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Park Invaders: 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.

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 in this park's case - to each island) 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 include 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

After detecting black swallow-wort on Peddocks Island's Tombolo trail in 2012, small patches of the vine were again detected and treated on the island between East and Middle Head in 2013. New infestations of perennial pepperweed were documented along the beach in between the two drumlins at World's End. Two new infestations of porcelainberry were also found at World's End and treated with foliar herbicide late in the season. These detections were near the Park entrance, with one

PERENNIAL PEPPERWEED

[*Lepidium latifolium* L.]

LELA2



Fig 1 UGA5170075 Fig 2 UGA5401235

Problem: Perennial pepperweed (PP) is native to southern Europe and western Asia.^{2,4} PP is an invasive plant that has become established in parts of New England and throughout the western US.⁴ As PP establishes and expands, it creates large monospecific stands that displace native species (Fig 1).^{1,4}

Habit: Erect, rhizomatous, semi-woody perennial (Fig. 2).^{1,2}

Reproduction: Primarily vegetatively via rhizome-like roots; seeds rarely germinate.^{1,2}

Leaves: Green to gray-green, glabrous, but sometimes hairy; basal leaves stalked, up to 1 ft. (30 cm) long and 3 in. (8 cm.) wide with serrate margins (Fig. 3).^{1,2} Stem leaves smaller, ranging from 3-10 in (7-25 cm) in length, tapered at the base, entire to weakly serrate and sessile to stalked (Fig. 4).^{1,4}

Stems: 1.5 m (5 ft.) tall plants emerge from thick, minimally branched roots or semi-woody crowns. Glabrous, although sometimes hairy.³

Flowers: Early summer to fall; small white 4-petaled flowers are borne in



Fig 3 FIGA 5154085 Fig 4 FIGA 5154085

A look at the Perennial Pepperweed early detection card for the Boston Harbor Islands.

WANTED

IN THE BOSTON HARBOR ISLANDS

JAPANESE SEDGE

Native to Japan, China, and Korea, Japanese Sedge can be found in the U.S. along the east coast from Massachusetts to North Carolina and has also been found in Oregon. It was first reported in the US at Island Beach State Park, New Jersey in 1929. It was thought that it came ashore from shipwrecks that were carrying oriental porcelain, with this plant being used as packing material. The plant was observed to be potentially good for the stabilization of dunes, and was planted intentionally on dunes in New Jersey and other beaches on the east coast. Japanese sedge has the ability to form dense stands on coastal dunes, with clusters of up to 200 plants per square meter. This density effectively excludes native beach grasses and actually makes dunes more susceptible to being blown out. Native plant diversity found growing in proximity to this sedge is also less than what is usually found with native beach grass.

Japanese Sedge has completely taken over this beach dune.



Invasive Plant Atlas of New England



(population sighted again in 2013 and treated) have seen successful rapid responses from park staff and the Northeast Exotic Plant Management Team (NEEPMT) in recent years, but persistent control is still needed. The new population of perennial pepperweed found at World's End suggests that increased surveillance is appropriate to understand the extent of the population in the coming field seasons and the species should therefore remain on the target list.

The coastal, invasive plant species Japanese sedge is getting closer to park islands. This dune stabilizer is being found on Cape Cod in Falmouth MA, and throughout locations of Gateway National Historic Sites including Sandy Hook, Staten Island, Queens and Brooklyn. New observations have come in on the bay side of Fire Island National Seashore as well. This plant has been added to park areas that have its preferred dune or disturbed, upper beach habitat including Grape Island, Great Brewster Island, Lovells Island, Spectacle Island, Thompson Island and World's End.

Invasive Species Management

A variety of invasive plant types, including vines, trees, shrubs and herbs, were managed on eight island and peninsula units with cooperation from park staff, NEEPMT, Trustees of Reservations partners and youth workers from the Thompson Island Outward Bound Education Center. Thompson Island was targeted heavily for invasive plant control, including new populations of common reed and perennial pepperweed. The number of managed species increased from five in 2012 to seven in 2013. While efforts at Webb Memorial State Park were limited, one species, porcelainberry, was found and treated. The most common invasive species managed in 2013, oriental bittersweet, was controlled on four islands. Tree of heaven, swallow-wort and multiflora rose were all found on three separate units. Spectacle Island does not usually get visited by exotic plant crews, but in 2013 one visit helped to improve an indigenous plant restoration area near the west-facing beach by removing autumn olive.

More Information

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Boston Harbor Islands NRA Invasives Field Guides:

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>

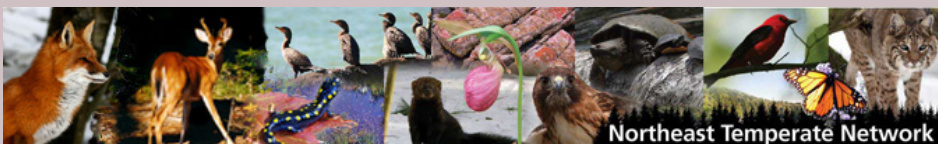
large cluster on the north side of the trail and one smaller cluster on the south side of the trail. They were treated the same day they were located.

ISED Target List Review

Three slowly expanding species were considered for removal from the list in 2013, but were kept because new population locations of these species would still be valuable to park managers. Porcelainberry at Webb Memorial State Park (The 3rd year it's been found and treated there) and swallow-wort on Peddocks island



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