

# Status of Yellow Perch in Lake Michigan and Yellow Perch Task Group Progress Report

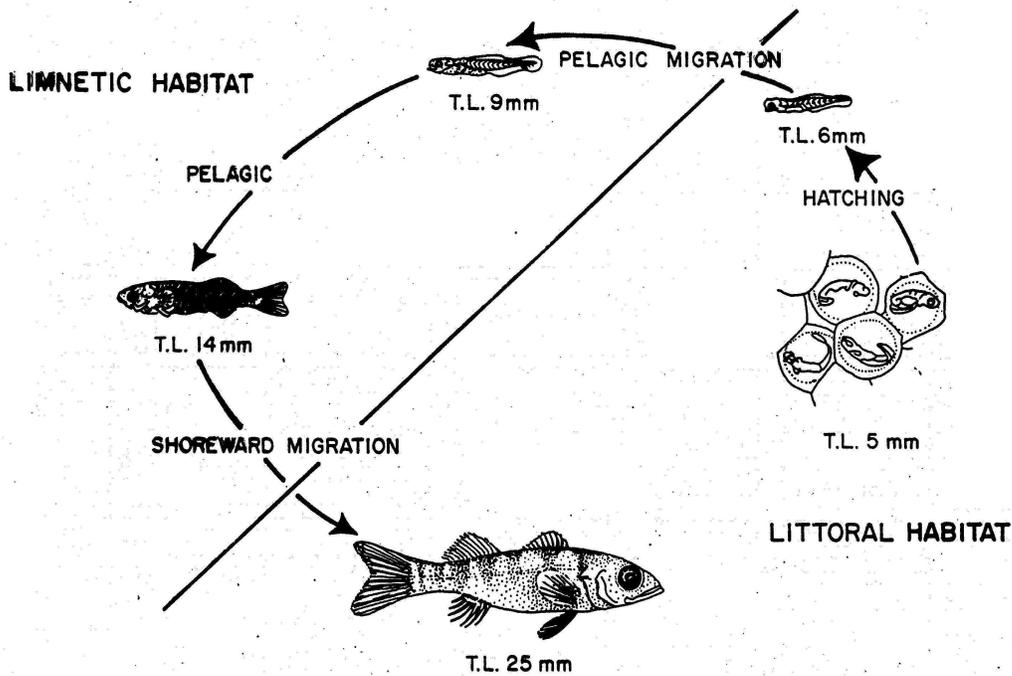


Fig. 1. Early life history of *Perca flavescens* in Lake Itasca, Minnesota. After hatching, the free embryo migrates into the limnetic zone until its transition to exogenous feeding. At approximately 40 days in age the metamorphosis from larva to juvenile is complete, and the juvenile returns to the littoral habitat.

(from Whiteside et al. 1985)

## REPORT OF THE LAKE MICHIGAN TECHNICAL COMMITTEE

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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 but is focused mainly in the southern basin. Numerous agencies and universities are 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) perch. The second section examines the most recent age structure data available for various parts of the lake. The final section consists of estimates (or indices) of juvenile yellow perch recruitment; most of this data comes from collections of age-0 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 was collected with either gill nets or bottom trawls (Figures 1 - 6). Generally this information shows a long-term decline in adult yellow perch abundance. The longer data series show peaks in the mid-1980s to early 1990s, followed by significant declines through the mid-1990s (Figures 3 - 6). Adult perch numbers have leveled out or increased slightly in some jurisdictions in recent years (e.g., Figures 1, 4, and 6). Also apparent in the longer data series, fluctuations in adult abundance have been accompanied by changes in the composition of the catch by sex (Figures 3 - 5).

## **Population Age Structure**

Adult population age structure determined from the different areas of the lake shows some variability (Figures 7 - 11). Aging structures used by Lake Michigan management agency personnel and researchers include otoliths, opercles, and spines, and the differences in collection methods and times, as well as aging methodology, could all contribute to the range of values reported. Standardization of aging methodologies is one reason for development of a lakewide assessment plan for yellow perch in Lake Michigan (see "Yellow Perch Task Group Progress Report", below).

While there is some variability in reported adult age structure, most people observed strong contribution of mid-1980's and / or mid- to late-1990's year classes, correlated with early recruitment indices based on trawl and seine assessments (see below).

## **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 abundance changes. An early indicator of recruitment is most beneficial to managers. In Lake Michigan, indicators of recruitment vary from collections of age-0 yellow perch to adult age group abundance; the majority of this information is collected using bottom trawls or beach seines. As with estimates of adult age structure (above), early estimates of recruitment also vary across the basin (Figures 12 - 18). While the strongest recent year classes occurred in 1995 and 1998, recruitment from these years is still relatively low based on longer data series from Illinois (Figures 15-16), Indiana (Figure 14), and Wisconsin (Figures 17-18).

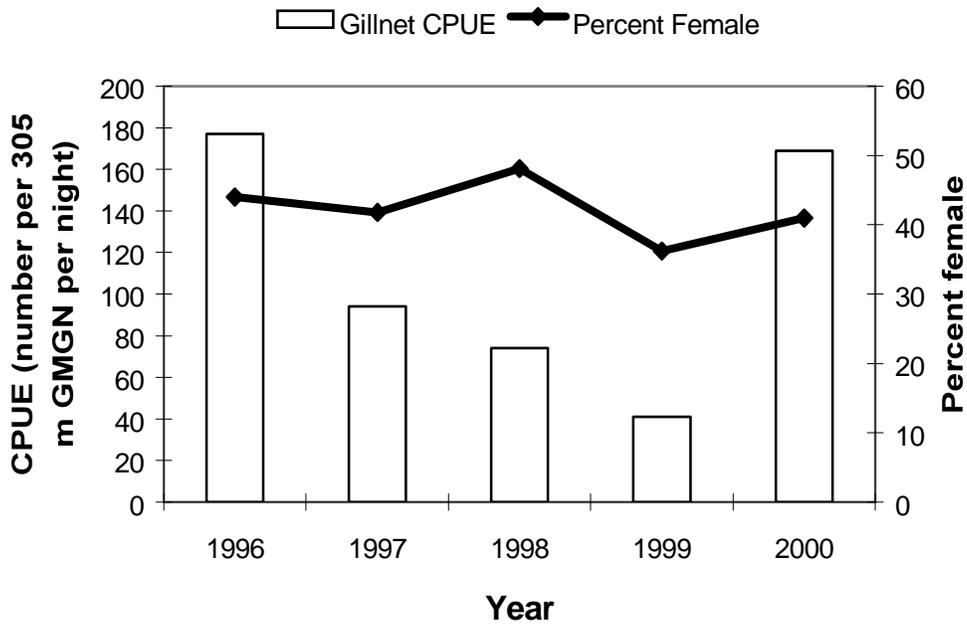


Figure 1. Adult yellow perch gill net catch-per-unit-effort and percent of females in the catch at four southern Lake Michigan ports (Grand Haven, Saugatuck, South Haven, and St. Joseph, MI). (MDNR; data from April, 1996 – 2000).

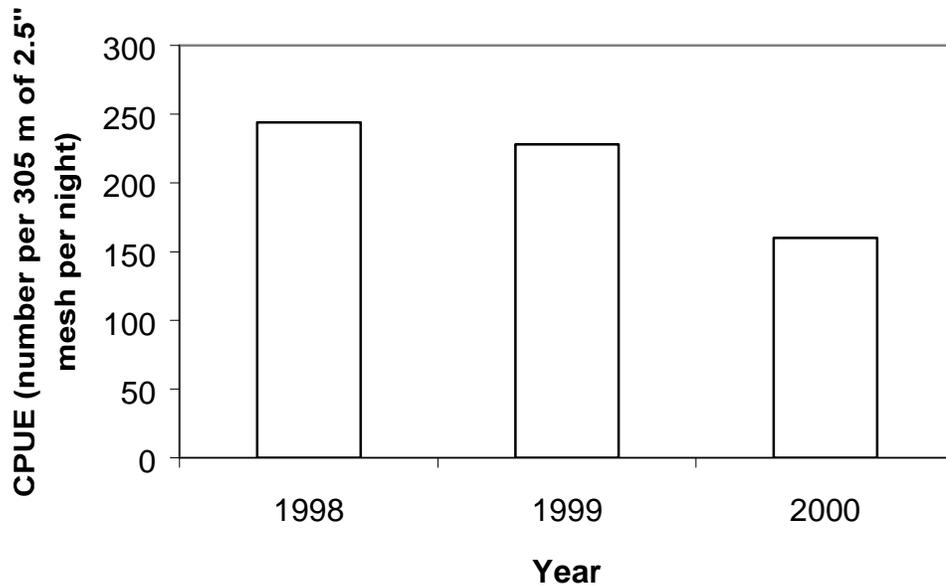


Figure 2. Adult yellow perch gill net catch-per-unit-effort at Muskegon. (UM-CILER; data from spring and fall, 1998 – 2000).

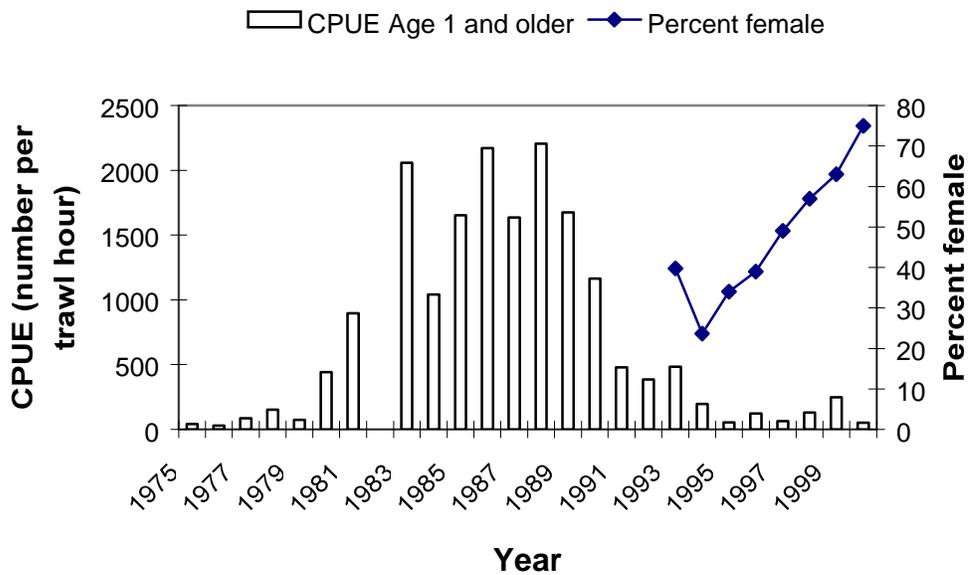


Figure 3. Adult yellow perch trawl CPUE and percent female in Indiana waters of Lake Michigan. (Ball State University; data from summer trawl survey at sites M and K in 1975 – 2000).

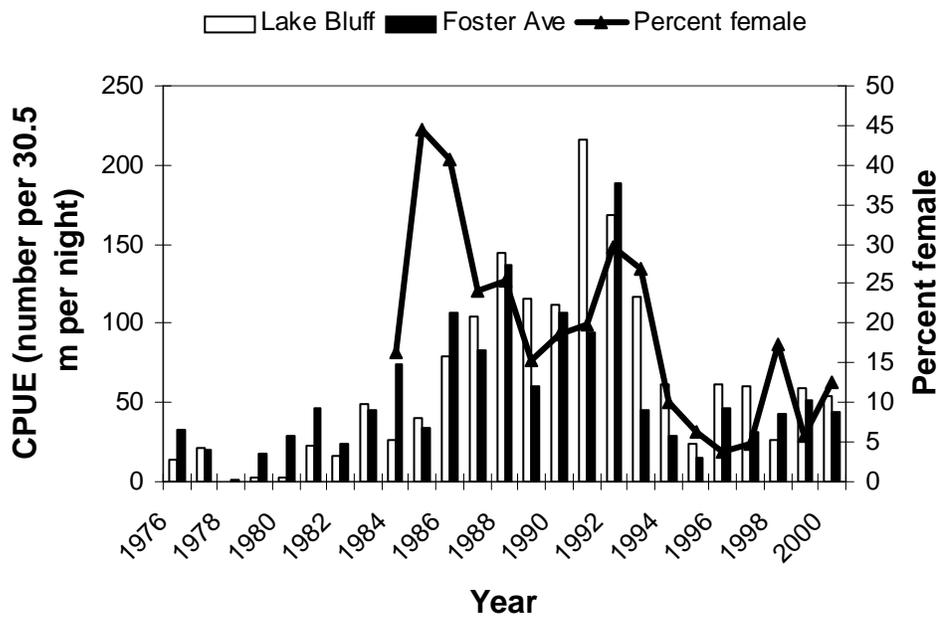


Figure 4. Adult yellow perch relative abundance and percent female in the Illinois waters of Lake Michigan. (ILDNR; data from spring gill net assessment, Chicago and Lake Bluff, IL, 1976 – 2000).

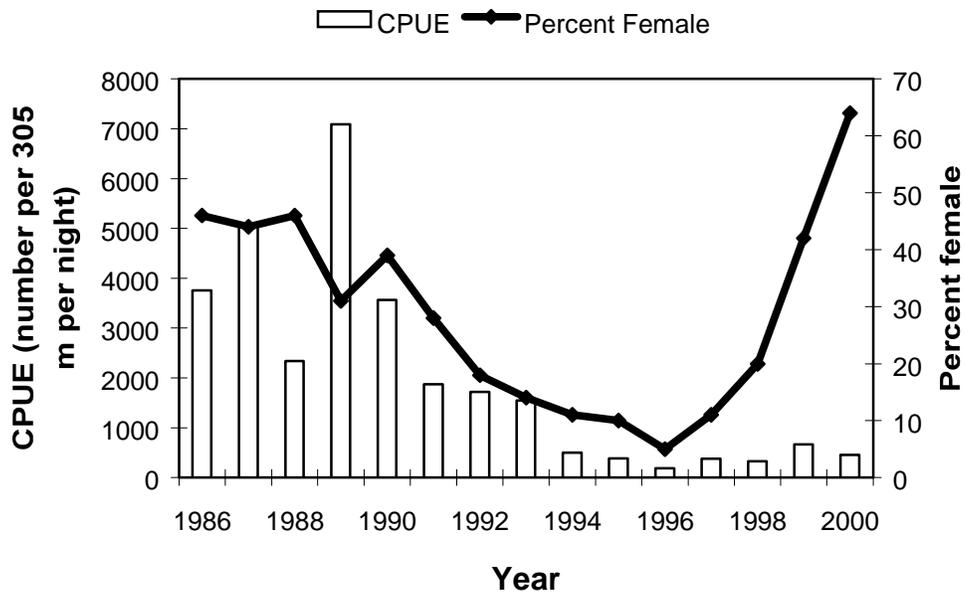


Figure 5. Adult yellow perch relative abundance and percent female in the Wisconsin waters of Lake Michigan. (WDNR; data from winter gill net assessment, Milwaukee, WI, 1986 – 2000).

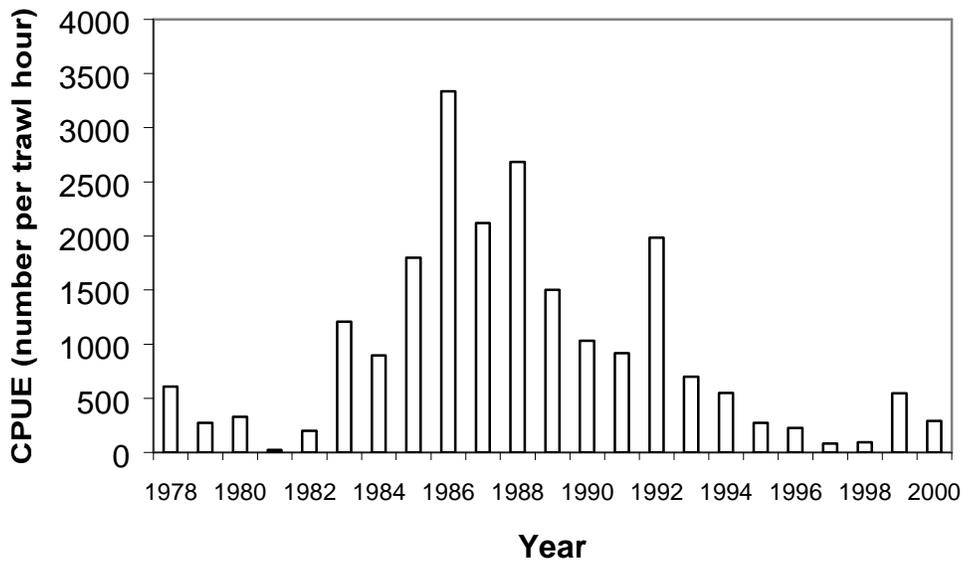


Figure 6. Relative abundance of age-1 and older yellow perch from the Southern Green Bay. (WDNR; data is the weighted area average from fall bottom trawls, 1978 – 2000).

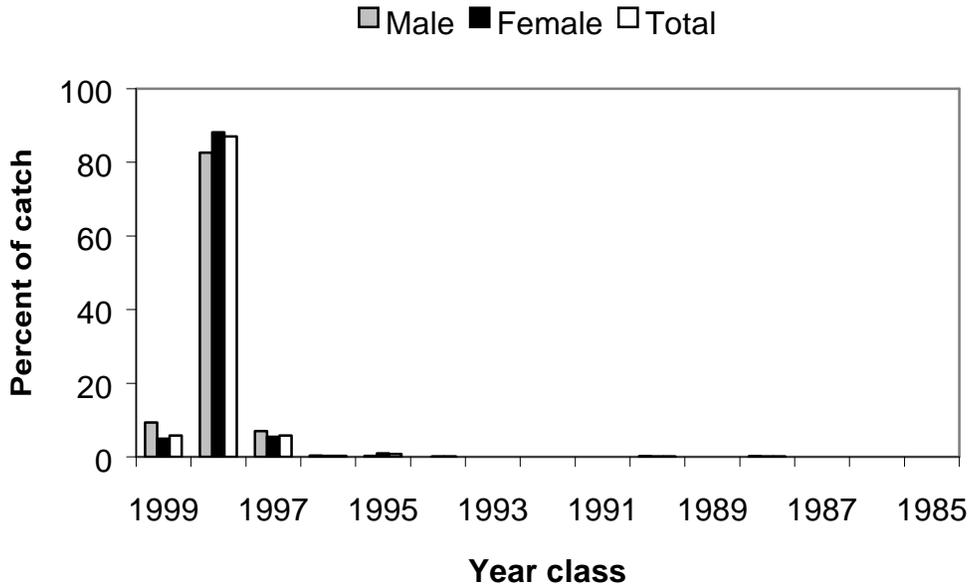


Figure 7. Yellow perch age structure from the Indiana waters of Lake Michigan. (Ball State University; data from summer trawl surveys at sites M and K, Indiana, 2000. Ages determined using opercules).

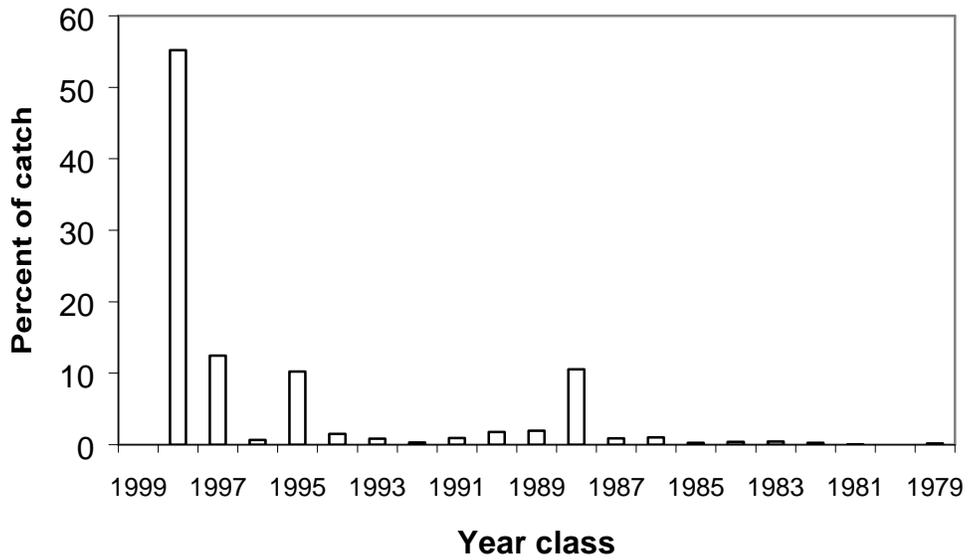


Figure 8. Yellow perch age structure from the Illinois waters of Lake Michigan. (ILDNR; data from spring gill net assessment, Chicago and Lake Bluff, IL, 2000. Ages determined using otoliths).

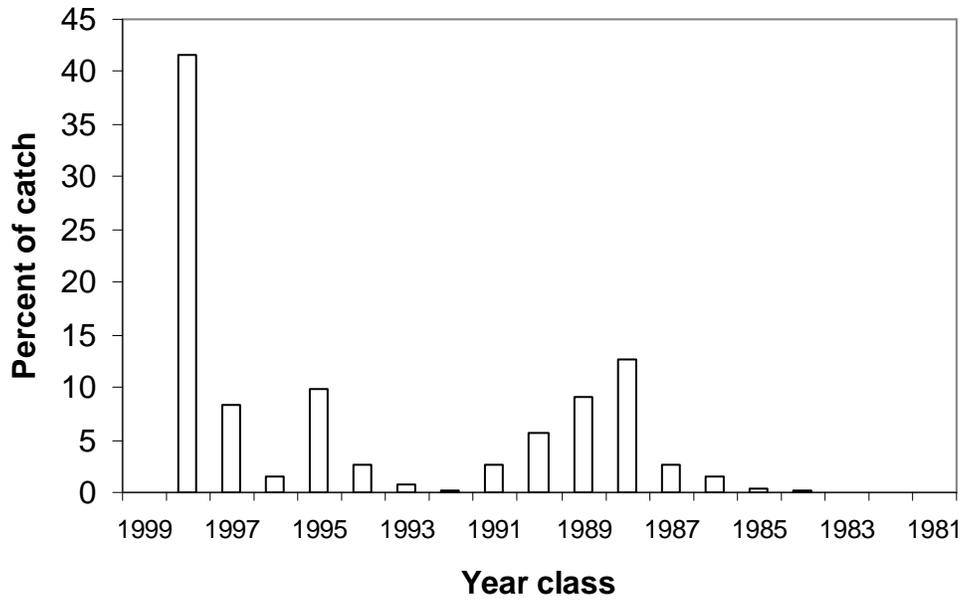


Figure 9. Yellow perch age structure from the Illinois waters of Lake Michigan. (INHS; data from spring fyke net sampling, Waukegan and Lake Bluff, IL, 2000. Ages determined using otoliths).

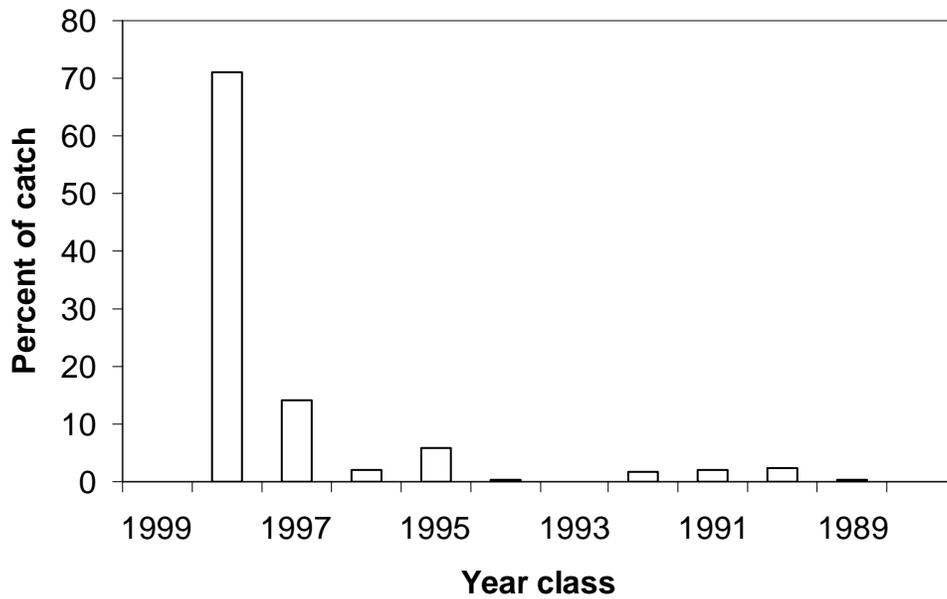


Figure 10. Yellow perch age structure from the Wisconsin waters of Lake Michigan. (WDNR; data from winter gill net assessment, Milwaukee, WI, 2000. Ages determined using spines).

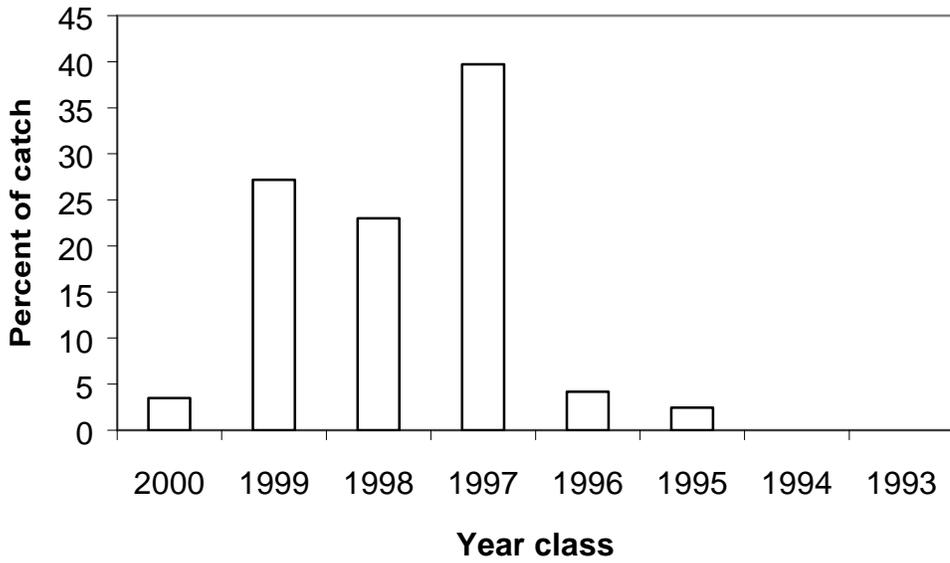


Figure 11. Yellow perch age structure from the Wisconsin water of Green Bay. (WDNR; data from fall trawl catches in Southern Green Bay, 2000. Ages determined using spines).

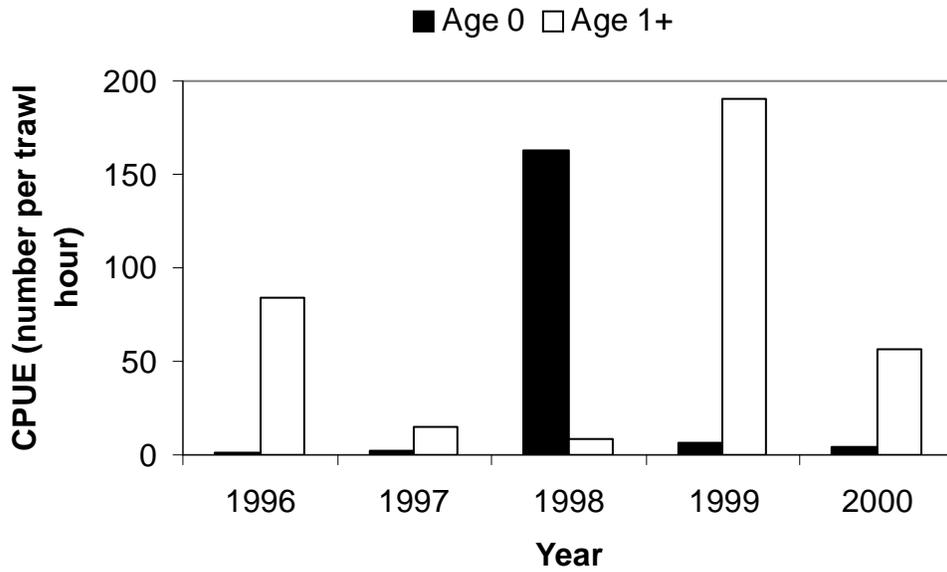


Figure 12. CPUE of age-0 and age-1 yellow perch in Michigan waters of Lake Michigan. (MDNR; data from summer trawl assessment at Grand Haven, Saugatuck, South Haven, and St. Joseph, MI, 1996 – 2000).

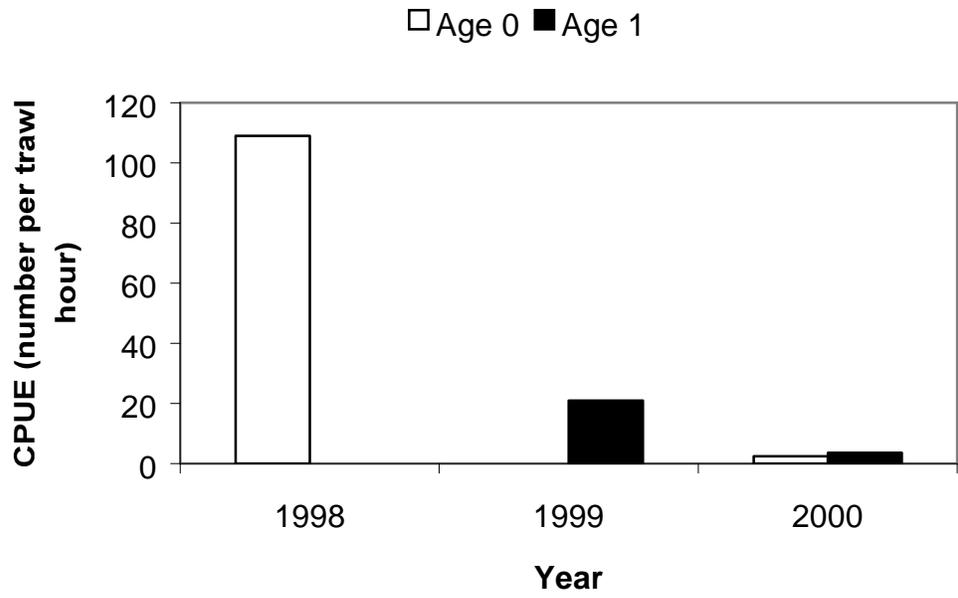


Figure 13. CPUE of age-0 and age-1 yellow perch in the Michigan waters of Lake Michigan. (UM-CILER; data from bottom trawl surveys at Muskegon and St. Joseph, MI, 1998 – 2000).

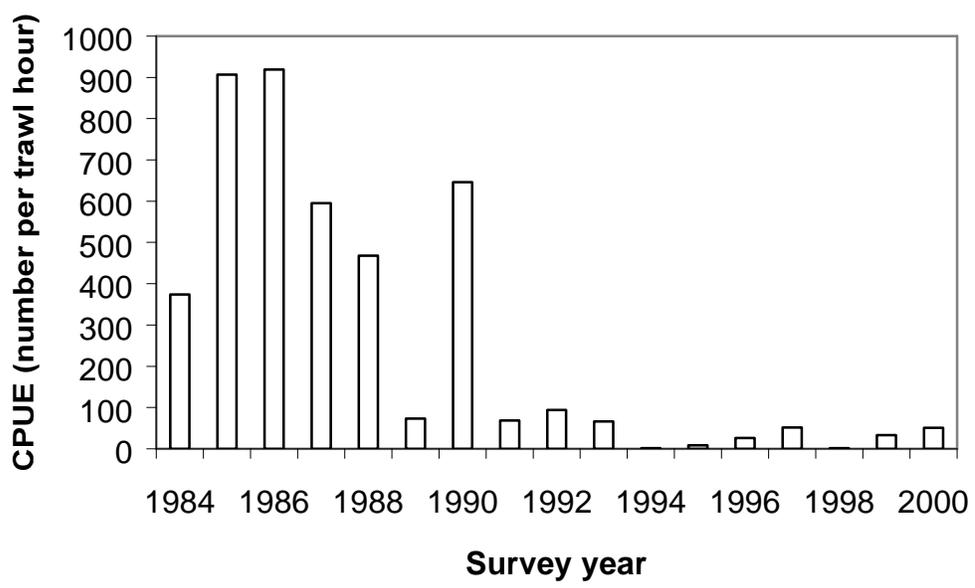


Figure 14. CPUE of age-2 yellow perch from the Indiana waters of Lake Michigan. (Ball State University; data from summer bottom trawl assessments, 1984 – 2000).

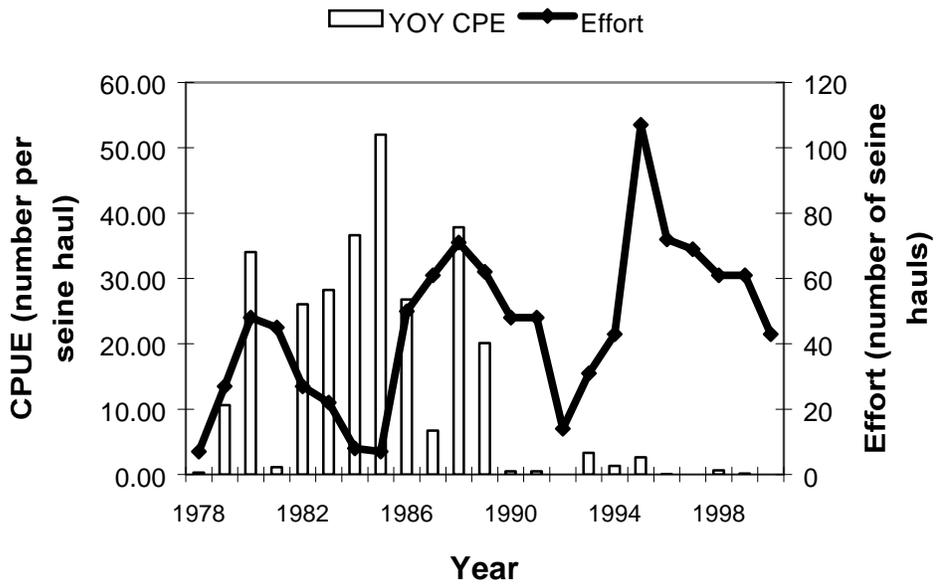


Figure 15. CPUE of YOY yellow perch from the Illinois waters of Lake Michigan. (ILDNR; data from summer beach seining along the Illinois shoreline, 1978 – 2000).

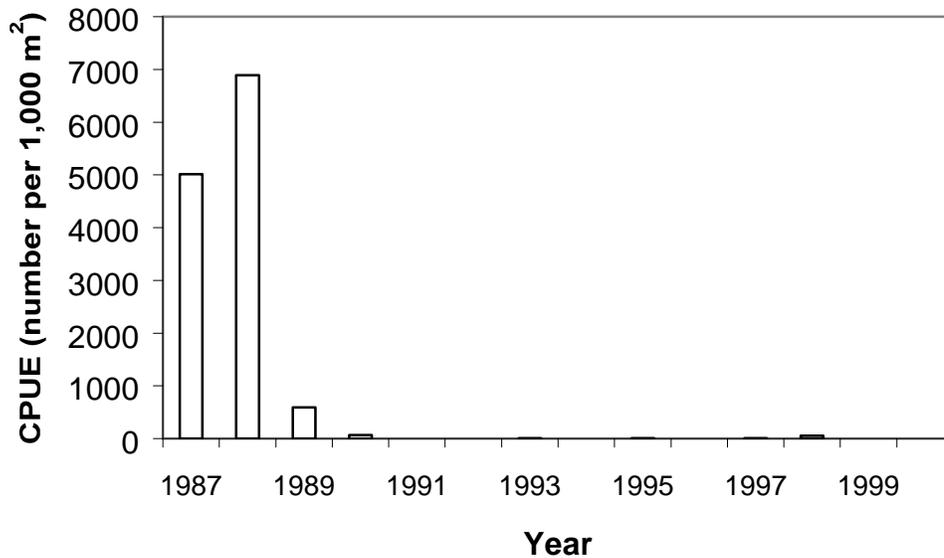


Figure 16. CPUE of age-0 yellow perch in the Illinois waters of Lake Michigan. (INHS; data from summer and fall bottom trawls off Waukegan, IL, 1987 – 2000).

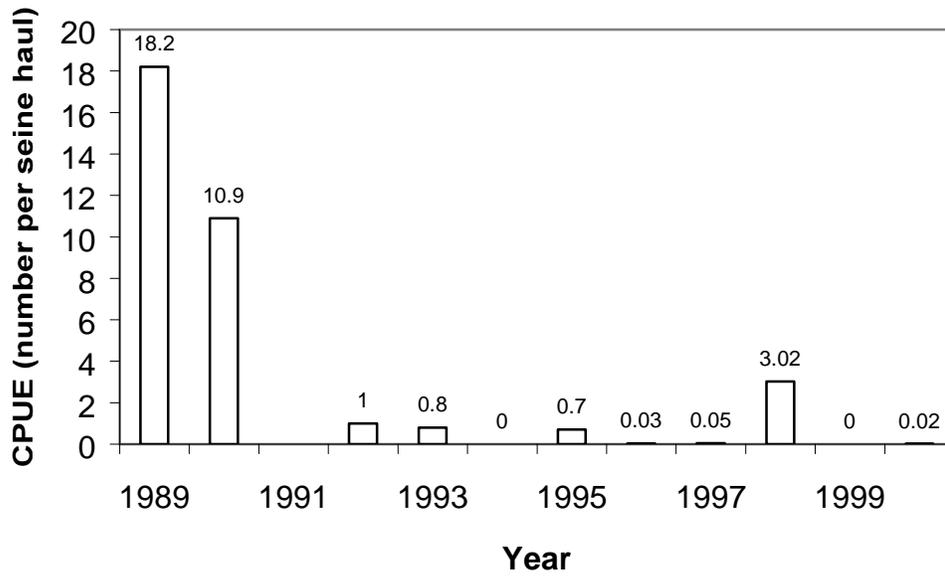


Figure 17. CPUE of age-0 yellow perch from the Wisconsin waters of Lake Michigan. (WDNR; data from summer beach seine assessments along the southern Wisconsin shoreline, 1989 – 2000).

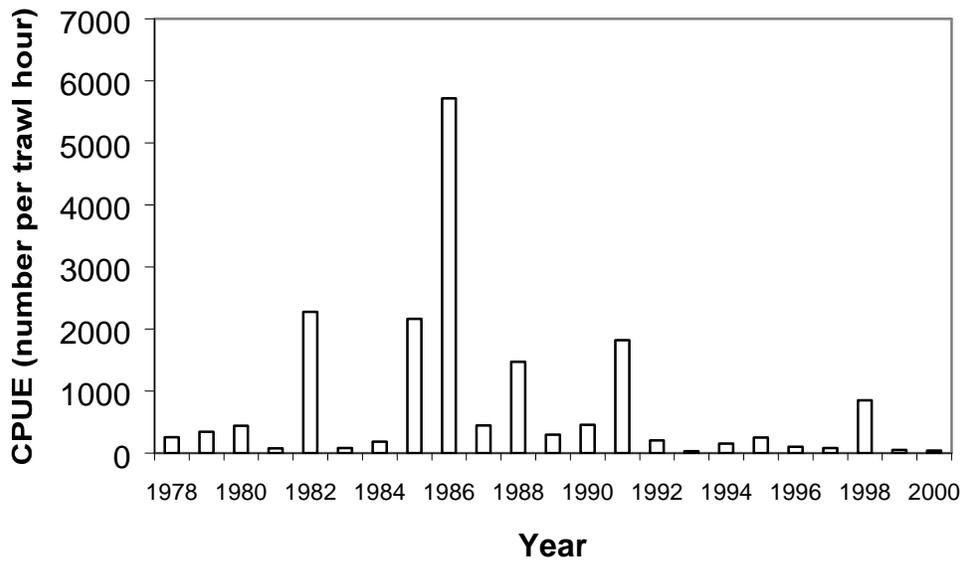


Figure 18. CPUE of age-0 yellow perch from the Wisconsin waters of Green Bay. (WDNR; weighted area average of fall bottom trawl surveys in Southern Green Bay, 1978 – 2000).

## 2000 Yellow Perch Harvest Restrictions

### Sportfishing regulations:

- ❑ Illinois
  - June closed to sportfishing for yellow perch
  - Daily bag limit 15 fish, with an 8 to 10 inch slot limit (perch less than 8 inches or greater than 10 inches must be released immediately)
- ❑ 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 45<sup>th</sup> parallel)
- ❑ Wisconsin (Lake Michigan)
  - June closed to sportfishing for yellow perch
  - Daily bag limit 5 fish
- ❑ Wisconsin (Green Bay)
  - Daily bag limit 25 fish

### Commercial regulations:

- ❑ Illinois perch fishery remained closed.
- ❑ Indiana perch fishery remained closed.
- ❑ Michigan does not allow a commercial harvest.
- ❑ Wisconsin perch fishery remained closed (outside of Green Bay, where quota is 200,000 pounds).