



ACADIA NP • APPALACHIAN NST • BOSTON HARBOR ISLANDS NRA • MARSH-BILLINGS-ROCKEFELLER NHP • MINUTE MAN NHP
MORRISTOWN NHP • ROOSEVELT-VANDERBILT NHS • SAINT-GAUDENS NHS • SAUGUS IRON WORKS NHS • SARATOGA NHP • WEIR FARM NHS

Park Invaders: 2013 Invasive Species Early Detection

Early detection is the key for controlling the spread of invasive/exotic pests and plants

Background

“Invasive species” are alien species that cause or are likely to cause harm to the environment, economy, and/or human health, and are considered to be one of the leading threats to the biodiversity and integrity of ecosystems worldwide. In broad terms, they are organisms that have been introduced deliberately or unintentionally into an environment where they did not evolve, are capable of establishing self-sustaining populations in “untransformed ecosystems”, and have no natural controls to limit their reproduction and spread. These are among the reasons why early detection of invasive species was identified as a priority “vital sign” by several Inventory and Monitoring networks including the Northeast Temperate Network (NETN).

2013 was the 4th year of the invasive species early detection (ISED) program and, for many parks, the second visit from

the NETN forest health monitoring crew since the protocol was adopted. In many cases, having the presence of field crews that venture beyond the front-country paths and roads has resulted in new detections of target invasive species. Program wide, early detection species were found in 29 different locations among all but two NETN parks during 2013. The numbers of reports have steadily increased in the last several years, compared with only six sightings in 2011 and 12 in 2012. In and of itself, this increase may not necessarily indicate higher prevalence of invasive species in NETN parks, but could be a reflection of higher skilled field crews that are using more efficient reporting tools.

Support of the ISED program from park staff and volunteers continues to enhance its efficiency and relevance. Successful rapid response when invasives are found remains crucial to maintaining its effectiveness within network parks.



Winter Moth.

Objectives and Methods

The main goal of this program is to detect invasive species in the early stages of establishment when the cost of eradicating them is still low. This is accomplished by first developing a modest list of target insect pest and exotic plant species that are specific to each park and recognizable to non-experts. 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 laminated field guides and annual trainings to field crews and network parks. The field guides contain each park's target list, identification cards for each species on the target list, and laminated pest and plant detection forms. As of the 2013 field season, the field crews have been experimenting with smartphone apps to record sightings of invasive/exotic species. The apps includes updated target lists for each park and automatically stores important data associated with the detection including GPS location, photographs, and extent of population. Prompt reporting is expected to increase with the use of this app in the field, which is also available for use by park staff, volunteers, and the visiting public.

An important note is that if a target invasive species is found on an NETN forest health monitoring plot, the plot must not be specifically targeted for invasive species removal. In order not to skew forest health data, forest monitoring plots need to be treated the same as the surrounding area and invasive species removal should only occur when it is conducted in a larger management area that happens to include one or more plots.

Results and Findings

Early Detections

There were two reports of early detection plants: oriental bittersweet and glossy buckthorn. Several vines of bittersweet were found on Schoodic peninsula, while a few glossy buckthorn seedlings were reported along the Jesup path in Great meadow on MDI. The glossy buckthorn plants are likely part of a much larger population on the west and north edges

GIANT HOGWEED [*Heracleum mantegazzianum* Sommier & Levier.] HEMA17



U.S. G.A. 1460060

Habit: Biennial or perennial herb with a deep (40-65 cm or 16-26 in), branching tap root; blooms once then dies (monocarpic);^{4,9} some perennials have survived after flowering.⁹

Reproduction: By seed; cut stems may re-grow; self-compatible, outcrossing, protandrous hermaphrodite.⁹

Leaves: Alternate;^{4,9} up to 3 m (10 ft) long, three-parted and pinnate;⁴ pubescent beneath;² petiole base enlarged, surrounding the stem;⁴ upper leaves become gradually smaller.²

Stems: Often purple-mottled, 2-5 m (7-16 ft) tall, up to 10 cm (4 in) in diameter; hollow and ridged.^{4, 5, 9}

Flowers: Compound umbel up to 1.5 m (5 ft) in diameter with 50 to 150 rays; white;^{4,9} most plants flower in third or fourth year;^{3,9} June-August;^{4,9} pollinated by a variety of insects, mostly bees and flies; self-pollination may occur between different umbels.^{3,9}

Fruits/Seeds: Fruit elliptic, ridged, and winged, 8-15 mm (3/16-1/2 in) in length on elongate stalks; splits in half, each half with one seed; shed August-October;^{4,9} over 100,000 seeds per plant possible;⁹ water, wind, or human dispersed, mostly within 10 m (33 ft) of mother plant;^{3,4,9} germination appears to require moisture and cold stratification;^{7,9} and will occur in light or dark; viability ranges between 2-15 years.⁹

A look at the Giant Hogweed early detection card for Acadia NP.

WANTED

AT ACADIA NP

WINTER MOTH

Winter moth is a non-native insect from Europe that was introduced into Nova Scotia in the 1950's and was first detected in New England in 2003 in eastern Massachusetts. It has since spread throughout coastal New England. The immature moths, called larvae, inchworms, or loopers, feed on many types of fruit, including apples, blueberries, and cherries, and a number of trees and shrubs such as maple, oak, ash, birch, elm, linden, and crab apple. Repeated defoliation by winter moth can increase tree mortality either directly, or through increased susceptibility to other stressors (drought, secondary defoliators, and fungal pathogens). It is most easily identified when the pale brown male moths emerge and swarm in November, a time of year when few other insects are out. However, adults must be sent to a lab for DNA analysis to distinguish it from the native Bruce spanworm. Larvae are pale green caterpillars with a white stripe running down each side of the body making them hard to distinguish from other species in the inchworm family. For more information on winter moth identification and spread, see to the UMass Extension website (<http://extension.umass.edu/landscape/fact-sheets/winter-moth-overview>). NETN will continue to monitor signs of insect damage to trees for potential winter moth infestations in Acadia National Park.

Larva



Milan Zubrik

Adult

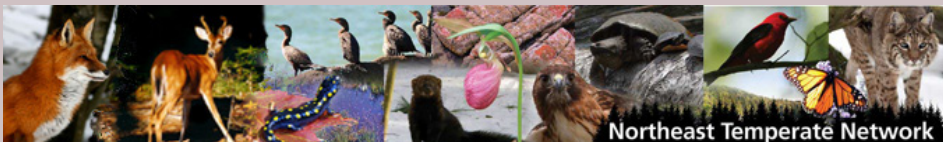


Louis-Michel Nageleisen

Feeding damage on a maple tree caused by the winter moth.
R. Childs



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Northeast Temperate Network

of Great meadow. The Acadia Exotic Plant Management Team (EPMT) has focused their survey efforts to defining the extent of this population as they continue to target this species for management. They spent the majority of their time controlling targeted invasive plant species including the following early detection species: common barberry, oriental bittersweet, giant hogweed, Japanese honeysuckle and exotic bush honeysuckle. The EPMT crew devoted a couple of days a month to surveying areas of the park where the introduction of invasive plants was most likely occur, including Liscomb and Satterlee pits, trail heads, roads, construction sites and areas of the park that abut private lands or contain old home sites. There were no reports of invasive aquatic plants detected during annual aquatic plant surveys in park ponds and lakes for 2013.

While visiting the park, a trained entomologist reported finding an adult Emerald Ash Borer (EAB) while hiking on the Long Pond trail on the south side of Beech Mountain. With help from State of Maine entomologists, several nearby ash trees were inspected for any signs of damage. The larval galleries that were present under some of the bark did not appear to be created by EAB. Further surveys are scheduled to occur in nearby locations, including a commercial campground with mature ash trees on their property. While EAB has not been verified in the park or nearby lands, this does not necessarily mean EAB is absent from the park.

Invasive Species Management

Most of the control efforts were focused on invasive plants that have seeded or rooted in disturbed areas of the park. Largely, this included construction areas and other sites with landscaping "escapees" in the surrounding communities of Bar Harbor. Much of the early detection species treated in 2013 addressed already known populations in disturbed locations. Three types of herbicide were used to treat 22 species of invasive plants on 19 acres.

More Information

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Acadia National Park Field Guide:

http://science.nature.nps.gov/im/units/netn/monitor/programs/invasiveSpecies/earlydetection_guides.cfm

Full Report online at:

<http://irmafiles.nps.gov/reference/holding/493069>