

Wetland Plantings for Wildlife

Indiana Biology Technical Note No. 3

Land users can have a significant impact on wildlife species and populations by taking action to maintain or improve existing wetlands. Managing wetlands for a specific group of plants or animals can be a successful and rewarding experience.

This document is a tool to assist individuals who wish to restore or enhance wetlands. A landowner can increase the likelihood that their wetland will be used by a wider variety of wildlife if some of the recommended plants are incorporated into management plans. Because wetlands are complex habitats, consider working with one of the specialists listed in the **Where To Go For Help** section.

WETLAND HABITATS

The term “wetland” describes a wide range of habitats including:

- **wet meadows** consisting mostly of saturated soils with grasses and sedges,
- **shallow water marshes** containing emergent vegetation such as cattails, bulrushes and sedges,
- **scrub/shrub wetlands** with lowland shrubs such as willows, dogwoods, and buttonbush,
- **forested wetlands** containing green ash, silver maple, water tolerant oaks and hickory trees, and
- **open water areas** with floating vegetation like water lilies.

The depth and permanence of water primarily determine which flora and fauna will dominate a wetland. It is this variation in water conditions and vegetation types that most often determine which wildlife will be found in wetlands across the state. All types of wetlands regardless of size, depth, and duration of flooding, can be important to wildlife as a source of food, water, and cover.

Trees, shrubs, and emergent wetland plants stand above the water’s surface and supply wildlife with cover and food. Wetland-adapted wildlife depend upon these plants to provide shelter for feeding, resting, and reproduction.



Wild Iris - Ken Collins, NRCS

At various times of the year, wetlands also provide cover and other benefits for other upland wildlife species including rabbits, deer, great-horned owls, and red-tailed hawks. By learning more about the basic needs of various wildlife species, landowner efforts to influence wildlife can be more effective.

MANAGING THE SURROUNDING LANDSCAPE

Wetlands do not exist in isolation. Much of what goes on around a wetland directly affects how that wetland functions. Thus, a landowner can influence the wetland through activities on the adjacent lands. Depending on the type of vegetation, the surrounding landscape can serve as valuable habitat for wildlife. For example, ducks and other waterfowl will often nest in grasses near wetlands. On the other hand, if your wetland contains woodland with snags, the site might attract wood ducks. Wooded borders are also used by a variety of amphibians and reptiles during the non-breeding season.

Buffers. A buffer between the adjacent land and the wetland is an important management tool. A minimum buffer width of at least 20 feet can filter nutrients, sediments, and toxins from the wetland. Normally, greater widths provide greater benefits. Depending upon the species planted, buffers can also act as a visual screen or noise barrier, as well as provide habitat for wildlife.



Muscatatuck WRP - Gerry Roach, NRCS

Buffers that include cool season grass/legume mixes can provide food and cover for wildlife. These plants are called cool season because growth occurs primarily during the spring and fall. An example mixture is Orchardgrass, Timothy, Alfalfa, and Ladino Clover. Recommended mixtures and seeding rates can be found in the *Upland Wildlife Habitat Management Standard* under the Reference Information section.

Grass buffers need to be maintained by periodic mowing at an interval of 1 to 3 years. This will provide a healthy grassland area and prevent encroachment by trees. Note that the buffer should not be mowed during the primary nesting season for grassland birds of March 1 through July 15.

Many landowners are also planting the upland areas adjacent to the wetland with warm season grasses, such as Big Bluestem, Indian Grass, and Switchgrass. The plants are called warm season grasses because growth primarily occurs during the heat of the summer. These grasses are popular because of the excellent habitat provided for many upland game birds and

grassland songbirds, as well as nesting habitat for waterfowl. When mixed with wildflowers, the warm season grass planting can also provide an attractive border around the wetland. Special care is needed for planting and managing warm season grasses. See *Warm Season Grass Establishment* under the Reference Information section, or consult one of the specialists listed in the **Where To Go For Help** section.

Another option is to maintain the buffer in trees and shrubs with a minimum width of 50 to 100 feet. Tree and shrub buffers take longer to establish than grasses because woody plants are slower to develop and require special maintenance during the first few years. Wooded buffers are especially beneficial to many amphibians and aquatic reptiles that require this type of habitat during the non-breeding season. Tree species and planting rates (see *Wetland Restoration Standard*), and planting procedures (see *Tree/Shrub Establishment Standard*) can be found in the Reference Information section.

Fencing. For wetlands in agricultural areas, you may need perimeter fences to keep cattle or other livestock from entering the wetland. Cattle in particular do considerable damage to the plants and can cause significant amounts of sediment to enter the water. Options can include single-strand or double-strand, high-tensile electric fence. Woven wire is more likely to trap debris and is less favored as an option. Fencing is placed as far from the wetland as the landowner can afford. Fences close to a wetland edge are not as beneficial to wildlife, although they can help improve water quality. In areas where streams and wetlands coincide, cattle crossings may be necessary.

ESTABLISHING WETLAND PLANTS

Recently Restored Wetlands. Many restored wetlands do not require planting, as long as the original topsoil is preserved. Many wetland plants produce seeds that can lay dormant for years under drained conditions, but will germinate when water is restored to the site. The total amount and variety of seeds that have remained viable in the soil is commonly known as a “seed bank”.

Landowners are often surprised at the variety of wetland plants that establish themselves within the first year after restoration. These plants come from both existing seed banks and by colonization from off-site sources, such as nearby ditch banks. The longer the intervals between draining and restoration, however, the less successful seed banks are, and planting may become necessary. Natural regeneration of native plants is preferred, but the seeds of invasive and aggressive species may also lurk in the seed bank. Consider your planting options after evaluating the plant composition of the wetland following the first growing season.



Invasive and Aggressive Species. Landowners should be aware that there are plants that can dominate wetlands to the exclusion of other plant species. Most non-native plants introduced to new areas by humans do not cause significant environmental problems. Some plants however, reproduce aggressively and spread into wild habitats. These plants may out compete native species and inhibit the use of the area by wildlife.

Examples of invasive plants include species such as purple loosestrife, phragmites, and reed canarygrass that will often move into a new wetland uninvited and dominate the site. In more open water sites, non-native species like water lily can spread to nuisance levels. It is therefore recommended that you do not plant exotic or non-native species in your wetland. Because even native species like cottonwood, black willow, and cattails can dominate a wetland under the right conditions, monitoring your wetland is highly recommended.

Planting considerations. At times, it may be necessary to supplement the natural regeneration of wetland plants. Planting of nursery stock may be needed in these cases. The timing of seed planting is critical for plant survival. Contact your local Natural Resources Conservation Service (NRCS) office for information regarding planting dates and seeding rates for specific species. Nursery stock may have to be ordered several months to a year prior to planting. Plants and seeds should be appropriate for your region (plants adapted to the southern part of the state, for example, may not fare well in northern Indiana).

The selection of plants should also reflect the expected water conditions of the site. Many grasses, sedges, and rushes require moderate fluctuations in water level, but submergent or floating species (such as pond lilies) need more stable and deeper waters. Few woody species can tolerate continuous flooding, so placement at the drier end of the wetland is recommended. The tables in this document contain a "Soil Moisture Tolerance" column that gives a general range of soil moisture preferred by each plant. Contact your local NRCS office regarding the soil characteristics on your property.

WETLAND PLANT TABLES

The following pages contain tables showing wetland plants that can provide food, cover and other benefits for wildlife. The column headings found in the tables give examples of possible wildlife benefits. Note however, that there is no guarantee that a listed wildlife species will automatically inhabit the wetland by planting a particular species of plant. For example, planting bur oak will not necessarily guarantee that raptors will someday nest on site. At the same time, there are also many other wildlife species not listed that may utilize various plants for a portion of their life cycle.

In addition to the plants listed in this guide, many other native species provide for the various needs of wetland wildlife. See the Reference Information section for additional information on desirable wetland plants common to Indiana wetlands.

WETLAND TREES AND SHRUBS BENEFICIAL TO WILDLIFE

TREES	SOIL MOISTURE TOLERANCE ¹	WATERFOWL (Food)	SONGBIRDS (Food & Nesting)	MAMMALS (Food & Shelter)	RAPTORS (Nesting & Perch Sites)	COMMENTS
Ash, Green (<i>Fraxinus pennsylvanica</i>)	VPD – WD		X	X		
Gum, Black (<i>Nyssa sylvatica</i>)	PD – WD	X	X			Eaten by wood duck and turkey
Hackberry (<i>Celtis occidentalis</i>)	SPD – WD		X	X		
Hickory, Bitternut (<i>Carya cordiformis</i>)	SPD – WD	X		X		Eaten by wood duck, squirrel & turkey
Hickory, Shellbark (<i>Carya laciniosa</i>)	VPD – WD	X		X		Eaten by squirrel & turkey
Oak, Bur (<i>Quercus macrocarpa</i>)	PD – ED			X	X	
Oak, Cherrybark (<i>Quercus pagoda</i>)	SPD – WD		X	X	X	Use south of U.S. 40
Oak, Pin (<i>Quercus palustris</i>)	VPD – WD	X	X	X		
Oak, Shumard (<i>Quercus shumardii</i>)	SPD – WD	X	X	X	X	
Oak, Swamp Chestnut (<i>Quercus michauxii</i>)	SPD – WD	X		X		
Oak, Swamp White (<i>Quercus bicolor</i>)	VPD – WD		X	X	X	
Pecan (<i>Carya illinoensis</i>)	SPD – WD		X	X		Use south of U.S. 40
Persimmon (<i>Diospyros virginiana</i>)	SPD – WD		X	X		
Serviceberry (<i>Amelanchier arborea</i>)	MWD – WD		X			
Sweetgum (<i>Liquidambar styraciflua</i>)	PD – WD	X	X	X		
Sycamore (<i>Platanus occidentalis</i>)	PD – WD	X	X	X	X	

SHRUBS	SOIL MOISTURE TOLERANCE ¹	WATERFOWL (Food)	SONGBIRDS (Food & Nesting)	MAMMALS (Food & Shelter)	RAPTORS (Nesting & Perch Sites)	COMMENTS
Buttonbush (<i>Cephalanthus occidentalis</i>)	SPD – WD	X	X	X		Wilted leaves may be toxic to livestock
Cherry, Choke (<i>Prunus virginiana</i>)	SPD – WD		X	X		
Chokeberry, Black (<i>Aronia melanocarpa</i>)	SPD – WD		X			
Dogwood, Alternate Leaf (<i>Cornus alternifolia</i>)	SPD – WD	X	X	X		Twigs browsed by deer and rabbits
Dogwood, Gray (<i>Cornus racemosa</i>)	SPD – WD		X	X		Eaten by pheasant, turkey and grouse
Dogwood, Red-osier (<i>Cornus stolonifera</i>)	VPD – WD		X	X		Eaten by grouse, quail, deer & rabbits
Dogwood, Rough Leaved (<i>C. drummondii</i>)	PD – WD		X	X		
Dogwood, Silky (<i>Cornus amomum</i>)	VPD – WD	X	X	X		Sometimes browsed by rabbits & deer
Elderberry (<i>Sambucus canadensis</i>)	VPD – WD		X	X		Eaten by pheasant, turkey and quail
Highbush Cranberry (<i>Viburnum trilobum</i>)	VPD – WD	X	X	X		Fruit eaten by grouse and pheasant
Nannyberry (<i>Viburnum lentago</i>)	SPD – WD	X	X	X		
Ninebark (<i>Physocarpus opulifolius</i>)	VPD – WD		X	X		Eaten by ruffed grouse
Spicebush (<i>Lindera benzoin</i>)	VPD – WD			X		Eaten by rabbit, quail and grouse
Spirea (<i>Spiraea alba</i> and <i>S. tomentosa</i>)	VPD – WD			X		Eaten by grouse, deer and rabbits
Wild Sweet Crabapple (<i>Malus coronaria</i>)	SPD – ED		X			Recommended for quail
Winterberry (<i>Ilex verticillata</i>)	VPD – SPD		X	X		Emergency food source for wildlife

WETLAND GRASSES AND WILD FLOWERS BENEFICIAL TO WILDLIFE

GRASS or GRASS-LIKE	SOIL MOISTURE TOLERANCE ¹	WATERFOWL (Food)	SONGBIRDS (Food & Nesting)	MAMMALS (Food & Shelter)	BUTTERFLIES (Food)	COMMENTS
Canada Blue Joint Grass (<i>Calamagrostis canadensis</i>)	SPD – VPD	X		X		
Fowl Manna Grass (<i>Glyceria striata</i>)	SPD – VPD	X				
Prairie cordgrass (<i>Spartina pectinata</i>)	SPD – VPD	X	X	X		
Switchgrass (<i>Panicum virgatum</i>)	PD - WD	X	X	X		
Virginia Wildrye (<i>Elymus virginicus</i>)	PD - WD	X	X	X		
Wild Rice (<i>Zizania aquatica</i>)	VPD – PD	X	X			Prefers shallow water

WILD FLOWERS	SOIL MOISTURE TOLERANCE ¹	WATERFOWL (Food)	SONGBIRDS (Food & Nesting)	MAMMALS (Food & Shelter)	BUTTERFLIES (Food)	COMMENTS
Arrowhead, Broadleaf (<i>Sagittaria latifolia</i>)	VPD – PD	X		X		Prefers shallow water
Aster, New England (<i>Aster novae-angliae</i>)	PD – WD		X		X	
Aster, Flat Topped (<i>Aster umbellatus</i>)	PD – SPD		X		X	
Aster, Swamp (<i>Aster puniceus</i>)	PD – SPD		X		X	
Bottle gentian (<i>Gentiana andrewsii</i>)	VPD – PD				X	
Cardinal Flower (<i>Lobelia cardinalis</i>)	PD – SPD		X		X	
Coneflower, Tall (<i>Rubecckia laciniata</i>)	PD – WD		X		X	
Cup Plant (<i>Silphium perfoliatum</i>)	PD – WD		X		X	
Dense Blazing Star (<i>Liatris spicata</i>)	PD – WD				X	
Dock, Prairie (<i>Silphium terebinthinaceum</i>)	SPD – ED			X	X	
Irises (<i>Iris virginica</i>)	VPD – PD			X	X	
Joe-pye-weed (<i>Eupatorium fistulosum</i> , <i>E. purpureum</i> , or <i>E. maculatum</i>)	VPD – SPD	X	X		X	
Lily, Michigan (<i>Lilium michiganense</i>)	PD – WD			X	X	
Milkweed, Swamp (<i>Asclepias incarnata</i>)	PD – SPD		X		X	
Nodding Bur Marigold (<i>Bidens cernua</i>)	PD – SPD	X	X			
Obedient Plant (<i>Physostegia virginiana</i>)	PD – SPD				X	
Prairie blazing star (<i>Liatris spicata</i>)	PD – WD				X	
Reed, Giant Bur (<i>Sparganium eurycarpum</i>)	VPD – PD	X				Prefers shallow water
Rushes, Native (<i>Juncus spp.</i>)	VPD – WD ²	X	X	X		Examples: Spike & Slender
Sago Pondweed (<i>Potamogeton pectinatus</i>)		X				
Sedges, Native (<i>Carex spp.</i>)	VPD – WD ²	X	X			Examples: Lake & Fox
Smartweeds, Native (<i>Polygonum spp.</i>)	VPD – SPD	X	X	X		Example: Pennsylvania
Wild Celery (<i>Vallisneria americana</i>)		X				

¹ KEY: ED = Excessively Drained WD = Well Drained SPD = Somewhat Poorly Drained PD = Poorly Drained VPD = Very Poorly Drained

² Varies with species.

WHERE TO GO FOR HELP

The following agencies and organizations can provide more information about wetlands and associated wildlife. The type of available assistance is listed as bulleted items for each group.

U.S.D.A. Natural Resources Conservation Service

Offices are located at the USDA Service Center in each county and are listed in the telephone book under *U.S. Department of Agriculture*. Also see Indiana Field Service Centers at:

<http://www.in.nrcs.usda.gov/>

Assistance includes:

- Providing funding for wetland restoration programs
- Providing technical assistance on wetland management
- Making wetland determinations on agricultural land

U.S. Environmental Protection Agency (EPA)

<http://www.epa.gov/owow/wetlands/>

Assistance includes:

- Providing wetland information regarding education, regulations, and protection

U.S. Fish and Wildlife Service

620 South Walker Street
Bloomington, IN 47403-2121
Phone: 812-334-4261

<http://midwest.fws.gov/Bloomington/>

Assistance includes:

- Providing technical assistance on wetland and wildlife management
- Providing technical guidance regarding Threatened and Endangered Species

U. S. Army Corps of Engineers

Assistance includes:

- Providing guidance on, and issuing Nationwide Permits
- Making wetland determinations on non-agricultural land

South Bend Field Office

U.S. Army Corps of Engineers
2422 Viridian Drive Suite # 101
South Bend IN 46628
Phone: (574) 232-1952
Fax: (574) 232-3075

http://www.lre.usace.army.mil/index.cfm?chn_id=1546

Indianapolis Field Office

U.S. Army Corps of Engineers
9799 Billings Road
Indianapolis, IN 46216
Phone: (317) 532-4197

<http://www.lrl.usace.army.mil/orf/orgs/addresses.htm>

Newburgh Field Office

U.S. Army Corps of Engineers
P.O. Box 489
Newburgh, IN 47629-0489
Phone: (812) 853-0472

<http://www.lrl.usace.army.mil/orf/orgs/addresses.htm>

Purdue University Ext. Wildlife Specialist

Phone: (765) 647-3538

bmacgowan@fnr.purdue.edu

Assistance includes:

- Providing technical assistance on wetland and wildlife management

IDNR Division of Fish and Wildlife District Wildlife Biologist

<http://www.state.in.us/dnr/fishwild/huntguide1/wbiolo.htm>

Assistance includes:

- Providing technical assistance on wetland and wildlife management

IDNR Division of Water

<http://www.in.gov/dnr/water/>

Assistance includes:

- Issuing construction in a floodway permits for riparian wetlands

IDNR Division of Soil Conservation

<http://www.in.gov/dnr/soilcons/programs/iwcp/index.html>

Assistance includes:

- Implementing the *Indiana Wetlands Conservation Plan* that includes the guiding principles for wetland conservation in Indiana

State of Indiana

Indiana WETlands

<http://www.in.gov/wetlands/about/index.html>

Assistance includes:

- Providing information about wetlands, permitting, current legislation, upcoming meetings and events, and subscribing to special wetland e-mails

Local Soil and Water Conservation District

<http://www.state.in.us/dnr/soilcons/contact/swcds.html>

Assistance includes:

- Determining and addressing local wetland resource needs in each county

REFERENCE INFORMATION

Natural Resources Conservation Service (NRCS) Technical Standards:

- *Wetland Restoration* (657)
 - *Wetland Enhancement* (659)
 - *Wetland Wildlife Habitat Management* (644)
 - Restoration and Management of Declining Habitats (643): see section on *Sedge Meadow Habitat*
 - *Upland Wildlife Habitat Management* (645)
 - *Tree/Shrub Establishment* (612)
- Indiana Biology Technical Note No. 1: *Using Micro and Macrotopography in Wetland Restoration*

Download from:

<http://www.in.nrcs.usda.gov/PlanningandTechnology/fotg/Section4/section4.htm>

Indiana Department of Natural Resources (IDNR) publications:

IDNR Division of Fish and Wildlife
Public Affairs Section
402 W. Washington St., Rm. W273
Indianapolis, Indiana 46204

- **Life Series.** Publications containing information on species-specific habitat requirements, diets, distribution and abundance for many common Indiana wildlife

Download from:

<http://www.IN.gov/dnr/fishwild/publications/fis.htm>

- **Habitat Management Fact Sheets.** Fact sheets providing information about beneficial habitat management and practices for Indiana wildlife

Download from:

<http://www.in.gov/dnr/fishwild/hunt/facts.htm>

- **Warm Season Grass Establishment** Fact Sheet

Download from:

<http://www.in.gov/dnr/fishwild/hunt/warmgrass.pdf>

The Department of Forestry and Natural Resources, Purdue University publications:

Forestry Building
195 Marsteller Street
West Lafayette IN 47907-2033
(765) 494-3591

- **Management of Forested Wetland Ecosystems in the Central Hardwood Region**

Download from:

<http://www.agcom.purdue.edu/agcom/Pubs/fnr.htm>

- **Wetlands, Regulations and You: What Every Indiana Farmer Needs to Know**

Download from:

<http://persephone.agcom.purdue.edu/AgCom/Pubs/FNR/FNR-171.pdf>

The Indiana Native Plant and Wildflower Society (INPAWS) promotes

"...the appreciation, preservation, conservation, utilization and scientific study of the flora native to Indiana..."

The INPAWS website (<http://www.inpaws.org/>) contains the following information:

- **Sources for plants native to Indiana & the Lower Midwest**
- **Landscaping with Plants Native to Indiana - Recommended Plants and their Sources**
- **Recommended reference books for plants native to Indiana**

Managing Your Restored Wetland, Cole, A. C., T. L. Serfass, M. C. Brittingham, and R. P. Brooks, Pennsylvania State University CES, University Park, PA, 1996.

Download from:

<http://pubs.cas.psu.edu/FreePubs/pdfs/uh086.pdf>

American Wildlife and Plants: A Guide to Wildlife Food Habits. Martin, Alexander, Herbert Zim, and Arnold Nelson, Dover Publications, Inc., 500 pp., 1961.

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