into invasive or non-invasive groups. After developing, testing, and refining a number of versions, she produced a simplified decision tree that could accurately identify potentially invasive woody species 85 percent of the time.

The model categorizes species in one of three ways: 1) Admit (low potential for invasiveness); 2) Do not admit (very high potential for invasiveness); and 3) Further analysis needed (intermediate



potential for invasiveness).

While good at predicting invasiveness, the decision tree is not as accurate at identifying the non-invaders, with 46 percent of non-invasive species being admitted and 36 percent being flagged for further analysis. In this sense, the model tends to err on the side of conservation.

The key characteristic of this tool is that it uses information that is relatively easy to obtain from books or web sites. The user can provide the rest of the data by making simple observations of plant growth characteristics, such as whether the species reproduces vegetatively from runners or stolons or reaches reproductive maturity quickly. The time investment required for the screening process is less onerous than regulation and does not require extensive research.

Getting the Attention of Industry

“When I first contacted the American Nurserymen’s Association about the idea of doing risk assessment on new plant introductions in 1993, they nearly hung up on me” recalls Reichard. “In 1997, they called me back and said ‘the nursery industry is part of the problem—what can we do?’” Several things happened during the intervening period that commanded the attention of the industry.

First, to underscore the seriousness of the problem, the costs of invasive species, and the availability of a usable screening process, Reichard began writing and publishing articles that would be seen by people in the horticultural industry.

“I didn’t just write my thesis, I wrote for the trade magazines and industry publications such as *Hortus West*, *Public Garden*, and *American Nurseryman*.” The horticultural industry includes a wide range of plant-related businesses and organizations: nurseries, breeders, growers, botanical gardens, parks, and a plethora of garden societies and organizations—all of which are involved at some point in bringing non-native plants into this country and introducing them to the gardening public. Individual gardeners also are an integral part of this cycle, both as importers and consumers and as participants in seed and plant exchanges. Getting the attention of this diverse industry wasn’t easy.



Second, the industry itself fell victim to imported invasive pests and diseases. Current threats such as the

Asian longhorn beetle, which was first detected in the U.S. in 1996, can potentially devastate large numbers of broadleaf trees, affecting both ornamental and commercial timber species. Plants species, too, can create problems; for example the parasitic Witchweed, first introduced in 1957, attacks several grasses. As a result, there is now an industry working group on the invasive plant issue, and their board has endorsed a policy statement on invasives and supports risk assessment.

When Preaching to the Choir Works

Strategically, it often makes sense to start an initiative with natural allies rather than natural adversaries. In this case, botanical gardens and their representative professional group, the American Botanical Gardens Association, were logical choices. Because botanical gardens usually have a conservation mission and use unusual plants for education and research, they are more likely to be aware of invasive species issues than are others in the industry. So, this is where Reichard invested her time and energy.

Keys to Working with Industries on Conservation Issues

Understand the industry and what their needs are. What different segments of the industry exist? What are their histories? What customer demands do they have to meet to stay in business?

Provide the tools to help them accomplish your objectives. What science is available, and how can it be made more accessible or applicable to a business setting?

Look for sympathetic ears in a hostile setting. What segments of the industry might be most inclined to hear your message? Work with them first to develop your credibility.

Get the customer to become an advocate for the issue. Business will always respond to customers faster than to you.

Educate people. Show people why the issue matters to them and clarify what is expected of them as part of the solution.

Develop good answers for common arguments and questions—you will be asked them again and again. Listen to business’ concerns.

In 1999, this strategy paid off. Reichard spoke at a symposium on plant collecting in Chicago. There she talked with Dan Hinkley, then owner of the prestigious Heronswood Nursery in Washington. Hinkley was not only an avid plant collector but also a unique public figure in the nursery industry. Although small, his nursery is renowned for its exotic and unusual plant list. Hinkley also has been featured in the *New York Times*, *Martha Stewart Living* and other publications that reach a wide public audience. While their meeting was serendipitous, it was Reichard's persistence in speaking at such events that gave her the opportunity to take advantage of this connection. Ultimately, Hinkley decided to try the screening process on Heronswood's extensive woody plant list.

He ended up pulling 15 woody plants from his catalog for further evaluation and revising the mail-order catalog to clearly identify 180 other plants that had potential for invasive behavior in some parts of the country—leaving the final choice up to the consumer. Hinkley later decided to restrict sales to Hawaii and Florida—two hotspots for invasive species problems in the U.S. This unprecedented action aroused controversy, both within the industry and among consumers. As Hinkley acknowledges, “We have a few customers that do congratulate us for taking the stance we have but an equal number that are perplexed and [made] angry by it.”

“The screening process is not perfect, but it has the advantage of being a voluntary action that business can take,” Reichard points out. Reichard, like others in the conservation community, would prefer stronger regulation. In the meantime, however, she pushes the voluntary screening process as being a less rigid alternative for business as well as an interim step toward conservation.

Using Consumer Power

On the other end of the business equation is the consumer. Business responds to customer pressure far more quickly than it does to demands from outside groups or to scientific arguments. In her outreach campaign, Reichard targeted retail customers, gardeners, and those who influence gardeners' choices, such as garden writers, editors, and landscape architects.

She developed a survey to find out whether gardeners were aware of the invasive species problem and their preferences for remedies, ranging from informative labeling to removal of potentially invasive plants from the market. Ninety-two percent of respondents indicated that they would not buy plants if they knew they were invasive, and most supported labeling. This emphasizes the need for education.

One of Reichard's key strategies for reaching many purchasers of plants is to work with specific groups to develop codes of conduct and ethics regarding invasive species. Organized professional groups such as landscape architects and landscape contractors are good targets for this type of approach. “It's important to give people an idea of what is expected of them,” says Reichard. And codes of conduct are intended to do just that within professional organizations.

Each discussion, article, or presentation adds to the growing picture of a potentially workable system. From here, Reichard plans to expand and improve her screening model to include herbaceous as well as woody species. Dan Hinkley would like to see more attention paid to developing specific regional standards and lists of invasive species because many plants are only problematic in certain parts of the country. He also would like to see “regional trialing sites with realistic evaluation protocols that would significantly reduce potential risk without shutting down the introduction of new plants to the marketplace—the catalyst for growth in our industry.”

The key to progress on invasive introductions is to maintain and encourage these industry/consumer/conservation dialogs, even when they are acrimonious. “You have to not hide from them,” says Reichard. “The issue has raised a lot of emotion and sometimes [conservationists use] an accusatory tone toward the industry, ‘You are the bad guys,’ but they are just doing what they have done in the past. You need to step back, understand their history, and ask yourself how you would feel if you were vilified for just doing business as you always have.”

References

1. Rappaport, E. 1991. Tropical vs. temperate weeds: A glance into the present and future. In Ramakrishnan P.S., ed. *Ecology of biological invasions in the tropics*. New Delhi: International Scientific Publications

Websites for Further Information:

www.invasivespecies.gov

This site provided by the National Invasive Species Council, includes extensive information, reports, and links to other organizations, databases and resources. Users can download the National Management Plan for Invasive species.

www.aphis.usda.gov

Provided by the Safeguarding Animal and Plant Health Inspection Service, this site offers information on existing importation regulations.

<http://plants.usda.gov>

This National Plants Database provides standardized information (searchable by scientific or common name) on the distribution, growth, habitat, etc., of plants of the U.S. and its territories; it also provides links to state and federal noxious weed lists.