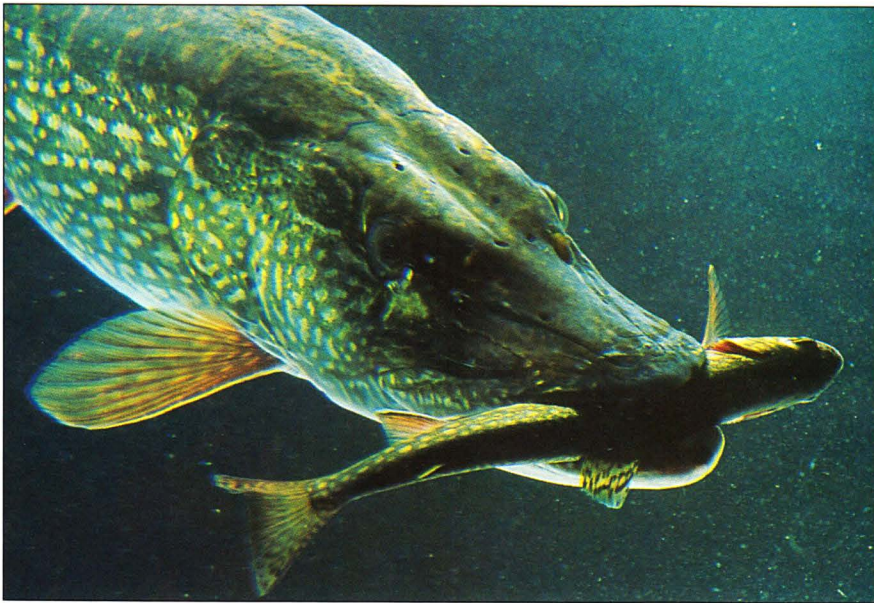


BITS & PIECES

BLENDING FISHERY SCIENCE WITH EVERYDAY FISHING

by Ralph Manns and Steve Quinn

PREDATORY ALARMS



Many species of fish emit powerful chemical signals—alarm substances—from their skin when they're attacked. The signals warn schoolmates of danger. Several recent studies have shown that when predators eat fish that are giving off alarm substances, they become chemically labeled with

the alarm substance, which warns other preyfish to beware.

Alicia Mathis and R. Jan Smith of the University of Saskatchewan* fed fathead minnows to pike and then collected water from the tanks containing the pike. When they added a small amount of this water to a tank containing

other fathead minnows that had never encountered pike, the minnows exhibited fright reactions after smelling the alarm substance. But fatheads didn't react to water in which pike had eaten minnows that did not produce the alarm substance.

In another study**, brook trout avoided water from Atlantic salmon that had eaten goldfish, but not water from salmon that had eaten mealworms. Apparently, when a predator eats a minnow, it issues an immediate warning as the damaged skin of the minnow emits an alarm substance. When the predator digests the minnow, more alarm substance is given off in the predator's feces for several days, marking it as something other minnows should avoid.

Bruce Carlson

* Mathis, A. and F. J. F. Smith. 1993. Chemical labeling of northern pike by the alarm pheromone of fathead minnows. *J. Chem. Ecol.* 19: 1967-1977.

** Keefe, M. 1992. Chemically mediated avoidance behavior in wild brook trout: the response to familiar and unfamiliar predatory fishes and the influence of fish diet. *Can. J. Zool.* 70:288-292.

COOPERATIVE SALMON STOCKING STUDY

Stocking fish that are large enough to survive and begin eating natural prey means a successful plant and good fishing in the future. But each day in a hatchery drains dollars and adds to mortality.

To determine the optimum size to release chinook salmon fingerlings in Lake Ontario, the Professional Captains United, Niagara County Promotion, and the New York Department of Environmental Conservation (DEC) began a cooperative study in 1992. During the first year of a three-year program, they stocked 60,000 chinook fingerlings of different sizes and marked them by clipping a pectoral fin.

Professional Captains United members and workers at the Salmon River Hatchery in Altmar, New York, the most productive facility on the Great Lakes,



released young salmon in Eighteen Mile Creek in Niagara County, where they should imprint and return to spawn between 1994 and 1997. DEC personnel will collect data on survival during their Lake Ontario creel surveys, by recording location, number, and size of caught marked and unmarked fish.

Professional Captains United members will check chinook catches at fish cleaning stations at Eighteen Mile Creek, the Niagara River, and Oak Orchard Creek during the salmon runs in the falls of 1994 through 1997. Professional Captains United and DEC also will monitor lake and tributary temperature to determine alternative stocking sites for future releases.

John Field