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On the Hunt for Invasives: 2012 Invasive Species Early Detection Report

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 economy, environment, 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 enemies 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).

Objectives and Methods

ASIAN LONGHORNED BEETLE [*Anoplophora glabripennis* (Motschulsky)]



Fig. 1 UGA 2159062

Problem: Native to China,^{1,3,4} Asian longhorned beetle (ALB) (Fig. 1) infests and kills native hardwood trees including all species of maple, birch, poplar, willow, elm, ash, hackberry, sycamore and others.^{1,3,4} It has the potential to cause more destruction than Dutch elm disease, chestnut blight and the gypsy moth combined.¹ Damage is caused by larvae that feed in the outer sapwood and deep into the tree's heartwood, forming tunnels or galleries in the trunk and branches.^{2,4} This damage weakens the integrity of the tree and will eventually kill it if the infestation is severe enough.^{1,3}

Identification: Adults are roughly 20 to 35 mm long (1 to 1 ½ in),^{1,2,3} shiny black with long antennae, and have small white markings on the body and antennae.^{2,3}

Signs and Symptoms: Oviposition niches/egg sites are oval or round wounds in the bark, ~13 mm in diameter (½ in), that are created when females chew through the bark and inject a single egg into the tree (Fig. 2).^{1,2,3} Adult beetles emerge one year later through the bark creating round exit holes that are ~6-12 mm in diameter (¼ to ½ in).^{1,4} (Fig. 3)



Fig. 2

UGA 1393011



Fig. 3

UGA 1393002

PEST

The main goal of this program is to detect invasive species while they are still in the early stages of establishment when the costs of eradicating them are still low. This is accomplished by first developing a modest list of target insect pest and exotic plant species specific to each park. Species on the list must be 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 present in the park, but that threaten ecosystem health and function in the region. To aid with identification, NETN makes available laminated field guides and annual trainings to field

able to record sightings of invasive/exotic species into an off-the-shelf smartphone application (for Iphone and Android) called “What’s Invasive?”. The app 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 capable of documenting invasive species directly to a web-based system immediately following a detection. This is considered to be the pilot year for using this app, and projects organizers are eager for feedback as to how it works in the field and ways it may be improved.

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

Two new locations of glossy buckthorn were detected by NETN staff in wetlands on the west side of Duck Brook Road. Bush honeysuckle and Japanese barberry were located again in a forest health study plot, also near Duck Brook Road. These species were detected in the same plot when it was first sampled in 2008, and the location was reported to park staff then and again in 2012. Although these species are still present in the plot, there is evidence of invasive species control efforts nearby. There were no reports of invasive aquatic plants detected during annual aquatic plant surveys in park ponds and lakes.

In recent years, there have been increasing reports by property owners in surrounding towns of hemlock woolly adelgid (HWA) in horticultural plantings of eastern hemlock not far from park boundaries. Acadia NP has increased awareness to the possibility of HWA encroaching on forested settings within the park and has asked members of the community to be on the lookout while hiking in the park. State of Maine forest service crews conducted surveys through some areas of the park during the winter of 2012-2013.

Invasive Species Target List Review

Many of the species already on the list are known to be present in small, isolated populations in the park, and are still appropriate for the target list. However, it is becoming apparent that several species are well established, and appear to have been for some time. Because of this, NETN is removing two species

A look at the Asian Longhorned Beetle early detection card for Acadia NP.

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, field crews and even park visitors will be

WANTED

AT ACADIA NP

GLOSSY BUCKTHORN

Glossy buckthorn, native to Eurasia, has been commonly planted in the US as a hedge or for wildlife food and cover. Like many invasive shrubs, it leafs out early in spring and retains its leaves late into fall, which helps increase its energy production and shade out native plants. It has become well established in the east side of Acadia's Mount Desert Island, but not in other areas of the park.



(Japanese barberry and Japanese knotweed) from the overall target list and removing two other species (glossy buckthorn and Norway maple) from the east side of Mount Desert Island, where they are more established than elsewhere in the park. Many of the other target species that are known to be present in the park occur in more disturbed areas (e.g., bush honeysuckle, purple loosestrife, and oriental bittersweet). These species will remain on the target list so as to make sure they do not venture into less disturbed, intact forest sections of the park

There are also a few highly invasive species that are on the park's doorstep that made good candidates for the target list. Four new plant species were added, including tree of heaven, Japanese honeysuckle, common reed, and two swallow-wort species. Japanese honeysuckle is already found in the park at low levels in an isolated location at Compass Harbor and is being added to the target list because of its high invasive potential. All of these invasive plants have invasive rankings ranging from medium to high. In

addition, the winter moth forest pest was added to the target list. Winter moth has recently been confirmed on the coast of Maine near Acadia, including Bar Harbor and Tremont. It is not yet known what the extent of infestation is or if there are breeding populations, but the Maine Forest Service (MFS) expects possible hardwood defoliation in the near future for these areas. Winter moth has the potential to defoliate a wide range of hardwoods, such as oak, maple, birch and blueberry. The MFS is looking into long-term control measures using biological control methods.

The park uses the top 11 pond/lake invasive aquatic plants list developed by the Maine Center for Invasive Aquatic Plants and these species are listed in the appendix of the full report. The stream alga species, didymo (also known endearingly as "rock snot"), was added to the aquatic invasive list for 2013.

Invasive Species Management

Of the 26 non-native species that were targeted and treated in the park during 2012 by the Acadia Exotic Plant Management Team, 10 species were on the NETN target list. The target species that were managed in 2012 include: common barberry, exotic bush honeysuckle, garlic mustard, glossy buckthorn, Japanese barberry, Japanese knotweed, multiflora rose, narrowleaf bittercress, oriental bittersweet, and purple loosestrife. A total of 120 acres were surveyed and treated throughout the park during 2012.

What's Next

The invasives program, now in its third year, has entered the stage of reviewing the original species target lists based on the number of detections and updated species ranges. Feedback from park managers has indicated that the target lists and field guides have increased awareness of priority invasive species, and have made identification of these species easier. Continued feedback about the *What's Invasive?* app will help to further enhance the effectiveness of the invasive species early detection program.

More Information

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Full Report online at:
<https://irma.nps.gov/App/Reference/Profile/2194335>

"What's Invasive?" Website
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