

HOW ILLINOIS KICKED THE EXOTIC HABIT

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Introduction

For the purpose of this paper, an exotic species is defined as “a plant or animal not native to North America.” The history of folly surrounding the premeditated and accidental introduction of exotic animals has been well-documented (De Vos et al. 1956, Elton 1958, Hall 1963, Laycock 1966, Ehrenfeld 1970, Bratton 1974/1975, Howe and Bratton 1976, Moyle 1976, Courtenay 1978, Coblentz 1978, Iverson 1978, Weller 1981, Bratton 1982, Vale 1982, and Savidge 1987).

In 1963, Dr. E. Raymond Hall wrote, “Introducing exotic species of vertebrates is unscientific, economically wasteful, politically shortsighted, and biologically wrong.” Naturalizing exotic species are living time bombs, but no one knows for sure how much time we have. For example, the ring-necked pheasant (*Phasianus colchicus*), touted as the Midwestern example of a good exotic introduction, has recently developed a nefarious relationship with the greater prairie chicken (*Tympanuchus cupido*) in Illinois. Parasitism of prairie chicken nests by hen pheasants and harassment of displaying male chickens by cock pheasants are contributing to the decline of prairie chickens in Illinois (Vance and Westemeier 1979). The interspecific competition between the exotic pheasant (which is expanding its range in Illinois) and the native prairie chicken (which is an endangered species in Illinois) may be the final factor causing the extirpation of the prairie chicken from Illinois; it has already been extirpated from neighboring Indiana.

In 1953, Klimstra and Hankla wrote, “In connection with the development of a pheasant adapted to southern conditions, the compatibility of pheasants and quail (*Colinus virginianus*) needs to be evaluated. It would be unwise to establish a game bird that would compete with another desirable species.” It has been recently discovered that ring-necked pheasants also parasitize quail nests (Westemeier et al. 1989). Management at Illinois’ prairie chicken preserves now include pheasant control 12 months of the year.

Michigan is apparently not moved by the potential threats that exotic animals pose (Huggler 1991). They recently released the Sichuan or “brush” pheasant (*Phasianus colchicus strauchi*) into the wild, and Indiana officials are considering the same move. The preferred habitat of the Sichuan pheasant and the ruffed grouse (*Bonasa umbellus*) overlap. Consequently, if the “brush” pheasant becomes fully naturalized, it may become a serious competitor to the native ruffed grouse.

The raccoon dog (*Nyctereutes procynoides*), a member of the dog family, apparently is native to Asia. Between 1927 and 1957, they were introduced to Europe both intentionally and accidentally as escapees from fur farms. As a result of their high reproduction rate, omnivorous feeding habits, and

general lack of enemies, they have spread rapidly throughout northern and western Europe. Later, like the nutria (*Myocaster coypus*), they were brought to the United States as fur-bearing stock. Raccoon dogs prefer forested, riparian habitats, marshes, and dense cover surrounding lakes. They are opportunistic, eating a wide variety of plants and animals, including eggs, fish, and carrion. They are the only canid that hibernates, but they are not "deep sleepers." On warm days, they forage and in the southern parts of their range, they do not hibernate at all (Ward and Wurster-Hill 1990). If raccoon dogs were to escape captivity and become fully naturalized, they have all the characteristics to become a serious predator of many native species of wildlife.

On July 23, 1983, it became illegal to possess, propagate, or release a raccoon dog in Illinois. But three separate fur farms had purchased raccoon dogs before the law was passed. On July 11, 1984, the Illinois Department of Conservation paid \$41,000 to buy the raccoon dogs from those fur farmers.

The rusty crayfish (*Orconectus rusticus*), originally sold as fish bait, is an aggressive exotic species that replaces native crayfish (Page 1985). Four species of crayfish are currently listed on Illinois' endangered species list. The establishment of rusty crayfish in Illinois would be a serious threat to these native species. Consequently, as of June 29, 1990, the importation, possession, and sale of live rusty crayfish was banned in Illinois.

The Issue of Exotic Plant Materials

Dr. Hall was right about the dangers of introducing exotic vertebrates, and his analysis applies to the introduction of exotic plant material as well (Reed 1977). Unfortunately, less is appreciated about the tremendous damage that is occurring to our continent's ecosystems due to the escape and naturalization of exotic plants (Bratton 1982; Harty 1986; Mooney and Drake 1986). In Illinois, as elsewhere, the perceived merits versus the perceived impacts associated with introducing exotic plant species are argued as a matter of philosophy among wildlife biologists, soil conservationists, foresters, landscapers, and ecologists. However, evidence is mounting to indicate that the introduction of exotic plant species has resulted in major ecological damage and caused serious management problems.

Multiflora rose (*Rosa multiflora*) is the classic Midwestern example of an exotic species run amuck, aggressively overgrowing pastures and abandoned farm ground. It was originally promoted in the 1940s for use as a living fence, erosion control, and wildlife food and cover, with the added assurance during its initial promotion that it would not spread or become a nuisance. These claims seem naive in retrospect. Nevertheless, variations of the same scenario have been used to promote autumn olive (*Elaeagnus umbellata*), bush honeysuckle (*Lonicera tatarica*), amur honeysuckle (*L. maackii*), and many other exotic species. Klimstra (1956) was one of the first to point out the problems associated with the widespread planting of multiflora rose; moreover, he questioned the REAL versus the PERCEIVED value of multiflora rose for wildlife habitat planting.

In Illinois, 811 species, or 29 percent, of the state's flora are naturalized from foreign countries (Henry and Scott 1980). Not all these species can be classified as problem species today, but Tartarian honeysuckle, amur honeysuckle, tree-of-heaven (*Ailanthus altissima*), thistle (*Carduus nutans*), Canada thistle (*Cirsium arvense*), crown vetch (*Coronilla varia*), giant teasel (*Dipsacus*

laciniatus), European beach grass (*Elymus arenarius*), tall fescue (*Festuca pratensis*), sericea lespedeza (*Lespedeza cuneata*), multiflora rose, Japanese honeysuckle (*Lonicera japonica*), purple loosestrife (*Lythrum salicaria*), white poplar (*Populus alba*), smooth and shining buckthorn (*Rhamnus cathartica* and *R. frangula*), and Johnson grass (*Sorghum halepense*), are just a few examples of exotic plant introductions causing farmers, foresters, land-managers, and grounds-keepers considerable problems in various regions of the state (West 1984; Schwegman 1988).

Moreover, autumn olive, osage orange (*Maclura pomifera*), and winged-euonymus (*Euonymus alatus*), three of the long-term “neutrals” in the game of exotic roulette, have now adapted sufficiently to Illinois’ conditions that they, too, are becoming naturalized weeds, spreading from plantings into the landscape (Nyboer and Ebinger 1978, Ebinger and Lehnert 1981, Ebinger et al. 1984, Nestlerode et al. 1987). Ebinger (1983) summarizes the problems that naturalized exotic shrubs (multiflora rose, Japanese honeysuckle, autumn olive, winged-euonymus, and blunt-leaved privet (*Ligustrum obtusifolium*) are causing managers of natural areas in Illinois. Additionally, climbing euonymus (*Euonymus fortunei*) and oriental bittersweet (*Celastrus orbiculatus*), two popular ornamental vines, are becoming invaders in southern Illinois forests (Schwegman 1991, personal communication).

Why Did We Plant Exotics in the First Place?

The common refrain associated with the promotion of exotic plant materials is that “they are hardy, disease free, have few, if any, insect pests, reproduce or propagate easily, and provide food or cover for wildlife.” These characteristics are precisely what makes exotic species such serious competitors when released into a new ecosystem or habitat.

Two recent examples of this scenario are the release of “Elsmo” lace-bark elm (*Ulmus parviflora* Jacq.), and “Redstone” Cornelian cherry dogwood (*Cornus mas* L.) by the Soil Conservation Service (Plants for Conservation 3(1) January 1991, and Plants for Conservation 3(2) July 1991). Siberian elm (*Ulmus pumila*) was promoted to replace American elm (*Ulmus americana*) as a street tree after the American elm was devastated by an introduced pathogen that caused Dutch Elm disease. Siberian elm failed in its original purpose, but was successful at naturalizing into many parts of the country. Now lace bark elm is being promoted to replace Siberian elm. From an ecological standpoint, we seem to be trapped on a devil’s merry-go-round. *Cornus mas* has been in the landscaping trade for years, known as Cornelian cherry (Rehder 1960); it seems unfortunate that we would now be promoting it for conservation purposes. There are at least 11 species of shrubby dogwoods native to the eastern United States. These native species offer equivalent soil conservation benefits and an abundance of fruits for wildlife with no ecological risks.

Sawtooth oak (*Quercus acutissima*), a species from Asia, provides another example of promoting an exotic species as an alternative wildlife food plant (Hopkins and Huntley 1979). Thirty-six years ago, Klimstra (1956), pointed out the potential problems associated with planting multiflora rose. Similarly, Coblenz (1981), has pointed out the lack of foresight and, more importantly, the lack of hindsight in promoting the exotic sawtooth oak over the 37 species of oaks native to the southeastern United States for mast production for wildlife.

In spite of the mounting evidence of the ecological dangers associated with exotics and the skyrocketing costs of controlling them, exotic species continue to be tested and promoted for the same worn-out reasons:

1. wildlife habitat plantings (autumn olive and bush honeysuckle);
2. landscaping purposes (blackthorn and purple loosestrife);
3. wood and fiber production (Princess tree [*Paulownia tomentosa*] and tree-of-heaven);
4. soil conservation practices (crown vetch and multiflora rose); and
5. forage improvement (Johnson grass and tall fescue).

What Is At Risk Because of Exotic Plants?

Entire plant communities, such as fens, bogs, and marshes, can be significantly altered by invasive plant species, such as purple loosestrife (Thompson et al. 1987). Endangered species, such as Kankakee mallow (*Iliamna remota*) may be crowded out of its last habitat by multiflora rose and the bush honeysuckles (Glass 1986, personal communication). Common plants, such as bluebells (*Mertensia virginica*) are being crowded out of forests by garlic mustard (Iverson et al. 1991). The native high-bush cranberry (*Viburnum trilobum*) is known to hybridize with the ornamental, *Viburnum opulus*. This may result in the loss of the native genotype, or it could result in creating an aggressive hybrid species similar to the case of *Spartina anglica* (Thompson 1991).

Oak reproduction is a major concern of foresters, ecologists, wildlife biologists, and natural area managers, and naturalized exotic shrubs and vines are now being identified as serious competitors to oak regeneration. A recent example is oriental bittersweet, which is becoming a serious pest on many hardwood regeneration sites in the Appalachians (McNab and Meeker 1987).

What Are The Costs Associated With Exotic Introductions?

Although the economic cost of controlling exotic introductions can be calculated, the ecological damage cannot be measured in dollars. For example, Brandenburg Bog in northeastern Illinois, was purchased to preserve, protect, and perpetuate a rare calcareous fen community. Purple loosestrife is invading the fen, and it may be beyond eradication (Heidorn 1986, personal communication). The direct cost of this exotic species to the State of Illinois in this example is at least \$379,000, the cost of purchase in 1973. However, "Brandenburg Bog is the premier calcareous fen in the state and as such is irreplaceable" (Schwegman 1988).

How Illinois Kicked The Exotic Habit – A Case History

The Illinois Department of Conservation nurseries began producing autumn olive in 1964. By 1982, our nurseries were distributing more than 1,000,000 autumn olive seedlings a year, which represented about 20 percent of the state nursery's production of all species combined (Sternberg 1982). We also produced large numbers of bush honeysuckles.

In 1983, our Seedling Needs Committee met to review the needs of the department relative to seedling production. This is a standing committee comprised of representatives from the divisions of Wildlife Resources, Forestry, Public Lands, Planning, and Natural Heritage. The issue of exotics and the role of the state nurseries in their production, was addressed by the committee. The committee agreed that further production of exotic plant materials in our nurseries was not necessary if suitable native species could be grown as substitutes for the exotics. The concept of substituting native species for exotic species is compelling when one considers that:

1. native species comprise 99 percent of the wildlife species we manage habitat for, and they evolved with native plant species. Furthermore, there is no hard evidence to support the contention that exotic plant materials are superior to native species for wildlife (Martin et al. 1951);
2. there is no reason to believe that native species of trees and shrubs cannot be grown in nurseries using techniques similar to those we use to grow exotics (Schopmeyer 1974);
3. when developing landscaping plans for state parks, conservation areas, and other Department of Conservation facilities, it seems more appropriate to use native plant materials in keeping with the natural setting (Hightshoe 1988);
and
4. future management problems caused by introducing new exotic plant materials could be reduced if we promoted and planted native species for conservation purposes.

Today, our nurseries produce 67 species of native trees and shrubs for use in developing wildlife habitat, reclamation projects, and community restorations (Table 1). The seeds necessary to propagate these native species are collected from state parks and conservation areas by our wildlife biologists, foresters, natural heritage biologists, site superintendents, maintenance workers, and volunteers.

TABLE 1. Native trees and shrubs grown at Illinois Department of Conservation nurseries

<i>Acer rubrum</i>	Red maple
<i>Acer saccharinum</i>	Silver maple
<i>Acer saccharum</i>	Sugar maple
<i>Aronia melanocarpa</i>	Black chokeberry
<i>Betula nigra</i>	River birch
<i>Carya illinoensis</i>	Pecan
<i>Carya ovata</i>	Shagbark hickory
<i>Carya ovalis</i> , <i>C. cordiformis</i> , <i>C. glabra</i> , <i>C. tomentosa</i>	various Hickory species
<i>Carya texana</i>	Black hickory
<i>Celtis occidentalis</i>	Hackberry
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Cercis canadensis</i>	Redbud
<i>Cornus obliqua</i>	Pale dogwood
<i>Cornus racemosa</i>	Gray dogwood
<i>Cornus stolonifera</i>	Red osier dogwood
<i>Corylus americana</i>	Hazelnut
<i>Crataegus crus-galli</i>	Cock-spur thorn
<i>Crataegus phaenopyrum</i>	Washington hawthorn
<i>Diospyros virginiana</i>	Common persimmon
<i>Fraxinus americana</i>	White ash
<i>Fraxinus pennsylvanica</i>	Green ash
<i>Gymnocladus dioica</i>	Kentucky coffee-tree
<i>Ilex decidua</i>	Swamp holly
<i>Juglans nigra</i>	Black walnut
<i>Juniperus virginiana</i>	Red cedar
<i>Liquidambar styraciflua</i>	Sweet gum
<i>Liriodendron tulipifera</i>	Tulip tree
<i>Malus ioensis</i>	Iowa crab apple
<i>Morus rubra</i>	Red mulberry
<i>Nyssa sylvatica</i>	Sour gum
<i>Pinus resinosa</i>	Red pine
<i>Pinus strobus</i>	White pine
<i>Pinus taeda</i>	Loblolly pine
<i>Platanus occidentalis</i>	Sycamore
<i>Prunus americana</i>	Wild plum
<i>Prunus serotina</i>	Wild black cherry
<i>Quercus alba</i>	White oak
<i>Quercus bicolor</i>	Swamp white oak
<i>Quercus imbricaria</i>	Shingle oak
<i>Quercus lyrata</i>	Overcup oak
<i>Quercus macrocarpa</i>	Bur oak

<i>Quercus marilandica</i>	Blackjack oak
<i>Quercus michauxii</i>	Basket oak
<i>Quercus nuttallii</i>	Nuttall's oak
<i>Quercus pagoda</i>	Cherry-bark oak
<i>Quercus palustris</i>	Pin oak
<i>Quercus prinoides</i> var. <i>acuminata</i>	Yellow chestnut oak
<i>Quercus rubra</i>	Red oak
<i>Quercus shumardii</i>	Shumard's oak
<i>Quercus stellata</i>	Post oak
<i>Quercus velutina</i>	Black oak
<i>Rhus aromatica</i>	Fragrant sumac
<i>Rhus copallina</i>	Dwarf sumac
<i>Rhus glabra</i>	Smooth sumac
<i>Rhus typhina</i>	Staghorn sumac
<i>Robinia pseudoacacia</i>	Black locust
<i>Rubus allegheniensis</i>	Common blackberry
<i>Sambucus canadensis</i>	Elderberry
<i>Symphoricarpos arbiculatus</i>	Coralberry
<i>Taxodium distichum</i>	Bald cypress
<i>Vaccinium arboreum</i>	Farkleberry
<i>Viburnum lentago</i>	Nannyberry
<i>Viburnum recognitum</i>	Smooth arrowwood
<i>Viburnum trilobum</i>	High-bush cranberry

In 1977, the Illinois nursery system moved forward once more by producing big bluestem (*Andropogon gerardii*) and Indian grass (*Sorghastrum nutans*) seed for prairie reconstructions. By 1980, our Mason Tree Nursery had expanded its operation to include 37 different species of prairie forbs. In 1983, 35,000 prairie forbs were obtained from 596 m² of bed space (Wallace et al. 1986).

The grass and forb program has been very successful. Production for 1991 included 54 forb species and 7 grass species (Table 2); 293,457 prairie forb rootstocks were grown in 1,900 m² of bed space. In addition, attempts to grow woodland herbaceous species have been initiated with 13 species currently involved (Table 3). Approximately \$4 million in capital improvements at the Mason Nursery has increased seed bed space from 16 ha to 40 ha and built a 279 m² greenhouse for herbaceous production. The facility is also equipped with a grass seed cleaning and processing facility and a center pivot irrigation system, which will allow expansion of the grass seed collection area to 16 hectares (Pequignot 1992, personal communication).

Besides attempts to eliminate exotic species from our nursery operations, educational articles discussing the problems with exotic plants and animals have been published in our department's official publication, Outdoor Highlights (Harty 1985; Schwegman 1985, 1988). Moreover, a colorful flier was prepared that explained the problems associated with planting purple loosestrife and recommended measures for its control. Species-specific alert fliers were produced for garlic mustard

(*Alliaria petiolata*), rudd (*Scardineus erythrophthalmus*), rusty crayfish, and zebra mussels (*Dreissena polymorpha*). A slide tape program describing the problems associated with exotic plant species in Illinois was also produced for use in educating the general public.

**TABLE 2. Native prairie forb and grass species grown at the
Mason Tree Nursery, Topeka, Illinois**

FORBS

<i>Allium cernuum</i>	Nodding onion
<i>Amorpha canescens</i>	Leadplant
<i>Anemone cylindrica</i>	Thimbleweed
<i>Asclepias sullivantii</i>	Prairie milkweed
<i>Asclepias tuberosa</i>	Butterfly-weed
<i>Aster laevis</i>	Smooth aster
<i>Aster novae-angliae</i>	New England aster
<i>Astragalus tennesseensis</i>	Ground plum
<i>Baptisia lactea</i>	White wild indigo
<i>Baptisia leucophaea</i>	Cream wild indigo
<i>Boltonia decurrens</i>	Decurrent false aster
<i>Calcalia plantaginea</i>	Prairie Indian plantain
<i>Camassia scilloides</i>	Wild hyacinth
<i>Ceanothus americanus</i>	New Jersey tea
<i>Coreopsis lanceolata</i>	Tickseed coreopsis
<i>Coreopsis palmata</i>	Prairie coreopsis
<i>Coreopsis tripteris</i>	Tall tickseed
<i>Dalea candida</i>	White prairie clover
<i>Dalea foliosa</i>	Leafy prairie clover
<i>Dalea purpurea</i>	Purple prairie clover
<i>Desmanthus illinoensis</i>	Illinois mimosa
<i>Desmodium canadense</i>	Showy tick trefoil
<i>Desmodium illinoense</i>	Illinois tick trefoil
<i>Dodecatheon meadia</i>	Shooting star
<i>Echinacea pallida</i>	Pale coneflower
<i>Eryngium yuccifolium</i>	Rattlesnake master
<i>Helianthus occidentalis</i>	Western sunflower
<i>Heliopsis helianthoides</i>	False sunflower
<i>Heuchera richardsonii</i>	Prairie alumroot
<i>Hieracium longipilum</i>	Hairy hawkweed
<i>Iliamna remota</i>	Kankakee mallow
<i>Iris shrevei</i>	Wild blue iris
<i>Lespedeza capitata</i>	Round-headed bush clover
<i>Lespedeza leptostachya</i>	Prairie bush clover
<i>Liatris aspera</i>	Rough blazing star
<i>Liatris pycnostachya</i>	Prairie blazing star

Liatris spicata
Monarda fistulosa
Napaea dioica
Parthenium integrifolium
Physostegia virginiana
Polytaenia nuttalli
Potentilla arguta
Prenanthes aspera
Ratibida pinnata
Rosa carolina
Rudbeckia subtomentosa
Silene regia
Silphium integrifolium
Silphium laciniatum
Silphium terebinthinaceum
Solidago rigida
Tradescantia ohimensis
Zizia aurea

Marsh blazing star
 Wild bergamont
 Glade mallow
 American feverfew
 False dragonhead
 Prairie parsley
 Prairie cinquefoil
 Rough white lettuce
 Drooping coneflower
 Pasture rose
 Fragrant coneflower
 Royal catchfly
 Rosinweed
 Compass-plant
 Prairie-dock
 Rigid goldenrod
 Spiderwort
 Golden alexanders

GRASSES

Andropogon gerardii
Panicum virgatum
Schizachryium scoparium
Sorghastrum nutans
Spartina pectinata
Sporobolus heterolepis
Stipa spartea

Big bluestem
 Switch grass
 Little bluestem
 Indian grass
 Cord grass
 Prairie dropseed
 Porcupine grass

Thirty-four (34) vegetation management circulars were prepared by various authors for the Illinois Nature Preserves Commission. These circulars provide information about specific exotic plant species and management recommendations for their control or eradication. Many of these circulars have been published in the Natural Areas Journal.

In addition to these efforts, two other publications, *Landscaping for Wildlife*, and *Illinois Prairie: Past and Future – A Restoration Guide*, promote the use of native species and point out the problems associated with exotic plant species.

Another significant step forward was the development of a windbreak manual for Illinois (Bolin et al. 1987). This is a cooperative effort by the University of Illinois, Department of Forestry, Cooperative Extension Service, the USDA Soil Conservation Service, and the Illinois Department of Conservation. The issue of exotics was addressed early in the planning of this manual, and the committee, which is comprised of inter-agency foresters, wildlife biologists, and natural-heritage biologists, recommended 30 native trees and shrubs and three nonnative species as suitable for use for windbreaks and snow trips in Illinois (Table 4). The three nonnative species to Illinois, Norway

spruce (*Picea abies*), blue spruce (*Picea pungens*), and Douglas-fir (*Pseudotsuga mensiesii*), have been planted throughout Illinois for many years and have not been found to reproduce spontaneously from seed. This has proven to be a prudent compromise.

TABLE 3. Native woodland herbaceous species grown at the Mason Tree Nursery, Topeka, Illinois

<i>Actaea pachypoda</i>	Doll's eyes
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit
<i>Asarum canadense</i>	Wild ginger
<i>Claytonia virginica</i>	Spring beauty
<i>Dentaria laciniata</i>	Toothwort
<i>Dicentra cucullaria</i>	Dutchman's breeches
<i>Isopyrum bitermum</i>	False rue anemone
<i>Jeffersonia diphylla</i>	Twinleaf
<i>Panax quinquefolius</i>	Ginseng
<i>Polygonatum commutatum</i>	Solomon's seal
<i>Sanguinaria canadensis</i>	Bloodroot
<i>Smilacina racemosa</i>	False Solomon's seal

The Illinois Department of Transportation has also been quite cooperative regarding management of exotics along right-of-ways and cloverleafs adjacent to Department of Conservation properties. For the past three years, the Department of Conservation and the Soil Conservation Service (SCS) have been working cooperatively to collect seeds from native shrubs for the SCS to evaluate at their Elsberry Plant Improvement Center in Missouri.

TABLE 4. Native tree and shrub species recommended for windbreaks and snow trips in Illinois (Bolin et al. 1987)

<i>Amelanchier arborea</i>	Shadbush
<i>Aronia melanocarpa</i>	Black Chokeberry
<i>Cornus alternifolia</i>	Alternative-leaved dogwood
<i>Cornus drummondii</i>	Rough-leaved dogwood
<i>Cornus obliqua</i>	Pale dogwood
<i>Cornus racemosa</i>	Gray dogwood
<i>Cornus stolonifera</i>	Red osier dogwood
<i>Corylus americana</i>	Hazelnut
<i>Crataegus crus-galli</i>	Cock-spur thorn
<i>Crataegus mollis</i>	Red haw
<i>Crataegus phaenopyrum</i>	Washington hawthorn

<i>Hamamelis virginiana</i>	Witch-hazel
<i>Ilex verticillata</i>	Winterberry
<i>Juniperus communis</i>	Common juniper
<i>Juniperus virginiana</i>	Red cedar
<i>Malus ioensis</i>	Iowa crab apple
<i>Picea abies</i>	Norway Spruce
<i>Picea pungens</i>	Blue spruce
<i>Pinus strobus</i>	White pine
<i>Prunus americana</i>	Wild plum
<i>Prunus virginiana</i>	Common chokecherry
<i>Pseudotsuga menziesii</i>	Douglas-fir
<i>Symphoricarpos orbiculatus</i>	Coralberry
<i>Taxus canadensis</i>	Canada yew
<i>Thuja occidentalis</i>	Arbor vitae
<i>Viburnum acerifolium</i>	Maple-leaved arrowwood
<i>Viburnum lentago</i>	Nannyberry
<i>Viburnum prunifolium</i>	Black haw
<i>Viburnum rafinesquianum</i>	Downy arrowwood
<i>Viburnum recognitum</i> (<i>V. Dentatum</i>)	Smooth arrowwood
<i>Viburnum rufidulum</i>	Southern black haw
<i>Viburnum trilobum</i>	High-bush cranberry

Seventeen species are currently being evaluated for their wildlife food and cover value (Table 5).

**TABLE 5. Native shrubs being evaluated as food and cover plants
by the Soil Conservation Service's Plant Improvement Center, Elsberry, MO**

<i>Amelanchier arborea</i>	Shadbush
<i>Aronia melanocarpa</i>	Alternate-leaved dogwood
<i>Cornus drummondii</i>	Rough-leaved dogwood
<i>Cornus obliqua</i>	Pale dogwood
<i>Cornus racemosa</i>	Black chokeberry
<i>Cornus alternifolia</i>	Gray dogwood
<i>Corylus americana</i>	Hazelnut
<i>Juniperus virginiana</i>	Red cedar
<i>Prunus americana</i>	Wild plum
<i>Prunus virginiana</i>	Common chokecherry
<i>Ribes americana</i>	Wild black currant
<i>Thuja occidentalis</i>	Arbor vitae
<i>Viburnum lentago</i>	Nannyberry
<i>Viburnum prunifolium</i>	Black haw
<i>Viburnum recognitum</i> (<i>V. dentatum</i>)	Smooth arrowwood
<i>Viburnum trilobum</i>	High-bush cranberry

On January 1, 1988, Illinois passed the Illinois Exotic Weed Act. Exotic weeds are defined as "... plants not native to North America which, when planted, either spread vegetatively or naturalize and degrade natural communities, reduce the value of fish and wildlife habitat, or threaten an Illinois endangered or threatened species."

There are currently three listed species—Japanese honeysuckle, multiflora rose, and purple loosestrife. It is unlawful to sell, buy, offer for sale, or distribute seeds, plants, or plant parts without a permit issued by the Illinois Department of Conservation. A violation of the act is a Class B misdemeanor, and listed plants are confiscated and destroyed.

On May 25, 1989, the Director of the Illinois Department of Conservation signed a department policy on the planting and removal of exotic plant species. The policy lists 12 species which cannot be used on DOC property and lists five species which can be used only for short rotation, research, or erosion control (Table 6).

TABLE 6. List of exotic plant species and their permissible uses on Illinois Department of Conservation properties as authorized by Policy Manual Code No. 2450 dated May 25, 1989

Scientific Name	Common Name	Permissible Uses
<i>Celastrus orbiculatus</i>	Round-leaved Bittersweet	None
<i>Coronilla varia</i>	Crown vetch	None
<i>Elaeagnus umbellata</i>	Autumn olive	None
<i>Euonymus alatus</i>	Winged euonymus	None
<i>Euonymus fortunei</i>	Climbing euonymus	None
<i>Festuca elatior</i>	Tall fescue	Critical erosion area
<i>Lespedeza cuneata</i>	Serecia lespedeza	Cover crop and nigrogen fixation
<i>Lonicera japonica</i>	Japanese honeysuckle	None
<i>Lonicera maackii</i>	Amur honeysuckle	None
<i>Lonicera tartarica</i>	Tartarian honeysickle	None
<i>Lythrum salicaria</i>	Purple loosestrife	None
<i>Melilotus alba</i>	White sweet clover	Short rotation cropland
<i>Melilorus officinalis</i>	Yellow sweet clover	Short rotation cropland
<i>Pueraria lobata</i>	Kudzu	None
<i>Rhamnus frangula</i>	Glossy buckthorn	None
<i>Robinia</i>	Black locust	Strip mine reclamation, nurse crop in black walnut plantation, mixed with 34 other species in forest application with unfavorable site conditions
<i>Rosa multiflora</i>	Multiflora rose	None

SUMMARY

Once exotics become naturalized, they often change community species composition, alter structure, and reduce natural diversity of native plant and animal communities. Moreover, if an exotic becomes naturalized and spreads throughout a system, getting it out of that system is like trying to unscramble an egg.

It is the responsibility of all natural resource professionals to provide proper and prudent management advice to private and public landowners and managers. To continue to ignore the documented consequences associated with introducing exotic species in the name of soil conservation, wildlife management, or reforestation, would fall short of this obligation.

A giant step forward is necessary to head off the invasion of exotic plant materials into the natural landscape. We must redirect our reforestation and wildlife habitat restoration efforts away from exotics and toward the utilization of native plant species that are compatible with native ecosystems.

Illinois is extremely fortunate to have natural resource agencies and resource professionals who have taken decisive action in addressing the issue of exotic species.

Laycock (1966) described the pursuit of exotic species as a "perpetual relay race with one generation passing the stick to the next." I am happy to report that the Illinois Department of Conservation has not dropped the baton. It is the author's hope that this paper will stimulate activity in other states to address the issue of exotic species within their jurisdiction.

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