



MANAGING  
YOUR  
WOODLAND  
WETLAND

## Introduction

**M**innesota's forests are famous for their bountiful water resources. Our sky blue lakes, rivers and streams are valued by tourist and resident alike. But our other water resources - forest wetlands - are equally important. It is these habitats that help keep our lakes and rivers clean, provide homes and food for innumerable wildlife species, moderate flooding during heavy runoff, and afford heart-pounding excitement to the waterfowl hunter. We now know how valuable wetlands are in providing these benefits. We know because we've lost those benefits in parts of the state where most wetlands were drained or degraded. No longer do many of the lakes and rivers run clear; ducks and other wildlife have disappeared; flood problems increase every year; and hunters and birdwatchers go elsewhere for excitement. This is not a desirable vision for our forests.

Wetlands are both fragile and resilient. They have the awesome ability to absorb tons of pollutants or hold vast amounts of water. But a tiny ditch, or a low-placed culvert, can eliminate the same wetland and all of its valuable functions. As landowners, we must learn to recognize and protect our wetlands to ensure that they continue to perform their vital functions on the landscape.

This brochure will help you identify wetlands in your woods. The special benefits of various wetland types will be shown, including their wildlife values. Several management options to enhance your wetland for wildlife will be discussed. Ways to minimize damage from forest management activities will be noted, and special laws you should be aware of are identified. Finally, sources of additional help, both financial and technical, are listed to assist you in the stewardship of your land.

## Wetland Types

Alder swamp. Beaver pond. Wild rice lake. Tamarack bog. Each of these brings to mind a very different picture, yet each is a true wetland.

Three characteristics identify wetlands: hydrology, vegetation and soils. Wetland hydrology means that at some time of the year, an area is flooded, or water is near enough the soil surface, to affect its biology and chemistry. Wetland vegetation is specially adapted to grow in wet areas; it grows poorly or not at all in drier soils. Finally, wetland soils are formed when oxygen is lacking (anaerobic), typically showing discoloration from chemical reactions.

Professional wetland managers use a variety of systems for identifying commonly recognized wetland types. One of these, described in a booklet entitled "Circular 39" and published by the U.S. Fish and Wildlife Service in 1956, identifies 8 major types in Minnesota. The photos on the next 4 pages summarize this system, show examples of the 8 wetland types, and list wildlife typically found in them.

Each type of wetland has different values for wildlife. Wild rice lakes and other deepwater marshes (types 4 and 5), for instance, are extremely important for waterfowl. Tamarack bogs (type 8) support a number of our brilliantly feathered warblers. Flooded swamps (type 7), often created by beaver dams, are important for a number of furbearers (mink, otter, raccoon), waterfowl, and woodpeckers. Alder and redosier dogwood thickets (type 6) are important for deer, rabbits, and numerous songbirds and small mammals. Cattail ponds (types 3 and 4) are widely recognized as important for waterfowl, but they also support many species of amphibians and reptiles. As you can see, each type of wetland has unique values for wildlife - all are important.

### **Type 1.**

#### **Seasonally flooded basins or flats (floodplains, meadows).**

Shallow depressions or floodplains, often without vegetation, that contain water for a short time (2 weeks or more) after snowmelt or heavy rains. Vegetated with bottomland hardwoods and/or grasses. Animal use includes 19 species of reptiles and amphibians such as mink frog, green frog, eastern newt, garter snake, Blanding's turtle; 11 species of mammals, such as water shrew, star-nosed mole, silver-haired bat, meadow vole, beaver, mink, raccoon, otter; and 83 species of birds such as wood duck, goldeneye, peregrine falcon, blackbellied plover, killdeer, willet, dunlin, common tern, belted kingfisher.



Tom Landwehr

### **Type 2.**

#### **Inland fresh meadows (sedge meadows).**

Shallow depressions without standing water but waterlogged within at least a few inches of the surface during the growing season. Vegetation includes grasses, sedges and rushes. Animal use includes 7 species of reptiles and amphibians, such as garter snake, tiger salamander, American toad, spring peeper, leopard frog; 10 species of mammals, such as water shrew, short-tailed shrew, star-nosed mole, meadow vole, coyote, raccoon, bobcat; and 47 species of birds, such as red-shouldered hawk, yellow rail, sandhill crane, lesser yellowlegs, common snipe,



Kent Solberg



Kent Solberg

### Type 3.

#### **Inland shallow fresh marshes (emergent wetlands, cattail marshes).**

Marshy depressions with up to 6 inches of water until midsummer, at which time they may dry completely or remain waterlogged. Vegetation includes cattails, arrowhead and smartweeds. Animal use includes 20 species of reptiles and amphibians, such as painted turtle, blue-spotted salamander, Cope's gray treefrog, wood frog; 8 species of mammals, such as water shrew, star-nosed mole, big brown bat, muskrat, beaver, raccoon, mink; and 51 species of birds, such as least bittern, green-backed heron, Virginia rail, sora, marsh wren, LeConte's sparrow, red-winged blackbird.



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### Type 4.

#### **Inland deep fresh marshes (emergent wetlands, wild rice lakes, prairie potholes).**

Marshy depressions covered with 6 inches to 3 feet of water during the growing season. Vegetation includes cattails, bulrushes and wild rice. Animal use includes 20 species of reptiles and amphibians, such as snapping turtle, Blanding's turtle, water snake, striped chorus frog, gray treefrog; 9 species of mammals, such as water shrew, big brown bat, muskrat, beaver, mink, otter, raccoon, moose; and 51 species of birds, such as pied-billed grebe, black-crowned night heron, great egret, black duck, ring-necked duck, common moorhen, black tern.

### Type 5.

#### Inland open fresh water (lakes and ponds).

Open water, emergent vegetation restricted to a narrow border. Vegetation includes pondweeds, wild celery, coontail, water milfoils, and waterlilies. Animal use includes 15 species of reptiles and amphibians such as Blanding's turtle, painted turtle, water snake, mudpuppy, eastern newt; 12 species of mammals such as water shrew, little brown bat, Keen's myotis, red bat, hoary bat, silver-haired bat, beaver, mink, otter; and 74 species of birds such as common loon, western grebe, white pelican, canvasback, mergansers, sanderling, Franklin's gull, Forster's tern.



Jim Schneeweis

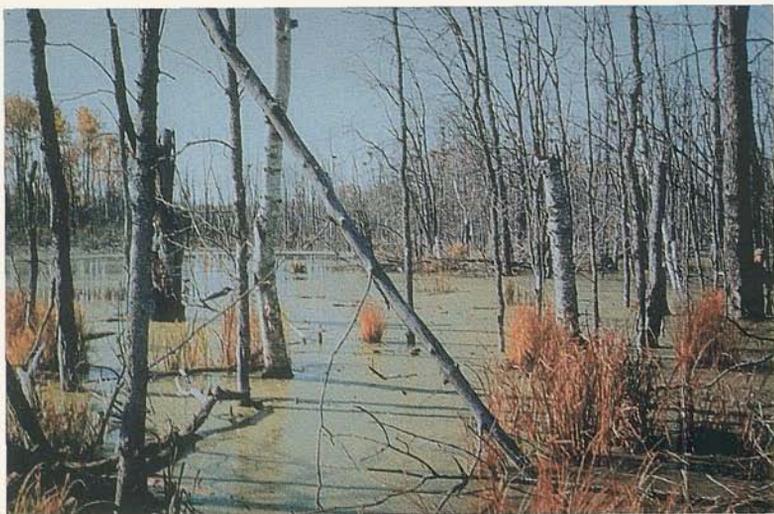
### Type 6.

#### Shrub swamps (brush swamps, alder swamps).

The soil is waterlogged or covered with as much as 6 inches of water during the growing season. Vegetation includes alders, willows, and dogwoods. Animal use includes 12 species of reptiles and amphibians such as garter snake, tiger salamander, newt, American toad, Cope's gray treefrog; 15 species of mammals such as masked shrew, arctic shrew, snowshoe hare, meadow vole, coyote, ermine, bobcat, deer, moose; and 62 species of birds, such as merlin, ruffed grouse, woodcock, black-billed cuckoo, saw-whet owl, alder flycatcher, eastern kingbird.



Tom Landwehr



Tom Landwehr

#### Type 7.

#### Timbered swamps (lowland forests, ash swamps, cedar swamps).

The soil is waterlogged at least to within a few inches of the surface during the growing season. In river bottoms, it is often covered with as much as 1 foot of water. Vegetation includes tamarack, white cedar, black spruce, balsam fir, red maple, black ash, mosses and smartweeds. Animal use includes 11 species of reptiles and amphibians, such as blue-spotted salamander, redback salamander, chorus frog, wood frog; 16 species of mammals, such as masked shrew, arctic shrew, Keen's myotis, red bat, hoary bat, snowshoe hare, red fox, bobcat, deer; and 43 species of birds, such as great blue heron, hooded merganser, osprey, great-horned owl, yellow-bellied flycatcher, Louisiana waterthrush.



Gretchen Mähmel

#### Type 8.

#### Bogs (open heath bogs, peatlands).

Soil is usually waterlogged and supports a spongy covering of mosses. Vegetation includes sphagnum moss, heath shrubs, sedges, and may include scattered, often stunted, tamarack and black spruce. Animal use includes 6 species of reptiles and amphibians, such as American toad, spring peeper, green frog, leopard frog, wood frog; 11 species of mammals, such as masked shrew, short-tailed shrew, star-nosed mole, meadow vole, coyote, long-tailed weasel; and 33 species of birds, such as red-tailed hawk, sandhill crane, long-eared owl, raven, palm warbler, Connecticut warbler, Lincoln's sparrow.

# Management of Woodland Wetlands

**W**hat should you do to optimize your wetland for wildlife? With what's been said earlier you should realize that you **may not need to do anything**. If you have an undisturbed wetland - that is, one which has not been partially drained or filled - often, the best advice is to **leave it as it is**. By modifying your wetland, regardless of type, you will be damaging habitat for some species even though you may be benefitting others. Undisturbed wetlands are fragile ecosystems, often supporting rare and unnoticed plant or animal species. Any alteration of your wetland could prove disastrous for these species. If your wetland shows signs of previous alteration, such as a drainage ditch or filling, then you may have a good candidate for improvement. Your goal should be to restore it to its original condition. Finally, if you have a wetland that is a solid stand of cattails, it may be acceptable to open it up through excavation (see discussion below).

If your wetland has been partially or fully drained in the past, it may be an easy matter to restore it. If a ditch drains the wetland it can be plugged with an earthen, concrete, or steel dam. If the land is drained by subsurface tiles, you can remove a section of the tile and add a control structure. This will allow the water to return to its natural level. Both of these require special technical expertise, and should not be attempted without assistance from a DNR Wildlife Manager, Soil and Water Conservation District technician, U.S. Fish and Wildlife Service biologist, Soil Conservation Service technician or a qualified private consultant. You must be careful when planning these projects to know where the water level will end up. You don't want to accidentally flood a neighbor or end up with no water at all.

In hilly and erodible country such as southeastern Minnesota, landowners can construct small (1/4 to 1 acre) ponds in the upper reaches of wooded gullies. The ponds are created by

constructing earthen berms across the gully, impounding water. These are heavily used by wood ducks and many other species of wildlife. They also reduce runoff and improve water quality downstream.

If your wetland has been partially or fully filled, or in some cases, if it is a solid stand of cattails with no open water, you may consider excavating material from the wetland. This is usually done with a backhoe, dozer, or dragline and tends to be very costly. As with impoundments, you should not attempt these without first consulting with your DNR Wildlife Manager. The results of these projects can be marginal and very expensive if not properly planned and executed.

Wild rice lakes are unique wetland habitats that are very sensitive to changes in water level. When water in the lake stays too high over summer, much of the rice crop can drown out, and little rice is produced. Drought can be equally devastating, but can be beneficial if it is short duration. A real problem in many



USFWS

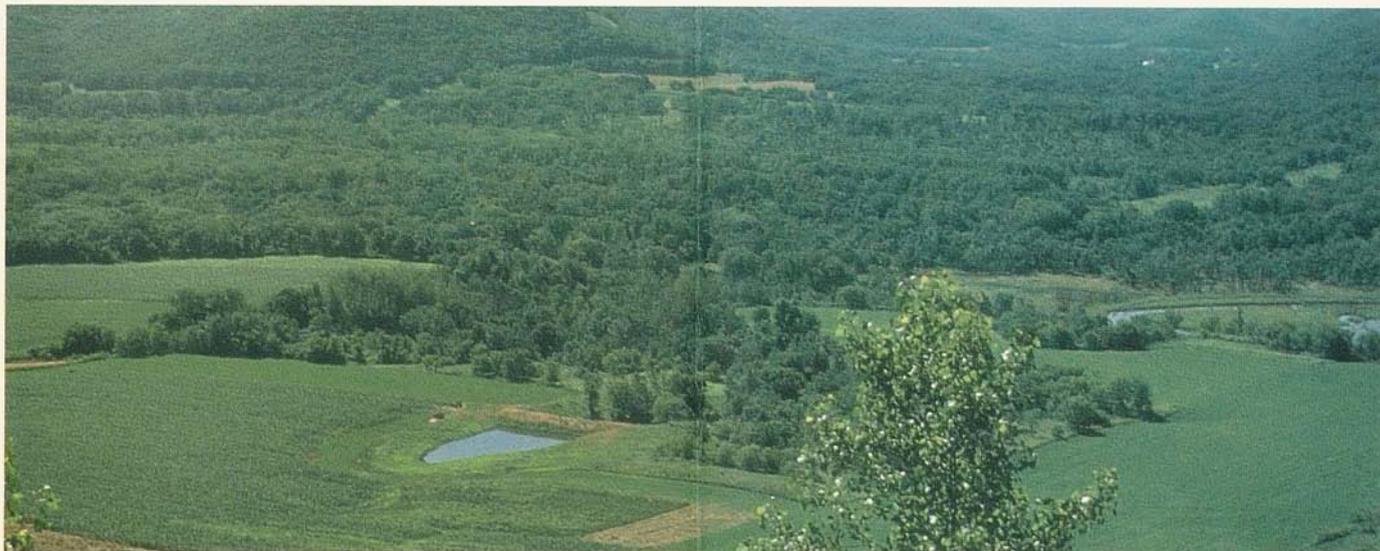
of our northern rice lakes occurs when beavers dam up lake outlets. When this happens, the lake level can rise and prevent rice from producing at its earlier abundance. To restore these lakes, it is necessary to remove the obstructing dam, or place a structure through it to allow the water level to be lowered. Your DNR Wildlife Manager can help with these projects.

In a very few cases, wild rice has been newly established on a lake or wetland by seeding in the fall with rice from another lake. This is not usually successful, however, as wild rice requires very specific water depths, bottom soils and water quality. In most cases, if a lake or wetland is capable of growing wild rice or any other plant, it will occur naturally.

Constructing and placing nest boxes is a cheap and often effective technique to increase use by cavity nesting birds like the wood duck. Ask your DNR Wildlife Manager for tips, or consult the DNR book "Woodworking for Wildlife" available at many book stores.



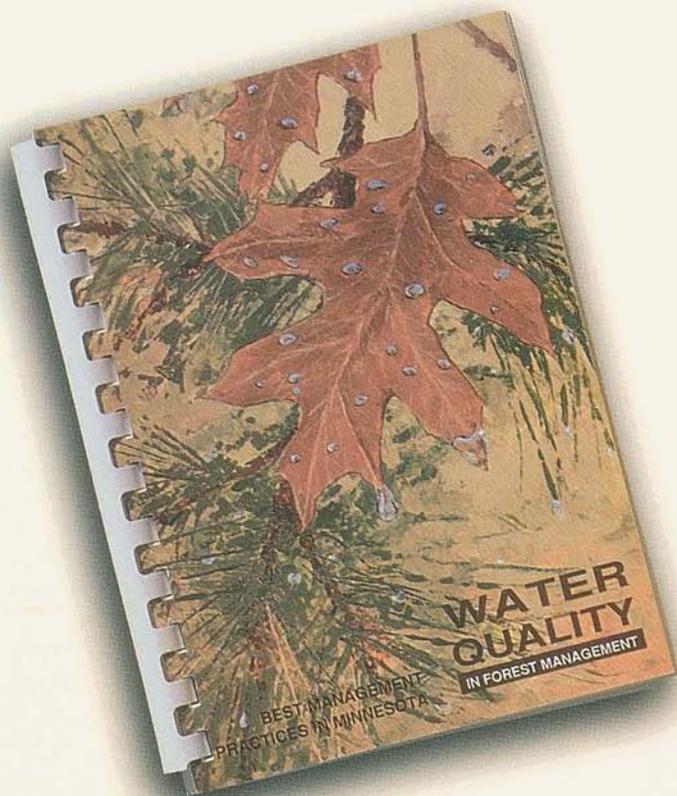
DNR file photo



Jon Cole

## Other Activities Which Affect Your Wetland

If you have an undisturbed wetland, it is important to protect it from damage. The best way to do this is by using "Best Management Practices," or BMPs, when working near the wetland. BMPs protect your wetland by preventing erosion, reducing the effects of pesticides, and other preventative measures. For further information on BMPs see your DNR or private forester, SWCD technician or consult a copy of the DNR Forestry and Wetland BMP Guidelines.



The following are some things you can do to protect your wetland during timber harvesting and other forest management activities.

- Do not route roads through wetlands or on steep slopes subject to erosion. Filling for roads destroys wetland habitat, obstructs or modifies the flow of water to or through wetlands, and contributes to sedimentation.
- Restrict timber harvest activities to winter months when wetlands are frozen to minimize rutting and compaction.
- Do not use wetlands as log landings during timber harvest where there are alternative sites. The heavy equipment used in most timber harvests damages vegetation, compacts wetland soils, and can allow harmful pollutants (e.g., oil and gas) to leak into wetlands.
- Leave a buffer of both living and dead trees around wetlands when harvesting timber. Trees provide nest sites and cavities for many wildlife species, provide shading to wetlands to reduce drying and maintaining lower temperatures for sensitive species, and help prevent sedimentation.
- Avoid use of pesticides on or near wetlands. Herbicides will damage aquatic vegetation and insecticides will kill many beneficial aquatic insects.
- Avoid tree planting or site preparation activities that disturb soil in or adjacent to wetlands.
- Seed down all disturbed soils adjacent to or near wetlands with a suitable grass/legume mixture, and never place any fill material into wetlands.

## Slash in wetlands



Dan Hanson



Dan Hanson

Keep slash out of wetlands by using upland sites for log landings. Slash accumulation accelerates wetland filling, as in these two scenes.

## Rutting



Mike Phillips



Dan Hanson

Rutting in the wetland above is result of summer harvesting that damaged wetland hydrology. Wetland on right was harvested when ground was frozen and shows no damage.

## Erosion



Dan Hanson

Skid road above was revegetated after logging operation. Skid road on right was not, and has caused severe erosion into lowlands.



Dan Hanson

## Culverts



Mike Phillips

Properly placed culvert above drains road well and water runs clear. Culvert on right provides poor drainage and degrades water quality.



Mike Phillips

## Permit Requirements

**A**ny work in a wetland that involves moving soil will very likely require a government permit. At least 3 government agencies regulate wetland activities including your county or city (planning and zoning office or Soil and Water Conservation District), the U.S. Army Corps of Engineers, and the DNR. Doing work without the permit can cost a lot of money, and may mean you have to restore the site to its preconstruction contours. Be sure to check for all your permits — it will save you time and money!

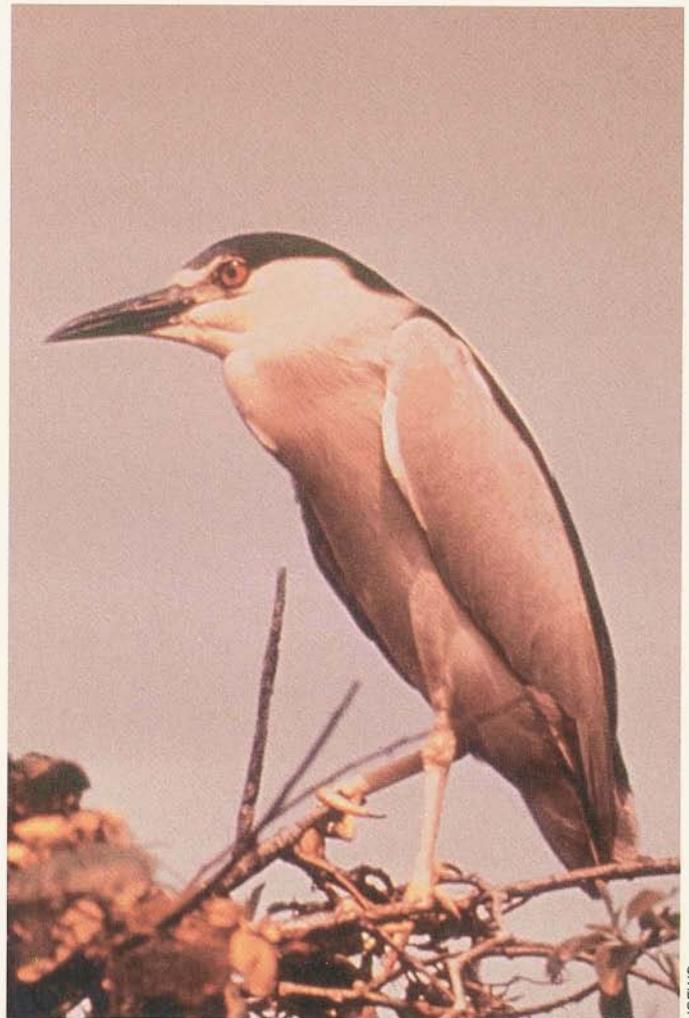
## Programs

Most of the practices described above (and many other forest management practices) are eligible for cost-sharing through government programs. These programs are intended to help you be a good steward of the forest you own, so the long-term health of our environment is maintained. Also, there are several agencies that can help you with technical assistance. Contact those listed below for more specific information.

## More Information

The first stop for any woodland owner should be your DNR Wildlife Manager or Forester; they can provide technical and financial assistance for many projects. The Soil and Water Conservation District (SWCD) and <sup>Natural Resources Conservation Service (NRCS)</sup> Soil Conservation Service (SCS) are also sources of technical <sup>and financial</sup> assistance, and may be familiar with sources of financial assistance through the Agricultural Stabilization and Conservation Service (ASCS). In some counties, the U.S. Fish and Wildlife Service (USFWS) will restore wetlands for no charge. Finally, your county may offer some forest management incentives or wetland tax exemption—check with the county auditor.

Good luck with your project!



USFWS

Agency	Type of Assistance	Phone Number
DNR Forestry	Technical and Financial	(612) 296-4481
DNR Wildlife	Technical and Financial	<del>(612) 296-3344</del>
SWCD	Technical and Financial	(612) 296-3767
SCS	Technical	(612) 290-3677
ASCS	Financial	(612) 290-3651
USFWS	Technical and Financial	(612) 725-3502



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***This brochure was funded through a grant from the USDA Forest Stewardship project.***

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