

Where Do Fish Really Go In Winter? Observations From New York Waters



By David M. Green
and Edward L. Mills
Department of Natural Resources
Cornell Biological Field Station
Bridgeport, NY

Reprinted from the Winter 1995 Edition of "Waterworks"

What happens to fish in the winter is an interesting question. Winter has different meanings to different fish depending on water temperature and climate. For example, winter to a Florida fish means different things compared to an upstate New York fish. Here, we consider winter to be a cold dormant period for fish. There is not a lot of information on fish in the winter - maybe that is because fishery biologists retreat to their desks, analyze data, and write reports in the winter! Nevertheless, some of us do get out and observe fish in the winter.

Biologists often characterize freshwater fish into three categories: coldwater, coolwater, and warmwater fish. You might think that there are no warmwater fish in New York, but that is not true! These categories actually refer to the upper temperatures preferred by these different fish groups. Coldwater fish include all of the trout and salmon species and burbot (freshwater cod); coolwater fish are represented by walleye, yellow perch, and northern pike; and largemouth bass, sunfish, and bullheads are considered warmwater fish. While the three categories refer to upper temperature preferences, they also reflect feeding activity and movement at lower temperatures. Thus, coldwater fish are more active and feed more at colder temperatures, and warmwater fish become more dormant as temperatures decline. Bass have been observed in an unconscious state, lying on their sides, appearing dead, when exposed to temperatures just above 32°F, while rainbow trout are more active at this temperature. Some North Atlantic Ocean fish even have a natural antifreeze in them so they can remain active below normal freezing temperatures.

Generally fish will seek the warmest water they can find in the winter. Water has a unique property that is very impor-

tant to the survival of aquatic organisms. It is most dense at 39°F; so as water cools, the warmest water is eventually near the lake bottom. The 32°F water is lighter and floats, then freezes. If water didn't have this unique property, lakes would freeze from the bottom up and kill most organisms. Because the warmest water is near the bottom, you will generally find fish in deep water in winter. In streams they will occupy the deepest holes or move downstream to areas where the stream is larger and deeper. Whatever the types of fish, winter activity, food, and water temperature are linked and influence where fish are found. Just ask a winter fisherman - fish usually occupy the deeper, warmer waters of lakes, and this is where fish are caught. In fact, most of the catch consists of cold or coolwater fish - fish that commonly feed during the winter.

In the winter of 1991-92, we observed fish with a video camera under the ice in the tributaries of the Hudson River. Fifty to ninety percent of the largemouth bass from the 40,000 acres of the freshwater tidal portion of the river moved into five locations in creek mouths or bays totaling only a little more than 300 acres. The bass were active, swimming slowly about, sometimes eyeing and bumping into the camera. In southeastern New York, young bass have been observed buried in the leaf litter around the edge of ponds during winter.

While feeding by warmwater fish is greatly reduced in the winter, coolwater fish feed more actively, and coldwater fish feed very actively in winter. Trout and salmon are active winter feeders. Lake trout have the coldest water temperature preference of any trout in New York and can even be found cruising near the surface of the unfrozen Finger Lakes in December.

Winter is a unique time in the life of a fish. They tend to aggregate mostly in habitats where they can find the warmest temperatures. However, aggregation can increase the risk of being located and caught by anglers. Life of a fish in winter is a restful period as feeding activity and movement are low. As spring and summer temperatures approach, life of a fish becomes more complex as needs for food and risks of predation increase. Perhaps if a fish had its choice, it would choose winter as its favorite season!

