Landscaping for Wildlife with Native Plants

North Carolina's native plants provide well-adapted food and cover for North Carolina's native animals, and a well-planned landscape of native plants can help you attract a diversity of wildlife to your property. Native North Carolina plants also are well-suited to the state's soils and climate and require relatively little upkeep, once established on an appropriate site.

However, the spread of exotic plants poses a threat to native plants and animals of North Carolina. This publication describes the problems associated with some exotic plants and presents a detailed list of native plants that may be used in place of these foreign ornamentals to attract wildlife to your property.

American goldfinches commonly feed on the seeds of orange coneflower in the fall and winter. Photo by Chris Moorman

Why use native plants?

Biologists and other scientists consider invasion by exotic plants to be one of the most serious problems facing native plant and wildlife populations in the United States. For example, multiflora rose, bicolor lespedeza, Japanese honeysuckle, and autumn olive are examples of exotic plants introduced into North Carolina—all for the purpose of promoting "wildlife habitat." However, each introduction has proven detrimental to North Carolina's native plants, pushing them out of their traditional habitats; and recent research indicates that many invasive exotic plants may be harmful to local wildlife as well.

- *Native* plants generally are defined as those that occurred in North America before European settlement.
- *Exotic* plants are those not native to an area. In North Carolina, exotics usually come from Asia or western Europe, regions that have similar climate and environmental conditions to those in this state.
- Some exotics are planted intentionally as lawn or garden ornamentals or as plants to attract wildlife, but other exotic plants were introduced accidentally.
- Many exotic species become *naturalized*, which means they are able to survive, spread, and reproduce on their own.
- Approximately 25 percent of the plants growing wild in the United States are naturalized exotics, some of which have become *invasive*, that is, they grow unabatedly where native plants otherwise would occur.

Invasive exotic plants are those that pose the greatest risk to the native plants and animals of North Carolina. Competitors, diseases, and insects control a plant's growth and dispersal in its native range. Over thousands of years, natural checks and balances develop, which greatly reduce the chance that a single species will increase in number to completely dominate a plant community. However, when an exotic plant is introduced to North Carolina, it

Exotic invasive plants, including mimosa, kudzu, Queen Anne's lace, and sericea lespedeza, have taken over this vacated suburban lot. Photo by Chris Moorman

Sawtooth oak, a tree native to Asia, continues to be recommended as a wildlife plant, despite the availability of many native oak species. Photo courtesy of Alice B. Russell, NCSU retired

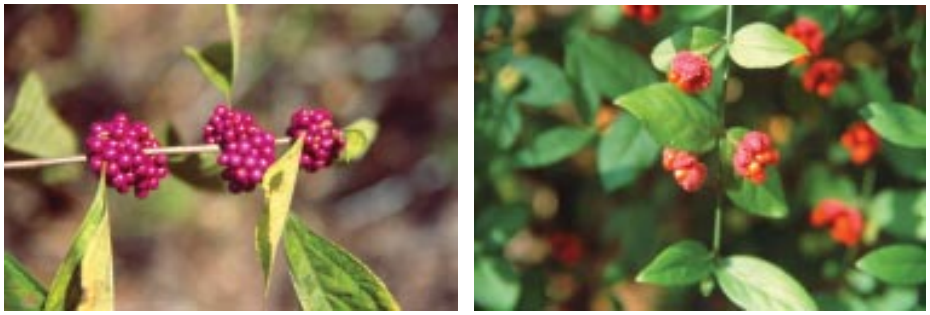
escapes its natural controls and can become invasive. The characteristics that make many exotic plants attractive as ornamentals (colorful berries, pest resistance, tolerance of harsh conditions) also increase their potential for invasiveness and make them difficult to contain. Prolific growth by a single plant species can be harmful because forests with a limited number of plant species provide very poor habitat for wildlife.

All exotic plants do not become invasive, and most can safely be planted as ornamentals. However, it takes scientists many years or even decades to fully understand an introduced plant's potential invasiveness. New information is being gathered continually, and you should check with your local nature center, botanical garden, conservation organization, or Cooperative Extension agent about a plant's invasiveness before introducing it to your property.

Ironically, exotic plants that are attractive to birds and other wildlife often are the most invasive because animals serve as great dispersers of their fruits and seeds. Autumn olive is an exotic plant that produces fruits favored by birds, but the plant grows and often spreads quickly where the seeds are defecated. Native fruit-producing plants may succumb to the competition from this type of invasive exotic, thereby reducing the diversity of foods available to birds. In addition, new evidence from the midwestern United States suggests birds that nest in some exotic shrubs experience poor nesting success. Lower nest height, the absence of sharp thorns on the exotic plants, and a branching pattern that allows predators easier access to nests built in exotic plants all could contribute to the increased nest predation. Despite the growing base of knowledge related to the potential problems of exotic plants, species like sawtooth oak (*Quercus acutissima*) continue to be recommended as plantings to encourage wildlife. Until adequate information on the invasiveness of such plants exists, native alternatives should be used.

Reversing the trend

You can help stop the exotic plant invasion by using and nurturing native plants around your home and on your property. Native plants generally grow well and require less care than exotic species when grown on the proper soils under the right environmental conditions. Additionally, North Carolina's native wildlife has



Native plants are attractive additions to any property. Both American beautyberry (left) and strawberrybush (right) produce fruits that are attractive to wildlife and the human eye. Photos by Chris Moorman

Tiger swallowtails, along with other butterflies and the ruby-throated hummingbird, eat nectar from native azalea blooms. Illustration by Liessa Thomas Bowen

Table 1. Plant Species Native to North Carolina* (including soil moisture and light requirements, region of primary occurrence, and benefit to wildlife).

Latin Name	Common Name**	Soil/Light	Region	Wildlife Value
Tall trees (more than 30 ft)				
Acer barbatum	Southern Sugar Maple	M/F-S	P,CP	S
Acer rubrum	Red Maple	W-D/F-P	M,P,CP	S
Acer saccharum	Sugar Maple	M/F-S	M	S
Aesculus flava	Yellow Buckeye	M/P-S	M	H
Betula lenta	Sweet Birch	M-D/F-S	M	S,L
Betula nigra	River Birch	W-D/F	P,CP	S,L
Carya glabra	Pignut Hickory	D/F-S	M,P,CP	S,L
Carya ovata	Shagbark Hickory	M-D/F-S	M,P,CP	S,L
Carya tomentosa	Mockernut Hickory	D/F-S	M,P,CP	S,L
Celtis laevigata	Sugarberry	M/F-S	P,CP	F,L
Chamaecyparis thyoides	Atlantic Whitecedar	W-M/F-P	CP	C,L
Diospyros virginiana	Persimmon	M-D/F-P	M,P,CP	F
Fagus grandifolia	American Beech	M/P-S	M,P,CP	S
Fraxinus americana	White Ash	M/F-S	M,P	S,L
Fraxinus pennsylvanica	Green Ash	W-D/F-P	M,P,CP	S,L
Gordonia lasianthus	Loblolly Bay	W-M/F-P	CP	C
Ilex opaca	American Holly	W-D/F-S	M,P,CP	C,F,N,L
Juniperus virginiana	Eastern Redcedar	M-D/F-P	M,P,CP	C,F,L
Liquidambar styraciflua	Sweetgum	W-M/F-P	M,P,CP	S
Liriodendron tulipifera	Yellow Poplar	M/F-P	M,P,CP	S,H,N,L
Magnolia acuminata	Cucumber Tree	M/F-P	M,P	S
Magnolia grandiflora	Southern Magnolia	M/P-S	P,CP	C,S
Magnolia virginiana	Sweetbay	W-M/F-P	P,CP	S,L
Nyssa sylvatica	Blackgum	D/F-P	M,P,CP	F
Oxydendrum arboreum	Sourwood	D/F-S	M,P,CP	N
Persea borbonia	Redbay	W-M/F-S	CP	C,F,L
Pinus echinata	Shortleaf Pine	D/F-P	M,P,CP	C,S,L
Pinus palustris	Longleaf Pine	D/F	P,CP	C,S
Pinus strobus	Eastern White Pine	D/F	M,P	C,S
Pinus taeda	Loblolly Pine	M-D/F	M,P,CP	C,S,L
Platanus occidentalis	Sycamore	M/F-P	M,P,CP	S
Prunus serotina	Black Cherry	M-D/F	M,P,CP	F,N,L
Quercus alba	White Oak	M-D/F-P	M,P,CP	S,L
Quercus coccinea	Scarlet Oak	D/F-P	M,P	S,L
Quercus falcata	Southern Red Oak	M-D/F-P	M,P,CP	S,L
Quercus michauxii	Swamp Chestnut Oak	M/F-P	P,CP	S,L
Quercus nigra	Water Oak	M-D/F-P	P,CP	S,L
Quercus pagoda	Cherrybark Oak	M/F-P	P,CP	S,L
Quercus phellos	Willow Oak	W-M/F-P	P,CP	S,L
Quercus rubra	Red Oak	M/F-P	M,P	S,L
Quercus shumardii	Shumard Oak	M/F-P	P,CP	S,L
Quercus stellata	Post Oak	D/F	M,P,CP	S,L
Quercus velutina	Black Oak	M-D/F-P	M,P,CP	S,L
Quercus virginiana	Live Oak	D/F	CP	C,S,L
Robinia pseudoacacia	Black Locust	M-D/F-P	M,P	S,L
Salix nigra	Black Willow	W-M/F-S	M,P,CP	L
Sassafras albidum	Sassafras	M-D/F-P	M,P,CP	F,L
Taxodium distichum	Baldcypress	W-M/F-P	CP	S
Tilia americana	Basswood	M/F-P	M,P,CP	S,N,L
Tsuga canadensis	Eastern Hemlock	M/P-S	M,P	C,S
Ulmus alata	Winged Elm	M-D/F-P	M,P,CP	S,L
Ulmus americana	American Elm	W-M/F-P	M,P,CP	S,L
Small trees/shrubs (10-30 ft)				
Aesculus pavia	Red Buckeye	M/P	CP	H,N
Aesculus sylvatica	Painted Buckeye	M/P	P	H
Alnus serrulata	Alder	W-M/F-P	M,P,CP	S,L
Amelanchier arborea	Serviceberry	M-D/F-S	M,P	F,N,L
Amelanchier canadensis	Juneberry	W-D/F-P	P,CP	F,N,L
Amelanchier laevis	Allegheny Serviceberry	M-D/F-P	M	F,N,L
Aralia spinosa	Devil's Walking Stick	M/F-P	M,P,CP	F,N
Asimina triloba	Pawpaw	M/F-S	M,P,CP	F,L
Carpinus caroliniana	Ironwood	W-M/P-S	M,P,CP	S,L
Castanea pumila	Chinquapin	D/F-P	M,P,CP	S
Celtis tenuifolia	Dwarf Hackberry	D/F-P	P	F,L
Cercis canadensis	Eastern Redbud	M-D/F-P	M,P	S,N,L
Chionanthus virginicus	Fringetree	M-D/F-P	M,P,CP	F
Cornus amomum	Silky Dogwood	W-M/P-S	M,P,CP	F,N,L
Cornus florida	Flowering Dogwood	M-D/F-P	M,P,CP	F,N,L
Crataegus spp.	Hawthorn	M/F-S	M,P,CP	F,H,N,L
Cyrilla racemiflora	Titi	W-M/F-S	P,CP	C,N
Halesia tetraptera	Carolina Silverbell	M/P-S	M,P	N
Hamamelis virginiana	Witch-Hazel	M/F-S	M,P,CP	S
Ilex decidua	Possumhaw	W-D/F-P	P,CP	F,N,L
Ilex verticillata	Winterberry	W-M/F-S	M,P,CP	F,N,L
Ilex vomitoria	Yaupon	W-D/F-S	CP	C,F,N,L
Morus rubra	Red Mulberry	M-D/F-S	M,P,CP	F,L
Myrica cerifera	Wax Myrtle	W-D/F-P	P,CP	C,F,L
Osmanthus americana	Wild Olive, Devilwood	M-D/F-P	CP	C,F
Ostrya virginiana	Hophornbeam	M-D/F-S	M,P	F,L
Prunus americana	Wild Plum	M-D/F	M,P	F,N,L
Prunus angustifolia	Chickasaw Plum	D/F	P,CP	F,N,L
Prunus caroliniana	Carolina Laurel Cherry	M-D/F-P	CP	C,F,N,L
Prunus pensylvanica	Fire Cherry	M-D/F	M	F,N,L
Rhus copallina	Winged Sumac	M-D/F-P	M,P,CP	F,N,L
Rhus glabra	Smooth Sumac	M-D/F-P	M,P,CP	F,N,L
Salix caroliniana	Carolina Willow	W-M/F-S	P,CP	L
Sambucus canadensis	Elderberry	W-M/F-P	M,P,CP	F
Sorbus americana	Mountain-Ash	M/F-P	M	F
Symplocos tinctoria	Sweetleaf	M-D/F-S	M,P,CP	S,N,L
Viburnum prunifolium	Black Haw	M/F-S	M,P,CP	F,L
Viburnum rufidulum	Rusty Blackhaw	D/F-S	P,CP	F,L
Small shrubs				
Callicarpa americana	American Beautyberry	M-D/F-S	P,CP	F
Calycanthus floridus	Sweetshrub	M/P-S	M,P	N
Ceanothus americanus	New Jersey Tea	M-D/P-S	M,P,CP	S,N,L
Cephalanthus occidentalis	Buttonbush	W-M/F-P	M,P,CP	S,H,N
Clethra alnifolia	Sweet Pepperbush	W/F-S	P,CP	F,H,N
Corylus americana	Hazelnut	M/F-S	M,P	S
Euonymus americana	Strawberrybush	M/P-S	M,P,CP	S
Gaylussacia dumosa	Dwarf Huckleberry	M-D/F-P	M,P,CP	F,N,L
Gaylussacia frondosa	Blue Huckleberry	M/F-P	P,CP	F,N,L
Hydrangea arborescens	Wild Hydrangea	M/P-S	M,P	S,N
Ilex glabra	Inkberry	M/F-P	P,CP	C,F,N,L
Itea virginica	Virginia Willow	W-M/P-S	M,P,CP	S,N
Kalmia latifolia	Mountain Laurel	M-D/F-S	M,P,CP	C,H,N
Leucothoe axillaris	Doghobble	W-M/F-P	M,P,CP	C,N
Lindera benzoin	Spicebush	M-D/F-S	M,P,CP	F,L
Lyonia lucida	Fetterbush	M/P-S	P,CP	C,N
Phoradendron serotinum	Mistletoe	parasite	M,P,CP	F,L
Rhododendron atlanticum	Dwarf Azalea	W-D/F-P	P,CP	H,N
Rhododendron calendulaceum	Flame Azalea	M-D/P-S	M	H,N

Soil moisture: W = wet; M = moist; D = dry.
Light requirements: F = full sun; P = partial shade; S = shade.
Region: M = mountains; P = piedmont; CP = coastal plain.
Wildlife Value: C = winter cover; F = fleshy fruit; S = seed, hard mast, or catkin; H = hummingbird nectar; N = butterfly and other insect nectar; L = butterfly larvae host plant.

Table 1. Plant Species Native to North Carolina* (continued).

Latin Name	Common Name**	Soil/Light	Region	Wildlife Value
Rhododendron catawbiense	Catawba Rhododendron	M/P-S	M,P	C,H,N
Rhododendron maximum	Rosebay Rhododendron	M/P-S	M,P	C,H,N
Rhododendron periclimenoides	Wild Azalea	W-M/F-P	M,P,CP	H,N
Rubus spp.	Blackberry, Dewberry	M-D/F-P	M,P,CP	C,F,S,N
Sorbus arbutifolia	Red Chokeberry	W-M/F-S	M,P,CP	F,L
Vaccinium arboreum	Sparkleberry	D/F-P	P,CP	C,F,N,L
Vaccinium corymbosum	Highbush Blueberry	M/F-P	P,CP	F,N,L
Vaccinium stamineum	Deerberry	D/F-P	M,P,CP	F,N,L
Vaccinium vacillans	Lowbush Blueberry	D/F-P	M,P,CP	F,N,L
Viburnum acerifolium	Mapleleaf Viburnum	M-D/P-S	M,P	F,L
Viburnum dentatum	Arrowwood	M/F-S	M,P,CP	F,L
Viburnum nudum	Wild Raisin	W-M/F-S	M,P,CP	F,L
Vines				
Ampelopsis arborea	Peppervine	W-M/F-P	CP	F
Aristolochia macrophylla	Dutchman's Pipe	M-D/P-S	M	L
Berchemia scandens	Rattanvine, Supplejack	W-M/F-P	P,CP	F
Bignonia capreolata	Crossvine	M-D/F-P	P,CP	H
Campsis radicans	Trumpet Vine	M-D/F-P	M,P,CP	H
Decumaria barbara	Climbing Hydrangea	M/F-S	CP	N
Gelsemium sempervirens	Carolina Jessamine	M/F-P	P,CP	C,H,N
Lonicera sempervirens	Coral Honeysuckle	M/F-P	P,CP	H
Parthenocissus quinquefolia	Virginia Creeper	M-D/F-S	M,P,CP	F
Passiflora incarnata	Passionflower	M-D/F-P	M,P,CP	H,N,L
Smilax spp.	Greenbrier	W-D/F-P	M,P,CP	C,F
Toxicodendron radicans	Poison Ivy	M-D/F-P	M,P,CP	F
Vitis spp.	Grape	W-D/F-P	M,P,CP	F
Ferns				
Polystichum acrostichoides	Christmas Fern	M/P-S	M,P,CP	C
Herbs and wildflowers				
Apocynum cannabinum	Hemp Dogbane	M-D/F-P	M,P,CP	N
Aquilegia canadensis	Columbine	M-D/P-S	M,P,CP	S,H,N
Arisaema triphyllum	Jack-in-the-Pulpit	W-M/P-S	M,P,CP	F
Aristilochia serpentaria	Virginia Snakeroot	M-D/P-S	M,P,CP	L
Aruncus dioicus	Goat's Beard	M/P-S	M,P	L
Asclepias incarnata	Swamp Milkweed	W-M/F-P	M,P,CP	N,L
Asclepias tuberosa	Butterfly Weed	D/F-P	M,P,CP	N,L
Asclepias variegata	White Milkweed	M-D/F-P	M,P,CP	N,L
Aster curtisii	Aster	M-D/F-P	M	S,N,L
Aster divaricatus	Heart-Leaved Aster	M-D/P-S	M,P	S,N,L
Aster novae-angliae	New England Aster	M-D/F-P	M	S,N,L
Aster novi-belgii	New York Aster	M/F-P	CP	S,N,L
Aster pilosus	White Heath Aster	D/F	M,P,CP	S,N,L
Baptisia australis	Blue False Indigo	M/F-P	M,P	N,L
Baptisia tinctoria	Yellow Wild Indigo	D/F-P	M,P,CP	N,L
Bidens aristosa	Sticktight	W-D/F-P	P,CP	S,N
Chamaecrista fasciculata	Partridge Pea	M-D/F	M,P,CP	S,L
Chrysogonum virginianum	Green and Gold	M/S	P,CP	S,N
Cimicifuga racemosa	Black Cohosh	M/S	M,P	L
Cirsium horridulum	Yellow Thistle	M-D/F	P,CP	S,H,N,L
Coreopsis angustifolia	Narrow-Leaved Coreopsis	M/F-P	CP	S,N
Coreopsis auriculata	Eared Coreopsis	M/F-P	M,P,CP	S,N
Coreopsis falcata	Sickle Tickseed	W-M/F-P	P,CP	S,N
Coreopsis lanceolata	Lance-Leaved Coreopsis	D/F	M,P,CP	S,N
Coreopsis major	Greater Tickseed	D/F-P	M,P	S,N
Coreopsis verticillata	Threadleaf Coreopsis	D/F-P	M,P,CP	S,N
Desmodium spp.	Beggarlice	M-D/F-P	M,P,CP	S,L
Echinacea purpurea	Purple Coneflower	M-D/F	M,P	S,N
Eupatorium coelestinum	Mistflower	M/F-P	M,P,CP	S,N
Eupatorium fistulosum	Joe-Pye-Weed	M/F	M,P,CP	S,N,L
Geranium maculatum	Wild Geranium	M-D/F-P	M,P	S,N
Helianthus angustifolius	Swamp Sunflower	W-M/F-P	M,P,CP	S,N
Helianthus atrorubens	Sunflower	D/F	M,P,CP	S,N,L
Helianthus divaricatus	Woodland Sunflower	D/P	M,P,CP	S,N
Heliopsis helianthoides	Ox-Eye	M-D/F-P	M,P,CP	S,N
Hibiscus moscheutos	Rose Mallow	M/F-P	M,P,CP	H,N
Houstonia caerulea	Bluets	M-D/F-S	M,P,CP	N
Impatiens capensis	Jewelweed	W-M/P-S	M,P,CP	H,N
Ipomoea coccinea	Red Morning Glory	D/F	M,P,CP	S,H,N
Iris cristata	Crested Iris	M/P-S	M,P	H
Liatris spicata	Blazing Star	W-M/F	M,P	N
Lobelia cardinalis	Cardinal Flower	W-M/F-S	M,P,CP	H,N
Lobelia puberula	Blue Lobelia	W-D/F-P	M,P,CP	H,N
Lobelia siphilitica	Great Blue Lobelia	W-M/P-S	M	H,N
Mitchella repens	Partridgeberry	M/F-S	M,P,CP	F
Monarda didyma	Beebalm	M/P-S	M	H,N
Monarda fistulosa	Wild Bergamot	M-D/F-P	M,P,CP	H,N
Monarda punctata	Horsemint	D/F-P	P,CP	H,N
Oenothera fruticosa	Sundrops	M-D/F-P	M,P,CP	S,H
Penstemon canescens	Hairy Beardtongue	M-D/F-P	M,P	H,N,L
Penstemon laevigatus	Smooth Beardtongue	M/F-S	M,P,CP	H,N,L
Phlox carolina	Carolina Phlox	W-D/F-P	M,P,CP	N
Phlox divaricata	Blue Phlox	M/P-S	M,P,CP	N
Phlox paniculata	Summer Phlox	M/F-P	M,P,CP	N
Phlox pilosa	Prairie Phlox	D/F-P	P,CP	N
Phlox subulata	Moss Pink	D/F	M,P	N
Phytolacca americana	Pokeweed	M-D/F	M,P,CP	F,S
Pycnanthemum incanum	Hoary Mountainmint	M-D/F-P	M,P,CP	N
Rudbeckia fulgida	Orange Coneflower	M/F	M,P,CP	S,N
Salvia lyrata	Lyreleaf Sage	M-D/F-S	M,P,CP	H,N
Silene virginica	Fire Pink	M-D/P-S	M,P,CP	S,H,N
Solidago spp.	Goldenrod	M-D/F-P	M,P,CP	S,N
Spigelia marilandica	Indian Pink	M/P-S	M,P,CP	H
Stokesia laevis	Stoke's Aster	M/F-P	P,CP	N
Vernonia noveboracensis	Ironweed	W-M/F-P	M,P,CP	N
Vicia caroliniana	Wood Vetch	D/F-P	M,P,CP	S,L
Viola pedata	Bird-Foot Violet	D/F-P	M,P,CP	L
Grasses				
Andropogon glomeratus	Brushy Bluestem	M/F	P,CP	C,S,L
Andropogon ternarius	Splitbeard Bluestem	D/F	M,P,CP	C,S,L
Aristida stricta	Wiregrass	D/F-P	P,CP	C,S
Arundinaria gigantea	Switchcane	W-D/F-S	M,P,CP	C,S,L
Panicum virgatum	Switchgrass	M/F-P	M,P,CP	C,S,L
Sorghastrum nutans	Indiangrass	M-D/F	M,P,CP	C,S

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Region: M = mountains; P = piedmont; CP = coastal plain.
Wildlife Value: C = winter cover; F = fleshy fruit; S = seed, hard mast, or catkin; H = hummingbird nectar; N = butterfly and other insect nectar; L = butterfly larvae host plant.
* Use of specific plants by wildlife will vary regionally, and there always are exceptions.
** For information on which plants may be toxic to humans, visit *http://www.ces.ncsu.edu/depts/hort/consumer/poison/poison.htm.*

A native Viburnum *sp. (above), rather than an exotic berry-producer like autumn olive, should be planted to attract wildlife.*

become adapted to using native plants over thousands of years. Therefore, native plants meet the needs, including food and cover, of North Carolina's native wildlife without causing long-term damage to local plant communities.

Many native plants produce showy flowers, abundant fruits and seeds, and brilliant fall foliage. A diversity of native plants in an urban landscape provides:

- Protective cover for most animals.
- Seeds, nuts, and fruits for squirrels and other mammals.
- Seeds, fruits, and insects for birds.
- Nectar for hummingbirds and butterflies
- Larval host plants for butterfly caterpillars (many caterpillars are adapted to eat the foliage of specific plants, called their *host plants*).

Table 1 contains examples of native trees, shrubs, and herbs beneficial to wildlife. Use the table to identify native alternatives to the exotic plants commonly recommended to attract wildlife. For example, consider a viburnum (*Viburnum* spp.) or holly (*Ilex* spp.) in place of autumn olive, or consider one of our dozens of native oaks (*Quercus* spp.) in place of sawtooth oak, which has been introduced from Asia.

Traditional landscape plantings don't fully mimic the dense foliage and high plant diversity of natural areas. Therefore, birds and butterflies are most likely to use native plants that grow naturally in unmowed or unmanicured portions of your yard or in adjacent natural areas. Allow native grasses, brambles, and shrubs to grow in small corners of your yard where neighbors will be less likely to see the "unsightly" growth. These areas provide nest sites, cover, and food for birds and commonly harbor host plants for butterfly caterpillars. Minimize the amount of lawn on your property because these areas require frequent use of water, fertilizer, and pesticides that can be harmful to the environment and the very insects you want to attract. Before making drastic changes that might upset your neighbors, describe your plan to them and explain why you intend to make the changes.

Landscaping with native plants

Retain as much native vegetation as possible during land clearing and construction of houses and buildings. However, areas where plants were cleared during development can be landscaped using native plants. It's best to provide a diversity of native plant species on your property, which in turn ensures that fruits and nectar will be available throughout the year. Each native plant species is adapted to a specific range of soil types, light conditions, and moisture regimes. Before planting, have your soil analyzed. A small sample from your yard can be tested for nutrient content and will allow you to receive specific recommendations for preparing your soil before planting. Use the results of the soil tests to help determine which native plants will grow best on your land. Contact your local Cooperative Extension Center for instructions on this free service.

Here are some important concepts to consider when landscaping your property:

The presence of vines (trumpet vine, left), annuals (jewelweed, right), perennials, and a variety of other flowering plants helps ensure that hummingbirds will have access to nectar from spring to fall. Photos by Chris Moorman

Flowering dogwood is a great wildlife plant because it produces abundant fruits nearly every year. Photo by Chris Moorman

- Before initiating landscaping activities, create a map of the existing vegetation on your property. From this base map, identify areas where food and cover are limited and abundant. Then create a projected map and plan for your final landscape, making sure to incorporate areas that will provide food, cover, and water.
- Include a diversity of native plants in your landscape. Provide plants that produce winter cover (evergreens), seeds, fruits, and nectar attractive to birds, butterflies, and other wildlife. Also, use plants that are known hosts for the larvae of butterflies native to your area.
- Select plants that flower and bear fruit or seed at different times of the year (see *Managing Backyards and Other Urban Habitats for Birds* and *Butterflies in Your Backyard*), thereby assuring fruits, seeds, and nectar will be available throughout most of the year.
- Check to make sure the plant will fruit. Only the female of some plant species (American holly, wax myrtle, and eastern redcedar) produces fruit. In this case, be sure to provide at least one male plant for pollination.
- Plan viewing areas by mapping wildflower beds and fruit-producing plants in sight of windows and paths, but avoid planting them near reflective glass or windows to reduce accidental window strikes by feeding birds.
- Consider the moisture and light requirements of plants when including them in your plan. Map moisture-loving plants in low-lying areas, and position shade-loving plants underneath large trees or on the shady side of your home.
- Mimic "Mother Nature" by creating gentle curves in your landscape. Plant wildflower beds in irregularly shaped patterns. The beauty of a "natural" landscape rivals that of more

Position shade-loving plants like this flame azalea under tall trees or on the shady side of your home. Photo by Chris Moorman

Eastern redbud (left) is one of the first plants to flower in the spring, and cardinal flower (right) and goldenrod (center) are two excellent late-season nectar sources for butterflies and other insects.

Left photo courtesy of Alice B. Russell, NCSU retired; other photos by Chris Moorman

regimented traditional ornamental plantings.

- Cluster similar types of vegetation to allow wildlife easy access to seasonally abundant food sources without excessive movement and increased exposure to predators. Clumping similar species and placing shorter herbs and shrubs in front of taller vegetation improves the appearance of your habitat.

A cluster of orange coneflowers allows butterflies and birds access to abundant nectar and seeds without excessive movement or exposure to predators. Photo by Chris Moorman

- Plant low-growing herbs and shrubs under taller shrubs and trees. This helps to provide the layering important to birds. Different birds eat and nest on the ground and in the shrub, midstory, and canopy layers of a landscape.
- Make sure to provide adequate growing space for landscape plantings. Avoid planting large-maturing trees and shrubs where they will overgrow their space and interfere with overhead utilities or crowd homes and other structures. Shrubs and trees should be at least 6 feet away from all structures.
- Consult a local expert or one of many guides for recommended planting procedures. Because of North Carolina's hot summers, fall planting works best for most native plant species.

Table 2. Some Sources of Native Plants.

Nursery*/Web Address	Address	City, State	Phone
Boone's Native Seed Co.	P.O. Box 10363	Raleigh, NC 27605	
Carolina Greenery	375 Carthage Rd.	West End, NC 27376-8731	(910)947-3150
Coastal Plain Conservation Nursery	3067 Connors Dr.	Edenton, NC 27932	(252)482-5707
Cure Nursery http://www.curenursery.com	880 Buteo Rd.	Pittsboro, NC 27312	(919)542-6186
Dogwoody Nursery and Gardens	1380 Carson Creek Rd.	Brevard, NC 28712	(828)884-6205
Elk Mountain Nursery http://www.elk-mountain.com/	P.O. Box 599	Asheville, NC 28802	(828)683-9330
Fern Valley Farms	1624 Fern Valley Rd.	Yadkinville, NC 27055	(336)463-2412
Gardens of the Blue Ridge	P.O. Box 10	Pineola, NC 28662	(828)733-2417
Garret Wildflower Seed Farm	1117 New Castle Ct.	Raleigh, NC 27603	(919)662-9751
Hanging Dog Valley Nursery	2600 Boiling Springs Rd.	Murphy, NC 28906	(828)837-7921
Huffman's Native Plants	U.S. Hwy 441 P.O. Box 39	Otto, NC 28783	(704)524-7446
Humphries Nursery	4712 Whitfield Rd.	Durham, NC 27707	(919)489-5502
Lamtree Farm	Rt.1, Box 162	Warrensville, NC 28693	(919)385-6144
Mellow Marsh Farm www.mellowmarshfarm.com	205 Anolis Rd.	Pittsboro, NC 27312	(919)542-3532
Mich Gardens at Jordan Lake	86 Beaver Creek Rd.	Apex, NC 27502	(919)387-0402
Mountain Gardens gardens.webjump.com	3020 White Oak Creek Rd.	Burnsville, NC 28714	(828)675-5664
Native Gardens http://www.native-gardens.com/	5737 Fisher Lane	Greenback, TN 37742	(865)856-0220
Niche Gardens http://www.nichegardens.com/	1111 Dawson Rd.	Chapel Hill, NC 27516	(919)967-0078
N.C. Botanical Garden http://www.unc.edu/depts/ncbg	C.B. 3375, Totten Center	Chapel Hill, NC 27599	(919)962-0522
Plant Delights Nursery http://www.plantdel.com/	9241 Sauls Rd.	Raleigh, NC 27603	(919)772-4794
Singing Springs Nursery	8802 Wilkerson Rd.	Cedar Grove, NC 27231-9324	(919)732-9403
Sunlight Gardens http://www.sunlightgardens.com/	174 Golden Lane	Andersonville, TN 37705	(800)272-7396
We-Du Nurseries http://www.we-du.com/	2055 Polly Spout Rd.	Marion, NC 28754	(828)738-8300
Woodlanders, Inc. http://www.woodlanders.net/	1128 Colleton Ave.	Aiken, SC 29801	(803)648-7522

*Several of these nurseries are open to visitors by appointment only.

- Remain patient. It generally takes 3 to 5 years before the results of landscaping efforts pay off and wildlife use of native plants becomes obvious. An old adage says, "The first year a garden sleeps, the second year it creeps, the third year it leaps."

Where to find native plants

Look for native plants propagated from locally collected seed. This helps protect the unique characteristics of individual plants of the species growing wild in your area

You'll have to compete with American goldfinches for coneflower seed if you hope to propagate your own plants from seed.

Illustration by Liessa Thomas Bowen

and ensures that the plants you use in your landscaping are best adapted to the local environment. Avoid planting cultivars of native plants when possible. Most of these variants may have been selected for qualities other than their value to wildlife, making them less desirable as wildlife plants. Although many conventional nurseries do not carry a large variety of native species, especially noncultivars, the number of reputable nurseries specializing in these plants is on the rise. Be wary of "deals" on native plants, especially orchids and trilliums, which often indicate the plants were collected from wild areas. Collecting plants from the wild contributes to the destruction of their natural habitats and often increases the chance of planting failure. Occasionally, local nature centers and botanical gardens initiate native plant rescues from areas soon to be cleared for development—these can be good and appropriate wild sources. In addition, it is possible to collect wild seed and sow or propagate native plants from the seed. See Phillips (1985), Bir (1992), and Schopmeyer (1974) for more on propagating native plants from seed. *Table 2* contains a list of native plant suppliers in North Carolina. This list is not comprehensive, and the number of nurseries that sell native plants increases each year. Visit http://www.unc.edu/depts/ncbg/sources.htm or http://www.co.mecklenburg.nc.us/coeng/Recycle/NPVL.htm or consult with local parks, nature preserves, garden clubs, botanical gardens, arboreta, and your County Extension Center for the names of additional native plant providers.

Table 3. Known Invasive Plants in North Carolina.

Common Name	Scientific Name
Trees	
Tree-of-Heaven	*Ailanthus altissima*
Mimosa	*Albizia julibrissin*
Chinaberry	*Melia azedarach*
Princess Tree	*Paulownia tomentosa*
Chinese Tallow Tree	*Sapium sebiferum*
Shrubs	
Japanese Barberry	*Berberis thunbergii*
Russian Olive	*Elaeagnus angustifolia*
Autumn Olive	*Elaeagnus umbellata*
Bicolor Lespedeza	*Lespedeza bicolor*
Japanese Privet	*Ligustrum japonicum*
Chinese Privet	*Ligustrum sinense*
Common Privet	*Ligustrum vulgare*
Oregon Grape	*Mahonia bealei*
Multiflora Rose	*Rosa multiflora*
Vines	
Porcelain-Berry	*Ampelopsis brevipedunculata*
Oriental Bittersweet	*Celastrus orbiculatus*
English Ivy	*Hedera helix*
Japanese Honeysuckle	*Lonicera japonica*
Kudzu	*Pueraria lobata*
Japanese Wisteria	*Wisteria floribunda*
Chinese Wisteria	*Wisteria sinensis*
Herbs	
Crown Vetch	*Coronilla varia*
Queen Anne's Lace	*Daucus carota*
Tall Fescue	*Fescue elatior*
Sericea Lespedeza	*Lespedeza cuneata*
White Sweet Clover	*Melilotus alba*
Japanese Grass	*Microstegium vimineum*
Johnson Grass	*Sorghum halepense*

Eradication and control of exotics

Herbicides, prescribed fire, selective removal of unwanted plants, and disking (or a combination of these activities) can be used to eliminate or control unwanted exotic plants. Because the results of these activities vary from

Although many invasive plants like Japanese honeysuckle are here to stay, they can be controlled locally by using herbicides or removing by hand.

Photo by Chris Moorman

county to county, you may need to experiment before finding the most successful approach for your property. In some cases, a range of native plant species already may be present. In others, a single exotic plant may dominate a piece of property, requiring the landowner take extreme measures to increase the diversity and abundance of native plants.

Known invasive plants in North Carolina are listed in *Table 3*. This list is not comprehensive, and most of the plants named have already spread throughout North Carolina to the extent they can never be controlled completely. To prevent the list from continuing to grow, carefully consider an exotic plant's potential for invasiveness before introducing it on your property, especially when trying to attract wildlife. For more information on methods of control required for exotic plant species, contact your local County Extension Center. The *North Carolina Agricultural Chemicals Manual*, published by North Carolina State University, and *Controlling Invasive Exotics in Your Yard*, by the North Carolina Botanical Garden, are excellent references for exotic plant control.

Internet resources

Native Plant Information

North Carolina Wildflower Preservation Society
http://www.ncwildflower.org/

North Carolina Botanical Garden
http://www.unc.edu/depts/ncbg

North Carolina Plant Conservation Program
http://www.ncagr.com/plantind/plant/conserv/cons.htm

North Carolina Partners in Flight
http://www.faculty.ncwc.edu/mbrooks/pif/

North Carolina State University Consumer Horticulture
http://www.ces.ncsu.edu/depts/hort/consumer/factsheets/maritime/index.htm
http://www.ces.ncsu.edu/depts/hort/consumer/factsheets/native/index-native.html

Mecklenburg County PLANT Program
http://ww.co.mecklenburg.nc.us/coeng/Recycle/native.asp

Sally and Andy Wasowski Website
http://www.botanicalmissionaries.com

Exotic and Invasive Plant Information

Southeast Exotic Pest Plant Council
http://www.se-eppc.org

Plant Conservation Alliance—Alien Plant Working Group
http://www.nps.gov/plants/alien/

North Carolina Department of Agriculture and Consumer Services Plant Protection
http://www.agr.state.nc.us/plantind/plant.htm

U.S. Fish and Wildlife Service
http://invasives.fws.gov

The Nature Conservancy
http://nature.org/initiatives/invasivespecies/
http:tncweeds.ucdavis.edu/

United States Department of Agriculture PLANTS Database
http://plants.usda.gov/

North Carolina Agricultural Chemicals Manual
http://ipmwww.ncsu.edu/agchem/agchem.html

Backyard and Other Wildlife

North Carolina Extension Wildlife, Fisheries, and Aquaculture
http://www.ces.ncsu.edu/nreos/wild/

North Carolina Wildlife Resources Commission
http://www.ncwildlife.org/

Natural Resources Conservation Service
http://www.nrcs.usda.gov/feature/backyard/

National Wildlife Federation
http://www.nwf.org/backyardwildlifehabitat/

Additional resources

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