

Status of the Lake St. Clair fish community and sport fishery, 1996-2001.

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Abstract.—Lake St. Clair is located near the geographical center of the Great Lakes and is bisected by a commercial shipping lane and an international boundary. With a large human population in close proximity, the lake provides economically and socially important recreational opportunities for the people of southeast Michigan. The fish community of the lake is an important recreational resource. Since the early 1980s, the lake underwent invasions of white perch, spiny water flea, zebra mussel, round goby, and tubenose goby. Their impact on this resource has not been well documented. Using trawls to sample fish populations and an angler diary program to collect data on recreational fishing effort and catch, this study documents the status of the fish community in the lake between 1996 and 2001. Trawl sampling revealed a diverse fish community with 62 fish species collected, including 8 exotic species, 3 threatened species, and 2 endangered species. Species richness was similar between nearshore and offshore zones, but some species occurred exclusively within one zone or the other. Trawl catches were used to create three-dimensional lakewide distribution maps for each species. The spatial distribution of each species was then categorized based on visual inspection of the maps. Ten species were found only within the Anchor Bay area of the lake. Unique habitat features or more intensive sampling in Anchor Bay could have been factors in this distribution pattern. A few temporal trends in species abundance were identified. A general trend of declining abundance for three native benthic species (Johnny darter, northern logperch, and trout-perch) was attributed to competitive interactions with the exotic round goby. Yellow perch recruitment and abundance varied across years. The 1993, 1994, and 1998 year classes were strong, while the 1992 and 1997 year classes were weak. Lake St. Clair yellow perch of all ages were near the statewide average length. Yellow perch foraged extensively on burrowing mayflies. Round gobies were the fish most frequently found in yellow perch stomachs and were the second most frequent food item in walleye stomachs. Catch rates derived from the angler diary program did not reveal any trends across years for any of the four major sport species (walleye, yellow perch, smallmouth bass, or muskellunge). Results of this study suggest that nearshore habitats, particularly in the delta area, are important for maintaining species richness and should be protected. Management efforts to protect the fisheries resources of the lake should also include steps to avoid further exotic species introductions.

Lake St. Clair is centrally located in the connecting channel between Lake Huron and Lake Erie in the Laurentian Great Lakes (Figure 1). The interface between the St. Clair River and Lake St. Clair is a unique freshwater delta system with

expansive marshes. For decades, the lake supported a recreational fishery renowned for smallmouth bass, muskellunge, walleye, and yellow perch (see Appendix 1 for scientific names of fishes). These predator populations were