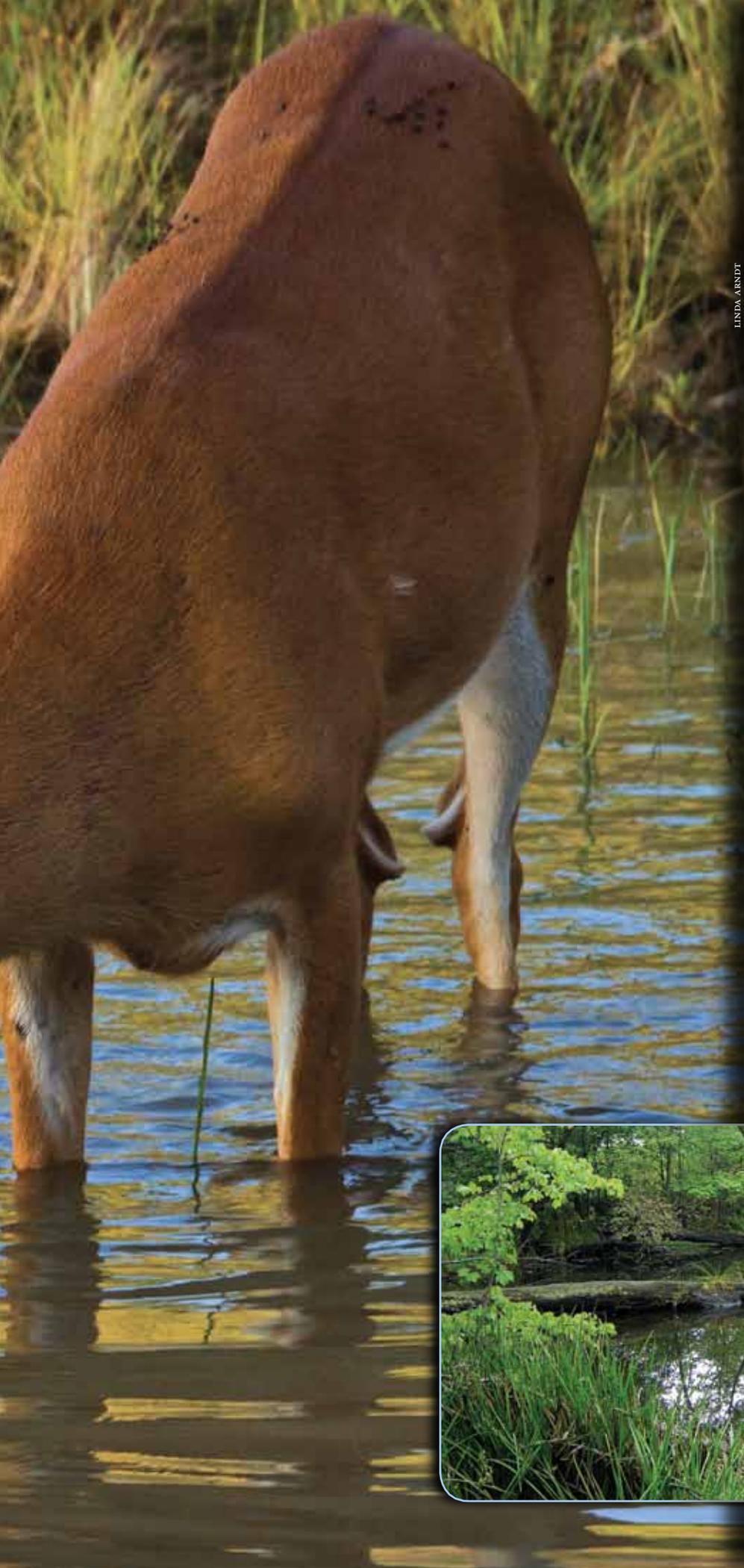


Small wetlands are relatively easy to create and can provide water, forage and cover for whitetails – while also hosting a diversity of other wildlife species.



Wetlands *for* Whitetails

By Tom Biebighauser



LINDA ARNDT

Wetlands are often scarcer than a 5½-year-old buck on public land.

Experts estimate that less than 10 percent of the original wetlands remain in Iowa, Ohio and Missouri, and that in most states where white-tailed deer are found only half of the original wetlands remain. For those who have watched how many deer and other species use these habitats, it is sobering to think how the loss has affected wildlife populations on a landscape level.

You may be surprised to find how easy it is to restore or create wetlands on the land you manage, and how many species of wildlife – especially whitetails – can benefit from even a very small wetland project. Restoring former wetlands, and creating new ones, is a broad topic. But I want to share a few ideas in this brief article that you may find useful and will hopefully get you started thinking about adding wetlands to the habitat on your hunting land. I'll even provide detailed instructions on how to create a small wetland up to 20 feet wide.

Benefits of Wetlands

Often called waterholes or ponds, wetlands can be smaller than your backyard or larger than a football field. Deer are frequent visitors to wetlands, where they can find food, water, and a refuge to hide. While most wetlands are found in valleys, they also occur naturally in mountain ridges where they can be the only source of water for miles.

These shallow pools are readily used by other game species as well, including wild turkeys and ducks, and innumerable non-game species will benefit. Small wetlands are great places to watch dragon-

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flies and are fun for children of all ages to explore. While the developer may consider the presence of wetlands to be a liability, the private landowner can reap many returns from these areas.

Eastern mountain ridges are generally dry, forcing deer into the valleys to drink. Because most people live in valleys, this journey for water can place deer in conflict with vehicles, dogs, and poachers. Developing a wetland may mean that deer no longer need to leave your property to find some place to drink. Farmers have known for years how important it is to provide their animals with ready access to clean water. It is no different for deer, especially when does are nursing fawns.

The presence of a quiet water source can be another advantage to having a wetland on your land. Many believe that deer are better able to detect predators if they can hear while they drink, escaping the noise associated with flowing water. Trail-cameras set on the Daniel Boone National Forest in Kentucky show that deer are the most frequent visitor to small wetlands constructed on mountain ridges, with wild turkeys a close second. Hunters confirm the value of these features by setting up deer stands near just about every wetland that is built.

Another benefit to building a wetland for deer is that the rushes, sedges, and aquatic plants growing in their saturated soil contain a great deal more sodium than plants growing on dry land. Research conducted by Dr. Peter Jordan, professor emeritus in the Department of Fisheries, Wildlife and Conservation Biology at the University of Minnesota, found that aquatic plants contain an average of over 10,000 parts per million of sodium, while terrestrial plants generally have less than 10 parts per million. Deer can also escape biting flies and heat by immersing themselves in the water of a wetland.

Small wetlands provide a home to an amazing diversity of wildlife species. Wood ducks, mallards and hooded mergansers frequent these wetlands. Wild turkeys make great use of wetlands, especially those that dry each fall. These “ephemeral” wetlands, also known as vernal ponds, produce an abundance of succulent annual plants, seeds, and invertebrates that turkeys will eat.

Most frogs, toads, and salamanders require ephemeral wetlands for breeding. It is in these seasonal waters, which do not

HOW TO CREATE A SMALL, PERMANENT WETLAND

Here is how a small wetland up to 20 feet in diameter can be built in one-half day or less by hiring a dozer operator. This technique can be used on ridge tops or in old roadways, and it is a great technique for closing an old road to vehicle access.

1. Locate a level, dry area on a ridge with soil that is high in clay.
2. Use brightly colored ribbon to mark the perimeter of the planned wetland.
3. Contact your local “Call before you dig” service to check for buried utilities.
4. Obtain any permits that are required.
5. Hire an experienced person to operate a dozer or excavator by the hour.
6. Use the heavy equipment to remove shrubs and trees from the marked area and save the woody debris in piles nearby for placement in the finished wetland.
7. Remove the topsoil and also save for later. Topsoil is dark in color and contains roots.
8. Dig a deep depression that removes clay to a depth of four feet, or until bedrock is reached. Pile the clay along the outer edge of the marked area.
9. Remove all tree roots and any layers of sand or gravel from the depression. These will drain the wetland if you don't remove them.
10. Place the clay back in the hole in multiple layers no thicker than six inches. Compact each layer by running over it with heavy equipment four times or more. Continue to place and compact thin layers of the clay in the depression, until there are at least 24 inches of compacted clay covering the entire bottom of the depression. It is okay to leave root sections in the clay as long as they are no longer attached to trees.
11. Shape a natural-looking depression with gradual slopes. There may be no need to build a dam because a shallow basin should remain after all the clay is placed and compacted in the hole.



12. Use a construction level to check the depth of the depression. In locations east of the Mississippi River, the wetland can be expected to contain water year round if it is built 18 inches or deeper. If it is shallower than 18 inches, it may only contain water seasonally.
13. Create a wide spillway on a gradual slope to direct overflow from the wetland away from steep slopes and disturbed ground to prevent erosion.
14. Spread the saved topsoil over and around the finished wetland. Remove any soil piled against trees and landscape so the area looks natural. Planted trees, shrubs, and wildflowers will grow better if the topsoil is not compacted.
15. Place large logs, piles of branches and topsoil in and around the wetland to improve habitat for wildlife, and to prevent damage from unauthorized motor vehicles.
16. Control erosion by sowing wheat and native plants, and by covering the soil with a thin layer of straw.



View a complete series of photos showing these steps in the construction of a small wetland. Visit: www.QDMA.com



This small wetland was built in an old logging road two years prior to this photo being taken.

contain fish, that their eggs and larvae can survive. Ephemeral wetlands are prime real estate for dragonflies, damselflies, and fairy shrimp, all of which eat mosquito larvae. Research shows that small wetlands can actually control mosquito populations. Those mosquitoes that lay their eggs in the water are quickly consumed by salamander and dragonfly larvae, and the flying adult mosquitoes are captured by tree swallows, purple martins, toads, and bats.

Some vocal individuals who own wetlands have reported bad experiences with how the government controls management of their wetlands. They have found that certain wetlands are jurisdictional and are protected by law. However, in most states it is possible to build a wetland that is not protected by law. These wetlands, called isolated or non-jurisdictional wetlands, are not located within a 100-year floodplain and are not connected to another wetland or stream. Landowners, such as mining companies, who think they may need to eliminate a homemade wetland sometime in the future may want to see if regulations in their state protect isolated, constructed wetlands before they build.

Building a Wetland

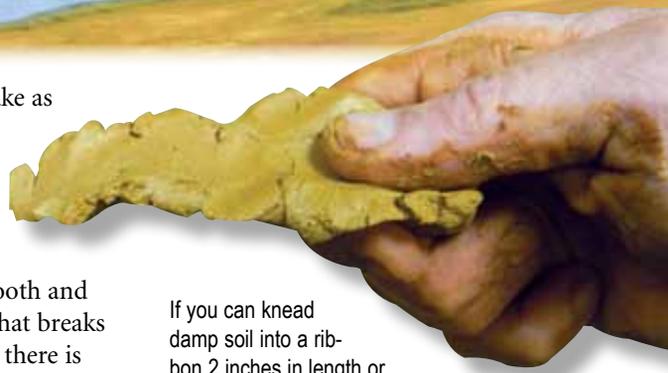
While building one wetland is good, two can be better. Consider building one to contain water year-round and the other to dry each fall. The perennial wetland can be a lifesaver for deer in time of drought, while the ephemeral wetland will provide critical habitat to many amphibians and invertebrates.

It may be possible to build a wetland for under \$1,000 that should last for hundreds of years with proper site selection. The least expensive location to build a wetland is on high and level ground, from clay-textured soil, away from ditches and streams. The area you select should be as flat as possible, with a slope no greater than 6 percent. A construction level and rod, or clinometer, can be used to measure slope.

The next design step involves using a post-hole digger to dig a test hole in the center of the area where you would like to have a wetland. The hole should be at least 3-feet deep. If water seeps into the hole and rises near the surface, then a wetland supplied with groundwater may be built. If the hole remains dry, then it is important to test for clay. Pick up a chunk of soil about the size of a walnut and mix

in a shot glass of water. It can take as long as five minutes to knead the water into the soil sample. Next, force the soil between your thumb and forefinger in an attempt to form a very thin, long ribbon. If the soil feels smooth and firm, and the length of ribbon that breaks off is two inches or longer, then there is enough clay to form a wetland that will be supplied by precipitation and runoff. However, if the soil feels rocky, sandy or sticky, there is probably not enough clay

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If you can knead damp soil into a ribbon 2 inches in length or longer that will support its own weight without breaking, there is enough clay in the soil for the site to hold water and allow for construction of a small wetland.



About This Article

This article was published in *Quality Whitetails* magazine, the journal of the nonprofit Quality Deer Management Association (QDMA). To become a QDMA member and receive *Quality Whitetails* six times a year, or to learn more about deer and habitat management, visit:

www.QDMA.COM



QDMA member Don Holmes of Illinois captured this photo by a small wetland on his hunting land. Small wetlands provide forage, cover and – of course – water for whitetails. “Quiet” water like this small wetland may even be used more regularly by deer than flowing streams.

to make a wetland. Find a location where there is clay, or consider using an aquatic-safe liner to build the wetland.

It is best to start small when constructing your first wetland. Marking an area approximately 60 feet in diameter is recommended for building a naturally appearing wetland that will have an open water area approximately 30 feet across.

As a general rule anywhere east of the Mississippi River, a constructed wetland will hold water all year if it is constructed more than 18-inches deep. It will probably dry each fall if built less than 14-inches deep.

Many people assume that the easiest way to create a wetland is to block a ditch or stream, or build a dam to collect drainage water from areas larger than an acre. This is not the best approach. In these cases, building so that flood water leaving these wetlands does not cause major erosion requires skill, frequent maintenance, and can be very expensive.

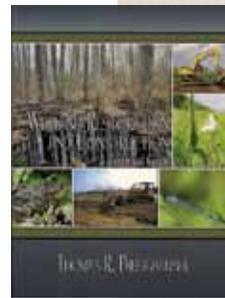
Wetlands should be built with certain characteristics so that they will require no maintenance. These include a low dam under 18-inches high, gradual slopes under 5 percent on the front and back sides of the dam, and a spillway at least 12-feet wide that directs overflow down a gradual slope.

Conclusion

The tips I’ve provided here for *Quality Whitetails* readers are only the beginning of a discussion about creating wetlands to fit your ultimate habitat design. If you’d like to learn more, I’ve written a book to help: *Wetland Restoration and Construction – A Technical Guide*, which is available from QDMA. The publication clearly explains the steps needed to design

WETLAND EDUCATION

Tom Biebighauser has written three books on restoring wetlands. His most recent



book – *Wetland Restoration and Construction: A Technical Guide* – is available from QDMA. Easy to read and follow, this book will teach you to identify former wetlands that have been drained or destroyed and then show you how to restore them. The book also guides you through numerous methods

for creating new wetlands. Hundreds of photos and diagrams from actual wetland restoration and construction projects help you visualize the steps in each project and what the finished wetland may look like. From small, seasonal waterholes to major wetlands, this book can help you increase habitat and wildlife diversity on the lands you hunt, providing benefits for whitetails and numerous other species. Tom’s book is available for \$22.95 by visiting QDMA.com or by calling 800-209-3337.

a wetland for deer and many other wildlife species. You can then be ready to join the many others who have created a special place for wildlife by building a wetland on your hunting land.



About the Author: Tom Biebighauser is a wildlife biologist who has built over 1,400 wetlands in 18 states and two Canadian provinces. He teaches practical, hands-on wetland restoration workshops across North America where participants learn about restoration by becoming involved in the design and construction of naturally appearing and functioning wetlands. Tom has written three books about restoring wetlands. Tom can be reached at: tombiebighauser@gmail.com.