

Winnebago System Bluegill Electrofishing Survey Summary Report – 2013-2014

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In 2013 and 2014, the Department of Natural Resources conducted bluegill assessments on Lakes Butte Des Morts and Winnebago to collect data on bluegill population dynamics within the Winnebago System. Bluegills were collected from Lake Winnebago via night-time electrofishing surveys conducted on May 7th, 2013, while bluegill were collected from Lakes Winnebago and Butte des Morts on May 27th and June 9th, 2014. Bluegills were targeted in shallow bays during late spring to maximize catch as fish are concentrated in spawning areas. All bluegill caught were measured and a small subsample was sacrificed for age estimation. Weight and sex data were also collected from the fish within the subsample.

A total of 164 bluegill were captured during 2013 surveys (117 per hour shock time), while 251 were captured in 2014 (41 per hour shock time; 25.3 per mile), this catch per effort puts the 2014 sample in the 20th percentile when compared to the rest of the state. The difference in catch rate is likely due to the cool late spring water temperatures observed in 2014. These temperatures caused peak spawning activity to be drawn out over a few weeks which led to fewer bluegills spawning at any one time. The average length of bluegills was 6.7" (range 2.9-8.7") in 2013 and 6.4" (range 2.1-8.5") in 2014 (Figure 1). Size structures of bluegills observed in both years were above state wide averages with high percentages of fish greater than 6" (91% in 2013 and 74% in 2014) and 7" (31% in 2013 and 34% in 2014). However, in both years there were few bluegills over 8".

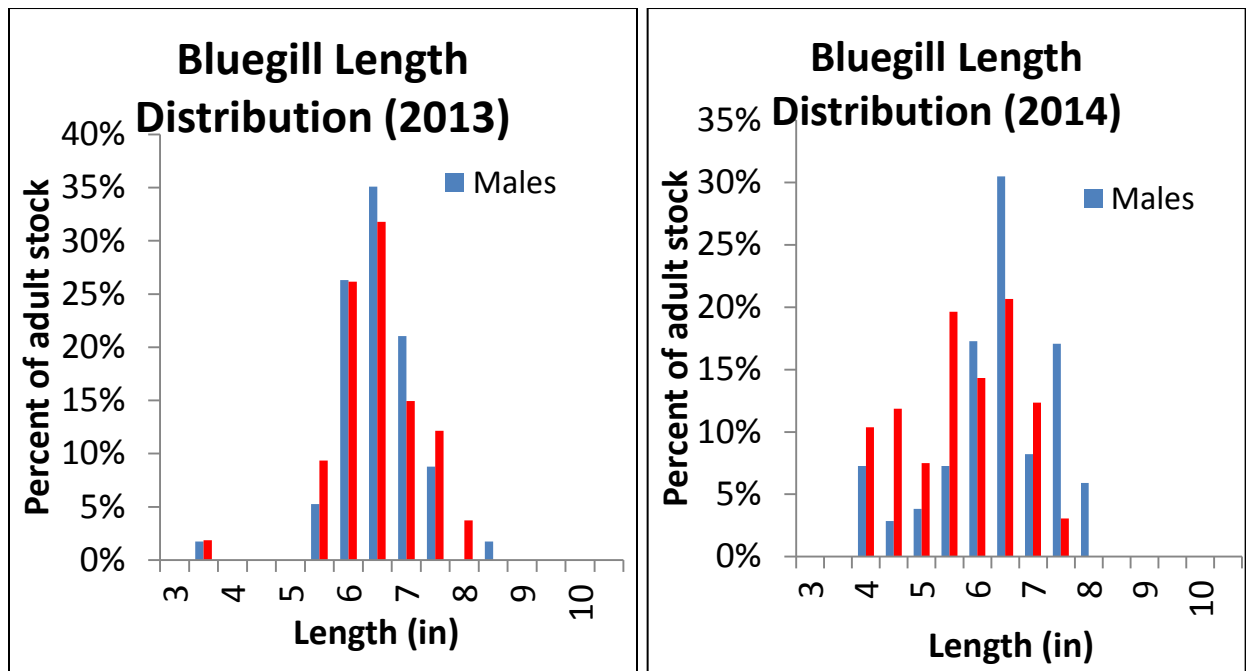


Figure 1. Displays the size structure of adult male and female bluegill captured during 2013 and 2014 spring electrofishing surveys conducted on the Winnebago System.

Otoliths (ear bones) were used to estimate age distributions of the bluegill populations for both 2013 and 2014. Bluegill ages ranged from 2-8 in 2013 with the oldest fish being an 8.5", 0.56 pound male. In 2014, bluegill ages ranged from 2-6 with the oldest fish being an 8.3", 0.46 pound female. In 2013, the bluegill population was comprised mostly of 3 year old fish (63% of females and 86% of males), while 3 year old (48% of males and 32% of females) and 4 year old (30% of males and 36% of females) fish dominated the age distribution observed in 2014 (Figure 2). Although there were higher proportions of older fish observed in 2014 than 2013, an increase in size structure that would typically be associated with this trend was not apparent. Bluegills in the Winnebago System reached harvestable size of 6" in 2.6 years, which is a faster growth rate than the statewide average of 4 years. Preliminary age data collected over these two years indicate that our bluegill population is exposed to high mortality rates (55-70% annual mortality of the adult population). This mortality estimate includes both harvest and natural mortality. These mortality estimates of mortality are actually fairly typical of a fast growing, exploited populations of bluegills in the Midwest. For example, Parsons and Reed (1998) studied annual mortality rates of bluegill in 4 Minnesota lakes and calculated average annual mortality rates to be 75%.

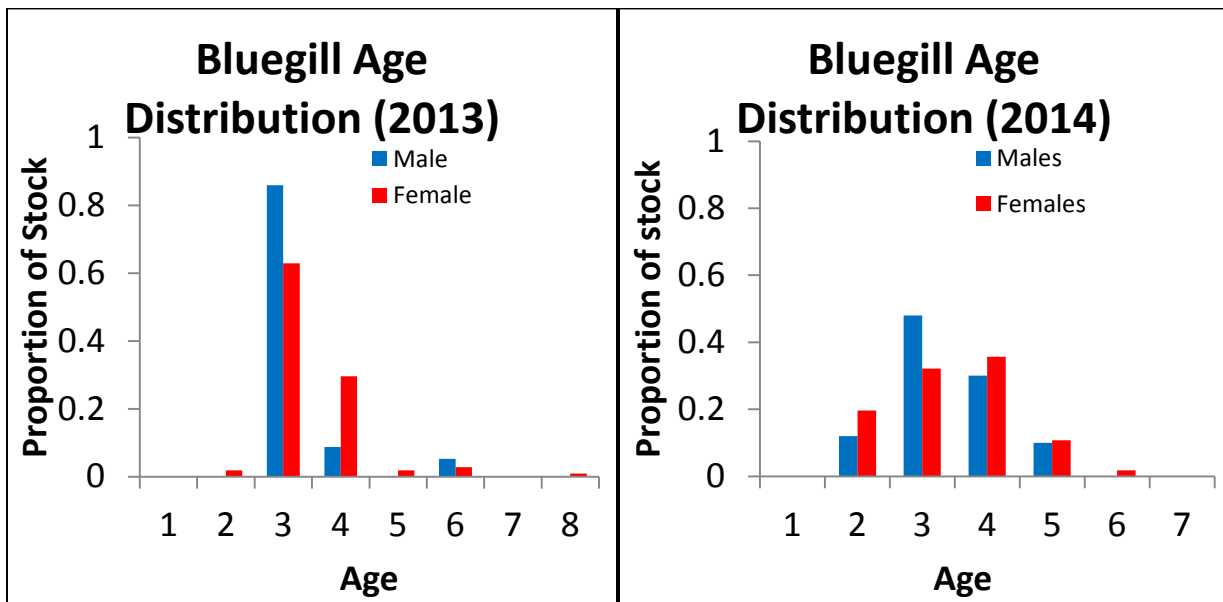


Figure 2. Displays the estimated age structure of the adult male and female bluegill population observed during 2013 and 2014 spring electrofishing surveys conducted on the Winnebago System.

The results presented in this report indicate that the Winnebago System supports a fast growing bluegill population. Further, the population consists of many fish of a harvestable size, but few over 8". Data collected over the two survey years also suggest that the age and size structure of the population has remained fairly constant, meaning the bluegill population have had consistent recruitment over the last few years.

Overall, an increase in submergent aquatic vegetation has led to an increase of panfish, including bluegill, on the Winnebago System since the early 2000's. Due to the increase in abundance of bluegill and other panfish populations, we plan to continue monitoring trends in bluegill age and length distribution through spring electrofishing surveys. Watch your inbox for more updates on fisheries work taking place on the Winnebago System. Our crew has a lot of great projects and survey's in the works for the upcoming years and we will do our best to keep anglers informed. Have a safe and successful open water fishing season!

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Parsons, B.G., J.R. Reed. 1998. Angler exploitation of bluegill and black crappie in four west-central Minnesota lakes. Minnesota Department of Natural Resources, Investigational Report 468.