

Chapter 20

INVASIVE PLANTS

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Invasive plants are a growing problem in Georgia and throughout the United States posing one of the biggest threats to natural environments today. They displace native species, destroy habitat and food for wildlife, alter hydrology and nutrient flow, and compete for pollinators and seed dispersers that native plants depend on. The financial cost is enormous and the long-term cost to our natural heritage is immeasurable.

Scientists estimate that at least 6,600 non-native plants, animals, insects, and microorganisms have been introduced into this country. Of those introduced, it is predicted that 10% to 15% will become established, resulting in self-sustaining populations in natural areas; and 10% of these established non-native species will become invasive. Cornell University estimates that invasive plant and animal species cost Americans an estimated \$137 billion annually, more than double the annual economic damage caused by all domestic and natural disasters.

A variety of terms is used to refer to invasive species, including non-native, non-indigenous, noxious, alien, pest and exotic. It should be noted however, that exotic does not equal invasive. Many ornamental landscape plants are non-native (i.e. exotic) but they have not posed problems to the environment by invading natural areas. Not all exotic plants are invasive. A comprehensive definition of invasive species would include a wide variety of species and

would focus on the impact of the species on natural areas and public health, rather than specifically on its impact to agriculture. For purposes of this discussion the following definitions are used for the terms: native, non-native, invasive species, and weed.

Native: a native species is one that occurs in a particular region, ecosystem, and habitat without direct or indirect human action.

Non-native (alien, exotic, foreign, introduced, non-indigenous): a species that occurs artificially in locations beyond its known historical natural range. A species could be considered non-native if it is from a different region, even if from the same country, or state.

Invasive species: Invasive plants are plants that have or are likely to (1) spread into native plant communities and cause environmental harm by developing self-sustaining populations and disrupting those systems; or, (2) spread into managed plant systems and cause economic harm. (Definition adopted by the ANLA Invasive Species Task Force, July 1999).

Weed: a subjective word used to describe any plant considered to be “out of place.” In other words, weeds can include native and non-native plants, growing wherever someone wishes they weren’t. Invasive species are often referred to as weeds of natural areas.

NATIONAL/STATE ORGANIZATIONS

Plant professionals need to be aware of invasive plant issues and know where to find

information related to the topic. Places to find more information include the American Nursery and Landscape Association (ANLA), American Association of Botanical Gardens and Arboreta (AABGA), the Weed Science Society of America, The Nature Conservancy, state and regional invasive pest plant councils (Georgia Exotic Pest Plant Council (GEPPC) and Southeast Exotic Pest Plant Council (SE-EPPC), USDA Forest Service and the Cooperative Extension Service. The ANLA adopted recommendations for an invasive species policy in July, 1999. The recommendations can be viewed at: www.anla.org/. In addition to the policy recommendations, a Voluntary Code of Conduct for Nursery Professionals was drafted at the Invasive Plant Species Workshop held in St. Louis in 2001. The Georgia Green Industry Association Board adopted the following Code in November, 2004.

VOLUNTARY CODE OF CONDUCT FOR NURSERY PROFESSIONALS

- Ensure that invasive potential is assessed prior to introducing and marketing plant species new to North America. Invasive potential should be assessed by the introducer or qualified experts using emerging risk assessment methods that consider plant characteristics and prior observations or experience with the plant elsewhere in the world. Additional insights may be gained through extensive monitoring on the nursery site prior to further distributions.
- Work with regional experts and stakeholders to determine which commercially available Georgia horticultural species in your region are either currently invasive or will become invasive. Identify plants that could be suitable alternatives in your region.
- Develop and promote alternative plant material through plant selection and breeding.
- Where agreement has been reached among nursery associations, government, academic and ecology and conservation organizations,

phase-out existing stocks of those specific invasive species in regions where they are considered to be a threat.

- Follow all laws on importations and quarantine of plant materials across political boundaries.
- Encourage customers to use, and garden writers, to promote non-invasive plants.

As a certified landscape professional, you can provide valuable information to consumers by helping educate consumers about the dangers of planting known invasive species, directing inquires about invasives to reference sources and being an informed citizen regarding local, state and federal regulations pertaining to invasive species.

REGULATIONS

Due to increased global trade and travel, the United States is more vulnerable than ever to potentially invasive plant species. No federal law or combination of laws provides comprehensive authority to prohibit the import of all classes of invasive plants or to regulate vectors of introduction. Although there is no comprehensive federal law there are over 20 federal agencies having responsibilities, authorities and programs that deal with overlapping facets of invasive plant research, use, prevention, control, monitoring or management. Under the current U.S. system, most non-native plants and animals can be legally imported without considering their potential invasiveness.

While there is a federal noxious weed list, plants are added only after they become well-established and have caused significant economic damage. Once established, they are very expensive to control. Over 75% of federal funding for control of invasive plant and animal species was spent to control species threatening agricultural crops or livestock and the remaining 25% was spent to control forest insects. No federal dollars were devoted to control plants invading non-agricultural

systems (i.e. natural plant communities). Specific information on the existing federal laws and policies is available on the web site www.invasivespecies.gov/ on the “Laws and Regulations” menu.

The state of Georgia has the follow regulations in place:

- Georgia prohibits the import or introduction of invasive plants on the federal list.
- Georgia is one of twenty-seven states that include enforcement by authorizing fines for violation of their plant provisions.

Recommendations for additional invasive species regulatory control at the state level include:

- Identifying and mitigating future threats,
- Early detection protocol,
- Import/introduction release requirements
- Quarantines,
- Education,
- Permits and licenses,
- Bonds and insurance,
- Monitoring,
- Transportation and shipping requirements,
- General authority and management,
- Emergency powers,
- Biological control agents,
- Restoration of natural environments,
- Enforcement authorities,
- Funding,
- Statewide Invasive Species Councils,
- Statewide Invasive Species Plans.

Nursery, landscape and retail professionals can help educate their customers and raise awareness concerning invasive plants. It is important to appreciate the difference between native and introduced species and know how to identify plants that are known to be invasive. By providing information about invasive plants and their resulting effect on the environment, customers will learn how to recognize the

environmental affect of these species in their own neighborhoods and natural areas.

Plant professionals can learn about the economic and biological consequences that invasive plants cause in the environment. Weedy plants can crowd out native plants that are more effective in erosion control, resulting in more devastating floods and loss of soil. By crowding out native plants, nonnative invasive plants can cause the loss of native pollinators, a reduction of nesting habitats for native birds, and cause harm to many other native animals.

INVASIVENESS ASSESSMENT TOOLS

New plant introductions are very appealing to plant enthusiasts but it is important to evaluate new plants for their invasive potential before introducing them to the gardening public. Screening new plant introductions for their invasiveness potential may seem like a simple solution, however, to date there is not a widely accepted method for doing so. The ANLA Statement on Invasiveness includes a section entitled “New Plant Introduction.” In this section the following is recommended.

Invasiveness screening of new plant introductions should be pursued voluntarily by nurseries and arboreta/ botanic gardens initially, testing a model or models developed through collaboration among industry, academia, and government. As the “science of weediness risk assessment and invasion biology” is advanced, a regulatory system may be warranted.

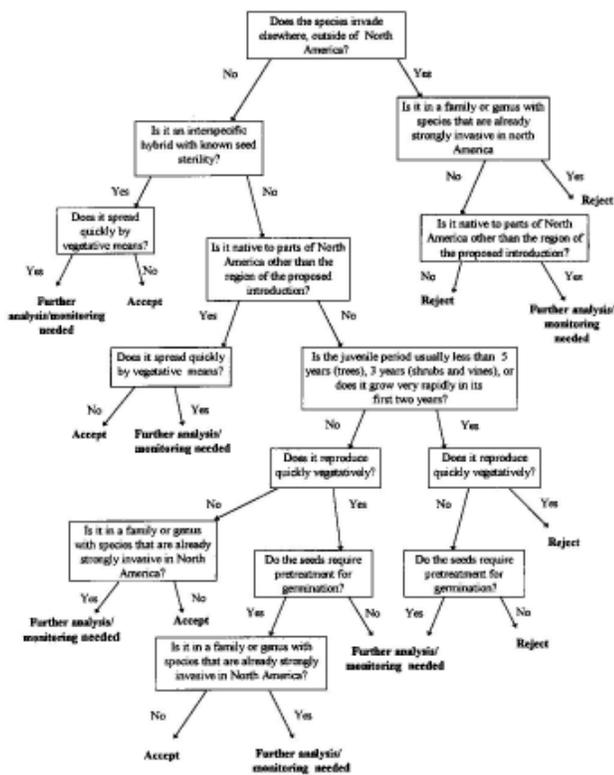


Figure 1.0 Decision tree for woody North American invasive species. Acceptance status refers to the decisions regarding possible introduction of the species. Source: *Predicting Invasions of Woody Plants Introduced into North America*. Sarah Hayden Reichard and Clement W. Hamilton. Conservation Biology, Vol. 11, No. 1, February 1997.

An acceptable regulatory screening program should:

- Be national in scope;
- Involve reasonable expansion of USDA-APHIS authorities, and be adequately resourced to be uniformly applied;
- Focus on new taxa (implies sufficient database of taxa native to or present in North America);
- Involve initial risk assessment with a “yes, no, or further study” result; Incorporate a post-entry quarantine concept for plants

requiring “further study” for which too little information exists;

- Incorporate approaches such as compliance agreements and accreditation;
- Pursue USDA/Canadian Food Inspection Agency (and ultimately Mexico’s Sanidad Vegetal) consistency of approach on new plant introductions.

While this ANLA recommendation is sound and an excellent goal to strive for, we are nonetheless in need of a ready tool to screen plants for invasiveness. Craig Regelbrugge with ANLA recommends the Reichard and Hamilton ‘decision tree’ for its simplicity. This decision tree for woody plant material is found in Figure 1. There is discussion of adapting the decision tree to include herbaceous plant material but at the time of this publication no such assessment tool is known.

PLANT LISTS

There are two approaches to invasive plant lists – “dirty” lists and “clean” lists. Most states have a “dirty” list of plants. This is a list that prohibits certain unacceptable species and allows unlisted species to be imported. This approach places the burden on regulators to determine whether a species is harmful. Another approach is to develop a “clean” list which prohibits all species unless they are determined to be acceptable. The “clean” list is a more stringent approach to the regulation of potentially invasive species and puts the economic burden on those who will derive the economic benefit.

Thirty-six states, including Georgia, have “dirty” lists for plants. Officially, Georgia relies on the federal noxious weed list, and therefore, does not take an active role in determining the content of its own list.

Since the commercial green industry is closely affected by invasive plant issues, the state’s professional association is taking a leadership role. In 2003, the Board of Directors of the Georgia Green Industry Association established

an exotic pest plant task force to examine the problem of invasive plants in Georgia. The task force included representation from all four GGIA divisions and a variety of governmental organizations (representation will include a fifth GGIA division added in 2005).

Of special interest to the task force was an accurate list of commercially available plants recognized as invasive. A survey of natural areas in the state was conducted to determine the scope of the problem. Additionally, various lists of invasive species were examined, including lists compiled by the Georgia Exotic Pest Plant Council, the U.S. Forest Service, The State Botanical Garden of Georgia and DeKalb County Parks and Recreation.

Based on experience, observation in the field, and feedback obtained from the survey conducted in 2003 the task force identified plants available in the nursery trade and known to be invasive and placed them into three designated categories. Category I plants (invading and disrupting native plant communities) are listed in Table 1.0.—

Common Name	Scientific Name
Autumn olive (silverberry)	<i>Elaeagnus umbellata</i>
Chinese privet	<i>Ligustrum sinense</i>
Chinese tallow tree	<i>Sapium sebiferum</i>
Japanese climbing fern	<i>Lygodium japonicum</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Kudzu	<i>Pueraria Montana</i>
Mimosa	<i>Albizia julibrissin</i>
Multiflora rose	<i>Rosa multiflora</i>

In the late 1990's, representatives from several interest groups came together to form the Georgia Exotic Pest Plant Council. Although not an official government agency, the group developed an invasive plant list to raise awareness of the invasive species problem and

to work together to mitigate the accompanying harms. The Georgia Exotic Pest Plant Council's invasive plant list can be found on the following website: www.gaepcc.org/. Several adjoining states as well as the Southeast Exotic Pest Plant Council have invasive plant lists. Specific plants may be invasive only in specific areas of the state. For example, Chinese tallow tree may not be a pest in the north Georgia mountains, but it is invasive in south Georgia and has caused millions of dollars worth of damage in other areas of the southeastern United States.

Chinese privet is a prime example of the widespread ecological damage that can incur when non-native species are introduced without regard to potential invasiveness. Chinese privet, *Ligustrum sinense* was introduced into the United States in 1852 as an ornamental shrub, and by 1932 was established throughout the Southeast. By the 1990's privet occurred on 2.9 million acres in the Southeast.

One study estimates Chinese privet covers 59% of the Upper Oconee River Floodplain in Georgia. Some of the problems privet causes are: it shades out native understory vegetation, results in the formation of a single-species mid-story, change in floodplain forest structure, sedimentation rates change, and the regeneration rate of native trees is reduced or lost.

WEBSITE RESOURCES

Invasive plant lists are readily available on internet websites. Following is list of website resources:

Alabama Invasive Plant Council (ALIPC):

www.se-eppc.org/states/alabama.cfm.

American Nursery and Landscape Association (ANLA): www.anla.org

Florida Exotic Pest Plant Council:

www.fleppc.org

Georgia Exotic Pest Plant Council:

www.gaepcc.org

Georgia Green Industry Association:

www.ggia.org

Georgia Plant Conservation Alliance:

www.uga.edu/gpca

Invasive Plants of the Eastern United States:

www.invasive.org/

Invasivespecies.gov: www.invasivespecies.gov

Plant Invaders of Natural Areas: www.nps.gov/plants/alien/bkgd.htm

Southeast Exotic Pest Plant Council:

www.seepcc.org/

The Nature Conservancy Wildland Invasive Species Team: <http://tncweeds.ucdavis.edu/>

USDA Forest Service: <http://www.fs.fed.us/invasivespecies/>

CONCLUSION

Landscape professionals play an important role in invasive plant issues. A few of the ways that certified plant professionals can assist are:

1. Know your plants. Be able to identify plants and know their culture and growth habits. Learn about how specific plants behave in cultivated and natural environments.
2. Be familiar with the invasive plants of your community/region/state.
3. Be willing to share your knowledge with co-workers and the gardening public.

4. Develop an appreciation for native habitats, native plants and the vital role they serve in maintaining a healthy ecosystem.
5. Adhere to the Voluntary Code of Conduct for Nursery Professionals.

We have taken a brief look at the history of the invasive plant issue, the laws and regulations surrounding the topic, organizations involved, invasive plant lists and assessment tools. The issue of invasive plants is extremely complex and permeates not only our environment but lives and livelihoods as well. We all need to continue working together to address the important issue of invasive plants.

STUDY QUESTIONS

1. Name four reasons invasive plant species pose threats to natural environments.
2. Does exotic always mean the plant is invasive? Explain.
3. Explain the first key indicators that a plant may be invasive by using the Reichard and Hamilton Assessment Tool.
4. Provide three resources for invasive plant information.
5. Provide two sources of invasive plant lists in your region.

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