



Wetland

Wetlands filter excess pesticides and nutrients. Many plants and animals find a home in wetlands.

In your backyard

A mini-wetland in your yard can provide many of the same benefits that natural wetlands offer. A mini-wetland can replace the important natural functions of wetlands that may have been lost when your community was developed.

A wetland in your backyard will temporarily store, filter, and clean runoff water from your roof and lawn. It will provide habitat for many interesting creatures—from butterflies and bees to salamanders, toads, frogs, and birds.

Most wetland plants do not require standing water to grow successfully, and will survive even in an area that appears dry during most of the growing season.

If you have a naturally occurring wet spot in your yard, or a low swale or drainageway with heavy clay soils,

Even if you do not have a naturally wet spot, you can establish an area in your yard to grow many of the beautiful plants associated with wetlands.

Backyard Conservation

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you easily can turn it into a wetland paradise. Even if you do not have a naturally wet spot, you can establish an area in your yard to grow many of the beautiful plants associated with wetlands.

What is a wetland?

A wetland is simply any area where water covers the soil or keeps it saturated for at least two or three weeks during the growing season. You will usually find them anywhere



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One in a series of 10 tip sheets on backyard conservation

water accumulates at a rate faster than it drains away. Some are inundated year-round while others only hold water for brief periods in the spring. Most wetlands are covered with water for less than a month during the summer. Wetlands dominated by grasses, cattails, and similar herbaceous vegetation are referred to as marshes, while wooded wetlands, dominated by shrubs and trees, are called swamps.

The saturation of the soil limits the types of plants you can grow to those with “wet feet.” How long the soil is saturated determines which wetland plants will grow best. There are many small wetland plants that grow quickly when the soil is wet in the spring and disappear when the soil dries up. Species like cattails, bulrushes, jewelweed, and the attractive cardinal flower do well where there are alternating wet and dry periods. These plants will survive persistent flooding as long as most of the leaves are out of the water. Water lilies and pond weeds grow well in permanently flooded ponds.

In your backyard, toads and tree frogs (spring peepers) will lay eggs and the pollywogs will mature where water only lasts 3 or 4 weeks; other frogs need longer periods. Where you have permanent water, the bullfrog pollywogs and small fish limit survival of most other frogs, toads, and salamanders. Mosquitoes will not survive in wetlands that dry out in less than a week after a summer rain or in wetlands connected to a deeper pond that supports small fish and large aquatic insects that feast on them.

Where to put a wetland

A natural depression or ditch that tends to stay wet is an ideal place to develop a wetland. Other areas with heavy clay soils that

drain slowly may also be suitable. Better drained sites may require use of a plastic or other type of liner. Of course, if you are building a backyard pond, as discussed in another tip sheet in this series, a shallow area of saturated soil can be incorporated in the design. When selecting a site, consider:

- Is the site away from your foundation, out buildings, existing landscaping that you want to maintain, or neighboring properties that might be damaged by excessive moisture?
- Would there be a safety concern for neighborhood children?
- How will the site be integrated into your plan for maintenance?
- If you need supplemental water, is it readily available or can you use roof drainage?
- If there is an existing wetland, check wetland regulations before altering it.
- Unless you completely own a ditch, check with local authorities before making any alterations. Be sure you won't cause adjacent properties to flood.

Safety

Locate the backyard wetland where it is unlikely to attract unattended children. Check local safety ordinances to determine if a fence is required for the specific depth and size of your wetland. Check local building ordinances for depth and safety restrictions and permits.

Building a wetland

Since wetlands refer to a variety of conditions, there is a lot of potential for including wetland plants in your yard. You may want a wetland that only stays wet for a short period after heavy rains or one that stays wet most of the time. It depends on the site and your desires. Establishing a wetland in your yard may be as simple as planting wetland plants in

an existing wet area, or it may require the same effort needed to install a backyard pond.

Building a wetland in an existing wet area or drainage-way

If the area is naturally wet during parts of the year, no mowing during the dry season may be all that is needed to allow naturally occurring wetland species to proliferate. Too often homeowners go to great lengths to establish plants that are not adapted to the site or to modify the site, when it would be more effective to use plants suited to the conditions. Numerous landscape plants are well adapted to wet conditions and will provide beauty as well as wildlife habitat.

Be sure to check the growth and rooting characteristics of trees you want to plant. Many wet soil tolerant trees have shallow root systems or brittle branches and must be planted a safe distance from buildings.

Partially blocking a drainage-way or small ditch to create your wetland by trapping storm water needs more planning. Where a low berm less than a foot high will create a small wetland, planning is not complicated if:

- the drainage area above the berm is small, generally less than an acre;
- there is adequate area for flood flows to go around and over the berm; and
- the soil contains a high percentage of clay.

For sites requiring a higher berm, and those with a larger watershed, you need engineering advice. For sites with sandy soil or a lot of rocks, you may also need to install a plastic liner (described in the next section) under all or the lower portion of your wetland.

You can turn a low swale in your backyard into a wetland.



To construct the wetland with a small berm to hold back water for a few days or weeks:

1. Put a stake in the center of the lowest portion of the drainageway where you want the berm.
2. Using a level on a large board or string, place a stake where a level line reaches the ground on either side.
3. Using the same type of level, mark how far back water will be impounded at the top of the berm.
4. Remove any existing sod from an area about 4 feet wide along the line of the berm and over about half the area that will be flooded.
5. Dig a trench about 1 foot deep along the center line of the berm and fill it with slightly damp heavy soil, packed down firmly.
6. Build your berm about 4 feet wide at the bottom and 1 foot at the top. The center should be 4 to 6 inches higher than the ends to allow for settling and to force water flowing over it around the ends, reducing the likelihood of erosion.
7. Cover the compacted berm with purchased grass sod or the sod you originally removed from the area.
8. Plant wetland adapted plants in

bands from the deepest areas to an area about six inches above the expected high water level, selected according to the degree of soil saturation they require.

Building a separate wetland

You can create a wetland in any level area and make it suitable for most wetland plants by digging out a depression, lining it with plastic, refilling it with soil, and adding water. After selecting the site, you should:

1. Using a hose or rope, lay out the shape of your wetland. An irregular shape will appear the most natural. Sometimes a long narrow curving wetland will fit nicely into a landscape plan.
2. Excavate an area 1-1/2 to 2 feet deep. The sides should slope gently to the deepest area.
3. Put an inch of fine sand or loose soil in the bottom to prevent the plastic liner from being punctured by small stones.
4. Line the depression with sheet plastic. Hold in place with heavy objects such as round stones. Or, install a pre-formed pool liner or use

a child's wading pool.

5. If you live in a region with heavy annual rainfall, puncture the liner in several places with pencil-sized holes about halfway up the sides to allow slow drainage so the soil will not stay completely waterlogged for long periods.
6. If you plan to grow common species of low maintenance plants adapted to moist soils in your area, fill the depression with a mixture of soil and peat. A significant amount of peat will help retain moisture and allow for aeration. If you intend to grow true bog plants that require acidic soils saturated with water most of the year, fill the area with a mixture of half peatmoss and half humus. Also, you should fill the lower half of the depression with pea gravel or coarse sand to assure more even distribution of water. Burying a perforated pipe in the pea gravel connected to an upright pipe fitted with a hose connection will help add water evenly to the bog.
7. Cover the edges of the plastic with soil to hide them and hold the liner in place.

Building a wetland by a backyard pond

Putting a shallow wetland at one edge of your backyard pond will increase its value and attractiveness. If you are using a pre-formed liner for your pond, you may want to build the wetland as described above, with the water level slightly above the pond liner or the edge of the pond liner lowered a couple of inches to allow water to flow into the pond. This design filters sediment and other contaminants out of the water coming off your lawn or roof through the wetland before it enters the pond. The wetland area also protects fish and other aquatic life in the pond by removing any chlorine from city tap water you use.

Establishing plants

The plants you select for your wetland will depend on:

- length of time the soil will be saturated or covered with water,
- depth of the water,
- amount of sunlight on the site,
- climate,
- soil pH, and
- size of the wetland.

Select plants that are hardy for your area and provide the desired wildlife habitat and aesthetics. The species of plants most common in other wetlands in your area with similar flooding cycles will be easiest to grow and need the least maintenance.

Choosing and establishing plants for ponds

To make part of your backyard like natural wetlands, use a mix of diverse plants. Most trees, shrubs, ferns, and many other plants grow best in soils that are only saturated early in the growing season and after heavy rains. Others, like the true bog

plants, need almost continually saturated soil. Plants like water lilies need to be continually flooded. Once established, plants like cattails will thrive in water a couple feet deep, but also in areas that are wet for only short periods. However, most have a narrower tolerance range live. Always check with your local nursery or other expert before making final decisions on what varieties to plant. Plants should always be purchased from a reliable source.

Native trees tolerant of wet soils:

Red and silver maple (*Acer rubrum*, *A. saccharinum*)
 River birch (*Betula nigra*)
 Catalpa spp.
 Ash (*Fraxinus* spp.)
 Cottonwood (*Populus deltoides*)
 Swamp white oak (*Quercus bicolor*)
 Sycamores (*Platanus* spp.)

Native shrubs tolerant of wet soils:

Red osier dogwood (*Cornus sericea*)
 Leatherwood (*Dirca palustris*)
 Winterberry (*Ilex verticillata*)
 Inkberry (*Ilex glabra*)
 Pussy willow (*Salix discolor*)
 Shrubby cinquefoil (*Potentilla fruticosa*)

Native herbaceous and flowering plants for sunny moist or boggy conditions:

Cattails (*Typhus* spp.)
 Joe-Pye weed (*Eupatorium maculatum*)
 Great blue lobelia (*Lobelia siphilitica*)
 Ironweed (*Vernonia noveboracensis*)
 Blue flag iris (*Iris versicolor*)
 Boneset (*Eupatorium perfoliatum*)
 Cardinal flower (*Lobelia cardinalis*)
 Goldenrods (*Solidago* spp.)
 Marsh marigold (*Caltha palustris*)
 Swamp milkweed (*Asclepias incarnata*)
 Gentian spp.

Native herbaceous and flowering plants for shady moist or boggy conditions:

Bee balm (*Monarda didyma*)
 Arrowhead (*Sagittaris latifolia*)

False hellebore (*Veratrum viride*)
 Turtlehead (*Chelone* spp.)
 Royal fern (*Osmunda regalis*)
 Skunk cabbage (*Symplocarpus foetidus*)
 Netted chain fern (*Woodwardia areolata*)
 Jack-in-the-Pulpit (*Arisaema triphyllum*)
 Cinnamon fern (*Osmunda cinnamomea*)
 Shield ferns (*Dropteris* spp.)
 Lady ferns (*Athyrium* spp.)

True bog plants requiring low pH and sun:

Sundews (*Drosera* spp.)
 Butterworts (*Pinguicula* spp.)
 Pitcher plants (*Sarracenia* spp.)

Many other native wetland species are available in most areas. There are also many species that have been naturalized in North America and are often considered native plants. Unfortunately, some of these species are more competitive and have become invasive, crowding out native species that provide habitat for indigenous wildlife.

On the farm

In the rural landscape, wetlands filter chemicals, excess nutrients, and sediment from flowing water, protecting streams and drinking water sources. They also provide wildlife habitat.

Across the country, many farmers voluntarily return formerly drained wetlands in crop fields and pasture to fully functioning wetlands. Many of these acres were marginally productive; returning them to wetlands provides significant ecological, economic, and recreational benefits.

Many farmers enhance their wetlands with nesting structures for ducks and other birds, put in plants and annual seeding to provide winter food and cover for wildlife, and establish native wildflowers to make the landscape more attractive.