

Japanese stiltgrass has invaded this wooded understory in New York state. Chris Evans photo.

Invasive Species Early Detection

Northeast Temperate Network Program Brief

Right: The emerald ash borer is a major threat to ash trees in NETN parks. Jennifer Stingelin Keefer photo.



Below: Using information NETN helps to gather about invasives, Marsh-Billings-Rockefeller NHP employs park staff and SCA crews to manage invasive species in the park. NPS photo.



Asian Long-horned Beetle

An “invasive species” is an alien life form whose introduction causes or is likely to cause some combination of harm to the environment, the economy, or human health. They are usually comprised of plants, animals, or insects that have been introduced deliberately or unintentionally into an environment in which they did not evolve, are capable of establishing self-sustaining populations in “untransformed ecosystems”, and have no natural enemies to limit their reproduction and spread.

Why monitor for early detection of invasive species?

Early detection followed by rapid response can eradicate invasive species before they have a chance to become widely established and eliminate the need for costly and resource-intensive control programs.

The main goal of the Invasive Species Early Detection (ISED) program is to detect invasive species in the early stages of establishment when the cost of eradicating them is still low and the the chance of eradication remains high. The impacts of invasive species include loss of threatened and endangered species, altered structure and composition of terrestrial and aquatic communities, and reduction in overall species diversity. While long-term changes associated with invasive species are being monitored through other Northeast Temperate Network (NETN) protocols, it is also critical to catch invasive species early in their invasion of new and sensitive habitats. Each park’s ISED target list is intended to provide enhanced security against rare but high-threat species that are in addition to each park’s and Exotic Plant Management Team’s already existing invasive species program. Early detection monitoring of newly arrived invasive plants, animals and diseases was ranked among the top priorities in the NETN vital signs selection process due to the concern about the effects these organisms can have on park ecosystems.

How is the monitoring done?

Target species lists are created and made available for all NETN field crews, cooperators, resource managers and volunteers to help ID and manage invasives.

Early detection monitoring includes opportunistic surveillance monitoring of invasive plant and forest pest species that focus on educating field crews, cooperators, volunteers, and park resource managers on invasive species identification. Equally important is providing a quick and easy way to report sightings of potential infestations. Modest lists of target insect pest and exotic plant species recognizable to non-experts have been created for each park. The target list includes species that are either present in the park at low levels and of concern if new populations are detected or not yet present in the park but threaten ecosystem health and function in the region. To aid with identification, NETN makes available field guides and annual trainings for monitoring crews and network parks. The field guides contain each park’s target list, identification cards for each species on the

NARROWLEAF BITTERCRESS

[*Cardamine impatiens* L.]

CAIM



Fig. 1 © 2005 L. J. Mehrhoff Fig. 2 © 2002 L. J. Mehrhoff

Problem: Native to Eurasia,³ narrowleaf bittercress has the ability to rapidly spread and colonize a variety of habitats,⁶ creating dense stands that outcompete native species.⁵

Habit: Erect, shade tolerant, annual or biennial (Fig. 1).^{1,2,3,5,6}

Reproduction: Prolific seeder, may self pollinate.⁴



Fig. 3 © 2003 M. Storey

Leaves: Numerous, 6-20¹ narrow, sharply toothed, sparsely ciliate leaflets;⁶ basal leaves (Fig. 2) can reach 10 cm (~4 in) and can have 3 to 11 leaflets along the rachis; leaflets are generally 3-lobed and lobes are rounded²; leaf bases sagittate to auriculate^{1,2,3,6} or clasping (Figs. 3 and 4).

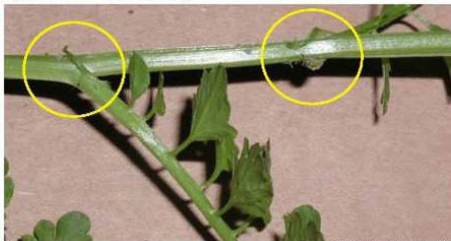


Fig. 4 © 2002 L. J. Mehrhoff

Above: A sample of a field-guide ID card.

target list, and laminated pest and plant detection forms. Field crews have also been experimenting with with iPhone or Android smartphones using the app “What’s Invasive!” to record sightings of invasive/exotic species. The app includes updated target lists for each park and automatically stores important data associated with detections including its GPS location, the ability to add photographs, and the extent of population. Prompt reporting is expected to increase with the use of apps in the field, which are also available for use by park staff, volunteers, and the general public.

As with other NETN protocols, the Appalachian Trail poses unique challenges among NETN parks because of its length and the large number of communities through which it passes, opening it up to numerous groups of invasive exotic species. This also makes it a very difficult resource to systematically



Above: For particular stubborn and deep rooted plants, an impressive looking weed wrench needs to be utilized. NPS photo.

inventory. To date, several regional or limited surveys have occurred along the trail, but none have systematically searched the A.T. region. Consequently, resource managers are under-equipped to address this problem.

How is the information delivered to parks?

Smartphone apps and direct contact with resource managers helps to spread the word quickly about invasives.

Data acquired from the ISED program are time-sensitive, and all new detections need to be quickly reported through the appropriate chain of command. ISED detections can also be reported using the “What’s Invasive!” app or on-line at www.whatsinvasive.org. It is then the responsibility of the designated park contact to forward all ISED information to the program coordinator, additional park/regional personnel, the Exotic Pest Management Team, and outside agencies as appropriate. In cases where noxious weeds or high priority pests are detected, the program coordinator will follow-up with each designated park contact and may assist with alerting relevant outside agencies. Coordinating and executing a rapid response is primarily the responsibility of the respective park resource manager where the infestation was detected. Rapid response should include positive species identification and management/eradication activities, and may involve coordination with other groups/agencies, network and park personnel, or park interns.

At the conclusion of each field season, park resource managers evaluate their responses to invasive species early detections and ask the question: “Could we do better next time?” These assessments provide critical information that help to improve the quality and timeliness of future rapid responses.

More information:

For access to the full monitoring protocol, resource briefs, ISED target lists, field ID cards, and more - visit NETN’s website and navigate to the [Early Detection of Invasive Species webpage](#). You can also “like” NETN on Facebook to keep abreast of all NETN monitoring activities.

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