

STATE OF THE STRAIT MONITORING FOR SOUND MANAGEMENT



A BINATIONAL CONFERENCE ON THE DETROIT RIVER ECOSYSTEM

Convened December 2004 by Great Lakes Institute for Environmental Research, University of Windsor, The Greater Detroit American Heritage River Initiative of Metropolitan Affairs Coalition, The Detroit River Canadian Cleanup, The Detroit River International Wildlife Refuge, The Detroit Water and Sewerage Department, and other organizations.

Cover photos: photos left and center (upper and lower): Recreational fishing in the Huron-Erie Corridor (lower center photo by Kurt Byers, Michigan Sea Grant Extension, courtesy of United States Environmental Protection Agency, Great Lakes National Program Office; other photos courtesy of OMNR); upper right: Scientist sampling water, benthic invertebrates and sediment in Lake Erie (photo courtesy of Environment Canada and University of Windsor); lower right: Longear sunfish (*Lepomis megalotis*) (photo courtesy of Nicolas Lapointe)

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MONITORING FOR SOUND MANAGEMENT

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6.8. TRENDS IN BALD EAGLE POPULATION SIZE AND PRODUCTIVITY ALONG THE DETROIT RIVER AND ON THE NORTH SHORE OF LAKE ERIE

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Introduction

The bald eagle (*Haliaeetus leucocephalus*) is classified as endangered in Ontario and has been identified as an indicator of aquatic ecosystem health by the Lake Erie and Lake Ontario Lakewide Management Plans and the State of the Lakes Ecosystem Conference (Environment Canada and the U.S. Environmental Protection Agency 2003). Bird Studies Canada (BSC), in partnership with the Ontario Ministry of Natural Resources (OMNR) and Canadian Wildlife Service (CWS), coordinates a research and monitoring program in southern Ontario aimed at monitoring the health of the southern Ontario bald eagle population. This program started in the 1970s and now includes nest monitoring, monitoring of contaminant levels in eaglets, and a new program studying eagle movements. Within Michigan, it has been the cooperative effort of the U.S. Fish and Wildlife Service, Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality (MDEQ), Clemson University and Michigan State University to record and monitor bald eagle activity within the states. Results from both U.S. and Canadian programs are used by a management team to assess bald eagle population levels and productivity.

Nest Monitoring

Methods

In Canada, BSC annually tracks the fate and productivity of every bald eagle nest on the north shores of Lake Erie, Lake Ontario and Lake Huron using a network of volunteer nest monitors and landowners. While most nests are monitored from the ground, special aerial surveys are conducted in Essex County to monitor nests that are difficult to view from the ground. In Michigan, most nest monitoring is done by trained biologists with some volunteer assistance.

Results

Data collected by BSC bald eagle monitors show that both the number of nests and nest success has increased dramatically over the last two decades in southern Ontario (Figure 1). Every year, two or three new bald eagle territories are reported, resulting in a slowly increasing population. Nesting productivity (defined as the mean number of chicks fledged per nest) has stabilized in recent years to approximately 1.4–1.6 young/nest (Figures 2 and 3), which is comparable to that of bald eagle populations in other areas.

In 2004, there were 38 noted bald eagle territories in southern Ontario, 81% containing active nests. In 2004, there were four bald eagle nests on the Canadian side of the Detroit River and an additional two nests within the western basin of Lake Erie (i.e. Essex County). Two of these nests have been active since the early 1980s, and two have been active since the early 1990s. Michigan has an estimated total of over 400 breeding areas, but lacks breeding activities along the Detroit River shoreline. The United States side of

the Detroit River has recorded low productivity within the Detroit River region and has only recorded two bald eagle nests along the river. The nests have only been in use since 1999 and have only yielded a single young since establishment (Dave Best, U.S. Fish and Wildlife Service, Michigan).

Conclusions and Recommendations

While the re-colonization of the Detroit River by bald eagles is a positive sign, these birds are vulnerable to high levels of disturbance, contamination, and ongoing habitat loss. With a scarcity of large mature trees to replace nesting trees that have fallen during windstorms or weather events, bald eagles may be unable to find suitable alternate nest trees and therefore be forced to leave a previously occupied territory. Dave Best of the U.S. Fish and Wildlife Service has taken part in past efforts to augment nesting habitat through the use of nesting platforms in areas that did not have suitable long-lived nesting trees. Bird Studies Canada has worked to establish nesting platforms in southern Ontario, and monitoring suggests that the most effective platforms are those built in pre-existing trees, which is consistent with reports from Michigan (Dave Best).

Monitoring of Contaminant Levels

Methods and Results

In addition to regular nest monitoring, every five years all nests within southern Ontario are accessed to band and blood sample the eaglets. Blood and feather samples are taken to monitor levels of contaminants (both organochlorines and heavy metals) in the tissues of bald eagles hatched along the north shore of Lake Erie. Analyses of contaminant data by CWS have revealed that levels of organochlorines (DDE and PCBs) have declined dramatically over the last 20 years. In the early 1980s, levels of PCBs and DDT were so high that bald eagles suffered from reproductive impairment due to egg shell thinning and life-threatening deformities such as crossed bills. Reproductive impairment was so severe that in 1980 the Lake Erie bald eagle population experienced complete reproductive failure. United States bald eagles nesting along the shores of the Detroit River have not rebounded from such a population crash possibly due, in part, to a lack of habitat characteristically preferred by nesting pairs.

Discussion

While the increase of the bald eagle population and the concurrent decline of organochlorines suggest that the population is recovering in many parts of the lower Great Lakes, recovery has been modest in the Lake Ontario basin. There are ongoing concerns about the viability and long-term stability of the southern Ontario bald eagle population. Observations of nest turnover rates collected by volunteer nest monitors suggest that bald eagles in southern Ontario have shortened life spans. In addition, over the last few years, several bald eagles found dead in Ontario had elevated levels of both mercury and lead in their bodies. Long-term exposure to such contaminants can limit an eagle's reproductive capabilities, alter their behaviour, impair their foraging abilities, increase their susceptibility to disease, and even result in death. Determining whether heavy metal exposure is responsible for decreased longevity is one of the long-term objectives of this project.

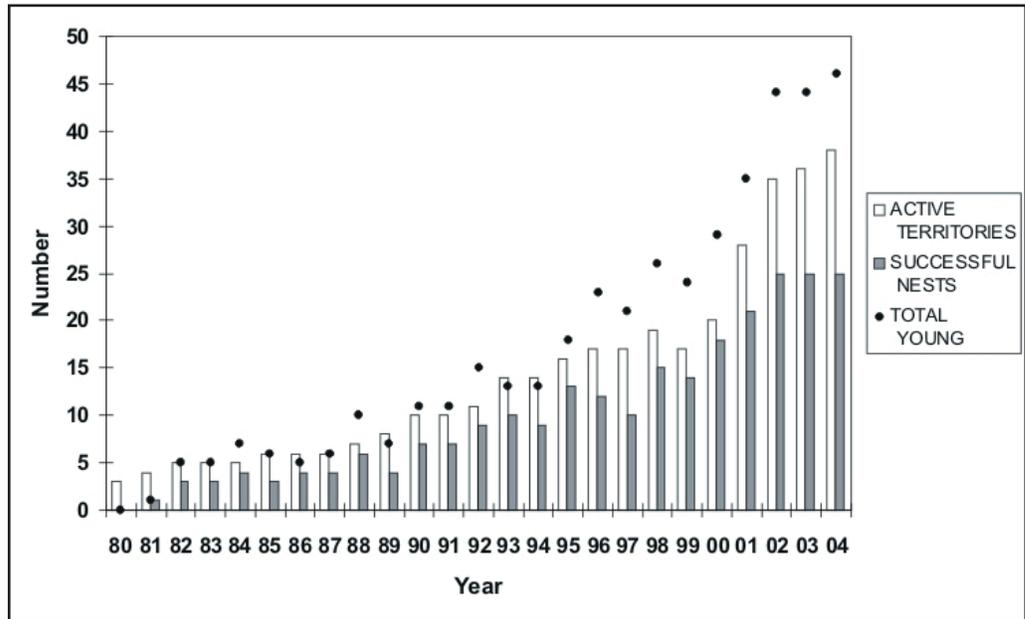


Figure 1. The number of successful bald eagle nests and active territories in southern Ontario (bars), and the total number of eaglets produced (dots) from 1980–2004. A nest was classified as successful if at least one young survived to fledging.

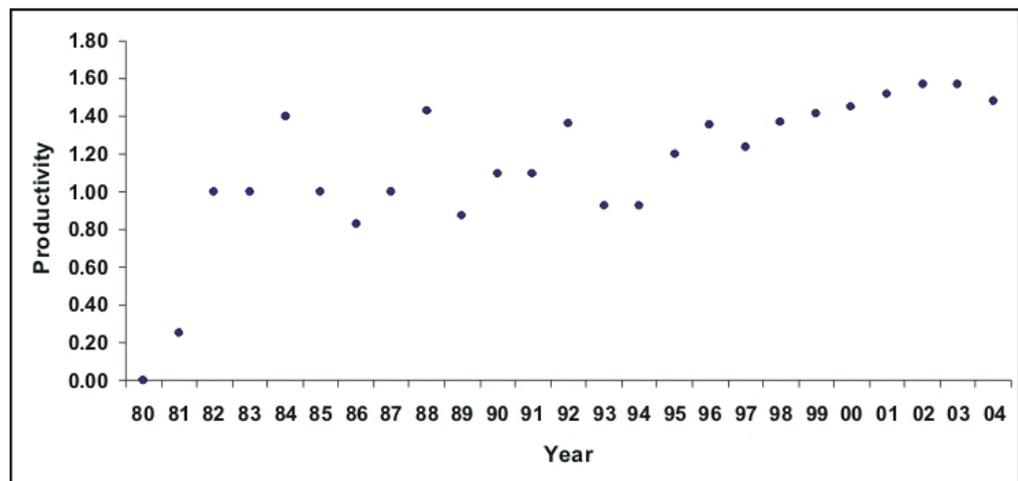


Figure 2. Productivity (mean number of chicks fledged per active nest) of bald eagles in southern Ontario between 1980 and 2004.

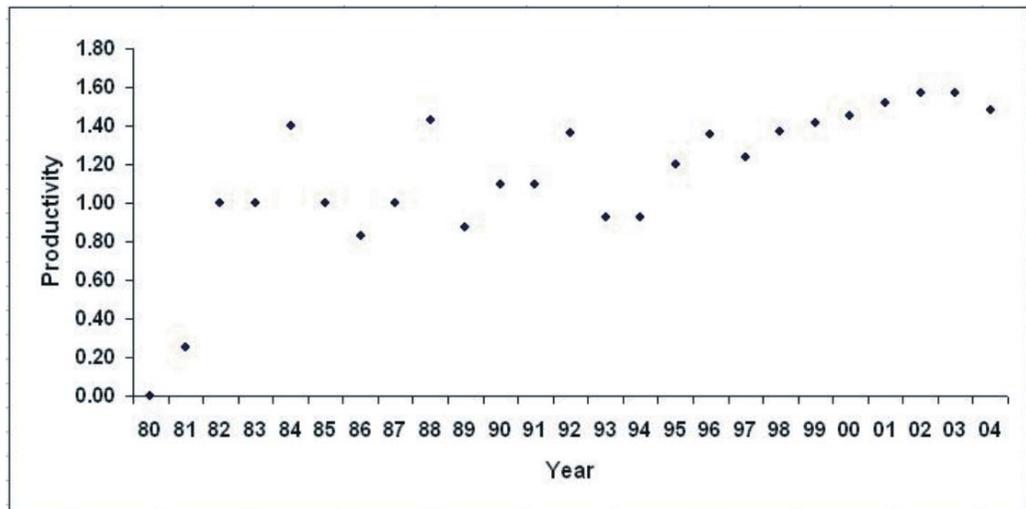


Figure 3. Number of eaglets produced per year per nest in Essex County, Ontario, from 1980–2004.

Tracking Eagle Movements

In 2004 BSC, in partnership with OMNR and CWS, launched a new program called Destination Eagle to investigate juvenile eagle heavy metal exposure. This program uses satellite telemetry to follow the movements of juvenile eagles for a five-year period. Location data will be used to identify areas where juvenile birds are spending the majority of their time, and perhaps becoming exposed to harmful contaminants. Three bald eagles were equipped with satellite telemetry units in June 2004. One eaglet died near its natal area, and the other two are moving throughout the Great Lakes basin. There are efforts to expand the program in 2005 to track more bald eagles from the Lake Erie watershed. This project will not only reveal important information on the movements of juvenile eagles and eagle habitat preferences but also increase public awareness of the importance of aquatic ecosystem health.

References

Environment Canada and the U.S. Environmental Protection Agency. (2003). *State of the Lakes 2003*, Environment Canada and the U.S. Environmental Protection Agency, En40-11/35-2003E.