

The Native Pond

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by

Jeffrey A. Fullerton

RD 2, Box 390, Mt. Pleasant, PA 15666, tcmajorr@westol.com

The first signs of spring are apparent in my backyard pond. Schools of golden shiners and redbelly dace are on the move. The eastern mudminnows are stirring, as are the mosquitofish, an occasional brook stickleback, and some starhead topminnows. (I was afraid the latter, from a southerly location, wouldn't make it through the winter.) Outdoor ponds are an easy way to keep and breed native fishes. I began in my high school years with modest arrangements, based on inexpensive tarps. Eventually, I worked my way up to a large pond that I constructed in 1984 with a six mil polyethylene liner, replacing that a few years later with 20 mil PVC liner, and replacing that with a 45 mil EDPM synthetic rubber liner.

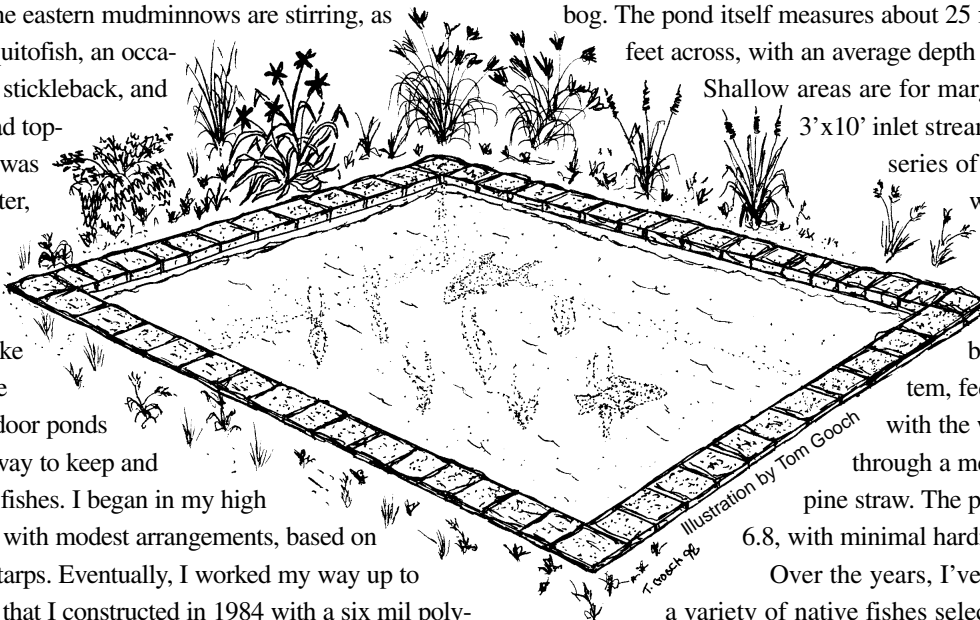
At this point, it's important to note that you should wash the talc off EDPM and other rubber-based liners before installing them. (Manufacturers use talc to keep the liners from sticking together during shipping.) To remove the talc, use a soft bristled brush and a hose to rinse it down.

A good reference guide for building, planting and stocking a natural pond is *Your Garden Pond*, by Wieser and Loiselle (Tetra Press, 1986). In addition to beautiful illustrations and good ideas, it also has a fairly comprehensive section on fishes native to the USA.

My pond is part of a natural garden biotope I've set up. It includes a rock arrangement and a carnivorous plant bog. The pond itself measures about 25 feet long and 16 feet across, with an average depth of about two feet.

Shallow areas are for marginal plants. A 3'x10' inlet stream flows into a series of smaller ponds via waterfalls fed by a pump based in the main pond. The pond mimics a blackwater ecosystem, fed by rainfall and with the water circulated through a mesh bag filled with pine straw. The pH runs about 6.5 to 6.8, with minimal hardness.

Over the years, I've experimented with a variety of native fishes selected for traits suitable for life in a small pond: small size, compatibility with other small fish, ability to thrive and reproduce under pond conditions, and winter hardiness in USDA zone 6. At first, I stocked the pond with bluegill, pumpkinseed, brown bullhead, and a variety of smaller local species. Of these, golden shiners and banded killifish did the best and reproduced prolifically. So did the bullheads, whose tadpole-like offspring were delightful to observe as they swam in compact spherical swarms in early summer. In the long run, however, I found this initially tranquil arrangement to be a recipe for disaster. The bullheads ended up dominating the pond and ate all the killies and trapdoor snails. Also, the earth bottom I had put down turned out not to be such a good idea when it came time



to replace the liner in 1987. After a miserable time of pulling up rank growths of water weeds and spatterdock rhizomes as thick as a man's leg—not to mention lugging away buckets and buckets of ooze—I planted rubber tubs purchased from a local feed store. In more recent years, I began to use plastic mesh pots designed for water gardens.

For anyone starting a new pond, I recommend planters over “natural” beds of soil, for the simplicity of maintenance. I top all my planters with a layer of non-calcareous gravel (quartz), which keeps the soil from being stirred up and also doubles as a spawning medium for sunfishes.

After the first revamping in 1987, I replaced the bullheads and bluegills in favor of more docile species, such as golden shiner, mudminnows and *Enneacanthus* sunfishes. These not only survived in a small pond, they also bred prolifically. Mosquitofish also produced numerous offspring. Despite their reputation for being too aggressive for a community setting, they've given me no problems so far.

In addition to these successes, there were a few failures. Emerald shiners and blackstripe topminnows failed to thrive and gradually disappeared, probably because they can't tolerate colder weather.

Southern redbelly dace survived, but being riffle spawners, did not reproduce in the pond. The verdict is not yet in for banded killifish, which also prefer harder water. Some have adapted, however, and some spawning has taken place.

The current species composition is predominantly a combination of golden shiner, northern redbelly dace, eastern mudminnow, brook stickleback, banded killifish, and mosquitofish. Less visible are the sunfishes: blackbanded, bluespotted, and orangespotted. Similarly, I don't see much of the tadpole madtoms, pirate perch, and Iowa and mud darters. In addition to these year 'round residents, there are a few seasonal transients: eastern starhead topminnows, as well as dollar and bantam sunfish. These marginally hardy species fare well over the summer, but I plan on wintering them indoors for the next few years until there is a surplus population with which to experiment.

Maintaining the pond is fairly simple. The fish are fed commercial grade flake foods daily. Species that will only eat live foods subsist off the natural populations of

bloodworms and other aquatic invertebrates. They probably consume a lot of newly hatched green frog tadpoles and mosquitofish fry as well.

I find it best to clean the pond every few years, preferably in early spring before the fish start spawning and while the plants are in their earliest stages of growth. This is the time to divide water lilies and thin the other plants. (While I do this, I put the fish in smaller, temporary ponds or tubs.) This is usually a good time to inventory the fish populations. After I've taken the fish out, I clean out the ooze that accumulates, but not all of it. This muck harbors some of the food organisms that support the carnivorous species. Leaving some behind helps the pond ecosystem to restart itself after refilling.

As winter approaches, falling leaves should not be allowed to accumulate in the pond or they will decay and increase the chance of winter kill when ice covers the surface. To prevent this, I keep a vigil, scooping out leaves daily until the last of them are down. I use a Tetra Luft



Eastern mudminnow,  
*Umbra pygmaea*.  
Illustration by Tom Gooch.

Pump to keep a hole open in the ice over winter.

This is a lot cheaper than running a stock tank heater, and it's very effective at preventing the depletion of

oxygen and buildup of toxic gases under the ice. The air stone must be suspended near the surface to agitate the top 3-6 inches of the water column. If it is placed at the deepest point, it may cause a complete turnover of the water, which will cool the pond and freeze it all the way down.

### Plants for the Native Pond

Plants enhance the appearance of a pond and help remove wastes. Among my favorites are the spatterdocks—water lily-type plants of the genus *Nuphar*. These typically have floating leaves and yellow flowers. The first species I worked with was the native spatterdock, *N. advena*. I didn't care for this one, however, as the leaves would stand above the water later in the season. I have since replaced it with the Cape Fear spatterdock, *N. sagittifolium*, which hails from the southern Atlantic coastal plain, and with the Japanese member of this family, *N. japonica*. Both are smaller and **continued on page 24**

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**“The Native Pond,” cont. from page 18** better behaved in a pond. Spatterdocks produce both submerged and above-water leaves at various stages of growth. Younger plants have the former and mature plants produce the latter—along with flowers—during the warmer months, when grown in a pot of soil outside. To prevent freezing, I lower my pots into the deepest parts of the pond and move them back to warmer shallows in the spring. You can adjust the depth of the plants by putting them on a marginal shelf in the pond, or raising them up on bricks or other supports. The pygmy spatterdocks (*N. minor*) of boreal North America might also work well in cooler parts of the country, but I have not had the privilege of growing them yet.

Another of my favorites is the water lily. A cosmopolitan species, water lilies are found throughout temperate North America and Eurasia. Wild-type parents from both continents are the source of many popular varieties used in water gardens. Perhaps the best known is the white pond lily (*Nymphaea odorata*), native to North America and found from Canada to the Everglades. The form known as *N. o. gigantea* is best suited for culture in large ponds and lakes, spreading aggressively, and standing up to the onslaught of turtles and other browsers. The smaller forms, var. “Hoptacong” and var. *minor*, are better suited to garden ponds, because they are less likely to spread, but bloom more freely than *gigantea*. The plants are easy to cultivate, requiring only a good garden soil, preferably in a tub or basket with a small amount of fertilizer. It’s best to confine the plants to a tub, to prevent them from taking over the pond. You should divide and re-pot the lilies in fresh soil every few years, and either compost the extras or give them to friends.

A plant with unrealized potential is the humble “banana plant,” sold in pet shops throughout the country.

The plant is named for the bunch of green, banana-shaped tubers from which the crown of the plant originates. More often than not, it’s short lived in an aquarium. But when planted in a backyard pond, it goes through a miraculous transformation, into something both bizarre and beautiful. The banana plant is actually the juvenile form of the large floating heart, *Nymphiodes aquatica*, a water lily-like plant with floating pads that are green above and deep purple-red on the underside. The plant is small (at least when grown in the northern part of the range), with the pads only four inches across at most. It’s found from southern New Jersey to Florida, the Gulf States, and the lower Mississippi Valley, largely in coastal areas. Perhaps the most interesting thing about this plant is how it reproduces. Clusters of five-petal white flowers erupt from a swelling just below the base of the leaf in summer. The plant also reproduces asexually, by budding, which produces a cluster of the typical banana tubers from the same part of the stem where the flowers arise. These form a small plantlet that drifts away at the end of the season when the portion of the stem below it disintegrates, while the leaf above remains intact. Like a tiny ship, it sets sail, driven by wind and currents, and, with luck, will establish itself when the leaf dies and the tubers sink to the bottom. These tiny plants are the source for the banana plants at the pet shop. In fact, my source for this plant was a local pet shop, where I purchased it in 1984. It has since grown and multiplied. I now grow the plant in mesh pots with a mix of sand and clay, topped with aquarium gravel, to keep the fish from stirring up the soil and roiling the waters. The nice thing about the mesh pots, aside from being easier to move around, is that plants can also put out feeder roots through the sides, which help to filter the water. Outdoors, the plant is probably hardy to USDA Zone 6. I’ve found it hardy in southwestern Pennsylvania, but a bit short