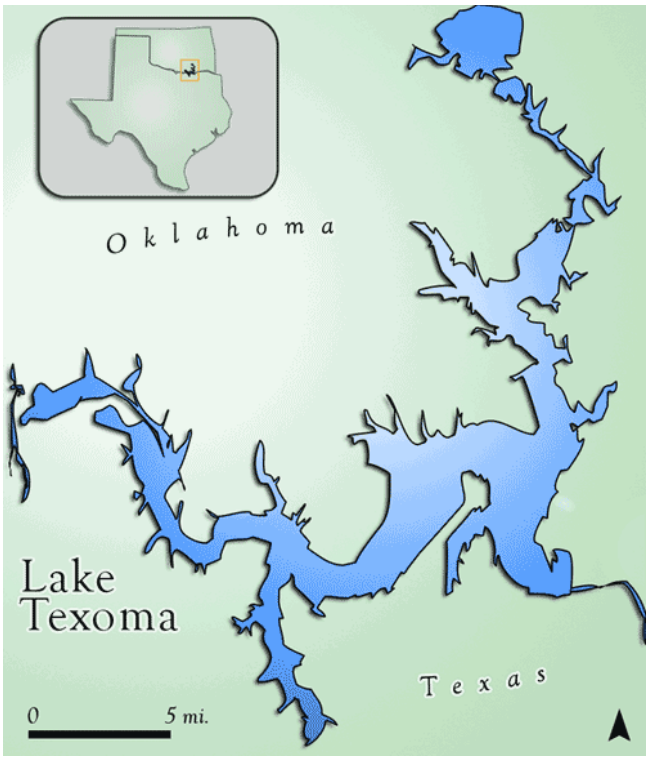
# Lake Texoma
# Fisheries Management Plan

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## Background

Lake Texoma is an 88,000 acre reservoir formed by the impoundment of the Red River 4.6 miles below its confluence with the Washita River on the Oklahoma-Texas border (Figure 1). It was impounded by the U.S. Army Corps of Engineers (USACOE) in 1944 by construction of the Denison Dam and is bounded by the southern Oklahoma counties of Bryan, Johnston, Love and Marshall and the northern Texas counties of Cooke and Grayson.

In capacity, Lake Texoma is the largest project in the Tulsa District of the USACOE and is the twelfth largest reservoir in the United States. The watershed contains 39,719 square miles in southwestern Oklahoma and northcentral Texas, as well as much of the Texas panhandle and parts of eastern New Mexico. A strongly increasing west to east precipitation gradient is present and consequentially natural vegetation consists of drought resistant grasses and shrubs in the west transitioning into tall grasses and cross timber ecosystems to the east (Patton and Lyday 2008). Agricultural operations including hay and row-crop production and livestock grazing dominate a large majority of the watershed. The lake serves multiple operation purposes including flood control to the area and downstream regions (OK, TX, AR, LA), power generation, water supply, and recreation.

Lake Texoma is one of the most popular Federal recreation facilities in the country, with more than 6 million visitors annually. In 2006, Texoma ranked first among USACOE lake projects nationwide, with visitors spending over 90 million hours at the lake (www.swt.usace.army.mil/recreat/OPSField.CFM?tblOPSField__LakeName=Lake%20Texoma). Two state parks, 26 resorts, 10 USACOE campgrounds, and 22 commercial concessionaires offer services to visitors on and around the lake. In addition, the Tishomingo and Hagerman National Wildlife Refuges provide home to native and migratory wildlife. Recreational activities contribute greatly to the economy of the entire lake area and to the benefit of local and regional businesses, cities and individuals. Several nicknames have been coined for Lake Texoma including “Playground of the Southwest” and “Striper Capital of the World”.

The USACOE along with the Southwestern Power Administration manage lake elevations. The top of the flood control pool is 640 feet msl and the normal power pool is 617 feet msl. In 1992, a seasonal pool plan was implemented to enhance fish and wildlife habitat. The seasonal pool plan elevations fluctuate between 615 and 619 feet msl (Figure 2). While the seasonal pool plan outlines target elevations, fluctuations due to flood control and/or hydropower demands can occur regularly.

## Habitat

Natural fish habitat consists of large expanses of open water, offshore humps, and areas of limited submerged standing timber, rock, coarse gravel, and mud or sand flats. Buttonbush (*Cephalanthus occidentalis*) is common along the shorelines in many areas of the lake, growing at or above Conservation Pool elevation. This species provides good spawning and nursery habitat when seasonally inundated. Aquatic vegetation is very sparse due to fluctuating water levels and herbivorous fish. Transplanted colonies of submerged vegetation have yielded poor results.

Additional habitat includes man-made structures such as rip-rap, natural and artificial brush piles, and boat docks. The Oklahoma Department of Wildlife Conservation (ODWC) currently maintains 36 marked brushpiles to increase angler opportunities. GPS coordinates for these structures are available on the ODWC website (https://wildlifedepartment.com/fishing/wheretofish).

## Water Quality

Lake Texoma is classified as a eutrophic reservoir with high primary productivity. Water quality data collected through the Oklahoma Water Resources Board (OWRB) as part of their Beneficial Use Monitoring Program (BUMP) classifies Lake Texoma as supporting or partially supporting the outlined Fish and Wildlife Propagation (FWP) beneficial uses. The complete BUMP report for Lake Texoma can be viewed at http://www.owrb.ok.gov/quality/monitoring/bump.php. A brief overview of several water quality parameters is included below and in Table 1.

### Thermal and Chemical Stratification

Lake Texoma exhibits strong thermal and chemical stratification during summer months (July – end-September) with anoxic conditions occurring below the thermocline. Depth of the thermocline varies within the lake. Upper portions of the Washita River Arm typically stratify at a depth of 30 - 40 feet, whereas the lower lake stratifies at 35 - 45 feet. This results in a greater percentage of the water column having cool, oxygenated water in the main lake basin. Lake Texoma is considered partially supporting the FWP beneficial use based on low dissolved oxygen levels recorded during the summer.

### Turbidity

A strong down lake turbidity gradient occurs within Lake Texoma. Lower lake samples had an average turbidity of 5 NTU and a secchi disk depth of 51 inches. The upper Red River arm had an average turbidity level of 59 NTU and a secchi disk depth of 13 inches.

### Productivity

A trophic state index (TSI), using Carlson's TSI (chlorophyll-a), was calculated to measure the lake's productivity. TSI values varied from upper lake to lower lake, indicating a primary productivity gradient within the lake. The upper Red River arm was classified as hypereutrophic, whereas the Washita River arm and lower lake sections ranged from eutrophic to mesotrophic.

### Conductivity

Specific conductivity ranged from 887.6 µS/cm to 3,062 µS/cm, indicating high levels of current conducting ions (chlorides and salts) in the system. These values are highest within the upper reservoir arms, notability the Red River, and generally decline in a down lake gradient.

### Salinity

Salinity values ranged from 0.30 ppt in the Washita River arm to 1.70 ppt in the Red River arm. These values are higher than the range of values recorded in other Oklahoma reservoirs.

pH
The pH values ranged from 7.13 to 8.75, representing a neutral to slightly alkaline system. The fish and wildlife beneficial use based on pH is supported.

Tailrace
Water quality and flow regime within the tailrace are greatly influenced by hydropower production (Ashby 1999). Two generation units are present and capable of elevating tailrace water levels over 6.5 feet during peaking conditions (9,005 $ft^3sec$-1) producing cyclical high and low flows. These releases reflect forebay conditions characterized by low dissolved oxygen and elevated concentrations of iron and magnesium during summer stratification. Generation releases have been known to influence water quality over twelve miles downstream of the dam (Ashby 1999). Operational strategies, such as selective withdrawal and surface releases, are not possible given the current configuration of the dam. Centerlines of the penstocks are located 84 feet below normal pool level.

Historic fish kills associated with chronic dissolved oxygen levels have prompted the USACOE to release a continuous flow of nearly 50 cfs from an adjacent floodgate during summer stratification. This released water receives aeration as it sprays from the cracked gate and cascades down baffles prior to spilling into the tailrace. Ashby (1999) acknowledges a positive benefit of this supplemental release during non-generation periods but suggests that results decline during peaking generation. ODWC monitoring further implies that a localized refuge may be provided for aquatic organisms and supports the continued use of this practice during summer stratification (mid-July to mid-September) as it appears to reduce fish stress and associated mortality.

## Fishery

Management of the Lake Texoma fishery is shared between the ODWC and Texas Parks and Wildlife Department (TPWD) and is a valuable lesson in multi-jurisdictional cooperative management. In efforts to establish consistency for anglers and allow more effective enforcement capabilities, joint management efforts have gradually been realized. A special Lake Texoma fishing license was created in 1979 allowing anglers to fish the lake in either state's jurisdiction without purchasing two separate licenses. This further allowed more effective law enforcement capabilities and provided monetary support for increasing management collaboration between the states. By 1997, ODWC and TPWD standardized regulations for all fish species previously managed under separate regulations. Joint sampling, data sharing, and annual meetings continue to support an open dialogue and cooperative management.

The major sportfish in Lake Texoma include largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieu*), spotted bass (*M. punctulatus*), white bass (*Morone chrysops*), striped bass (*M. saxatilis*), white crappie (*Pomoxis annularis*), black crappie (*P. nigromaculatus*), blue catfish (*Ictalurus furcatus*), channel catfish (*I. punctatus*), and flathead catfish (*Pylodictis olivaris*). The primary forage species include threadfin and gizzard shad. Lake Texoma has produced numerous Oklahoma and Texas state record fish. The fish stocking history for Lake Texoma is included in Table 2. Special fishing regulations which apply to Lake Texoma include:

| | |
|---|---|
| Largemouth, Smallmouth, and Spotted Bass: | 5 combined per day, 14-inch minimum size limit for largemouth and smallmouth bass. |
| All Crappie: | 37 per day, 10-inch minimum size limit. |
| Striped Bass and/or Striped Bass Hybrids: | 10 combined per day, of which only two may be 20-inches or longer. Culling is prohibited. |
| White Bass: | 25 per day, no minimum size limit. |
| Channel and/or Blue Catfish: | 15 combined per day, only one blue catfish greater than 30-inches per day. |
| Flathead Catfish: | 5 per day, 20-inch minimum size limit. |
| Alligator Gar: | 1 per day, the attempt to take or harvest alligator gar is prohibited May 1-31 |
| Other Species: | Statewide regulations. |

**Recent Creel Survey**

Staff from ODWC and TPWD completed a creel survey from December 2018 to November 2020 to assess angler use, catch, harvest, and demographics. Concurrently, researchers from Texas A&M Extension Service were contracted to provide economic valuation of the Lake Texoma fishery utilizing contact information collected during creel efforts.

Creel statistics are presented and discussed in detail within the TPWD Texoma Reservoir 2020 Fisheries Management Survey Report (Bennett and Cummings 2020) but highlights follow:

- Total fishing effort ranged from 1,006,061 hours to 1,399,718 hours in the two study years (Appendix A). Both years were impacted by either flooding effects or Covid-19 challenges. These factors may have led to less cumulative effort in comparison to previous creel surveys from 1987-1999 (range 1,200,000 hours to 2,100,000 hours).
- Directed fishing effort by anglers was highest for striped bass, accounting for 54.5% and 43.6% of the overall angling effort in 2019 and 2020, respectively (Appendix B).
- The overall effort for black basses increased from an average of 7.0% from 1987 to 1999, to approximately 20% in 2019 and 2020 (Appendix B).
- Anglers were encountered from 21 U.S. states in 2019 but from only the six U.S. states in closest proximity to Texoma Reservoir in 2020, indicating long range travelers were not visiting the Texoma area during peak of Covid-19 (Appendix C).

The economic valuation is presented and discussed within The Economic Impact of Visitors to Lake Texoma report (Dudensing and Ropicki 2021) but highlights follow:

- Total directed expenditures were calculated at $46 million and $42 million in year 1 and 2 of study (Appendix A).

- Non-regional striped bass anglers account for most expenditures associated with fishing at Texoma (Schorr et al. 1995, Dudensing and Ropicki 2021).
- Anglers were also asked what fishing license types they possessed during the 2019 creel survey, and we found that 30% of bank anglers and 73% of boat anglers had purchased the special Texoma fishing license ($12) which allowed them access to fish the entire reservoir.
- Texoma license sales may be used in the future to track trends in overall fishing effort at Lake Texoma (Appendix D)

**Black Bass**

Lake Texoma contains three species of black bass; largemouth bass, spotted bass, and smallmouth bass and is one of the best black bass lakes in the region. Texoma is known for its quality largemouth and exceptional smallmouth bass fishing. As a result, Texoma regularly ranks in the top 25 with the Bassmaster Central Region Best Bass Lakes rankings. Past tournament results and rankings are listed in Table 3.

Largemouth Bass

The largemouth bass is the dominant black bass species in Lake Texoma. Florida-strain largemouth bass have been stocked consistently since the 1990s to increase abundance of trophy-sized bass. Catch rates and relative weights for legal-sized fish are consistently within the range of acceptable values for a quality fishery. Recruitment of young bass is occasionally below acceptable values. This was true during the most recent surveys conducted in 2016, 2019, and 2023. Overall catch rate in 2019 fell below the acceptable catch rate ($\geq$40 fish/hr) for the first time since the 1980s but recovered in 2023 to 52.1 fish/hr. Catch of bass $\geq$ 14 inches (34.6 fish/hr) was the highest recorded in the past three samples. Catch rates and size structure of largemouth bass are included in Table 4 and Figures 3 and 4, respectively. Growth rates for largemouth bass were within acceptable levels when compared to other major reservoirs within the region (Figure 5). On average, 3-year-old largemouth reached 14.4 inches in length. Largemouth bass from Lake Texoma were tested for Largemouth Bass Virus (LMBV) in 2002. These results indicated that approximately one-quarter of the population carried LMBV at that time. Fish kills resulting from LMBV were never confirmed at Lake Texoma.

Spotted Bass

Spotted bass make up a small portion of the black bass population at Lake Texoma. Overall catch rates have remained relatively low in recent samples (6.5 – 13.4 fish/hr) and size structure has remained relatively stable with few individuals exceeding 14 inches. Growth rates were last evaluated in 2010 and the average length of an age-3 spotted bass was 11.3 inches. Catch rates, size structure, and growth rates of the spotted bass population are listed in Table 5 and Figures 6 - 8, respectively.

Smallmouth Bass

Smallmouth bass were first stocked in 1981 and have developed into a quality smallmouth bass fishery. The population is self-sustaining and has expanded to most of the available habitat within the lake. Numerous Oklahoma state record smallmouth bass have been produced at Lake Texoma. The largest on record was caught in 2003 and weighed 7.8 lbs. Sampling data is limited for smallmouth bass given their preference for deeper, rock and bolder type habitat.

These habitats are not effectively sampled by daytime electrofishing. Spring electrofishing samples conducted during 2023 resulted in an overall catch rate of 6.5 fish/hr with 3.4 fish/hr exceeding 14 inches. Growth rates were last evaluated in 2010 and the average length of an age-3 smallmouth bass was 13.7 inches. Catch rates, size distribution, and growth rates are included in Table 6 and Figures 9 and 10, respectively.

Recent Angler Creel Survey Results – Black Bass

Little traditional harvest of Black Bass was observed during the recent creel survey; five Largemouth Bass from 14- to 20-inches were observed harvested in the creel each year in 2019 and 2020 (Bennett and Cummings 2020). Percent legal released (non-tournament) was 91% and 93% during the two study years (Appendix E). No documented traditional harvest of Spotted Bass occurred during 2019 or 2020 creel surveys; however, Spotted Bass were likely reported by anglers as released Largemouth Bass. An estimated 18,683 Largemouth Bass, 3,854 Smallmouth Bass, and 3,022 Spotted Bass were retained for weigh-in by tournament anglers in 2019 and 10,734 Largemouth Bass, 1,903 Smallmouth Bass, and 4,041 Spotted Bass were retained in 2020. Length frequency of tournament retained Black Bass is described in Bennet and Cummings 2020. Tournament effort accounted for 65% of all effort for black bass in 2019 and 54% in 2020. Some tournaments were cancelled or postponed during the height of the COVID19 pandemic, which likely accounted for the reduced tournament effort in 2020.

**Temperate Bass**

White Bass

White Bass are native to the Lake Texoma watershed and contribute to the recreational fishery. Fishing for white bass is especially popular during the spring when they make their spawning run up the numerous tributaries of the lake. The National Sand Bass Festival was started in 1963 as businessmen and community leaders attempted to bring the natural resources of Madill and Marshall County into the spotlight. Historic densities of white bass were phenomenal. Lake aging and the expansion of the striped bass population has likely masked this once dominant pelagic predator. Despite a perceived decline from decades ago, the white bass population continues to provide diverse angling opportunities.

Catch rates for white bass are within the normal range of fluctuation (2-4 fish/net-night) but were lower in 2023 and 2024 when compared to the previous three samples. Size distribution of white bass has remained consistent over the past three samples with few individuals exceeding 14 inches. Relative weights for white bass greater than 8 inches have remained above acceptable values since the 2018 sample. Catch rates and size structure of the Lake Texoma white bass fishery are included in Table 7 and Figures 11 and 12, respectively.

Striped Bass

The evolution of the Lake Texoma striped bass fishery has required intensive management and regulation adjustments. ODWC introduced 1,013,133 striped bass into the reservoir from 1965 to 1974 to create an additional sport fishery and to provide a biological control on shad populations (Harper and Namminga 1986). Natural reproduction was verified in 1973, 1975, and each year thereafter (Mauck 1986). To protect the developing population a 1 fish/day bag limit was originally imposed in 1967. Ten years later this bag limit was raised to 3 fish/day and later

to 5 fish/day in 1980. Populations of striped bass and forage fish were in excellent condition and yielded numerous trophy fish in the early 1980's (Mauck 1986). The current lake record was caught in 1984 weighing 35.12 pounds. By 1980, Lake Texoma had become nationally recognized for its excellent striped bass fishery and experienced increasing fishing pressure. In 1982, liberal bag limits were instituted allowing anglers to harvest 15 fish/day of which only 5 could exceed 20 inches.

Angling pressure and environmental factors have combined to shape the Lake Texoma striped bass fishery. Artificial lures were the primary method of fishing prior to 1985 when bait fishing made its debut (Mauck 1986). This technique allowed anglers and guides to target large fish more effectively and regularly harvest bag limits. It became the opinion that live bait fishing was a contributing factor to declining numbers of large fish, prompting biologists to conduct a fishing mortality survey. Hysmith et al. (1992) demonstrated that post-release mortality of striped bass caught on live bait (57.6%) far surpassed those caught with artificial baits with treble hooks (32.3%) and single hooks (15.7%). These results further showed that this discrepancy was higher for fish over 20 inches with mortality estimates as high as 71% when caught with live bait.

By the late 1980's it was apparent that a combination of environmental factors were having a significant impact on the population. Discharge of flood waters reduced the number of large fish due to entrainment, while winter kills of threadfin shad reduced the forage base and negatively impacted year-class strength. Another environmental factor, known as the "temperature-dissolved oxygen squeeze", also negatively affected striped bass distribution and survival during the summer months. Striped bass are a temperate species, preferring a temperature range from 64 – 75 °F. Due to the thermal and chemical stratification that occurs at Lake Texoma (and many other lakes in the southern U.S.) preferred temperatures often experience anoxic or sub-lethal dissolved oxygen concentrations for striped bass. This results in stripers being "squeezed" into a narrow band of water that meets their temperature and oxygen needs. Stripers become stressed when these conditions cannot be met in the lake. Stratification and the resulting impact on the striper population vary each year due to a number of environmental factors. Generally, stratification occurs at deeper, cooler depths in the lower lake sections, whereas upper lake areas experience warmer temperature and less suitable conditions for striped bass. This effect can influence the distribution of striped bass into the lower basin of the reservoir during the summer months. Overcrowding and insufficient forage availability can play a large role in the overall stress and survival of striped bass during the summer months.

In 1989, the regulation was adjusted to a 15 fish/day creel with only 1 fish > 20 inches. A joint angler creel survey by the ODWC and TPWD was initiated in 1987 to determine catch rates, fishing pressure, and harvest estimates and ran through 1999 (Hysmith et al. 2000). During this 13-year survey, striped bass anglers accounted for 63.6% of the angling effort and harvested an estimated 854,032 striped bass annually (range 474,459 to 1,233,066). Weight of harvested striped bass averaged 1,706,717 pounds annually but saw yearly estimates as high as 2,883,333 pounds.

Despite efforts to reduce the harvest of larger fish in the population, striped bass were not reaching their historic trophy sizes and regulations were ineffective in reviving numbers of

striped bass greater than 20 inches (Moczygemba and Hysmith 1994). In an attempt to reduce the impacts of catch and release mortality, the ODWC and TPWD adopted a regulation decreasing the bag limit to 10 fish/day while increasing the number > 20 inches to two fish daily. This regulation was adopted in 1996 and remains in effect today.

Since 1993, winter gill-net data has been jointly collected by ODWC and TPWD to monitor the striped bass population. The percentage of fish ≥ 20 inches in the population has averaged 25.5% since the latest regulation change in 1996. Catch rates, growth rates, and size distribution data are presented in Table 8, and Figures 13 and 14. This population data closely mirrors the current regulation which allows 20% of the harvest to exceed 20 inches. Age and growth data has been collected annually since 2016. These data are presented in Table 9 and 2024 data is presented in Figure 15. Growth rates for Lake Texoma striped bass are generally slower than other reservoir populations in the southeast United States. Striped bass reach the 20 inch length limit between their 3$^{rd}$ and 4$^{th}$ year. Estimated annual mortality of the striped bass population was 44.6% in 2024. Natural mortality is intensified in years following a threadfin shad kill which last occurred in 2010. The decline of fish collected in gillnets from 2014 – 2016 reflects severe drought and limited spawning opportunities spanning from 2011 – 2014. Angler harvest and catch and release mortality are also major contributors to the total mortality rate (Hysmith et al. 1992).

The current length and bag limit restrictions on Lake Texoma striped bass are the result of many years of combined fishery population surveys, angler surveys, public hearings and various harvest regulation modifications by ODWC and TPWD. Approximately 150 guides operate on the lake and guided trips account for 60% of the directed effort for striped bass and comprise 77% of the total harvest (Moczygemba et al. 2005). Data collected in 1990 showed the Lake Texoma fishery, led by the striped bass fishery, generated more than $25 million in annual angler expenditures (Schorr et al. 1995). Subsequently, the Texoma fishery has been valued more than $40 million annually (Dudensing and Ropicki 2021), making it arguably the single-most valuable fishery resource in Oklahoma. Since the establishment of the current regulations, the striped bass population remains relatively stable and the majority of anglers are satisfied with their Lake Texoma fishing experience (Hunt and Ditton 1998). Fortunately, the desires of the angling public and the production capabilities of the lake align.

Recent Angler Creel Survey Results – Temperate Bass

Recent creel surveys (Appendix F) shows extensive angler utilization of the striped bass and white bass fisheries during 2019 and 2020 (549,371 h and 610,661 h). Mean angler catch rates of striped bass (2.0/h and 2.3/h) in 2019 and 2020 were high. Over a half-million striped bass are harvested annually (564,362 and 504,141). White bass abundance is cyclical, and harvest follows suit. An estimated 6,390 white bass were harvested in 2019 and 36,556 were harvested in 2020. Length frequency estimation of harvested striped bass and white bass are illustrated in Bennett and Cummings 2020. Release rates are much higher for white bass than striped bass.

## Catfish

Channel Catfish

Channel Catfish are omnivorous, feeding on a wide variety of organic matter, dead and alive. Some of the more common foods are fish, mussels, snails, insects and crayfish. Creel surveys conducted in 2006 and 2007 indicated that channel catfish make up 32.0% of the total catfish harvest at Lake Texoma (Kuklinski 2008). The average length of harvested channel catfish during that survey was 15.2 inches in 2006 and 17.8 inches in 2007. Gillnet catch rates for channel catfish are relatively low, ranging from 1 – 3 fish/net-night. The most recent samples from 2022 and 2023 fall within this range and the relative weights were within acceptable values. Catch rates and relative weight data is listed in Table 10 and Figure 16.

Blue Catfish

Blue catfish have become an important and increasingly sought after sportfish at Lake Texoma. A former world record blue catfish (121.5 lbs) was caught from the Texas side of Lake Texoma in 2004 using rod and reel. The current Oklahoma state record blue catfish was caught in 1988 and weighed 118 lbs. Sampling data indicates that Lake Texoma has an abundant and stable blue catfish population. Mauck and Boxrucker (2004) estimated total annual mortality for Lake Texoma blue catfish to be 18.8%. Creel surveys conducted in 2006 and 2007 indicated that blue catfish make up 66.7% of the total catfish harvest at Lake Texoma (Kuklinski 2008). The average length of harvested blue catfish during that survey was 18.7 inches in 2006 and 24.7 inches in 2007. An aging study conducted in 2003, indicated blue catfish took approximately 13 years to reach $\geq$ 30 inches in Lake Texoma (Kuklinski 2008). Of the twelve premier blue catfish fisheries in Oklahoma that were evaluated by Kuklinski 2008, only two reached 30 inches faster than Lake Texoma (one year faster in both cases). Low frequency electrofishing catch rates are consistently high, ranging from 200 – 300 fish/hr. Sampling in 2023 resulted in 253 fish/hr with 3.0 fish/hr greater than 30 inches. Fluctuations in catch rates over time are likely due to the nature of random site selection more than population fluctuations. This can be illustrated by catch rates of BCF greater than 30 inches which have ranged from 13.2 fish/hr in 2012 to 0.6 fish/hr in 2020.

Otoliths were collected from a subset of blue catfish for age and growth analysis in 2023. These data indicate growth may have decreased since the 2003 sample, with blue catfish reaching $\geq$ 30 inches at 18 years of age. However, blue catfish length at age is highly variable, especially for older individuals. This 5 year decrease in age to reach 30 inches may be a result of sample size differences between the sampling events. Additionally sampling would be needed to establish a better baseline for blue catfish growth at Lake Texoma. Catch rates, size structure, and growth rates for blue catfish are included in Tables 11 and 12 and Figures 17, 18 and 19, respectively.

Recent Angler Creel Survey Results – Catfish

Recent creel surveys show that catfish accounted for an estimated 9% (2019) and 12% (2020) of the overall angling effort at Texoma Reservoir (Appendix B). Blue catfish harvest was estimated at 53,363 and 27,583 in 2019 and 2020, respectively (Appendix G). Channel catfish harvest was estimated at 12,230 and 15,671 in 2019 and 2020, respectively. Higher effort for Blue Catfish, yet lower catch rates and harvest was observed in the 2020 creel survey, likely the result of increased shore-based angler effort observed during the COVID19 pandemic. The catfish fishery supports several local guide services.

**Crappie**

Lake Texoma contains both white crappie and black crappie. Angling for crappie is popular during the spring spawn and throughout the year around brush piles and boat docks. The last three trapnet samples conducted in 2017, 2020, and 2023 indicates that Lake Texoma has a relatively low catch rate for crappie with inconsistent recruitment. This was evident in the most recent sample with only one individual sampled from the 2020 spawn. Growth rates for crappie are exceptional and consistently exceed acceptable values for all age groups. In the 2023 sample, age-2 crappie averaged 11.6 inches. Crappie catch rates, growth rates, and size structure from past trap-netting surveys are presented in Tables 13, 14 and Figures 20, 21, respectively.

Recent Angler Creel Survey Results – Crappie

Anglers harvested an estimated 114,157 and 167,073 crappies in 2019 and 2020, respectively (Appendix H). Mean angler catch rate (2.9/h in 2019, 2.7/h in 2020) was high for crappie anglers. Length frequencies of harvested crappie can be found in Bennett and Cummings 2020.

**Shad**

Productive water within the lake allows for an abundant shad population consisting of both gizzard and threadfin shad. These species compose the majority of diet for predators within the lake, especially pelagic predators such as striped bass. Adult gizzard shad are able to reach large sizes and can outgrow gape limits of many predators. Threadfin shad adults are considerably smaller, rarely exceeding 6 inches in length. Threadfin are temperature sensitive and stress at temperatures below 45°F. Five significant threadfin shad die-offs have been reported due to unusually cold winters (1976/1977, 1981/1982, 1987/1988, 2000/2001, and 2009/2010). In a few instances, broodstock have been added following these events to jump start the population and to appease public pressure. The utilization of shad for live bait fishing is very popular, particularly with fishing guides.

Age-0 shad abundance, as measured by surface-set gill-net samples, is high and dominated by threadfin shad (Kuklinski 2010). Relative densities of age-0 shad (gizzard and threadfin combined) are similar between the Red and Washita River arms during most years of study but numbers decline within the lower lake (Kuklinski 2010 and J. Boxrucker, pers. comm..). Differences in between-arm catches were more evident with age-0 gizzard shad being found more routinely in the Red River arm. Shad densities vary annually but are not significantly different in most years. Catch rate data for gizzard and threadfin shad are presented in Table 15.

**Paddlefish**

Paddlefish (*Polyodon spathula*) are native to the Red River drainage. The construction of Denison Dam in 1944 blocked upstream migrations to spawning grounds and led to extirpation of the paddlefish from Lake Texoma and upstream. The United States Fish and Wildlife Service (USFWS) initiated a restoration stocking program for paddlefish in Lake Texoma in 1999. Evaluation of the Lake Texoma paddlefish population conducted by Patterson (2010) estimated the population at 1,761 individuals in 2009. Natural reproduction could not be confirmed during this study. Paddlefish were found to generally utilize the upper portions of the reservoir. Growth rates were similar to other Oklahoma paddlefish populations. Subsequently, ODWC (J. Schooley) conducted gillnet paddlefish sampling in the fall of 2015 and the winter of 2016/2017 and captured only one individual paddlefish over both surveys. An angler reported catching a paddlefish from the upper Washita River arm in 2022. Large mesh gillnetting in February 2024

collected 1 adult paddlefish. This was the last reported capture of a paddlefish from Lake Texoma.

**Alligator Gar**

Alligator gar (*Atractosteus spatula*) is a fishery resource of growing importance in the southeastern United States. Declining populations in portions of the species' range have caused many state and federal agencies to actively manage populations. Alligator gar are known to reach 100 or more pounds in Lake Texoma and the Red River. The current Oklahoma state record was caught in 2015 in the Red River upstream from the lake. It weighed 254 pounds and was 8 feet, 1 inches long. Growing concerns about the vulnerability of spawning alligator gar in Lake Texoma led to the initial development of seasonal "no harvest" areas in the Big Mineral and upper Red River arm of the lake. Currently, the entire State of Oklahoma as well as the Texas portion of Lake Texoma has adopted regulations that prevent the pursuit and harvest of alligator gar during the month of May. Mandatory reporting of harvested alligator gar is also required in Oklahoma providing an improved understanding of exploitation.

The Oklahoma Fisheries Research Lab has completed extensive research of the Lake Texoma alligator gar population in recent years. An improved understanding of population characteristics (age, growth, mortality, recruitment) allows harvest model simulations to be developed. It is believed that current harvest levels are sustainable but future attention is warranted.

## Fish Consumption Advisories

Fish consumption advisories are issued by the Oklahoma Department of Environmental Quality (ODEQ) and can be viewed at https://www.deq.ok.gov/state-environmental-laboratory-services/environmental-public-health-information/healthy-fish-consumption-in-oklahoma/.

## Threats to the Fishery

### Siltation

The highly erodible soils within the Red and Washita River drainages contribute to turbidity and significant sedimentation in the upper reaches of Lake Texoma. Patton and Lyday (2007) have documented accretion of sediments above water level that has effectively resulted in surface area reduction, cove isolation, fragmentation of lacustrine habitats, morphometric changes, and establishment of terrestrial vegetation on newly deposited lands. Depositional bars have effectively isolated large embayments (i.e. Widow Moore, and Kansas Creek) greatly limiting boat access to these once popular fishing destinations.

Limited connectivity to the main lake and a decline in habitat quality has likely influenced the distinct fish communities found between isolated fragments and the main reservoir. Shorelines associated with isolated backwaters are generally monotypic and of low value to many species of desirable sportfish. These shorelines are characterized by reduced shoreline development values, lower shoreline gradient, and reduced habitat heterogeneity than main lake non-depositional

shorelines. Future decades will pose numerous challenges and perhaps opportunities to resource managers as management will likely be altered in these wetland environments.

**Competing water uses**

Current and projected demands for regional water have elevated concerns for adequate quality water for aquatic resources in future years and decades. Numerous projects and operational changes are being evaluated to make Red River and Lake Texoma water more readily available and desirable for municipal, industrial, and agricultural purposes. Unfortunately, there are concerns that changes to the chemical properties of water and additional removal from the system will have pronounced negative effects on aquatic organisms and water-based recreation in the region.

Efforts to remove naturally occurring chlorides from water draining the Red River watershed have been the focus of numerous studies over the past decades and appear to be regaining momentum. The construction of low-flow dams, pump stations, and diversion pipelines would potentially alter instream flows, the timing and magnitude of inflow events, and water chemistry. It is widely understood that chlorides are important properties entrained within water that bind to suspended clay particles and assist with flocculation, subsequently enhancing water clarity. This process is important for making the water within Lake Texoma aesthetically pleasing and attractive to water-based recreation. Additionally, primary productivity and lake carrying capacity are enhanced by adequate sunlight penetration. The relatively high salinity levels are an important factor for striped bass egg development and buoyancy. A reduction in salinity and a reduction in available flows may compromise this premier fishery.

Water storage reallocations pose additional threats to the current seasonal pool plan, optimal fish production and water-based recreational activities. Concern as to whether enough water is available within the Red River, its tributaries, and Lake Texoma to satisfy the "cumulative" water supply requirements is warranted.

**Aquatic Nuisance Species (ANS)**

<u>Golden Alga</u>

Golden alga (*Parmnesium parvum*) is a single-celled species capable of producing dense blooms and toxins. Golden alga was first observed within Lake Texoma during the winter of 2004 when fish kills were observed in several embayments of the upper Red River arm. Subsequent fish kills resulting from golden alga blooms were documented in 2006, 2007, 2009, and 2023. These kills were primarily contained within isolated embayments of the upper Red River arm; however, blooms have occasionally spread down lake. A riverine fish kill attributed to golden algae occurred in 2014 in the Red River between I-35 and the lacustrine zone. Toxins produced from this harmful species have the ability to harm or kill organisms within multiple trophic levels including other algal species, zooplankton, planktivores and piscivores. Conditions surrounding bloom and toxin formation are dynamic and not completely understood. High levels of nutrients, especially phosphorus, and relatively high salinity levels (>1.5 ppt) are conducive to increased toxicity levels (Hambright 2009). Golden alga densities are higher in the winter and in the Red River arm of the lake. While this species is observed lake wide, heavy blooms, toxic conditions,

and associated fish kills have been limited to the Red River arm. The largest blooms have been observed in Lebanon Pool, a large backwater basin often disconnected from the main reservoir. Observed fish kills have occurred during years of lower than normal pool elevation which may further favor bloom conditions and limit the ability of fishes to escape near-shore areas or isolated embayment.

Zebra mussels

Zebra mussels (*Dreissena polymorpha*) were first detected in Lake Texoma in 2008. Water samples collected by the U.S. Fish and Wildlife Service near Highport Marina tested positive during PCR analysis. The first live adult zebra mussel was detected in April of 2009 near Eisenhower State Park. Since that time, adult zebra mussels have become widespread throughout Lake Texoma. Current density appears to have normalized at a lower level than initial infestation and mechanical fouling from zebra mussels hasn't been common.

Harris Mud Crabs

Harris mud crabs (*Rhithropanopeus harrisii*) were first collected at Lake Texoma in September 2008. The first specimen was provided to ODWC by a scuba diver and a second specimen was collected by Southeastern Oklahoma State University (SOSU) during sampling to determine the abundance of Harris mud crabs in Lake Texoma. Both specimens were collected near the dock at Cross Point Methodist Camp. In 2009, additional sampling was conducted by SOSU to determine the distribution and abundance of Harris mud crabs in Lake Texoma. A total of 22 specimens were collected ranging from Buncombe Creek to the west and Willow Springs to the north and east. The Harris mud crab is believed to originate from the Gulf of Mexico and has established populations in at least five Texas freshwater reservoirs. Lake Nacona has an established Harris mud crab population and is upstream of Lake Texoma within the Red River watershed. The Lake Texoma population may be the result of downstream migration from Lake Nacona.

Invasive Carp

Bighead (*Hypophthalmichthys nobilis*) and silver carp (*H. molitrix)* are invasive fish that feed on plankton and compete for food with larval fishes, shad, and mussels. Grass carp (*Ctenopharyngodon idella*) are herbivorous fish holding a reputation of ecological disruption often limiting desirable aquatic vegetation. Juvenile grass carp have been observed within the Red and Washita River arms of the reservoir, indicating successful reproduction within the watershed (Hargrave and Gido 2004). The long free flowing current offered in the Red and Washita Rivers provide a mechanism for successful hatching for their semi-buoyant eggs. Bighead and silver carp have been confirmed in the Red River below Lake Texoma, however, there have been no confirmed reports of their presence within Texoma. It is suspected that the source of inter-basin spread is bait bucket introductions. Educating anglers on identification of these species and measures to avoid their further spread is warranted. Juvenile bighead and silver carp closely resemble shad species and have led to regulations prohibiting the transportation of shad from the lower Red River. Current research by USFWS and Auburn University seeks to better understand life history characteristics, movement, and reproductive success within the Red River below Lake Texoma.

Hydrilla

Hydrilla (*Hydrilla verticillata*) is an invasive and potentially damaging aquatic weed popular in the aquarium trade. It has the ability to form dense mats displacing native species, restricting water flow, and impairing recreational activities. Its many modes of reproduction, including fragmentation, allows for rapid spread and dispersal within and among water bodies. Although hydrilla has not been observed within Lake Texoma, several water bodies within its drainage host this species (Arbuckle, Murray, and Ardmore City Lakes). It is unknown how this species may impact Lake Texoma if established.

## Lake Texoma Fisheries Management Goal

To provide a diversified, high quality sport fishery commensurate with resource capabilities and public desires.

## Objectives and Strategies

**Objective 1.0 Maintain largemouth bass electrofishing catch rates at the following levels.**

A. Total catch rates - ≥ 65 fish per hour.
B. Catch rates for LMB ≥ 14 inches - ≥ 25 fish per hour.
C. Length at age – 14 inches at age 3.

Strategies

1. Conduct standardized sampling procedure (SSP) electrofishing every three years to evaluate catch rates.
2. Collect age and growth data once every six years.
3. Monitor bass tournament data.

**Objective 2.0 Establish baseline dataset for smallmouth bass.**

Strategies

1. Collect smallmouth bass during SSP electrofishing every three years to evaluate catch rates by size groups and relative weights.
2. Collect age and growth data once every six years.
3. Monitor bass tournament data.

**Objective 3.0 Maintain striped bass gill-net catch rates, size structure, and growth at the following levels.**

A. Winter gillnet catch rates - ≥ 22 fish per net-night
B. Percentage of fish ≥ 20-inches - ≥ 20%
C. Length at age – 20-inches at age 4.

Strategies

1. Conduct SSP gillnetting annually to evaluate catch rates by size groups and relative weights.
2. Collect age and growth data annually.
3. Maintain current harvest regulations.

**Objective 4.0 Evaluate summer electrofishing protocol for blue catfish and establish a baseline dataset.**

Strategies

1. Conduct summer electrofishing every three years utilizing random and non-random protocols for site selection.
2. Evaluate random versus non-random electrofishing data and determine appropriate sampling protocol for Lake Texoma with an emphasis on larger individuals (>30 inches).
3. Establish target management objectives.

**Objective 5.0 Establish baseline dataset for crappie.**

Strategies

1. Conduct SSP trap netting every three years to evaluate catch rates by size groups and relative weights.
2. Collect age and growth data during each survey year.
3. Establish target management objectives.

**Objective 6.0 Collect trend data on threadfin and gizzard shad populations and maintain densities appropriate for predator demand.**

Strategies

1. Monitor effects of potential winter kill events as needed.
2. Restock threadfin shad following severe winter kills if an acceptable source is available.

**Objective 7.0 Address aquatic nuisance species through monitoring efforts and public outreach.**

Strategies

1. Work with cooperators and provide technical assistance towards applicable plans, monitoring efforts, and public outreach.
2. Conduct at least one media contact per year highlighting ANS issues and measures the public can use to prevent further spread.

**Objective 8.0 Protect and enhance aquatic habitat to benefit important sportfish and their associated prey species.**

Strategies

1. Oppose habitat degradation and shoreline development that does not comply with the Lake Texoma Shoreline Management Plan and does not require adequate mitigation. ODWC will propose adequate and reasonable mitigation measures when necessary.
2. Maintain thirty (30) fishing attractors and visually mark their position with buoys. Brush piles made of natural materials will be refurbished once every five years.

3. Provide GPS coordinates of all newly established habitat structures for public viewing on the ODWC website.

**Objective 9.0 Provide technical assistance to public agencies and participate in related planning efforts**

Strategies

1. Collect forebay and tailrace water quality data during summer stratification period and advise the USACOE accordingly.
2. Monitor USACOE and ODEQ permits and provide comments on projects that could negatively impact the resource and/or public use.
3. Meet annually with TPWD staff to facilitate data transfer and ensure regulation consistency.

**Objective 10.0 Provide improved angler access at selected sites**

Strategies

1. Utilize Sportfish Restoration Boating and Fishing access funds to improve existing sites and establish new sites pending suitable cooperators and funding.
2. Annually monitor existing boating and fishing access projects and supply cooperator with a compliance letter.
3. Work with USACOE to identify and develop high water level boat ramps and quality shoreline fishing access.

**Objective 11.0 Conduct public outreach**

Strategies

1. Conduct at least one media contact per year highlighting ODWC management efforts on Lake Texoma and fishing opportunities available to the public.
2. Provide information to the Lake Texoma Association as requested and attend related meetings as available.
3. Collect fish and/or tissue samples as requested to monitor contaminant levels in selected fishes.
4. Educate anglers and guides about proper fish handling and associated fishing mortality.

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Table 1. Physical and chemical characteristics of Lake Texoma

| | | |
|---|---|---|
| Operating Agencies: | | |
| Hydropower | Southwestern Power Administration | |
| Flood Control | U.S. Army Corps of Engineers | |
| Impoundment Date | 1944 | |
| Watershed | 39,719 square miles | |
| Surface Area | 88,000 acres | |
| Capacity | 2,643,000 acre-feet | |
| Shoreline | 580 miles | |
| Shoreline Development Ratio | 13.9 | |
| Mean Depth | 30.6 ft. | |
| Maximum Depth | 98.4 ft. | |
| Water Exchange Rate | 6.06 | |
| | Lower Lake | Upper Lake |
| Secchi Disk | 51 in. | 13 in. |
| pH Range | 7.27 – 8.42 | 7.84 – 8.65 |
| Conductivity Range | 887.6 – 1301 µS/cm | 1364 – 3062 µS/cm |
| Salinity Range | 0.46 – 0.70 ppt | 0.70 – 1.70 ppt |
| Average Turbidity Value | 5 NTU | 59 NTU |
| Trophic State Index (chlorophyll a) | 51 | 63 |
| Trophic Class | Mesotrophic | Hypereutrophic |

Table 2. Species, number and size of fish stocked by Oklahoma and Texas in Lake Texoma from 1965 to 2024.

| DATE | SPECIES | NUMBER | SIZE |
|---|---|---|---|
| 1965 | Striped bass | 138 | Adults |
| 1967 | Striped bass | 200,000 | Fry |
| 1968 | Striped bass | 5,000 | Fingerlings |
| 1968 | Walleye | 50,400 | Fry |
| 1969 | Walleye | 500,000 | Fry |
| 1969 | Striped bass | 284,614 | Fingerlings |
| 1970 | Striped bass | 77,640 | Fingerlings |
| 1971 | Striped bass | 96,839 | Fingerlings |
| 1972 | Striped bass | 208,340 | Fingerlings |
| 1973 | Striped bass | 141,612 | Fingerlings |
| 1974 | Florida bass | 10,000 | Fry |
| 1974 | Striped bass | 548,898 | Fingerlings |
| 1974 | Largemouth bass | 57,225 | Fry |
| 1975 | Walleye | 4,750,000 | Fry |
| 1975 | Florida bass | 200,000 | Fry |
| 1975 | Hybrid largemouth bass | 80,000 | Fry |
| 1976 | Walleye | 25,000 | Fry |
| 1977 | Walleye | 2,261,000 | Fry |
| 1977 | Florida bass | 23,748 | Fingerlings |
| 1977 | Striped bass | 1,600 | Fingerlings |
| 1979 | Threadfin shad | 31,181 | Adults |
| 1981 | Smallmouth bass | 576,655 | Fingerlings |
| 1982 | Threadfin shad | 1,500 | Adults |
| 1982 | Smallmouth bass | 452,372 | Fingerlings |
| 1983 | Smallmouth bass | 48,104 | Fingerlings |
| 1984 | Threadfin shad | 33,744 | Adults |
| 1984 | Striped bass | 490 | Fingerlings |
| 1985 | Threadfin shad | 38,920 | Adults |
| 1985 | Florida bass | 237,589 | Fingerlings |
| 1985 | Striped bass | 550 | Fry |
| 1986 | Florida bass | 231,850 | Fingerlings |
| 1987 | Smallmouth bass | 6,800 | Fingerlings |
| 1991 | Smallmouth bass | 10,641 | Fingerlings |
| 1991 | Channel catfish | 15,170 | Fingerlings |
| 1992 | Channel catfish | 59 | Growouts |
| 1995 | Florida bass | 100,000 | Fingerlings |
| 1996 | Smallmouth bass | 16,100 | Fingerlings |
| 1996 | Smallmouth bass | 3,900 | Fingerlings |
| 1996 | Florida bass | 51,420 | Fingerlings |
| 1996 | Florida bass | 48,880 | Fingerlings |
| 1996 | Florida bass | 100,300 | Fingerlings |
| 1997 | Florida bass | 109,950 | Fingerlings |

Table 2. Continued.

| DATE | SPECIES | NUMBER | SIZE |
|---|---|---|---|
| 1997 | Florida bass | 100,090 | Fingerlings |
| 1998 | Smallmouth bass | 27,694 | Fingerlings |
| 1998 | Florida bass | 110,500 | Fingerlings |
| 1999 | Smallmouth bass | 20,085 | Fingerlings |
| 1999 | Florida bass | 327,191 | Fingerlings |
| 1999 | Paddle fish | 5,862 | Fingerlings |
| 2000 | Paddle fish | 20,568 | Fingerlings |
| 2001 | Paddle fish | 770 | Fingerlings |
| 2001 | Threadfin shad | 11,300 | Adults |
| 2002 | C. Florida bass | 678,403 | Fingerlings |
| 2004 | C. Florida bass | 234,537 | Fingerlings |
| 2005 | Paddlefish | 31,478 | Fingerlings |
| 2007 | Paddlefish | 2,029 | Fingerlings |
| 2010 | Threadfin shad | 39,252 | Adults |
| 2010 | C. Florida bass | 34,357 | Fingerlings |
| 2012 | C. Florida bass | 372,888 | Fingerlings |
| 2013 | C. Florida bass | 75,066 | Fingerlings |
| 2013 | C. Florida bass | 288 | Adults |
| 2014 | C. Florida bass | 50 | Adults |
| 2015 | C. Florida bass | 50,067 | Fingerlings |
| 2017 | C. Florida bass | 130,250 | Fingerlings |
| 2018 | C. Florida bass | 111,665 | Fingerlings |
| 2018 | C. Florida bass | 202 | Adults |
| 2019 | C. Florida bass | 400 | Adults |
| 2020 | C. Florida bass | 61,230 | Fingerlings |
| 2020 | Channel catfish | 46,812 | Fingerlings |
| 2022 | Channel catfish | 41,496 | Fingerlings |
| 2023 | C. Florida bass | 120,661 | Fingerlings |

Table 3. Lake Texoma Tournament Results. Ranking of lakes statewide from which 10 or more tournament reports were received. Ranked according to quality fishing indicators. Lake Texoma ranking listed in parentheses.

| Year | Number of Reports | Total Number Of Anglers | Number of Bass Caught | Number of Bass Weighed In per 8-Hour Day | | Bass/ Tourn | Bass Weighed In/Angler | Percent Successful Anglers | | Average Weight per Bass (lbs.) | | Number of Bass Weighing In Over 5 lbs. | Angler-Hours per Bass Weighing In Over 5 lbs. | Number of Bass Weighing In Over 8 lbs. | Avg. Big Bass | Avg. 1st Place Weight (lbs.) | | Overall Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1994 | 19 | 659 | 1121 | 1.7 | (# 5) | 59.0 | 1.7 | 81 | (# 1) | 2.3 | (# 14) | 1.0 | (#11) | 0 | 6.8 | 15.8 | (# 4) | 4 |
| 1995 | 21 | 898 | 1320 | 1.1 | (# 18) | 62.9 | 1.5 | 79 | (# 3) | 2.25 | (# 11) | 0.9 | (#18) | 0 | 6.6 | 14.3 | (# 5) | 8 |
| 1996 | 25 | 1303 | 2048 | 1.4 | (# 8) | 81.9 | 1.6 | 79 | (# 1) | 2.05 | (# 14) | 1.5 | (#14) | 0 | 7.8 | 14.7 | (# 4) | 7 |
| 1997 | 26 | 1778 | 2335 | 0.9 | (# 17) | 89.8 | 1.3 | 69 | (# 5) | 2.34 | (# 15) | 1.8 | (#15) | 0.04 | 9.4 | 15.7 | (# 3) | 10 |
| 1998 | 26 | 1508 | 2177 | 1.0 | (# 16) | 83.7 | 1.4 | 76 | (# 2) | 2.17 | (# 16) | 1.0 | (#16) | 0 | 7.4 | 15.4 | (# 2) | 7 |
| 1999 | 31 | 2152 | 2177 | 0.9 | (# 18) | 70.2 | 1.0 | 72 | (# 6) | 2.14 | (# 16) | 0.9 | (#17) | 0.03 | 8.3 | 13.7 | (# 9) | 15 |
| 2000 | 16 | 667 | 856 | 1.2 | (# 11) | 53.5 | 1.3 | 82 | (# 3) | 2.15 | (# 15) | 0.9 | (#14) | 0.19 | 9.0 | 15.6 | (# 6) | 8 |
| 2001 | 13 | 427 | 547 | 1.0 | (# 13) | 42.1 | 1.3 | 76 | (# 2) | 2.08 | (# 11) | 0.2 | (#18) | 0 | 5.7 | 13.4 | (# 4) | 10 |
| 2002 | 18 | 870 | 820 | 0.7 | (# 14) | 45.6 | 0.9 | 70 | (# 5) | 2.00 | (# 15) | 0.4 | (#16) | 0 | 6.7 | 12.7 | (# 3) | 10 |
| 2003 | 21 | 1150 | 1771 | 1.4 | (# 7) | 84.3 | 1.5 | 75 | (# 5) | 2.18 | (# 13) | 0.7 | (#20) | 0 | 6.9 | 13.9 | (# 4) | 4 |
| 2004 | 24 | 1459 | 1826 | 1.0 | (# 13) | 76.1 | 1.3 | 71 | (# 7) | 2.03 | (# 16) | 0.8 | (#20) | 0.04 | 8.3 | 14.1 | (# 5) | 12 |
| 2005 | 30 | 1705 | 1831 | 1.4 | (# 14) | 61.0 | 1.1 | 71 | (# 9) | 2.18 | (# 12) | 0.5 | (#21) | 0 | 6.9 | 13.3 | (# 6) | 9 |
| 2006 | 28 | 1157 | 1749 | 1.9 | (# 6) | 62.5 | 1.5 | 76 | (# 6) | 2.07 | (# 16) | 0.4 | (#16) | 0 | 4.7 | 14.5 | (# 4) | 8 |
| 2007 | 20 | 575 | 1421 | 2.8 | (# 6) | 71.1 | 2.8 | 82 | (# 4) | 2.12 | (# 15) | 1.1 | (#14) | 0.1 | 5.2 | 15.8 | (# 4) | 6 |
| 2008 | 17 | 1082 | 1574 | 1.2 | (#18) | 92.0 | 1.2 | 72 | (#8) | 2.09 | (#13) | 0.8 | (#18) | 0 | 5.3 | 14.7 | (#8) | 18 |
| 2009 | 15 | 818 | 1711 | 1.8 | (#7) | 112 | 1.8 | 83 | (#7) | 2.13 | (#14) | 1.3 | (#17) | 0 | 5.6 | 16.4 | (#11) | 13 |
| **Avg** | **22** | **1138** | **1580** | **1.3** | **12** | **71.7** | **1.5** | **76** | **4.6** | **2.1** | **14** | **0.9** | **16.6** | **0.03** | **6.9** | **14.6** | **5.1** | **9.3** |

Table 4. Total number (No.), catch rates (C/f), and relative weights ($W_r$) by size groups of largemouth bass collected by spring electrofishing from Lake Texoma. Numbers in parentheses represent acceptable values for a quality fishery. Acceptable $W_r$ values are ≥90.

| Total (≥40) | | | <8 in. (15-45) | | 8–12 in. (15-30) | | ≥12 in. (≥15) | | ≥14 in. (≥10) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | $W_r$ | C/f | $W_r$ | C/f | $W_r$ | C/f | $W_r$ |
| 1982 | 147 | 21.0 | 9.0 | 101 | 6.3 | 95 | 3.9 | 91 | 1.9 | 93 |
| 1983 | 338 | 22.9 | 8.5 | 100 | 7.2 | 98 | 7.2 | 90 | 2.8 | 90 |
| 1984 | 337 | 32.1 | 16.3 | 99 | 9.4 | 97 | 6.4 | 89 | 1.4 | 88 |
| 1985 | 320 | 26.1 | 7.5 | 90 | 11.7 | 85 | 6.9 | 92 | 2.6 | 83 |
| 1986 | 218 | 45.9 | 11.4 | 89 | 14.1 | 97 | 20.4 | 90 | 10.3 | 90 |
| 1987 | 189 | 29.8 | 6.9 | 95 | 13.1 | 102 | 9.8 | 91 | 5.3 | 95 |
| 1988 | 255 | 42.5 | 11.8 | 90 | 15.7 | 95 | 15.0 | 99 | 8.5 | 104 |
| 1989 | 279 | 58.7 | 5.1 | 91 | 33.9 | 101 | 19.8 | 101 | 10.9 | 103 |
| 1990 | 201 | 80.4 | 26.8 | 107 | 24.8 | 103 | 28.8 | 95 | 11.2 | 96 |
| 1991 | 275 | 84.6 | 5.2 | 111 | 37.8 | 94 | 41.5 | 96 | 24.6 | 96 |
| 1992 | 254 | 84.7 | 14.6 | 117 | 23.0 | 106 | 47.0 | 100 | 28.3 | 93 |
| 1993 | 279 | 69.8 | 8.5 | 94 | 17.8 | 102 | 43.5 | 98 | 25.0 | 98 |
| 1994 | 258 | 103.0 | 11.2 | 85 | 20.8 | 92 | 71.2 | 95 | 49.2 | 93 |
| 1996 | 257 | 114.0 | 21.3 | 94 | 24.4 | 94 | 68.4 | 97 | 55.1 | 97 |
| 1998 | 263 | 105.0 | 20.4 | 85 | 25.2 | 89 | 59.6 | 96 | 45.2 | 95 |
| 1999 | 248 | 76.3 | 4.9 | 98 | 13.8 | 98 | 57.6 | 91 | 38.2 | 92 |
| 2000 | 247 | 82.3 | 19.7 | 95 | 23.0 | 100 | 39.7 | 96 | 29.0 | 94 |
| 2002 | 235 | 78.3 | 17.3 | 89 | 22.7 | 90 | 38.3 | 91 | 19.3 | 90 |
| 2006* | 366 | 61.0 | 13.5 | 112 | 26.3 | 100 | 21.2 | 90 | 10.0 | 88 |
| 2010 | 447 | 66.2 | 5.2 | 86 | - | - | - | - | 38.8 | 92 |
| 2012 | 246 | 61.5 | 16.5 | 86 | - | - | - | - | 22.5 | 97 |

Table 4 continued.

| Total (≥40) | | | <8 in. (15-45) | | 8–12 in. (15-30) | | ≥12 in. (≥15) | | ≥14 in. (≥10) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | $W_r$ | C/f | $W_r$ | C/f | $W_r$ | C/f | $W_r$ |
| 2016 | 243 | 58.3 | 6.2 | 90 | - | - | 36.5 | 104 | 29.0 | 103 |
| 2019 | 158 | 36.5 | 3.2 | 81 | - | - | 27.2 | 95 | 20.5 | 97 |
| 2023 | 341 | 52.1 | 2.6 | 93 | - | - | 44.9 | 93 | 34.6 | 93 |

* Denotes changed electrofishing protocol – Minimum of 6 hrs of effort required.

Table 5. Total number (No.), catch rates (C/f), and relative weights ($W_r$) by size groups of spotted bass collected by spring electrofishing from Lake Texoma. Numbers in parentheses represent acceptable values for a quality fishery. Acceptable $W_r$ values are $\geq$90.

| | Total (≥ 40) | | < 8 inches (15-45) | | 8-12 inches (15-30) | | ≥ 14 inches (≥ 10) | |
|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | $W_r$ | C/f | $W_r$ | C/f | $W_r$ |
| 1987 | 26 | 4.2 | 2.4 | 86 | 1.1 | 78 | c | - |
| 1988 | 29 | 4.8 | 0.7 | 77 | 1.5 | 85 | 0.67 | 93 |
| 1989 | 44 | 9.3 | 5.3 | 89 | 1.9 | 82 | 0.63 | 121 |
| 1990 | 55 | 22.0 | 7.6 | - | 8.8 | 91 | 2.4 | 95 |
| 1991 | 71 | 21.8 | 6.5 | 75 | 12.3 | 85 | 0.9 | 96 |
| 1992 | 47 | 15.7 | 5.7 | - | 6.0 | 97 | 2.3 | 97 |
| 1993 | 118 | 29.5 | 3.5 | 97 | 8.0 | 89 | 5.3 | 92 |
| 1994 | 63 | 25.2 | 3.2 | - | 10.4 | 83 | 6.0 | 91 |
| 1996 | 60 | 26.7 | 0.9 | 91 | 2.7 | 90 | 11.5 | 94 |
| 1998 | 36 | 14.4 | 4.0 | - | 5.6 | 86 | 1.2 | 93 |
| 1999 | 46 | 14.2 | 1.8 | 109 | 4.9 | 94 | 1.8 | 89 |
| 2000 | 82 | 27.3 | 3.3 | 88 | 7.7 | 101 | 3.7 | 97 |
| 2002 | 154 | 51.3 | 12.3 | 95 | 18.0 | 97 | 6.7 | 86 |
| 2006* | 86 | 14.3 | 4.5 | 111 | 5.2 | 100 | 1.3 | 89 |
| 2010 | 96 | 14.2 | 4.1 | 113 | - | - | 1.9 | 89 |
| 2012 | 162 | 40.5 | 15.0 | 101 | - | - | 4.5 | 99 |

Table 5 Continued.

| | Total (≥ 40) | | < 8 inches (15-45) | | 8-12 inches (15-30) | | ≥ 14 inches (≥ 10) | |
|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | $W_r$ | C/f | $W_r$ | C/f | $W_r$ |
| 2016 | 27 | 6.5 | 0 | - | - | - | 2.2 | 106 |
| 2019 | 39 | 9.0 | 0.7 | 88 | - | - | 1.2 | 93 |
| 2023 | 84 | 13.4 | 3.1 | 104 | - | - | 3.4 | 93 |

* Denotes changed electrofishing protocol – Minimum of 6 hrs of effort required.

Table 6. Total number (No.), catch rates (C/f), and relative weights (Wr) by size groups of smallmouth bass collected by spring electrofishing from Lake Texoma. Acceptable Wr values are ≥90.

| | Total (≥40) | | < 8 inches | | 8-14 inches | | ≥ 14 inches | |
|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | Wr | C/f | Wr | C/f | Wr |
| 2010 | 49 | 7.3 | 0.8 | 82 | 2.4 | 81 | 4.0 | 84 |
| 2012 | 11 | 2.8 | 1.3 | 89 | 0.8 | 94 | 0.8 | 91 |
| 2016 | 40 | 9.6 | 2.2 | 85 | 6.5 | 88 | 1.0 | 90 |
| 2019 | 18 | 4.2 | 0.5 | 72 | 2.8 | 79 | 1.0 | 84 |
| 2023 | 70 | 6.5 | .2 | - | 2.9 | 82 | 3.4 | 84 |

Table 7. Total number (No.), fish per net night (C/f), and relative weights (Wr) by size groups of white bass collected by combined OK-TX winter gill netting from Lake Texoma.

| Total | | | < 8 in. | | 8 – 12 in. | | ≥ 12 in. | |
|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | Wr | C/f | Wr | C/f | Wr |
| 1982 | 34 | 1.0 | 0.5 | 89 | 0.5 | 90 | 0.2 | 87 |
| 1983 | 73 | 3.6 | 0.5 | 92 | 1.4 | 93 | 1.7 | 90 |
| 1984 | 9 | 0.5 | 0.1 | 102 | 0.2 | 95 | 0.2 | 85 |
| 1985 | 39 | 1.9 | 0.2 | 72 | 0.5 | 76 | 1.4 | 83 |
| 1986 | 7 | 0.5 | 0.1 | 77 | 0.05 | 79 | 0.1 | 75 |
| 1987 | 17 | 1.0 | 0.1 | 83 | 0.2 | 86 | 0.5 | 83 |
| 1988 | 2 | 0.1 | - | - | - | - | 0.1 | 73 |
| 1989 | 169 | 8.4 | 1.2 | 84 | 6.0 | 88 | 1.4 | 93 |
| 1990 | 6 | 0.2 | 0.1 | 89 | 0.2 | 111 | 0.1 | 78 |
| 1991 | 74 | 3.8 | 0.7 | 83 | 1.7 | 87 | 1.2 | 90 |
| 1992 | 98 | 5.0 | 0.2 | 59 | 2.4 | 85 | 2.6 | 86 |
| 1993* | 257 | 9.8 | 1.2 | - | 3.6 | - | 5.0 | - |
| 1994 | 183 | 7.0 | 1.4 | - | 1.9 | - | 3.6 | - |
| 1995 | 97 | 3.8 | 0.2 | - | 1.9 | - | 1.4 | - |
| 1996 | 331 | 13.2 | 1.9 | - | 4.3 | - | 6.7 | - |
| 1997 | 79 | 2.9 | 0.1 | - | 1.7 | - | 1.2 | - |
| 1998 | 310 | 12.2 | 2.6 | - | 5.0 | - | 4.6 | - |
| 1999 | 65 | 2.4 | 0.5 | - | 1.2 | - | 0.7 | - |
| 2000 | 202 | 7.9 | 1.0 | - | 2.4 | - | 4.6 | - |
| 2001 | 72 | 2.9 | 1.0 | - | 1.2 | - | 0.7 | - |
| 2002 | 56 | 2.2 | 0.2 | - | 0.5 | - | 0.5 | - |
| 2003 | 152 | 5.5 | 1.7 | - | 1.9 | - | 1.9 | - |
| 2004 | 25 | 0.7 | 0.02 | - | 0.1 | - | 0.7 | - |
| 2005 | 135 | 5.0 | 0.7 | - | 3.8 | - | 0.5 | - |

Table 7 Continued.

| Total | | | < 8 in. | | 8 – 12 in. | | ≥ 12 in. | |
|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | Wr | C/f | Wr | C/f | Wr |
| 2006 | 78 | 2.9 | 0.1 | - | 1.2 | - | 1.4 | - |
| 2007 | 123 | 4.6 | 0.5 | - | 3.1 | - | 1.0 | - |
| 2008 | 187 | 6.7 | 1.0 | 86 | 2.4 | 91 | 3.3 | 100 |
| 2009 | 158 | 5.4 | 1.3 | 84 | 1.9 | 87 | 2.2 | 97 |
| 2010 | 125 | 4.6 | 0.6 | 86 | 1.8 | 90 | 2.1 | 97 |
| 2011 | 172 | 6.2 | 0.3 | 86 | 3.0 | 99 | 3.0 | 98 |
| 2012 | 170 | 5.5 | 1.8 | 85 | 1.8 | 91 | 2.0 | 103 |
| 2013 | 144 | 5.0 | 1.2 | 85 | 1.6 | 92 | 2.3 | 98 |
| 2014 | 158 | 5.6 | 0.6 | 88 | 2.5 | 95 | 2.6 | 100 |
| 2015 | 40 | 1.5 | 0.2 | 83 | 0.7 | 88 | 0.6 | 91 |
| 2016 | 354 | 12.1 | 0.6 | 92 | 5.8 | 106 | 5.6 | 111 |
| 2017 | 398 | 14.2 | 1.3 | 87 | 7.3 | 96 | 5.6 | 110 |
| 2018 | 240 | 8.5 | 1.0 | 85 | 1.9 | 88 | 5.5 | 95 |
| 2019 | 50 | 1.8 | 0.1 | 89 | 1.7 | 95 | 0.03 | 95 |
| 2020 | 212 | 7.5 | 5.4 | 93 | 4.3 | 102 | 1.1 | 115 |
| 2021 | 285 | 9.9 | 2.1 | 90 | 3.4 | 101 | 4.4 | 101 |
| 2022 | 228 | 7.6 | 1.4 | 85 | 2.2 | 93 | 4.0 | 99 |
| 2023 | 92 | 3.1 | 0.7 | 82 | 1.0 | 91 | 1.4 | 97 |
| 2024 | 69 | 2.5 | 0.8 | 85 | 1.0 | 95 | 0.7 | 100 |

* Winter gill netting began in 1993.

Table 8. Total number (No.), fish per net night (C/f), and relative weights (Wr) by size groups of striped bass collected by combined OK-TX winter gill netting from Lake Texoma.

| Total | | | < 12 in. | | 12 – 20 in. | | ≥ 20 in. | |
|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | Wr | C/f | Wr | C/f | Wr |
| 1982 | 290 | 8.6 | 1.4 | 86 | 7.0 | 74 | 2.9 | 68 |
| 1983 | 211 | 10.6 | 5.8 | 93 | 4.6 | 91 | 0.5 | 85 |
| 1984 | 141 | 7.2 | 0.7 | 98 | 4.8 | 74 | 1.9 | 74 |
| 1985 | 152 | 7.7 | 1.2 | 71 | 4.8 | 83 | 1.7 | 78 |
| 1986 | 223 | 11.5 | 3.8 | 81 | 7.4 | 79 | 0.5 | 86 |
| 1987 | 102 | 5.0 | 2.2 | 85 | 2.9 | 85 | 0.1 | 85 |
| 1988 | 48 | 2.4 | 2.6 | 78 | 2.4 | 92 | 0.5 | 105 |
| 1989 | 244 | 12.2 | 8.6 | 79 | 3.1 | 85 | 0.5 | 71 |
| 1990 | 100 | 5.3 | 0.5 | 130 | 4.1 | 84 | 0.7 | 73 |
| 1991 | 320 | 16.1 | 6.5 | 82 | 8.9 | 88 | 0.7 | 79 |
| 1992 | 363 | 19.0 | 6.5 | 73 | 11.0 | 97 | 1.4 | 84 |
| 1993* | 484 | 18.2 | 3.8 | - | 9.4 | - | 5.0 | - |
| 1994 | 569 | 21.6 | 3.4 | - | 13.7 | - | 4.6 | - |
| 1995 | 334 | 13.2 | 2.4 | - | 7.9 | - | 2.9 | - |
| 1996 | 374 | 14.9 | 3.4 | - | 7.9 | - | 3.6 | - |
| 1997 | 531 | 19.9 | 2.4 | - | 11.8 | - | 5.8 | - |
| 1998 | 580 | 23.0 | 7.9 | - | 11.0 | - | 4.1 | - |
| 1999 | 546 | 21.1 | 4.1 | - | 14.2 | - | 3.1 | - |
| 2000 | 567 | 22.3 | 3.1 | - | 15.1 | - | 4.1 | - |
| 2001 | 747 | 30.2 | 2.6 | - | 19.0 | - | 8.6 | - |
| 2002 | 580 | 21.8 | 3.4 | - | 16.6 | - | 2.2 | - |
| 2003 | 650 | 23.5 | 1.9 | - | 15.6 | - | 6.0 | - |
| 2004 | 732 | 24.0 | 1.4 | - | 18.0 | - | 7.0 | - |
| 2005 | 669 | 24.7 | 5.8 | - | 9.4 | - | 9.4 | - |
| 2006 | 758 | 28.3 | 5.8 | - | 15.4 | - | 7.2 | - |

Table 8. Continued.

| | Total | | < 12 in. | | 12 – 20 in. | | ≥ 20 in. | |
|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | Wr | C/f | Wr | C/f | Wr |
| 2007 | 674 | 25.2 | 5.8 | - | 13.9 | - | 5.5 | - |
| 2008 | 597 | 21.6 | 2.9 | 88 | 12.8 | - | 5.9 | 98 |
| 2009 | 704 | 24.1 | 6.6 | 86 | 11.6 | - | 5.9 | 92 |
| 2010 | 580 | 20.3 | 1.0 | 84 | - | - | 5.2 | 84 |
| 2011 | 347 | 12.8 | 2.3 | 96 | - | - | 0.3 | 100 |
| 2012 | 680 | 22.5 | 7.0 | 85 | - | - | 6.3 | 104 |
| 2013 | 475 | 16.6 | 1.2 | 80 | - | - | 5.4 | 90 |
| 2014 | 655 | 22.9 | 2.4 | 87 | - | - | 8.7 | 92 |
| 2015 | 383 | 13.4 | 2.6 | 89 | - | - | 4.8 | 90 |
| 2016 | 193 | 6.6 | 0.5 | 88 | - | - | 3.7 | 117 |
| 2017 | 489 | 18.0 | 6.6 | 87 | - | - | 2.8 | 106 |
| 2018 | 504 | 18.1 | 2.3 | 85 | - | - | 5.2 | 101 |
| 2019 | 889 | 31.7 | 5.6 | 79 | - | - | 10.4 | 85 |
| 2020 | 826 | 29.9 | 4.4 | 91 | - | - | 6.1 | 100 |
| 2021 | 1133 | 39.2 | 6.9 | 91 | - | - | 18.4 | 102 |
| 2022 | 789 | 27.2 | 1.2 | 88 | - | - | 7.7 | 96 |
| 2023 | 581 | 20.5 | 2.9 | 90 | - | - | 6.3 | 91 |
| 2024 | 557 | 20.0 | 2.6 | 90 | - | - | 4.7 | 92 |

* Winter gill netting began in 1993.

Table 9. Mean length at age of striped bass from Lake Texoma. Samples collected by winter gillnetting.

| Year | Age 1 | Age 2 | Age 3 | Age 4 | Age 5 | Age 6 |
|---|---|---|---|---|---|---|
| 2011 | 8.1 | 11.4 | 17.0 | 19.1 | 25.0 | - |
| 2013 | 9.6 | 13.9 | 17.5 | 23.8 | 26.7 | 25.5 |
| 2016 | 8.7 | 16.6 | 19.1 | 22.8 | - | 25.6 |
| 2017* | 9.8 | 16.3 | - | 4.3 | 25.6 | - |
| 2018 | 9.0 | 15.8 | 22.1 | - | 26.0 | 27.3 |
| 2019 | 8.8 | 13.6 | 20.5 | 25.5 | - | 27.7 |
| 2020 | 9.2 | 15.1 | 17.8 | 22.0 | 26.4 | - |
| 2021 | 9.1 | 14.6 | 19.9 | 21.2 | 24.0 | 28.4 |
| 2022 | 8.9 | 14.8 | 19.0 | 22.6 | 23.3 | 26.5 |
| 2023 | 8.0 | 12.3 | 18.9 | 22.1 | 25.8 | 25.9 |
| 2024 | 8.6 | 12.1 | 17.5 | 21.8 | 25 | 27.7 |

*Mean length at age is fit for the entire dataset.

Table 10. Total number (No.), fish per net night (C/f), and relative weights (Wr) by size groups of channel catfish collected by combined OK-TX winter gill netting from Lake Texoma.

| | Total | | < 12 in. | | ≥ 12 in. | | ≥ 16 in. | |
|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | Wr | C/f | Wr | C/f | Wr |
| 1982 | 69 | 2.2 | 0.7 | 91 | 1.2 | 91 | 0.7 | 95 |
| 1983 | 37 | 1.9 | 0.7 | 97 | 1.2 | 91 | 0.5 | 97 |
| 1984 | 39 | 1.9 | 0.7 | 88 | 1.2 | 89 | 0.5 | 98 |
| 1985 | 36 | 1.9 | 0.7 | 79 | 1.0 | 91 | 0.5 | 96 |
| 1986 | 34 | 1.7 | 1.0 | 72 | 0.7 | 78 | 0.1 | 96 |
| 1987 | 32 | 1.7 | 0.7 | 81 | 0.7 | 91 | 0.5 | 89 |
| 1988 | 30 | 1.7 | 0.7 | 79 | 1.0 | 84 | 0.5 | 85 |
| 1989 | 35 | 1.7 | 1.2 | 79 | 0.7 | 84 | 0.5 | 90 |
| 1990 | 23 | 1.2 | 0.7 | 96 | 0.5 | 79 | 0.2 | 85 |
| 1991 | 12 | 0.7 | 0.2 | 89 | 0.5 | 87 | 0.1 | 103 |
| 1992 | 23 | 1.2 | 0.7 | 81 | 0.5 | 92 | 0.2 | 93 |
| 1993* | 48 | 1.9 | 0.7 | - | 1.0 | - | 0.5 | - |
| 1994 | 34 | 1.2 | 0.7 | - | 0.7 | - | 0.1 | - |
| 1995 | 64 | 2.6 | 1.7 | - | 1.0 | - | 0.2 | - |
| 1996 | 34 | 1.2 | 0.2 | - | 1.0 | - | 0.5 | - |
| 1997 | 22 | 0.7 | 0.5 | - | 0.5 | - | 0.1 | - |
| 1998 | 33 | 1.2 | 0.5 | - | 0.7 | - | 0.2 | - |
| 1999 | 53 | 1.9 | 1.7 | - | 1.7 | - | 0.7 | - |
| 2000 | 20 | 0.7 | 0.1 | - | 0.7 | - | 0.1 | - |
| 2001 | 67 | 2.6 | 1.4 | - | 1.2 | - | 0.5 | - |
| 2002 | 47 | 1.7 | 0.5 | - | 1.2 | - | 0.7 | - |
| 2003 | 58 | 2.2 | 1.2 | - | 0.7 | - | 0.5 | - |
| 2004 | 53 | 1.9 | 1.2 | - | 0.7 | - | 0.5 | - |
| 2005 | 50 | 1.7 | 0.7 | - | 1.2 | - | 0.2 | - |

Table 10. Continued.

| | Total | | < 12 in. | | ≥ 12 in. | | ≥ 16 in. | |
|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | Wr | C/f | Wr | C/f | Wr |
| 2006 | 58 | 2.2 | 1.2 | - | 1.2 | - | 0.5 | - |
| 2007 | 38 | 1.4 | 0.5 | - | 0.7 | - | 0.5 | - |
| 2008 | 63 | 2.3 | 0.8 | 82 | 1.5 | 88 | 1.1 | 89 |
| 2009 | 72 | 2.5 | 1.5 | 94 | 1.0 | 94 | 0.6 | 98 |
| 2010 | 38 | 1.3 | 0.5 | 93 | 0.8 | 88 | 0.3 | 93 |
| 2011 | 101 | 3.7 | 1.8 | 88 | 1.9 | 90 | 0.6 | 94 |
| 2012 | 77 | 2.6 | 1.5 | 88 | 1.0 | 86 | 0.4 | 90 |
| 2013 | 68 | 2.4 | 1.1 | 90 | 1.2 | 87 | 0.5 | 92 |
| 2014 | 57 | 2.0 | 0.7 | 90 | 1.3 | 91 | 0.4 | 103 |
| 2015 | 56 | 2.0 | 0.3 | 97 | 1.7 | 89 | 0.7 | 91 |
| 2016 | 56 | 1.9 | 0.6 | 100 | 1.3 | 86 | 0.6 | 86 |
| 2017 | 43 | 1.6 | 0.9 | 98 | 0.7 | 86 | 0.3 | 88 |
| 2018 | 79 | 2.8 | 1.5 | 97 | 1.3 | 95 | 0.7 | 97 |
| 2019 | 54 | 1.9 | 1.4 | 87 | 0.5 | - | 0.3 | - |
| 2020 | 71 | 1.7 | 1.2 | 88 | 0.6 | 87 | 0.3 | 91 |
| 2021 | 23 | 0.8 | 0.4 | 82 | 0.4 | 96 | 0.1 | 90 |
| 2022 | 50 | 1.8 | 0.8 | 89 | 1.0 | 96 | 0.3 | 92 |
| 2023 | 38 | 1.3 | 0.7 | 93 | .6 | 90 | 0.3 | 91 |
| 2024 | 64 | 2.3 | 0.8 | 91 | 1.5 | 92 | 0.3 | 100 |

* Winter gill netting began in 1993.

Table 11. Total number (No.) and catch rate (C/f) by size groups of blue catfish collected by summer boat electrofishing from Lake Texoma.

| | Total | | < 12 in. | ≥ 12 in. | ≥ 20 in. | ≥ 30 in. |
|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | C/f | C/f | C/f |
| 1993 | 116 | 148.7 | 53.6 | 94.5 | 42.1 | 3.8 |
| 1994 | 261 | 261 | 77.0 | 184.0 | 46.0 | 4.0 |
| 1995 | 285 | 180 | 45.5 | 134.5 | 32.2 | 2.5 |
| 1999 | 660 | 330 | 76.5 | 253.5 | 40.0 | 6.5 |
| 2002 | 185 | 185 | 1.0 | 184.0 | 40.0 | 8.0 |
| 2003 | 450 | 225 | 44.2 | 180.8 | 32.5 | 3.0 |
| 2009* | 483 | 322 | 295.3 | 26.7 | 8.7 | 2.7 |
| 2012 | 386 | 232 | 55.8 | 175.8 | 51.6 | 13.2 |
| 2014 | 283 | 189 | 24.7 | 164.0 | 26.0 | 4.7 |
| 2017 | 376 | 226 | 94.8 | 130.8 | 56.4 | 3.6 |
| 2020 | 508 | 305 | 88.2 | 216.6 | 38.7 | 0.6 |
| 2023 | 533 | 253 | 34.2 | 219.0 | 55.8 | 3.0 |

* Denotes changed electrofishing protocol – Minimum of 1.5 hrs of effort required and sites randomly selected within the upper 50% of the reservoir.

Table 12. Mean length at age of blue catfish from Lake Texoma. Samples collected by summer boat electrofishing during 2023.

| Age | Number | Length (in) |
|---|---|---|
| 1 | 2 | 8.9 |
| 2 | 11 | 8.9 |
| 3 | 46 | 10.7 |
| 4 | 33 | 12.8 |
| 5 | 21 | 14.1 |
| 6 | 14 | 16.3 |
| 7 | 24 | 16.8 |
| 8 | 35 | 19.0 |
| 9 | 50 | 19.8 |
| 10 | 13 | 22.2 |
| 11 | 11 | 22.8 |
| 12 | 6 | 23.4 |
| 13 | 17 | 25 |
| 14 | 13 | 23.7 |
| 15 | 14 | 26.2 |
| 16 | 13 | 24 |
| 17 | 30 | 26.9 |
| 18 | 8 | 29.8 |
| 19 | 3 | 33.5 |
| 20 | - | - |
| 21 | 2 | 32.2 |

Table 13. Total number (No.), fish per net night (C/f), and relative weights (Wr) by size groups of all crappie collected by trap netting from Lake Texoma. Numbers in parentheses represent acceptable C/f values for a quality fishery.

| | Total (≥25) | | <5 in. (≥5) | | ≥5 in. (10-40) | | ≥8 in. (≥10) | | ≥10 in. (≥4) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | No. | C/f | C/f | Wr | C/f | Wr | C/f | Wr | C/f | Wr |
| 1992 | 94 | 8.4 | 1.8 | 60 | 6.2 | 99 | 5.0 | 101 | 1.6 | 100 |
| 1994 | 345 | 7.4 | 3.4 | 112 | 4.3 | 99 | 3.6 | 100 | 1.9 | 102 |
| 1995 | 192 | 7.3 | 0.5 | 86 | 6.7 | 93 | 6.2 | 95 | 3.5 | 97 |
| 1999 | 171 | 7.4 | 2.9 | 102 | 4.5 | 98 | 4.4 | 98 | 3.8 | 99 |
| 2001 | 184 | 7.2 | 4.6 | 75 | 2.6 | 91 | 2.2 | 96 | 1.7 | 98 |
| 2017 | 396 | 15.0 | 0.0 | - | 15.0 | 91 | 13.3 | 91 | 6.7 | 91 |
| 2020 | 240 | 11.7 | 0.1 | - | 11.6 | 110 | 7.3 | 101 | 1.1 | 96 |
| 2023 | 131 | 6.0 | .9 | - | 5.1 | 99 | 4.0 | 99 | 3.1 | 99 |

Table 14. Mean length at age of crappie collected by trap netting from Lake Texoma. Numbers in parentheses represent values for acceptable growth rates.

| | Age 1 | Age 2 | Age 3 | Age 4 |
|---|---|---|---|---|
| Year | (≥ 6.3 in.) | (≥ 7.9 in.) | (≥ 8.9 in.) | (≥ 9.8 in.) |
| 1992 | 7.3 | 8.9 | 10.2 | 12.6 |
| 1994 | 8.7 | 11.5 | 12.4 | 12.8 |
| 1995 | 9.6 | 10.8 | 13.4 | 12.6 |
| 1998 | 8.2 | 10.2 | 11.1 | 12.6 |
| 1999 | 8.6 | 11.7 | 12.7 | 12.6 |
| 2001 | 6.8 | 10.7 | 12.7 | - |
| 2017 | 8.2 | 9.7 | - | - |
| 2020 | 8.4 | 11.8 | 12.9 | 13.4 |
| 2023 | 10.0 | 11.6 | - | 13.1 |

Table 15. Mean fish per net night (C/f) of gizzard, threadfin, and all shad combined collected by floating gillnets from Lake Texoma.

| | Gizzard Shad | Threadfin Shad | All Shad Combined |
|---|---|---|---|
| Year | C/f | C/f | C/f |
| 2001 | 179.1 | 600.1 | 779.2 |
| 2002 | 107.6 | 869.7 | 983.6 |
| 2003 | 80 | 818.2 | 898.2 |
| 2004 | 144.7 | 873 | 1017.7 |
| 2005 | 49.5 | 975.8 | 1025.2 |
| 2006 | 37.3 | 397.5 | 434.8 |
| 2007 | 127.4 | 490.4 | 617.9 |
| 2008 | 48.2 | 475.2 | 523.2 |
| 2009 | 107.6 | 485 | 592.6 |
| 2010 | 136.1 | 324.5 | 460.6 |
| 2011 | 78.2 | 338.2 | 416.4 |
| 2012 | 27.8 | 406.6 | 434.4 |
| 2014* | 15.3 | 81.5 | 96.8 |
| 2015 | 41.3 | 123.2 | 164.4 |

* Gear changed from 25 ft panels to 10 ft panels. Same mesh sizes used for both nets.

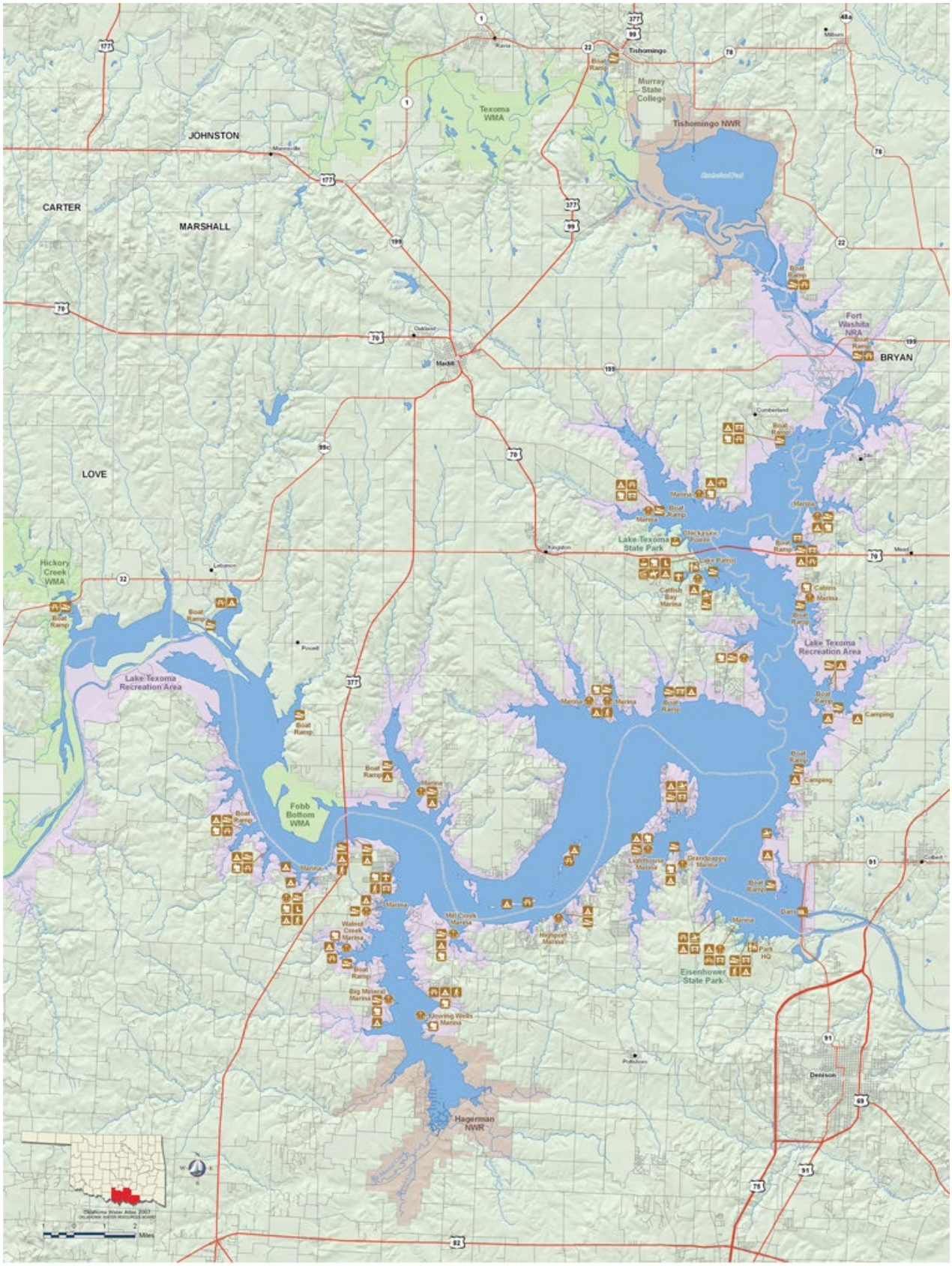


Figure 1. Map of Lake Texoma and vicinity.

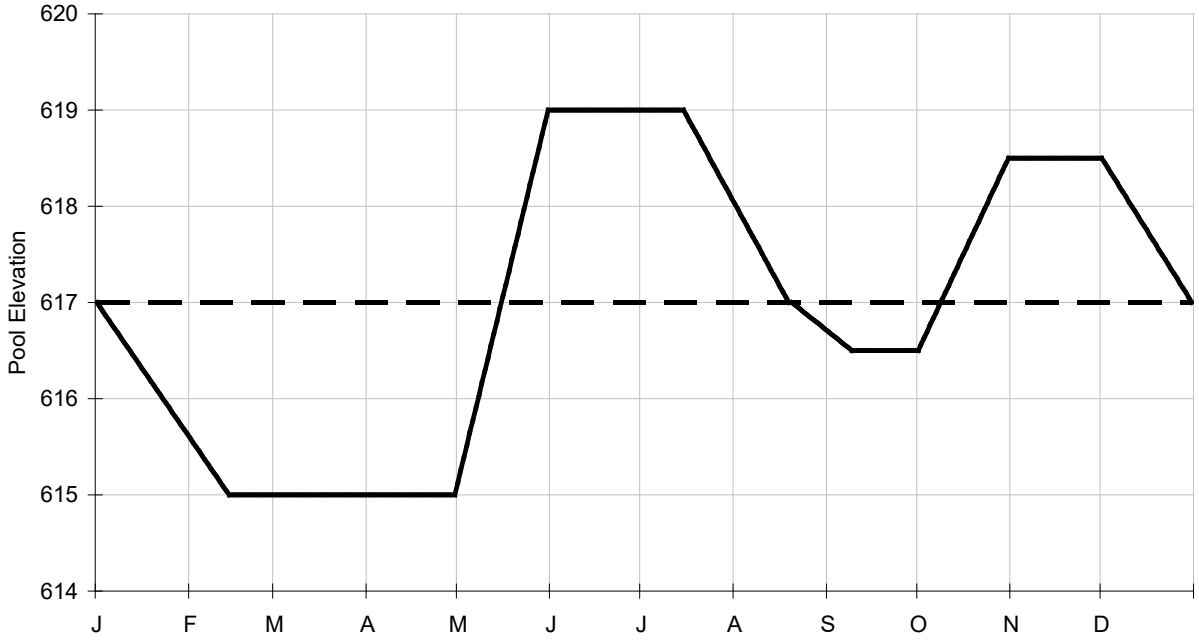



Figure 2. Target elevations (solid line) and conservation pool (dotted line) for Lake Texoma.

Dates and elevations for seasonal pool plan.
Jan 1 – Elevation 617 and dropping to 615 feet msl
Feb 15 – Elevation 615 feet msl
May 1 – Raise elevation from 615 to 619 feet msl
June 1 – Elevation 619 feet msl
July 15 – Lower elevation from 619 to 616.5 feet msl
Sept 10 – Elevation 616.5 feet msl
Oct 1 – Raise elevation from 616.5 to 618.5 feet msl
Nov 1 – Elevation 618.5 feet msl
Dec 1 – Lower elevation from 618.5 to 617 feet msl


Figure 3. Total catch rates of largemouth bass and catch rates of largemouth bass ≥ 14 inches collected by spring electrofishing.

* Denotes changed electrofishing protocol – Minimum of 6 hrs of effort required.

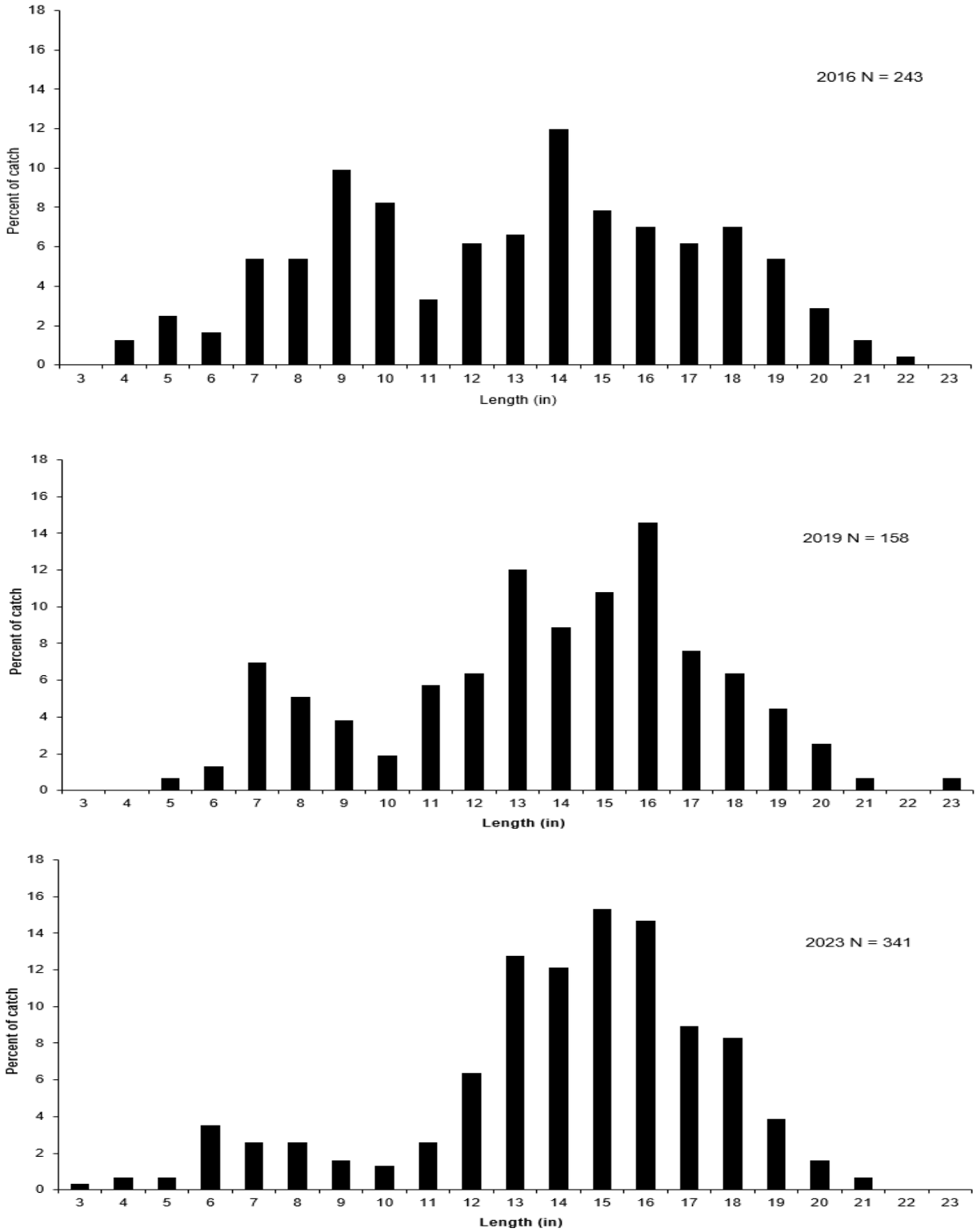



Figure 4. 2016, 2019, and 2023 length frequency distribution for largemouth bass collected by spring electrofishing at Lake Texoma.

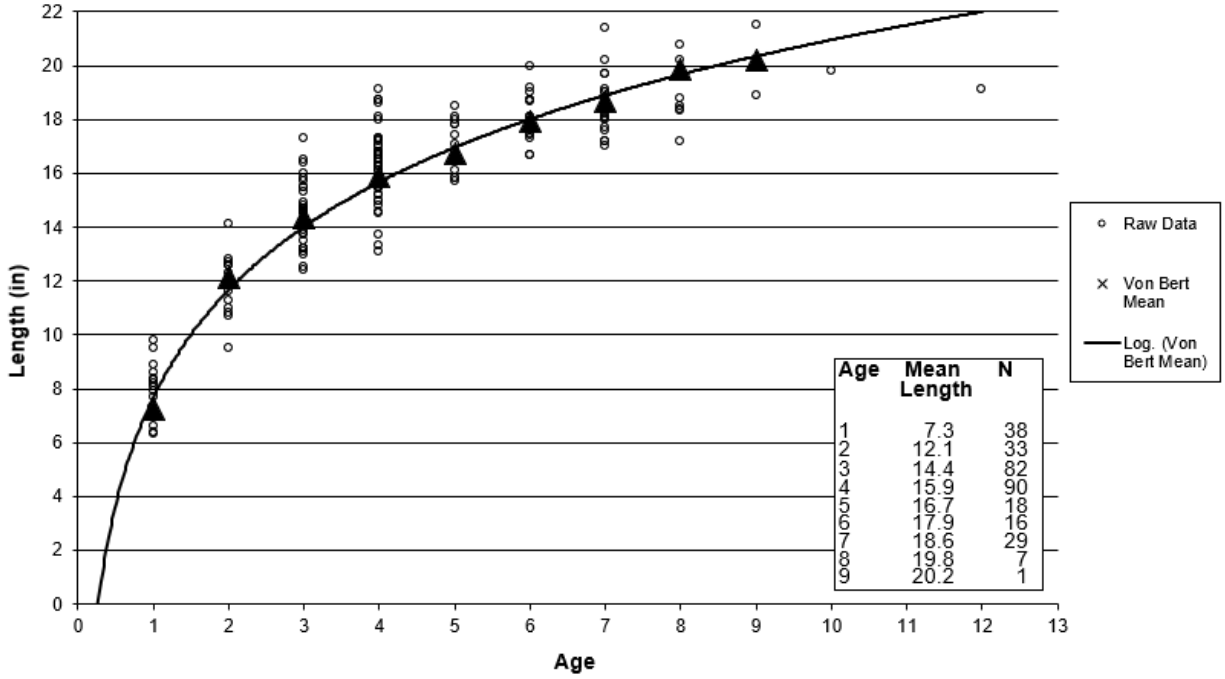



Figure 5. 2023 Length at age data for largemouth bass collected from Lake Texoma by spring electrofishing. N = 341

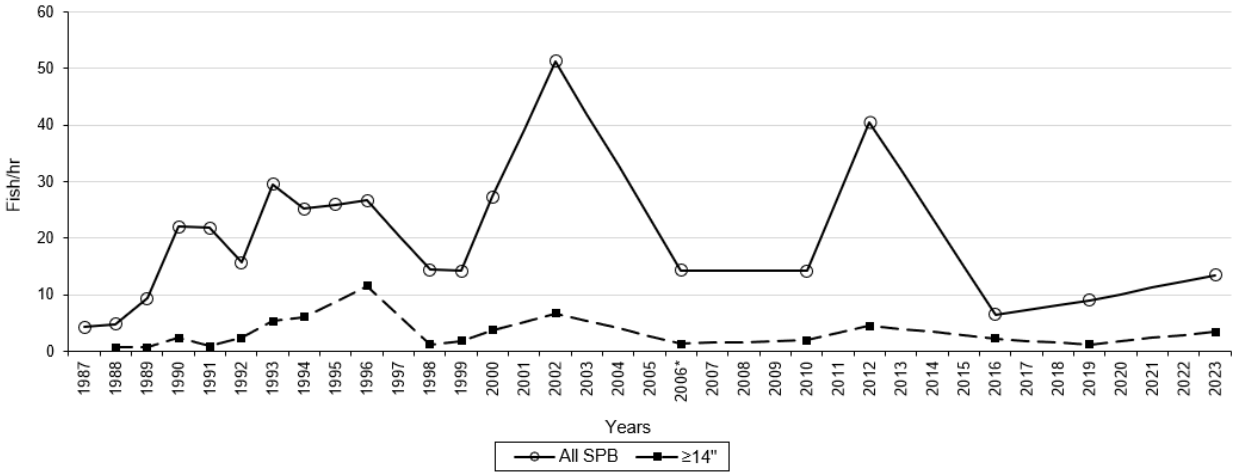



Figure 6. Total catch rates of spotted bass and catch rates of spotted bass ≥ 14 inches collected by spring electrofishing.

* Denotes changed electrofishing protocol – Minimum of 6 hrs of effort required.

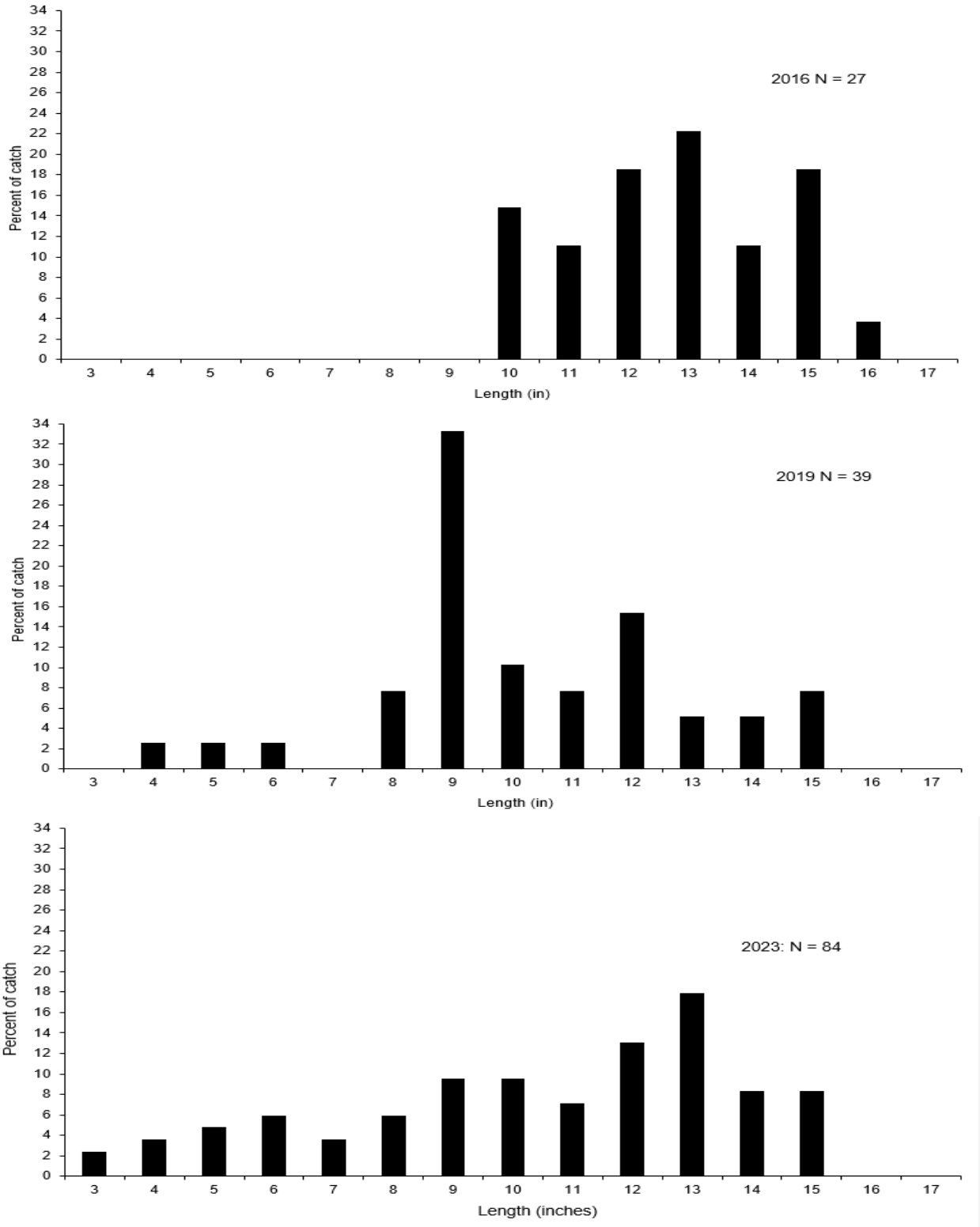



Figure 7. 2016, 2019, and 2023 length frequency distribution for spotted bass collected by spring electrofishing at Lake Texoma.

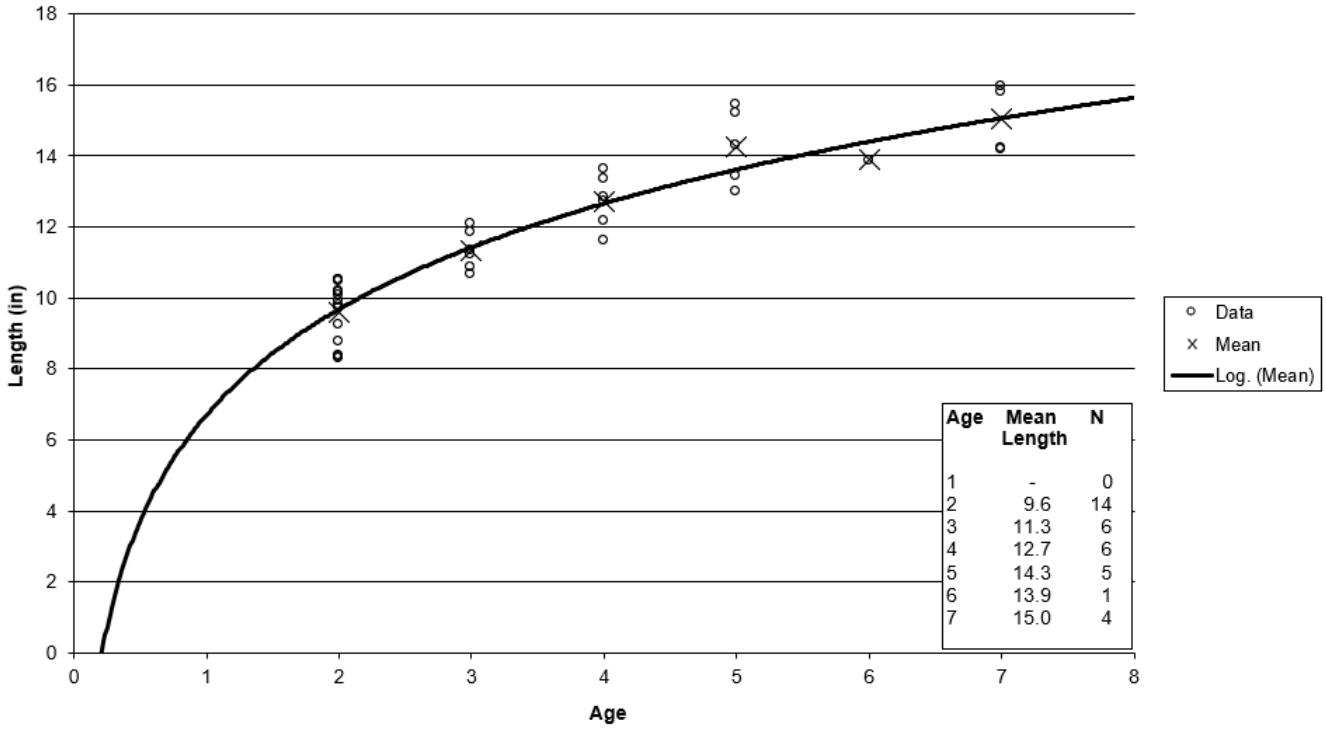
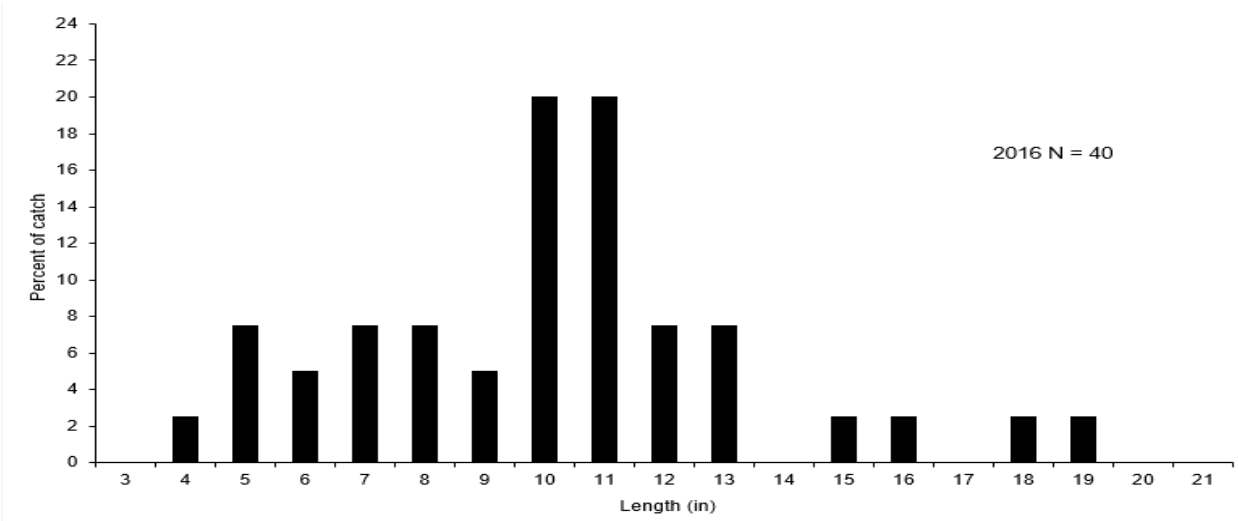
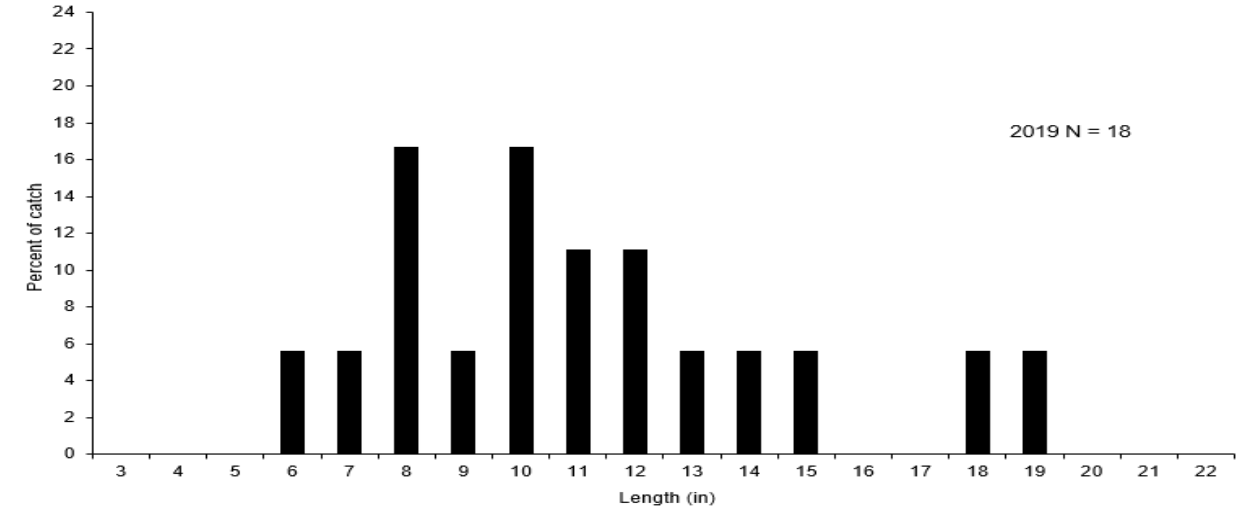



Figure 8. 2010 Length at age data for spotted bass collected from Lake Texoma by spring electrofishing. N = 36.



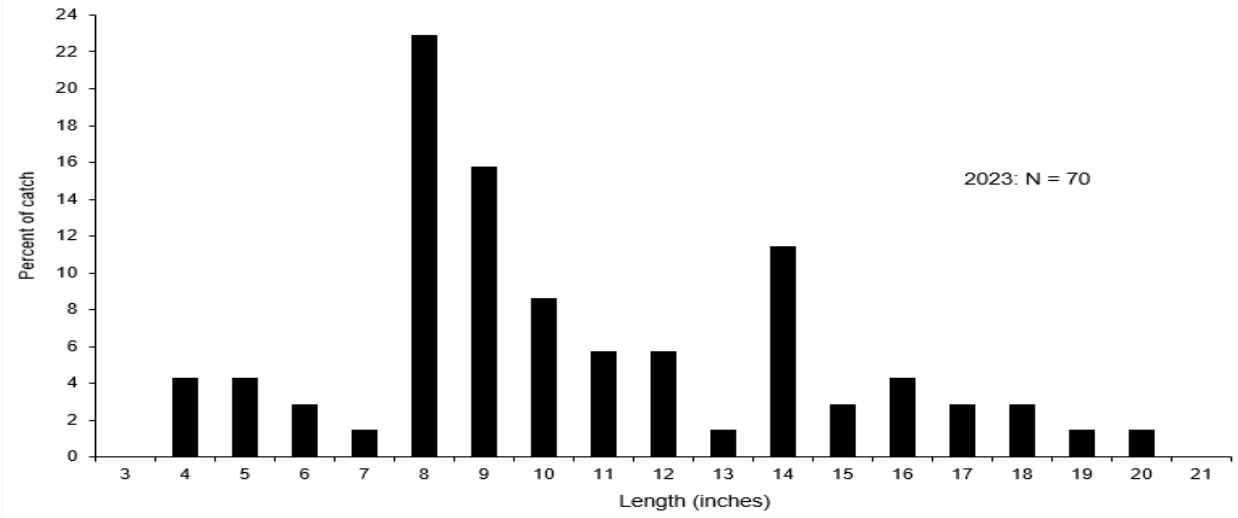




Figure 9. 2016, 2019 and 2023 length frequency distribution for smallmouth bass collected by spring electrofishing at Lake Texoma.

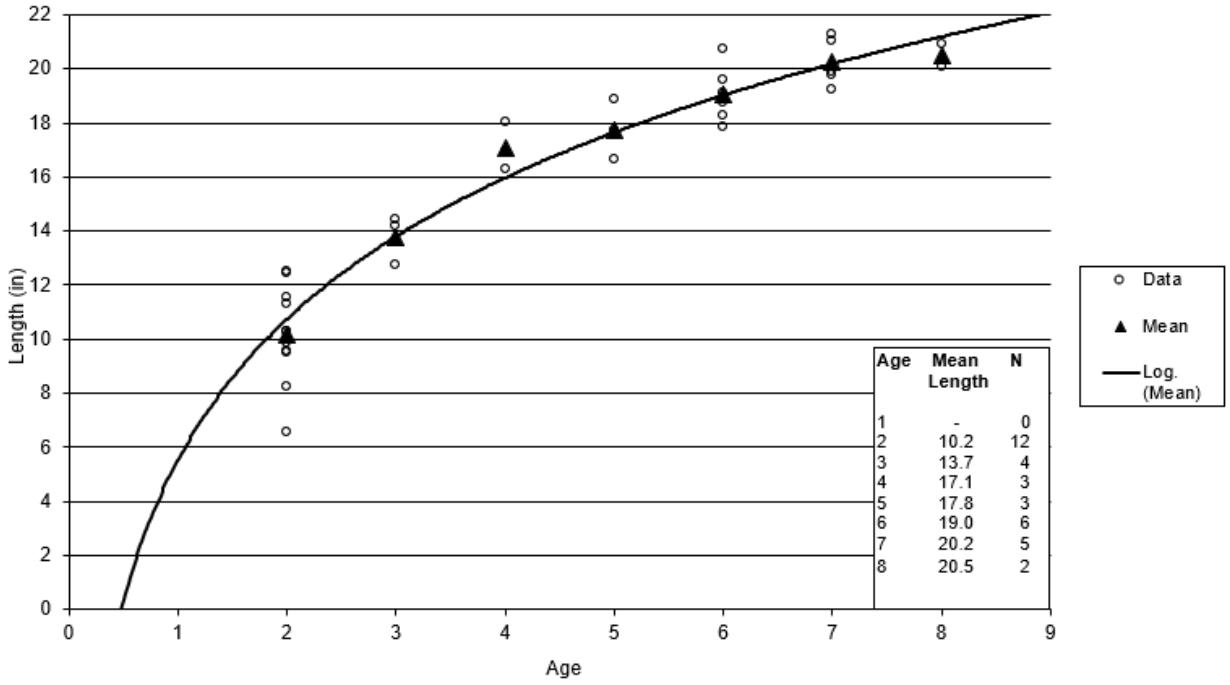



Figure 10. 2010 Length at age data for smallmouth bass collected from Lake Texoma by spring electrofishing. N = 35

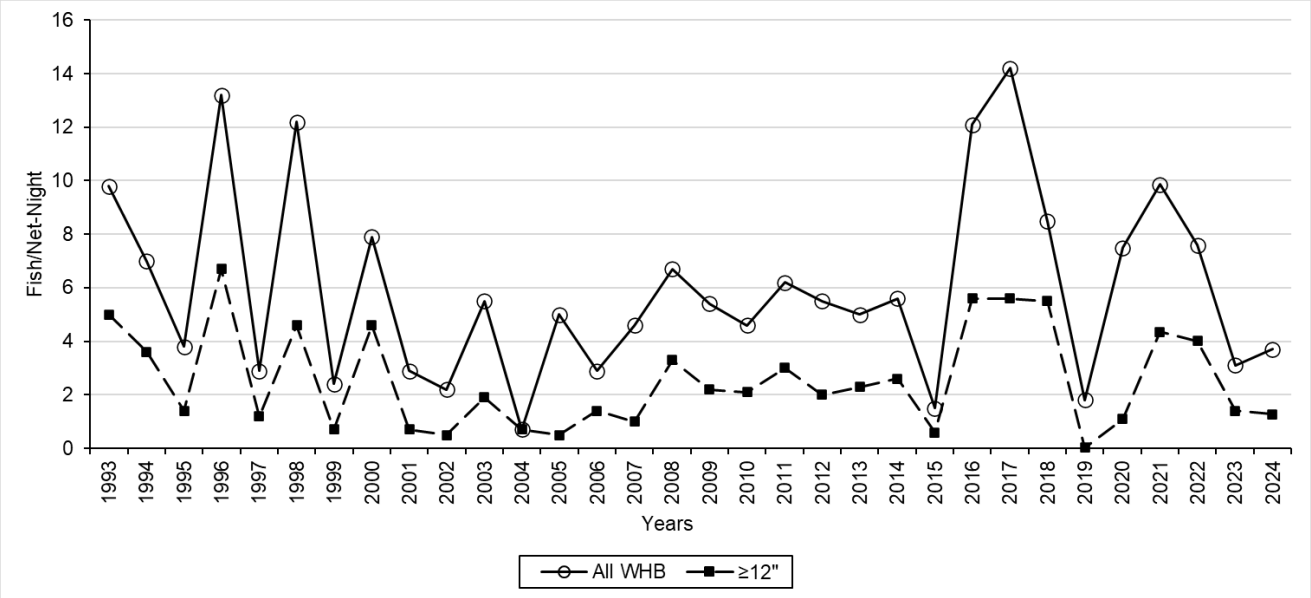


Figure 11. 1993 to 2024 catch rates for all white bass and white bass ≥ 12 inches collected by combined OK-TX winter gillnetting at Lake Texoma.

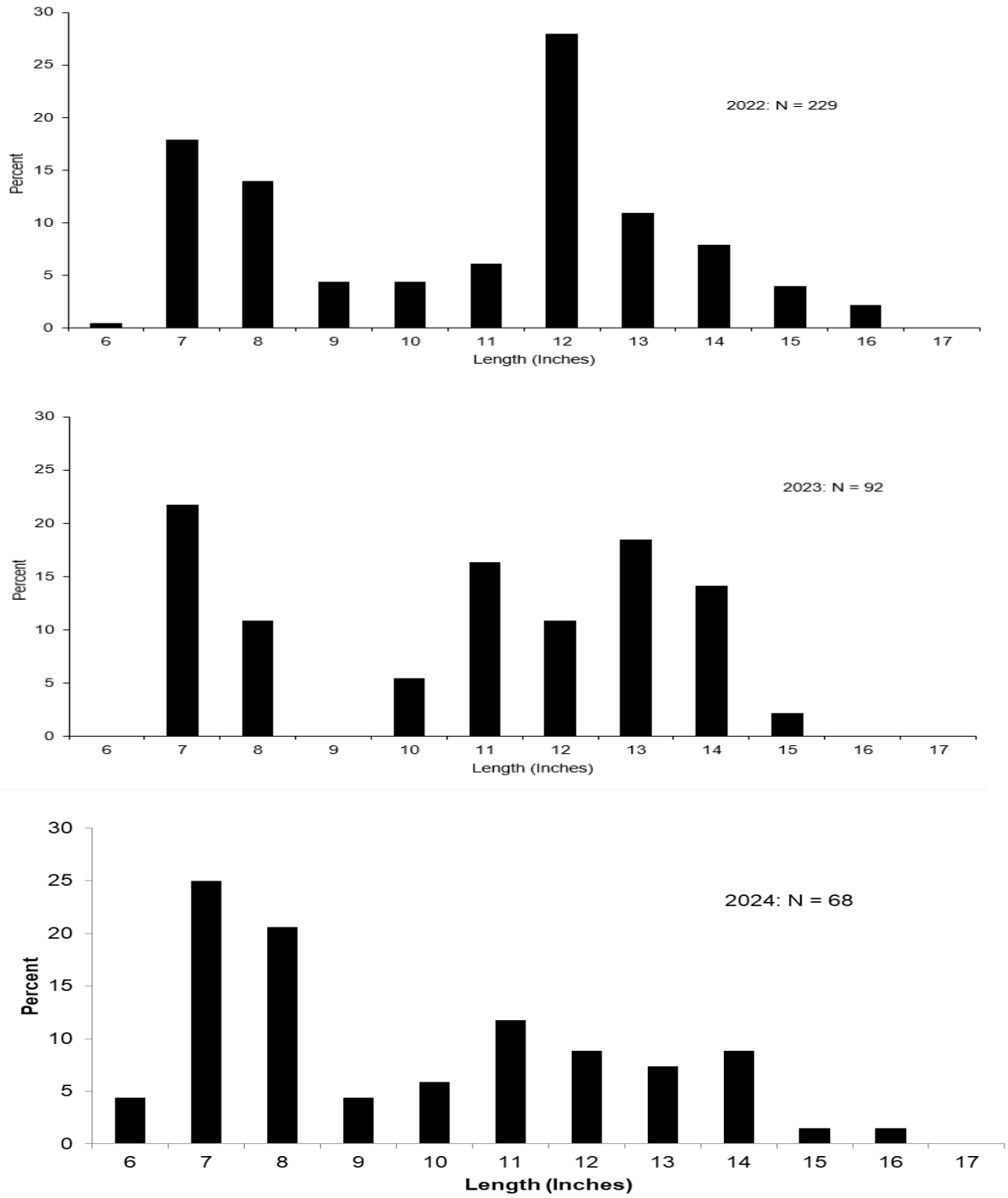



Figure 12. 2022, 2023 and 2024 length frequency distribution for white bass collected by combined OK-TX winter gillnetting at Lake Texoma.

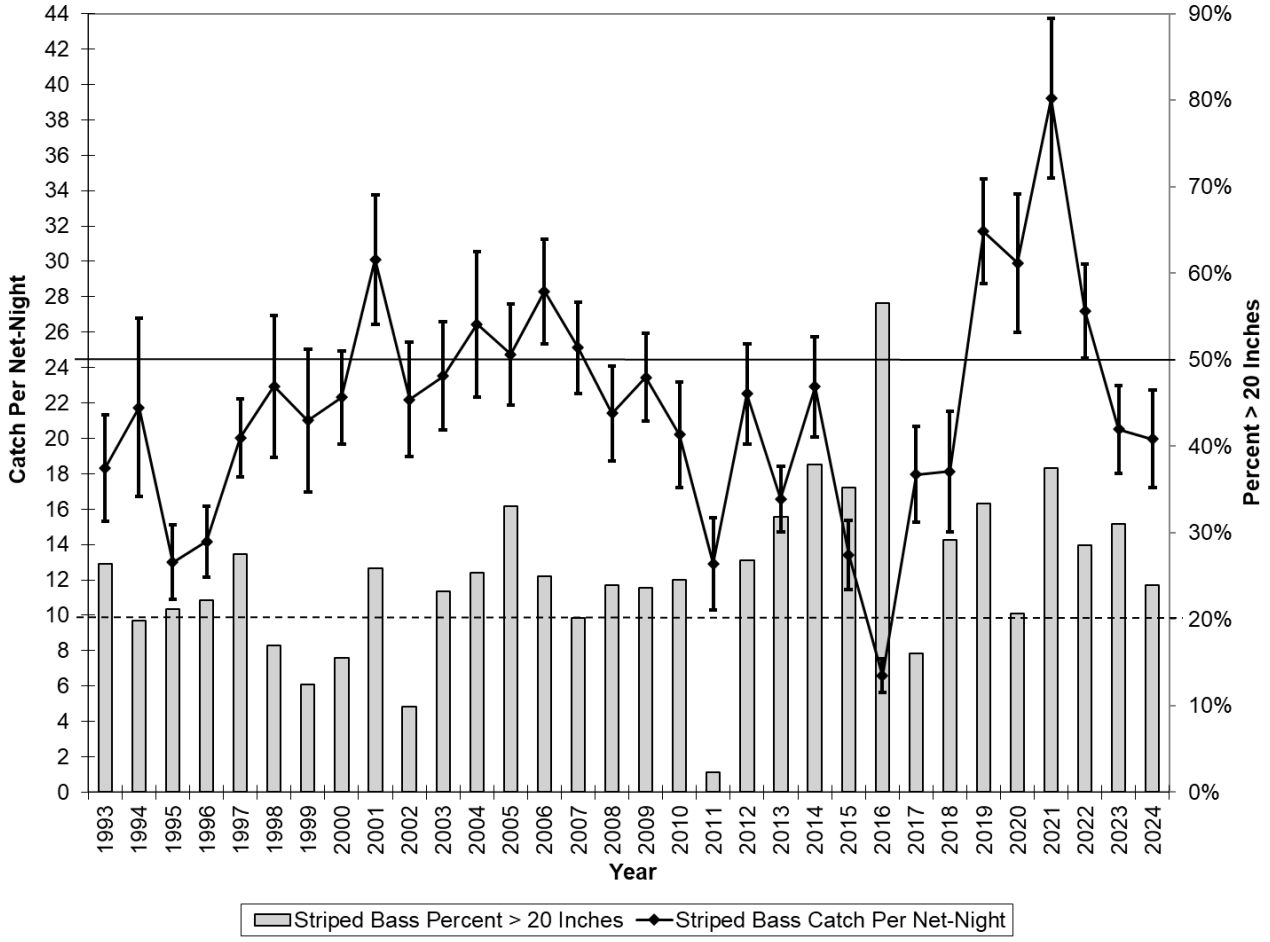



Figure 13. 1993 to 2024 catch per net-night and percent of catch ≥ 20 inches for striped bass collected by combined OK-TX winter gillnetting at Lake Texoma. The solid horizontal line (22 fish/net-night) and dotted horizontal line (20% ≥ 20 inches) designate target levels.

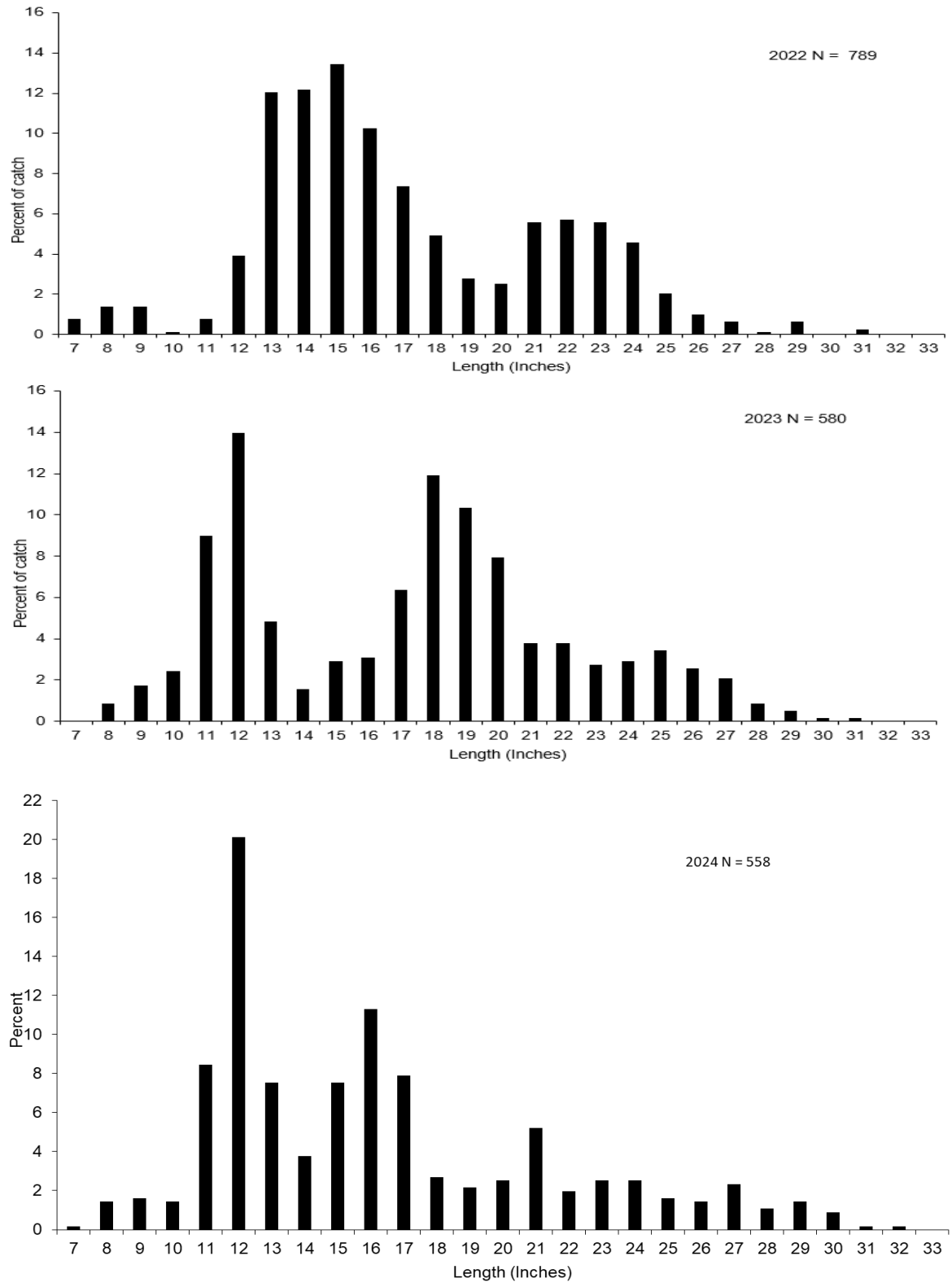



Figure 14. 2022, 2023 and 2024 length frequency distribution for striped bass collected by combined OK-TX winter gillnetting at Lake Texoma.

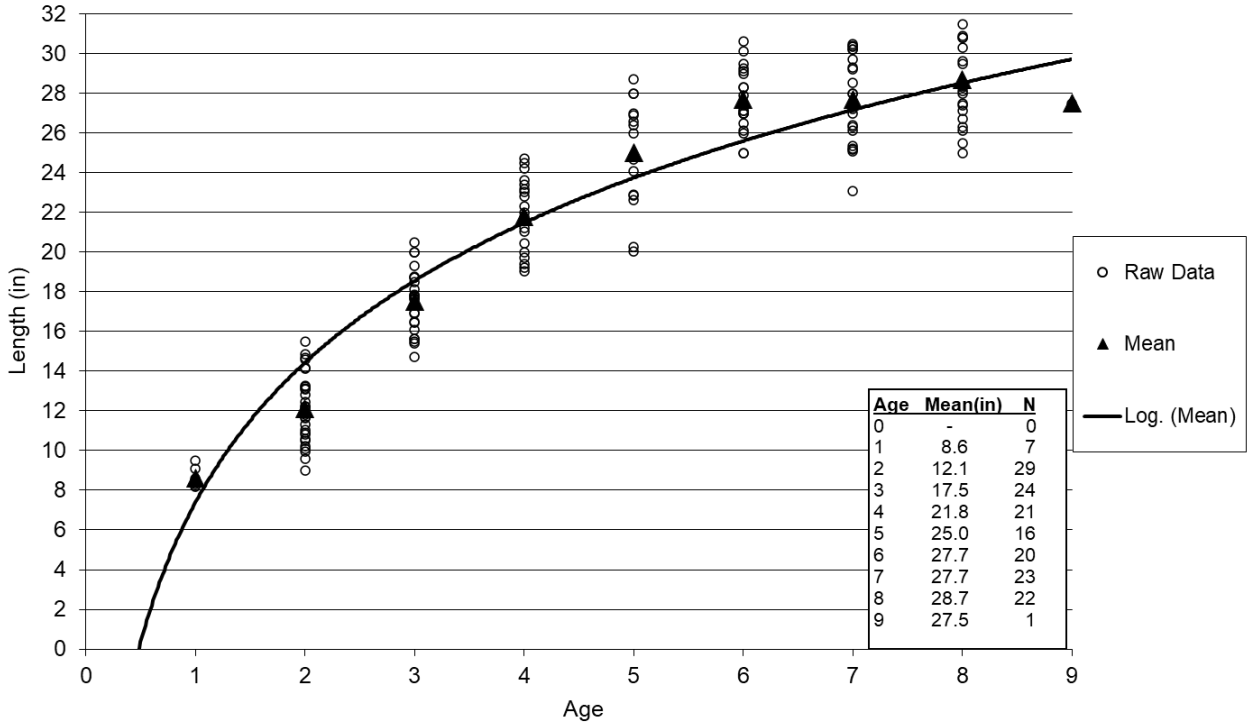



Figure 15. 2024 Length at age data for striped bass collected by gillnetting at Lake Texoma. N = 163.

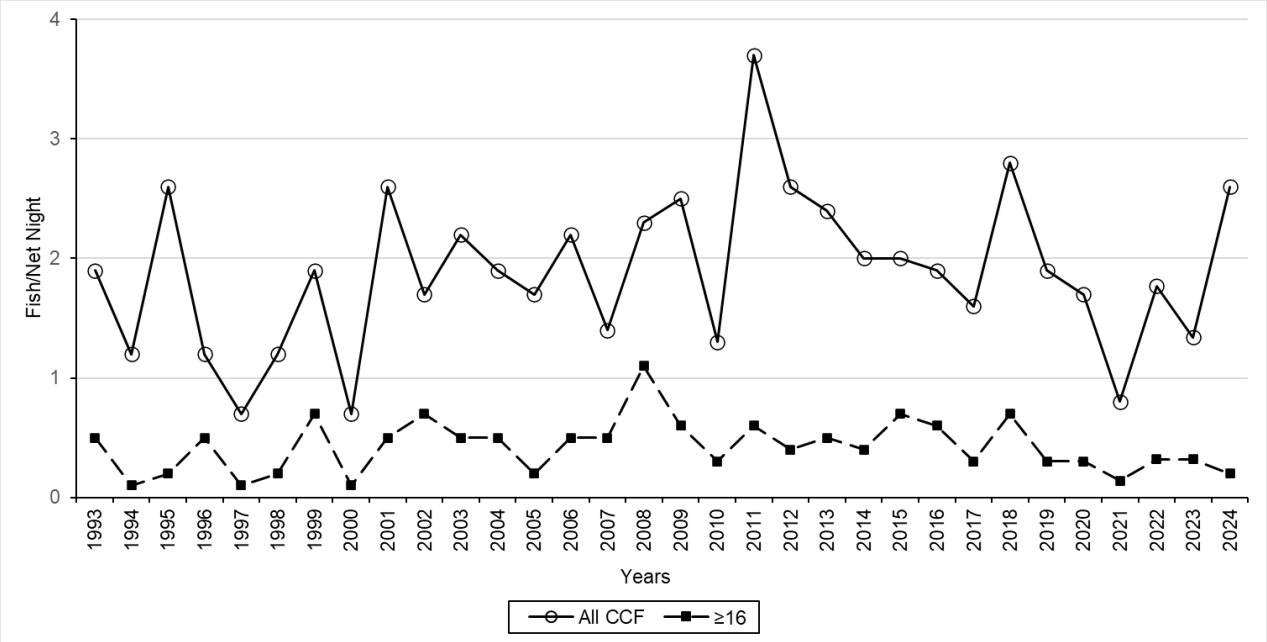



Figure 16. 1993 to 2024 catch rates for all channel catfish and channel catfish > 16 inches collected by combined OK-TX winter gillnetting at Lake Texoma.

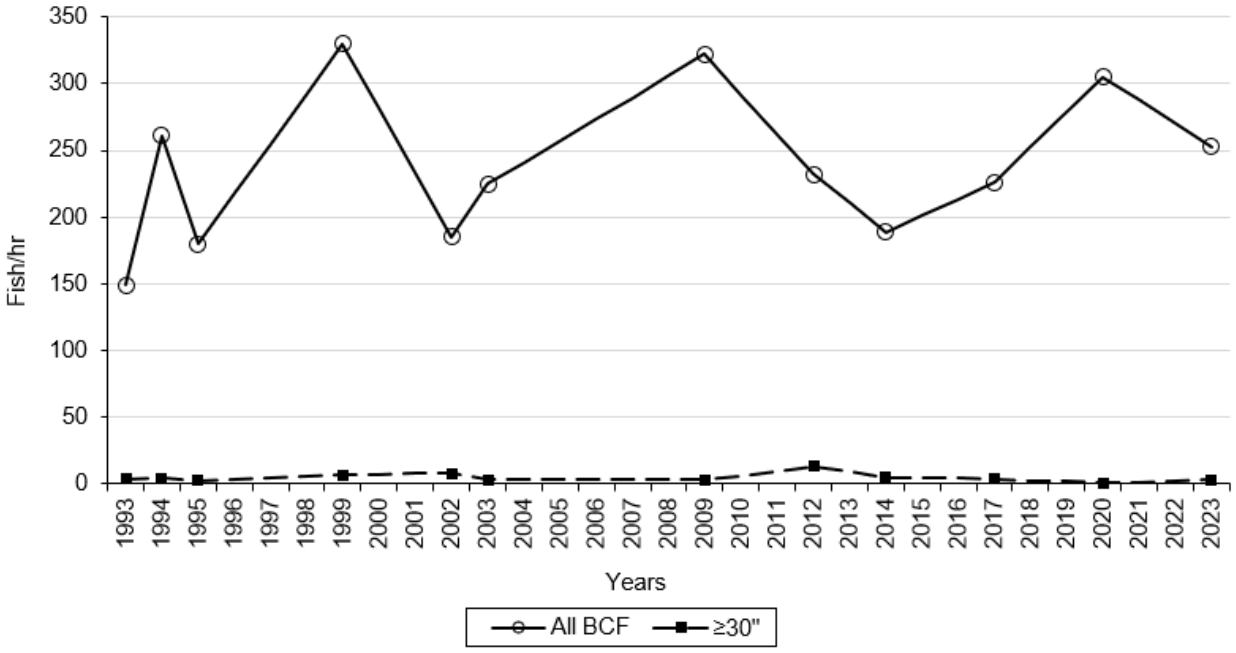



Figure 17. 1993 to 2023 catch rates for all blue catfish and blue catfish ≥ 30 inches collected by combined OK-TX summer low frequency electrofishing at Lake Texoma.

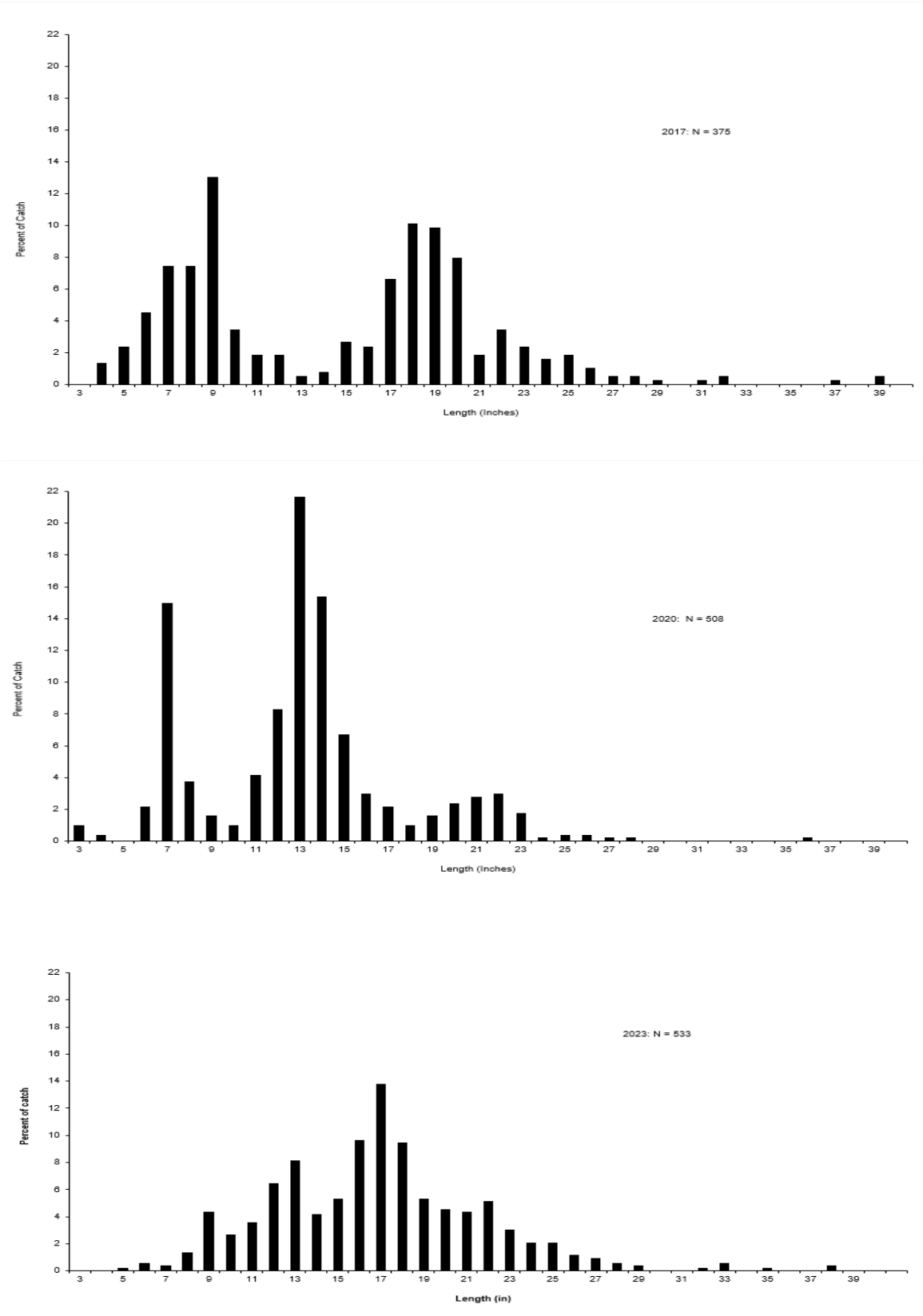
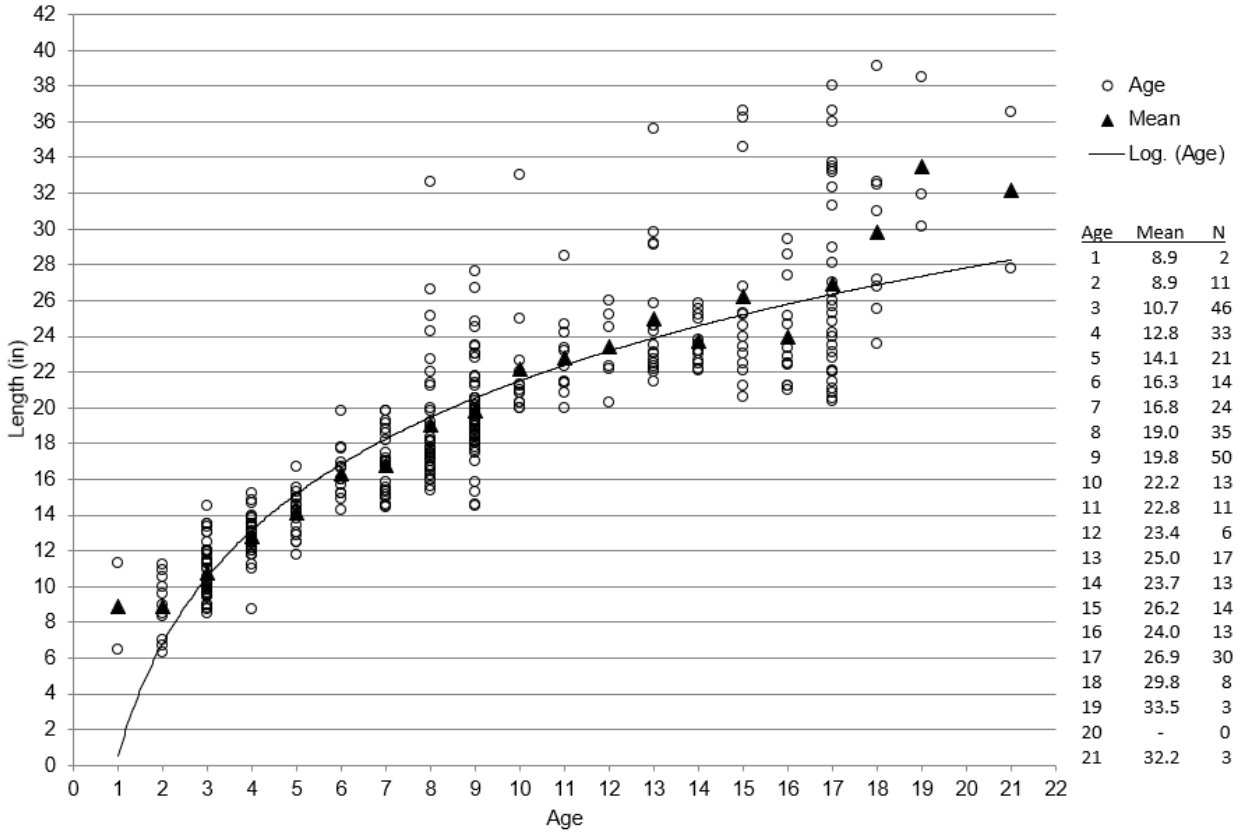



Figure 18. 2017, 2020 and 2023 length frequency distribution for blue catfish collected by summer boat electrofishing from Lake Texoma.




| Age | Mean | N |
|---|---|---|
| 1 | 8.9 | 2 |
| 2 | 8.9 | 11 |
| 3 | 10.7 | 46 |
| 4 | 12.8 | 33 |
| 5 | 14.1 | 21 |
| 6 | 16.3 | 14 |
| 7 | 16.8 | 24 |
| 8 | 19.0 | 35 |
| 9 | 19.8 | 50 |
| 10 | 22.2 | 13 |
| 11 | 22.8 | 11 |
| 12 | 23.4 | 6 |
| 13 | 25.0 | 17 |
| 14 | 23.7 | 13 |
| 15 | 26.2 | 14 |
| 16 | 24.0 | 13 |
| 17 | 26.9 | 30 |
| 18 | 29.8 | 8 |
| 19 | 33.5 | 3 |
| 20 | - | 0 |
| 21 | 32.2 | 3 |

Figure 19. 2023 Length at age data for blue catfish collected by low-frequency electrofishing at Lake Texoma. N = 367

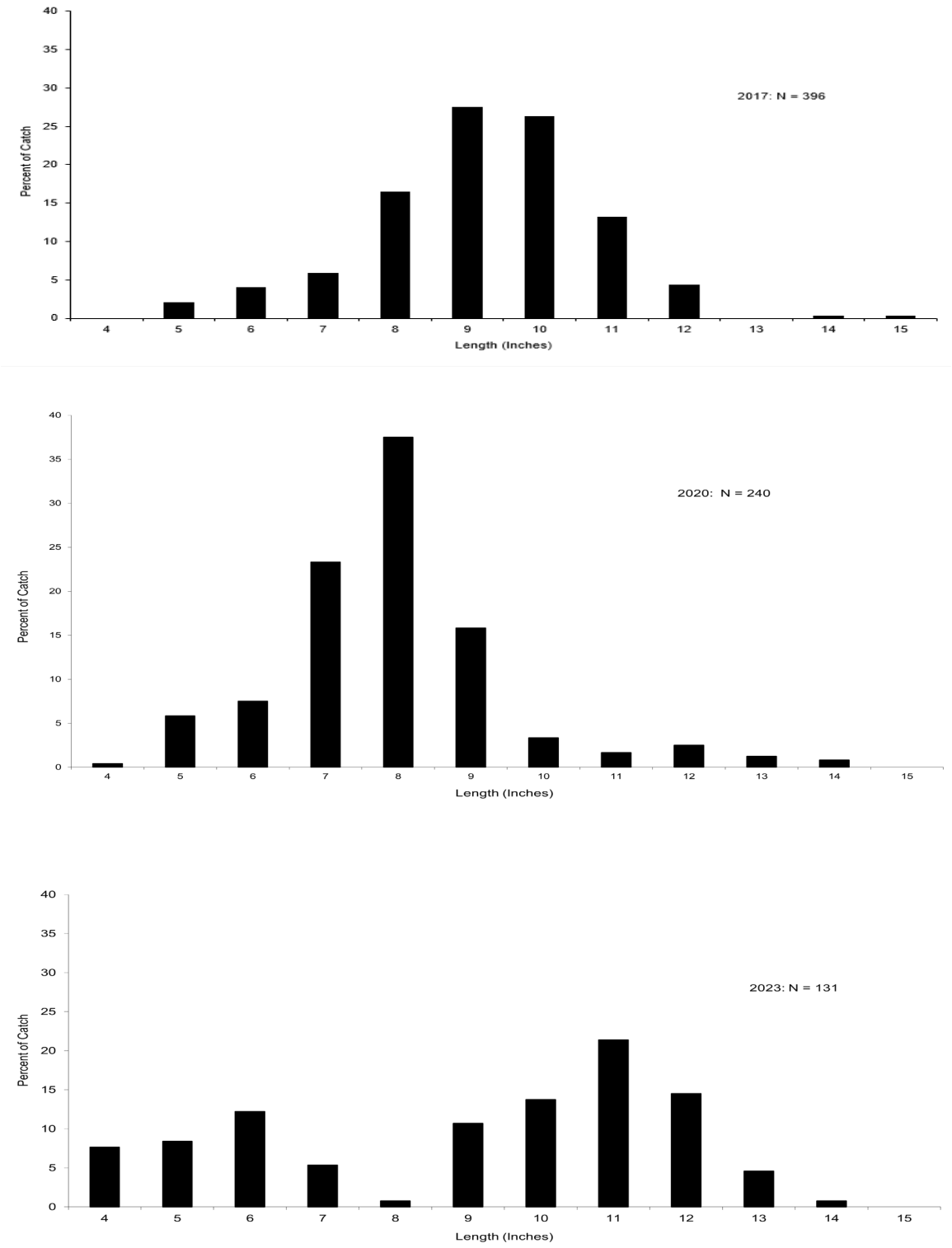



Figure 20. 2017, 2020, and 2023 length frequency distribution for all crappie collected by trap netting at Lake Texoma.

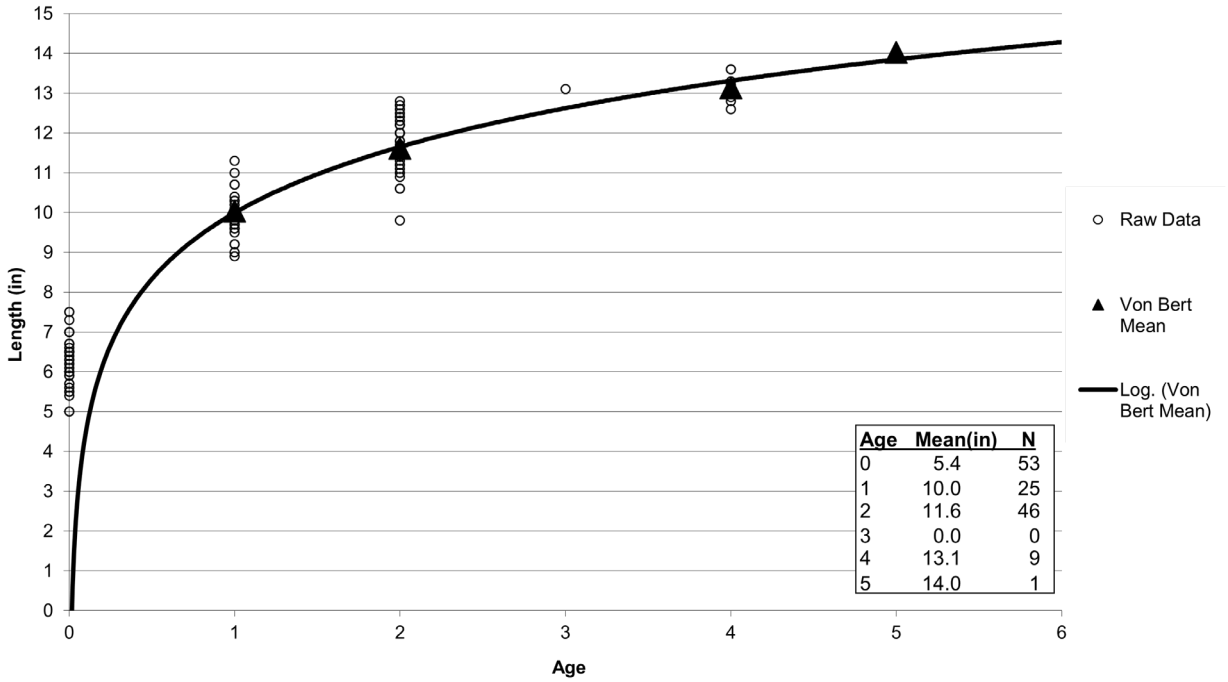



Figure 21. 2023 Length at age data for white crappie collected by trapnetting at Lake Texoma. N = 134.

# Appendix A.

Total fishing effort (h) for all species and total directed expenditures at Lake Texoma 1987 to 1999 (average), 2018-2019, and 2019-2020. Survey periods were from 1 Dec. through 30 Nov. Relative standard error is in parentheses. Taken directly from Bennett and Cummings 2020.

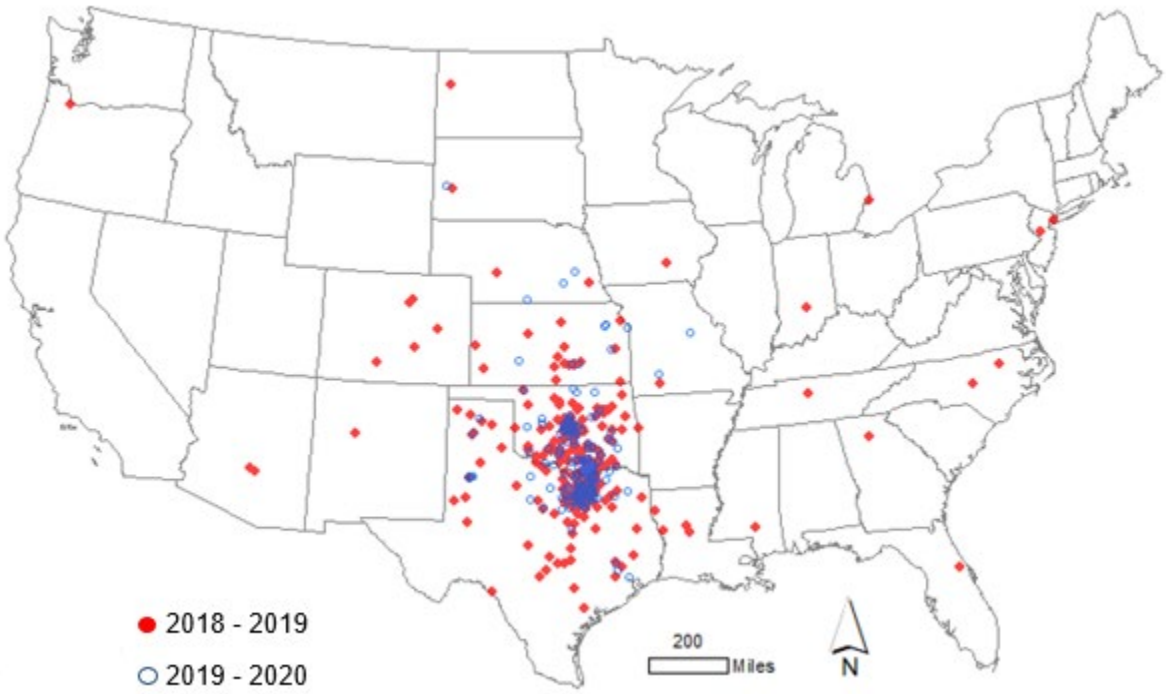
| Creel statistic | 1987-1999 | 2018-2019 | 2019-2020 |
|---|---|---|---|
| Total fishing effort | 1,500,000 (range 1,200,000 to 2,100,000) | 1,006,061 (10) | 1,399,718 (11) |
| Total directed expenditures | $25,641,000 (Schorr et al. 1995) | $46,007,709 | $42,100,268 |

# Appendix B.

Percent directed angler effort by species for Lake Texoma 1987–1999, 2019, and 2020. Survey periods were from 1 Dec through 30 Nov. Tournament effort for Black Bass in parentheses. Taken directly from Bennett and Cummings 2020.

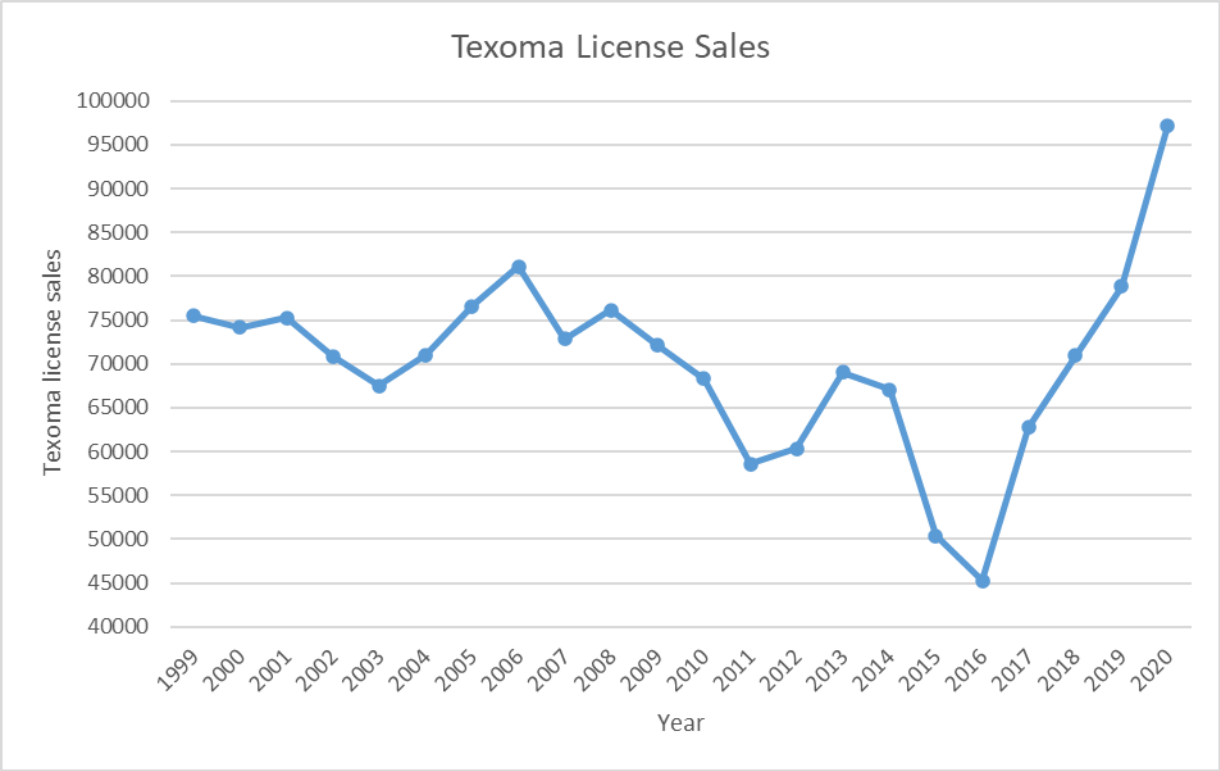
| Species | 1987-1999 | 2019 | 2020 |
|---|---|---|---|
| Catfish | 8.5 | 8.7 | 12.7 |
| White Bass | 3.3 | 1.2 | 0.9 |
| Striped Bass | 63.6 | 54.4 | 43.6 |
| Black Bass | 7.0 | 20.4 (13) | 19.6 (11) |
| Crappie | 5.5 | 7.9 | 9.1 |
| Anything | 12.1 | 7.4 | 14.5 |

# Appendix C.




Location, by ZIP code, of anglers traveling to fish Texoma Reservoir, Texas, as determined from the December 2018 to November 2019 and December 2019 to November 2020 creel survey. Taken directly from Bennett and Cummings 2020.

# Appendix D.




Total number of Texoma Licenses ($12) sold annually in Oklahoma and Texas 1999-2020. Taken directly from Bennett and Cummings 2020.

# Appendix E.

Creel survey statistics for Black Basses at Lake Texoma, from December 2018 through November 2019 and December 2019 through November 2020. Catch rate is for all anglers targeting Black Basses. Harvest is partitioned by the estimated number of fish harvested by non-tournament anglers and the number of fish retained by tournament anglers for weigh-in and release. Relative standard errors (RSE) are in parentheses. Taken directly from Bennett and Cummings 2020.

| Statistic | 2018/2019 | 2019/2020 |
|---|---|---|
| Surface area (acres) | 77,588 | 77,259 |
| Directed angling effort (h) | | |
| Tournament | 133,793 (15) | 147,315 (16) |
| Non-tournament | 71,296 (16) | 127,538 (18) |
| Smallmouth Bass | 18,369 (29) | 14,642 (44) |
| All black bass anglers combined | 205,089 (13) | 274,853 (14) |
| Angling effort/acre | 2.6 (13) | 3.6 (14) |
| Catch rate (number/h) | 0.7 (51) | 0.6 (70) |
| Harvest | | |
| Non-tournament harvest | | |
| Largemouth Bass | 1,073 (316) | 2,039 (276) |
| Smallmouth Bass | 119 (1069) | 230 (865) |
| Spotted Bass | 0 | 0 |
| Harvest/acre | <0.1 | <0.1 |
| Tournament weigh-in and release | | |
| Largemouth Bass | 18,683 (63) | 10,734 (108) |
| Smallmouth Bass | 3,854 (217) | 1,903 (393) |
| Spotted Bass | 3,022 (285) | 4,041 (235) |
| Percent legal released (non-tournament) | 91 | 93 |

# Appendix F.

Creel survey statistics for Striped Bass and White Bass at Lake Texoma, from December 2018 through November 2019, and December 2019 through November 2020. Total catch per hour is for anglers targeting Striped Bass and White Bass. Relative standard errors (RSE) are in parentheses. Taken directly from Bennett and Cummings 2020.

| Creel survey statistic | Year | |
|---|---|---|
| | 2018/2019 | 2019/2020 |
| Surface area (acres) | 77,588 | 77,259 |
| Directed effort (h) | 549,371 (12) | 610,661 (13) |
| Directed effort/acre | 7.1 (12) | 7.9 (13) |
| Total catch per hour | 2.0 (15) | 2.3 (17) |
| Total harvest | | |
| Striped Bass | 564,362 (19) | 504,149 (20) |
| White Bass | 6,390 (113) | 36,556 (44) |
| Harvest/acre | | |
| Striped Bass | 7.3 (19) | 6.5 (20) |
| White Bass | 0.1 (113) | 0.5 (44) |
| Percent released | | |
| Striped Bass | 47 | 55 |
| White Bass | 84 | 85 |

# Appendix G.

Creel survey statistics for catfish at Lake Texoma December 2018 through November 2019, and December 2019 through November 2020. Total catch per hour is for anglers targeting catfish and total harvest is the estimated number of catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses. Taken directly from Bennett and Cummings 2020.

| Creel survey statistic | Year | |
|---|---|---|
| | 2018/2019 | 2019/2020 |
| Surface area (acres) | 77,588 | 77,259 |
| Directed effort (h) | 87,089 (15) | 178,513 (14) |
| Directed effort/acre | 1.1 (15) | 2.3 (14) |
| Total catch per hour | 1.5 (56) | 0.6 (83) |
| Total harvest | | |
| Blue Catfish | 53,363 (44) | 27,583 (64) |
| Channel Catfish | 12,230 (106) | 15,671 (109) |
| Harvest/acre | | |
| Blue Catfish | 0.7 (44) | 0.4 (64) |
| Channel Catfish | 0.2 (106) | 0.2 (109) |
| Percent legal released | 18 | 19 |

# Appendix H.

Creel survey statistics for Crappie at Lake Texoma from December 2018 through November 2019, and December 2019 through November 2020, all anglers combined. Total catch per hour is for anglers targeting Crappie and total harvest is the estimated number of Crappie harvested by all anglers. Relative standard errors (RSE) are in parentheses. Taken directly from Bennett and Cummings 2020.

| Creel Survey Statistic | Year | |
|---|---|---|
| | 2018/2019 | 2019/2020 |
| Surface area (acres) | 77,588 | 77,259 |
| Directed effort (h) | 79,118 (16) | 127,273 (17) |
| Directed effort/acre | 1.0 (16) | 1.7 (17) |
| Total catch per hour | 2.9 (37) | 2.7 (38) |
| Total harvest | 114,157 (54) | 167,073 (47) |
| Harvest/acre | 1.5 (54) | 2.2 (47) |
| Percent legal released | 32 | 15 |