

As *Wildland Weeds* enters its second year of publication, readers will notice fewer Florida-focused articles. I hope this trend continues. When Florida EPPC decided to publish a magazine, the Board of Directors was overwhelmingly supportive of "crossing state lines." We all recognize that invasive plants are not unique to any state, or region, or country – they are a global problem. Today, there are four North American EPPC chapters – California, Tennessee, Pacific Northwest and Florida. More chapters are sure to form as recognition of the problems caused by exotic pest plants continues to grow.

The choice of articles for the first volume was based on availability. Soliciting articles for a new magazine is not easy – the editorial board resorted to harassing the people we *knew* for material! The authors who contributed to early issues were, by and far, Florida EPPC members, and did so to help the magazine get off the ground. *Wildland Weeds* is based in Florida, but we hope to make this less obvious in future issues. Please feel free to contact us with articles from your region – alerting others to your weed problems will help prevent budding infestations elsewhere in the world!
— Amy Ferriter

Public Unawareness OF BIOLOGICAL INVASIONS BY PLANTS

By: Peter Alpert Department of Biology University of Massachusetts Amherst, MA 01003-5810
and
Thomas F. Colton Biological Science Learning Center University of Chicago
924 E 57 Street Chicago, IL 60637, USA

Public cooperation is crucial to controlling wildland weeds, for the simple reason that people are responsible for spreading them. Unlike any other major environmental problem, a biological invasion can be the handiwork of one, ordinary citizen. A vacationer may return from abroad with seeds of non-native plants on his clothes. A home gardener experimenting with attractive exotics may plant the beachhead for an invasion to follow. The infamous spread purple loosestrife (*Lythrum salicaria*) through wetlands of the northeast and midwest is just one example of an ornamental turned ugly (Stein and Flack, 1996). There may be no other case in which an unwitting, personal act can cause so much ecological harm.

But before people can be expected to be more circumspect in their relations with botanical non-natives, people must believe that biological invasions by plants are a serious problem. Is the public aware of biological invasions by plants? We posed this question through a survey of visitors

to the weekly public tours at the University of California Bodega Marine Laboratory in northern California during August 1996. The answer was, essentially, no.

Survey methods

We selected our sample by inviting all those aged 13 or older who came for the lab tours on four successive weeks to complete a 20-minute questionnaire. Of the 206 visitors who did, 28% were of high-school age (13-17), 9% were 18-30 years old, and 61% were over 30 (2% did not indicate their age). Virtually all of those over 22 were high school graduates (99%) and had completed some college (93%); most were college graduates (60%).

The questionnaire asked respondents to: (1) list three weeds; (2) describe a typical weed, the places weeds grow, and the factors that cause them to spread; (3) cite problems that weeds cause them personally and that weeds cause for society or the environment; (4) say whether there should be more efforts to control weeds; (5) score their



Weeds enjoyed a mixed reputation for good and evil.

Only 43% of those surveyed identified water hyacinth as non-native to California, even though it is the object of an active eradication project. Photo by Mike Bodle, SFWMD.

Table 1. Answers to the question, "Please list three weeds."

	Percent of total responses	Number of different kinds listed
Non-natives:		
Lawn weeds	38	5
Serious problem weeds	18	8
Other	11	17
Total	67	30
Natives	5	17
Answers that could refer to natives or to non-natives	5	5
Answers that contain the word "weed"	19	18
Unknown or vague answers	5	12

level of interest in learning more about various aspects of weeds; and (6) note any good things about weeds. To find out how much people know about which species are native and which are not, we also asked them where five lo-

cally common plants were from. To test public knowledge of some concepts related to biological invasion, we asked people if they were familiar with the terms "biological invasion," "native species," and "biodiversity."

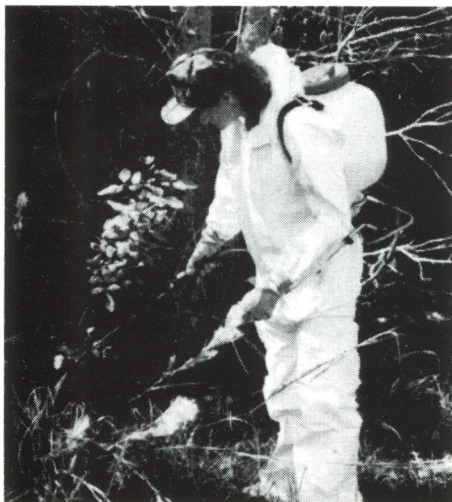
Results

Nearly everyone (90%) was able to list one or more weeds. The weed most often mentioned was "dandelion" (53% of respondents), followed by "crabgrass" (27%), "thistle" (19%), "foxtail" (13%), and "yellow star thistle" (11%). The category of weeds most mentioned was lawn weeds (Table 1), followed by literal weeds, plants whose common name includes the word "weed," and problem weeds, plants that public agencies target for control. The eight problem weeds named were "yellow star thistle," "purple star thistle," "russian thistle," "johnson grass," "nutgrass," "hydrilla," "iceplant," "pampas grass," and "beach grass."

Many people (42%) characterized a typical weed as growing fast, spreading quickly, or persisting. Smaller numbers of people thought of weeds as prickly (14%), green (11%), ugly (10%), or growing where they are not wanted (16%). Despite the fact that most of the weeds that they named were non-natives (Table 1), almost no one (2%) characterized weeds as being non-native. When asked where weeds typically grow, 73% of respondents said in gardens, yards, or lawns; another 21% said in fields. Only 35% wrote that people spread weeds; most (57%) blamed spread on the wind.

Weeds enjoyed a mixed reputation for good and evil. Most people (77%) said that there were some good things about weeds: they control erosion (36%), are attractive (35%), provide food (26%) and habitat (19%) for animals, and provide medicine and food for humans (12%). At the same time, most people said that weeds cause them problems (73%) and cause problems for society or the environment (71%).

For adults (age > 18), the major social and environmental problem that weeds cause was ill human health (Table 2), especially allergies. Young people were more likely to be concerned about effects on native species. Fewer than 20% of the respondents in any age or education group noted that weeds cause problems for agriculture or natural resources. Accordingly, people were divided on the question of whether there should be more efforts to control weeds: 41% said yes,



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30% said no, and 29% had no opinion.

People seemed to be largely unaware that local problem weeds were non-natives. Only 43%, 38%, and 15%, respectively, identified "water hyacinth," "Scotch broom," and "beach grass" as non-native to California, even though each is the object of active eradication in the area. On the other hand, people were aware of the origins of some common species. Nearly everyone (92%) pegged "redwood" as native to California, and most (74%) identified "eucalyptus" as non-native.

Public knowledge of different concepts related to biological invasion ranged from good to sparse. About two-thirds of our respondents showed that they understood the term "native species." Fewer than one-third understood the terms "biological invasion" or "biodiversity." College education made a large difference in some but not all cases. Adults with a college degree were twice as likely (58%) to understand the term "biological invasion" as were adults without a degree (26%), but college-educated adults were only slightly more likely (43% versus 30%) to understand the term "biodiversity."

Conclusions

Does the public perceive biological invasions by plants as a serious problem? Our survey of public visitors to a biological laboratory in northern California indicates not. People were familiar with the term "weed" and tended to identify non-native, invasive species as weeds. However, people generally thought of weeds as a backyard nuisance, or at most a human health problem, rather than an environmental problem. People seemed largely unaware of the serious invasive plants in their area and showed limited familiarity with the concepts of biological invasion or biodiversity. As might be expected, only a minority supported more efforts to control weeds.

Why are people not more aware of the major economic and ecological impacts of invasive plants? Our survey

Table 2. Answers to the question, "Do weeds cause problems for society or the environment?" Percent of respondents.

	Youths	Adults	
		Not college graduate	College graduate
Yes	65	74	74
Impacts most commonly listed:			
Health*	4	42	32
Native species*	21	6	13
Natural resources	9	17	15
Aesthetic	19	9	13
Agriculture	7	13	14
Fire	4	6	9

*Percentage differed significantly between age groups (G-test, $P < 0.05$).

suggests at least one likely reason: people do not feel these impacts directly. The problems with weeds that people cited were the ones that they personally felt, such as invasions of gardens, allergies, and stickers. One of the few people to mention economic costs was a man who maintained golf courses; lawns were his business.

This suggests that the way to raise public awareness of biological invasions may be to publicize the impacts of invasive plants on resources that people already care about. People may not all be familiar with the concept of biodiversity, but most everyone is likely to value the

local river or forest for recreation, their water supply, their safety, and their tax dollars. Scientific and semi-popular literature reports impressive figures on economic losses due to weeds (Stein and Flack, 1996) and striking case histories of invasive plants that clog waterways (Barrett, 1989), stall forest regrowth (Luken and Thieret, 1997), drain soil moisture (Lemaitre et al., 1996), and increase fire hazard (Vitousek et al., 1996). It is time to bring more of these examples into the public media and to the public atten-

tion.

This article is condensed, with the journal's permission, from our previously published paper: Colton, T. F. and P. Alpert. 1998. Lack of public awareness of biological invasions by plants. Natural Areas Journal 18:262-266. We are grateful to Karen Eason, Kitty Brown, and the spirited docents of the Bodega Marine Laboratory of the University of California at Davis for helping us to administer the survey, to the Laboratory for allowing us to use their facilities and importune their visitors, and to the National Science Foundation for support through an Informal Science Education supplement to grant IBN-9507497.

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