

Getting Through the Winter

Helping frogs and salamanders survive.

BY JOSHUA CONWAY

You can do many things to encourage frogs on your golf course and in your local community. The simple actions you take, when repeated many times over by landowners, can have a significant positive impact. And an abundance of frogs on your property will be strong evidence that you are taking good care of both land and water.

Frogs are amphibians, a word of Greek origin that means *two lives*. Most adult frogs live in damp places in woods or near streams or ponds. But when mating season comes, usually in the spring, they migrate to ponds, wetlands, and seasonal pools to lay their eggs. The eggs hatch into tadpoles, a completely aquatic stage that breathes with

gills and eats algae. Depending on the species, they remain in the tadpole stage for as long as a year before they develop legs and lungs and move onto land as adults.

Eggs, tadpoles, and adult frogs are a crucial component of many ecological communities. A vital link in the food chain, they serve as food for aquatic insects, fish, mammals, and birds. But carnivorous adult frogs do their share of eating, too, feeding on mosquitoes, flies, and aquatic invertebrates. Some frogs even eat small fish, amphibians,

reptiles, birds, and rodents. A recent study found that a healthy frog population removes more than 50,000 insects per acre per year during the spring and summer months. Winter, on the other hand, is a critical time for all wildlife species, including frogs. Severe weather in many regions, combined with diminished food supplies,

Regional differences in the severity of the season ahead have a profound influence on how frogs and salamanders spend the winter. In the southern U.S., many frogs and salamanders are active throughout winter months. Winter rains in Florida, for example, can bring on a great deal of active migration, calling, and reproduction. In contrast,

freezing weather in the northern parts of the U.S. and Canada stops all amphibian activity and forces a period of hibernation.

PROVIDING HIBERNATION SITES

Because amphibians regulate their internal body temperatures with external heat sources, like the sun, they are known as ectotherms. When temperatures drop,

amphibians restrict their activity and diet, allowing them to survive extreme temperatures. Some, like the wood frog, which breeds inside the Arctic Circle, can even freeze to some extent without dying. However, all amphibians in cold areas need a place where they can be protected from the worst extremes of winter.

● **Ponds:** Hibernation sites differ among various groups of amphibians. Many aquatic amphibians hibernate in mud and debris at the bottom of a pond. Some spring breeders, like



Southern chorus frog. Photo by Marvin Bouknight, Oldfield Naturalist, S.C.

presents a formidable challenge, and many don't survive.

Instinct prepares wildlife to meet the hardships of winter in a variety of ways. Migratory birds have long since flown to wintering grounds in the southern U.S., Mexico, and Central and South America. Mammals have completed intense eating periods or hoarded this year's natural harvest in order to store fat for the lean months ahead. Amphibians, too, are getting ready for winter, and there is much you can do to lend a helping hand.

leopard frogs, also have been reported to hibernate in the sites they will use for breeding activity in the spring. In addition, some species have larval stages that require more than one growth season to metamorphose into adults. For all of these amphibians, it is important that water levels be sufficiently deep so the pond bottom doesn't freeze solid in midwinter. Refrain from draining ponds, as this practice can cause aquatic amphibians to perish.

● **Wooded Areas:** Other aquatic breeders, like wood frogs and mole salamanders, hibernate in their summer habitat locations, generally in wooded areas, and wait until spring to move to breeding ponds. These species typically hibernate under leaves, logs, rocks, and other cover objects. For them, as well as for the terrestrial breeders like many of the lungless salamanders, it is important to have sufficient cover on the forest floor. Leave rocks, limbs, debris,

leaves, and other cover materials in woodlands. Amphibians will burrow under cover for warmth and protection.

● **Streams:** Population studies suggest that certain species also migrate to streams to spend the winter in moving water that contains more oxygen than still water. It is not certain how common this wintering behavior might be, but it is likely to occur in places that get cold enough to freeze the surface of ponds, but not the running water in streams. Remove limbs and other debris from streams to ensure continuous water flow as the surface waters freeze.

● **Travel Corridors:** Regardless of whether frogs and salamanders move in the spring or fall, and regardless of whether they spend the winter in their breeding habitat, their summer habitat, or a third location, they all need to move back and forth between these different places. Make sure your

property includes a network of suitable habitat connections that link breeding, summer, and winter habitats together. Movement distances can be 500 feet or more between these habitats.

LEAPERS, CLIMBERS, WALKERS, AND SWIMMERS

There are close to 100 different species of frogs in North America, so what species you have on your property will depend on where you are. In general, there are several main groups that you are likely to see in most places. The accompanying chart describes the most common types of frogs.

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The Most Common Types of Frogs

Type	Description	Examples
Water Frogs or True Frogs	Tend to be large and green, with long legs for leaping; true frogs are found near water. Some, like the bullfrog, stay in ponds all summer, while others prefer to retreat to land after breeding takes place.	Bullfrog, Green Frog, Wood Frog, and Leopard Frog
Toads	Tend to be brown, dry, and warty, with short legs for hopping. They can be found hopping around in broad daylight (unlike most frogs, which are nocturnal).	Woodhouse's Toad, American Toad, Western Toad, Great Plains Toad, Canadian Toad
Treefrogs	Tend to be small with smooth skin. Range in color from green to brown and gray. They can be distinguished by the large sticky toe-pads that they use to climb. Treefrogs spend most of their time in the woods, but they are frequently seen in the spring at breeding time in shoreline vegetation near shallow ponds.	Green Treefrog, Gray Treefrog, Barking Treefrog
Chorus and Cricket Frogs	More frequently heard than seen, chorus frogs are tiny, generally green or brown frogs found near shallow bodies of water with clumps of grass or other vegetation used for cover. Although related to treefrogs, this group stays close to the ground and climbs little.	Spring Peeper, Ornate Chorus Frog, Western and Pacific Chorus Frogs, Little Grass Frog, Northern and Southern Cricket Frogs
Spadefoots	Smooth skin with scattered bumps and a characteristic small, sharp-edged "spade" on each hind foot. The spade is used for digging underground during dry weather. Generally found in dry, sandy, or loose soil. Can be distinguished from other toads by their vertical pupils. Spadefoots emerge with spring rains and head for breeding ponds or vernal pools for breeding. Take care when handling them, because many people have allergic reactions to their skin secretions.	Western, Plains, Eastern, and Couch's Spadefoot