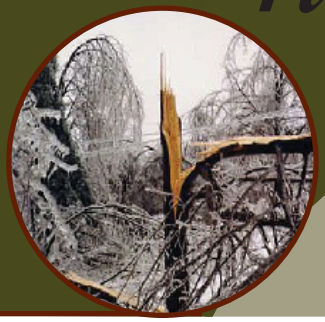
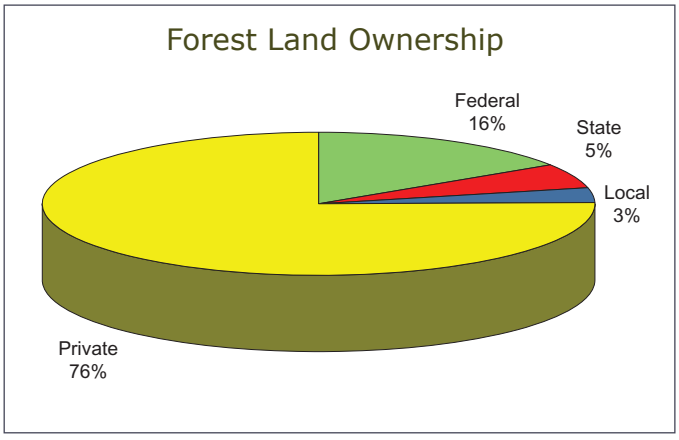
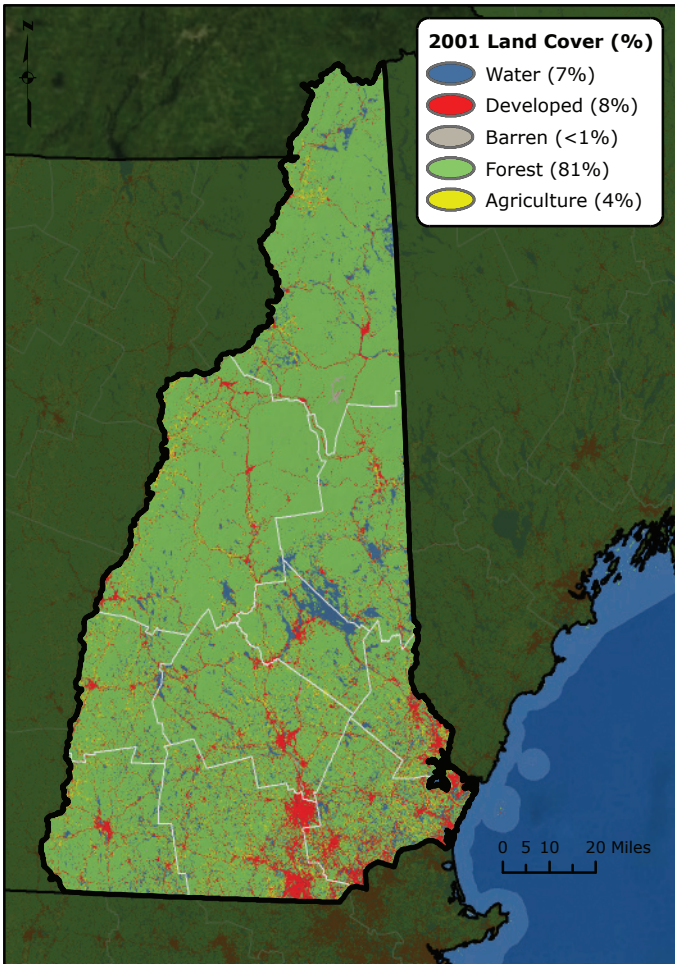
2010 Forest Health
NEW HAMPSHIRE *highlights*



Forest Resource Summary

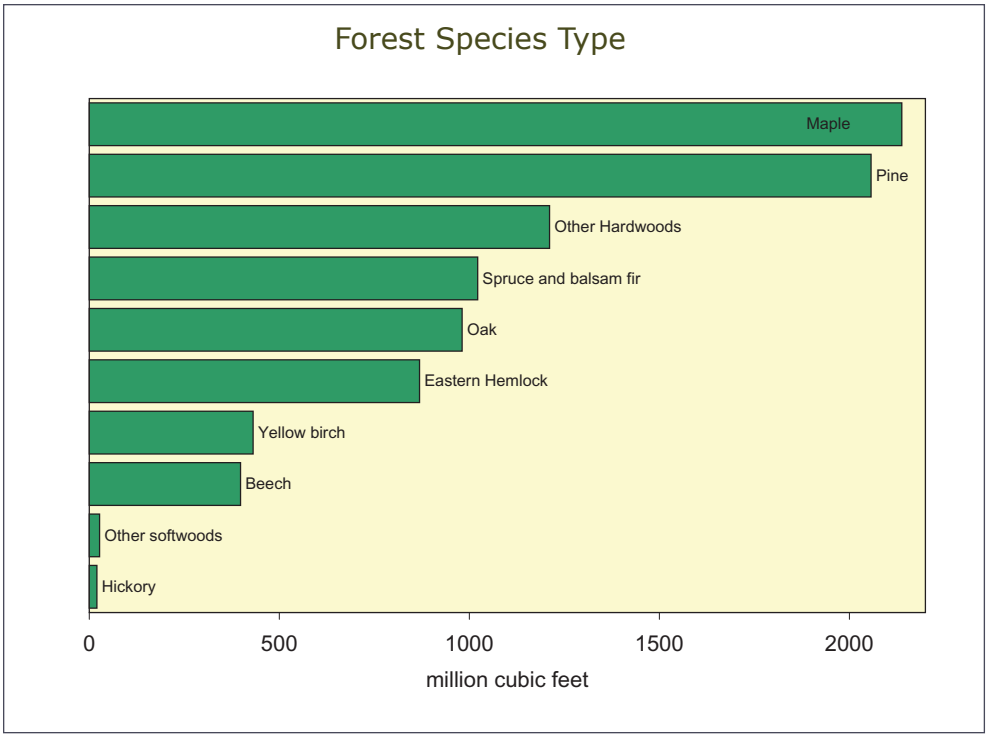
Approximately three-quarters of the forest land in New Hampshire is privately owned. Only 16 percent is in Federal ownership, which includes the White Mountain National Forest. The latest New Hampshire forest inventory estimates that 81 percent—approximately 4.8 million acres—of New Hampshire is forested. The forest resource is made up of a variety of forest types mostly comprised of maples, pine, other hardwoods, spruce and balsam fir, oaks, and hemlock. These forests provide a variety of goods including recreational opportunities, clean water, and wildlife habitat as well as paper





Forest Health Programs in the Northeast

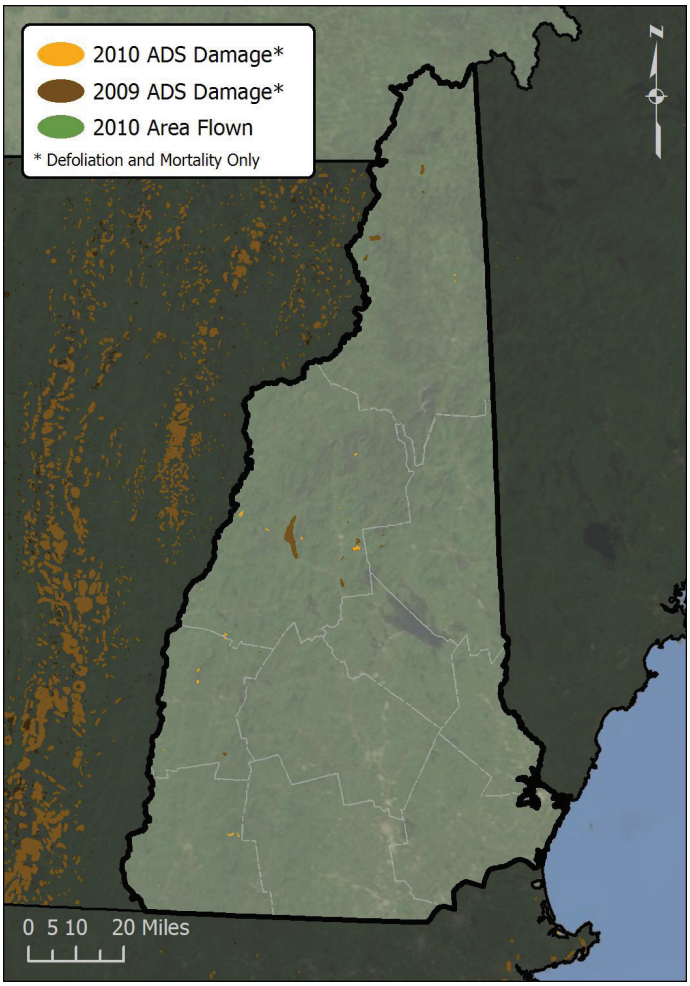
State forestry agencies work in partnership with the U.S. Forest Service to monitor forest conditions and trends in their State and respond to pest outbreaks to protect the forest resource.



and wood products. Keeping New Hampshire forests healthy enhances the quality of life for those who live, work, and recreate in the State.

Aerial Surveys

The annual aerial survey is a cooperative effort between the New Hampshire Division of Forests and Lands and the U.S. Forest Service, Northeastern Area State and Private Forestry. Little damage was observed in 2010 in New Hampshire—only 3,600 acres of damage were mapped, including areas on the White Mountain National Forest. Most of the damage was discoloration from beech bark disease and maple leaf spot, with additional acreage defoliated by oak leaftier and pear thrips. Trees affected by frost damage and white pine needlecast disease had recovered prior to the aerial survey and therefore were not captured in the damage estimates.



This map delineates aerial detection survey (ADS) results for New Hampshire in 2009 and 2010.

Forest Damage

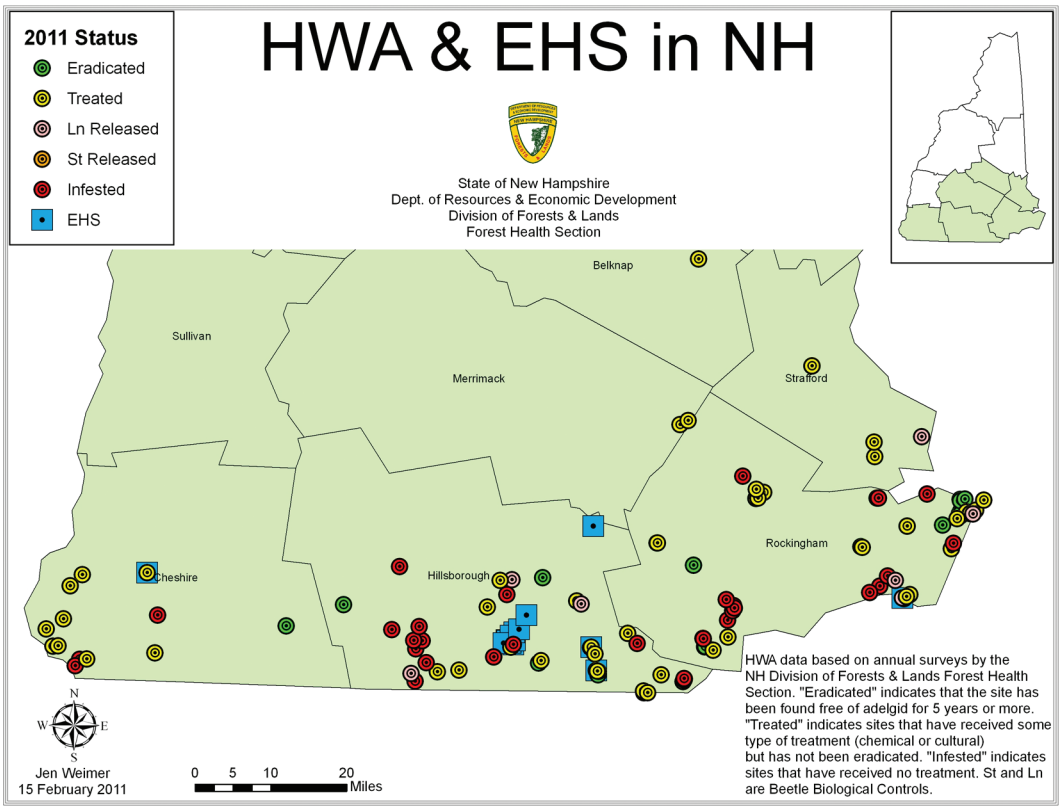
Early, fall-like discoloration on sugar maple from **septoria leaf spot** occurred during the summer of 2010. Defoliation from **oak leafroller** and **oak leaftier** was heavy and included areas on the White Mountain National Forest. Symptoms of **beech bark disease** were prevalent, with discolored leaves appearing early in the season. Significant weather events also occurred. **Wind** caused hardwood mortality, and thousands of acres of **frost** damage occurred throughout the State.

Other significant forest damage was observed, including fir mortality from **balsam woolly adelgid**, **aspen leafroller** defoliation, **pear thrips** defoliation, and oak mortality from **fire**. In addition, **browning of white pine** occurred again throughout the State early in the summer, caused in some instances by the fungus *Canavirgella banfiedii*.

Each summer, **pheromone traps** are placed around the State to monitor common forest pest populations. Pest epidemics can be predicted by analyzing trends over time. In 2010 pheromone traps were put out for spruce budworm, forest tent caterpillar, and oak leaftier. Spruce budworm and forest tent caterpillar populations remained at endemic levels. Oak leaftier was detected at numerous trap sites, which is consistent with the defoliation observed during aerial surveys. Heavy defoliation in isolated areas may be seen again in 2011.

Exotic Pests

Hemlock woolly adelgid continues to spread slowly throughout southern New Hampshire. Several new adelgid infestations were discovered during the surveys of areas that bordered towns with known infestations. These include South Hampton, Atkinson, Windham, Chesterfield, Winchester, and Newington. Infestations were also reported throughout the year by homeowners in Mason, Richmond, Greenfield, New Castle, Keene, Mont Vernon, and New Ipswich.



Status of hemlock woolly adelgid and elongate hemlock scale in New Hampshire.

Most sites in the post-suppression survey were clear of the adelgid either due to insecticide treatments and/or the presence of a fungus, which was first noted in the State in 2008. Samples sent to the University of Vermont Entomology Research Laboratory identified the organism as *Myrangium* sp., a known entomopathogenic fungus of scale insects. Research is ongoing to determine if this fungus can be utilized for biological control of both the adelgid and **elongate hemlock scale**. Suppression methods for the adelgid include chemical, cultural, and biological control options, the latter of which is used at sites that are too large to be treated chemically. In 2010, 1,000 *Laricobius nigrinus* beetles were released on conservation properties in Merrimack and New Ipswich.

Hemlock woolly adelgid and a Laricobius *predatory beetle on eastern hemlock. (Photo by Emily Hague, Monadnock Conservancy)*

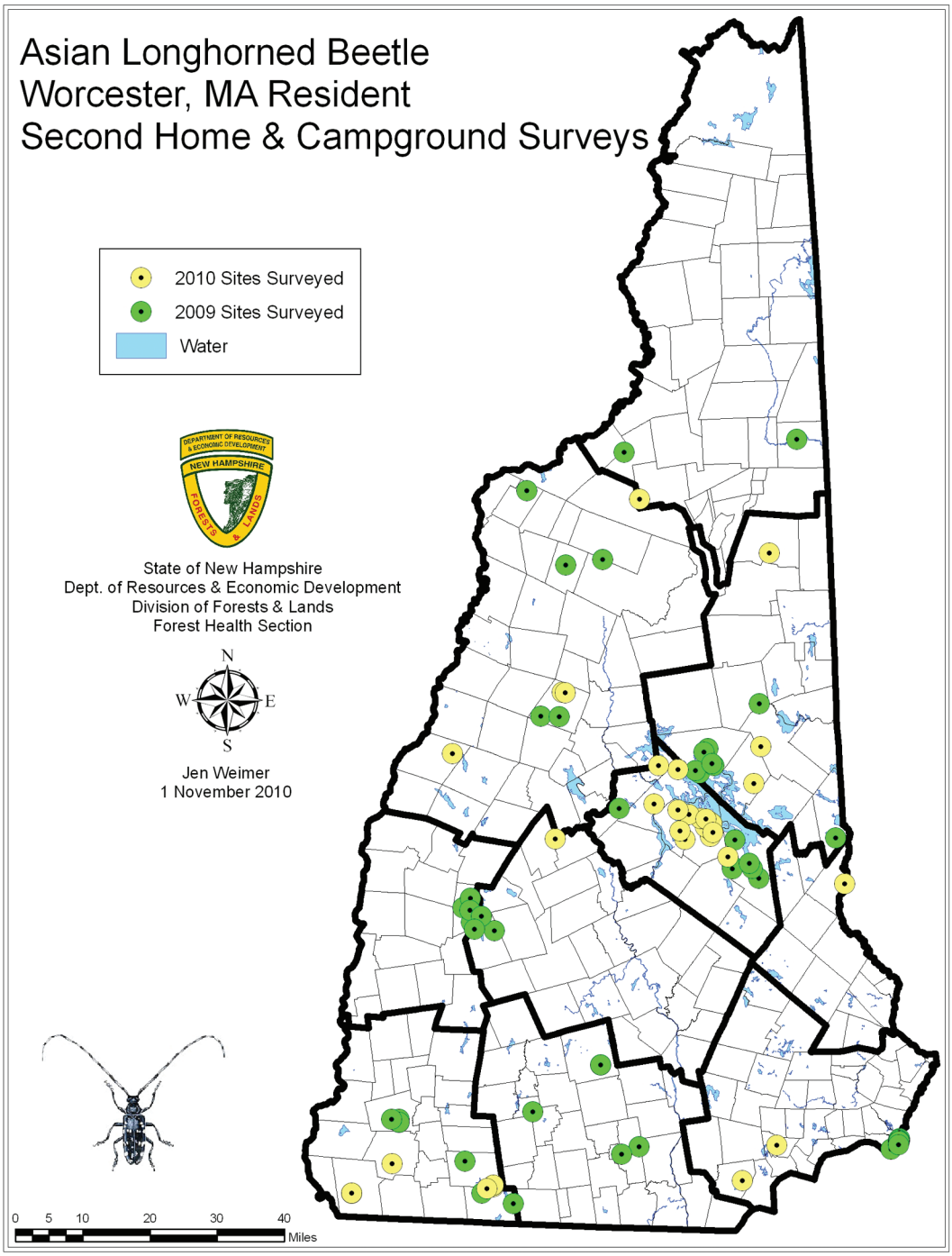
The elongate hemlock scale also continues to spread in New Hampshire and was found in Nashua on a tree that had been previously treated for the adelgid. In addition, the scale was found during a survey of an adelgid predatory beetle release site in Seabrook. New infestations of the scale were also reported by homeowners in Amherst, Manchester, and Keene. The new infestations were due to natural spread and the movement of infested nursery stock.

Emerald ash borer is a threat to New Hampshire's ash resource. New detections in New York in 2010 bring the invasive pest within 80 miles of the New Hampshire border. Surveys in New Hampshire include insect traps and biomonitoring. Traps were placed in private campgrounds around the State as part of a cooperative effort with the New Hampshire Department of Agriculture. Colonies of *Cerceris fumipennis*, a predatory wasp, were also monitored at nine sites. No signs of the borer were found in any of the surveys. The biomonitoring project will continue next year with the help of volunteers.

The **Asian longhorned beetle** is another threat to the State's forest resource. Additional detections have been found in the Worcester, MA, area, and the quarantine has expanded to 94 square miles. In addition, the beetle was detected in six trees in Boston, resulting in a 9-square-mile quarantine. Street tree surveys are ongoing in Massachusetts as well as surrounding States. Over 4,000 host

Asian longhorned beetles were captured in a swimming pool filter in Worcester, MA. (Photo by Michael Bohne, U.S. Forest Service)

trees were surveyed in Concord, Claremont, Littleton, and Salem. After finding numerous beetles in swimming pool filters in Worchester, MA (photo opposite page), a 2-year survey of pool filters was initiated in New Hampshire in cooperation with UNH Cooperative Extension. In addition, second homes in the State owned by Worcester residents continue to be surveyed, and several private campgrounds that had a high percentage of campers from the Worcester area were also surveyed. No signs of Asian longhorned beetle were found in any of the New Hampshire surveys.



Asian longhorned beetle survey sites in New Hampshire.

An *Acer mono* sentinel tree, commonly known as painted maple, was planted outside the New Hampshire Division of Forests and Lands office at Fox Forest in Hillsboro. The tree is native to Asia and is highly attractive to the exotic Asian longhorned beetle. This new monitoring tool for Asian longhorned beetle is being planted around the State by the New Hampshire Department of Agriculture with the help of urban forest personnel to aid in the early detection of the beetle in New Hampshire.

Two other invasive pests were found during the pool survey that were not known to exist in the areas where we found them. The first is the **brown marmorated stink bug**, *Halyomorpha halys*, an agricultural pest of fruits and vegetables. This bug was found in Rockingham County and is the first known sighting in New Hampshire. The second invasive pest was the **European fire ant** in Merrimack County. This project was a success due to the shared cooperation and hard work of volunteer citizens, UNH Cooperative Extension, the U.S. Forest Service, and the New Hampshire Division of Forests and Lands.

Brown marmorated stink bug. (Photo by David Lance, www.forestryimages.org)

To meet the goal of keeping invasive pests out of New Hampshire, forestry personnel are studying modes of transportation and natural vectoring capabilities of the pests and designing quarantines to limit the movement of host material. The Division of Forests and Lands is also working jointly with UNH Cooperative Extension to develop a citizen monitoring program. Program participants will help survey for devastating forest pests and also inform the general public about how to look for the signs and symptoms of these invasive pests.

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