

# Opportunistic Foraging by Largemouth Bass (*Micropterus salmoides*)

JAMES R. HODGSON

*Division of Natural Sciences, St. Norbert College, De Pere, Wisconsin 54115*

*and*

JAMES F. KITCHELL

*Center for Limnology, University of Wisconsin, Madison, 53706*

**ABSTRACT:** During 1980, adult largemouth bass diets in Peter and Paul lakes (Michigan's Upper Peninsula), included prey ranging in size from zooplankton (*e.g.*, *Daphnia*) to vertebrates (fishes, amphibians, reptiles and small mammals). A partial winterkill in 1980-1981 reduced bass populations in both lakes by as much as 50%. Given the observed reduction in adult bass density and presumed reduction in intra-specific competition for food in 1981, we anticipated dietary changes as a consequence of more food being available to each surviving bass.

Two approaches to foraging theory were compared in this study. Functional response models predict that density-dependent effects should be seen simply as increased numbers of each prey type eaten and that all prey will remain in the diet. By contrast, optimal foraging theory predicts that an increase in overall prey density will result in lower ranked prey items being dropped from the diet in an inverse order of ranking; the forager should become more specialized as net energy gain increases.

Our data demonstrate opportunism in bass foraging behavior but provide support for the general tenets of optimal foraging theory. Large prey in the size range of the cost-curve nadir of adult bass were more abundant in the 1981 stomach samples. Lowest-ranked prey (*e.g.*, *Daphnia*) became less important in 1981. Overall diet breadth of bass decreased. Growth rates of adult bass were greater in 1981 than 1980.