

THE BATTLE AGAINST INVASIVE SPECIES

Notes from the FMCE Forum “Battle Against Invasive Species” held 11/16/2010

Updated: 3/7/2011

The Battle Against Invasive Species – Public Forum/Q&A

Tuesday, November 16th, 2010 7:00 PM to 9:00 PM

Brighton Town Hall Auditorium, 2300 Elmwood Ave, Rochester, NY 14618



Speakers



Introduction by Peter Debes, naturalist, educator, Vice Chair of the Rochester Regional Group of the Sierra Club



Plant invaders by Steven Daniel, naturalist, Adjunct Associate Professor at MCC, President of Nature Discoveries & biological consultant



Insect invaders by Gregg Sargis, Program Stewardship Ecologist of The Nature Conservancy of Central & Western NY



Aquatic invaders by Charles Knauf, Environmental Health Project Analyst at Monroe County Health Department



Introduction

This forum was given in memory of Christine Sevilla, environmental crusader, artist, and creator of the “Garden Villains” brochure. Donations were accepted by GVAS for reprinting this brochure and by the GLT to develop an Interpretive Trail at the newly named Christine Sevilla Wetlands Preserve in Caledonia (www.christinsevilla.com). June Summers introduced the forum by remembering Christine Sevilla who, in recent years, was so important in raising local environmental consciousness and promoting preservation of wetlands through her maps, photographs, books and community activism. Her fold-out “Garden Villains” brochure highlights 12 important invasive species. Sandra Frankel, Brighton Town Supervisor, welcomed all the attendees and expressed gratitude for Christine Sevilla’s personal contribution to environmental awareness in Brighton and the Rochester region.



Forum Co-Sponsors

The Federation of Monroe County Environmentalists (<http://fmce.org/announcements.html>) with:



Bergen Swamp Preservation Society (<http://www.bergenswamp.org/>)



Center for Sustainable Living (<http://www.living-sustainably.org/>)



Genesee Land Trust (<http://www.geneseelandtrust.org/>)



Genesee Valley Audubon Society (<http://www.gvaudubon.org/>)



League of Women Voters (<http://www.lwv-rma.org/>)



The Nature Conservancy (<http://www.nature.org/wherewework/northamerica/states/newyork/>)



People for Parks



PRISM:Partnership for Regional Invasive Species Management (<http://nyis.info/>)



Peter Debes – Overview of Invasive Species

1. **Invasive Organisms** – a broader term than species – are newcomers exploiting resources to the detriment of native species. Native organisms have evolved in, or existed after migration to, the area where they are now found. No human intervention was involved in their arrival. They exist in balance with many other species in the area. Often humans introduce species to an area for various reasons – and some of these species become invasive.
2. Invasive organisms are rapid colonizers. Here are **six characteristics of rapid colonization** by a newcomer species – which allow it to become an invasive pioneer:
 - a. Tolerate a broad range of environmental conditions – O₂ levels, soil, sunlight, temperature
 - b. Able to grow rapidly, mature quickly, have many offspring. Examples: Norway maple, field mouse. Compare to a species which has few seeds like the avocado tree.
 - c. Able to reproduce without sexual methods – by sending out runners
 - d. Able to disperse offspring widely - e.g. cottonwood tree.
 - e. May alter environment to the detriment of competing species – dense root mass or heavy leaf fall e.g. Norway maple. Native species have lots of species competing for their resources, because they evolved together long ago.
 - f. Have few or no predators. This is especially true where humans have introduced a new species to an area without natural controls. e.g. purple loosestrife, black swallow wart, etc.
3. Diversity in an ecosystem creates a network of resiliency to cope with problems such as drought, floods, excess heat or cold, a disease, an insect infestation, loss of a food source, loss of a native species, encroachment of development, etc. One way to understand diversity is as to represent each species as a “dot” and the inter-dependencies between the species as lines connecting those dots. In a diverse ecosystem, the dots and lines create a resilient network – like a net or a web. The more dots, the more possible lines or connections you can draw. The less diverse an ecosystem, the fewer inter-dependencies and the less resilient it will be. The loss of one food source or species can severely hurt other species in a less diverse ecosystem.
4. By monopolizing scarce resources, one very successful invasive species can greatly reduce the local ecosystem’s diversity, also reducing its resiliency.
5. Invasive species cost agriculture an estimated \$120 Billion in losses and control measures.



Steven Daniel – Invasive Plants

1. See Steven Daniel’s slide show at http://fmce.org/Invasive%20Species/Invasive_Plantssd111610%20Steve%20Daniel.pdf
2. The opening slide shows some common local invasive species: purple loosestrife at Montezuma National Wildlife Refuge, Autumn olive; phragmites, Eurasian bittersweet, and Bishop’s wort.
3. Invasive Species is “a catastrophic wildfire in slow motion.”
4. Native species are rarely invasive because they evolved in a complex system of checks & balances.
5. About 2/3 of the non-introduced species in our woodlands and fields are native. Only a few of the non-native species are considered invasive – but these few can have a huge detrimental impact.
6. Invasive Species are both a **cause** of ecosystem degradation and a **symptom** of Larger Environmental Issues on the Global, National, and Local level, such as:
 - a. Warming climate.
 - b. Fragmentation of forests e.g Mendon Ponds.

- c. Overpopulation of white tailed deer – they prefer to eat native plants, sparing the invasive species... but they also spread some invasive seeds (especially shrub honeysuckle, buckthorn, multiflora rose, and purple loosestrife) in their droppings.
 - d. Synergistic impact of other invasive species such as earthworms. The earthworm invasion complicates the picture. There are no native earthworms in NY. They change soil structure, creating favorable conditions for invasive species.
7. Most invasive species introductions were intentional – recommended by agencies (bush honeysuckle) and sold by nurseries (e.g. swallowwort). European phragmites may have been an unintentional introduction.
8. Garlic mustard invasive species forest understory, threatening the existence of some butterflies such as the rare West Virginia White butterfly. Pale and black swallowwort has possibly pushed the Hoary Edge butterfly from Powder Mills Park.
9. Early Detection and rapid response is the ideal action plan to control invasive species. Once they get established, it is an immense or impossible task to remove them, and other native species will be gone. e.g. BRACHYPODIUM SYLVATICUM (SMOOTH FALSE BROME) has recently been found in Bergen Swamp. It is still a good candidate for early and rapid removal before it drives out native species and becomes the widespread, serious threat that it is in the Pacific Northwest.

How can you help?

- a. **Exactly what to do is a matter for informed debate. Local citizen action can make a difference.**
- b. **Identify high quality natural areas and make a long-term commitment to removing invasives and re-establishing native species. One swallowwort removal day feels good, but leaves a void for invasives to re-fill, and may not be the best use of resources.**
- c. **Buy and Plant Native Species. Encourage your friends and colleagues, local businesses, and municipalities to do the same. Choose from lists of “native alternatives” to invasive species. Request that garden centers and nurseries promote native plants, and not sell species known to be invasive.**
- d. **Help reprint and distribute Christine Sevilla’s Garden Villains brochures.**
- e. **Encourage Monroe County to consider following the lead of Nassau and Suffolk Counties which have passed legislation making it illegal to sell certain invasive plants.**
- f. **Learn your local flora. Take classes and workshops. Join the Botany Section of the Rochester Academy of Science, or • the New York Flora Association. <http://www.nyflora.org/>**
- g. **Volunteer with a local group taking action to control invasive species such as: Washington Grove advocates removing Norway Maple, Rochester Butterfly Club at Mendon Ponds digging Swallowwort, Friends of Webster Trails removing Autumn Olive at Gosnell, Nature Preserve, Ithaca Volunteers pulling Japanese Stilt-Grass and preserving rare plants in 6-Mile Creek, TNC Volunteers removing Garlic Mustard at Counterfeiters Ledge, near Buffalo.**
- h. **Email info@fmce.org if you’d like to be added to the local Invasive Species Control Volunteer Team.**



Greg Sargis – Insect Invaders

1. Insect Invasive Species include many pesky threats to our northeastern forests.
2. Preventing the spread of invasive species is a **policy problem** that can be addressed thru legislation and administration: regulation, inspection, quarantine, etc. Examples: gypsy moth, chestnut blight, emerald ash borer, Dutch elm disease.
3. The northeast gets about one new invasive species per year recently.
4. Detailed example: **Emerald Ash Borer (EAB)** introduced near Detroit around 2002. It is native to eastern Russia and northern Japan. It deprives the tree of nutrients and water. Leaves “D” shaped holes in

bark. EAB has many destructive effects and spreads about ½ mile a year with out human-aided spreading. It has spread much faster because of people moving firewood.

5. The **Asian Longhorned Beetle** (ALB) is native to eastern Asia. Found in wood shipping pallets. First identified in Brooklyn in 1996 but was probably in the US since the 1980's. ALB is slow to spread and may be possible to eradicate, but likes several tree species. It is affecting maple syrup production and street trees.

6. Hemlock Woolly Adelgid is an aphid 1/32 inch.

7. What is being done & what needs to be done?

- a. Prevention
- b. Monitoring
- c. Ecological forecasting
- d. Funding !!!

How can you help?

- a. **Buy only local firewood and use it locally.**
- b. **Volunteer to help with citizen science & monitoring projects.**
- c. **Plant your landscape with non-invasive plants.**
- d. **Replant native species.**
- e. **Clean your clothes & boots after hiking or working in fields and forested areas.**
- f. **Stay informed about invasive species alerts.**



Charles Knauf – Aquatic Invaders

1. See Charles Knauf's slideshow at

http://fmce.org/Invasive%20Species/AquaticInvaders_CKnauf_2010Nov16.pdf

2. Everything shows up in aquatics: phytoplankton & zooplankton, plants, invertebrates like “rock snot”, tiny shrimplike creature, zebra mussels, even birds (ute swan) and fish (Pacific salmon in the Genesee River). Example: carp (Cyprinus carpio) – problem or not?

3. Examples of real problems:

- a. Alewife (*Alosa pseudoharengus*), a 5-6” herring native to the Atlantic coast, invasive in the Great Lakes. Huge deleterious effects
- b. Zebra and Quagga Mussels (?) native to the Black and Caspian Seas. Probably brought in 1980s in ship ballast. Can do down to 120’, cold tolerant. Link to E botulism.
- c. Round Goby (*Neogobius melanostomus* – see photos & identification sketches in the slideshow.) Can climb vertical surfaces which creates worries for inland trout fisheries. Possibly implicated in Type E botulism and VHS spreads. Some positives – they feed on Derissinids and are food source for some game species.

For those who want to know more about Aquatic Invaders, Charles Knauf sent us extra information after the forum:

4. **Hemimysis**, the small shrimp-like invertebrate of which I had a slide in the early part of the presentation, was reported by Robert O’ Gorman of USGS, to be thriving in the area around Oswego where he had surveyed. This invasive has the potential to occupy the food web niche that was left open by the Diporeia die back, and, unlike many invasives that have lower food values than the species they supplant, this one looks to be nutritionally the approximate equivalent of diporeia.

5. The NYSDEC link for the **baitfish regulations** is: <http://www.dec.ny.gov/outdoor/47282.html>

The new NYSDEC regulation **prohibiting leaving boats on State land** goes **against slowing down ANS spread**. The NYS reservoir system requires that a boat to be used on the reservoir be left in place once a permit is obtained, and they don’t yet have a lot of these problems. Large numbers of boats were formerly

stored at **Hemlock and Canadice**. It will be interesting to see what new species show up there now that everything that launches in the Lake will be coming from outside.

6. **Alewives** are filter feeders and their major diet consists of phytoplankton and zooplankton that are in the size range that is trapped by their gill rakers. So, when nutrients are reduced, or “shunted” to a different zone of the lake, as in benthification, there is a reduction in the available phytoplankton and zooplankton that rely on the nutrients for their survival.

7. Another means of control for aquatic invasive plants that is showing promise is the use of predators from the native areas, that is, introducing non-native species to control the invasive. Cornell University has demonstrated the effectiveness of Eurasian Aquatic Moth (*Acneta nivea*) and a weevil (*Eurychiopsis leconti*) in combating Eurasian Water Milfoil.

8. In the slide of the dead gobies at Ontario Beach, the cause of the fish kill was most likely **Viral Hemorrhagic Septicemia (VHS)**, an invasive pathogen thought to have been introduced into the Great Lakes from salmonid egg sources on the Pacific Coast. First sampled in 2005 (our beach program staff actually collected one of the first fish sent to Cornell) and confirmed in 2006, this disease has been indicated as cause of the large fish kills in the Eastern Basin in past springs, and has caused some localized kills, most notable a die-off in Cranberry Pond 3 years ago.

9. It is critical to emphasize *the importance of never moving live fish from water body to water body*. In response to VHS, NYSDEC modified baitfish regulations to require anglers to obtain bait for movement from a licensed dealer, who can only sell bait that has been tested and shown free of fish diseases, purchased from a commercial rearing facility, or bait that is captured by legal means in the water body where the angler is fishing. Purchased bait can only be retained for 10 days, and the angler must produce the dated receipt on demand. While there may be ways to cheat on these regulations, they would all involve greater costs and efforts than simply complying with the regulation. The practice of bringing home fish for aquaria, or getting rid of aquarium fish by dumping them in a pond should also be avoided. We've all heard the stories of the alligators in the NYC Sewer system!

How can you help?

- a. **Do not use round gobies as bait – illegal in NYS.**
- b. **Purchase live bait from a licensed dealer.**
- c. **Dump bail buckets on land > 100 ‘ from water.**
- d. **Clean boat, trailer, boots and waders.**
- e. **Dry > 3 days – some say a week is needed.**
- f. **Dump water from motor and wells on land > 100 ‘ from water.**
- g. **Use a 10% bleach solution to clean equipment.**
- h. **Do not move live fish from one water body to another water body.**
- i. **Do not bring home fish for your aquarium.**
- j. **Do not dump your aquarium fish in a water body.**