

# INTERACTIONS AMONG THREE TOP-LEVEL PREDATORS IN HARLAN COUNTY RESERVOIR, NEBRASKA<sup>AFS</sup>

Nathan W. Olson and Christopher S. Guy  
Montana Cooperative Fishery Research Unit  
Department of Ecology, Montana State University  
Bozeman, MT 59717  
cguy@montana.edu

Keith D. Koupal  
Nebraska Game and Parks Commission  
District VI Office  
1617 1st Avenue, Kearney, NE 68847

Walleye (*Stizostedion vitreum*), white bass (*Morone chrysops*), and hybrid striped bass (*M. chrysops* x *M. saxatilis*) are common top-level predators in Midwestern reservoirs. However, the ecology and interactions among these three species are not well understood. Therefore, we compared food habits and vertical distribution of walleye, white bass, and hybrid striped bass to quantify resource overlap. Food habits and vertical distribution data were collected during the evening, i.e., 2000 h to 0200 h, monthly from June through September 2002 and 2003. Food habits and vertical distribution data were collected from 554 white bass (155-392 mm TL), 241 hybrid striped bass (315-720 mm TL), and 181 walleye (231-962 mm TL). Diet overlap was high for hybrid striped bass and walleye in June (Pianka index [ $O_{jk}$ ] = 0.935), and was high among all three predators from July through September (Pianka index [ $O_{jk}$ ] = 0.920-0.996). Primary diet items consisted of chironomids and freshwater drum (*Aplodinotus grunniens*) in June and gizzard shad (*Dorosoma cepedianum*) from July through September. Walleye and hybrid striped bass exhibited the greatest diet breadth (Levin's standardized index [ $B_A$ ] = 0.031-0.130) during all months. Vertical distribution overlapped for all species during June in both years. Our results indicate substantial overlap among walleye, white bass, and hybrid striped bass with respect to diet and spatial distribution in Harlan County Reservoir. Thus, it is likely that competition could occur among these species when resources are limited.