

# project

# WWEB

Fall  
2013

Connecting Projects WILD, WET and Learning Tree in New Hampshire

## Alien Invasion!

Invasives, exotics, aliens, oh my! Insidious plant and animal invaders are changing the composition and health of our forests and other natural ecosystems.

Invading plants and animals can harm the environment by competing with native organisms for food and space, reducing wildlife habitat, causing our forests to be less diverse and healthy, altering food webs and other ecosystem processes, and endangering native plant and animal populations.

These unwelcome newcomers are often spread

by humans. As people and goods travel from one part of the country or world to another, they may carry uninvited species with them. Within the past century, many species now considered invasive and damaging to the environment were deliberately introduced into the wild; at the time, it was thought they would benefit humans or wildlife. Some were brought into the country for a specific purpose, but escaped the confines of gardens or cages and aggressively populated the countryside, wreaking environmental havoc.

Read on to learn who some of these culprits are, how to identify them, and what you can do to help stop or slow their spread.



### IN THIS ISSUE

Announcements	2
<b>SPOTLIGHT on...</b>	
GBNERR/invasives	3
Forest Invaders	4
Emerald Ash Borer	5
Most Wanted	6
Project H.O.M.E.	7

Scientific principles and laws do not lie on the surface of nature. They are hidden, and must be wrested from nature by an active and elaborate technique of inquiry.

~ John Dewey,  
*Reconstruction in Philosophy*

## Invasive Exotic Plants Take Over

By James D. Oehler, Habitat Biologist,  
New Hampshire Fish and Game Department

The title "Invasive Exotic Plants" may sound like the beginning of a title for a cheap 1950s science fiction B-movie, but the ecological and economic harm that these plants cause is no work of fiction. About one-third of the thousands of plant species known to occur in the Northeast were introduced from some other country or region of the U.S. Most are benign and are enjoyed by many as landscape and garden plants. However, free from the diseases and organisms that keep a plant species in check in their land of origin, a select few have aggressively spread since their introduction and have become difficult to control. As a result, these invasive exotic plants have degraded our natural communities by out-competing native species for resources and have cost millions of dollars to control.

### What's the big deal?

Why do some introduced species become invasive? For one, they produce prolific amounts of seed or fruit. For instance, a single twelve-inch diameter tree-of-heaven, introduced from China as a hardy



*Invasive multiflora rose was, until recently, a suggested species to plant to enhance habitat for wildlife.*

ornamental, can produce one million seeds in a year! An autumn olive tree can produce two to eight pounds of seed per year, with 20,000-54,000 seeds per pound; and the aquatic purple loosestrife can

*INVASIVE PLANTS continued on page 2*



## ATTENTION

### **Project WEB is going digital!**

Due to budget constraints, only one more issue of Project WEB will be printed and mailed. Instead, starting with the Fall 2014 issue, Project WEB will be available only digitally on the Fish and Game, Department of Environmental Services and Project Learning Tree websites.

**Don't miss an issue! Please sign up to be on our e-mail list** – you will receive notification of the posting of each new issue, and a link directly to it.

Visit [wildnh.com/WEB](http://wildnh.com/WEB) today to sign up.

### *INVASIVE PLANTS continued from page 1*

produce up to 900 capsules per year, with an average of 120 seeds per capsule.

Once seeds and fruits are formed, they are widely dispersed by a variety of means. Small mammals and birds carry some types of seeds in their fur or feathers to new locations, or defecate a viable seed after consuming a piece of fruit. The next time you go for a walk in an old field, pay attention to where invasive, exotic plants are growing. They are commonly found growing along fence lines and field edges or at the base of trees in the middle of fields, because these are the places where birds like to perch.

Wind also effectively disperses seeds of common reed, tree-of-heaven, and purple loosestrife, because the seeds are either very

lightweight or are contained in a winged sheath that is easily carried by the wind.

Humans are great dispersers of invasive plant seed as well. Some invasive species are still widely available from nurseries and are desired for their use as ornamentals, in erosion control projects, in floral arrangements, or planted as a source of food or cover for wildlife.

Many invasives are also effective at reproducing vegetatively. Oriental bittersweet, tree-of-heaven and common reed have massive root systems that aggressively spread out and push up new plant shoots, which aids these plants in creating dense monocultures. Additionally, the branch tips of multiflora rose and two species of barberry take root when branches droop to the ground.

### **Pushing out the Natives**

All of these species can out-compete native species for resources, even in areas that seemingly have few resources to offer. Most of the invasive exotic shrubs and trees will be among the first plants to leaf out and the last to lose their leaves in the fall. Some, like Japanese barberry, can even alter soil chemistry, making the area uninhabitable by other species. Additionally, because of their nitrogen-fixing capabilities, autumn and Russian olive can sharply increase soil nitrogen levels, putting many native species at a disadvantage.

Once these species become well established, they can have a tremendous impact on the native plants and animals in the invaded area. Dense stands of phragmites (common reed) and purple loosestrife result in fewer numbers of small mammals and birds, especially waterfowl, as more desired foraging plants are displaced.

During fall migration, songbirds require a great deal of energy to complete their long treks south. Many native shrubs, especially dogwoods, produce high-quality



*Purple loosestrife chokes out more desirable plants in wetland areas.*

fruits with plenty of fat to maintain songbird energy levels. In contrast, many invasive exotic plants, including common buckthorn, Japanese barberry, multiflora rose and Oriental bittersweet, are nutrient-poor and alone likely could not support the energy needs of migrating songbirds.

Monarch butterfly larvae feed only on milkweed plants, yet the adult butterflies are now found laying their eggs on some invasives, on which the larvae cannot feed. Additionally, Oriental bittersweet twines to the top of trees and shrubs, effectively shading them out. Bush honeysuckle and both buckthorn species inhibit forest regeneration and reduces the variety of herb communities. It is not uncommon for annual herbs, necessary to the survival of many wildlife species, to be entirely suppressed by these plants. Multiflora rose also displaces native vegetation; even cattle are often reluctant to enter fields dominated by it.

### **Be Vigilant**

Landowners/managers should be diligent in identifying and preventing new invasions. A few new seedlings may be easily pulled by hand, but if allowed to proliferate, they may form a dense stand that is difficult and costly to control. Although it may not be feasible to eliminate large populations of invasives, there are things that can be done to minimize their spread or to prevent their establishment if detected early. Once unwanted invasives are identified, control measures may include pulling undesired individuals by hand, mowing or weed-eating. Other, more involved techniques include girdling, tilling, flooding and biological and chemical control.

For further information about identifying and controlling plant invasives, visit:

[wildnh.com/Wildlife/Northeast\\_Hab\\_Mgt\\_Guide.htm](http://wildnh.com/Wildlife/Northeast_Hab_Mgt_Guide.htm). 

### **Alicia Carlson Leaves Project WET**

In August Project WET state coordinator, Alicia Carlson, left her position at the N.H. Department of Environmental Services after thirteen years. For the past 5½ years, she worked as a Source Water Protection Education Specialist, which included the role of Project WET state coordinator. In her new role, Alicia has moved from water protection to forest stewardship. She is now a Forest Stewardship Program Outreach Assis-

tant with UNH Cooperative Extension in Durham. Reach her at [alicia.carlson@unh.edu](mailto:alicia.carlson@unh.edu) or 603-862-3883.

Although her job has changed, Alicia's commitment to environmental education has not. We are pleased that she is planning to remain actively involved with the New Hampshire Environmental Educators (NHEE) and the New Hampshire Education and Environment Team (NHEET). Awesome, Alicia!!

## Spotlight on...

### Great Bay National Estuarine Research Reserve (GBNERR)

## Leading the way in the fight against plant invasives

Great Bay NERR is on the cutting edge of invasive research and control in New Hampshire. Since 2005, Great Bay NERR has mapped twenty of the most ecologically damaging invasive plant species on all reserve properties. Over 4,000 stands of these species have been documented within the reserve boundary.

Mapping invasive populations within the Great Bay NERR supports prioritization of areas to focus control efforts. By overlaying locations of the most ecologically damaging invasive species and the most ecologically sensitive natural areas, priority areas for removing invasives can be identified. Also, monitoring and mapping invasive populations helps detect them before they become prevalent throughout the landscape.

The Great Bay NERR is a key partner in the New Hampshire Coastal Watershed Invasive Plant Partnership, which brings together eleven agencies and organizations to assess the extent and control the spread of invasive species in New Hampshire's coastal watershed. The group also works with municipalities, private landowners and state and federal land managers to promote native species and restore native habitats.

Reserve staff promote and facilitate cooperative invasive species control efforts within its boundary. Throughout the watershed, the Great Bay NERR works closely with local landowners to document invasive species and build awareness of control options. Through hands-on workshops and demonstration projects, homeowners are



*A volunteer steward uses a weed wrench to remove common buckthorn at Great Bay National Estuarine Research Reserve.*

learning to identify invasive species and practice effective ways of removing them.

As the Great Bay NERR's efforts to control invasive species proceed, treatments are being applied using experimental designs that will allow for comparisons of the effectiveness of different control options. The results and experiences will be shared with landowners and management agencies to guide their future decisions about controlling invasive species on private and public lands.



### Students can get involved by locating and removing invasive plants in their communities

Groups working to combat invasive plants in Great Bay's watershed can borrow some tough tools to make their efforts more effective.

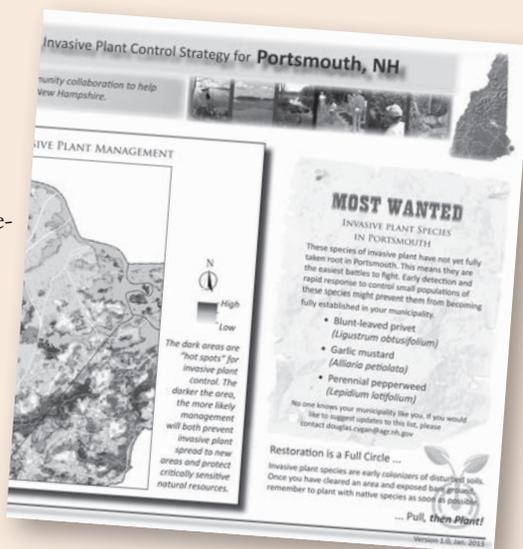
The Great Bay NERR hosts a storehouse of specialized tools at the Great Bay Discovery Center that are available for loan as a community resource. Called Weed Wrenches, the tools are useful for manual removal of woody stemmed invasive plants, such as glossy buckthorn, autumn olive, multiflora rose and honeysuckles. Enough Weed Wrenches are available to equip a large work group, including school classes.

To make arrangements to borrow the tools, visit [greatbay.org/programs/tool-loan-program.htm](http://greatbay.org/programs/tool-loan-program.htm)

### Pulling Together Statewide

The importance of minimizing the spread of invasive plants means they are a common focus of control and restoration projects. However, invasive plants know no boundaries and can easily reestablish from surrounding areas unless a landscape-scale strategic approach is taken to prioritizing control projects. Great Bay National Estuarine Research Reserve, New Hampshire Fish and Game Department, and the N.H. Natural Heritage Bureau have teamed up with over 120 community members, natural resource managers, and academics to develop a strategic prioritization plan for the control of upland, wetland, and intertidal invasive plant species throughout the state.

The strategy is available online at [wildnh.com/invasives/](http://wildnh.com/invasives/). You can download a customized map for each New Hampshire municipality, showing priority areas where invasive plant removal will have the most immediate impact and most effectively protect our native natural resources for the long term. You'll also find a customized "early detection" list of plant species just coming into each town



and a handbook that describes how to use this strategy to prioritize projects right down to the individual property level, whether it's town conservation land, a school ground, or your own backyard.

Only by working together on shared invasive plant "battles" across differing land ownerships and political boundaries, can we protect our native plants and wildlife habitat for the long term.

*Rachel Stevens, Stewardship Coordinator, GBNERR.*

# Forest Invaders

The forests of New England have gone through many changes in the last four hundred years. Forests were cleared for farming, housing and timber production. Dramatic weather events like hurricanes and ice storms changed our forests in other ways. Another phenomenon that affects our forest is the introduction of species and diseases that are not native to the area.

It is hard to imagine that the American chestnut and American elm were common trees in the southern part of New Hampshire less than a hundred years ago, before being effectively wiped out by chestnut blight and Dutch elm disease. Other invaders like white pine blister rust and gypsy moth have affected forest health. With the number of forest invaders rapidly increasing, we have to think about what New Hampshire's future forests might look like.

What exactly is a forest invader? The plants and animals that occur here naturally are called native species. These species have co-evolved with other native species that have served to keep populations in check through predation, competition and disease.

*Non-native species* (also called exotic

or alien species) are species that have been introduced or moved by human activities to an area where they do not naturally occur. Non-native species are not necessarily harmful; in fact many of them are beneficial (e.g., apple trees). However, when a non-native species overruns or out-competes the native

*When a non-native species overruns or out-competes the native species, it often causes ecological or economic problems; then it becomes a non-native invasive species.*

species in an area, it often causes ecological or economic problems. Then it becomes a *non-native invasive species*.

In their new locations, invasive species do not have the natural controls that serve to limit their populations in their native range. This lack of controls, coupled with a typically high reproduction rate, allows invasive species to tolerate a large array of conditions, enabling them to take over in non-native areas.

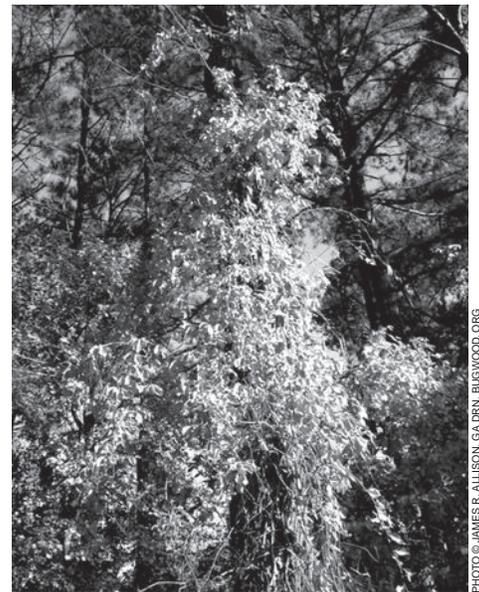


PHOTO © JAMES R. ALLISON, GARDEN, BIGWOOD.ORG

*Although known for its colorful fall display, Oriental bittersweet invades natural landscapes posing a serious threat to native trees and shrubs.*

The effect of invasive species on a community can be devastating. Invasive species degrade and alter habitats, crowd out native species, choke waterways, deplete native fisheries and limit forest regeneration. Some environments are extremely vulnerable to invaders. A single invasive species can cause irreversible damage to an ecosystem. Non-native species can dominate ecosystems and reduce populations of native species, possibly causing extinction.

Although species distribution patterns are always changing, historically, those changes have occurred over time through natural progressions. Today, species distribution is rapidly increasing worldwide because of human travel and commerce. Some species were intentionally introduced, such as the autumn olive, as a wildlife food.

Changes in an ecosystem can sometimes cause native species to act like non-native species. For example, since 1990, native bark beetles have killed millions of trees across millions of forested acres from Alaska to southern California. Scientists believe that a warmer climate has enabled those beetles to flourish and extend their ranges into new territories.

Management practices have been put into practice to reduce the harmful effects of invasive species, but the best way to manage invasive species remains the prevention of their spread.



*This information was adapted with permission from Project Learning Tree's Exploring Environmental Issues: Focus on Forests.*

## Activities Related to Articles in this Issue

### Project WILD suggests:

In the activity, *Here Today, Gone Tomorrow*, middle school students conduct research and make a list of threatened and endangered animals (local or national), and include factors that affect the animals' condition.

Taking part in *World Travelers*, Middle school students conduct field research, develop graphs and maps depicting the proportions of exotic species, and create reports on the effects of those species on native species.

In the Project WILD Aquatic activity, *Aquatic Roots*, upper elementary and middle school students research local aquatic plants and animals to find out if they are natives or exotics, and investigate their impacts on people, other animals and the environment.

### Project WET suggests:

In *Invaders!*, students describe how an aquatic invasive species could be transported between water bodies and demonstrate how invasive species impact native species and their natural habitat.

When presented with water

management challenges in 8-4-1, *One for All*, students identify various water users and their requirements for water in a community/watershed and demonstrate the complexity of sharing water (use invasive species as a water management challenge instead of endangered species).

In *Humpty Dumpty*, students describe the challenges of restoring an altered natural environment and develop a restoration plan for a local site (focus on invasive species as the altered ecosystem).

### Project Learning Tree suggests:

Students learn what invasive species are, why they are problematic and how to prevent their spread in *Invasive Species*.

Many plants found on vacant lots are non-native species. *Are Vacant Lots Vacant?* has students look closely at a vacant lot to see what grows there.

Certain characteristics allow plants and animals to survive in a variety of environmental conditions. *Charting Diversity* organizes plants and animals according to those characteristics.

# **Emerald Ash Borer Alert!**

## **Invasive beetle discovered in Concord in 2013**

**By Karen P. Bennett, Extension Forester, UNH Cooperative Extension**

The emerald ash borer (EAB) is a non-native beetle that attacks and kills true ash (*Fraxinus spp.*) and is responsible for the death of millions of ash trees in the Midwest. It was discovered in Concord, N.H., in late March of 2013, making New Hampshire one of 21 states reporting incidents of the invasive pest. After an extensive survey of the Concord area, foresters determined that five to six percent of the ash trees within a 24-square mile area were infested.

The Concord infestation of EAB is the eastern-most find in North America. The beetles are believed to have first arrived hidden in a load of firewood. Based on the size of the infestation, foresters feel the insect was probably in Concord for five years before it was detected. Native to Southeast Asia, EAB was first detected in North America in 2002 near Detroit, Michigan. Its likely mode of travel from Asia was in wood packing materials protecting a shipment of commercial goods.

As a non-native insect, EAB lacks predators to keep it in check. Once infested, trees die within three to five years. Because the insect is so lethal to native ash trees, New Hampshire state officials issued a quarantine for Merrimack County, restricting the movement of all hardwood firewood, ash nursery stock, ash logs and other ash forest products originating in the county. The quarantine adds another level of protection to the existing firewood restriction established in 2011 prohibiting uncertified firewood from entering the state.

Although ash trees make up less than four percent of the trees growing in New Hampshire, they are a common landscape tree, important to our economy and apt to grow in ecologically sensitive sites. Of the three ash species found in the state, green and black ash grow in riparian areas, along larger streams and rivers. Black ash also grows in unique swamps and its stems are prized for basket-making. White ash is an important lumber tree, adding about \$1 million to New Hampshire's annual forest economy. Turkey, grosbeaks, cardinals, cedar waxwings, black bear and small rodents all eat ash seeds, while beaver eat the inner



PHOTOS © DAVID CAPPAERT MSU, BUGWOOD.ORG



PHOTO © USDA, APHIS, PPD, BUGWOOD.ORG

*Emerald ash borer larva tunnel under the bark, destroying the trees ability to transport food and water, eventually killing the tree.*

To do that, we need many eyes inspecting ash trees to find evidence of new outbreaks. Visit [nbbugs.org](http://nbbugs.org) or call the UNH Cooperative Extension Forestry Information Center hotline at 1-800-444-8978 to get the information you need to help. Resources include the signs and symptoms of an infestation, help to identify emerald ash borers and ash trees, a map showing the infestation zone, guidance for reporting suspect trees, and recommendations for other shade and forest trees.



*Karen Bennett is leading UNH Cooperative Extension's EAB response. She reminds all to report suspect ash trees or insects at [nbbugs.org](http://nbbugs.org) or 1-800-444-8978.*

### **Resources**

NH Public Radio's The Exchange aired an excellent two-part program exploring invasive species on July 31 and August 1, 2013. Listen in at:

[nhpr.org/post/eradicating-invasive-species-part-1-plants](http://nhpr.org/post/eradicating-invasive-species-part-1-plants)

[nhpr.org/post/invasive-species-part-2-animals-and-insects](http://nhpr.org/post/invasive-species-part-2-animals-and-insects)

# MOST WANTED INVASIVES

One of the most important things you can do to help prevent the spread of invasives is to learn to identify plants and animals that are non-native species that mean trouble.

For more information about these invasives or to report sightings of emerald ash borer or Asian longhorned beetle, visit: [nhbugs.org](http://nhbugs.org). For information on plant invasives, visit: <https://extension.unh.edu> and search for invasives.

## Oriental Bittersweet

### Look out for strangling vines

People liked to decorate using this plant's bright orange berries, so it was



PHOTO © JAMES H. MILLER USDA, FS, BUGWOOD.ORG

brought to the U.S. from Asia many years ago. That turned out to be a bad idea, because birds eat the berries

and then fly away. When the birds defecate, bittersweet seeds are deposited deep in the forest, far way from the garden where it was planted. The vine takes over natural areas and chokes out native vegetation that cannot compete with it for space, water and sunlight. The plant is able to live in deep shade. When a tree dies or is cut down and sunlight comes in, the bittersweet grows and reproduces quickly.

## Burning Bush The red menace

Beautiful bright red fall leaves make this plant attractive to landscapers. It is



PHOTO © JOYLUDESIGNS @DREAMTIME.COM

a threat, however, because its seeds are widely dispersed by birds and wildlife and it crowds

out native bushes and shrubs. Burning bush is shade-tolerant, meaning that it can grow in the shade of other trees.

## Norway Maple The imposter

Norway maple is native to Europe and was introduced to North America as

a landscape plant. It is adapted to live in a variety of conditions and produces many seeds that are spread by the wind. In New Hampshire, this tree has escaped from areas



PHOTO © JAN MARTIN WILL @DREAMTIME.COM

where it was planted on lawns and streets, and now occurs in many forest areas. The roots of Norway maple are thought to excrete a toxin that doesn't let other plants live under its canopy, allowing it to out-compete sugar maples.

## Emerald Ash Borer Shiny but not nice

The adult emerald ash borer beetle fits on the head of a penny and is hard to spot in the wild. Recently discovered in New Hampshire, it is responsible for the death of millions of trees in the Midwest. The ash borer larva does all the harm. It tunnels under the bark, destroying the tree's ability to transport food and water, eventually killing the tree. Most new infestations are caused by people unknowingly taking infested ash, sometimes for use as campfire wood, to new areas.



PHOTO © DAVID CAPPAERT INSU, BUGWOOD.ORG

## Gypsy Moth Chomping through the forest

The gypsy moth is an example of an experiment gone horribly wrong. This moth was brought to the U.S. in a failed attempt to start a silkworm industry. Escaping soon after, the gypsy moth has become a major pest in the northeastern U.S. and southeastern Canada. Not a fussy eater, gypsy moth caterpillars will eat the leaves of any deciduous (trees that lose their leaves) tree, but they really like oaks. Tree damage can range from light disturbance to almost all the leaves being eaten. Most de-



PHOTO © SCOTT BAUER, USDA, BUGWOOD.ORG

ciduous trees can survive a moderate degree of defoliation, and many can even survive a single year when all their leaves are eaten. However, continuing attacks can fatally weaken a tree.

## Woolly Adelgid Fuzzy sap-sucking insect

The hemlock woolly adelgid is a tiny exotic insect that gets its name from its

woolly white appearance and its host, the hemlock tree. It has a complex life cycle and produces two generations per year. The eggs, nymphs



PHOTO © PA. DCNR, BUGWOOD.ORG

and adults are wrapped in a white fluffy substance. Adults, as well as nymphs, suck sap from young twigs on hemlock trees. This causes the hemlock needles to dry out and drop. After a few years of defoliation, the hemlock tree will die.

## Asian Longhorned Beetle Attacking our trees

The Asian longhorned beetle feeds on the most common trees found in our schoolyards, parks or backyards, such as maple, elm, willow and horse chestnut. They have shiny black bodies with irregular white spots, exceptionally long black antennae



PHOTO © MELODY KEEN, USDA, FS, BUGWOOD.ORG

with white bands and may have blue feet. The larvae bore into live trees, causing sap to flow from wounds and frass (looks like wood shavings) to accumulate at the base

of the tree. They ultimately kill the trees they feed on. Primarily found in China and areas of Korea and Japan, the beetle probably hitchhiked here in solid wood packing material that accompanies commodities moving into the United States. 

Adapted from the "Forest Invaders" issue of WILD Times for Kids, a teaching tool for fourth through sixth grades, available on the N.H. Fish and Game website at [wildnh.com](http://wildnh.com).

# ON THE H.O.M.E. FRONT

## Invasive Plants and Schoolyard Wildlife

by Marilyn Wyzga

Winter is a good time to be planning for your schoolyard habitats. Consider what you will plant in the spring to feed birds and other wildlife, whether you have invasive plants to remove, and what you will plant in place of those so wildlife get the food they need.

While many birds have migrated through New Hampshire, others reside here for the winter. They take advantage of foods in the form of plant fruits, seeds and nuts to fuel their winter survival, and also eat insects in warmer months. With so many exotic invasive plants in our landscape, there is much discussion and disagreement about whether invasive plants are “good” for the birds. Birds do feed on persistent winter fruits like the leathery hips of multiflora rose and the speckled red berries of autumn olive, yet both plants have been found to be invasive. Do their fruits provide enough quality nutrition? And do invasive exotic



To support butterfly habitat, remember to include the plants that feed their larvae, like milkweed for monarch caterpillars.

plants support the insects needed by birds during the nesting season?

Researchers at the University of New Hampshire are studying the relationship between exotic invasive shrubs, caterpillars, and the breeding success of birds that use shrublands. Caterpillars are one of the most important foods that many shrubland birds feed to their nestlings. Many caterpillars have evolved to eat the leaves from only certain native shrubs (such as dogwoods and viburnums). Since exotic shrubs such as glossy buckthorn and autumn olive have only recently been introduced to the United States, they support fewer caterpillars than native shrubs. Researchers predict birds will produce more young in shrublands that have more native than exotic shrubs. (Search for “shrubland birds” at <http://extension.unh.edu> to read the study.)

### Generalists vs. Specialists

Interesting data can also be found in Doug Tallamy’s book, *Bringing Nature Home: How Native Plants Sustain Wildlife in Our Gardens*. Tallamy, an entomologist from the University of Delaware, presents readers with a story of insects as the core of the food web: a diversity of insects leads to a diversity of other wildlife that eat them. When it comes to their own feeding, insects (like all wildlife) fall into two broad categories: *specialists* or *generalists*. Specialists feed exclusively on one type of plant, like the Karner blue butterfly, whose larvae consume only wild blue lupine. Generalists, such as luna moths, feed on a variety of plants. However, it seems both groups are specifically adapted to digesting the plants with which they have co-evolved.

To support wildlife habitat in your schoolyard landscape, provide the particular foods different insects need to survive. Planting native plants from your local area goes a long way towards accomplishing this, since it feeds a greater array of insects. A healthy population of well-fed insects can, in turn, be consumed by birds, amphibians and reptiles, and so on through all strands of the food web.

### Countering Invasives

Removing existing invasive species from your site is as important as introducing native vegetation. Plants identified as “invasive” often succeed to excess by abundant fruiting. Whether or not their

Removing existing invasive species from your site is as important as introducing native vegetation.



A Hanover High School student uses a weed wrench to pry invasive plant saplings out of the ground by their roots.

fruits provide the best nutrition, birds still eat them, and they are not selective about where they defecate. So a bird drawn into a newly landscaped area to take shelter in the conifers you’ve cultivated may have just been noshing on burning bush berries in a neighboring yard. And so they “plant” those seeds (with their droppings) right in your landscape. Be vigilant in your newly planted areas, seeking out and eliminating the seedlings of invasives. Keep the soil covered, first with 2-3 inches of mulch, and then groundcovers, so those invasive seeds are challenged to take hold.

Students can help remove invasive plants, especially those that are small and young. Some invasives are very distinctive even when small, such as Oriental bitter-sweet with its bright yellow root, and autumn olive with its silvery, fuzzy leaves. Older students can employ a weed wrench (see picture), a standing tool that jacks saplings right out of the ground. Proper disposal is critical. Dry the plants to keep roots from taking hold, or place them in a black plastic bag to keep the seeds from spreading. Some invasive plants will re-root if they are simply tossed in the woods or on a compost pile; Japanese knotweed can actually sprout from a

HOME continued on page 8



*Highbush cranberry (left), planted in place of burning bush, provides nectar for insects and persistent fruits for birds and small mammals, plus good fall color.*



PHOTO © HOWARD CHEEK, DREAMSTIMEFREE.COM

*Welcome the birds, butterflies, and other animals to share your living landscape by laying out a buffet of native plants.*

small cutting that finds its way to open soil.

Once removal is complete, replant the area with native trees, shrubs and vines, especially the fruiting kind, and monitor for invasives. If herbicides have been applied (on a schoolyard, by a licensed professional only!), you will need to wait a period of weeks for the herbicide to flush from the soil.

### Beautiful Threats

Three popular horticultural plants were added to the invasive species list in New Hampshire in 2007: Norway maple (*Acer platanoides*), burning bush (*Euonymus alatus*) and Japanese barberry (*Berberis thunbergii*). These may be growing in your schoolyard, since they are very durable,

easy-care plants and the burning bush and barberry in particular were favored for bird plantings. Several websites offer super alternatives to these three invasive species. You can search for a list of alternatives to invasives from UNH Cooperative Extension (<http://extension.unh.edu>). You may also want to look into *Integrated Landscaping: Following Nature's Lead*, by Chase-Rowell, Hartnett, Tebo and Wyzga (2008, University Press of New England). This book offers whole plant systems that combine trees, shrubs, perennials, and groundcovers, which collectively exhibit some of the best features of those three invasives – such as adapting to challenging landscapes like schoolyards – without the invasive quality.

And keep in mind, a healthy habitat means the plants are being eaten. Every beautiful butterfly comes from a leaf-eating caterpillar. So welcome the birds, butterflies, frogs, turtles and rabbits to share your living landscape by laying out a buffet of native plants.



*For the complete list and a downloadable color booklet, Prohibited Invasive Species, visit the NH Department of Agriculture website at: <http://agriculture.nh.gov>.*

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**PAID**  
CONCORD, NH  
PERMIT #1478

CONCORD, NH 03301  
29 HAZEN DRIVE  
ENVIRONMENTAL SERVICES  
NH DEPARTMENT OF  
**WEB**