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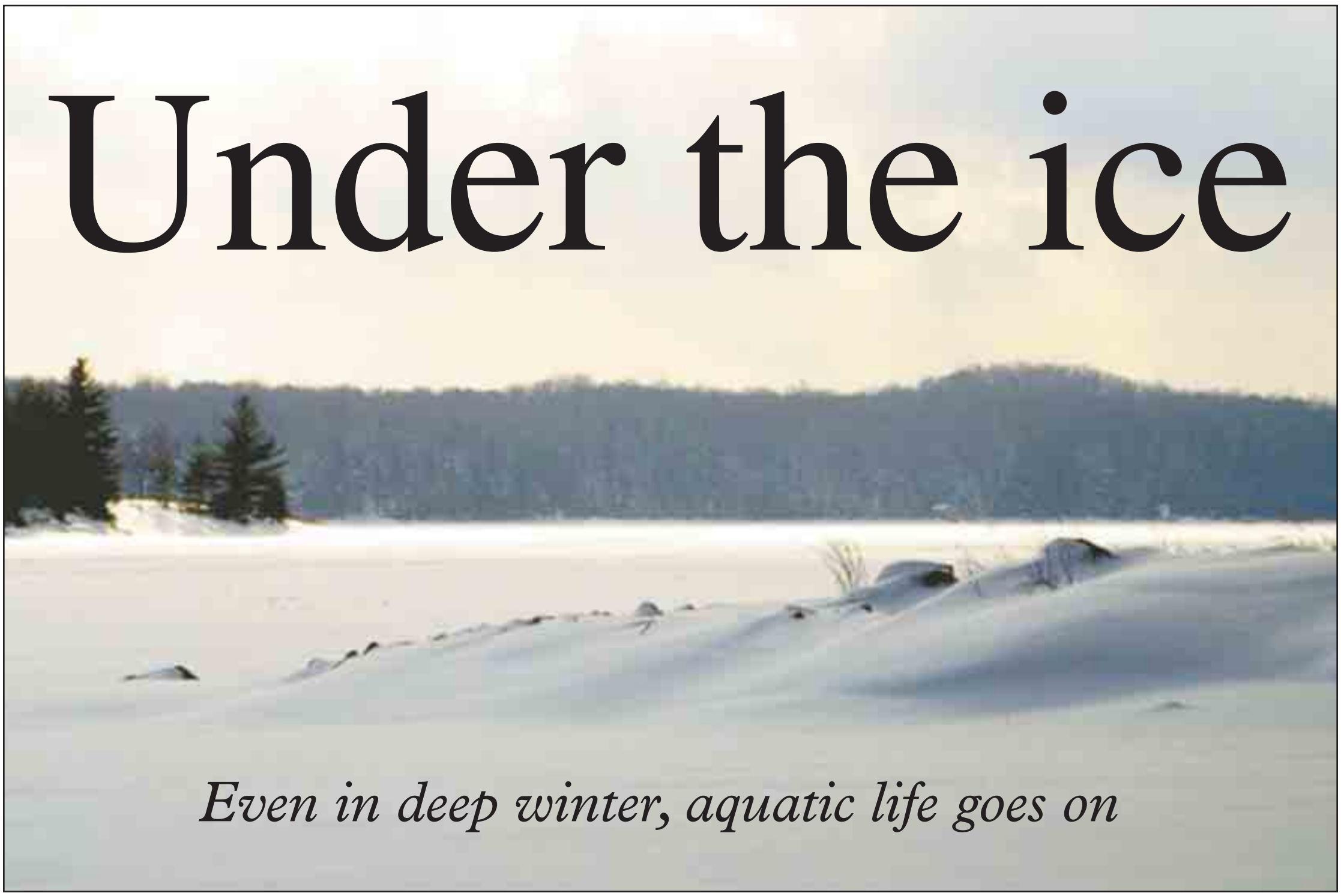
Under the ice



Even in deep winter, aquatic life goes on

Terry Carpenter, special to The Examiner

OUR CHANGING SEASONS
Drew Monkman

Despite the warmest January on record, the Kawartha Lakes have somehow managed to remain frozen this winter. Below the ice, aquatic life carries on, almost completely cut off from the surface world. Yet how often do we stop to think about the many adaptations, some physiological and others behavioural, that fishes, frogs and turtles call upon to survive until spring?

As a general rule, most fishes in winter stay close to the bottom, usually within 15 to 30 centimetres. Being cold-blooded, they congregate where the water is warmest and where activity requires the least energy. Most species also frequent fairly shallow parts of our lakes. Some, like northern pike and walleye, are usually in less than 10 metres of water. Lake trout, too, are usually found near the bottom. However, they will at times feed close to the icy ceiling of the lake. The levels of phytoplankton (microscopic floating plants such as algae) are high here because sunlight penetration through the ice permits photosynthesis to take place. Zooplankton (microscopic animals) feed on the phytoplankton, and baitfishes such as lake herring feed on the zooplankton. Herring, in turn, is a favourite food of lake trout.

Other fish species are almost totally inactive during the winter. Bullheads and carp settle into the muddy bottom of rivers and lakes and remain partially covered by sediment all winter. Most bass lie dormant under logs, weeds or rocks until the light and warmth of spring restore their energy and appetite. Smallmouth bass essentially starve themselves during winter. Consequently, very few are ever caught by ice fishermen. Their largemouth cousins, on the other hand, remain somewhat more active and are occasionally caught by winter anglers.

One species, however, is anything but inactive. Burbot, also known as ling, or freshwater cod, actually spawn under the ice on rocky lake bottoms throughout February and into early March. One of Ontario's lesser known fish species, the burbot is an elongated fish with a single barbel on the chin. Along with a few landlocked populations of Atlantic tomcod in the Maritimes, it is the only surviving freshwater member of the cod family. Spawning takes place at night in 30 centimetres to three metres of water. The fish form "writhing balls" of about a dozen intertwined individuals which actually move across the lake bottom. No nest is constructed and there is no parental care provided to the eggs or to the young. The eggs simply drift along the lake bottom, hatching within 30 days. Burbot are extremely productive, with large females laying up to one million eggs.

The burbot was long regarded as an undesirable fish because of its strange appearance and predacious feeding habits. Now, however, this species is being promoted as an excellent eating fish. This is being done in an attempt to take pressure off walleye and lake trout populations. Burbot can be found in most lakes in the Kawarthas.

Burbot is also one of many species that continue to feed during the winter, and are often caught by anglers. The most popular species with ice fishermen, however, are brook trout, lake trout, rainbow trout, splake, black crappie, yellow perch, whitefish, northern pike and walleye. Walleye, for example, do not change their habitat in winter except to avoid strong currents. As in summer, they continue to patrol weed beds where they hunt perch and other forage fishes.

Other than Lake Scugog, the Kawartha Lakes themselves are closed to fishing in the winter. However, ice fishing is permitted on many lakes in northern Peterborough County such as Pencil and Jack lakes. In this area, the ice fishing season opens Jan. 1 for northern pike, walleye, brook trout, brown trout and lake trout. The splake and rainbow trout season is open all year except for Dec. 24.

Winter is often a time of high fish mortality. Winterkill may occur in shallow lakes when the ice stays late, and there is deep snow cover. Under these conditions, there is insufficient sunlight penetrating the ice and snow to allow photosynthesis and the creation of new oxygen. Most of what oxygen is available is used up by bacteria to break down decaying vegetation. Large numbers of fish may therefore die of asphyxiation. Winter is also an especially difficult time for young fish. Many starve to death because of a shortage of appropriate-sized food such as plankton.

Frog species that are typically aquatic also spend the winter months under the ice. Unlike more terrestrial species such as wood frogs, spring peepers and treefrogs, all of which overwinter directly on the forest floor, green frogs, bullfrogs, mink frogs, pickerel frogs and leopard frogs simply lie on top of the mud at the bottom of ponds, marshes, lake edges and rivers. However, contrary to popular belief, they do not actually bury down into the mud itself. If they were to do so for any extended period of time, they would suffocate. In order for their skin to absorb oxygen, it must be in direct contact with oxygen-rich water. Frogs will even slowly swim around from time to time under the ice. It is not uncommon to see overwintering diving ducks on the Otonabee River come to the surface with frogs in their bills that they have just plucked from the river bottom.

Turtles, on the other hand, prefer to dig right down into the mud of pond and lake bottoms. They will also hide under sunken logs or crawl into cavities. Their metabolisms slow down to the faintest "spark of life," so oxygen requirements are minimal. Turtles absorb the dissolved oxygen they need through their skin, through their cloaca (anal opening) and through the lining of their mouth and throat. Although they can get by with very little oxygen, the small amount they do require is still absolutely essential to survival.

If oxygen levels become severely depleted, large numbers of turtles and frogs often die. Because these species are not freeze tolerant, bodies of water that are drained or drawn down in the winter can ice to the bottom, resulting in the animals freezing to death. Shallow, backyard ponds can be especially dangerous. Some sort of system such as a floating heater is necessary to keep the pond from freezing over completely and ice forming to the bottom. This also allows poisonous gases in the water to escape and keeps dissolved oxygen levels high.

What to watch for this week

The number of common goldeneyes and common mergansers on Little Lake and the Otonabee River usually begins to increase by mid-February. The male goldeneyes also intensify their courtship behaviour by bobbing their heads and whistling loudly.

Drew Monkman is a Peterborough teacher and author of Nature's Year in the Kawarthas. He can be reached at dmonkman1@cogeco.ca. Terry Carpenter is an award-winning local nature photographer. Go to www3.sympatico.ca/terrycarpenter/ to see more of his photographs and to contact him.