

Invasive Alien Plants: The Role of Birds in Their Spread and the Threat to Bird Habitat

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Here in Massachusetts, we are experiencing a massive assault on many of our bird habitats, with an explosion in the number, and infestation sites, of several dozen (mainly new for us) plants from far-away lands. Many of these are fruiting plants for which birds are the primary means of dispersal. The nutritional value of alien plants for birds is suspect, and very suspect in the long run if even a few of these species fulfill their potential to overrun entire habitats and ecosystems. Massachusetts has 1770 taxa of native vascular plants. As these get crowded out, and many disappear, the myriad fruits and seeds, as well as the insects that rely on just these plants, will no longer be available as food for our birds. As our native plant biodiversity declines in both numbers and species, due to the several dozen aliens now invading our region, hundreds of native species may be lost. It is ironic to see that birds themselves play a prominent role in the spread of this attack.

Until recently, most of our “weeds” (undesirable plant species) were herbaceous wild flowers and grasses from Europe, the Middle-East, and areas west of the Appalachians. These were nuisances in agricultural fields, orchards, and gardens, and uncounted hours and dollars have been spent fighting them. In the last several decades, however, much of Massachusetts has quietly hosted an enormous influx of unwanted plants, seemingly everywhere except in the interiors of forests in poorer soils. Note: A “weed” is labeled an invasive when it shows signs of dominating or replacing native plants in one or more habitats.

Most of our newer “weeds” are woody trees, shrubs, and vines brought in from similar climates of northeast Asia in the 1900s by the horticultural industry or by an agency of the United States government. Most have admirable horticultural qualities such as attractive flowers, leaves, fruits, bark, or shape. Many provide new food sources and cover for birds and other wildlife, or control soil erosion quickly. Up to ninety-nine percent of the horticultural novelties sold at garden centers do not naturalize freely; they stay where they are planted and, due to climatic, infertility, or unknown realities, do not leapfrog into new areas. Some that do not invade natural areas here are major threats elsewhere. For example, popular horticultural plants such as privets, wisteria, and butterfly-bushes do not spread through wild lands in cold New England, but are major invasives in southeastern United States, where winters are less severe.

Thirty-eight species are now listed as invasive by the Massachusetts Invasive Plant Working Group. This group was formed to advise the state and is sponsored by the Massachusetts Executive Office of Environmental Affairs, the Horticultural Research Institute, and the Massachusetts Nursery and Landscape Association, Inc. Its twenty members come from the state and federal government, non-profit

organizations, and the nursery and landscape industry; the list includes input from all these groups. Unfortunately, there are no laws or penalties preventing the importation, sale, or resale of any of these thirty-eight species. At present time, there is no assistance offered for attempts to control them, no help in removal (except giant hogweed), and no fines if listed species are found growing on private, non-profit, corporate, or government property. The following are those which most afflict avian habitats in mainland Massachusetts. A few others are fairly localized, especially on offshore islands, while another half-dozen are spreading northwards from the New York City area. It is often useful to break down invasive alien plants (those that are threats to entire ecosystems) by growth form, as is done in the following paragraphs.

Problem Trees

Norway Maple (*Acer platanoides*). This is the most commonly planted street, and front yard, tree in the state. It is now spreading rapidly into forest edges, outcompeting native trees, and forming monotypic stands. A “plastic tree,” which repels all native insects, it is therefore useless for foraging native birds. Its dark shade inhibits germination of native plants in the understory. From Europe.

Tree of Heaven (*Ailanthus altissima*). Known as “Tree of Hell” by botanists, this foul-smelling urban weed tree is spreading out along highways to many suburbs. It emits toxins which inhibit germination of all other plants. From eastern Asia.

Black Locust (*Robinia pseudoacacia*). A commonly planted street and yard tree, it is escaping widely and is forming monotypic stands along highways. It is especially invasive in the pitch pine and scrub oak flatlands of southeastern Massachusetts. It may affect our scrubland birds, such as Brown Thrasher and Eastern Towhee, and grassland species where it invades fields. As a nitrogen-fixing legume, it alters soils and creates favorable conditions for other invasives. From west of Appalachians.

Problem Shrubs

Japanese Barberry (*Berberis thunbergii*). This ubiquitous hedge planting has single sharp thorns and oval red fruits dispersed by birds. It is very invasive in the Berkshires and locally common in other areas. A new hybrid with the rarer European barberry (*B. vulgaris*) is becoming common (*B. x ottawensis*). From Japan, eastern Asia.

Multiflora Rose (*Rosa multiflora*). The federal government imported and spread this familiar thorny plant for erosion control and wildlife food and cover. It has now escaped widely, replacing native plants. Its impenetrable thickets protect many other invasives, impeding their removal. Its prolific fruit is probably the sole reason we have mockingbirds in the state. From eastern Asia.

Autumn-olive (*Elaeagnus umbellata*). Imported by highway departments, this gray-leafed, wide shrub has red fruits relished by birds. Good? No. Bad — because birds are spreading more of it everywhere. It is most invasive in southeastern Massachusetts, but is also shading out and replacing native plants near, and beyond, interstate roadways statewide. From central and eastern Asia.

Glossy Buckthorn (*Frangula alnus*, a.k.a. *Rhamnus frangula*). A thornless ornamental, its prolific black fruits (red at first) are spread widely by birds and white-tailed deer. It is a serious invader of fields, shrub lands, forest edge, and some wetlands. It is one of the few invasives that is proliferating in the interior of shady woodlands, where it prevents germination of native trees and shrubs due to toxins in its roots and leaves. Still absent from Nantucket. From Europe.

Common Buckthorn (*Rhamnus cathartica*). This is another small tree, or shrub, with black fruits spread by birds, although it is far less invasive than glossy buckthorn. Despite their popularity with birds, the fruits of both are virtually useless nutritionally. As suggested by the Latin name, they cause rapid voiding of stomach contents, forcing birds to eat more, thus spreading it faster. From Europe.



Common Buckthorn in fruit. Causes “the runs” in birds. All photographs by the author.

Winged Burning-bush (*Euonymus alata*). Very popular with landscapers, it seems no McMansion or corporate office park is allowed to open without a row of this red-leaved beauty. Unfortunately, its inconspicuous fruits are eaten, and spread widely, by birds. Habitats such as forest interiors, scrublands, fields, and wetland edges are now sporting vigorous patches of this invader. From northeast Asia.

Asian Honeysuckle-bushes. Up to a half-dozen species of these bushes, with fragrant flowers and red fruits, have escaped in the northeast. Our chief problems are Morrow’s Honeysuckle (*Lonicera morrowii*) and Bell’s Honeysuckle (*Lonicera x bella*, hybrid *L. morrowii* and *L. tatarica*). Birds, like Cedar Waxwings and Gray Catbirds, eat the fruits (said to be “junk food” of low nutrition) and disperse them widely in open areas, woodland edges, and deep into rich soils of closed canopy forests. Few native trees, shrubs or wild flowers germinate under the dense monocultures they form. From eastern Asia.



An Asian Honeysuckle-bush in flower. Catbirds spread its fruit and seeds widely.

Problem Vines

Japanese Honeysuckle (*Lonicera japonica*). This is a vine with fragrant white (then yellow) flowers, but the fruits are black, not red. Not much of a problem (yet) near Boston, it is a big problem in Nantucket, and some other parts of southeastern Massachusetts. It is spread by birds eating the fruits (with the consequent dispersal of

seeds) and by sending up climbing shoots from a maze of underground runners. From eastern Asia.

Oriental (Asian) Bittersweet (*Celastrus orbiculatus*). “The plant that ate Massachusetts.” This dastardly plant is the most conspicuous killer of native and horticultural trees and shrubs in the state. Martha Stewart types rave about its pretty fruits that make such wonderful dried arrangements in the late fall, and it is still legally sold! It strangles all trees and shrubs, while it robs water, nutrients, and sun from its hosts. Vast areas have become “Bittersweet Jungles,” as they drape over, and kill, dozens of trees. It is the first invasive to impact public safety, as dense masses of the vines collect ice and snow on top of now-weakened trees overhanging roadsides and wires. One good winter wind storm, and these over-laden branches will take down wires and close roads to emergency vehicles. It is spread by birds, in particular American Robins, which, once rare in winter, now overwinter in the thousands, feeding on and spreading this far and wide. The easily-recognized vine is a prime candidate for a massive citizen effort to eradicate it. Our ecosystems would be much healthier without this threat. From eastern Asia.

Black Swallow-wort. (*Cynanchum louiseae*, formerly *Vincetoxicum nigrum*). This has been dubbed “Al-Qaeda-weed” by those trying to battle it in the wilds, and “strangle-weed” by urban and suburban gardeners. This extremely tenacious climbing milkweed adapts to virtually any conditions as it over-runs full sun fields, shrub lands above spring flood lines, and full forest shade. Three plants at the far end of Lake Walden in Concord became 5000 in two years and spread to a dozen new sites. It is toxic to monarch larvae. Birds do not spread it (its fluffy seeds are windborne, and it spreads via rapidly expanding white runners), but much bird habitat will be ruined by this, as it replaces native plants in many ecosystems. Frequent mowing kills it in lawns and fields. Isolated young plants can be dug with spades in finer soils, but in all other areas, its eradication requires herbicides brushed on leaves for absorption into roots. Using rubber mats to smother the plants may prove effective. From islands of Aegean and lands of southeast Europe and northern Middle-East.

Pale Swallow-wort (*Cynanchum rossicum*). Similar to black swallow-wort, with pink petals rather than short purple ones, it is also similar in its invasive potential. Invasion started in eastern Ontario, spread through New York and now into the Connecticut Valley. (The first Middlesex record was established at Massachusetts Audubon’s Broadmoor Sanctuary in Natick this past May.) From southern Russia and Ukraine.

Porcelainberry (*Ampelopsis brevipedunculata*). This plant looks like a typical grape, as it quickly over-runs shrubs and trees, and even overgrows bittersweet! Spreading rapidly from the South, it has already devastated much of Cape May and the edges of New York City, where it is one of the top five invasives. Birds, even warblers, are suckers for its juicy white, pale blue, and purple fruits. This is spread via bird air mail and is rapidly attacking gardens and wild lands here. It is sold by many nurseries and promoted as something to buy (in 2004!) in birding magazines to attract birds to your garden! From northeast Asia.

Problem Herbs

Shrub-like Bamboo-Knotweeds now include two species and their hybrid brought in by horticulturalists. Our original species is the Japanese knotweed (*Polygonum cuspidatum*), which every year sends up eight-foot zig-zag stems in clumps, with 8" heart-shaped horizontal leaves having a straight line base. Its prolific white flowers in late summer attract bees but not birds. Its seeds (mostly sterile) are not fed on by birds. Most spread is via bits of rootstock stuck in mud and dispersal by riverine floods, snowplows, vehicles, sneakers, and landscapers. It is savagely replacing native plants in river floodplains (especially in the Connecticut Valley) and along roadsides, fields, and woodland edges everywhere. Birds that are adapted to using the hundreds of native plants, and the



Nantucket today. Hybrid Knotweed on left, Phragmites on right, and locally invasive Sycamore Maple (*Acer pseudoplatanus*).

insects they attract in these areas, vacate areas suddenly full of knotweed. A much larger congener from the Sakhalin Island area, giant knotweed (*Polygonum sachalinense*) is now spreading in Massachusetts. It grows to twelve feet tall and has much larger fifteen-inch leaves that are truly heart-shaped, with two rounded basal lobes (not straight). The thick support veins are extremely hairy (smooth in Japanese). A hybrid knotweed (*P. x bohemicum*) is more common than pure giant on Nantucket and in Middlesex County. All eliminate native plants (and their birds) and serve to collect litter and impede driver visibility.

Garlic Mustard (*Allaria petiolata*). Brought in by the Julia Child crowd, this potherb (unlike forty-nine others) has leapfrogged out of the garden and is rapidly invading all sorts of sites, from sunny fields to roadsides, forest edge, and the interior of flood plains. It adds chemicals to soils that inhibit other native plants needed by our birds. From Europe.

Goutweed, also known as Bishop's Weed (*Aegopodium podagraria*). Foolish gardeners buy the white-fringed variegated form and wish they hadn't. It sends out underground runners infesting whole gardens and, if located near floodplain forests, it can form monotypic carpets, to the exclusion of all native plants and the birds they sustain. From Europe.

Purple Loosestrife (*Lythrum salicaria*). Artists, photographers, and beekeepers rave about this, while birders, ecologists, and wetland managers despise it. It completely dominates many freshwater marshes that formerly hosted cat-tail beds and many other freshwater plants — marshes that were home to rails, bitterns, and Marsh

Wrens. It also invades pond edges and upland fields, thus eliminating native plants and providing no food for birds. It threatens waterfowl by overrunning shallow open waters. From Europe.

Spotted Knapweed (*Centaurea biebersteineii*, formerly *C. maculosa*). A huge scourge in the Midwest and Great Plains, it is a nuisance along highways and especially in the sandy soils of the pine barrens of southeast Massachusetts, the Cape, and islands. It poisons the soil, inhibiting most native flowers and grasses near it, reducing biological productivity. Its weak root system promotes soil erosion. From Russia and Ukraine.

Problem Aquatic Plants



Phragmites in September flower. Forming ecological wastelands in marshes, roadsides, and open areas statewide.

Phragmites (*Phragmites australis*). This giant reed forms extensive monotypic stands that eliminate all native wetland plants in their path. While used as a roosting site, these stands harbor virtually no breeding or feeding birds. Originally infesting upper edges of salt marshes, it is now blitzing into many freshwater marshes, riversides, fields, and roadsides. In wetlands, this appears to dominate, and replace, purple loosestrife. From the Old World.

Water-chestnut (*Trapa natans*). Boaters, kayakers, and fisherman have no use for this. A plant no one can love, its four-spiked nuts are miniature weapons that can puncture skin, yet they offer no nutritional value for wildlife. It can carpet entire ponds and slow rivers. The nuts can attach themselves to the breast feathers of Canada Geese; the nuts then drop off as the geese fly from pond to pond and may infest new waterways. From Asia.

Eurasian Water-milfoil (*Myriophyllum spicatum*). This is the worst of a number of freshwater invasive plants that explode in population when introduced to a new water body. Small fragments stuck to boat bottoms, and, perhaps, on wandering moose, deer, and waterfowl, will infect new ponds. Infested waterways suffer from oxygen loss and eutrophication, reducing human, fish, and bird usage.

Conclusion

The near and long-term threat to our thousands of species of Massachusetts native plants, animals, and fungi is real. We need many experiments on the impact of invasives, coupled with an understanding as to how our landscapes (and birds) will fare if an all-out war is not undertaken. Our state may eventually consist of actively managed areas such as lawns, soccer fields, and gardens with few invasives, while all minimally-managed areas (e.g. wild lands, ignored roadsides, and edges) could

become totally choked and overrun with invasive plants. An enormous list of extirpated, and newly extinct species will result. Your well-intentioned attempts to rid your patch of invasive plants, and the work for which you volunteer to weed the invasives from the site of a rare plant, or to protect your favorite sanctuary are wonderful — but isolated actions in a checkerboard pattern will not stave off the ultimate threat posed by invasive alien plants. The rain of aerial bird poop, plankton of the skies, loaded with fruit seeds (and fertilizer); the wind blown seeds; and the flood and vehicle-dispersed plant body parts will be increasing ten to a thousand times in the coming years.

We must declare war — property by property, neighborhood by neighborhood, town by town, watershed by watershed, county by county, state by state, and nationally — soon. We must decide in the next few years to battle the spread of invasive alien plants with a campaign that involves up to half of all citizens young and old, or we may have to give up on nature. Dr Edward O. Wilson, and many other naturalists, feel that educating the populace as to the threats inherent in the spread of invasive plants, and the consequent control options needed, may get millions of people back to knowing and caring about nature. As citizens spot, cut, pull and apply herbicide (where needed), many are bound to glimpse a pink lady's-slipper, see a Scarlet Tanager or Yellow Warbler, and get hooked on the component species of nature—along with the wonderful native habitats we are trying to protect from this insidious form of eco-terrorism, too long tolerated, and allowed to fester without a serious fight. 

References

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Peter Alden, of Concord, MA, was the originator (with E. O. Wilson) of the world's first Biodiversity Day in 1998. He then oversaw four years of statewide Biodiversity Days for Secretary of Environmental Affairs Bob Durand. He is President of the Nuttall Ornithological Club and has authored fourteen books, including the National Audubon Field Guide to New England (with Brian Cassie and Dick Forster). In 2003 he surveyed all the invasives in the 100 miles of roadside in Concord (see <<http://www.discoverlife.org>>) and is now at work on an invasives field guide. He hopes many birders will join the New England Wild Flower Society (508 877-7630, or <<http://www.newfs.org>>) and participate in their invasives activities. He would like to thank Peggy Brace, Natalie Vasileu, and Guy Tudor for encouragement, and salutes the following invasives specialists: Chris Mattrick (NEWFS), Leslie J. Mehrhoff (University of Connecticut and organizer of the Invasive Plant Atlas of New England), and Cynthia Boettner (U.S. Fish and Wildlife Service).