

SMART GARDENING FOR SHORELANDS

Keep it clean to protect frogs and toads

Paige Filice and Erick Elgin, Michigan State University Extension

There is something magical about hearing the first spring peepers waking up after a long and cold winter. The endless chorus throughout spring and summer is an indication of Michigan's 13 species of frogs and toads as they wake up from hibernation. Swarming ponds, lakes, streams and wetlands, these precious amphibians are looking for a place to mate and live. Frogs and toads are also great companions for your yard and garden. They eat pests like beetles, cutworms and slugs and are an important food source for a variety of other animals including herons, mink, foxes and fish.

Frogs and toads have highly permeable skin that allows liquids and gases to pass through easily. This makes them particularly sensitive to pollution, especially when developing from tadpoles to adults. Chemicals found in their environment like fertilizers, weed and pest killers, and detergents can be absorbed into their bodies and cause deformities like a lack of eyes, malformed legs and in some cases death. Due to pollution, loss of habitat and disease, amphibians are the most endangered group of wildlife on earth, with one-third to potentially half of amphibian species worldwide at risk of extinction. Michigan has four rare or declining frog and toad species.

Do your part to protect Michigan's amphibians

Minimize usage of chemicals. Common garden chemicals like fertilizers and pesticides are designed



Jim Harding

Frogs and toads produce a range of sounds during courtship and mating. The callers, typically males, croak to advertise their location, mating readiness and to defend their territory.



Jim Harding

A pair of northern leopard frogs meet on a lily pad.

to alter the environment (e.g., kill insects or weeds, encourage growth). Unfortunately, research has found they can also harm amphibians like frogs and toads. When managing weeds, consider hand pulling, digging up or cutting them instead of applying chemicals. Preventing weeds and other pests is the easiest and cheapest way to limit your reliance on chemicals. Consider planting native species that do not need extra fertilization and are less affected by disease. Native plants also attract insects typically not harmful to your garden that are a food source for frogs and toads.

Timing is everything. If you do need to apply fertilizers or pesticides, spot treat during sunny, non-windy and dry days and when animals are the least active. Apply chemicals when rain is not expected for a few days. If applying herbicides is necessary, use caution as some herbicides persist in the soil for long periods of time. If applied late in the growing season, they can impact eggs and tadpoles the following spring.

Control rainwater runoff. The more rainwater that can be filtered through vegetation and soil as opposed to entering a storm drain, the healthier our water is. Consider installing a rain barrel at the end of a gutter or direct your gutters into a rain garden to capture runoff. Rain gardens add beauty and habitat to your yard while also helping the environment.

Create habitat and avoid barriers. Frogs and toads do not like wide open sunny places like grassy lawns. During the day, they prefer to stay damp in shady areas away from heat and direct sunlight. Consider replacing parts of your lawn with a diverse mix of native plant species that can provide ample food and protection. Or, on a smaller scale, create shelter for them by building a brush or rock pile, or leave a layer of leaves for them to hide in. Another popular gardener trick is to turn over a clay or ceramic flowerpot and prop it up with rocks, making it easy for a frog or toad to slip inside for an afternoon nap. Shelters should be placed in quiet and shady areas, which are not mowed frequently.

Shoreline habitats are also very important to amphibians, as some species like the green frog require plants near the water for survival. Common development practices like removing shoreline plants and installing seawalls and rock rip rap make it nearly impossible for frogs or toads to reach and use shorelines to rest and feed. If you live on a lake, pond or river, be sure frogs and toads have easy access into and out of the water. You can do this by simply extending a downed tree or log into the water or planting native plants along the shoreline. These practices also reduce erosion, eliminating the need to install a seawall or rock rip rap.



Green frog



Wood frog



American toad



Gray tree frog

Ryan Hodnett, Wikimedia Commons

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Handle with care. If you are lucky enough to have a frog or toad visitor in your garden, never handle them or other amphibians when you have insect repellent, sunscreen or soap on your hands. They can be harmed or killed by chemicals we consider harmless. Keep hands moist or wear clean garden gloves when handling if possible.

See more Smart Gardening for Shorelands tip sheets: canr.msu.edu/smart-shorelands



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If you'd like to handle frogs or toads, be sure to wash your hands to remove any insect repellent, sunscreen or soap.

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Mark Bugnaska Photography

If you are lucky enough to live on a lake or pond, the best way to protect frogs and toads is to provide them with a natural and unmowed area along the shoreline.

For more information on a wide variety of Smart Gardening topics, visit www.migarden.msu.edu or call MSU's Lawn and Garden hotline at 1-888-678-3464.

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Smart waterfront plants to enhance your shoreline

Erick Elgin, Michigan State University Extension

Living near water offers moments of serenity and beauty inspired by all aspects of the water's edge. Imagine enjoying the dappled sunlight of a lake shoreline with towering aromatic white pine trees above with delicious blueberries and sparse Pennsylvania sedge below. These plants together with the sounds and cool breeze from the lake can bring a breath of relaxation that Michigan lakes offer. But these plants do a whole lot more than just dazzle our senses. They also protect the water and land.

Plants that grow in, along, and just outside water play an important role in protecting water quality and providing habitat for many water loving critters. This is especially true of native plant species. Native plants have extensive root systems that have adapted to living in and around water. The roots and stems minimize erosion and buffer the water from pollutants like phosphorus and nitrogen that may runoff yards. Importantly, they also provide necessary habitat for a variety of animals. For example, common arrowhead, a popular and beautiful shoreline plant, provides a high-energy food for migrating waterfowl and small fish may use big arrowhead beds as shelter.

Native plants along water:

- Hold soil in place with either deep or laterally extensive roots systems
- Absorb and lessen energy from waves created by wind and boats
- Slow down water runoff from a sloping yard or landscape to allow pollutants such as sediments and contaminants to absorb before they reach the water
- Absorb nutrient runoff which helps keep the water clear of algae
- Provide key habitat for fish and wildlife

Planning your waterfront garden

When landscaping around water, it is important to balance your needs with the protection of the waterbody. A well-designed waterfront landscape will maintain access, views and aesthetics along with stabilizing soil, protecting water quality and enhancing habitat for fish and wildlife. When choosing native plants for your waterfront garden consider: (1) how high does it grow, (2) how much will it spread, and (3) when will it bloom.



Mark Bugnaski Photography

It is also critical to plant trees, shrubs, flowers, grasses and sedges in areas where they will have the greatest success. There is often a gradual change in wetness along creek, lake, and pond shorelines. Typically, there is an aquatic zone that is almost always under water, a transition zone with consistently moist soil and an upland zone that is mostly dry. It is very important to plant the right species in the right location so that your plants survive.

For example, plants that grow well in the aquatic zone will typically not do well in dry conditions. Table 1 has a brief list of hardy species that do very well in each zone. When putting the right plant in the right place, you can better assure beautiful blooms and a hardy root mass that slows erosion.



Mark Bugnaski Photography

Table 1. Short list of native plants that have high success on shorelines and are commonly available in native plant nurseries.

Species derived from Vanderbosch and Galatxitch 2010. For a more extensive plant list, check out the Michigan Natural Shoreline Partnership's website: <https://www.mishorelinepartnership.org/>

Zone	Species
Aquatic	• River bulrush (<i>Bolboschoenus fluviatilis</i>)
	• Blue flag Iris (<i>Iris versicolor</i>)
	• Hardstem bulrush (<i>Schoenoplectus acutus</i>)
	• Common arrowhead (<i>Sagittaria latifolia</i>)
	• Giant Bur reed (<i>Sparaganium eurycarpum</i>)
Transition	• Three square bulrush (<i>Schoenoplectus pungens</i>)
	• Porcupine sedge (<i>Carex hystericina</i>)
	• Joe-pye weed (<i>Eupatorium maculatum</i>)
	• Swamp milkweed (<i>Asclepias incarnate</i>)
	• Blue vervain (<i>Verbena hastata</i>)
Upland	• Black-eyed susan (<i>Rudbeckia hirta</i>)
	• Little bluestem (<i>Schizachyrium scoparium</i>)
	• Native sunflowers (multiple species in the genus <i>Helianthus</i>)
	• Wild bergamot (<i>Monarda fistulosa</i>)
	• Pennsylvania sedge (<i>Carex pennsylvanica</i>)



Blue flag Iris (*Iris versicolor*)



Common arrowhead (*Sagittaria latifolia*)



Wild bergamot (*Monarda fistulosa*)

Planting and maintaining a lawn along the water's edge can be uninspiring and more importantly damaging to your lake or stream. The root system of lawn species are not deep or dense enough to protect the soil from the erosive nature of moving water. In addition, fertilizers and pesticides commonly used on lawns may enter the waterbody causing damage to fish and wildlife. Keep in mind, it is important to balance your needs with protecting the waterbody. Replacing lawn along your water's edge with a native plant garden is a great way to accomplish this. Any addition of a native tree, flowering shrub, or a handful of wildflowers can make a difference. Already have some landscaping that isn't native? No need to remove it, just incorporate native species when you can.

For more information on waterfront landscaping design and plant species best suited for each zone of a waterfront, check out the Michigan Natural Shoreline Partnership:

www.mishorelinepartnership.org

Additional resources

- Michigan Shoreland Stewards Program: www.mishorelandstewards.org
- Michigan State University Native Plants and Ecosystem Services: www.nativeplants.msu.edu
- Wildflower Association of Michigan: www.wildflowersmich.org
- More Smart Gardening for Shoreland tip sheets: canr.msu.edu/smart-shorelands

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