

Big Eau Pleine Reservoir Historical Fishery



Fishermen on BEP River East of Stratford 1952

Outline

- Fish Kill History
- Summary of Fish Kill Events
- Historical electrofishing CPE
- Fishery Summary
- Lake Aeration System Operations
- After the Fish Kill

Fish Kill Timeline

- 1954
 - First record of fish kill in the Fish Management files.
 - Fish dead below Spindlers Bridge – 1000s of walleye, NP, Carp, Bullheads
 - Cause thought to be High BOD from Stratford Sewage Plant
- 1959
 - Reference is made to a large fish kill in a newspaper article from 1963.
No file evidence
- 1963
 - Documented a large fish kill in the Hwy 153 vicinity. Much of the reservoir appeared to have adequate oxygen levels throughout the winter.
 - This fish kill triggered a flurry of activity and newspaper articles.

- 1963
- Fish Management and Law Enforcement were invited to a meeting at the Marshfield Sportsman Club.
- At this time the fish kills were thought to be caused by ***Sewage and Cheese Waste***. Forty-five cheese producers dotted the basin.
- 1972
 - Dead fish appeared below the dam but this was the only evidence present in the files.
- 1974
 - Fish were dead from Hwy S to Spindlers Bridge.
 - This kill appeared minimal because not many fish were seen and counted, but fish surveys give appearance of a large kill
- 1975
 - Low DO levels were noted in a memo, but there is no reference to a fish kill. There is one reference to an “apparent fish Kill” by Al Hauber in a Sept. 1975 article. This kill may have been less because the 1974 kill was larger than documented
 - There is a newspaper article on the 1975 fish survey.

- 1977
 - Dead fish were observed in December, between Spindlers Bridge and Hwy S. DO levels were noted to be dropping by Dec. 23, 1976.
 - In January 1977 dead fish were found below the BEP Dam.
 - This appeared to be a large fish kill due to the early start of the kill.
- 1980
 - March 21, DO levels near Hwy S were 9ppm.
 - But near the Park and Hwy O they were below 1ppm
 - By April 23 2-3000 dead walleye and other fish were reported near the BEP Dam.
 - This was a large kill and may have been more influential on the 1985 catch than the 1977 kill.
- 1989
 - Thousands of dead carp, a few walleye, and small black crappie were observed after ice out from the Hwy O bridge to the Dam.
 - This fish kill is similar to what was observed in 2005.

- 1990
 - Dead fish were noted in the file Below Spindlers Bridge.
 - This fish kill may have been minor due to the severity of the kill in 1989, but not much information exists.
- 2005
 - Dead fish were noted around the BEP County Park
 - This was a minor fish kill believed to be caused by low DO.
- 2009
 - This fish kill started in February and was a major fish kill
 - Contributing to the Kill was an extended period of low flow in the BEP River
 - This was a large kill
- 2013
 - Fish Kill started in January at Spindlers Bridge and was believed to be caused by low DO levels and low early winter water levels.
 - This kill was large and could have been worse but fish kill in 2009 had eliminated a large portion of the fish population.





Fish Kill Summary

- Pre-1960 fish kills are considered to be related to sewage and cheese waste for the most part.
- DNR has documentation for 10 fish kills Similar to those listed by Coon (1996).
- **Minor or with little documentation – these fish kills are characterized by few dead fish observed.**
 - 1972, 1974*, 1975, 1989, 1990, 2005
 - *1974 could have been a large kill
- **Major Kill well documented- over 1000 dead gamefish and or rough fish noted.**
 - 1977**, 1980**, 2009, 2013
 - ** 1977 was thought to be most severe, but records indicate 2-3000 dead walleye in 1980 were observed.
- Coon has the years 1970 and 1976 listed but there is no documentation of an investigation in the Fish Management files, he does not list 1972, but there is documentation of a fish kill.

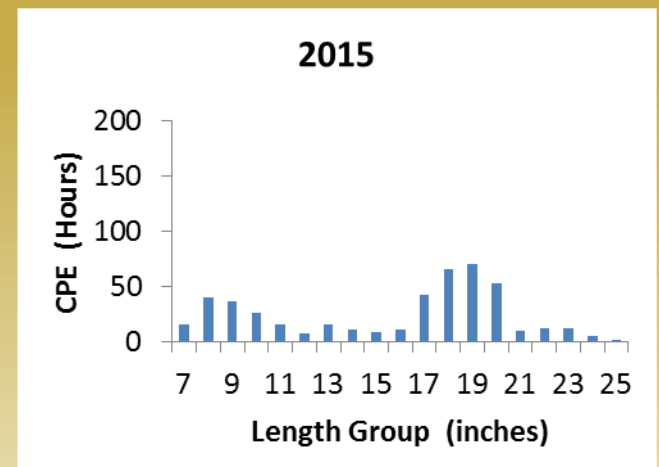
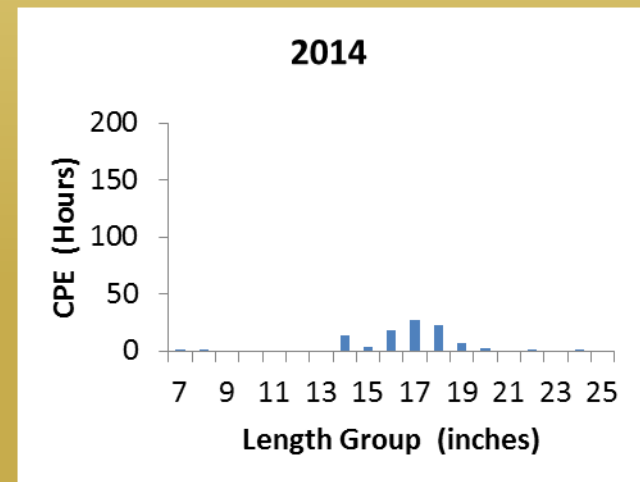
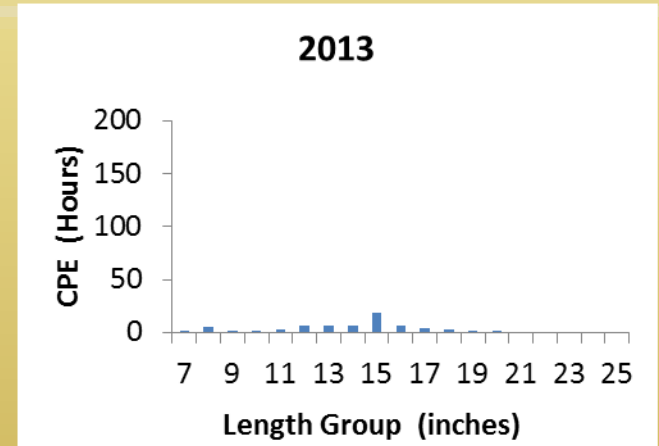
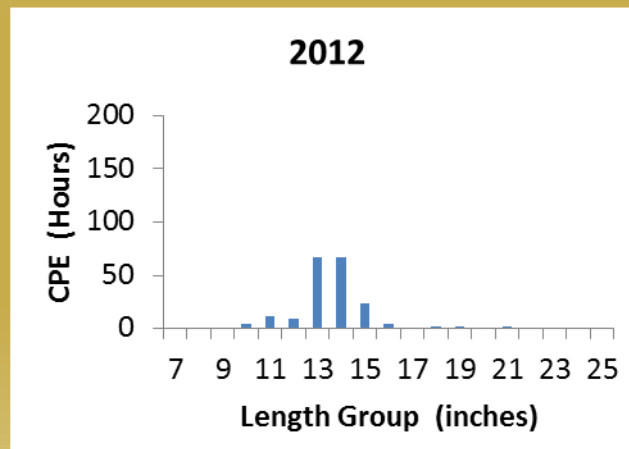
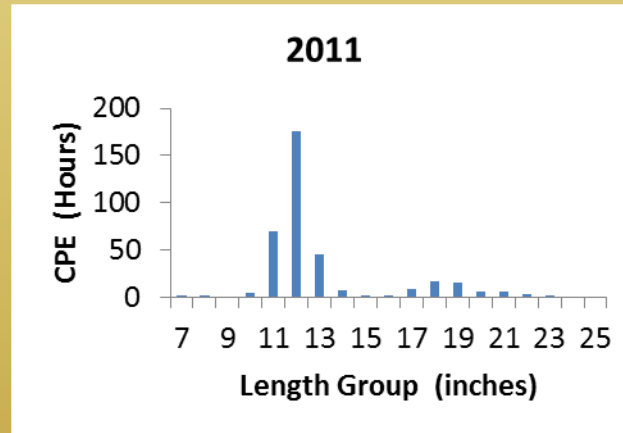
Fish Management Summary

- Spring Net Surveys
 - 1975, 1985, 1993, 1999, 2003
- Spring Electrofishing
 - 1974, 1975, 1976, 1979¹, 1990, 1993², 1999, 2003, 2006, 2009, 2011³, 2012, 2013, 2014, 2015
- Fall Fingerling Index
 - 1971, 1974, 1975, 1985, 1989, 1991, 1993
 - ¹ appears to be only fish <11 inches
 - ² datasheets missing cannot determine transects
 - ³ multiple runs at BEP transect (East Point to Hwy S)

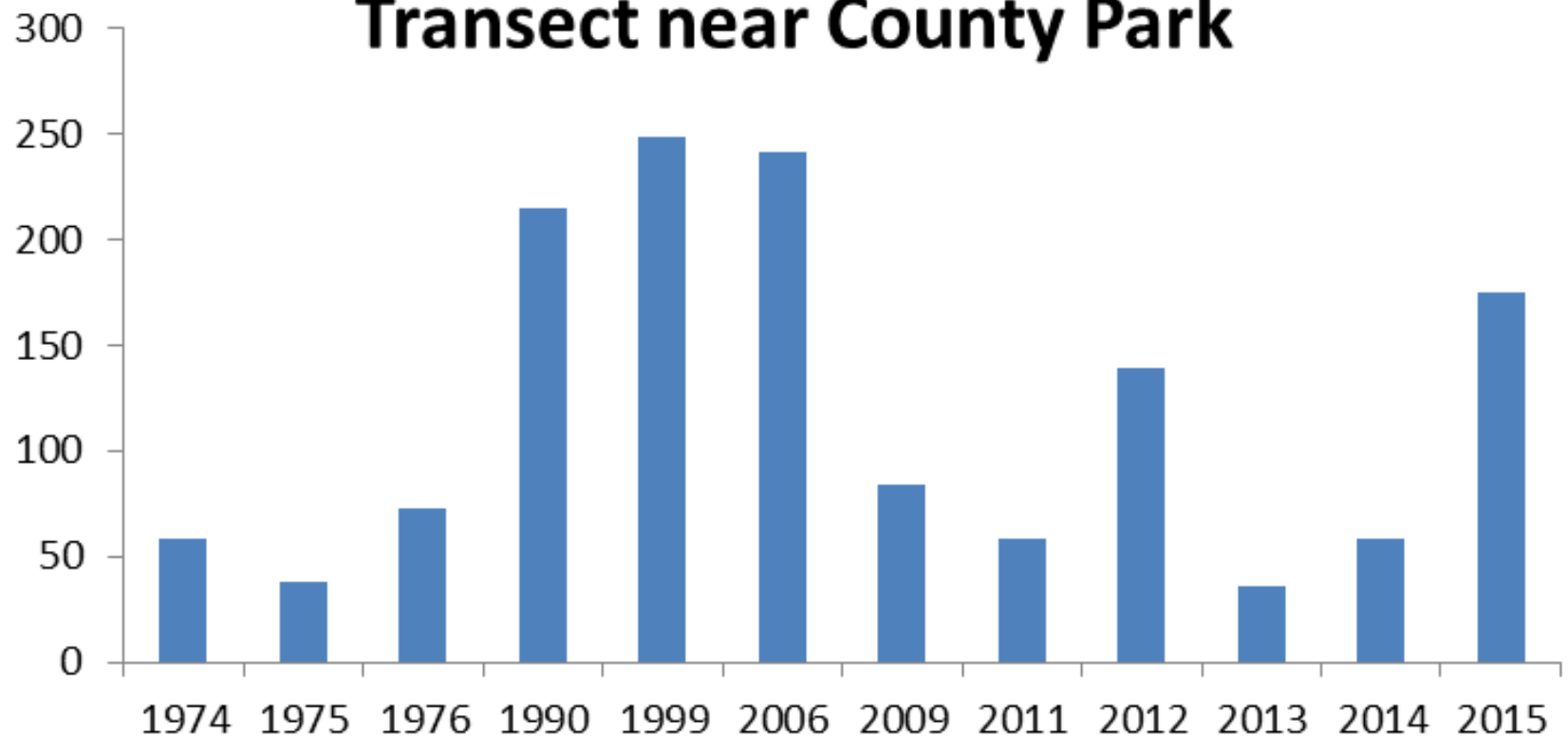
Walleye CPE by Length Bin Since 2009 Fish Kill

Water Temp.

Year	Temp
2011	42-61F
2012	48.5
2013	61.4
2014	43.7
2015	49.2

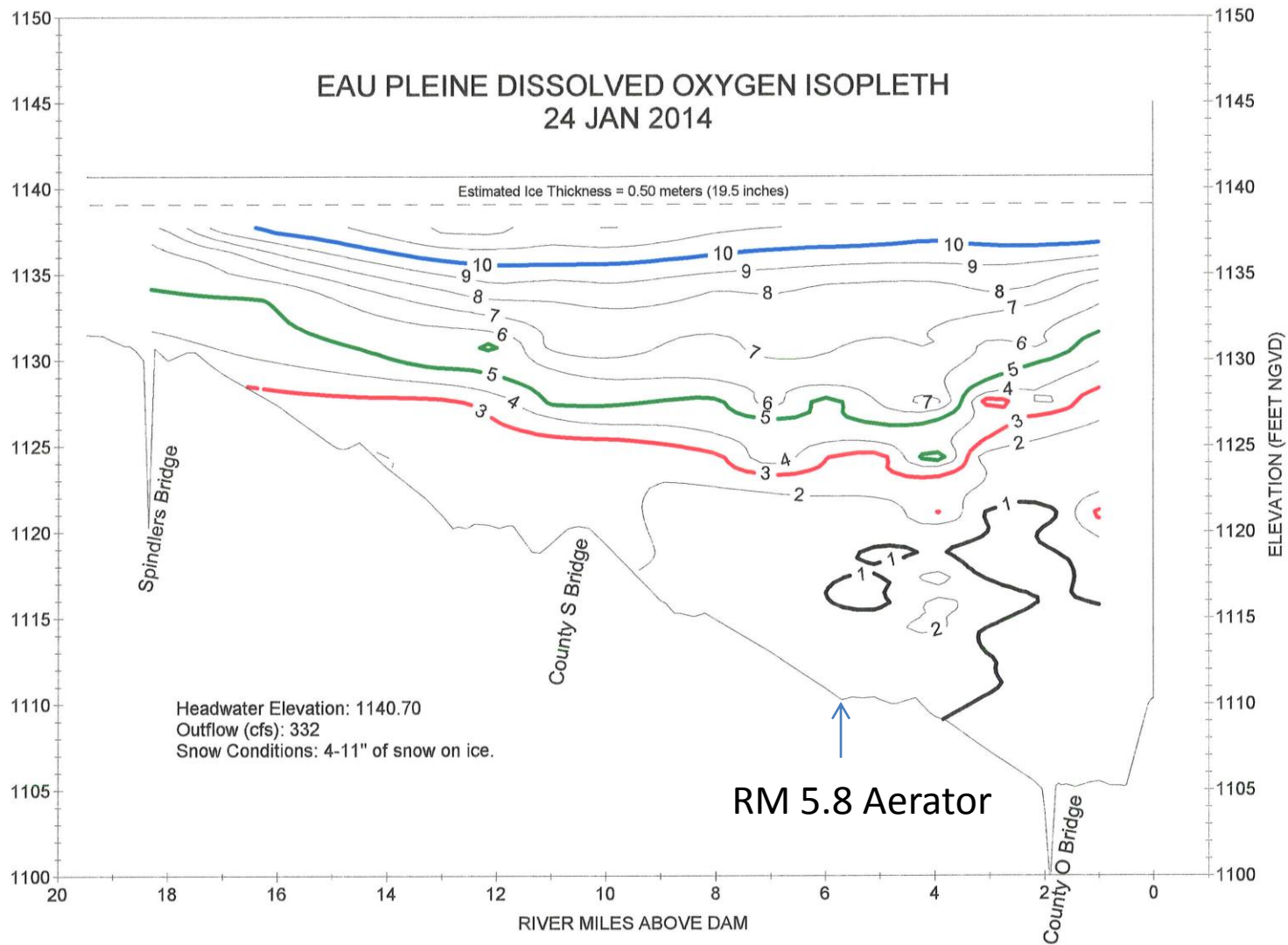


Big Eau Pleine Historical CPE Transect near County Park



Current Management of Reservoir Aeration

- WVIC measure oxygen and BOD levels throughout the reservoir starting in January
- They identify areas of concern and help determine the operation of the lake aeration system.
- BEP has had an aeration system since 1981.
- The aeration system was replaced in 2010 and is more efficient than the old system



Is current DO sufficient for sustaining fisheries?

- WVIC has conducted a telemetry study on Walleye movements in the BEP.
 - Found fish wintered anywhere from 2-3 miles downstream of Spindlers
 - Wintered in the aeration zone
 - Wintered mid-way between aeration zone and Hwy O.
- Coble (1982) found DO concentration of 5ppm were important for the maintenance of gamefish populations in the Wisconsin River.
- Below 5ppm number of large gamefish >100mm were significantly lower.

Big Eau Pleine Fish Kill

DNR Follow-up Work

- Catch Rates from a single Electrofishing Run in 2009 following Fish Kill was 84 walleye/hour.
- DNR noticed a distinct 2009 year class during the 2011 work. It appeared the 2009 year-class had survived the fish kill and would re-populate the population.
- In summary, the walleye population in the BEP was returning, but the 2013 Fish Kill has set back the recovery.
- It is difficult to estimate where the normal population level is, as PEs show that through the years the Walleye population has not always been at high 2003 level.
- Standard electrofishing will continue each spring, comp survey 2017

- Fish Stocking – DNR added 120,000 fingerling in 2013
- Walleyes For Tomorrow
 - Operating at BEP since 2013
 - Stocking has been walleye fry

WFT Stocking Record for BEP	
2013	200,000
2014	500,000
2015	Approx. 1,000,000

