

CHAPTER 1

GENERAL INTRODUCTION

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Since the late 1970s, the previously threatened double-crested cormorant (henceforth called cormorants; common and scientific names of organisms in this report are listed in Appendix 1) has made an impressive comeback in the Great Lakes (Scharf and Shugart 1981, Ludwig 1984, Weseloh et al. 1995) and now numbers as many as 50,000 in Michigan waters alone (Chapter 3). From approximately 1940 through 1960, cormorants were almost extirpated from the Great Lakes due to dichloro-diphenyl-trichloro-ethane (DDT)-related eggshell thinning and hatching deformities (e.g. Weseloh et al. 1983). The recent explosion of cormorants has been attributed to a reduction in the concentration of DDT and its metabolites in the water, as well as protection from human disturbance, increased nesting and foraging habitat on artificial reservoirs (Campo et al. 1993, Simmonds et al. 1995), and a ready food supply in the form of introduced alewife in the Great Lakes (Price and Weseloh 1986, Ludwig et al. 1989). Since 1980, diet studies in the Great Lakes show that alewife is the most prominent prey item for cormorants in nearly every location where alewife and cormorants are found together (Belonger 1983, Craven and Lev 1987, Karwowski et al. 1992, Ludwig et al. 1989, Ross and Johnson 1994, Weseloh and Ewins 1994). Cormorants appear to be generalist feeders that consume prey species on the basis of energetic profitability, which often results in the consumption of commercially or recreationally important species such as stocked trout or salmon fingerlings, yellow perch, and walleye.

Yellow perch populations have been declining in many areas of the Great Lakes for several decades, most likely as a result of repeated recruitment failures (Lucchesi 1988, Haas and Schaeffer 1992), and fisheries managers are now concerned that predation pressures from the newly abundant and growing

populations of cormorants will either contribute to the further decline of yellow perch fisheries or hold them at unacceptably low levels.

In Les Cheneaux Islands of northern Lake Huron, the perch fishery, which had for decades been economically important to the area (Diana et al. 1987), has experienced a marked decline since the late 1970s (Lucchesi 1988). Concern from anglers and local citizens helped generate a Michigan Department of Natural Resources (MDNR) study in the mid-1980s, which revealed that growth overfishing (over-harvest to the point where size at harvest declines dramatically) may have been at least partially responsible (Lucchesi 1988). A 175-mm minimum size limit was instituted in 1987 in an effort to reduce mortality for smaller fish, but it did not help the fishery as predicted (see Figure 4-1). During this time abundance of cormorants have increased in the area. Cormorants naturally reestablished at St. Martins Shoal, just west of Les Cheneaux Islands, in 1980 after many years of absence, and in 1995 the local population occupied three nesting colonies and numbered approximately 4,000 breeding pairs plus an estimated 2,000 to 3,000 juvenile birds (Chapter 3).

The purpose of this project was to evaluate cormorant-perch interactions in Les Cheneaux Islands area. In particular, we evaluated population trends in cormorants and yellow perch, then determined the effect of cormorant foraging on the yellow perch fishery. This report documents a series of independent but related studies on various aspects of the project. Major funding for the project came from Michigan Department of Natural Resources, with supplemental funding from the U.S. Fish and Wildlife Service and the University of Michigan.

This report is subdivided into eight chapters and five appendices, each with separate authors who researched each component. The main