

# Lock 19 and Rice Lake Walleye Recruitment Study

March-April 2004



## **Background**

Rice Lake supports one of southern Ontario's largest and most productive inland fisheries. Within the fishery, the most sought after species is walleye. In recent years, surveys by the Ontario Ministry of Natural Resources (O.M.N.R.) have determined the abundance of walleye has declined in Rice Lake. Of particular concern is the low production of young walleye in 5 out of the 6 years since 1997.

Over the past 30 years the fish community of Rice Lake has undergone significant environmental changes that do not favour walleye, including reduced productivity, increased water transparency, high fishing pressure, extensive shoreline development, water level fluctuations and the invasion of exotic species such as zebra mussels, bluegill and black crappie.

Bluegill became established in the 1970's and black crappie in the 1980's. The high abundance of these species in the late 1990's coincides with the decline in walleye production. There is speculation that crappie may have a negative impact on the walleye population especially with the increased water transparency. The nature and extent of the interaction is unknown.

## **Determining the Problem**

The Ontario Federation of Anglers and Hunters' (O.F.A.H.) Fisheries Research Unit, with funding provided by Shimano Canada, O.M.N.R., Fishing Forever, and the Government of Canada's Job Creation Partnership, will be looking at several possible reasons for the low production of young walleye.

## **Our Study**

The O.F.A.H. Fisheries Research Unit plans to examine two potential factors that may be limiting reproduction of the Rice Lake walleye population:

- 1) **Walleye spawning success at Lock 19 in the Otonabee River and shoals on Rice Lake**
  - Determine the number of walleye spawning at each site.
  - Determine the number of larval walleye hatching at Lock 19. This information can be compared to work done in the late 1980's and related to the number of spawning walleye.
  - Compare flow data for Lock 19 over the past two decades with year-class strengths of walleye.
- 2) **The extent to which black crappie prey upon walleye fry**
  - Examine black crappie stomachs immediately following the walleye spawning period to determine whether walleye fry make up a significant portion of the black crappie diet.
  - Use archived scales to determine age, growth, year-class strength and relative abundance of black crappie in Rice Lake to look for historical relationships with the abundance of young walleye.

## **Public Notice**

### *Walleye Spawning Surveys*

During the walleye spawning period, typically within the first few weeks of April at Lock 19, O.F.A.H. Fisheries Research Unit staff will be conducting walleye spawning counts to determine where walleye are spawning, determine how many fish are using Lock 19 as a spawning area, and determine the peak spawning period. This work is conducted at night and requires the use of lights to survey under water. This is purely observational and has little effect on the spawning success of the walleye.

Following the river spawning period, similar work will be taking place around several of the known walleye spawning shoals in Rice Lake. Again, this work will require O.F.A.H. Fisheries Research Unit staff to be counting walleye on the spawning shoals at night.

### *Black Crappie Diet Study*

Approximately two weeks following the peak of the walleye spawning activity walleye eggs hatch into fry and start to disperse from the spawning locations. This usually occurs in late April and early May. During this period, O.F.A.H. Fisheries Research Unit staff will be capturing black crappie by a number of methods, including angling. These fish will have stomach contents collected and preserved to determine the extent to which black crappie are feeding upon walleye fry. Tissue will also be collected for laboratory analysis to verify these observations. Also, calcified structures will be collected from the fish for age and growth interpretation. This data will be used to calculate year-class strengths and how temperature impacts black crappie recruitment.

## **For more information please contact:**

Dave Brown  
O.F.A.H. Fisheries Biologist  
(705) 748-6324

Chris Robinson  
Research Biologist  
O.F.A.H. Fisheries Research Unit  
(705) 748-6324

Helen Ball  
Biologist  
Peterborough District O.M.N.R.  
(705) 755-3302

## **Thanks to the following for their continued support and contributions:**

- Local Residents whose property we accessed to conduct our research.
- Government of Canada's Job Creation Partnership
- The following contributors:

 SHIMANO

