2013 Fall Bottom Trawling Summary Report

Ryan Koenigs, Winnebago Sturgeon Biologist, 3 January 2013

Each fall the DNR fisheries crew out of Oshkosh conduct bottom trawl surveys to monitor year class strength of game and non-game fish species within the Winnebago System. The data collected during this survey are critical to the management program on the Winnebago System, as this is the only annual survey that monitors trends within the entire fish community. The survey objectives are to: 1) determine year class strength of game and non-game fish species through the capture of age-0 fish; 2) monitor trends in relative abundance of adult game and game fish species; 3) evaluate size distribution of gamefish and panfish populations.

Each survey year involves monthly sampling of 46 standardized transects within Lake Winnebago during the months of August-October. Monthly rounds of sampling consist of 4-5 days of field data collection. Sampling of each transect consists of dragging a trawl net (27' head rope; photo insert, right) along the bottom for 5 minutes at 4 miles per hour. The size of the net, in combination with the speed and duration, samples ~1 acre of the lake bottom. So in essence, throughout the three months we are sampling 138 acres of the lake bottom (0.1% of the surface area of Lake Winnebago).

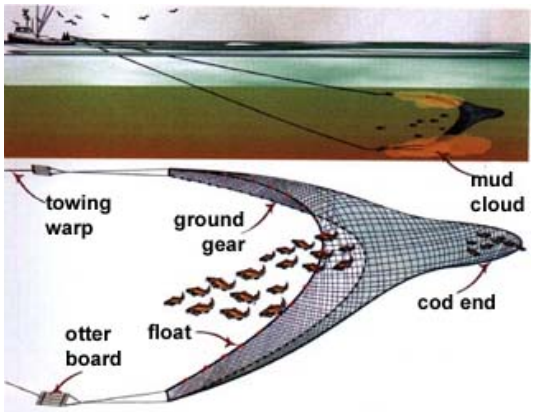

Diagram of how bottom trawl net functions to capture fish.

All fish caught in the net are either counted or measured. The majority of the biomass in most trawl hauls is adult freshwater drum (photo insert, left). Therefore the drum are removed from the table first, counted as being removed. Any encountered gamefish are transferred to a holding tank for measurement and all age-0 forage species are counted and documented.

Trawling crew sorting fish captured from one net cast during trawling assessments. Note that the majority of the fish in the catch are adult freshwater drum (sheepshead).

The results from this survey benefit from a long term data set (1986-present) obtained with standardized methods. The same methods have been followed during the same sampling periods for the past 27 years, which provides an expansive data set for referencing relative strength of year classes.

The most frequently asked question following our trawling assessments is, "how big was the walleye hatch this year?" The data collected during this survey accurately portray year class strength of walleye and are thus used to predict future trends in the adult population and fishery. As shown in Figure 1, the 2013 walleye hatch was very large. In fact, this is the 3rd largest year class of walleye documented on the Winnebago System since our trawling assessments began in 1986. This year class also comes on the heels of strong year classes in 2008 and 2011. These results suggest that the future is pretty bright for the walleye population over at least the next 6-8 years.

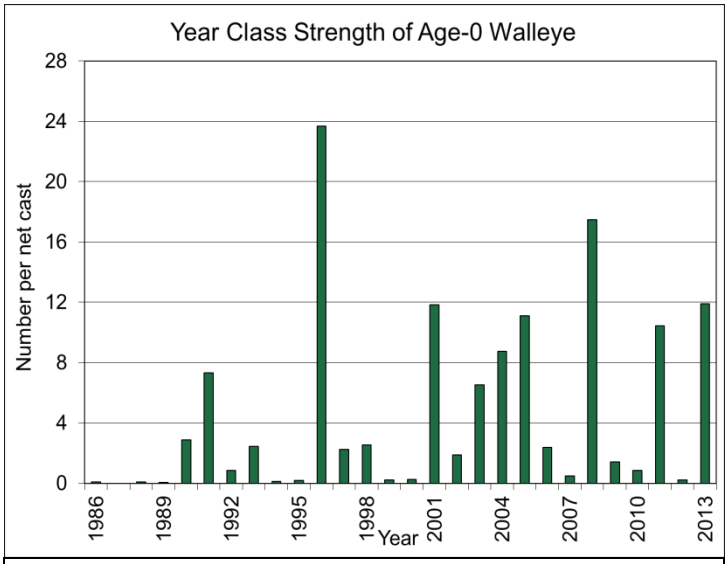

Figure 1. Year class strength of age-0 walleye as observed during fall bottom trawl surveys (1986-2013).

Although the 2013 year class was very strong in terms of numbers, the size of the fish was below average. October caught walleye from this year class ranged in size from 4.6-8.2" with a mean length of 5.9" (length data obtained in October is utilized because it is closest to the end of the growing season and most representative of fish size entering winter). In comparison, the long term average length of age-0 walleye at this time of the year is 6.2". The reduced mean length is mostly attributable to fish spawning later than normal. Peak walleye spawning occurred between April 20-22, which is 1-2 weeks later than normal. The later spawn translates to a shorter growing season for the fish and, in turn, a reduced size going into winter. The size of the year class likely contributed to below average growth rates as well, due to more competition for available resources. The real indication of the strength of the 2013 year class will come next year when we reference catch of yearling walleye to past year classes.

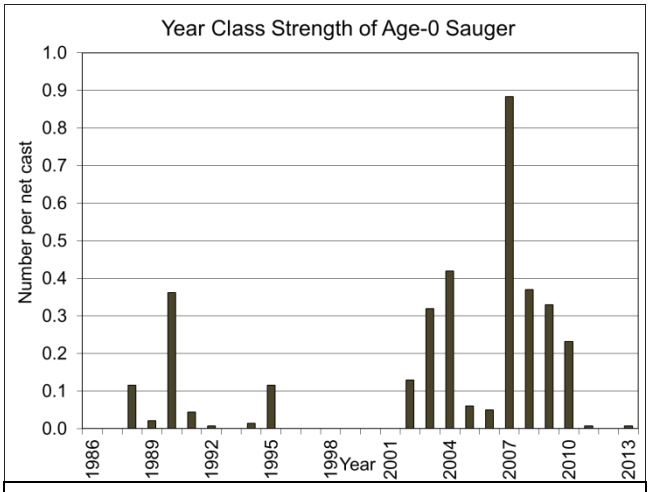

Figure 2. Year class strength of age-0 sauger as observed during fall bottom trawl surveys (1986-2013).

We may have had a strong walleye hatch, but the sauger hatch did not fare so well. In fact, only one age-0 sauger was captured in the 138 net casts involved in the survey (Figure 2). This is the third consecutive year of very limited natural reproduction of sauger.

These three years coincide with the first three years following a 10-year project to rehabilitate the sauger population. Fry were stocked into Lake Winnebago from 2001-2010, as part of this project, and these stocking events were very successful (contributing up to 76% of the year classes during this time period). After the project came to an end in 2010, DNR staff and private interest groups agreed to a five year evaluation period where no fish would be stocked. 2013 marks the third year of the evaluation period, and interest groups will meet to discuss future sauger management actions after the 5-year evaluation period is complete. One thing is for certain, the joint efforts of Walleyes for Tomorrow, Otter Street Fishing Club, and Wisconsin DNR helped rebuild the sauger population. The question now is how well the population will maintain itself.

Switching gears from gamefish species to panfish, trawling data indicate that 2013 was a poor year for reproduction of all panfish species. Both yellow perch and black crappie experienced poor hatches (Figure 3), and no bluegills were observed during the survey. Yellow perch captured in the survey ranged in size from 3.2-10.8" with the majority of the fish (51.3%) being 6.0-7.4" in total length. The strong 2009 and 2010 year classes continued to dominate the black crappie population. In fact, 52.5% of the black crappie handled during the survey were from sizes corresponding to these year classes (10.0-10.9").

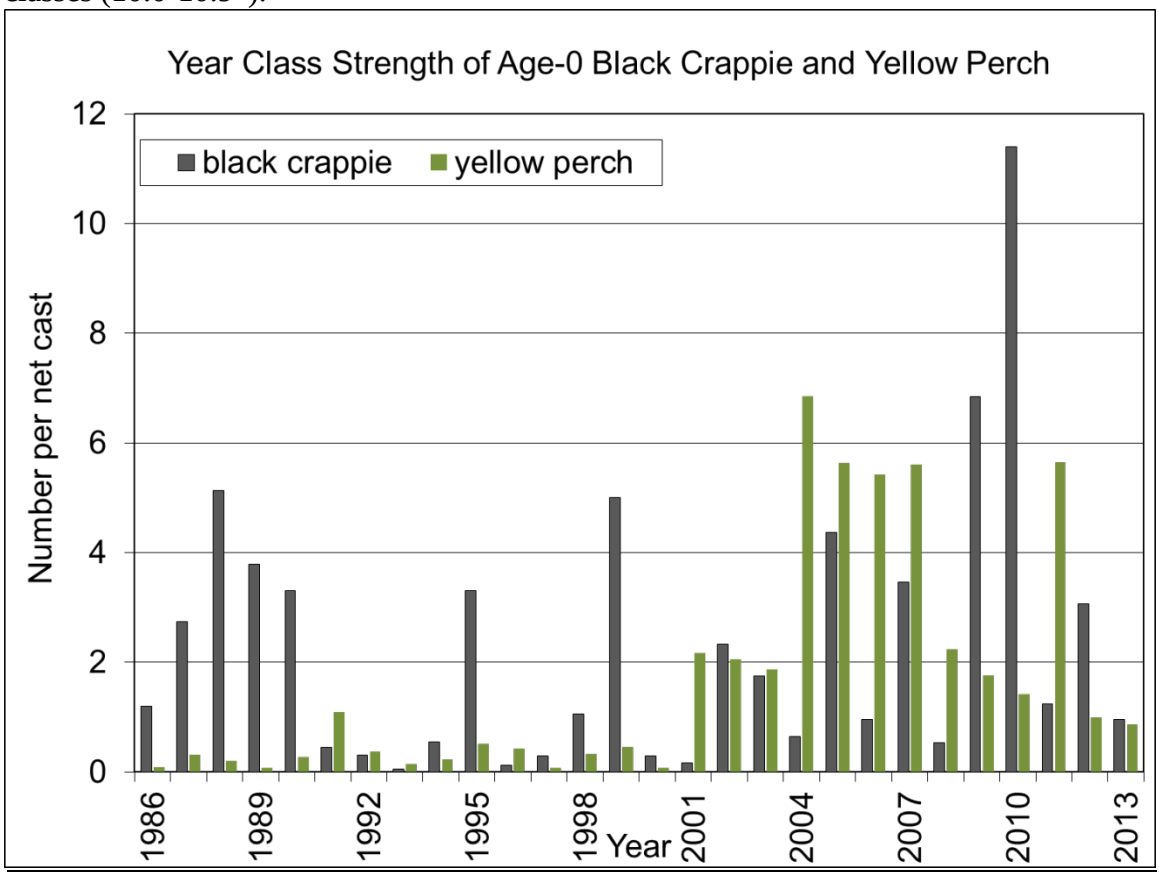

Figure 3. Year class strength of age-0 black crappie and yellow perch as observed during fall bottom trawl surveys (1986-2013).

Other than year class strength of the fish species described above, trawling data also provides useful insight into the strength of the forage base. There are numerous fish species that DNR staff monitor to assess the relative abundance of available forage for that year, but the four most influential are gizzard shad, freshwater drum (sheepshead), white bass, and trout perch. Trawling data indicate that all four of these species pulled off below average hatches in 2013 (Figure 4).

Gizzard shad abundance has the largest effect on the forage base due to their ability to pull of very large hatches that saturate the system with forage (as shown in photo on next page). Shad are also very desirable to game fish due to their high fat content. Although trawling data indicated a below average hatch of gizzard shad, the year class was still present and provided foraging opportunities for walleye and other game fish in summer/fall 2013. Shad do experience large die offs during Wisconsin winters and sturgeon opportunistically feed on dead and dying shad in years of high abundance. In recent years we have observed dozens of undigested shad in the stomachs of harvested sturgeon.

Freshwater drum may not have experienced a strong hatch in 2013, but there was a strong hatch in 2012. This year class translated into large catches of yearling drum in 2013 that were in the 7-10" range. White bass continued their highly variable recruitment and the population remains healthy in large part due to the strong 2011 year class. Further, the population is currently dominated by 11.0-12.4" fish, which are mostly from the strong 2011 year class. The trend of decreasing trout perch numbers continued in 2013, and we are not sure what factors are causing this decline.

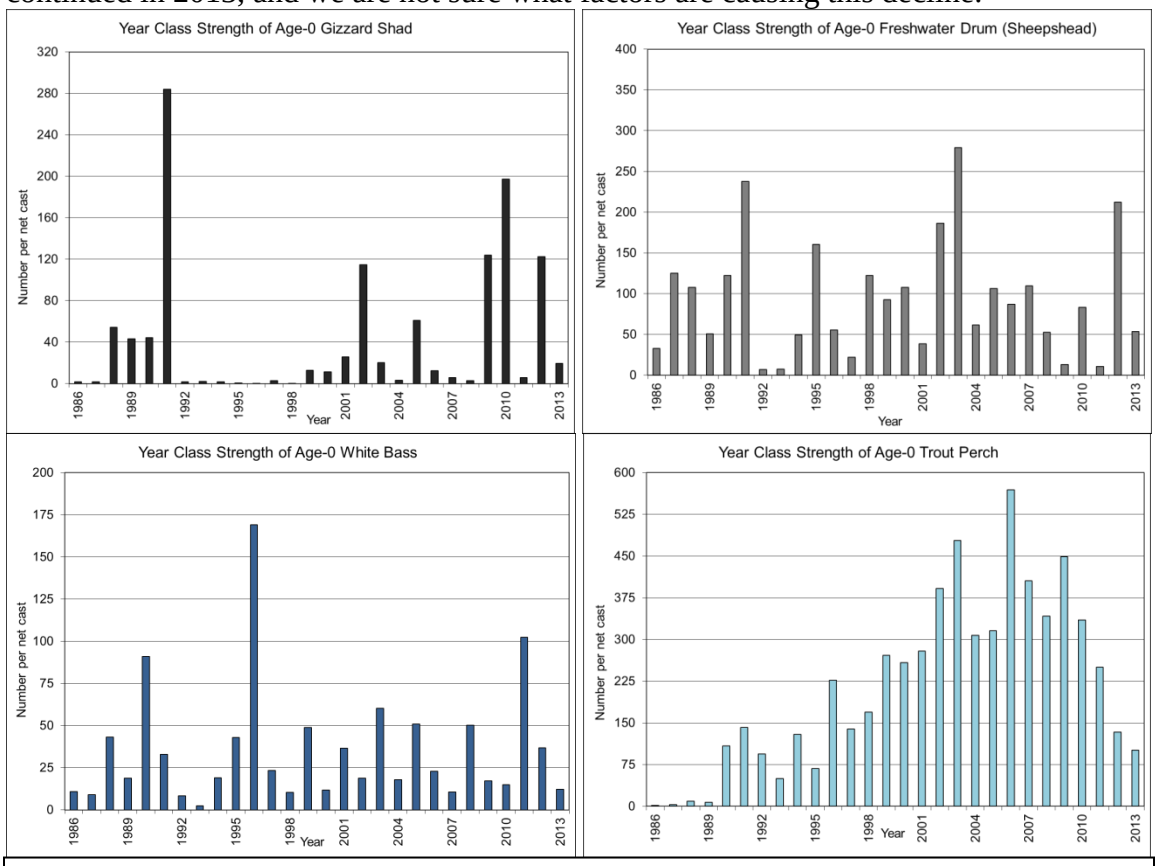

Figure 4. Year Class strength of age-0 gizzard shad, freshwater drum, white bass, and trout perch as observed during fall bottom trawl surveys (1986-2013).

Age-0 gizzard shad captured during a single net cast in August 2010. As represented in the picture, gizzard shad can pull off very large hatches when environmental conditions are favorable.

Overall, it was another successful year of trawling for our Winnebago System fisheries management crew. We observed a large hatch of walleye, but below average hatches of virtually all other fish species. By tracking the strength of these year classes through time we can better understand the driving factors behind the fish populations of interest to anglers. As I stated earlier, this is the only survey that assesses the health of the entire fisheries community within the System, which makes the data critical to our management program. We would also like to thank all of the volunteers whose assistance helped make this year's survey a success. We literally would not be able to complete the work that we do without the dedicated assistance from these volunteers.

Good luck fishing!

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