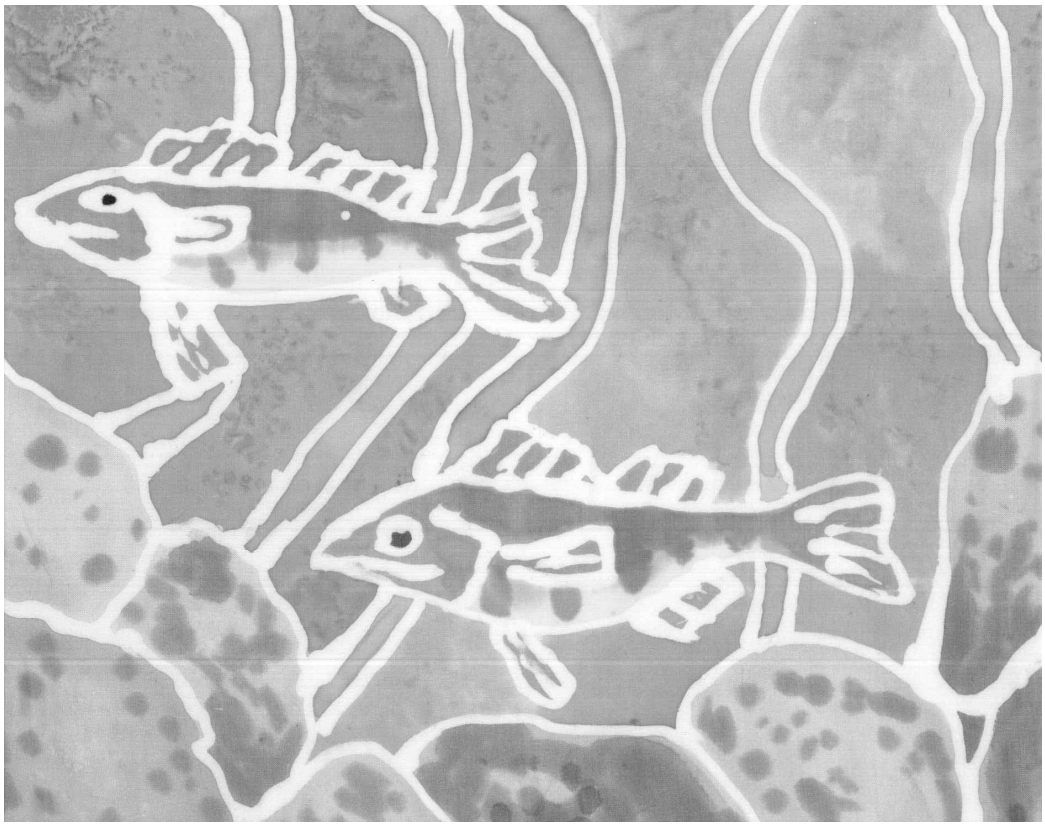
Status of Yellow Perch in Lake Michigan 2009



[Yellow perch enjoying Lake Michigan's "submerged terra incognita" (Janssen et al. 2005) – from a tie-dyed wall hanging by J. Jonas.]

REPORT TO THE LAKE MICHIGAN COMMITTEE
Windsor, Ontario
March 23, 2010

Prepared by:
Dan Makauskas (ILDNR) and David Clapp (MDNRE)

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Yellow Perch Task Group Contact List: 2009-2010

This report was prepared from information provided by the following Lake Michigan Yellow Perch Task Group members and contributors. Questions regarding data from a specific area of Lake Michigan, or concerning a specific aspect of Lake Michigan yellow perch research, should be directed to the contributor of that information (see Appendix 1 for a map of lake areas).

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Status of Yellow Perch in Lake Michigan

Yellow perch assessment activity is occurring throughout the lake, with numerous agency and university personnel sampling perch utilizing various gear types in different seasons. Selected parts of this information are presented here, in three sections. The first section covers the relative abundance of adult (age 1 and older) yellow perch. The second section examines the most recent age structure data available for different parts of the lake. The final section consists of estimates (or indices) of juvenile yellow perch recruitment: most of these data come from collections of age-0 yellow perch. Coordinated regulation of yellow perch harvest has been an important part of perch management in recent years. Current commercial and recreational regulations for all Lake Michigan jurisdictions are included as a final section of this status report.

Adult Relative Abundance

The data assembled were collected with either gill nets or bottom trawls (Figures 1 to 7). Generally, this information shows a long-term decline in adult yellow perch abundance. The longer data series show a peak abundance in the mid- 1980s to early 1990s, followed by significant declines through the early 2000s (Figures 1-2, 5-7). Increases in catch-per-unit-effort resulting from recruitment of the 1998, 2002, and 2005 year classes are particularly apparent in some data series (e.g., Figures 3 and 6). Data from common gear types (graded-mesh gill net) fished in all jurisdictions are presented in Figure 7; these index data show that current abundance remains well below the historically observed abundance of the late 1980s and early 1990s.

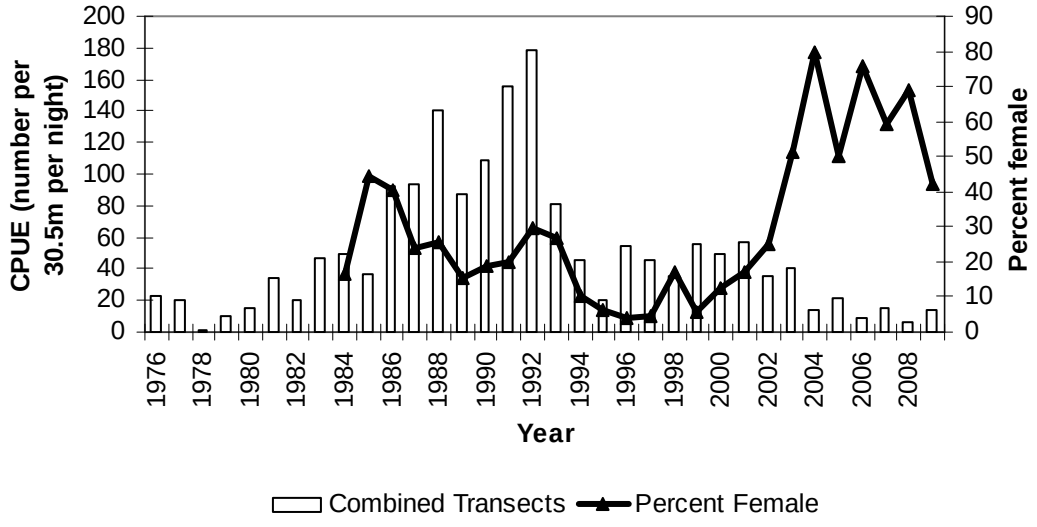

Figure 1. Adult yellow perch relative abundance and percent female in the Illinois waters of Lake Michigan. (ILDNR; data from spring gill net assessment, Chicago and Lake Bluff, IL, 1976 – 2009.)

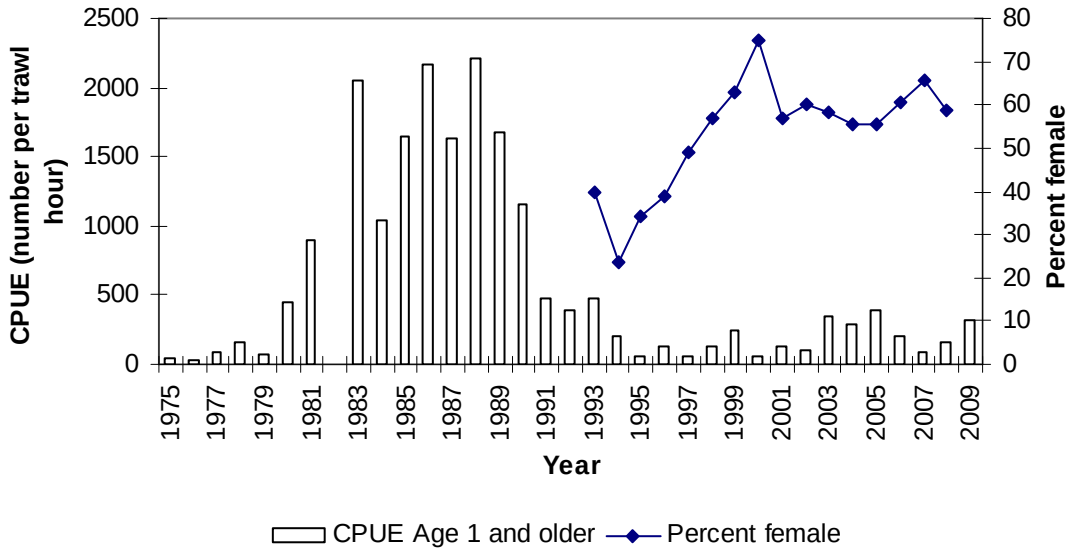

Figure 2. Adult yellow perch trawl CPUE and percent female in Indiana waters of Lake Michigan. (Ball State University; data from summer trawl survey at sites M and K in 1975 – 2009.)

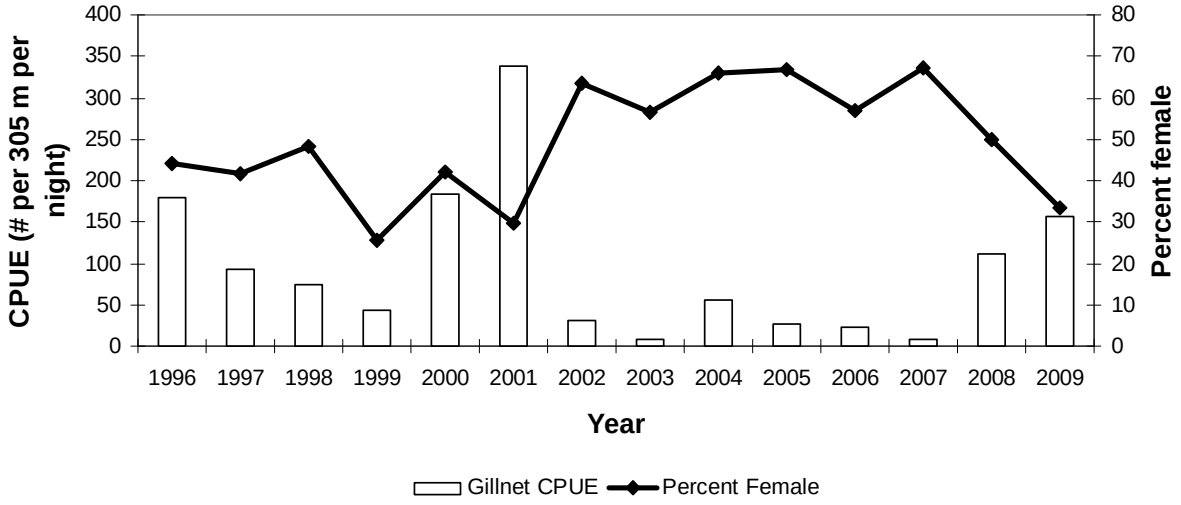

Figure 3. Adult yellow perch gill net catch-per-unit-effort and percent female in the catch at four southern Lake Michigan ports (Grand Haven, Saugatuck, South Haven, and St. Joseph, MI). (MDNRE; data from April-June, 1996 – 2009.)

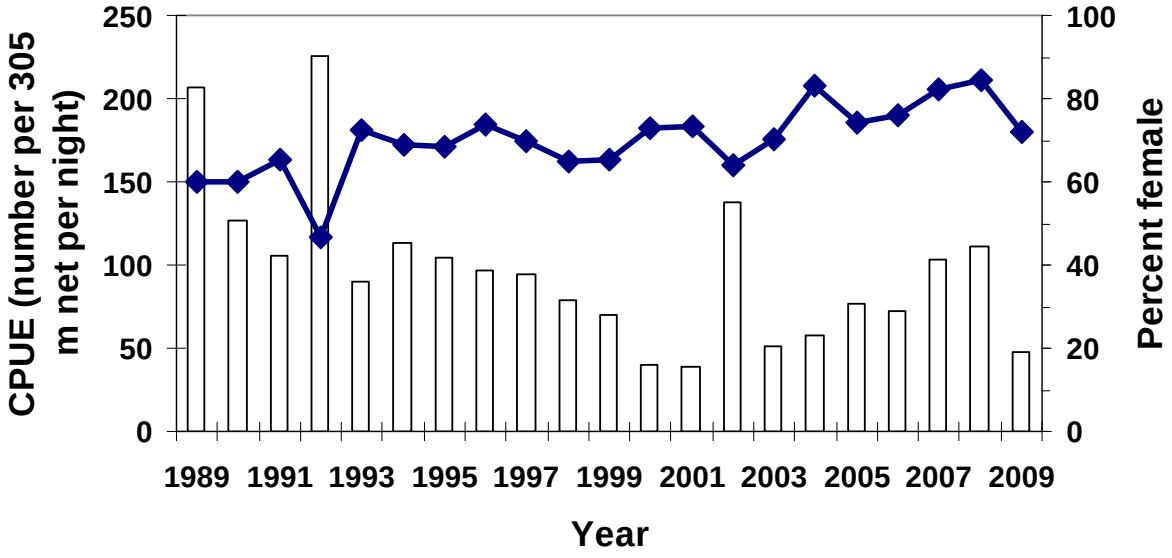

Figure 4. Adult yellow perch gill net catch-per-unit-effort and percent female in the catch in Bays de Noc. (MDNRE; data from August to October, 1989 – 2009.)

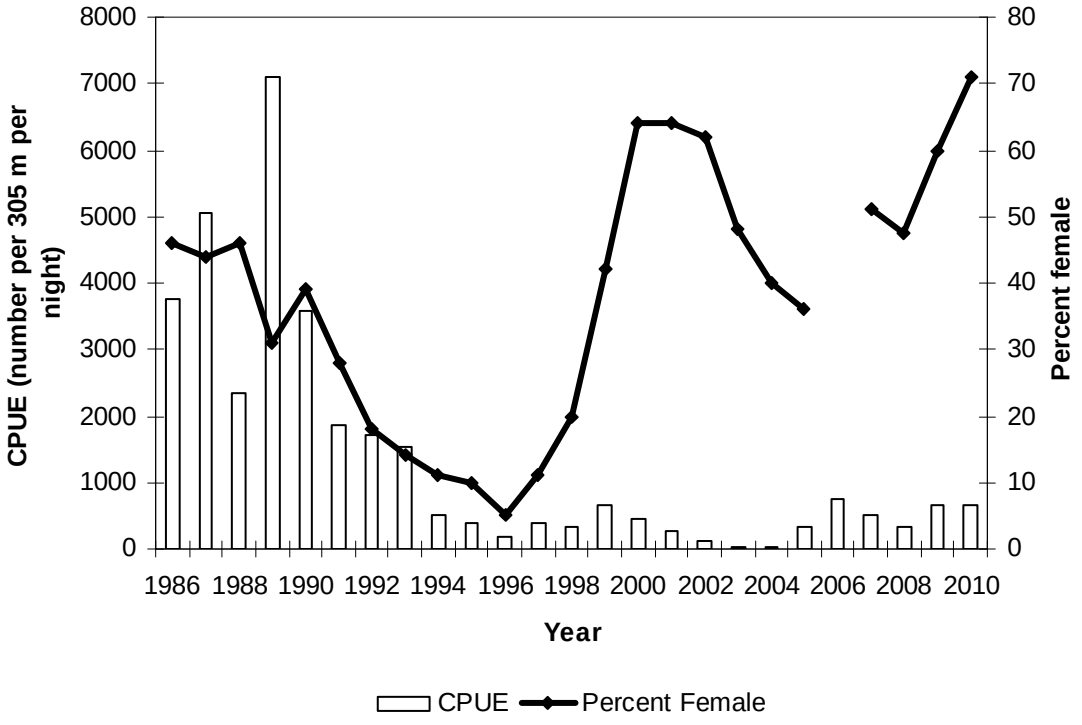

Figure 5. Adult yellow perch relative abundance and percent female in the Wisconsin waters of Lake Michigan. (WDNR; data from winter gill net assessment, Milwaukee, WI, 1986 – 2010.)

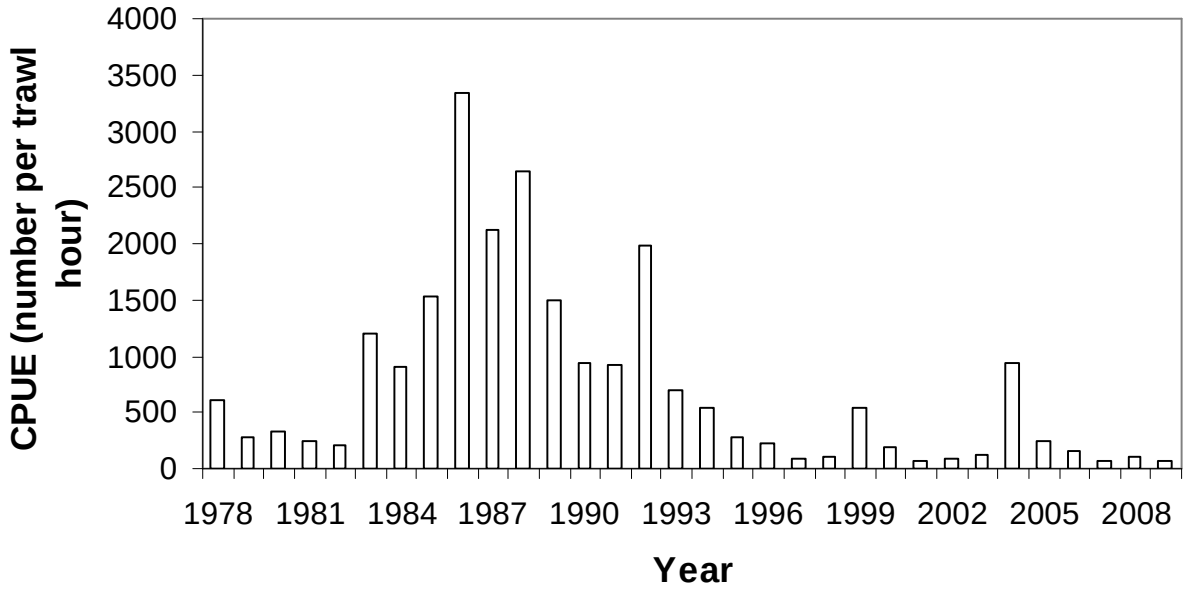

Figure 6. Adult yellow perch relative abundance in the Wisconsin waters of Green Bay. (WDNR; data from summer trawl assessment, Green Bay, WI, 1978 – 2009.)

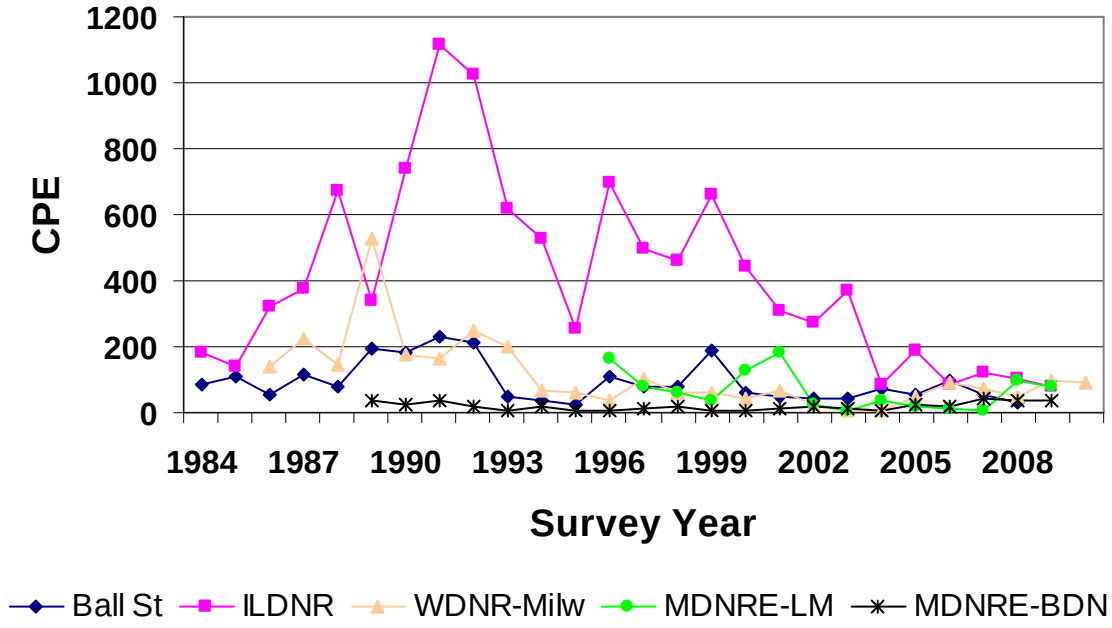

Figure 7. Yellow perch CPE (number of fish per 305 m) in graded mesh gill net consisting of equal length panels of 51-mm, 64-mm, and 76-mm stretched mesh, 1984-2010. (Data from BSU, ILDNR, WDNR, and MDNRE; 1997-2000 & 2002-2009 MDNRE-LM values calculated from 1996 and 2001 selectivity evaluations.)

Population Age Structure

The yellow perch adult population age structure was determined by evaluating scales, otoliths, opercles, or spines. Although differences in aging techniques and collection methods and times occur among agencies, assessments continued to show contribution to the adult population from the 2005 year class in data collected in most assessments (e.g., Figures 8-10, 12); yellow perch from the 2005 year class still made up from approximately 25-60% of the adult population in the various state waters. Continued survival of the 1998 year class (age 10) is also apparent in data collected in Illinois (Figure 9; >5% of the adult population) and Wisconsin (Figure 14; >10% of the adult population) waters of Lake Michigan. The bulk of the adult yellow perch populations in Green Bay / Bays de Noc appear to be from the 2007 year class (approximately 60% of adults in both areas; Figures 11 and 13).

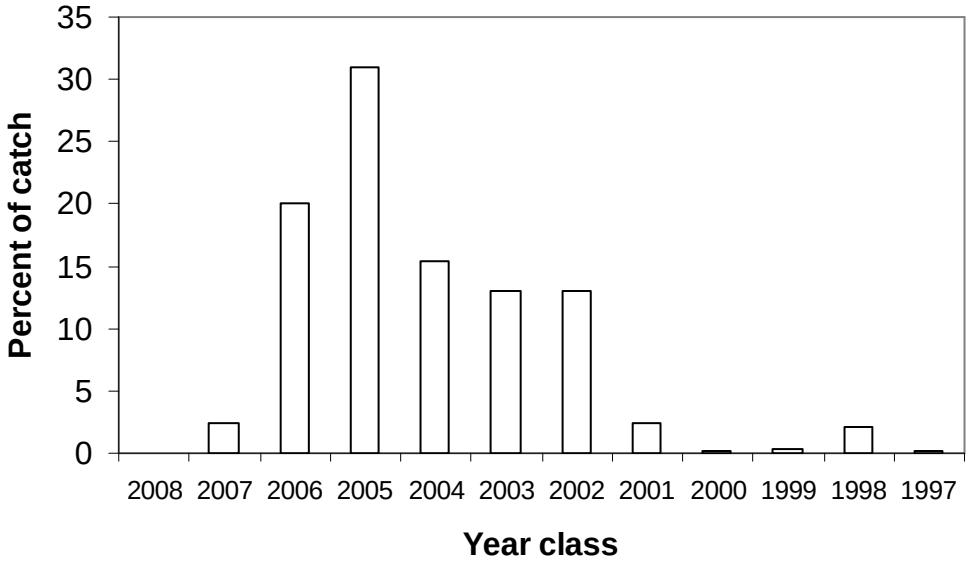

Figure 8. Yellow perch age structure from the Illinois waters of Lake Michigan. (ILDNR; data from spring gill net assessment, Chicago and Lake Bluff, IL, 2009. Ages determined using otoliths.)

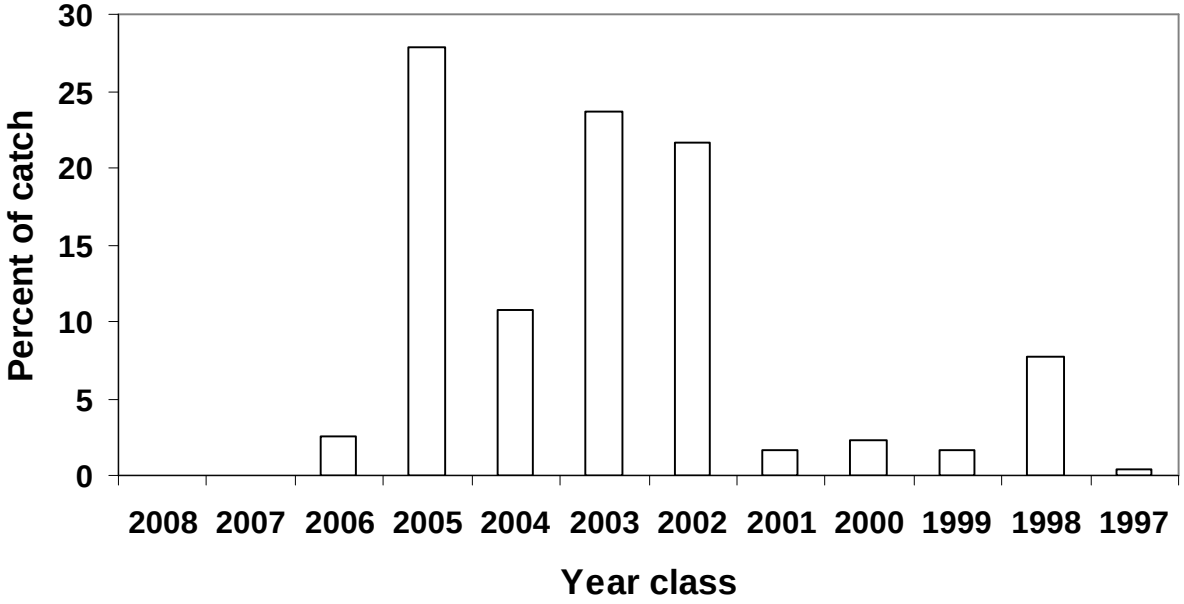

Figure 9. Yellow perch age structure from the Illinois waters of Lake Michigan. (Illinois Natural History Survey; data from spring gill net survey at Waukegan and Lake Forest, Illinois, 2009. Ages determined using otoliths.)

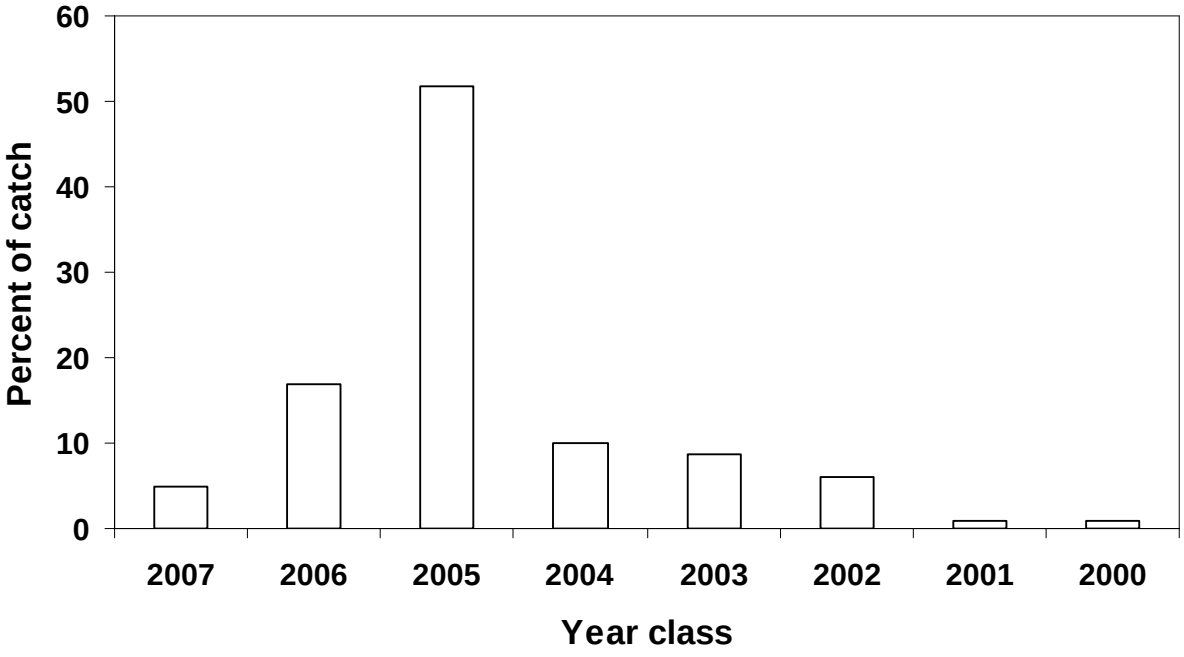

Figure 10. Yellow perch age structure from the Michigan waters of Lake Michigan. (MDNRE data from spring gill net assessment, combined three southern Lake Michigan ports – Grand Haven, Saugatuck, and South Haven, MI – 2009. Age determined using spines.)

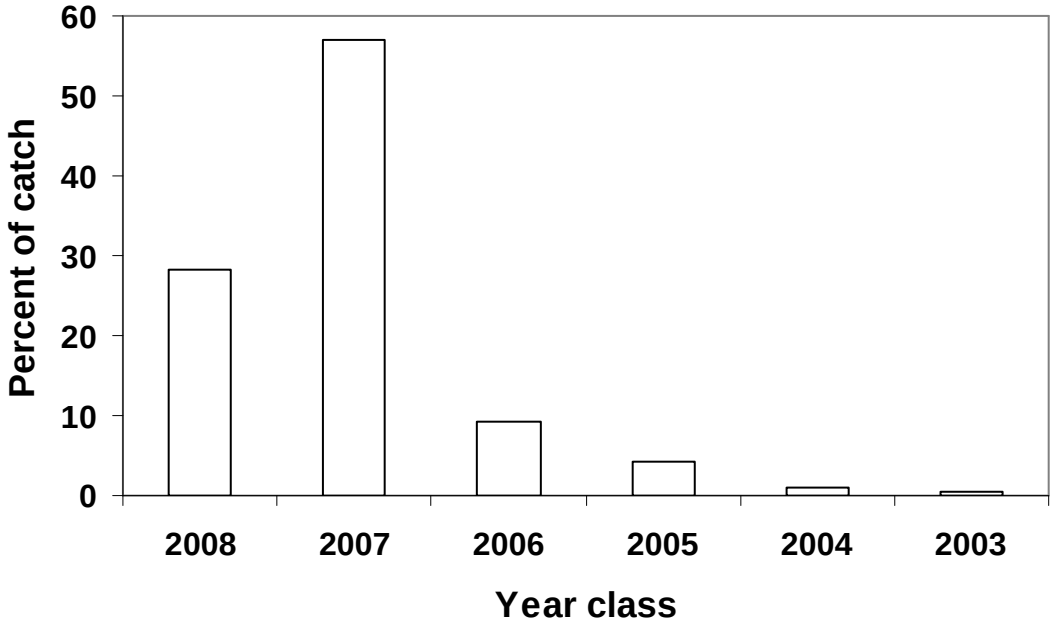

Figure 11. Yellow perch age structure from the Michigan waters of Lake Michigan. (MDNRE data from August – October gill net assessment, Bays de Noc, MI – 2009. Age determined using spines.)

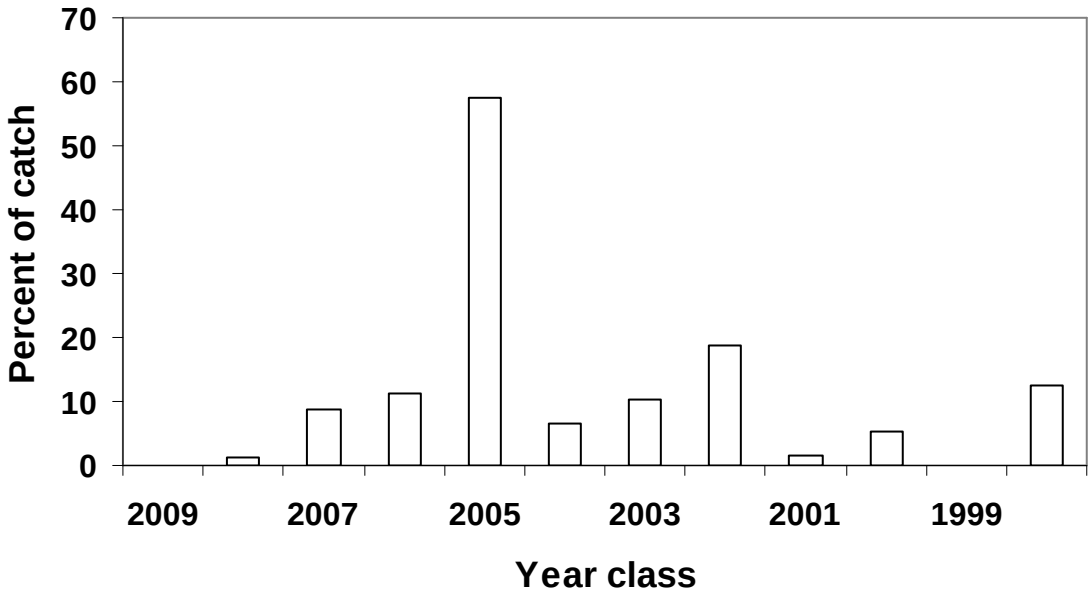

Figure 12. Yellow perch age structure from the Wisconsin waters of Lake Michigan. (WDNR; data from winter gill net assessment, Milwaukee, WI, 2010. Ages determined using spines.)

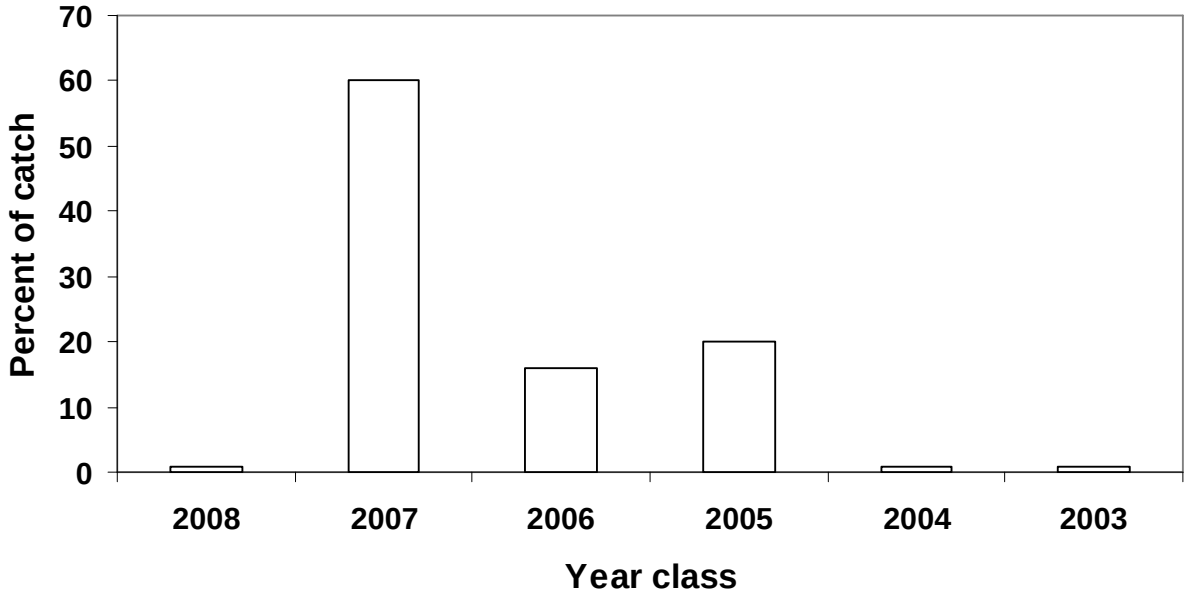

Figure 13. Yellow perch age structure from the Wisconsin waters of Green Bay. (WDNR; data from commercial harvest – all gear types, Green Bay, WI, 2009. Ages determined using spines.)

Recruitment

Having a reliable indicator of future inputs to an adult population is vital to understanding the dynamics of the fish population and helping predict changes in abundance. An early indicator of recruitment is most beneficial to managers. In Lake Michigan, indicators of yellow perch recruitment have traditionally been collected using bottom trawls or beach seines. While catch of age-0 yellow perch increased slightly in some areas of southern Lake Michigan (e.g., Figures 14, 16, 19, and 20), recruitment in 2009 was still relatively low (weak) in most areas of the lake, in comparison to long-term averages.

The YPTG agreed to implement a lakewide summer "micromesh" gill net assessment (beginning in summer 2007) to standardize assessment of young-of-year yellow perch production, especially in areas where standard trawl and seine surveys cannot be implemented. Indications from the first two summers of implementation are that this will be a valuable assessment for providing a comparable measure of young-of-year yellow perch abundance across all nearshore habitats in Lake Michigan. Data from 2010 micromesh assessments were not available at the time this report was being prepared, but these data will be presented in future reports.

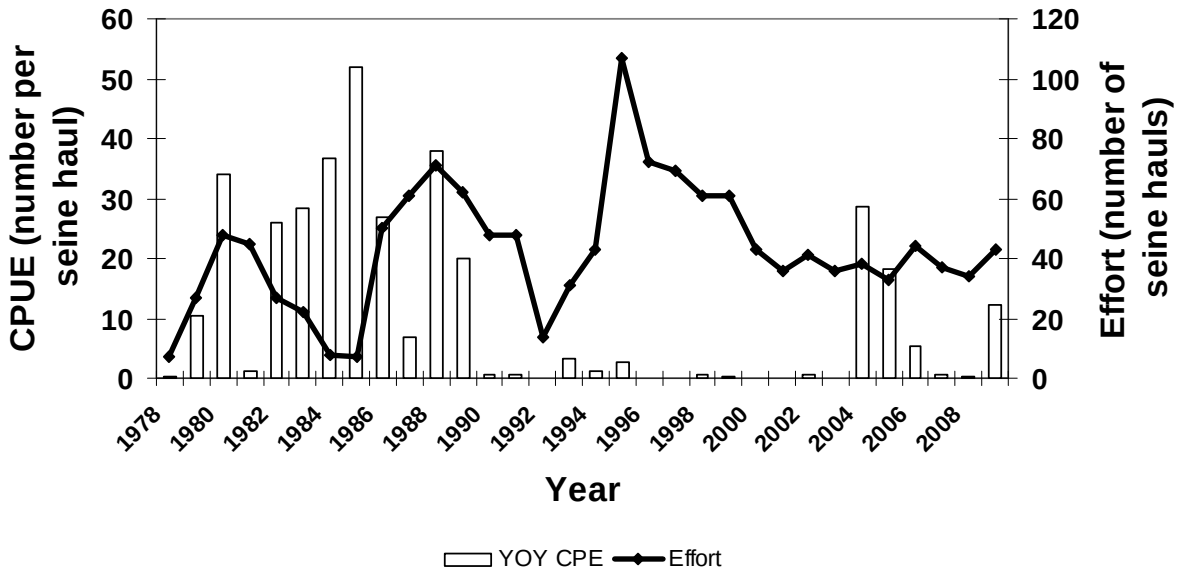

Figure 14. CPUE of YOY yellow perch from the Illinois waters of Lake Michigan. (ILDNR; data from summer beach seining along the Illinois shoreline, 1978 – 2009.)

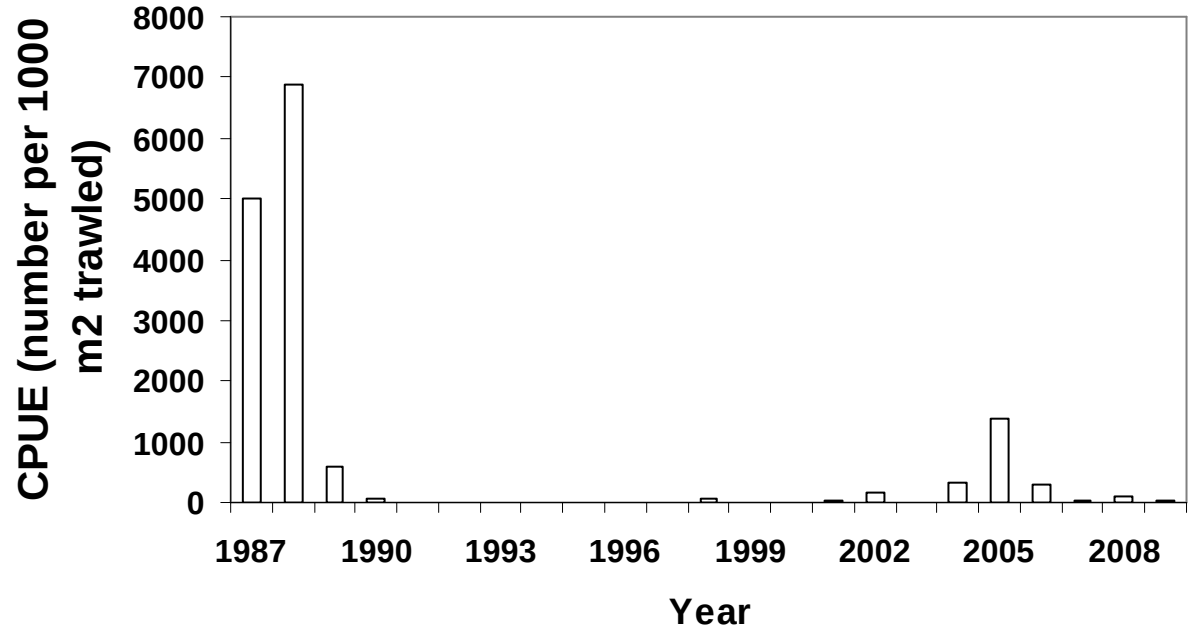

Figure 15. CPUE of age-0 yellow perch in the Illinois waters of Lake Michigan. (INHS; data from summer and fall bottom trawls off Waukegan, IL, 1987 – 2009.)

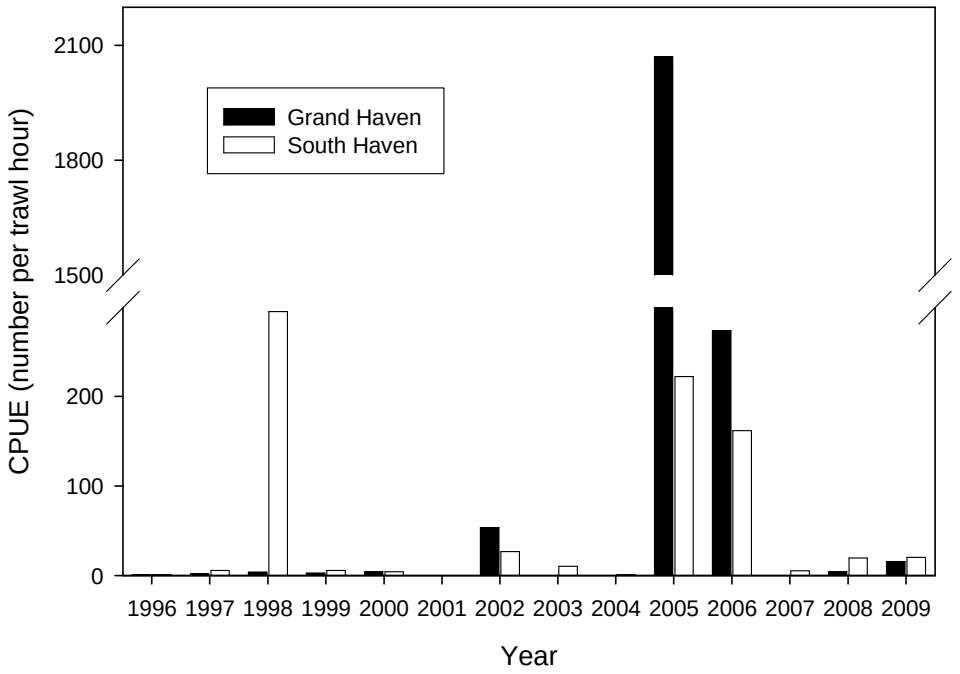

Figure 16. CPUE of age-0 yellow perch in the Michigan waters of Lake Michigan. (MDNRE; late summer bottom trawl data from Grand Haven and South Haven, 1996 - 2009. Grand Haven was not sampled in 2003.)

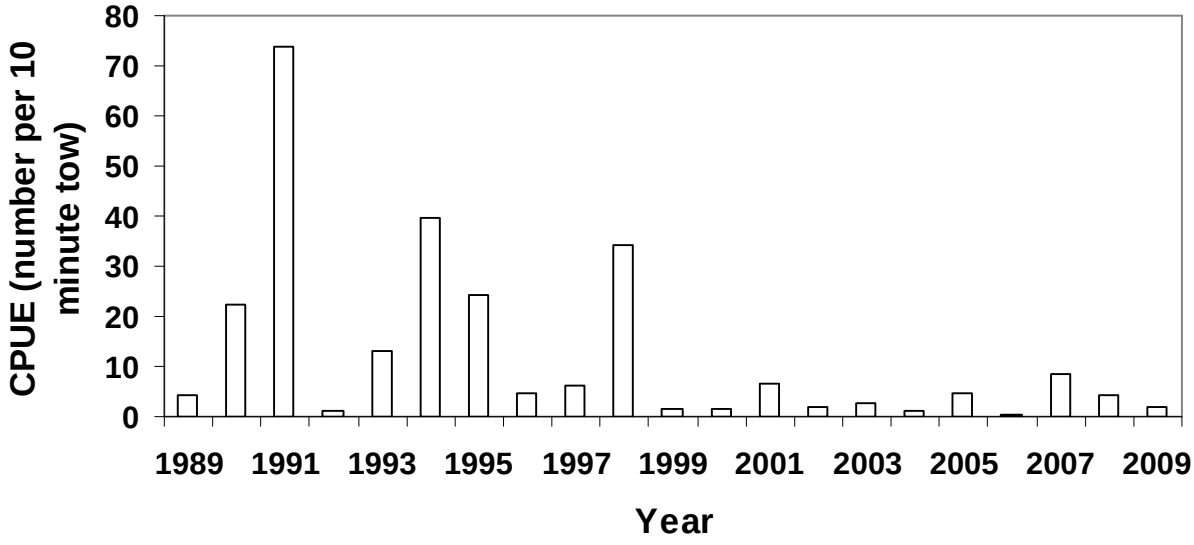

Figure 17. CPUE of age-0 yellow perch in Bays de Noc, Lake Michigan. (MDNRE; summer bottom trawl data, 1989 - 2009.)

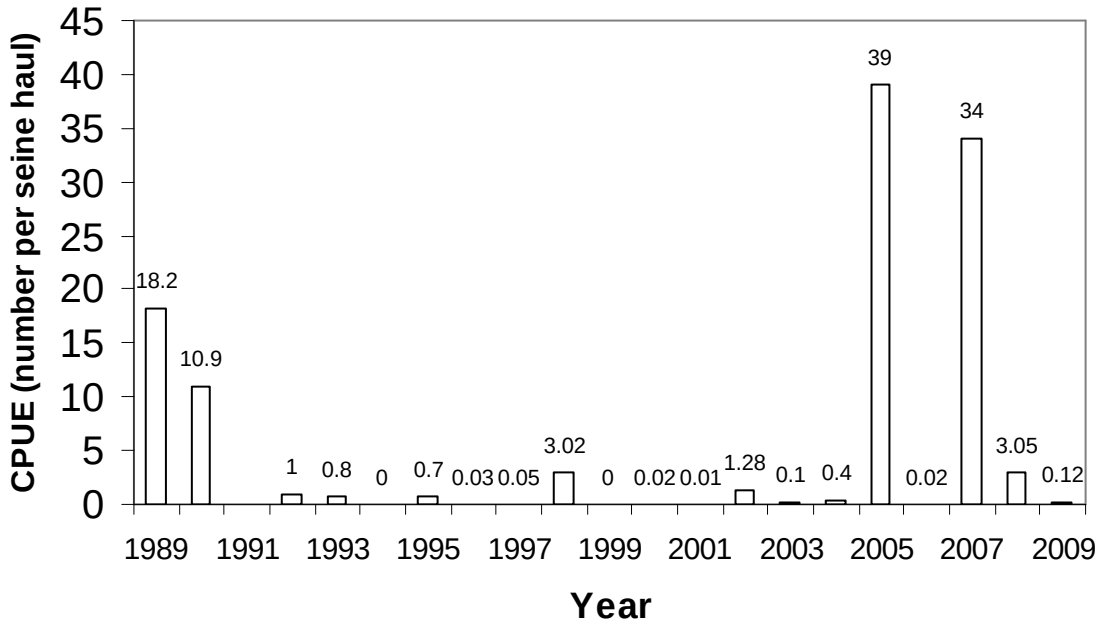

Figure 18. CPUE of age-0 yellow perch from the Wisconsin waters of Lake Michigan. (WDNR; data from summer beach seine assessments along the southern Wisconsin shoreline, 1989 – 2009.)

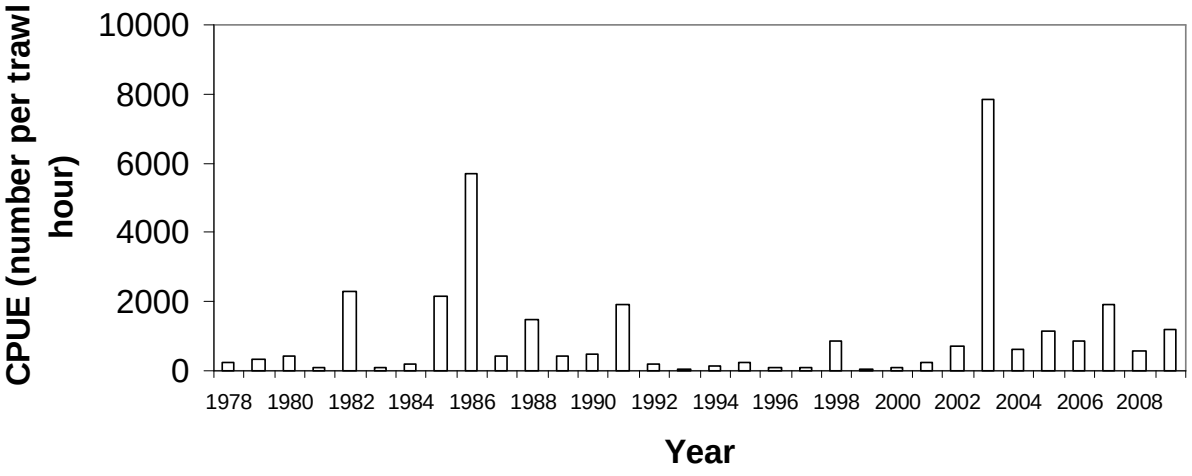

Figure 19. CPUE of age-0 yellow perch from the Wisconsin waters of Green Bay. (WDNR; data from summer trawl assessments, 1978 – 2008.)

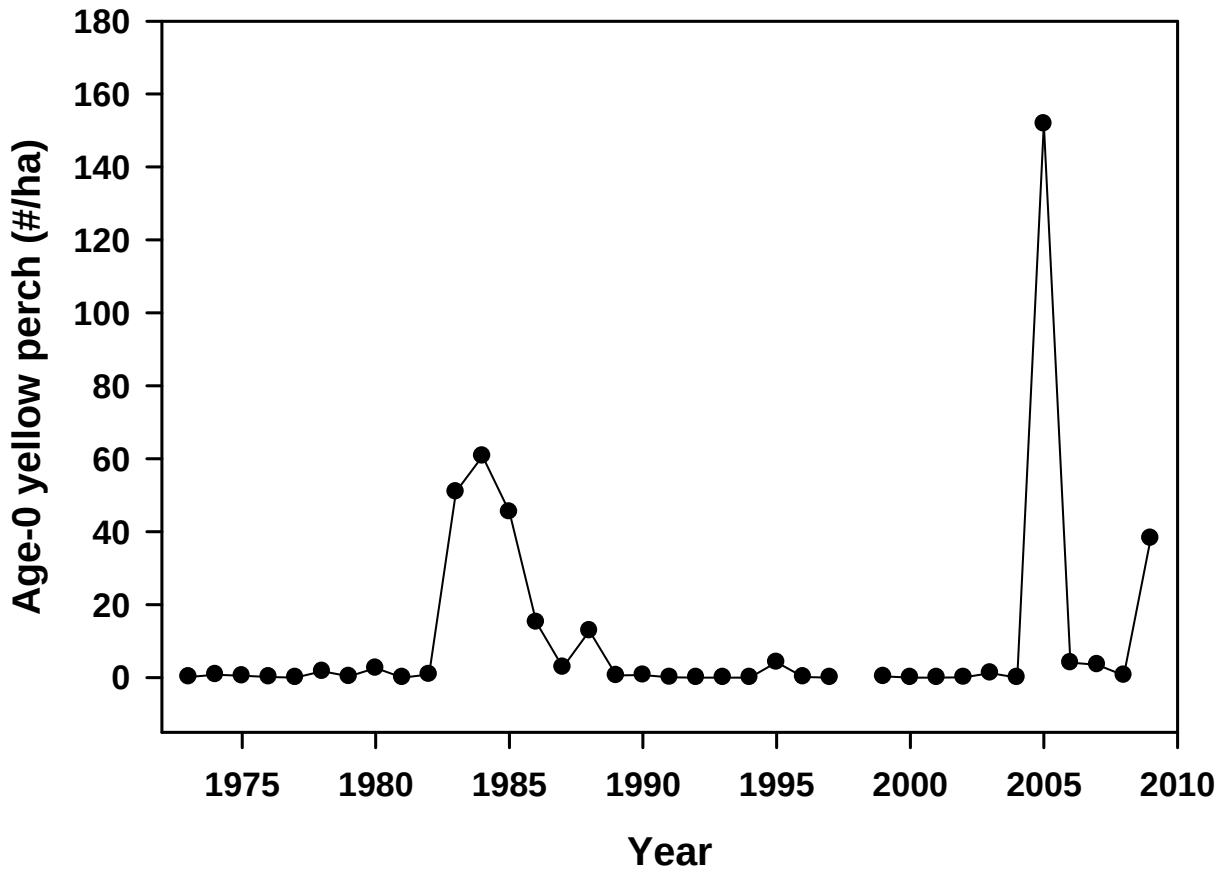

Figure 20. CPUE of age-0 yellow perch, lakewide. (USGS; data from fall bottom trawl assessments, 1973 – 2009.)

2010 Yellow Perch Harvest Restrictions

Sportfishing regulations:

- Illinois
  - July closed to sportfishing for yellow perch (exception: under 16 years of age – 10 fish bag limit)
  - Daily bag limit 15 fish
- Indiana
  - No closed season for yellow perch
  - Daily bag limit 15 fish
- Michigan
  - No closed season for yellow perch
  - Daily bag limit; 35 fish (south of the 45th parallel) / 50 fish (north of 45th parallel and Grand Traverse Bays)
- Wisconsin (Lake Michigan)
  - May 1 through June 15; closed to sportfishing for yellow perch
  - Daily bag limit 5 fish
- Wisconsin (Green Bay)
  - March 16 through May 19; closed to sportfishing for yellow perch
  - Daily bag limit 15 fish

Commercial regulations:

- Illinois perch fishery remained closed
- Indiana perch fishery remained closed
- Michigan does not allow a commercial harvest (outside of 1836 Treaty waters)
- Wisconsin perch fishery remained closed (outside of Green Bay, where quota for 2010 is 100,000 pounds)

Task Group Meetings

A brief winter 2010 meeting of the YPTG was held on January 27, 2010, following the winter Lake Michigan Technical Committee meeting in Chesterton, Indiana. Agenda items at this meeting included review of 2009 perch assessments, plans for the annual report, lakewide young-of-year gill net assessments, and discussion of a possible update to the Decision Analysis model.

Appendix 1. Lake Michigan statistical districts.