

## Niche dynamics of largemouth bass (*Micropterus salmoides*) in a north temperate lake

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### Introduction

Fish assemblages are routinely influenced by competition (MATTHEWS 1998). Commonly documented responses to interspecific competition include declines in growth rates and spatial and habitat changes with foraging shifts most conspicuous in interacting species (ROSS 1986, PERSSON & GREENBERG 1990, TREMBLAY & MAGNAN 1991, HE et al. 1994). Most evidence of competition between piscivores has been indirect (MARWITZ & HUBERT 1997), whereas direct evidence of food resource partitioning has come from north temperate lakes studies that demonstrated interactions between closely related species (WERNER 1979, NILSSON & NORTHCOTE 1981, MITTELBACH 1984, 1988, COCHRAN et al. 1988, HODGSON et al. 1991). However, understanding the mechanisms allowing competing species to partition resources remains fragmented.

This study examines interspecific interactions of trophic dynamics among three interacting species of piscivores (largemouth bass *Micropterus salmoides*, LMB; smallmouth bass *M. dolomieu*, SMB; and yellow perch *Perca flavescens*, YP) in a small experimental oligotrophic lake in the Upper Peninsula of Michigan, USA. Long Lake has not experienced any angling exploitation for decades, subsequently providing a unique opportunity for us to examine a fish assemblage free from human manipulation, where interspecific trophic interactions have had sufficient time to develop. Our objectives were to describe the effects of interspecific competition on the diet of LMB when impacted by two other piscivores, SMB and YP. Specifically, we concentrated on the piscivory of LMB before and after extirpation of SMB from the assemblage. During 1988–1990 both bass species were present, but in 1999 only LMB were present. YP were present during the entire study. Because of the more dominant piscivore position of SMB in the assemblage (HODGSON et al. 1997), our expectation was that in the absence of SMB (1999), LMB would become a more dominant piscivore and increase their proportion of fish prey.

**Key words:** largemouth bass, smallmouth bass, *Micropterus*, trophic niche, competition