

Restoring and Maintaining Native Ecosystems by Control of Non-Native Invasive Plants

by Marc Imlay

Handouts: One handout was a summary sheet— the full text of which is quoted in this document below in italics—and the second handout was an example of Japanese control projects—that handout is scanned separately from this document.

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ABSTRACT (The following is text copied from the handout Marc Imlay distributed during the session): *“Non-native invasive plants are covering all our natural areas in the region. The quantity of native plants and animals replaced by competition with non-native species is greater than that lost from all other causes except direct development in our terrestrial habitats and water pollution in our aquatic habitats. Non-native invasive species of plants such as English ivy, Japanese stiltgrass and kudzu are covering the natural areas that we in the conservation movement have worked so hard to protect from habitat destruction, erosion, and water pollution. Just as we are making progress on wetlands, stream bank stabilization and endangered species, these plants from other parts of the world have typically covered 20-90% of the surface area of our forests, streams and meadows. Many of us feel demoralized and powerless to combat these invaders that have few natural herbivores or other controls. A typical park is 50-500 acres and has over a hundred species of native plants, let alone the hundreds of native species of insects, mushrooms, snails, reptiles, mammals and birds that depend upon the plants, prior to being covered by monocultures of five to 10 alien species.*

“Five programs are especially emphasized for successful control of non-native invasive plants:

1) Patrol our borders; 2) manual removal; 3) the use of carefully targeted herbicides, when necessary to complement manual removal; 4) host specific biological controls; and 5) early detection/rapid response for very harmful but recently introduced invasive species, such as wavyleaf basketgrass (if you see it, get it removed).

“Of the 15 top non-native invasive plant species in the mid-Atlantic region, purple loosestrife and mile-a-minute now have one or two non-native insects or fungi that feed on them. They were brought over after being tested for host specificity in Eurasia and then tested in quarantine conditions in the United States. Typically, about 50 such biological control agents control these species in their native countries, so if one or two can control them here, that is amazing. In actuality, bio-controls work about half the time, reducing the invasive species to about 10% of its former abundance. The problem of bio-controls harming non-target organisms is only about 3% as frequent before the new rules of proving host specificity went into effect about 15 years ago. Native biological controls are also of about equal importance. A native insect and pathogen combination appeared as tree-of-heaven moved South after 250 years. It is often 100% effective. Yes, you only have to pull for 500 years!”

Key Points of the Session:

A. Research on **biological control** is very important and should be supported/facilitated. Examples, notes and resources about biological control:

- It's estimated that there's an effective, host-specific biological control for 30% of invasive plant species.
- Successful control of mile-a-minute vine through introduction of weevils – Research by Dr. J. F. Goldstein at University of Delaware. [Imlay said to call Robert (Bob) Trumbule of Maryland Dept. Natural Resources (Ag Dept.) as a source for obtaining the weevils].
- Dr. William (Bill) Bruckart III, USDA-ARS, Ft. Detrick MD—has conducted research that shows 2 insects from China will work in biological control of Japanese stiltgrass. Bruckart is also studying feasibility of certain pathogens that may be useful in controlling “fig buttercup” (lesser celandine). CONTACT William.Bruckart@ARS.USDA.GOV
- Biological Control WorkGroup Report* (www.maipc.org/workshop2014/MAIPC_BioControlWG_July2014.pdf)

- Success story: 1,200 acre **Kokee State Park in Kauai**, Hawaii—Katie Castell and Marshall Ericson (803)335-9975.
 - Leaf beetle, two moths and a psyllid for control of Japanese knotweed, giant knotweed and Bohemian knotweed (*Fallopia* spp.)—Grevstad et al, 2013.
 - If you observe evidence of Japanese stiltgrass susceptible to a rust or leaf blight (native biological control), let him know. There's ongoing research in China on this.
 - Classic Biological Control Effectiveness (VanDriesche et al 2010)—49 invasive plant projects in recent review; of these, 27% (13 projects) achieved complete control, and 33% (16 projects) achieved partial control.
- B. Support managed hunts – because **deer control** is an important component to reducing invasives. Example: Patuxent has reduced deer herd to 20 per square mile, and now they have less Japanese stilt grass and also reduced lyme disease.
- C. **Remove evergreen competition in winter.** Example: Japanese honeysuckle at Swan Park—when you dig it out, it takes 10 years before it grows back, and during that time, their leaves are not shading the ground in winter. Result is a decline in other invasive competition.
- D. **The first sites to remediate should be the ones with the highest biodiversity**, then move on to other areas. Example—success story at Magruder Woods in Hyattsville MD—it was only 50% native, now it's 85%. The following is the rest of the text from the handout that Imlay distributed during the session, which elaborates more on this recommendation: *“[Do] surveys and management plans. [Then] inventory and prioritize. In choosing the site, it is best to start with the more sensitive areas (dominated by native rather than non-native plants) and work out as volunteer- and staff-support grows. Some of the natives remain to re-colonize, as invasive plant control advances and environmental stresses are controlled. These sites also become sources of native plants for contiguous areas and sites nearby, especially when resources are available to remove invasive species by their land managers. These sites also tend to have better deer control, which also reduces the risk of deer ticks.”*

Question/Answer:

Q about chemicals and which to use near water. **A:** Don't use regular RoundUp (glyphosate) near water. Instead, use a non-ionic surfactant, such as RoundUp Pro Max. “Glyphosate only kills what it touches”; it doesn't move through the soil to other plants, and it has a half-life of only 25 days. But need to apply it very carefully, and not before a rain.

Q about how to control mile-a-minute, if you can't use fire and don't have weevils for biological control. **A:** Use a rake to pull out 80% of it, then hand pull and use chemical application for the remaining 20%. Apply twice in one year. Goats are also an important tool, but need people to manage them.

Other **Q's** about control of various invasive vine species, such as Oriental bittersweet, Japanese wisteria, porcelain berry, etc. **A:** Never spray up to kill vines, only spray down. After you spray, will need to treat again a few months later. For Japanese honeysuckle, spray it on “warm” days in winter, i.e. >50 degrees F., and no rain.

Q about biological control of *Ailanthus*. **A:** There are 3 native biological controls for *Ailanthus*, including a fungus and the *Ailanthus* moth, tested in PA.

Q about biological control of wavy-leaf basketgrass. **A:** This genus of plant is native to the U.S. (in NC and SC); we need more research to find biological control that can be done in other parts of the country.

Q about how to engage volunteers and community support. **A:** Work with existing groups – there are many out there. Or, to start a group, you need to have a relationship with the municipality. Examples: 1) Montgomery County/ Carroll County (Maryland) “Weed Warriors”—their focus is on special sites, such as parks; the volunteers get trained and certified to do the work, then they report after work is complete. “Weed Warriors” are supported by the Maryland DNR Forestry Board, and they collaborate with Master Gardeners; you could use their model to partner with other counties that might be interested. This may also be an opportunity to partner with public schools that are looking for “service learning” projects. 2) In Baltimore City, Stephanie Helms is the contact. 3) In Virginia, Master Naturalists are active in invasive plant removal projects (www.virginiamasternaturalist.org)

Imlay’s Parting Comment: *“Choose a site where you can win the battle, then move on to win the war.”*