WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Fisheries Survey Report for Beaver Dam Lake, Dodge County, Wisconsin 2021

WATERBODY IDENTIFICATION CODE 835100

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Executive Summary

In 2021, the Wisconsin Department of Natural Resources (DNR) conducted a comprehensive fishery survey on Beaver Dam Lake using a variety of sampling methods throughout the open water period to sample the major components of the fishery. The objectives of the survey were to 1) assess the status of the northern pike (*Esox lucius*), walleye (*Sander vitreus*), largemouth bass (*Micropterus salmoides*) and panfish populations, 2) attain a population estimate for northern pike and walleye and 3) update management recommendations for the fishery of Beaver Dam Lake. The results of the 2021 survey were compared to lakes with similar characteristics and the prior comprehensive fishery surveys conducted on Beaver Dam Lake in 2015 and 2010. Based on 2021 survey results, Beaver Dam Lake continues to offer quality fishing opportunities for northern pike, walleye, channel catfish (*Ictalurus punctatus)* and black crappie (*Pomoxis nigromaculatus*).

Northern pike catch rates were lower in 2021 (0.6 fish/net night) versus 2015 (1.6 fish /net night). The percent of northern pike over the 26-inch minimum length limit was higher in 2021 at (38%), than in 2015 (10%) and similar to 2010 (40%). Due to the low number of pike captured, a population estimate was not calculated. The northern pike population in Beaver Dam Lake is supplemented by small fingerling stocking at 10/acre. During the 2021 survey, the DNR conducted a genetic study of age-2 to age-4 northern pike which indicated that stocked northern pike contribute approximately 41% to the population. Future comprehensive fishery surveys should focus on attempting another northern pike population estimate and conducting age and growth analysis to further evaluate the population.

The walleye catch rate was above average (86th percentile) compared to lakes with similar characteristics (complex fishery, warm water temperatures and dark water) across the state. The catch rate of adult walleye was lower in 2021 (12.8 walleye/net night) compared to 2015 (25.1 walleye/net night) and 2010 (21.5 walleye/net night). However, the 2021 survey produced an adult walleye population estimate of 7,765 walleye (95% CI = 5,422-11,760) or 1.2 adults per acre. This was similar to previous population estimates of 1.4 adult walleye/acre in 2015 and 0.8 adult walleye/acre in 2010. The walleye population showed good size structure, maintained by small fingerling stocking at 35/acre in alternate, even years. The average length of walleye sampled in 2021 was 17.6 inches compared to 11.6 in 2015 and 14.5 in 2010.

Black crappie were abundant, with an above average catch rate (75th percentile) compared to lakes with similar characteristics. Lengths ranged from 3.1 to 13.2 inches with an average length of 7.9 inches. White crappie (*Pomoxis annularis*) were also abundant with lengths ranging from 3.6 to 13.2 inches and an average length of 8.5 inches.

The bluegill (*Lepomis macrochirus*) catch rate continues to be below average compared to similar lakes. Size structure is similar to past surveys with quality-size

bluegill (equal to or greater than 6 inches) being common, and a low proportion of preferred-size bluegill (equal to or greater than 8 inches) being present.

Current Wisconsin Department of Natural Resources (DNR) sampling protocols do not accurately assess yellow perch (*Perca flavescens*) or black crappie. Angler concerns over the populations of these species should lead to more intensive sampling in the next survey to address the potential impacts and develop science-based decisions on their management.

Management recommendations include:

1. Monitor the northern pike population and reevaluate size structure, abundance, growth, length at age, relative weight and conduct a population estimate in the next comprehensive fishery survey. Continue to stock small fingerling northern pike at 10/acre every year.
2. Monitor the walleye population and reevaluate size structure, abundance, growth, length at age, relative weight and conduct a population estimate in the next comprehensive fishery survey. Continue to stock small fingerling walleye at 35/acre in alternate, even years.
3. Maintain an adult walleye density of at least 2 adults/acre and retain the 18-inch minimum length, three fish daily bag limit to protect the population. Conduct genetic analyses to determine the extent of natural reproduction in the walleye population.
4. Monitor the largemouth bass population and reevaluate size structure, abundance, length at age, relative weight and growth in the next comprehensive fishery survey.
5. Monitor the black crappie population to evaluate size structure, abundance, growth, length at age and relative weight in the next comprehensive fishery survey.
6. Monitor the bluegill population and reevaluate size structure, abundance, length at age, relative weight and growth in the next comprehensive fishery survey.
7. Monitor the yellow perch population to evaluate size structure, abundance, growth, length at age and relative weight in the next comprehensive fishery survey.
8. Monitor the relative abundance of the common carp (*Cyprinus carpio*) population, via catch rates, in the next comprehensive fishery survey.
9. Conduct a lake-wide creel survey to estimate angler harvest and exploitation of all fish species in Beaver Dam Lake. Given the large size of the lake and current DNR budget structure, this may be cost prohibitive.

Introduction

Beaver Dam Lake is a 6,718-acre, shallow, lowland, hypereutrophic drainage lake located in northwestern Dodge County (Figure 1). It lies within four townships: Fox Lake, Trenton, Westford and Beaver Dam. The city of Beaver Dam, Wisconsin is located along the southeast shoreline which includes the Beaver Dam Lake dam and Beaver Dam River outlet of the lake. The lake's maximum depth is 7 feet with an average depth of 5 feet. The lake has two major inlets that drain from the north and northwest: Mill Creek, the outlet of a dam that creates upstream Fox Lake and Beaver Creek, which flows from the Westford Marsh wetland and agricultural watershed. Beaver Dam Lake consists of over 40 miles of shoreline that is a mix of heavily developed on the southern end to moderately developed with wetland, agricultural and forested complexes to the north. There are three large bays on the lake (Rakes, Trestle Works and Beaver Bay). The bottom substrate consists of muck and rock. There is ample public access throughout with the majority in the urbanized southeast portion of the lake. Documented aquatic invasive species include common carp, Curly-Leaf Pondweed (*Potamogeton crispus*), Eurasian Watermillfoil (*Myriophyllum spicatum*) and Zebra Mussel (*Dreissena polymorpha*).

In 1968, the water level of Beaver Dam Lake was drawn down and the lake was chemically treated to remove a fishery dominated by common carp and bullhead. Exceptional fishing quickly developed but by 1972, common carp were again becoming abundant. After a severe winterkill in 1978, the lake was once again dominated by common carp and bullhead. In 1987, the lake was drawn down and chemically treated with rotenone to improve the fishery, water clarity and promote reestablishment of submerged aquatic plants needed for wildlife habitat. The management strategy following the 1987 treatment was to control common carp and bullhead populations by quickly stocking large numbers of diverse species to fill the niches once occupied by common carp and bullhead.

One measure of a lake's health is the trophic state, which relates to the amount of algae in the water. Beaver Dam Lake's average summer trophic state for the last 5 years was 81 (Hypereutrophic) and was determined using chlorophyll data. For a shallow lowland lake, this is considered poor. Shallow lowland lakes do not stratify, or form separate layers of water, during the summer months and have watersheds greater than 4 square miles in area. Beaver Dam Lake is prone to severe blue-green algal blooms in the summer.

Public boat access with parking is available at Waterworks Park, Tahoe Park and Edgewater Park, located in and managed by the City of Beaver Dam. Spring Road/Hickory Bay located in and managed by the Town of Fox Lake. Derge County Park located in the Town of Westford and managed by Dodge County Land Resources & Parks. Fish Camp and Mill Creek boat landings located in the Town of Trenton and managed by the Wisconsin Department of Natural Resources (DNR). Suitable public

access provides recreational opportunities for both anglers and recreational boaters. Recreational use is heavy year-round, especially during summer weekends.

The fishery is an important resource for anglers throughout Dodge and surrounding counties. Northern pike, walleye and largemouth bass are the primary gamefish species, while black and white crappie along with yellow perch are the principal panfish species. Walleye, black crappie, white crappie, channel catfish, white sucker (*Catostomus commersonii*), yellow perch and common carp are abundant. Bluegill, largemouth bass, bigmouth buffalo (*Ictiobus cyprinellus*), yellow bullhead (*Ameiurus natalis*), brown bullhead (*Ameiurus nebulosus*), and bowfin (*Amia calva*) are common. Green sunfish (*Lepomis cyanellus*), pumpkinseed (*Lepomis gibbosus*), orangespotted sunfish (*Lepomis humilis*), white bass (*Morone chrysops*), yellow bass (*Morone mississippiensis*), black bullhead (*Ameiurus melas*), northern pike, and muskellunge (*Esox masquinongy*) are present. Muskellunge are present likely due to downstream immigration from Fox Lake.

Beaver Dam Lake currently receives small fingerling northern pike at 10/acre every year and small fingerling walleye at 35/acre in alternate, even years (Table 1). The most recent fish stocking events include 380,825 small fingerling walleye in 2018 and 289,653 small fingerling walleye in 2019. No walleye stocking occurred in 2020 or 2021, which was the reason for the 2019 stocking with surplus fish from the Lake Mills State Fish Hatchery (LMSFH). In 2021, the lake received 15,985 large fingerling northern pike instead of small fingerlings due to situations at the hatchery. In 2021, Beaver Dam Lake was part of a DNR South District northern pike genetics study which sampled genetic and age structures from 150 individuals in the age-2 to age-4 year classes to identify the contribution of stocked northern pike to the fishery. Although the sample size was small (n=34), preliminary results indicate that stocked northern pike made up approximately 41% of the population. The Beaver Dam Lake Improvement Association (BDLIA) and Beaver Dam Lake District (BDLD) stock walleye, yellow perch, black crappie and bluegill (Table 2).

Current fishing regulations follow the general inland regulations except for walleye which carries an 18-inch minimum length limit and a three fish daily bag limit. The walleye regulation was put into effect in 2002 and applies to all tributaries of the lake. Mill Creek from the lake upstream to the dam at Fox Lake and Beaver Creek from the lake upstream to the Hwy G bridge are listed as fish refuges and are closed to fishing from March 1 through the Friday preceding the first Saturday in May.

The significance of the fishery and high, year-round public use justifies regular monitoring of the fish community to assess management options and maximize the potential of the fishery. The last comprehensive fish survey was conducted in 2015.

Methods

This survey was scheduled to be completed in 2020. Four nets were set on March 23, 2020, in the southern basin of the lake. COVID-19 restrictions caused the survey to be canceled and all nets were pulled on March 24. The 2021 Beaver Dam Lake comprehensive fishery survey intended to replicate the efforts of the 2015 survey to compare capture rates, population size and growth metrics of the more popular fish species.

On March 26, 2021, four white nylon fyke nets (0.75-inch bar mesh, 3 x 6-foot frames) were set in the southern basin of Beaver Dam Lake to target spawning northern pike and walleye during spring netting I (SNI). An additional four fyke nets were set on March 27 in the northern basin of the lake. All nets were pulled on April 1 due to staffing issues. Four nets were then reset on April 5 and one additional net was set on April 6. Nets were checked daily and were removed as catch rates dropped. All nets were removed on April 16, 2021, for a total of 82 net nights of effort. All gamefish sampled were measured to the nearest 0.1 inch and weight was taken to the nearest 0.06 pound on a subsample of northern pike, muskellunge and walleye. In order to attain northern pike and walleye population estimates all northern pike and walleye sampled were marked as follows: males received a left pelvic fin clip, females a right pelvic fin clip and those of unknown sex received a top caudal (tail) fin clip. All largemouth bass were marked with a top caudal fin clip to eliminate duplicate counts. Throughout the survey northern pike and walleye were examined for marks and noted as recaptures if marks were found. Additionally, aging structures were removed from northern pike, walleye, largemouth bass and bluegill according to standard sampling protocols for age and growth estimates. These protocols include removing an otolith from bluegill, a pelvic fin ray from northern pike greater than 12 inches, a second or third dorsal spine from walleye greater than 12 inches or largemouth bass greater than 10 inches in length, and a scale sample from northern pike and walleye less than 12 inches or largemouth bass less than 10 inches in length. Aging structures were collected until five structures were collected for each species and each sex for every half inch increment. A subsample of bluegill, black crappie, white crappie, yellow perch and channel catfish were measured to the nearest 0.1 inch. Other fish species encountered were identified to species and counted.

Spring electrofishing I (SEI) using a DNR standard pulsed direct current (PDC) boom shocker boat was conducted at night on April 21 and April 22. One six-mile transect was conducted on April 21 and two three-mile transects were conducted on April 22 for a total of twelve miles of shoreline. The objective of SEI was to count, measure, and inspect for fin clips adult northern pike and walleye to facilitate the calculation of population estimates for both species. Northern pike and walleye sampled were measured to the nearest 0.1 inch. Aging structures were collected until five structures were collected for each species and each sex for every half-inch increment. Due to restrictions of COVID-19 and staff vacancies, only one dipper was utilized instead of

the typical two dippers. Sampling used two probes (each with eight droppers) and a dip net bar mesh of 0.375 inches.

Spring centrarchid electrofishing (SEII) using a DNR standard PDC boom shocker boat was conducted at night May 4-May 7 targeting largemouth bass, panfish species and common carp. Six 2.0-mile stations along the shoreline were selected randomly around the lake. For each 2.0-mile station, all fish species were netted, and catchable common carp were counted in the first 0.5 mile. Only largemouth bass were sampled in the remaining 1.5 miles. One largemouth bass station was cut short at 1.35 miles due to angler activity. The total SEII effort was 11.85 miles of sampling for largemouth bass and 3.0 miles of sampling effort for all other species. At stations targeting all species, all fish were collected and gamefish and panfish were measured to the nearest 0.1 inch. Other fish were identified to species and counted. Catchable common carp were counted. At stations targeting only largemouth bass, all largemouth bass sampled were measured to the nearest 0.1 inch. All gamefish were examined for the presence of fin clip marks from SNI. Age structures were taken from bluegill and largemouth bass until five of each half inch length bin were collected. Dense mats of curly-leaf pondweed and blue-green algae blooms made sampling difficult as heavy vegetation dampens the electrical field produced by the equipment and limits the effectiveness on fish. Due to restrictions of COVID-19 and staff vacancies, only one dipper was utilized instead of the typical two dippers. Sampling used two probes (each with eight droppers) and a dip net bar mesh of 0.375 inches.

Fall electrofishing (FE) using a DNR standard PDC boom shocker boat was conducted at night on October 27, November 1 and November 2 to assess the abundance of young-of-the-year (YOY) and juvenile walleye. Six 2.0-mile stations were selected randomly around the lake for a total of 12.0 miles of sampling effort. For each 2.0-mile station, all fish species were netted during the first 0.5 mile and only gamefish species were sampled in the remaining 1.5 miles. Low water levels made electrofishing close to shore difficult. During FE sampling, all fish except common carp and bigmouth buffalo were measured to the nearest 0.1 inch. Changes to COVID-19 protocols allowed using two dippers, two probes (each with eight droppers) and a dip net bar mesh of 0.375 inches.

Relative weight, the ratio of a fish's weight to the weight of a standard fish of the same length based on a scale of 100, was used to assess body condition of northern pike and walleye. Mean relative weight (W_r) was calculated by length group as an index of northern pike and walleye condition using a standard length-at-weight equation (Willis, 1989). Average relative weight was calculated for each species and for each sex separately when sex data were available. Relative weight values between 75 and 100 indicate normal weight for a given length. A relative weight value greater than 100 indicates that a fish is in excellent condition. A relative weight value less than 75 indicates that a fish is in poor condition.

Proportional size distribution (PSD) was calculated for northern pike, walleye, largemouth bass, bluegill, black crappie, white crappie and yellow perch to assess population size-structure. Stock lengths are based on standardized lengths for each species: northern pike (14 inches), walleye (10 inches), largemouth bass (8 inches), bluegill (3 inches), white crappie and black crappie (5 inches), yellow perch (5 inches). Quality lengths used were: northern pike (21 inches), walleye (15 inches), largemouth bass (12 inches), bluegill (6 inches), white crappie and black crappie (8 inches), yellow perch (8 inches). Proportional size distribution-preferred (PSD-P) was also calculated for northern pike, walleye, largemouth bass, bluegill, white crappie and black crappie to assess the proportion of fish in the population that are a preferred length by anglers. These are based on standardized lengths for each species: northern pike (28 inches), walleye (20 inches), largemouth bass (15 inches), bluegill (8 inches), white crappie and black crappie (10 inches), yellow perch (10 inches) (Anderson and Neuman, 1996).

Growth information from northern pike, walleye, largemouth bass and bluegill was obtained according to established protocols for each species and included fin rays, dorsal spines, otoliths and scale samples collected throughout the comprehensive fishery survey. Growth data from Beaver Dam Lake was compared to average statewide and south district growth rates from the Fisheries Management Information System database.

Results and Discussion

A total of 12,504 fish of seventeen different species were collected throughout the 2021 comprehensive fishery survey, with 11,721 fish sampled during SNI (Table 3). A total of 224 fish were sampled during SEI (Table 4), while only 133 fish were sampled during SEII (Table 5) most likely due to dense mats of curly-leaf pondweed and water clarity. A total of 426 fish were sampled during FE (Table 6) after aquatic vegetation died back and water clarity improved. Walleye, black crappie, channel catfish, white crappie, white sucker, yellow perch and common carp were abundant. Bigmouth buffalo, bluegill, brown bullhead, largemouth bass and yellow bullhead were common. Black bullhead, northern pike, muskellunge and pumpkinseed were present.

WALLEYE

In the 2021 SNI, 1,050 walleye were sampled for a catch rate of 12.8 walleye/net night. This catch rate is above average (86th percentile) compared to lakes with similar characteristics (complex fishery, warm water temperatures and dark water) across the state. Lengths ranged from 7.5 to 27.0 inches with an average length of 17.6 inches (Figure 2). The largest walleye sampled in the 2021 SNI was a 27.0-inch female that weighed 7.6 pounds. Of the 1,050 walleye sampled in the 2021 SNI, 26.1% were female, 60.6% were male and 13.3% were immature/unknown sex compared to 5.4% female,

35.4% male and 59.2% immature/unknown sex in 2015 (due to a large year class of immature fish sampled).

In the 2015 SNI, 2,862 walleye were sampled for a catch rate of 25.1 walleye/net night. This catch rate is above average (95th percentile) compared to lakes with similar characteristics across the state. Lengths ranged from 4.7 to 25.7 inches with an average length of 11.6 inches. The 2015 SNI sample contained an extremely large year class of immature walleye (43% of the total sample was less than or equal to 10-inches in length, which skewed the average). In 2010 SNI, 4,163 walleye were sampled for a catch rate of 21.5 walleye/net night. This catch rate is above average (93rd percentile) compared to lakes with similar characteristics across the state. Lengths ranged from 6.1 to 27.4 inches with an average length of 14.5 inches.
In 2021, the percent of walleye over the 18-inch minimum length limit was 52%, higher than in 2015 (7%) and 2010 (11%). No creel data is available to estimate harvest levels of walleye by anglers that may be leading to changes in in the number of walleye over the minimum length limit.

The size structure of the walleye population has shifted substantially from the 2021 and 2015 and 2010 surveys. Walleye PSD values were higher in 2021 (79), compared to 2015 (49) and 2010 (44). While PSD was higher in 2021, quality sized walleye (equal to or greater than 15 inches) were common in all survey years. In 2021, walleye PSD-P was 23, indicating a much larger proportion of preferred-size walleye (equal to or greater than 20 inches) compared to 2015 (2) and 2010 (4). Average W_r also increased to 99.7 in 2021 from 94.9 in 2015. The length frequency histograms do not indicate a dramatic decline in the number of walleye over the current 18-inch minimum length limit. Therefore, angler exploitation is currently not likely a factor driving walleye size structure in Fox Lake.

A population estimate was calculated from 202 adult walleye out of the 218 that were examined for marks during the 2021 SEI. Of the 961 walleye marked at large, 25 were recaptured for a R/C of 0.12 and a Peterson estimate of 7,765 Walleye (95% CI = 5,422-11,760) or 1.2 adults per acre with a CV of 18.72%. The population estimate in 2015 was 1.4 adult walleye/acre and in 2010 it was 0.8 adult walleye/acre.

Walleye ranged from age-1 to age-14, indicating multiple year classes and potential limited natural recruitment or downstream migration of fish from Fox Lake in unstocked years. Walleye growth rates were comparable to both the south district and statewide averages (Figure 3). Male walleye between 15.0 and 15.9 inches were in the 60th percentile for growth versus the 43rd percentile in 2015. Female walleye between 18.0-18.9 inches were in the 41st percentile versus the 26th percentile in 2015. A weighted regression of the catch curve for walleye age 7-14 in 2021 showed instantaneous mortality was approximately 24% and angling mortality was low at only 4% (Figure 4).

During the 2021 FE, 150 walleye were sampled for a catch rate of 12.5 walleye/mile (24.3 walleye/hour). Lengths ranged from 5.4 to 24.1 inches with an average length of 11.5 inches. In 2015 FE, 897 walleye were sampled for a catch rate of 44.9 walleye/mile (81.5 walleye/hour). Lengths ranged from 5.8 to 26.5 inches with an average length of 11.9 inches. In 2010 FE, 1,463 walleye were sampled for a catch rate of 61.0 walleye/mile (114.9 walleye/hour). Lengths ranged from 6.0 to 26.3 inches with an average length of 13.2 inches (Figure 5). Out of the 150 walleye captured in 2021, 81 were young-of-year (YOY). It is unclear if these are naturally reproduced fish or downstream migration of fish from Fox Lake in an unstocked year. Genetic sampling in future surveys should be conducted to answer this question.

NORTHERN PIKE

In the 2021 SNI, 50 northern pike were sampled for a catch rate of 0.6 northern pike/net night. This catch rate is below average (24th percentile) compared to lakes with similar characteristics across the state. Lengths ranged from 15.7 to 33.7 inches with an average length of 25.0 inches (Figure 6). The largest northern pike captured in the 2021 SNI was a 33.7-inch female that weighed 9.75 pounds. In the 2015 SNI, 184 northern pike were sampled for a catch rate of 1.6 northern pike/net night. This catch rate is average (53rd percentile) compared to lakes with similar characteristics across the state. Lengths ranged from 8.4 to 33.2 inches with an average length of 15.8 inches. In 2010 SNI, 94 northern pike were sampled for a catch rate of 0.5 northern pike/net night. This catch rate is below average (19th percentile) compared to lakes with similar characteristics across the state. Lengths ranged from 10.2 to 33.5 inches with an average length of 24.8 inches.

The percent of northern pike over the 26-inch minimum length limit in 2021 SNI was 38%, higher than in 2015 (10%) but slightly lower than 2010 (40%). No creel data is available to estimate harvest levels of northern pike by anglers that may be affecting size structure.

Northern pike PSD values have changed over time with a value of 82 in 2021 (43 in 2015, 89 in 2010). This indicates decent population size structure with a large proportion of quality-size northern pike (equal to or greater than 21 inches) present. Northern pike PSD-P was similar across survey years. In 2021, northern pike PSD-P was 24 (13 in 2015 and 28 in 2010), indicating decent proportions of preferred-size northern pike (equal to or greater than 28 inches) are present.

Northern pike body condition was good as suggested by W_r values that ranged from 81 to 134, with a mean W_r of 100 (n = 37). This was similar to W_r values from 2015 that ranged from 60 to 143 with a mean W_r of 99. This indicates that the forage base is adequate to maintain the three top predator species (northern pike, walleye and largemouth bass) and density dependent factors may not currently be affecting the size structure of northern pike in Beaver Dam Lake.

Growth rates closely mimicked south district averages up to age 6 where they dipped lower but were still slightly above the statewide average (Figure 7). Due to the small sample size, a population estimate was not calculated for northern pike in 2021. Two northern pike were sampled during the 2021 SEI and neither were marked from previous surveys.

During the 2021 FE, seven northern pike were sampled for a catch rate of 0.6 northern pike/mile (1.1 northern pike/hour). Lengths ranged from 9.0 to 23.7 inches with an average length of 20.4 inches. One 9.0-inch fish was sampled, indicating some survival of the large fingerling northern pike stocked in 2021. In 2015 FE, 30 northern pike were sampled for a catch rate of 1.5 northern pike/mile (2.7 northern pike/hour). Lengths ranged from 10.0 to 31.4 inches with an average length of 19.0 inches. In 2010 FE, five northern pike were sampled for a catch rate of 0.21 northern pike/mile (0.4 northern pike/hour). Lengths ranged from 12.0 to 26.6 inches with an average length of 18.7 inches.

LARGEMOUTH BASS

In the 2021 SNI, 10 largemouth bass were sampled for a catch rate of 0.1 largemouth bass/net night. Lengths ranged from 5.8 to 18.6 inches with an average length of 12.2 inches (Figure 8). In the 2015 SNI, 76 largemouth bass were sampled for a catch rate of 0. 7 largemouth bass/net night. Lengths ranged from 3.5 to 15.8 inches with the majority from a young year class resulting in an average length of 5.4 inches. In 2010 SNI, 79 largemouth bass were sampled for a catch rate of 0.4 largemouth bass/net night. Lengths ranged from 6.1 to 20.2 inches with an average length of 14.5 inches. Fyke netting is not a gear that samples largemouth bass populations well, which is why they are the focus during SEII sampling events.

In the 2021 SEII, 39 largemouth bass were sampled for a catch rate of 3.3 largemouth bass/mile (6.2/hour). This catch rate is below average (10th percentile) compared to similar lakes. Lengths ranged from 3.4 to 16.5 inches with an average length of 8.8 inches. In the 2015 SEII, 13 largemouth bass were sampled for a catch rate of 1.1 largemouth bass/mile (2.2/hour). This catch rate is below average (4th percentile) compared to similar lakes. Lengths ranged from 5.4 to 17.1 inches with an average length of 12.8 inches. In the 2010 SEII, 34 largemouth bass were sampled for a catch rate of 3.5 largemouth bass/mile (6.2/hour). Lengths ranged from 6.9 to 18.1 inches with an average length of 13.7 inches. Age structures were taken from all 39 largemouth bass during 2021 SEII indicating six year classes. Growth rates for age-1 to age-6 largemouth bass were slower than south district averages but similar to the statewide average (Figure 9). Since catch rates produced a small sample size, age and growth information on largemouth bass in Beaver Dam Lake should be a priority in the next survey.

In 2021, largemouth bass PSD was 21 and PSD-P was 13 and in 2015 PSD was 82 and PSD-P was 27. This indicates that both quality-size largemouth bass (equal to or

greater than 12 inches) and preferred-size (equal to or greater than 15 inches) largemouth bass were common in the population during both survey years.

During the 2021 FE, 55 largemouth bass were sampled for a catch rate of 4.6 largemouth bass/mile (8.9/hour). This catch rate is below average (14th percentile) compared to similar lakes. Lengths ranged from 4.5 to 18.1 inches with an average length of 11.4 inches. In the 2015 FE, 215 largemouth bass were sampled for a catch rate of 10.8 largemouth bass/mile (19.5/hour). This catch rate is below average (31st percentile) compared to similar lakes. Lengths ranged from 3.7 to 17.3 inches with an average length of 10.2 inches. In the 2010 FE, 245 largemouth bass were sampled for a catch rate of 10.2 largemouth bass/mile (19.2/hour). This catch rate is below average (30th percentile) compared to similar lakes. Lengths ranged from 3.5 to 18.4 inches with an average length of 13.1 inches.

BLACK CRAPPIE

Black crappie was the most abundant panfish species sampled in 2021 SNI, with a total of 1,387 sampled and a catch rate of 16.9 black crappie/net night. This catch rate is above average (75th percentile) compared to lakes with similar characteristics. Lengths ranged from 3.1 to 13.2 inches with an average length of 7.9 inches (Figure 10). In the 2015 SNI, an extremely large young year class dominated the total catch of 22,574 black crappie for a catch rate of 198.0 black crappie/net night. This catch rate is above average (100th percentile) compared to similar lakes. Lengths ranged from 2.5 to 10.8 inches with an average length of 4.0 inches. In the 2010 SNI, 4,249 black crappie were sampled for a catch rate of 21.9 black crappie/net night. This catch rate is above average (78th percentile) compared to similar lakes. Lengths ranged from 2.9 to 14.3 inches with an average length of 8.9 inches.

In 2021, black crappie PSD was 43 and PSD-P was 38 indicating that the population was comprised of a decent proportion of both quality-size (greater than or equal to 8 inches) and preferred-size (greater than or equal to 10 inches) black crappie. In 2015, black crappie PSD was 28 and PSD-P was 21, indicating that the population in 2015 was comprised of a smaller proportion of quality-size and preferred-size black crappie compared to 2021. In 2010, black crappie PSD was 81 and PSD-P was 29. Of the black crappie measured in 2021, 37% were 8 inches or greater. During the one-day netting survey in 2020, 54 black crappie were captured with a range of 6.4 to 11.5 inches and an average length of 8.5 inches. Catch rates were 13.5/net night and PSD was 72.

In the 2021 SEII, five black crappie were sampled for a catch rate of 1.7 black crappie/mile (3.2/hour). Lengths ranged from 3.6 to 4.9 inches with an average length of 4.2 inches. In 2015 SEII, five black crappie were sampled for a catch rate of 1.7 black crappie/mile (3.2/hour). Lengths ranged from 10.1 to 11.1 inches with an average length of 10.6 inches. In the 2010 SEII, 18 black crappie were sampled for a catch rate

of 7.2 black crappie/mile (12.0/hour). Lengths ranged from 5.4 to 10.5 inches with an average length of 8.8 inches.

During the 2021 FE, 37 black crappie were sampled for a catch rate of 12.3 black crappie/mile (23.6/hour). Lengths ranged from 6.0 to 10.4 inches with an average length of 6.1 inches. In 2015 FE, 305 black crappie were sampled for a catch rate of 61.0 black crappie/mile (105.8/hour). Lengths ranged from 2.5 to 11.9 inches with an average length of 6.3 inches. In the 2010 FE, 343 black crappie were sampled for a catch rate of 57.2 black crappie/mile (103.4/hour). Lengths ranged from 2.9 to 12.0 inches with an average length of 4.5 inches.

WHITE CRAPPIE

White crappie was the second most abundant panfish species captured in 2021 SNI, with a total of 719 sampled for a catch rate of 8.8 white crappie/net night. Lengths ranged from 3.6 to 13.2 inches with an average length of 8.5 inches (Figure 11). Of the white crappie sampled in the 2021 SNI, 72% were equal to or greater than 8 inches. In 2015 SNI, 468 white crappie were sampled for a catch rate of 4.1 white crappie/net night. Lengths ranged from 3.9 to 12.9 inches with an average length of 7.9 inches. In the 2010 SNI, 21 white crappie were sampled for a catch rate of 0.1 white crappie/net night. Lengths ranged from 7.8 to 12.0 inches with an average length of 9.9 inches.

In 2021, white crappie PSD was 86 and PSD-P was 33 indicating that the population was comprised of a large proportion of quality-size (greater than or equal to 8 inches) and preferred-size (greater than or equal to 10 inches) white crappie. In 2015, white crappie PSD was 84 and PSD-P was 4, indicating that the population in 2015 was comprised of a large proportion of quality-size white crappie, but few of preferred-size. White crappie PSD in 2010 was 91 and PSD-P was 48.

In the 2021 SEII, six white crappie were sampled, for a catch rate of 3.0 white crappie/mile (3.8/hour). Lengths ranged from 3.3 to 8.4, with an average length of 5.3 inches. No white crappie were sampled in the 2015 or 2010 SEII.

In the 2021 FE, four white crappie were sampled for a catch rate of 1.3 white crappie/mile (2.6/hour). Lengths ranged from 4.4 to 4.9 inches with an average length of 4.7 inches. In the 2015 FE, two white crappie were sampled for a catch rate of 0.4 white crappie/mile (2.6/hour). No white crappie were sampled in the 2010 FE.

YELLOW PERCH

In the 2021 SNI, 517 yellow perch were sampled for a catch rate of 6.3 yellow perch/net night. This catch rate is above average (71st percentile) compared to similar lakes. Lengths ranged from 5.6 to 12.4 inches with an average length of 8.1 inches (Figure 12). In the 2015 SNI, 27,331 yellow perch were sampled for a catch rate of 239.7 yellow perch/net night. This catch rate is above average (100th percentile) compared to similar lakes. Lengths ranged from 3.7 to 9.9 inches with an average length of 5.8

inches. The 2015 SNI sample contained an extremely large year class of immature yellow perch which skewed the average. In the 2010 SNI, 1,486 yellow perch were sampled for a catch rate of 7.7 yellow perch/net night. This catch rate is above average (76th percentile) compared to similar lakes. Lengths ranged from 5.6 to 13.0 inches with an average length of 8.1 inches.

Yellow perch PSD was calculated using SNI data from 2021, 2015 and 2010. In 2021, yellow perch PSD was 49 and PSD-P was 13 indicating that the population was comprised of a large proportion of quality-size (greater than or equal to 8 inches) and preferred-size (greater than or equal to 10 inches) yellow perch. In 2015, yellow perch PSD was 20 and PSD-P was 0, indicating that the population in 2015 was comprised of a moderate proportion of quality-size yellow perch, but none of preferred-size. Yellow perch PSD in 2010 was 43 and PSD-P was 13.

In the 2021 SEII, three yellow perch were sampled for a catch rate of 1.0 yellow perch/mile (1.93/hour). Lengths ranged from 3.9 to 8.4 inches with an average length of 6.6 inches. In the 2015 SEII, five yellow perch were sampled for a catch rate of 1.7 yellow perch/mile (3.2/hour). Lengths ranged from 5.2 to 8.6 inches with an average length of 7.0 inches. In 2010 SEII, three yellow perch were sampled for a catch rate of 1.2 yellow perch/mile (2.0/hour). Lengths ranged from 4.7 to 8.4 inches with an average length of 6.2 inches.

In the 2021 FE, four yellow perch were sampled for a catch rate of 1.3 yellow perch/mile (2.6 yellow perch/hour). Lengths ranged from 4.1 to 7.7 inches with an average length of 5.2 inches. In the 2015 FE, 321 yellow perch were sampled for a catch rate of 64.2 yellow perch/mile (111.3 yellow perch/hour). Lengths ranged from 3.8 to 10.6 inches with an average length of 5.2 inches. In the 2010 FE, 113 yellow perch were sampled for a catch rate of 33.0 yellow perch/mile (34.1 yellow perch/hour). Lengths ranged from 3.2 to 12.5 inches with an average length of 4.8 inches.

BLUEGILL

In the 2021 SNI, bluegill were low in abundance with 123 bluegill sampled for a catch rate of 1.5 bluegill/net night. Lengths ranged from 3.7 to 8.7 inches with an average length of 5.9 inches (Figure 13). In the 2015 SNI, 1,179 bluegill were sampled for a catch rate of 10.3 bluegill/net night. Lengths ranged from 3.2 to 8.8 inches with an average length of 5.8 inches. In the 2010 SNI, 1,082 bluegill were sampled for a catch rate of 5.6 bluegill/net night. Lengths ranged from 3.0 to 10.1 inches with an average length of 7.4 inches.

In the 2021 SEII, 24 bluegill were sampled for a catch rate of 8.0 bluegill/mile (15.5/hour). This catch rate is well below average (6th percentile) compared similar lakes. Lengths ranged from 2.7 to 8.4 inches with an average length of 5.5 inches. In the 2015 SEII, seven bluegill were sampled for a catch rate of 2.3 bluegill/mile (4.4/hour). This catch rate is well below average (2nd percentile) compared to similar

lakes. Lengths ranged from 2.4 to 7.8 inches with an average length of 5.9 inches. In the 2010 SEII, ten bluegill were sampled for a catch rate of 4.0 bluegill/mile (6.7/hour). Lengths ranged from 4.1 to 8.1 inches with an average length of 6.3 inches.

During the 2021 FE, 61 bluegill were sampled for a catch rate of 20.3 bluegill/mile (38.9/hour). Lengths ranged from 2.0 to 7.6 inches with an average length of 5.4 inches. In the 2015 FE, 127 bluegill were sampled for a catch rate of 25.4 bluegill/mile (44.0/hour). Lengths ranged from 1.8 to 8.1 inches with an average length of 5.5 inches. In the 2010 FE, 198 bluegill were sampled for a catch rate of 33.0 bluegill/mile (59.7/hour). Lengths ranged from 1.5 to 8.5 inches with an average length of 4.4 inches.

Bluegill PSD was calculated using the SNI data from 2021, 2015 and 2010. In 2021, bluegill PSD was 49 and PSD-P was 8, in 2015 PSD was 37 and PSD-P was 5 and in 2010, bluegill PSD was 93 and PSD-P was 7. This indicates that while quality-size bluegill (equal to or greater than 6 inches) were abundant, the proportion of preferred-size bluegill (equal to or greater than 8 inches) was very low in all survey years.

All 24 bluegill sampled in the 2021 SEII were collected and otoliths were removed for age estimation. Bluegill growth rate was above the statewide mean growth rate but below the south district growth rate in 2021 (Figure 14).

PUMPKINSEED

In the 2021 SNI, pumpkinseed were low in abundance with 52 sampled for a catch rate of 0.6 pumpkinseed/net night. Lengths ranged from 3.8 to 7.5 inches with an average length of 5.6 inches (Figure 15). In the 2015 SNI, 2,046 pumpkinseed were sampled for a catch rate of 17.9 pumpkinseed/net night. Lengths ranged from 3.0 to 8.1 inches with an average length of 5.3 inches. In the 2010 SNI, 326 pumpkinseed were sampled for a catch rate of 1.7 pumpkinseed/net night. Lengths ranged from 3.7 to 8.6 inches with an average length of 6.3 inches.

No pumpkinseed were sampled during the 2021 SEII. In the 2015 SEII, 10 pumpkinseed were sampled for a catch rate of 3.3 pumpkinseed/mile (6.3/hour). This catch rate is below average (25th percentile) compared to similar lakes. Lengths ranged from 5.4 to 6.2 inches with an average length of 5.7 inches. In the 2010 SEII, 7 pumpkinseed were sampled for a catch rate of 2.8 pumpkinseed/mile (2.1/hour). This catch rate is below average (22nd percentile) compared to similar lakes. Lengths ranged from 3.5 to 8.5 inches with an average length of 6.1 inches.

During the 2021 FE, 15 pumpkinseed were sampled for a catch rate of 5.0 pumpkinseed/mile (9.6/hour). Lengths ranged from 2.2 to 6.3 inches with an average length of 5.0 inches. In the 2015 FE, 75 pumpkinseed were sampled for a catch rate of 15.0 pumpkinseed/mile (26.0/hour). Lengths ranged from 1.6 to 5.0 inches with an average length of 3.5 inches. In the 2010 FE, 97 pumpkinseed were sampled for a catch

rate of 16.2 pumpkinseed/mile (29.2/hour). Lengths ranged from 2.0 to 7.6 inches with an average length of 4.4 inches.

CHANNEL CATFISH

Channel catfish were the second most abundant fish captured during the 2021 SNI. A total of 1916 channel catfish were sampled for a catch rate of 23.4/net night. Lengths ranged from 3.8 to 26.1 inches with an average length of 14.7 inches (Figure 16). In the 2015 SNI, 384 channel catfish were sampled for a catch rate of 3.4/net night. Lengths ranged from 3.1 to 26.2 inches with an average length of 18.4 inches. In the 2010 SNI, 768 channel catfish were sampled for a catch rate of 4.0/net night. Lengths ranged from 5.4 to 27.0 inches with an average length of 19.4 inches.

PSD-P values decreased from 96 in 2015 to 23 in 2021. Channel catfish PSD was calculated using SNI data from 2021, 2015 and 2010. In 2021, channel catfish PSD was 23 and PSD-P was 1 indicating a small proportion of quality-size (greater than or equal to 16 inches) and preferred-size (greater than or equal to 24 inches) channel catfish. In 2015, channel catfish PSD was 96 and PSD-P was 3, indicating that the population in 2015 was comprised of a large proportion of quality-size (greater than or equal to 16 inches), but few of preferred-size (greater than or equal to 24 inches) channel catfish. Channel catfish PSD in 2010 was 94 and PSD-P was 7.

No channel catfish were captured during 2021 SEII.

During the 2021 FE, seven channel catfish were sampled for a catch rate of 0.6 channel catfish/mile (1.1/hour). Lengths ranged from 11.2 to 21.2 inches with an average length of 17.0 inches. In the 2015 FE, 14 channel catfish were sampled for a catch rate of 2.8 channel catfish/mile (4.9/hour). Lengths ranged from 14.9 to 24.0 inches with an average length of 20.6 inches. In the 2010 FE, 11 channel catfish were sampled for a catch rate of 1.8 channel catfish/mile (3.3/hour). Lengths ranged from 6.0 to 22.5 inches with an average length of 18.1 inches.

COMMON CARP

Common carp were the most abundant fish species sampled in the 2021 SNI. A total of 4,542 common carp were sampled, for a catch rate of 55.4/net night. The 2021 SNI sample was comprised of 189 adult common carp and 4,353 young-of-year common carp for catch rates of 2.3 adult/net night and 53.1 young-of-year/net night, respectively. In the 2015 SNI, 178 common carp were sampled for a catch rate of 1.6 /net night. In the 2010 SNI, 882 common carp were sampled for a catch rate of 4.5 /net night.

In the 2021 SEII, a total of 56 common carp were sampled for a catch rate of 18.7 common carp/mile. This catch rate is above average (83rd percentile) compared to similar lakes. In the 2015 SEII, 77 common carp were sampled for a catch rate of 25.7 common carp/mile. This catch rate is above average (90th percentile) compared to

similar lakes. In the 2010 SEII, 68 common carp were sampled for a catch rate of 27.2 common carp/mile. This catch rate is above average (90th percentile) compared to similar lakes.

In the 2021 FE, a total of 33 common carp were sampled for a catch rate of 11.0 common carp/mile. This catch rate is average (50th percentile) compared to similar lakes. In the 2015 FE, 180 common carp were sampled for a catch rate of 36.0 common carp/mile. This catch rate is above average (90th percentile) compared to similar lakes. In the 2010 FE, 226 common carp were sampled for a catch rate of 37.7 common carp/mile. This catch rate is above average (90th percentile) compared to similar lakes.

Otoliths were aged from a subset of young-of-year common carp (fish averaging 4.6 inches and fish averaging 7.4 inches) for age estimation. All structures were estimated at age-0, indicating that two spawning events likely occurred in 2020.

OTHER SPECIES

Other species captured during the 2021 SNI included: bigmouth buffalo, black bullhead, brown bullhead, yellow bullhead, orangespotted sunfish and white sucker. These fish can play an important role in the trophic status of the lake. Catch rates of bigmouth buffalo decreased substantially in 2021, with only 126 sampled (1.5/net night) versus 2,170 in 2015 (19.0/net night). Black bullhead catch rates were identical with 40 being sampled in 2021 (0.5/net night) versus 62 in 2015 (0.5/net night). Brown bullhead catch rates increased in 2021 with 228 sampled (2.8/net night) from 2015 with 119 sampled (1.0/net night). Yellow bullhead decreased slightly with 263 sampled (3.2/net night) in 2021 compared to 470 sampled (4.1/net night) in 2015. White sucker catch rates also decreased with 692 being sampled (8.4/net night) in 2021 from 1310 sampled (11.5/net night) in 2015.

Management Recommendations

At 6,718 acres, Beaver Dam Lake's size and hypereutrophic status make it difficult to effectively sample the fishery. The northern pike and largemouth bass populations were not effectively sampled and conducting a population estimate and calculating growth and mortality metrics should be a focus of future surveys.

The walleye population appears stable with very similar adults per acre as in 2015 (1.2 versus 1.4/acre) and higher than in 2010 (0.8/acre). The increase in average length, PSD and relative weight shows an improvement in walleye size structure with a large proportion of fish above the 18-inch minimum size limit compared to 2015 and 2010. Future comprehensive fishery surveys should continue to collect growth and mortality estimates and attempt another population estimate.

Black crappie, white crappie and yellow perch appear to be doing well in the lake with above average catch rates and average lengths. The limited bluegill and largemouth bass data could be a product of the lake conditions during SEII because abundant levels of curly-leaf pondweed and blue-green algae, along with high levels of turbidity made electrofishing for these species difficult. An alternative method for sampling largemouth bass and bluegill may be necessary to effectively sample these species in Beaver Dam Lake. Lengths, weights and aging structures should be taken from other gear types to gather more precise growth, age and mortality estimates to indicate whether more restrictive regulations should be considered for these species.

Channel catfish were the second most abundant fish captured in the spring netting survey. An increase in catch rate with a decrease in PSD suggests that there may be some density-dependent growth issues occurring. Future surveys should attempt to collect length, weight and age data as well as a population estimate to get a better understanding of this species and its role in the fishery.

Common carp were the most abundant fish sampled during the SNI. Almost 96% of the common carp sampled in the 2021 comprehensive fishery survey were from two large spawning events in 2020. A large fish kill of common carp occurred in the lake in the spring of 2021. Deceased and moribund common carp of all sizes were seen during the survey. A concerned citizen contacted DNR staff about dead and dying carp in Starkweather Bay in late April. Samples of moribund individuals were collected and sent to a lab in Maine for analysis. The samples came back positive for Koi Herpes Virus. Common carp continued to die off into May. The status of the common carp population is unclear after this event. Future surveys should look closely at the carp population response.

Presently, no changes to the fishing regulations appear necessary. Stocking rates seem to be providing a quality walleye and northern pike fishery, although the northern pike population should be investigated more thoroughly in the next comprehensive fishery survey. Channel catfish and common carp populations should be monitored to determine whether they reach levels that could become a detriment to the fishery of Beaver Dam Lake. A reduced harvest on bluegill, pumpkinseed and largemouth bass may help improve the size structure and abundance of these species.

Management recommendations include:

1. Monitor the northern pike population and reevaluate size structure, abundance, growth, length at age, relative weight and conduct a population estimate in the next comprehensive fishery survey. Continue to stock small fingerling northern pike at 10/acre every year.
2. Monitor the walleye population and reevaluate size structure, abundance, growth, length at age, relative weight and conduct a population estimate in the

next comprehensive fishery survey. Continue to stock small fingerling walleye at 35/acre in alternate, even years.

3. Maintain an adult walleye density of at least 2 adults/acre and retain the 18-inch minimum length, three fish daily bag limit to protect the population. Conduct genetic analyses to determine the extent of natural reproduction in the walleye population.
4. Monitor the largemouth bass population and reevaluate size structure, abundance, length at age, relative weight and growth in the next comprehensive fishery survey. Consider a more restrictive regulation to improve abundance and size structure.
5. Monitor the black crappie population to evaluate size structure, abundance, growth, length at age and relative weight in the next comprehensive fishery survey.
6. Monitor the bluegill population and reevaluate size structure, abundance, length at age, relative weight and growth in the next comprehensive fishery survey. Consider a more restrictive regulation to improve abundance and size structure.
7. Monitor the yellow perch population to evaluate size structure, abundance, growth, length at age and relative weight in the next comprehensive fishery survey.
8. Monitor the relative abundance of the common carp (*Cyprinus carpio*) population, via catch rates, in the next comprehensive fishery survey.
9. Conduct a lake-wide creel survey to estimate angler exploitation of all fish species in Beaver Dam Lake. Given the large size of the lake and current DNR budget structure, this may be cost prohibitive.

Tables

Table 1. Fish stocked by DNR in Beaver Dam Lake since 2010 including year stocked, species, age class, number of fish stocked and stocking source.

Year	Species	Age Class	Number Stocked	Source
2010	Northern Pike	Small Fingerling	17,798	DNR
2010	Walleye	Fry	2,300,000	DNR
2010	Walleye	Small Fingerling	114,889	DNR
2011	Northern Pike	Small Fingerling	19,089	DNR
2011	Walleye	Small Fingerling	111,214	DNR
2012	Northern Pike	Small Fingerling	42,600	DNR
2012	Walleye	Small Fingerling	104,259	DNR
2013	Northern Pike	Small Fingerling	15,056	DNR
2013	Walleye	Small Fingerling	111,326	DNR
2014	Northern Pike	Small Fingerling	46,026	DNR
2014	Walleye	Small Fingerling	235,382	DNR
2015	Northern Pike	Small Fingerling	65,420	DNR
2016	Northern Pike	Small Fingerling	65,420	DNR
2016	Walleye	Small Fingerling	219,822	DNR
2017	Northern Pike	Small Fingerling	22,669	DNR
2018	Northern Pike	Large Fingerling	2,541	DNR
2018	Northern Pike	Small Fingerling	20,134	DNR
2018	Walleye	Small Fingerling	380,825	DNR
2018	Yellow Perch	Adult	3,000	DNR
2019	Northern Pike	Small Fingerling	65,407	DNR
2019	Walleye	Small Fingerling	289,653	DNR
2020	Northern Pike	Small Fingerling	57,101	DNR

Table 2. *Fish stocked by BDLIA in Beaver Dam Lake since 2010 including year stocked, species, age class, number of fish stocked and stocking source.*

Year	Species	Age Class	Number Stocked	Source
2010	Northern Pike	Large Fingerling	900	BDLIA
2010	Yellow Perch	Large Fingerling	25,375	BDLIA
2011	Yellow Perch	Large Fingerling	9,100	BDLIA
2011	Yellow Perch	Small Fingerling	9,000	BDLIA
2012	Largemouth Bass	Large Fingerling	800	BDLIA
2012	Northern Pike	Fry	270,000	BDLIA
2012	Northern Pike	Large Fingerling	750	BDLIA
2012	Walleye	Large Fingerling	700	BDLIA
2012	Yellow Perch	Large Fingerling	13,000	BDLIA
2013	Bluegill	Adult	1,300	BDLIA
2013	Bluegill	Large Fingerling	2,500	BDLIA
2013	Bluegill	Yearling	1,600	BDLIA
2013	Northern Pike	Large Fingerling	750	BDLIA
2013	Walleye	Large Fingerling	1,325	BDLIA
2013	Yellow Perch	Large Fingerling	6,500	BDLIA
2014	Bluegill	Adult	13,998	BDLIA
2014	Largemouth Bass	Large Fingerling	4,000	BDLIA
2014	Northern Pike	Large Fingerling	200	BDLIA
2014	Yellow Perch	Large Fingerling	14,000	BDLIA
2015	Bluegill	Large Fingerling	19,997	BDLIA
2015	Northern Pike	Yearling	667	BDLIA
2015	Walleye	Large Fingerling	9,087	BDLIA
2016	Bluegill	Adult	12,000	BDLIA
2016	Bluegill	Large Fingerling	72,000	BDLIA
2016	Bluegill	Small Fingerling	11,500	BDLIA
2016	Walleye	Large Fingerling	2,778	BDLIA
2017	Bluegill	Yearling	71,490	BDLIA
2017	Walleye	Large Fingerling	5,560	BDLIA
2017	Yellow Perch	Large Fingerling	19,998	BDLIA
2018	Yellow Perch	Adult	7,150	BDLIA
2018	Yellow Perch	Yearling	27,200	BDLIA
2020	Northern Pike	Fry	37,500	BDLIA

Table 3. Catch summary of the 2021 spring fyke netting (SNI) survey of Beaver Dam Lake, Dodge County, WI.

SNI	2021			
Species	Number	Average Length (Inches)	Length Range (Inches)	#/Net Night
Bigmouth Buffalo (YOY)	52			0.63
Bigmouth Buffalo (adult)	74			0.90
Black Crappie	1387	7.9	3.1-13.2	16.91
Black Bullhead	40			0.49
Bluegill	123	5.9	3.7-8.7	1.50
Bluegill hybrid	4	6.3	5.6-7.0	0.05
Brown Bullhead	228			2.78
Channel Catfish	1916	14.7	3.8-26.1	23.37
Common Carp (YOY)	4353			53.09
Common Carp (adult)	189			2.30
Largemouth Bass	10	12.2	5.8-18.6	0.12
Northern Pike	50	25.0	15.7-33.7	0.61
Muskellunge	2	38.8	33.0-44.5	0.02
Pumpkinseed	52	5.6	3.8-7.5	0.63
Walleye	1050	17.6	7.5-27.0	12.80
White Crappie	719	8.5	3.6-13.2	8.77
White Sucker	692			8.44
Yellow Bullhead	263			3.21
Yellow Perch	517	8.1	5.6-12.4	6.30
Total	**11721**			**142.94**

Table 4. *Catch summary of the 2021 spring electrofishing (SEI) survey of Beaver Dam Lake. Dodge County, WI.*

SEI	2021			
Species	Number	Average Length (Inches)	Length Range (Inches)	# Per Mile
Largemouth Bass	4	16.2	15.7-16.8	0.3
Northern Pike	2	22.7	20.7-24.7	0.2
Walleye	218	15.4	6.7-22.4	18.2
Total	**224**			

Table 5. Catch summary of the 2021 spring electrofishing (SEII) survey of Beaver Dam Lake. Dodge County, WI.

SEII	2021			
Species	Number	Average Length (Inches)	Length Range (Inches)	# Per Mile
Black Crappie	5	4.2	3.6-4.9	2.0
Bluegill	24	5.5	2.7-8.4	9.6
Common Carp (YOY)	43			17.2
Common Carp (adult)	13			5.2
Largemouth Bass	39	8.8	3.4-16.5	3.3
White Crappie	6	4.6	3.3-8.0	4.0
Yellow Perch	3	6.6	3.9-8.4	2.4
Total	**133**			

Table 6. Catch summary of the 2021 fall electrofishing (FE) survey of Beaver Dam Lake, Dodge County, WI.

FE	2021			
Species	Number	Average Length (Inches)	Length Range (Inches)	# Per Mile
Bigmouth Buffalo	29			9.7
Black Crappie	37	6.1	3.3-10.4	12.3
Bluegill	61	5.4	2.0-7.6	20.3
Channel Catfish	7	17.0	11.2-21.2	0.6
Common Carp	33			11.0
Largemouth Bass	55	11.4	4.5-18.1	4.6
Northern Pike	7	20.4	9.0-23.7	0.6
Pumpkinseed	15	5.0	2.2-6.3	5.0
Walleye	150	11.5	5.4-24.1	12.5
White Crappie	4	4.7	4.4-4.9	1.3
White Sucker	23	17.3	15.1-18.8	7.7
Yellow Bullhead	1	7.5		0.3
Yellow Perch	4	5.2	4.1-7.7	1.3
Total	**426**			

Figures

Figure 1. Contour map of Beaver Dam Lake in Dodge County, Wisconsin.

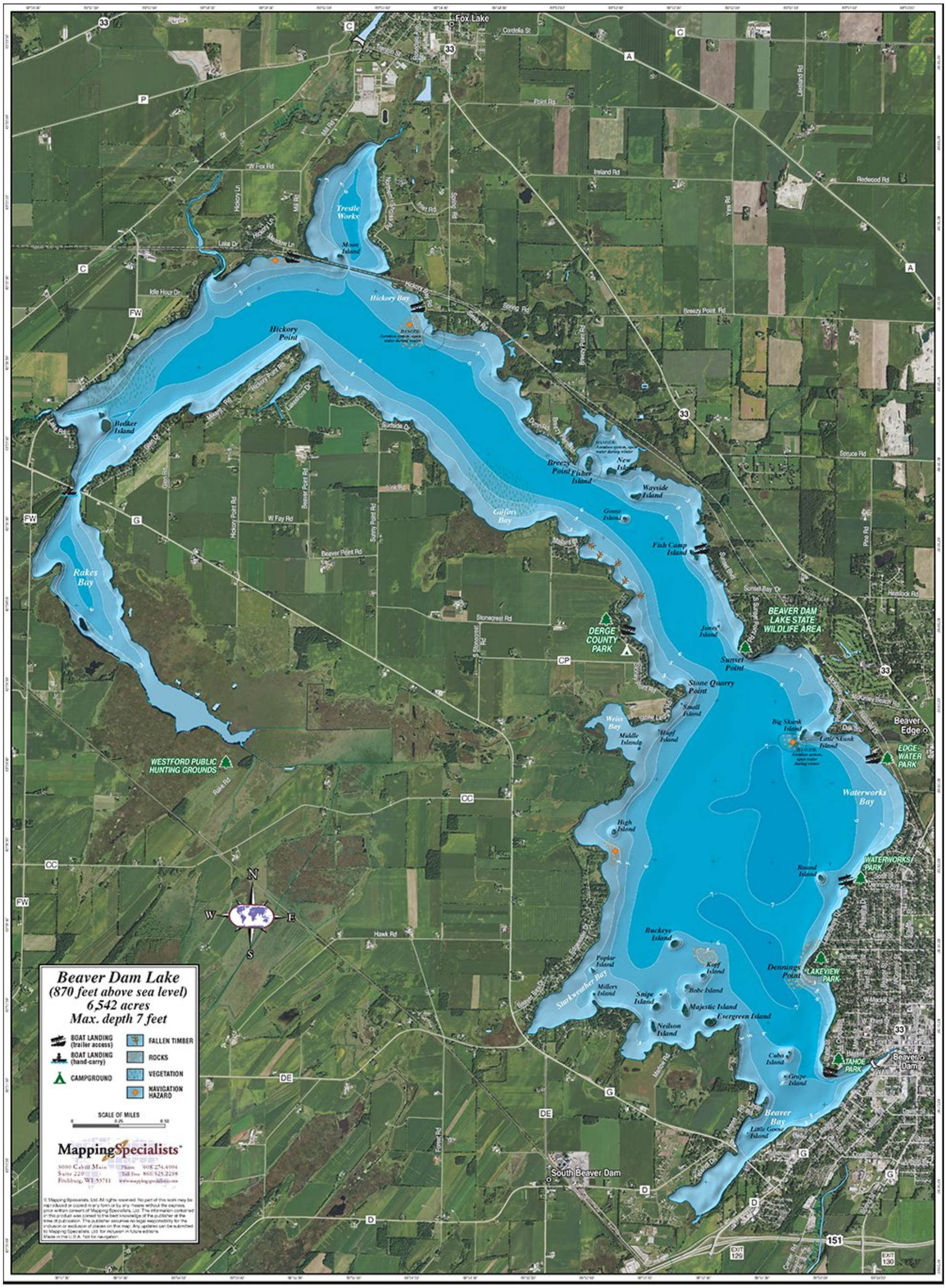


Figure 2. Length-frequency histograms of walleye sampled during the 2015 and 2021 spring fyke netting (SNI) surveys of Beaver Dam Lake, Dodge County, WI.

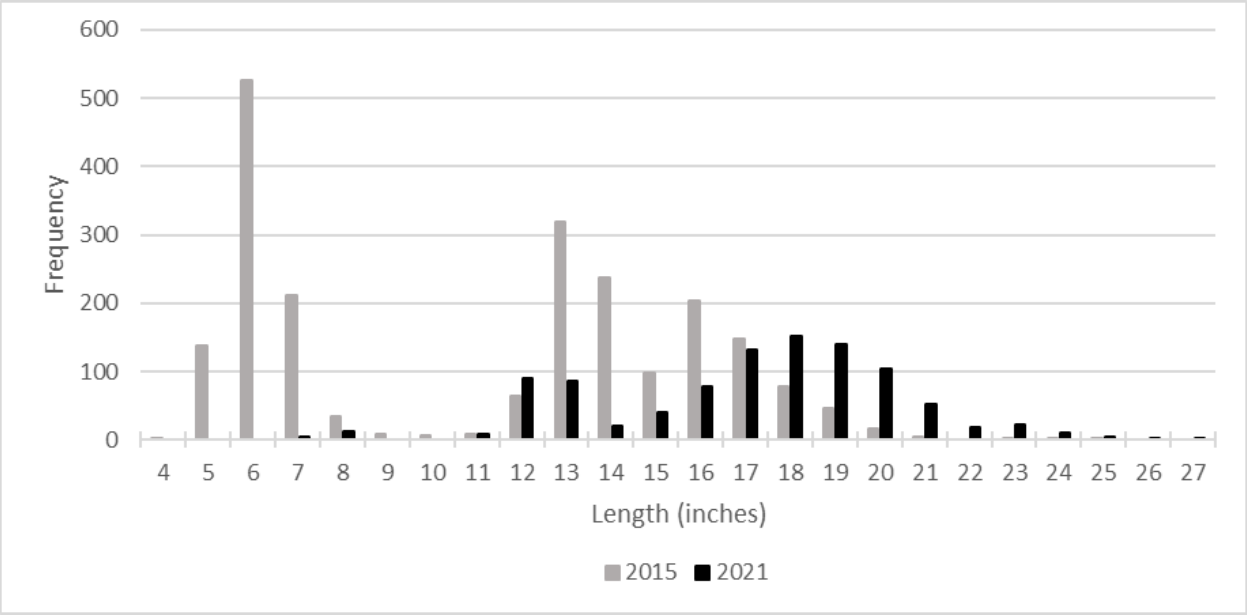


Figure 3. Walleye mean length at age determined using dorsal spines collected during the 2021 spring fyke netting (SNI) survey of Beaver Dam Lake, Dodge County, WI compared to the statewide mean length at age from spring (January-May) surveys and the south district average.

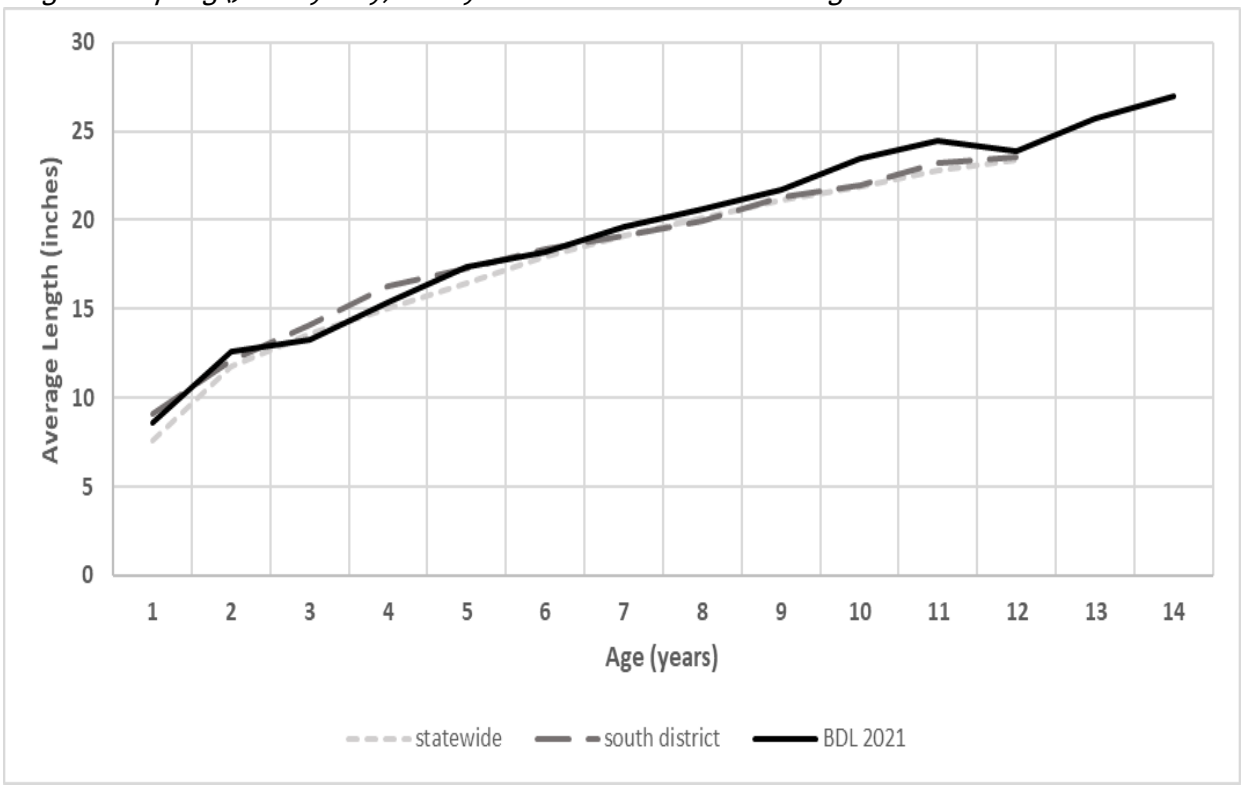


Figure 4. Walleye catch curve for Beaver Dam Lake, Dodge County calculated from fish sampled during the 2021 spring fyke netting (SNI) survey. Z=0.24, S=0.79, A=0.21, F=0.04, Ages 7-14

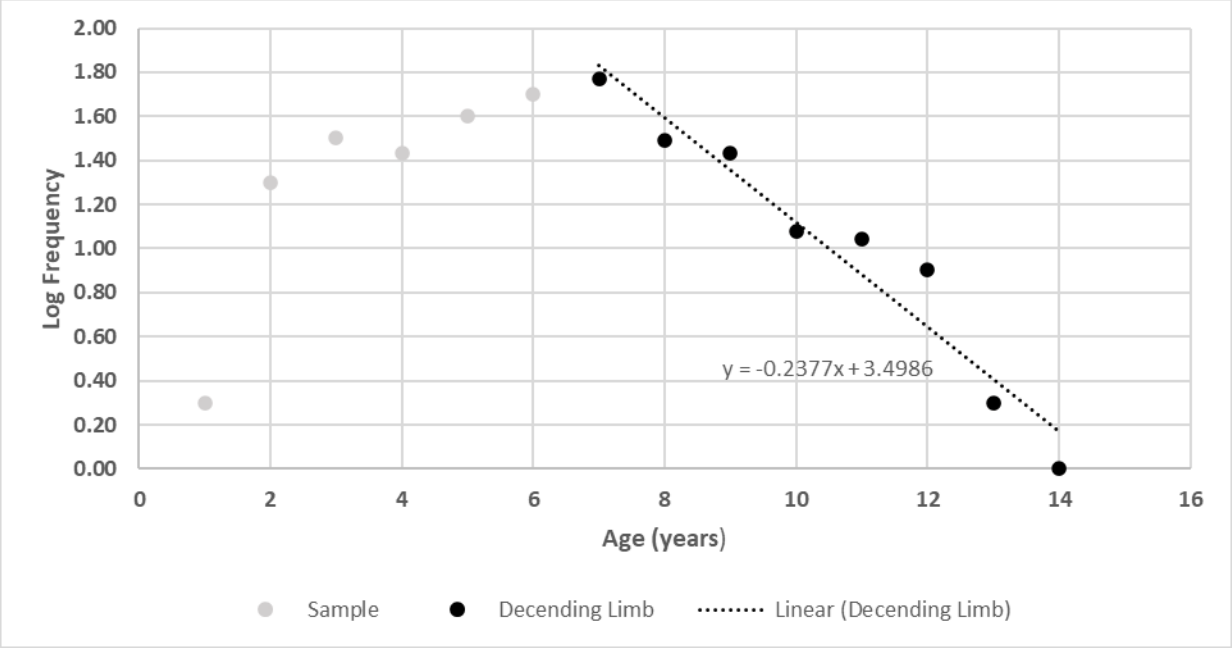


Figure 5. Length-frequency histogram of walleye sampled during the 2021 fall electrofishing (FE) survey of Beaver Dam Lake, Dodge County, WI.

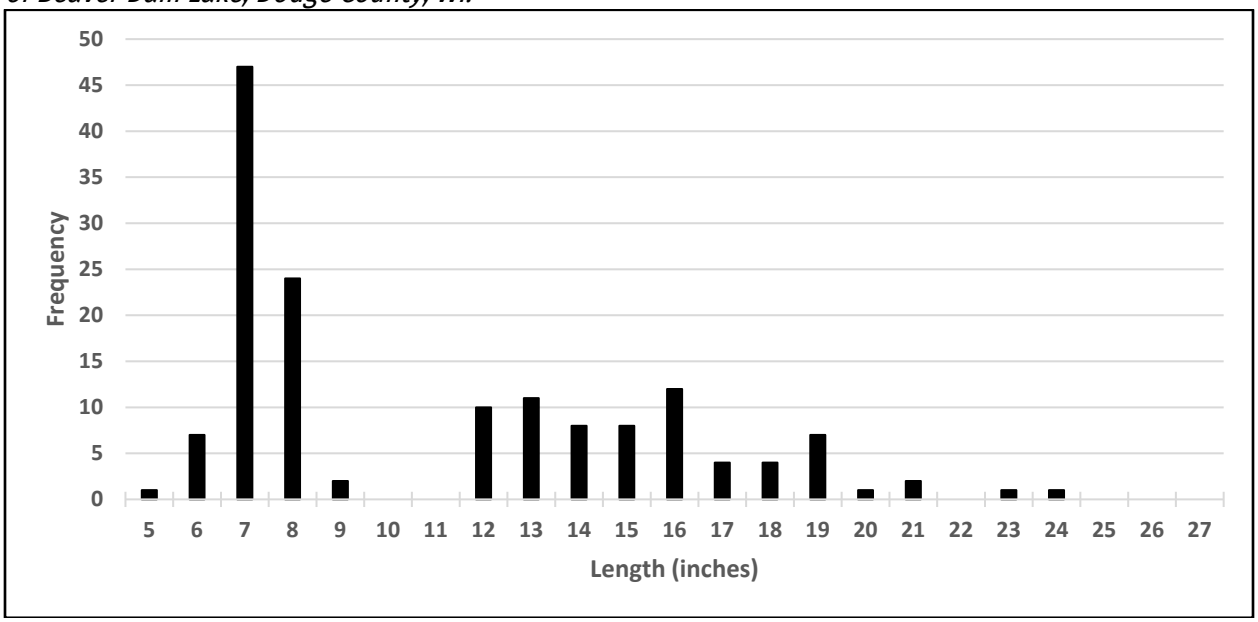


Figure 6. Length-frequency histogram of northern pike sampled during the 2015 and 2021 spring fyke netting (SNI) surveys of Beaver Dam Lake, Dodge County, WI.

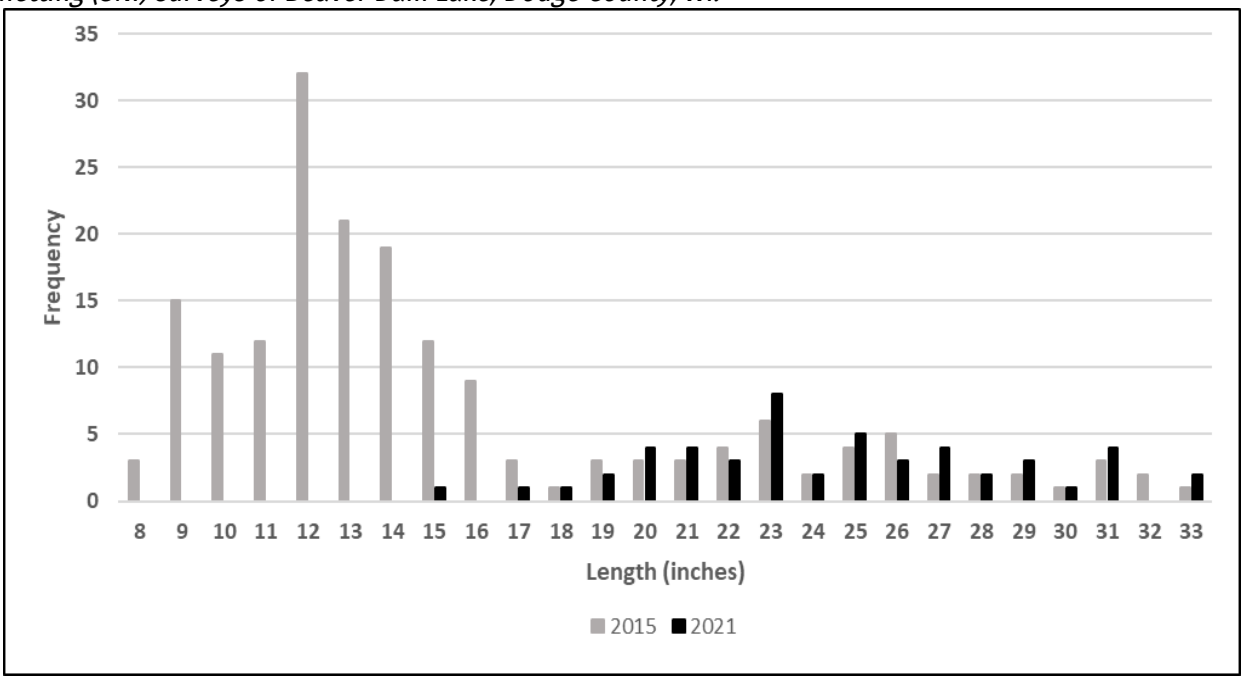


Figure 7 – Northern pike mean length at age determined using anal fin rays collected during the 2021 spring fyke netting (SNI) survey of Beaver Dam Lake, Dodge County, WI compared to the statewide mean length at age from spring (January-May) surveys and the south district average.

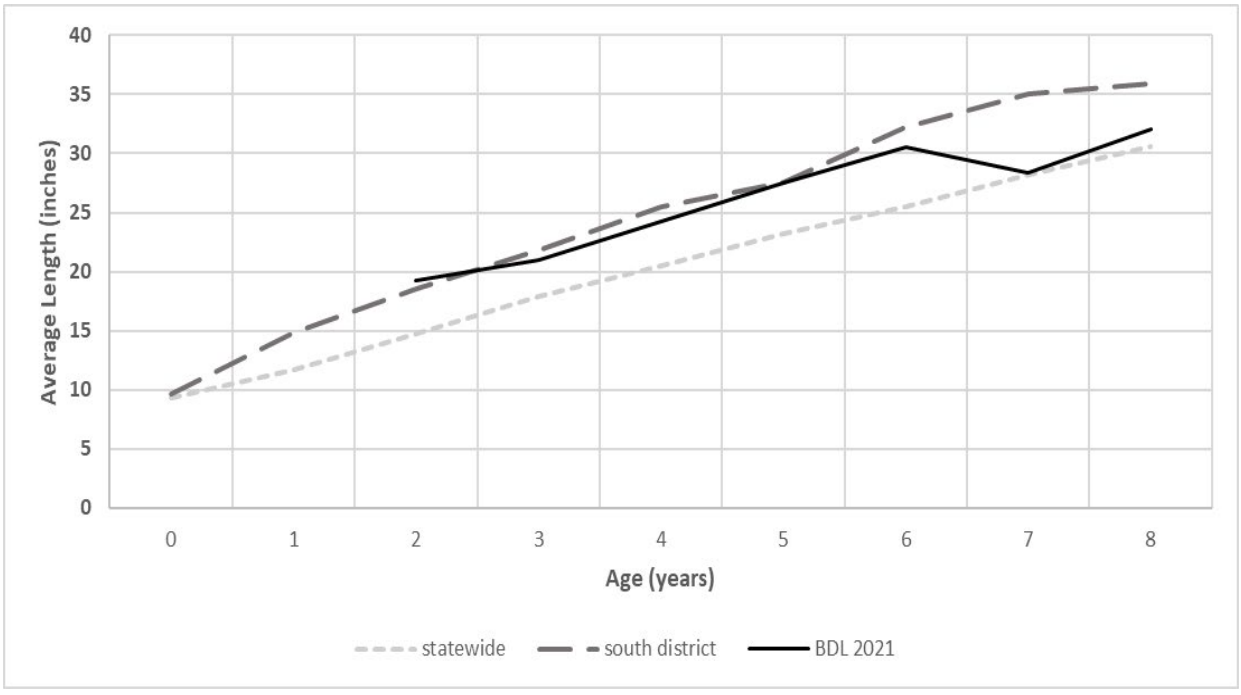


Figure 8. Length-frequency histogram of largemouth bass sampled during the 2015 and 2021 spring fyke netting (SNI) surveys of Beaver Dam Lake, Dodge County, WI.

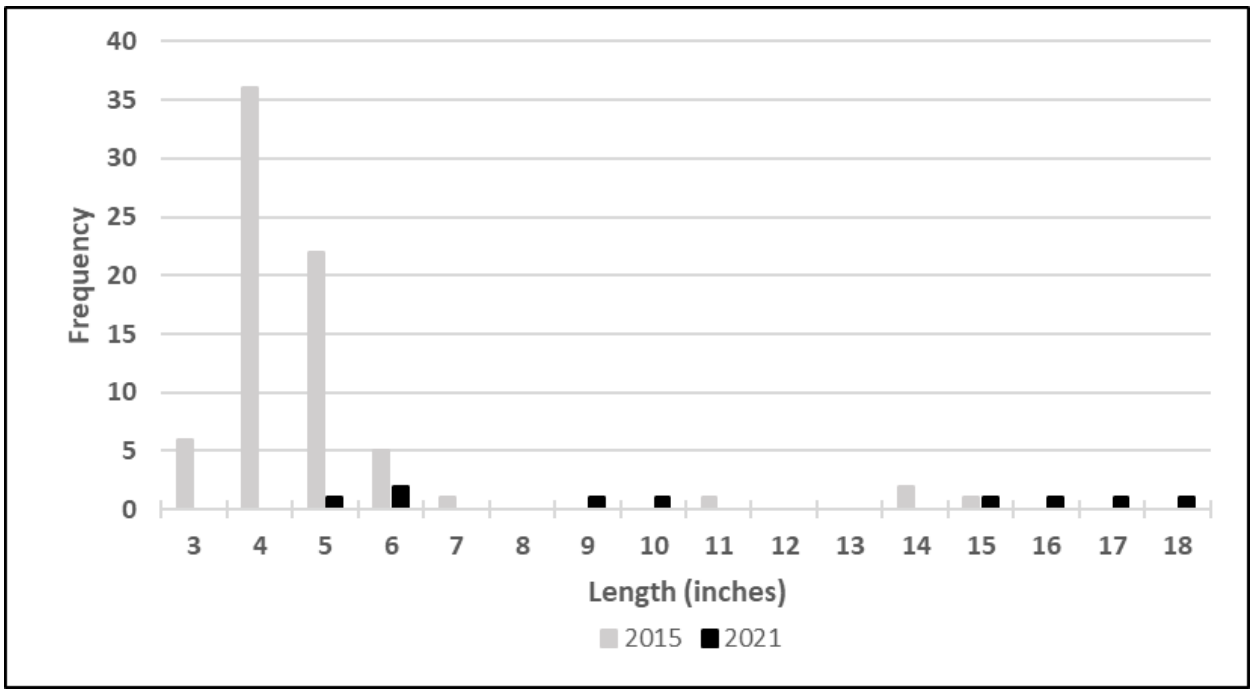


Figure 9. Largemouth bass mean length at age determined using dorsal spines, anal fin rays and scales collected during the 2021 spring centrarchid electrofishing (SEII) survey of Beaver Dam Lake, Dodge County, WI compared to the statewide mean length at age from spring (January-May) surveys and the south district average.

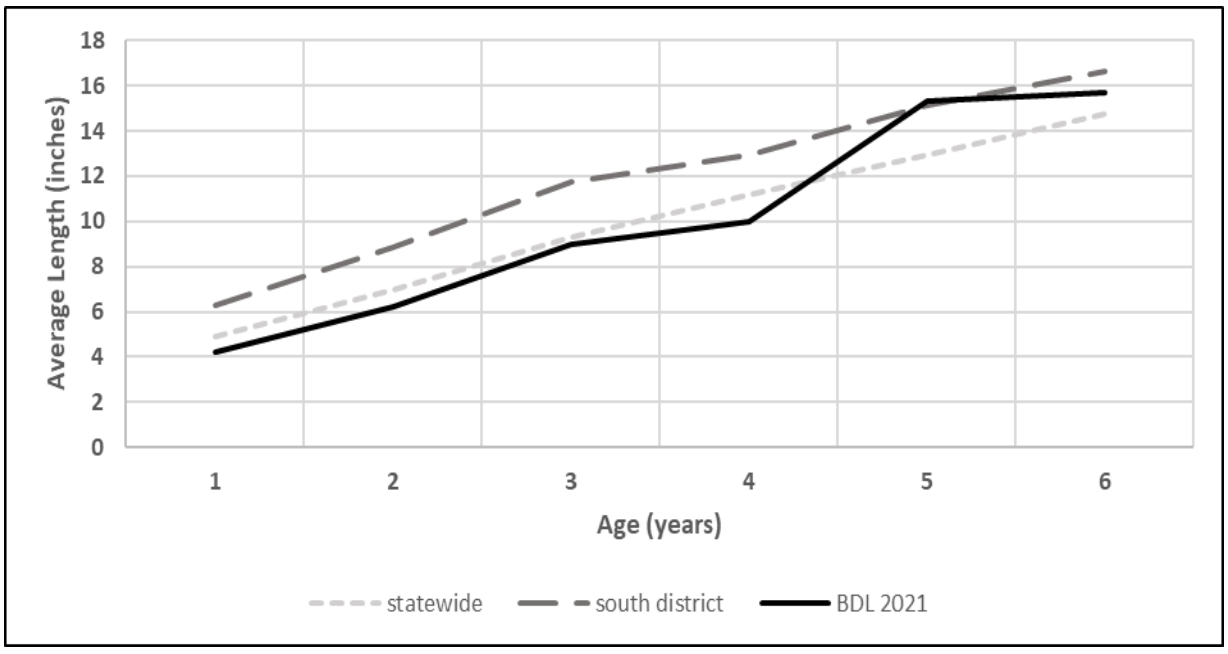


Figure 10. Length-frequency histogram of black crappie sampled in the 2015 and 2021 spring fyke netting surveys (SNI) of Beaver Dam Lake, Dodge County, WI.

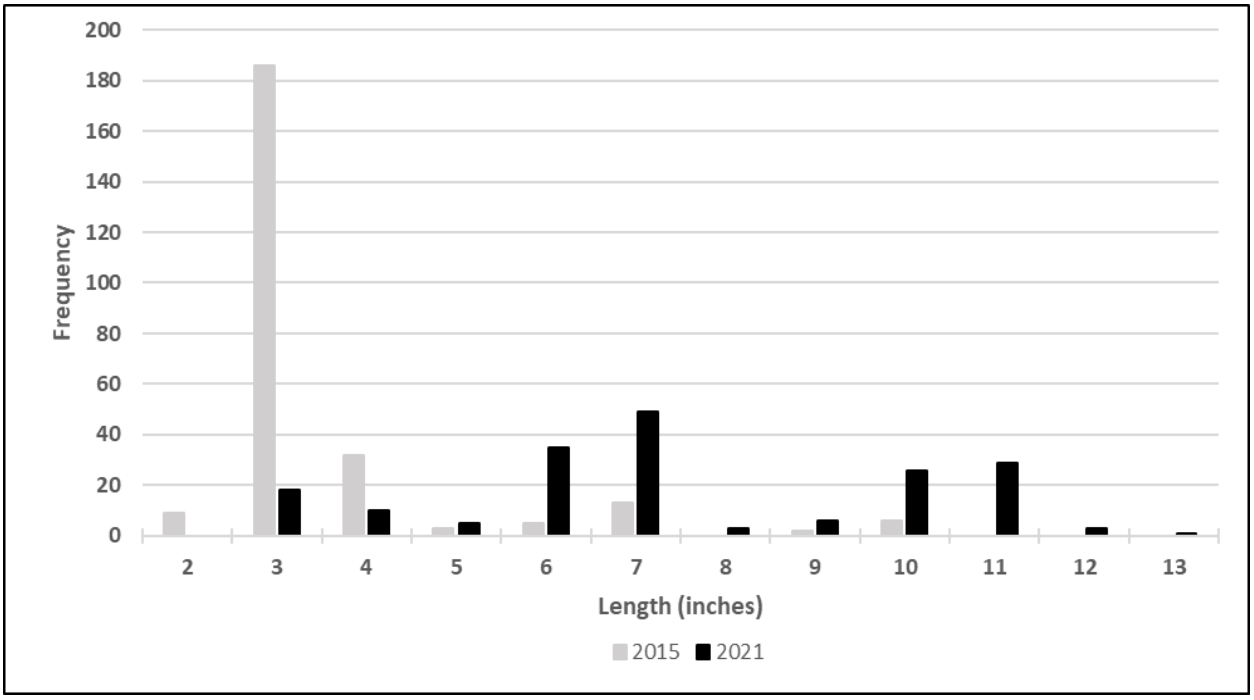


Figure 11. Length-frequency histograms of white crappie sampled in the 2015 and 2021 spring fyke netting surveys (SNI) of Beer Dam Lake, Dodge County, WI.

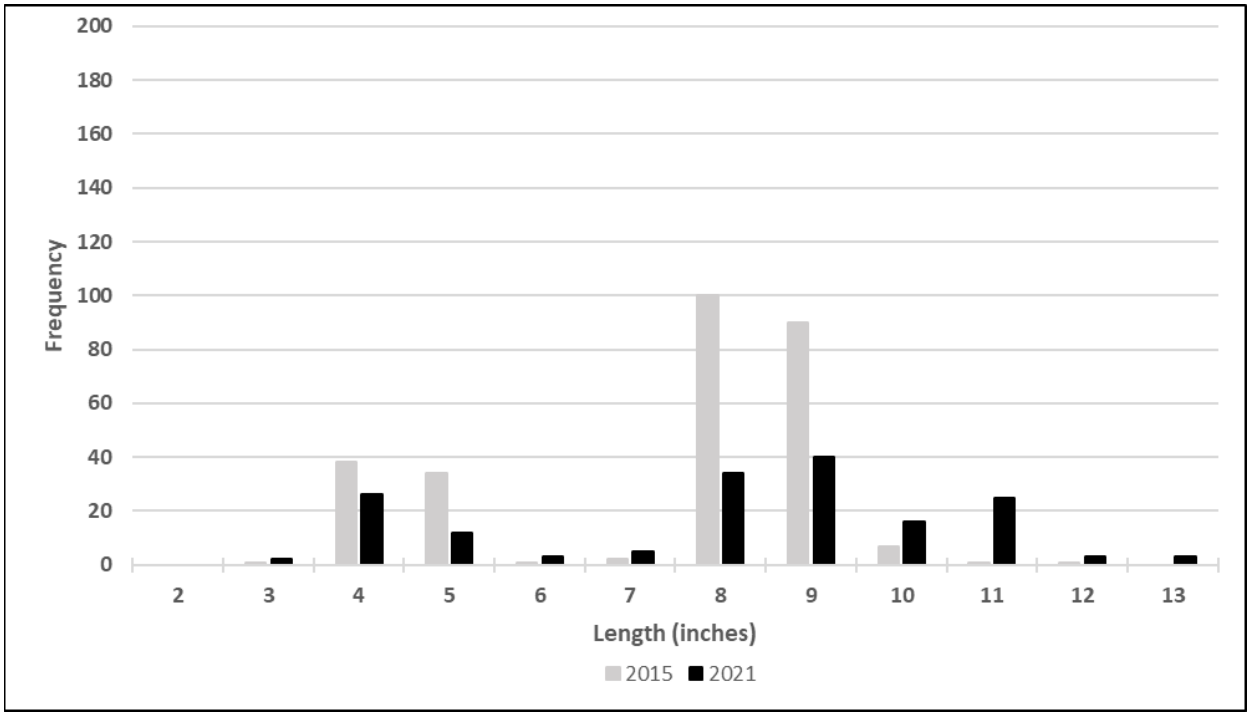


Figure 12. Length-frequency histograms of yellow perch sampled in the 2015 and 2021 spring fyke netting surveys (SNI) of Beaver Dam Lake, Dodge County, WI.

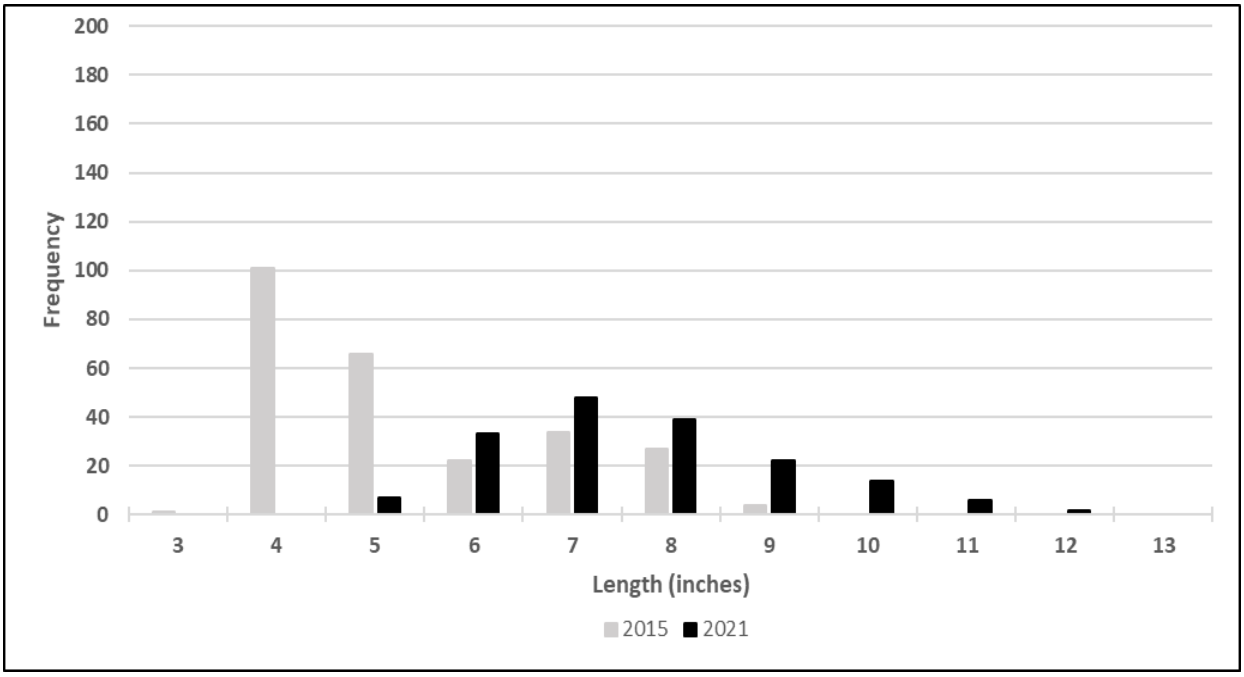


Figure 13. Length-frequency histograms of bluegill sampled in the 2015 and 2021 spring fyke netting surveys (SNI) of Beaver Dam Lake, Dodge County, WI.

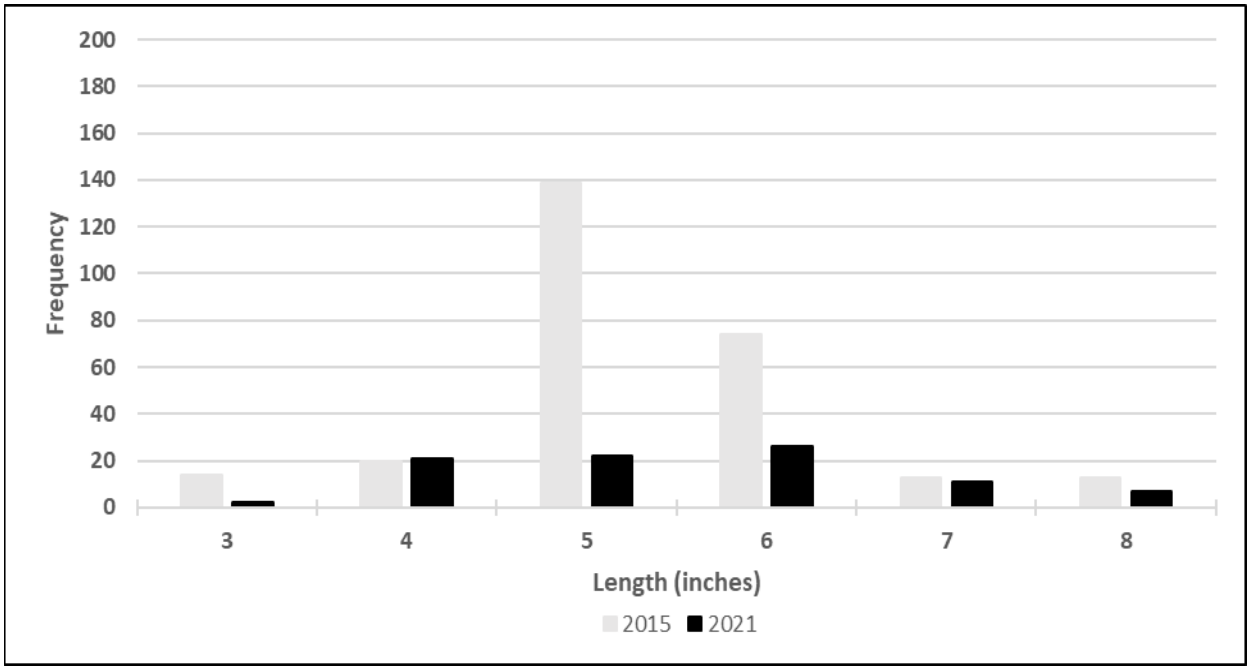


Figure 14. Bluegill mean length at age determined using otoliths and scales collected during the 2021 spring centrarchid electrofishing (SEII) survey of Beaver Dam Lake, Dodge County, WI compared to the statewide mean length at age from spring (January-May) surveys and the south district average.

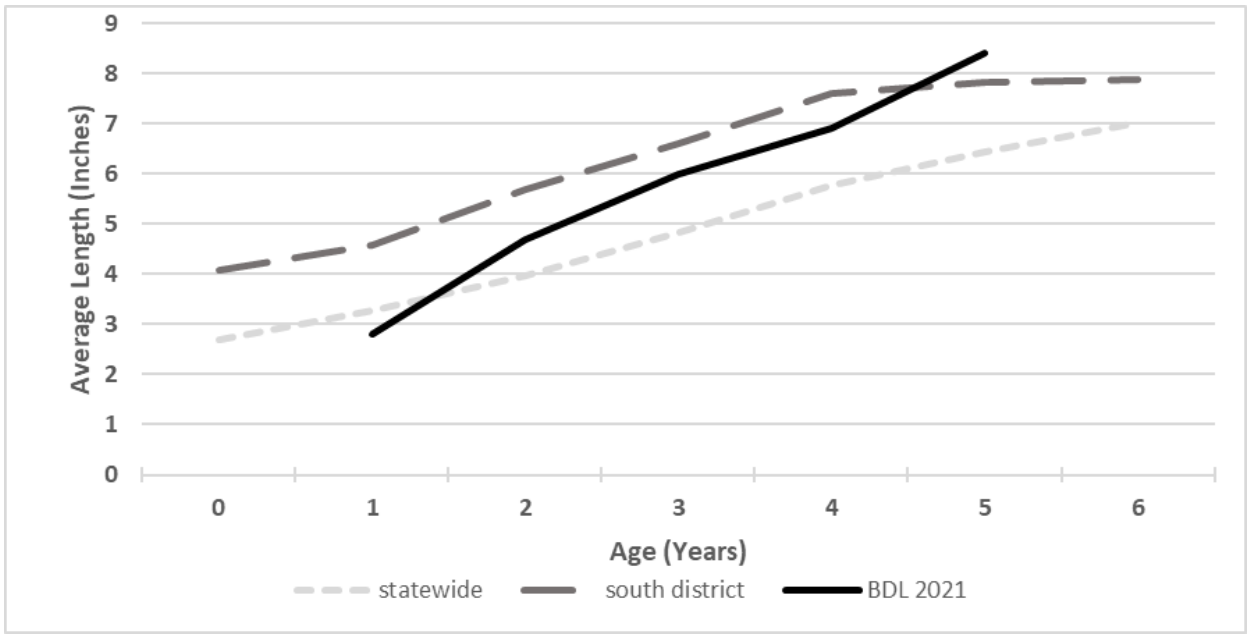


Figure 15. Length-frequency histograms of pumpkinseed sampled in the 2015 and 2021 spring fyke netting surveys (SNI) of Beaver Dam Lake, Dodge County, WI.

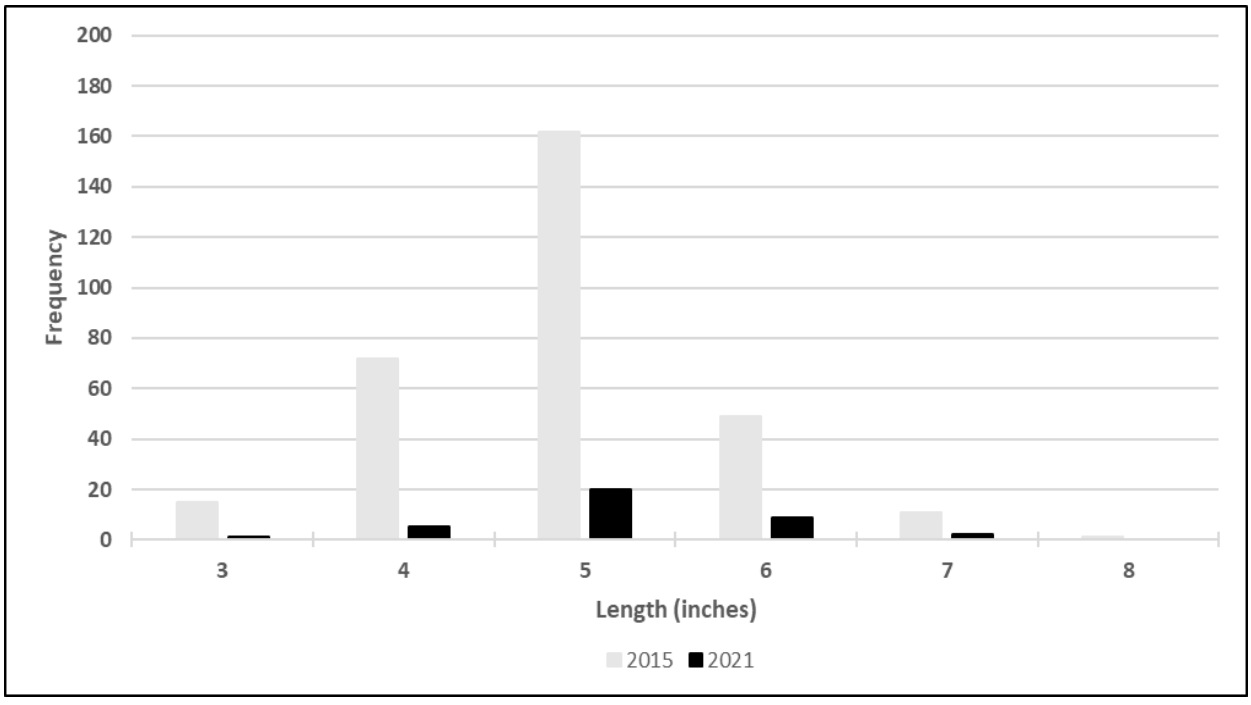
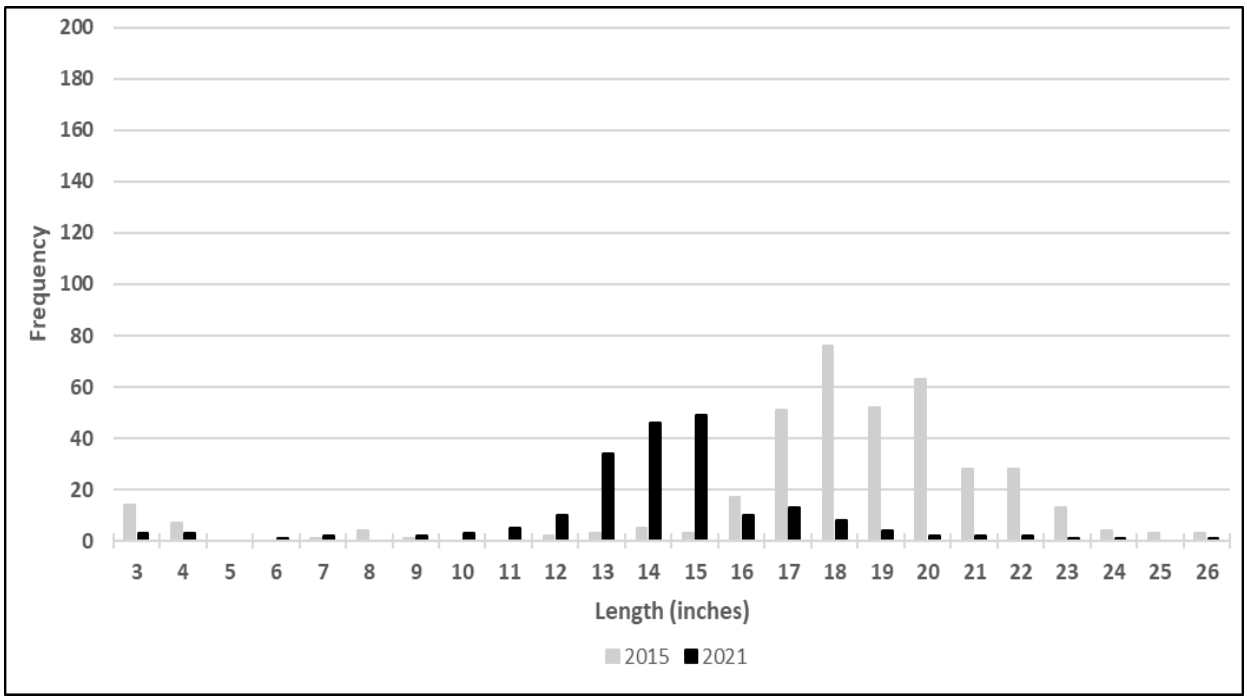


Figure 16. Length-frequency histograms of channel catfish sampled in the 2015 and 2021 spring fyke netting surveys (SNI) of Beaver Dam Lake, Dodge County, WI.



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