

PLANTS THAT TOLERATE WET SOIL

A species' tolerance to wet soil depends in part on type of soil; for example, wet mineral soils high in clay are much different in important physical and chemical properties than soils high in organic matter, and soils high in organic matter generally are better aerated, even when fairly wet, compared to wet soils high in clay. The lack of oxygen is the primary reason so many plant species cannot survive in saturated soils, although many important plant physiological processes are also significantly affected by these conditions. Soils high in organic matter are higher in nitrogen especially, although it is not readily available to the plant when the soil is saturated; additionally, these soils generally are acidic, although in some regions they can be heavily influenced by underlying calcareous bedrock or glacial deposits, as is the case in upstate New York.

Most species that seem to thrive in wet and even flooded soils actually grow much better on well-drained soils if they do not have to compete with other plants (of course, aquatic plant species are an exception and have not been included in this book). The best single source of information about a plant species' affinity to wet soils is the USDI Fish and Wildlife Service's National List of Plant Species that Occur in Wetlands. This list was developed for all wetland and aquatic plant species in each region and is best accessed via the USDA PLANTS Database Web site (<http://plants.usda.gov>). Once reaching this site, one should click on the "Wetland Indicator Status" choice on the main page. The regions most pertinent to the

geographical scope of this book are regions 1, 2 (northernmost portion), and 3.

Many species that tolerate wet soil naturally occur on mineral soils along streams within floodplains that are flooded to various depths and durations, especially early during the growing season. Many of these same species—*Fraxinus pennsylvanica* (green ash) and *Platanus occidentalis* (American sycamore), for example—tolerate the extremes of streetside conditions, thus are often selected for such use. Some species—*F. nigra* (black ash) and *Picea mariana* (black spruce), for example—occur naturally on both wet mineral and organic soils. Species names followed by a ✓ are those that thrive on wet organic soils (i.e., those that typically occur naturally on peat and generally grow best under these conditions). The species included in this "Wet Soil" category are excellent candidates for wetland restoration projects, as well as planting in wet spots in one's garden. While numerous manuals and books are available on restoring wetlands, those by Keddy (2000) and Mitsch and Gosselink (2000) provide the strongest foundation on which to engage in these activities.

SUN

Ferns and fernlike plants

Diplazium pycnocarpon (narrow-leaved spleenwort)

Dryopteris celsa (log fern)

Dryopteris cristata (crested wood fern)

Equisetum fluviatile (water horsetail)

Equisetum hyemale (scouring rush)

Equisetum scirpoides (dwarf scouring rush)
Equisetum sylvaticum (woodland horsetail)
Lycopodium alopecuroides (foxtail clubmoss)
Matteuccia struthiopteris (ostrich fern)
Onoclea sensibilis (sensitive fern)
Osmunda cinnamomea (cinnamon fern)
Osmunda regalis (royal fern)
Selaginella apoda (meadow spikemoss)
Thelypteris palustris (marsh fern)
Thelypteris simulata (Massachusetts fern)
Woodwardia areolata (netted chain fern)
Woodwardia virginica (Virginia chain fern)

Grasses and grasslike plants

Acorus calamus (sweetflag)
Andropogon virginicus var. *abbreviatus* (bushy beardgrass)
Carex aurea (golden-fruited sedge)
Carex crinita (fringed sedge)
Carex grayi
Carex muskingumensis (palm sedge)
Carex nigra (black sedge)
Carex stricta (tussock sedge)
Deschampsia cespitosa (tufted hairgrass)
Hordeum jubatum (foxtail barley)
Juncus effusus (softrush)
Muhlenbergia capillaris (hairgrass)
Panicum virgatum (switch grass)
Scirpus cyperinus (bulrush)
Spartina pectinata (prairie cord-grass)
Sporobolus airoides (alkali sacaton)
Typha (cattail) spp.

Wildflowers

Asclepias incarnata (swamp milkweed)
Aster umbellatus (flat-topped aster)
Boltonia asteroides (false aster)
Boltonia decurrens
Caltha palustris (marsh marigold)
Camassia scilloides (wild hyacinth)
Chamaelirium luteum (devil's bit)
Chelone glabra (turtlehead)
Coreopsis rosea (pink coreopsis)
Delphinium tricorne (dwarf larkspur)
Erigeron pulchellus (Robin's plantain)
Eupatorium coelestinum (hardy ageratum)
Eupatorium fistulosum (hollow-stemmed Joe-pye weed)

Eupatorium maculatum (spotted Joe-pye weed)
Eupatorium perfoliatum (boneset)
Eupatorium purpureum (purple Joe-pye weed)
Gentianopsis crinita (fringed gentian)
Gentianopsis procera (lesser fringed gentian)
Geum rivale (water avens)
Hedyotis caerulea (bluets)
Helenium autumnale (sneezeweed)
Helianthus angustifolius (narrow-leaved sunflower)
Helianthus giganteus (swamp sunflower)
Helonias bullata (swamp pink)
Hibiscus moscheutos (rose mallow)
Iris fulva (copper iris)
Iris lacustris (dwarf lake iris)
Iris prismatica (slender blue flag)
Iris setosa (arctic blue flag)
Iris versicolor (northern blue flag)
Iris virginica (southern blue flag)
Liatris spicata (blazing star)
Lilium canadense (Canada lily)
Lilium michiganense (Michigan lily)
Lilium superbum (Turk's cap)
Lobelia cardinalis (cardinal flower)
Lobelia siphilitica (great blue lobelia)
Maianthemum canadense (Canada mayflower)
Melanthium virginicum (bunchflower)
Menyanthes trifoliata (bog buckbean)
Physostegia virginiana (false dragonhead)
Podophyllum peltatum (mayapple)
Senecio aureus (golden ragwort)
Smilacina stellata (starry false Solomon's seal)
Smilacina trifolia (three-leaved false Solomon's seal)
Symplocarpus foetidus (skunk cabbage)
Thalictrum pubescens (tall meadow rue)
Trientalis borealis (starflower)
Trollius laxus (spreading globeflower)
Veratrum viride (false hellebore)
Veronicastrum virginicum (culver's root)
Viola cucullata (marsh blue violet)
Viola sororia (dooryard violet)
Zizia aptera (heart-leaved alexanders)
Zizia aurea (golden alexanders)

Vines

Lonicera dioica (glaucous honeysuckle)
Wisteria frutescens (American wisteria)

Shrubs

Alnus incana subsp. *rugosa* (speckled alder)
Alnus maritima (seaside alder)
Alnus serrulata (tag alder)
Alnus viridis subsp. *crispa* (green alder)
Amelanchier bartramiana (mountain juneberry)
Amelanchier canadensis (shadbush)
Andromeda glaucophylla (bog-rosemary) ✓
Aronia arbutifolia (red chokeberry)
Aronia melanocarpa (black chokeberry)
Betula pumila (bog birch)
Cephalanthus occidentalis (buttonbush)
Chamaedaphne calyculata (leatherleaf) ✓
Chionanthus virginicus (fringetree)
Clethra alnifolia (summersweet clethra)
Cornus amomum (silky dogwood)
Cornus drummondii (rough-leaved dogwood)
Cornus sericea (red-osier dogwood)
Cornus stricta (southern swamp dogwood)
Dirca palustris (leatherwood)
Fothergilla gardenii (dwarf fothergilla) ✓
Gaylussacia baccata (black huckleberry)
Gaylussacia dumosa (dwarf huckleberry)
Gaylussacia frondosa (dangleberry)
Hamamelis vernalis (vernal witch-hazel)
Ilex decidua (possum haw)
Ilex glabra (inkberry)
Ilex laevigata (smooth winterberry)
Ilex verticillata (winterberry)
Itea virginica (Virginia sweet spire)
Kalmia angustifolia (sheep-laurel) ✓
Kalmia polifolia (bog-laurel) ✓
Ledum groenlandicum (Labrador tea) ✓
Lindera benzoin (spicebush)
Lyonia ligustrina (maleberry)
Lyonia lucida (fetterbush lyonia)
Myrica gale (sweetgale)
Myrica heterophylla (southern bayberry)
Myrica pensylvanica (northern bayberry)
Nemopanthus mucronatus (mountain-holly)
Physocarpus opulifolius (eastern ninebark)
Potentilla fruticosa (shrubby cinquefoil)
Rhododendron arborescens (sweet azalea) ✓
Rhododendron atlanticum (Atlantic azalea) ✓
Rhododendron canadense (rhodora) ✓
Rhododendron periclymenoides (pinxter azalea) ✓
Rhododendron viscosum (swamp azalea) ✓

Ribes americanum (eastern black currant)
Ribes glandulosum (skunk currant)
Ribes triste (swamp red currant)
Rosa palustris (swamp rose)
Salix (willow) spp. (nearly all)
Sambucus canadensis (black elderberry)
Spiraea alba (meadowsweet)
Spiraea tomentosa (hardhack)
Vaccinium corymbosum (highbush blueberry) ✓
Vaccinium macrocarpon (cranberry) ✓
Vaccinium oxycoccos (small cranberry) ✓
Viburnum cassinoides (witherod viburnum)
Viburnum edule (mooseberry)
Viburnum lentago (nannyberry)
Viburnum nudum (smooth witherod)
Viburnum trilobum (American cranberrybush)
Xanthorhiza simplicissima (yellowroot)
Zenobia pulverulenta (dusty zenobia) ✓

Trees

Acer negundo (boxelder)
Acer rubrum (red maple)
Acer saccharinum (silver maple)
Betula nigra (river birch)
Carpinus caroliniana (American hornbeam)
Carya aquatica (water hickory)
Carya illinoensis (pecan)
Carya laciniosa (shellbark hickory)
Celtis laevigata (sugarberry)
Chamaecyparis thyoides (Atlantic white-cedar) ✓
Fraxinus caroliniana (water ash)
Fraxinus nigra (black ash)
Fraxinus pennsylvanica (green ash)
Fraxinus profunda (pumpkin ash)
Gleditsia aquatica (water locust)
Gleditsia triacanthos (honeylocust)
Larix laricina (eastern larch) ✓
Liquidambar styraciflua (sweetgum)
Magnolia virginiana (sweetbay magnolia) ✓
Nyssa sylvatica (blackgum)
Picea mariana (black spruce)
Pinus serotina (pond pine)
Platanus occidentalis (American sycamore)
Populus deltoides (eastern cottonwood)
Populus heterophylla (swamp cottonwood)
Quercus bicolor (swamp white oak)
Quercus laurifolia (laurel oak)

Quercus lyrata (overcup oak)
Quercus macrocarpa (bur oak)
Quercus michauxii (swamp chestnut oak)
Quercus nigra (water oak)
Quercus pagoda (cherrybark oak)
Quercus palustris (pin oak)
Quercus phellos (willow oak)
Salix (willow) spp.
Taxodium distichum (baldcypress)
Thuja occidentalis (northern white-cedar) ✓

SHADE

Ferns and fernlike plants

Diplazium pycnocarpon (narrow-leaved spleenwort)
Dryopteris celsa (log fern)
Dryopteris cristata (crested wood fern)
Matteuccia struthiopteris (ostrich fern)
Onoclea sensibilis (sensitive fern)
Osmunda cinnamomea (cinnamon fern)
Osmunda regalis (royal fern)
Thelypteris palustris (marsh fern)
Woodwardia areolata (netted chain fern)
Woodwardia virginica (Virginia chain fern)

Grasses and grasslike plants

Carex lupulina (hop sedge)
Carex muskingumensis (palm sedge)

Wildflowers

Aconitum noveboracense (northern monkshood)
Calla palustris (water arum)
Caltha palustris (marsh marigold)
Chamaelirium luteum (devil's bit)
Chelone glabra (turtlehead)
Diphylleia cymosa (umbrella leaf)
Geum rivale (water avens)

Iris prismatica (slender blue flag)
Iris versicolor (northern blue flag)
Lilium canadense (Canada lily)
Lobelia cardinalis (cardinal flower)
Maianthemum canadense (Canada mayflower)
Panax trifolius (dwarf ginseng)
Podophyllum peltatum (mayapple)
Polemonium vanbruntiae (Appalachian Jacob's ladder)
Senecio aureus (golden ragwort)
Smilacina stellata (starry false Solomon's seal)
Symplocarpus foetidus (skunk cabbage)
Thalictrum pubescens (tall meadow rue)
Trientalis borealis (starflower)
Veratrum viride (false hellebore)
Veronicastrum virginicum (culver's root)
Viola cucullata (marsh blue violet)
Viola sororia (dooryard violet)

Shrubs

Dirca palustris (leatherwood)
Hamamelis vernalis (vernal witch-hazel)
Ilex decidua (possum haw)
Ilex verticillata (winterberry)
Itea virginica (Virginia sweet spire)
Nemopanthus mucronatus (mountain-holly)
Vaccinium myrtilloides (velvetleaf blueberry)
Viburnum cassinoides (witherod viburnum)
Viburnum edule (mooseberry)
Viburnum nudum (smooth witherod)

Trees

Magnolia virginiana (sweetbay magnolia)
Nyssa sylvatica (blackgum)
Picea mariana (black spruce)
Styrax americanus (American snowbell)

PLANTS THAT TOLERATE DRY SOIL

These species often naturally occur on rocky outcrops or deep sands, both of which subject plants to occasional very dry conditions. On rocky outcrops, plants that survive do so by exploiting crevices that accumulate organic material and soil, or that provide a path to a less hostile underlying substrate. The parent geological material of these rocks can also influence which species can grow under these already difficult conditions, especially relative to whether the materials promote either an acidic (low pH) or alkaline (high pH) condition.

Deep sands are often quite deficient in nutrients, as well as moisture, and few plant species tolerate these infertile, dry sites. Sands also tend to be acidic, although those along dune systems can be circumneutral. Species best adapted to these driest, infertile sites are noted by a ♦ following the name; these species are especially good options for restoring badly degraded, infertile, dry lands that may not even have any soil.

The soil pH has a significant influence on plant nutrient availability and on essential symbiotic relationships for many plant species, whether the soil is dry or wet. Although many species grow best in circumneutral or slightly lower pH soils, some species, like the many very showy members of the heath family, require very acidic conditions. At high pHs, many species become chlorotic as they cannot access soil iron and other nutrients. However, some species naturally thrive under these higher pH conditions. A ✕ follows the names of those best adapted to dry sites with circumneutral to alkaline soils.

Many more species than those listed below can tol-

erate dry soils if not growing in full sun. Individual species entries in this book should be consulted for this larger group.

SUN

Ferns and fernlike plants

- Cheilanthes lanosa* (hairy lip fern)
- Cheilanthes tomentosa* (woolly lip fern)
- Dennstaedtia punctilobula* (hay-scented fern)
- Lycopodium tristachyum* (ground-pine)
- Pteridium aquilinum* (bracken fern)
- Selaginella rupestris* (rock spikemoss)

Grasses and grasslike plants

- Andropogon gerardii* (big bluestem)
- Andropogon gyrans* (Elliott's broomsedge)
- Andropogon ternarius* (split-beard broomsedge)
- Andropogon virginicus* (broomsedge)
- Aristida purpurea* (purple three awn)
- Bouteloua curtipendula* (side oats gramma)
- Bouteloua gracilis* (blue gramma)
- Buchloe dactyloides* (buffalo grass)
- Deschampsia flexuosa* (crinkled hairgrass)
- Elymus canadensis* (Canada wild rye)
- Elymus glaucus* (blue wild rye)
- Eragrostis spectabilis* (purple lovegrass)
- Eragrostis trichodes* (sand lovegrass)
- Muhlenbergia capillaris* (hairgrass)
- Panicum virgatum* (switch grass)
- Schizachyrium scoparium* (little bluestem)
- Sorghastrum nutans* (Indian grass)
- Spartina pectinata* (prairie cord-grass)
- Sporobolus heterolepis* (prairie dropseed)

Wildflowers

Anemone patens (pasqueflower)
Asclepias purpurascens (purple milkweed)
Asclepias tuberosa (butterfly weed)
Aster azureus (prairie heart-leaved aster)
Aster ericoides (heath aster)
Aster laevis (smooth aster)
Baptisia australis (blue false indigo)
Campanula rotundifolia (harebell)
Chrysopsis falcata (sickle-leaved golden aster)
Chrysopsis mariana (shaggy golden aster)
Chrysopsis villosa (hairy golden aster)
Coreopsis lanceolata (tickseed)
Echinacea pallida (prairie coneflower)
Gentiana puberulenta (prairie gentian)
Geum triflorum (prairie smoke)
Hedyotis caerulea (bluets)
Heliopsis helianthoides (oxeye)
Iris verna (dwarf iris)
Liatris aspera (rough gayfeather)
Liatris punctata (dotted blazing star)
Liatris pycnostachya (prairie blazing star)
Lilium philadelphicum (wood lily)
Lupinus perennis (blue lupine)
Monarda fistulosa (bergamot)
Oenothera fruticosa (sundrops)
Oenothera macrocarpa (Missouri evening primrose)
Oenothera speciosa (white evening primrose)
Opuntia humifusa (eastern prickly pear)
Oxalis violacea (violet wood-sorrel)
Penstemon hirsutus (hairy beardtongue)
Phlox pilosa (prairie phlox)
Phlox subulata (moss-pink)
Potentilla tridentata (three-toothed cinquefoil)
Ratibida pinnata (prairie coneflower)
Rudbeckia hirta (black-eyed Susan)
Silene virginica (fire pink)
Silphium laciniatum (compass plant)
Silphium terebinthinaceum (prairie dock)
Solidago canadensis (Canada goldenrod)
Solidago nemoralis (gray goldenrod)
Solidago rigida (stiff goldenrod)
Solidago rugosa (rough-stemmed goldenrod)
Solidago sempervirens (seaside goldenrod)
Solidago speciosa (showy goldenrod)
Tradescantia ohiensis (smooth spiderwort)
Viola fimbriatula (ovate-leaved violet)

Viola palmata (wood violet)
Viola pedata (bird's-foot violet)
Viola sagittata (arrow-leaved violet)
Waldsteinia fragarioides (barren strawberry)

Vines

Campsis radicans (trumpet creeper)
Celastrus scandens (American bittersweet)
Parthenocissus quinquefolia (Virginia creeper)

Shrubs

Amelanchier humilis (bush juneberry)
Amelanchier sanguinea (roundleaf serviceberry)
Amelanchier stolonifera (running serviceberry)
Amorpha fruticosa (indigobush) ◆
Arctostaphylos uva-ursi (bearberry) ◆
Aronia arbutifolia (red chokeberry)
Aronia melanocarpa (black chokeberry)
Ceanothus americanus (New Jersey tea) ◆
Ceanothus herbaceus (prairie-redroot) ◆
Celtis tenuifolia (dwarf hackberry)
Chionanthus virginicus (fringetree)
Comptonia peregrina (sweetfern) ◆
Cornus racemosa (gray dogwood)
Cornus rugosa (roundleaf dogwood) ✕
Corylus americana (American hazelnut)
Gaultheria procumbens (teaberry)
Gaylussacia baccata (black huckleberry) ◆
Hypericum densiflorum (dense hypericum)
Hypericum frondosum (golden St. John's wort)
Hypericum kalmianum (Kalm's St. John's wort)
Hypericum prolificum (shrubby St. John's wort)
Ilex glabra (inkberry)
Juniperus (juniper) spp. ◆
Kalmia latifolia (mountain-laurel)
Myrica pensylvanica (northern bayberry) ✕
Paxistima canbyi (mountain lover)
Physocarpus opulifolius (eastern ninebark)
Potentilla fruticosa (shrubby cinquefoil) ✕
Prunus maritima (beach plum)
Prunus pumila (sand cherry)
Quercus ilicifolia (scrub oak) ◆
Quercus prinoides (dwarf chestnut oak) ◆
Rhus aromatica (fragrant sumac) ✕
Rhus copallina (shining sumac) ◆
Rhus glabra (smooth sumac)
Rhus typhina (staghorn sumac)
Ribes odoratum (clove currant)

Robinia hispida (bristly locust)
Rosa (rose) spp. (except *R. palustris*, swamp rose)
Salix cordata (dune willow)
Shepherdia canadensis (buffalo berry) ✕
Spiraea alba (meadowsweet)
Symphoricarpos albus (snowberry)
Symphoricarpos orbiculatus (coralberry)
Vaccinium angustifolium (low sweet blueberry) ◆
Yucca filamentosa (Adam's needle) ◆
Zanthoxylum americanum (prickly-ash)

Trees

Acer nigrum (black maple) ✕
Amelanchier arborea (serviceberry)
Aralia spinosa (devil's-walkingstick)
Betula populifolia (gray birch) ◆
Carya glabra (pignut hickory)
Carya ovata (shagbark hickory)
Carya pallida (pale hickory)
Carya texana (black hickory)
Carya tomentosa (mockernut hickory)
Celtis occidentalis (hackberry) ✕
Cotinus obovatus (American smoketree) ✕
Crataegus (hawthorn) spp.
Diospyros virginiana (persimmon)
Fraxinus pennsylvanica (green ash)
Fraxinus quadrangulata (blue ash) ✕
Gleditsia triacanthos (honeylocust) ✕
Gymnocladus dioica (Kentucky coffeetree)
Juniperus virginiana (eastern redcedar) ◆
Liquidambar styraciflua (sweetgum)
Nyssa sylvatica (blackgum)
Ostrya virginiana (eastern hophornbeam)
Oxydendrum arboreum (sourwood)
Pinus banksiana (jack pine) ◆
Pinus echinata (shortleaf pine)
Pinus pungens (Table Mountain pine)
Pinus resinosa (red pine)
Pinus rigida (pitch pine) ◆
Pinus virginiana (Virginia pine) ◆
Platanus occidentalis (American sycamore)
Populus deltoides (eastern cottonwood)
Populus grandidentata (bigtooth aspen)
Populus tremuloides (quaking aspen)
Prunus pennsylvanica (pin cherry) ◆
Quercus bicolor (swamp white oak)
Quercus cinerea (bluejack oak)

Quercus coccinea (scarlet oak)
Quercus ellipsoidalis (northern pin oak)
Quercus falcata (southern red oak)
Quercus imbricaria (shingle oak)
Quercus laevis (turkey oak)
Quercus lyrata (overcup oak)
Quercus macrocarpa (bur oak)
Quercus muehlenbergii (chinkapin oak)
Quercus palustris (pin oak)
Quercus phellos (willow oak)
Quercus prinus (chestnut oak)
Quercus shumardii (Shumard oak)
Quercus velutina (black oak)
Quercus virginiana (live oak)
Robinia pseudoacacia (black locust) ◆
Sassafras albidum (sassafras)
Thuja occidentalis (northern white-cedar) ✕

PARTIAL SHADE TO SHADE

Ferns and fernlike plants

Dryopteris fragrans (fragrant wood fern)
Dryopteris intermedia (evergreen wood fern)
Dryopteris marginalis (marginal shield fern)
Pellaea atropurpurea (purple cliff brake)
Pellaea glabella (smooth cliff brake)
Polypodium polypodioides (resurrection fern)
Polystichum acrostichoides (Christmas fern)
Woodsia spp.

Grasses and grasslike plants

Carex eburnea (sedge)
Carex flaccosperma (sedge)
Carex laxiculmis (sedge)
Carex pennsylvanica (sedge)
Carex plantaginea (plantain sedge)
Carex platyphylla (broad-leaf sedge)
Elymus hystrix (bottlebrush-grass)

Wildflowers

Anemone canadensis (Canada anemone)
Aquilegia canadensis (wild columbine)
Aster divaricatus (white wood aster)
Chimaphila maculata (spotted wintergreen)
Chimaphila umbellata (prince's pine)
Chrysogonum virginianum (gold-star)
Eupatorium rugosum (white snakeroot)
Galax aphylla (wandflower)

Geranium maculatum (wild geranium)
Hepatica americana (round-lobed hepatica)
Heuchera americana (alumroot)
Maianthemum canadense (Canada mayflower)
Podophyllum peltatum (mayapple)
Porteranthus trifoliatius (Indian physic)
Potentilla tridentata (three-toothed cinquefoil)
Rudbeckia hirta (black-eyed Susan)
Sedum ternatum (wild stonecrop)
Smilacina stellata (starry false Solomon's seal)
Solidago caesia (blue-stemmed goldenrod)
Solidago flexicaulis (zig-zag goldenrod)
Solidago ulmifolia (elm-leaved goldenrod)
Viola adunca (hookspur violet)
Waldsteinia fragarioides (barren strawberry)

Shrubs

Chionanthus virginicus (fringetree)
Cornus rugosa (roundleaf dogwood) ✕
Corylus (hazelnut) spp.
Diervilla lonicera (bush-honeysuckle)
Dirca palustris (leatherwood)

Gaultheria procumbens (teaberry)
Gaylussacia baccata (black huckleberry) ◆
Hamamelis virginiana (witch-hazel)
Hydrangea arborescens (smooth hydrangea)
Kalmia latifolia (mountain-laurel) ◆
Staphylea trifolia (bladdernut) ✕
Vaccinium arboreum (farkleberry)
Vaccinium pallidum (dryland blueberry)
Vaccinium stamineum (deerberry)
Zanthoxylum americanum (prickly-ash)

Trees

Acer nigrum (black maple) ✕
Amelanchier arborea (serviceberry)
Aralia spinosa (devil's-walkingstick)
Celtis occidentalis (hackberry)
Ilex opaca (American holly)
Ostrya virginiana (eastern hophornbeam)
Oxydendrum arboreum (sourwood)
Picea glauca (white spruce) ✕
Viburnum rufidulum (rusty blackhaw)

PLANTS THAT TOLERATE SHADE

Besides the species covered under wet and dry soil conditions, additional species tolerate partial to full shade on moist, well-drained soils. Of course, the previously listed species that tolerate extreme conditions grow even better when cultivated on moist, well-drained soils. Many other species could be included here, especially under the shrub and wildflower categories, but a species' ornamental attributes, especially flowering, fall color, and form, typically are greatly diminished by increasing amounts of shade. Many spring-flowering wildflower species will tolerate deep shade during the majority of the growing season but require the open canopy conditions that typically exist during their flowering and leaf development periods in early spring. Very few species in nature tolerate prolonged periods beneath evergreen canopies, which are not just dark beneath but much drier than below deciduous tree canopies. Species that tolerate extended periods of only light shade are excluded here.

Ferns and fernlike plants

Adiantum capillus-veneris (southern maidenhair fern)
Adiantum pedatum (maidenhair fern)
Asplenium bradleyi (Bradley's spleenwort)
Asplenium ×ebenoides (dragontail fern)
Asplenium montanum (mountain spleenwort)
Asplenium platyneuron (ebony spleenwort)
Asplenium rhizophyllum (walking fern)
Asplenium ruta-muraria (wall-rue)
Asplenium scolopendrium var. *americanum* (American hart's-tongue fern)

Asplenium trichomanes (maidenhair spleenwort)
Asplenium viride (green spleenwort)
Athyrium filix-femina (lady fern)
Botrychium dissectum (dissected grape fern)
Botrychium virginianum (rattlesnake fern)
Cryptogramma stelleri (slender rock brake)
Cystopteris bulbifera (bulblet bladder fern)
Cystopteris fragilis (fragile fern)
Cystopteris protrusa (lowland bladder fern)
Deparia acrostichoides (silvery spleenwort)
Dryopteris campyloptera (mountain wood fern)
Dryopteris carthusiana (spinulose wood fern)
Dryopteris expansa (northern wood fern)
Dryopteris filix-mas (male fern)
Dryopteris goldiana (Goldie's fern)
Gymnocarpium dryopteris (oak fern)
Gymnocarpium robertianum (limestone oak fern)
Lycopodium complanatum (northern ground-cedar)
Lycopodium digitatum (southern ground-cedar)
Lycopodium lucidulum (shining clubmoss)
Lycopodium obscurum (ground-pine)
Osmunda claytoniana (interrupted fern)
Phegopteris connectilis (narrow beech fern)
Phegopteris hexagonoptera (broad beech fern)
Polypodium virginianum (rock polypody)
Polystichum braunii (Braun's holly fern)
Polystichum lonchitis (northern holly fern)
Thelypteris noveboracensis (New York fern)

Grasses and grasslike plants

Chasmanthium latifolium (northern sea oats)
Luzula acuminata (hairy wood-rush)
Luzula echinata

Wildflowers

Actaea pachypoda (white baneberry)
Actaea rubra (red baneberry)
Anemone quinquefolia (wood anemone)
Anemonella thalictroides (rue anemone)
Arisaema triphyllum (Jack-in-the-pulpit)
Aruncus dioicus (goat's beard)
Asarum canadense (wild ginger)
Aster cordifolius (blue heart-leaved aster)
Aster macrophyllus (big-leaved aster)
Cardamine concatenata (cut-leaf toothwort)
Cardamine diphylla (broad-leaf toothwort)
Caulophyllum thalictroides (blue cohosh)
Cimicifuga americana (American bugbane)
Cimicifuga racemosa (black cohosh)
Clintonia borealis (blue bead lily)
Clintonia umbellulata (speckled wood lily)
Coreopsis auriculata (lobed tickseed)
Dicentra canadensis (squirrel corn)
Dicentra cucullaria (Dutchman's breeches)
Dicentra eximia (bleeding heart)
Dodecatheon meadia (shooting star)
Echinacea purpurea (purple coneflower)
Erythronium albidum (white trout lily)
Erythronium americanum (yellow trout lily)
Eupatorium rugosum (white snakeroot)
Hepatica acutiloba (sharp-lobed hepatica)
Hepatica americana (round-lobed hepatica)
Hexastylis arifolia (arrow-leaved ginger)
Hexastylis shuttleworthii (mottled wild ginger)
Hexastylis virginica (Virginia wild ginger)
Hydrastis canadensis (goldenseal)
Hydrophyllum canadense (maple-leaved waterleaf)
Hydrophyllum macrophyllum (hairy waterleaf)
Hydrophyllum virginianum (eastern waterleaf)
Iris cristata (crested iris)
Jeffersonia diphylla (twinleaf)
Mertensia virginica (Virginia bluebells)
Mitella diphylla (miterwort)
Monarda didyma (Oswego tea)
Oxalis acetosella (northern wood-sorrel)
Pachysandra procumbens (Allegheny spurge)
Panax quinquefolius (ginseng)
Phlox divaricata (wild blue phlox)
Phlox stolonifera (creeping phlox)
Rudbeckia laciniata (cutleaf coneflower)
Sanguinaria canadensis (bloodroot)

Sedum ternatum (wild stonecrop)
Smilacina racemosa (false Solomon's seal)
Stylophorum diphyllum (celandine poppy)
Thalictrum dioicum (early meadow rue)
Tiarella cordifolia (foamflower)
Tradescantia virginiana (Virginia spiderwort)
Trillium spp.
Uvularia (bellwort) spp.
Viola canadensis (Canada violet)
Viola conspersa (dog violet)
Viola pubescens (yellow violet)
Viola rostrata (long-spurred violet)

Vines

Aristolochia macrophylla (Dutchman's pipe)
Bignonia capreolata (cross-vine)
Decumaria barbara (climbing hydrangea)
Linnaea borealis (twinflower)
Lonicera sempervirens (trumpet honeysuckle)
Mitchella repens (partridgeberry)

Shrubs

Calycanthus floridus (sweetshrub)
Clethra acuminata (cinnamon clethra)
Cornus canadensis (bunchberry)
Euonymus americanus (American euonymus)
Euonymus atropurpureus (eastern wahoo)
Euonymus obovatus (running strawberry-bush)
Leucothoe axillaris (swamp dog-laurel)
Leucothoe fontanesiana (drooping leucothoe)
Lindera benzoin (spicebush)
Rhododendron spp. (including azaleas)
Rubus odoratus (flowering raspberry)
Sambucus racemosa (red elderberry)
Taxus canadensis (Canada yew)
Viburnum acerifolium (mapleleaf viburnum)
Viburnum alnifolium (hobblebush)

Trees

Abies balsamea (balsam fir)
Abies fraseri (Fraser fir)
Acer pensylvanicum (striped maple)
Acer saccharum (sugar maple)
Aesculus pavia (red buckeye)
Aesculus sylvatica (painted buckeye)
Amelanchier arborea (serviceberry)
Amelanchier laevis (smooth serviceberry)
Carpinus caroliniana (American hornbeam)

Cercis canadensis (eastern redbud)
Cornus alternifolia (alternate-leaf dogwood)
Cornus florida (flowering dogwood)
Fagus grandifolia (American beech)
Halesia carolina (Carolina silverbell)
Ilex montana (mountain winterberry)
Ilex opaca (American holly)
Magnolia fraseri (Fraser magnolia)

Magnolia macrophylla (bigleaf magnolia)
Magnolia tripetala (umbrella magnolia)
Magnolia virginiana (sweetbay magnolia)
Picea glauca (white spruce)
Stewartia ovata (mountain stewartia)
Styrax americanus (American snowbell)
Tsuga canadensis (eastern hemlock)
Tsuga caroliniana (Carolina hemlock)

PLANTS WITH FLOWERS THAT ATTRACT BUTTERFLIES AND HUMMINGBIRDS

The following species have flowers with high-quality nectar for butterflies and hummingbirds. Of course, other flower pollinators, like bees, will think you have invited them also. Red flowers that are tube-shaped are especially attractive to hummingbirds. Many species not listed below are also primary food sources for the larvae of many of the butterflies and moths native to this region. Further details on which species are significant food sources for larvae of these species are in Stokes et al. (1991) and Henderson (1987).

Wildflowers

Amsonia tabernaemontana (bluestar)
Aquilegia canadensis (wild columbine)
Aruncus dioicus (goat's beard)
Asclepias (milkweed) spp.
Aster spp.
Chelone glabra (turtlehead)
Cimicifuga racemosa (black cohosh)
Coreopsis (tickseed) spp.
Echinacea purpurea (purple coneflower)
Eupatorium (Joe-pye weed, boneset) spp.
Helenium autumnale (sneezeweed)
Helianthus (sunflower) spp.
Heliopsis helianthoides (oxeye)
Liatris (blazing star) spp.
Lilium (lily) spp.
Lobelia cardinalis (cardinal flower)
Lobelia siphilitica (great blue lobelia)
Lupinus perennis (blue lupine)
Monarda didyma (Oswego tea)
Monarda fistulosa (bergamot)

Phlox spp.
Physostegia virginiana (false dragonhead)
Rudbeckia (coneflower, black-eyed Susan) spp.
Sedum ternatum (wild stonecrop)
Solidago (goldenrod) spp.
Spigelia marilandica (Indian pink)

Vines

Bignonia capreolata (cross-vine)
Campsis radicans (trumpet creeper)
Lonicera (honeysuckle) spp.

Shrubs

Callicarpa americana (American beautyberry)
Ceanothus americanus (New Jersey tea)
Cephalanthus occidentalis (buttonbush)
Chamaedaphne calyculata (leatherleaf)
Clethra spp.
Diervilla lonicera (bush-honeysuckle)
Fothergilla spp.
Itea virginica (Virginia sweet spire)
Lindera benzoin (spicebush)
Physocarpus opulifolius (eastern ninebark)
Rhododendron spp. (including azaleas)
Spiraea alba (meadowsweet)
Symphoricarpos orbiculatus (coralberry)
Vaccinium (blueberry, cranberry) spp.

Trees

Aesculus (buckeye) spp. (especially *A. pavia*, red buckeye)
Prunus pensylvanica (pin cherry)
Salix (willow) spp.

PLANTS WITH FRUITS THAT ATTRACT BIRDS

Fruits of some species are devoured before they fully ripen: rarely do I pick many serviceberries or blueberries at my home before the invasion by catbirds, a bird species that I once really enjoyed seeing. Fruits of other species (hawthorns, crabapples) are not touched until late into the winter, months after the fruits have matured. Although birds are the primary consumers of some fruit, small mammals will eat the seeds within these fruit (dogwoods, for example). And the fruit of some plant species (those that produce cones, i.e., conifers) are only factories for the seeds that many bird (and some small mammal) species enjoy throughout the late fall into winter. Trees and shrubs especially also are essential to provide cover to bird species, even if they do not have any food to offer. Henderson (1987) discusses the many ways to enhance bird and other wildlife visits to one's property.

Vines

- Celastrus scandens* (American bittersweet)
- Parthenocissus* (Virginia creeper, grape-woodbine) spp.
- Vitis* (grape) spp.

Shrubs

- Alnus* (alder) spp.
- Amelanchier* (serviceberry, juneberry) spp.
- Aronia* (chokeberry) spp.
- Betula pumila* (bog birch)
- Callicarpa americana* (American beautyberry)
- Chionanthus virginicus* (fringetree)
- Cornus* (dogwood) spp.
- Corylus* (hazelnut) spp.
- Gaylussacia* (huckleberry) spp.
- Ilex* (holly) spp.
- Juniperus* (juniper) spp.

- Lindera benzoin* (spicebush)
- Myrica pensylvanica* (northern bayberry)
- Nemopanthes mucronatus* (mountain-holly)
- Prunus* (cherry, plum) spp.
- Rhus* (sumac) spp.
- Ribes* (gooseberry, currant) spp.
- Rosa* (rose) spp.
- Rubus* (raspberry, blackberry) spp.
- Sambucus* (elderberry) spp.
- Symphoricarpos* (snowberry, coralberry) spp.
- Taxus canadensis* (Canada yew)
- Vaccinium* (blueberry, cranberry) spp.
- Viburnum* spp.

Trees

- Abies* (fir) spp.
- Amelanchier arborea* (serviceberry)
- Aralia spinosa* (devil's-walkingstick)
- Betula* (birch) spp.
- Carpinus caroliniana* (American hornbeam)
- Celtis occidentalis* (hackberry)
- Chamaecyparis thyoides* (Atlantic white-cedar)
- Cornus* (dogwood) spp.
- Crataegus* (hawthorn) spp.
- Fagus grandifolia* (American beech)
- Ilex* (holly) spp.
- Juniperus virginiana* (eastern redcedar)
- Picea* (spruce) spp.
- Pinus* (pine) spp.
- Prunus pensylvanica* (pin cherry)
- Sassafras albidum* (sassafras)
- Sorbus americana* (American mountain-ash)
- Thuja occidentalis* (northern white-cedar)
- Tsuga canadensis* (eastern hemlock)
- Viburnum* (nannyberry, blackhaw, rusty blackhaw) spp.

PLANTS WITH FRUITS THAT ATTRACT MAMMALS

I am not sure that all readers will want to rush out and plant these species: you may not appreciate the deer, opossums, raccoons, and even squirrels that might accept your invitation for dinner. But in some cases, "mammals" includes the reader (and maybe the reader's neighbor), and the species followed by a * are worth tasting, without any special preparation. Consult Henderson (1987) for a thorough review on how to maximize wildlife visits by the use of plants.

Shrubs

- Arctostaphylos uva-ursi* (bearberry)
- Cornus* (dogwood) spp.
- Corylus* (hazelnut) spp. *
- Gaylussacia* (huckleberry) spp. *
- Vaccinium* (blueberry, cranberry) spp. *

Trees

- Acer* (maple) spp.
- Aesculus* (buckeye) spp.
- Amelanchier arborea* (serviceberry) *
- Asimina triloba* (pawpaw) *
- Carya* (hickory) spp. *
- Cornus* (dogwood) spp.
- Diospyros virginiana* (persimmon) *
- Fagus grandifolia* (American beech)
- Juniperus virginiana* (eastern redcedar)
- Malus* (crabapple) spp. *
- Prunus* (cherry, plum) spp. * (some very astringent)
- Quercus* (oak) spp.