

Kemp Reservoir

2021 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-4

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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Survey and Management Summary

Fish populations in Kemp Reservoir were surveyed in 2021 by trap netting and in 2022 by gill netting. Historical data are presented with the 2021-2022 data for comparison. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

Reservoir Description: Kemp Reservoir is a 15,104-acre impoundment located on the Wichita River in the Red River Basin approximately 50 miles west of Wichita Falls. It has a primarily natural and rocky shoreline. Golden alga fish kills began in 2002 and have occurred periodically since. A minor golden alga bloom occurred during the winter of 2021. In addition to golden alga, the reservoir went through the drought of record from 2011 to 2015 decimating the fish populations. The reservoir filled up in early 2015 and stayed within 6 feet of conservation level since, inundating acres of terrestrial vegetation. Largemouth Bass and White Crappie appeared in the reservoir after catching runoff from ponds in the surrounding watershed. Kemp Reservoir water quality is saline and highly conductive.

Management History: Historically important sport fish include Striped Bass, Largemouth Bass, White Crappie, and catfishes. Striped Bass were stocked in 2015, 2017, 2018 and 2022 with fingerlings and in 2018 and 2021 with fry. Advanced fingerling Striped Bass were stocked in 2021. Channel Catfish fingerlings were stocked in 2021 and Bluegill advanced fingerlings in 2020. Blue Catfish fingerling were stocked in 2022. White Bass have not been sampled since 2006. Kemp Reservoir has always been managed with statewide regulations. Starting September 1, 2021 the Blue and Channel Catfish statewide regulation changed to a 25 fish bag limit with no minimum length but only 10 fish can be 20 inches or greater in length.

Fish Community

- **Prey species:** Gizzard Shad and Bluegill are present in the reservoir as seen during the gill net survey and trap net survey. Threadfin Shad are present in the reservoir.
- **Catfishes:** The Channel Catfish population was above the historical average with few over 12-inches in length. Blue Catfish and Flathead Catfish have not been documented since 2006.
- **Striped Bass:** Fewer Striped Bass were sampled in 2022 than during the 2017 gill net survey. All fish were over 21-inches in 2022.
- **Largemouth Bass:** Largemouth Bass are present in the reservoir as evidence from informal angling trips. During a spring electrofishing survey for Common Carp in 2021 many Largemouth Bass were observed.
- **White Crappie:** White Crappie catch rate was slightly lower in 2021 compared to the 2017 trap net survey. More legal-length fish were sampled during the 2021 survey. Body condition was good for most fish.

Management Strategies: Sample with 7 trap nets in 2025 and 10 gill nets in spring of 2024 and 2026. Stock Striped Bass fingerlings at a reduced rate every other year (5/acre). Since the water is highly conductive and thus difficult to sample with electrofishing, monitor Largemouth Bass through informal angler provided information and by angling.

Introduction

This document is a summary of fisheries data collected from Kemp Reservoir from 2018-2022. The purpose of the document is to provide fisheries information and make management recommendations to protect and improve the sport fishery. While information on other fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2018-2022 data for comparison.

Reservoir Description

Kemp Reservoir is a 15,104-acre impoundment constructed in 1923 on the Wichita River. It is located in Baylor County approximately 50 miles west of Wichita Falls and is entirely within the Waggoner Ranch. Kemp Reservoir is operated and controlled by the City of Wichita Falls and Wichita County Water Improvement District No. 2. Primary uses include irrigation, flood control, municipal water supply, and recreation. Kemp has a watershed area of 2,086 mi². Sedimentation is a problem with 23.2% of the storage capacity and 1,183 acres of surface area being lost from 1971 to 2006 (Austin et al. 2006). In addition, when the reservoir is three feet below conservation pool, 2,451 surface acres are separated from the rest of the reservoir (Austin et al. 2006). Mean reservoir depth when at full pool is 16 feet and shoreline development index is 7.3. Conductivity in November 2021 was 4,124 $\mu\text{S}/\text{cm}$. Habitat at time of sampling consisted of natural shoreline, rocks and flooded terrestrial vegetation. Since September 2018 the water level has stayed within 2 feet of the conservation pool (Figure 1). Golden alga (*Prymnesium parvum*) caused fish kills have occurred periodically since 2002, severely impacting the sport fishery. Recently, however, the severity of the kills has lessened and some species have been able to recover. A minor golden alga fish kill occurred in late 2021 but lasted only a couple of days. Other descriptive characteristics for Kemp Reservoir are in Table 1.

Angler Access

Kemp Reservoir has seven public boat ramps, of which five offer access to the reservoir. One is located in a cove that has silted to a point where boats cannot access the main lake from the ramp, and one ramp has been undercut and the concrete collapsed. Additional boat ramp characteristics are in Table 2. The Waggoner Ranch solely controls all access to the lake and charges a \$15/per person per day entry fee. Adequate shoreline access is available at the public boat ramp areas and numerous other shoreline access points. Roads around the reservoir can be in disrepair and unpassable after rains. Only the Moonshine boat ramp would be recommended for launching boats because the roads are well maintained and the ramp offers a loading dock.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Lang and Mauk 2018) included:

1. Monitor any changes in access policy for Kemp Reservoir by the Waggoner Ranch ownership after Diversion Reservoir access was terminated in 2017.

Action: Monitored access to Kemp Reservoir remains open to the public with a \$15 charge per person per day.

2. Monitor the reservoir for golden alga and gather angling information from local anglers. In the past, this technique of talking to anglers has provided adequate information for monitoring the reservoir and its fish populations. Because of the threat of golden alga caused fish kills stocking should be limited to Striped Bass being requested at a reduced rate every other year based on golden alga, access, and effective surface acreage issues.

Action: The anglers have reported good fishing at Kemp for Striped Bass, Largemouth Bass, White Crappie and small Channel Catfish. Striped Bass were stocked at a reduced rate with fingerlings and with extra fry from hatchery production in 2018 and 2021. Because the fishery has been improving and angling interests high, Bluegill were stocked in 2020, Channel Catfish in 2021 and Blue Catfish in 2022. Confirmed a residence report of a fish kill to be golden alga during the winter of 2021 and monitored the spread and severity of the kill.

3. The potential spread of zebra mussels and other invasive species exists. Informing the public and reservoir authorities of what to do to prevent the spread and what to do if they suddenly appear in the reservoir are prudent actions.

Action: Posted articles and media blitzes about invasive species on social media. Maintained signage about invasive species at boat ramps. Performed plankton tows biannually for presence/absence of zebra mussel DNA and veligers in coordination with the City of Wichita Falls.

Harvest regulation history: Sport fish species in Kemp Reservoir have always been managed using state-wide regulations (Table 3). Starting September 1, 2021 the Blue and Channel Catfish state-wide regulation changed to a 25 fish bag limit with no minimum length but only 10 fish can be 20 inches or greater in length.

Stocking history: Striped Bass fry were stocked into Kemp Reservoir in 2018 and 2021. Fingerling Striped Bass were stocked in 2018 and 2022 and advanced fingerlings in 2021. Channel Catfish fingerlings were stocked in 2021. Bluegill advanced fingerlings were stocked in 2020. Blue Catfish were stocked in the spring of 2022. The complete stocking history is in Table 4.

Vegetation/habitat management history: Kemp Reservoir has no significant vegetation/habitat management history.

Water transfer: Kemp Reservoir, in the Red River basin, is used primarily for irrigation by the Wichita County Water Improvement District No. 2. However, beginning in 2009 the City of Wichita Falls began receiving 10% of their municipal water supply from Kemp Reservoir. To use the naturally salty water, a large reverse osmosis water treatment plant was built. The briny, reject water from this plant is then pumped via pipeline directly into the Wichita River. Kemp Reservoir water was used for cooling water at a coal-fired power plant located near Oklaunion, Texas and operated by West Texas Utilities. The power plant was decommissioned September 30th, 2020.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Kemp Reservoir (Lang and Mauk 2018). Primary components of the OBS plan are listed in Table 5. Trap netting and gill netting survey sites were randomly selected and were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017). A spring electrofishing survey was conducted with biologist selected sites during the daytime.

Electrofishing – A spring daytime survey was attempted in 2022 using a Smith Root APEX electrofishing control box and 7000 kW generator (75 volts, Pulse AC, 60 Hz, 25 % duty cycle). Prior to 2022 all electrofishing used a 7.5 GPP Smith Root electrofishing system. The 2022 survey was not part of the 2017 OBS sampling plan (Lang and Mauk 2018). Biologist selected sites were picked around the reservoir to target Largemouth Bass. CPUE for electrofishing was recorded as the number of fish caught per hour of electrofishing (fish/hr).

Trap netting – Crappie were collected using trap nets (7 net nights at 7 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn).

Gill netting – Channel Catfish and Striped Bass were collected by gill netting (7 net nights at 7 stations). CPUE for gill netting was recorded as the number of fish caught per net night (fish/nn).

Statistics – Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. 2007], and condition indices [relative weight (W_r)] were calculated for target fishes according to Anderson and Neumann (1996). Standard error (SE) was calculated for structural indices. Relative standard error ($RSE = 100 \times SE$ of the estimate/estimate) was calculated for all CPUE.

Habitat – A structural habitat survey was conducted in 2017 (Lang and Mauk, 2018). Vegetation surveys were conducted every four years beginning in 2001 to monitor presence/absence of aquatic vegetation. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2017).

Water level – Source for water level data was the United States Geological Survey (USGS 2022).

Results and Discussion

Habitat: A structural habitat survey was last conducted in 2017 (Table 6). Native submerged vegetation covered 3.4 acres in 2021, an increase from the 2017 (1.0 acres) survey but less than the coverage before the drought of 2011-2015 (Table 7).

Prey species: Gizzard Shad were sampled in both the gill net and trap net surveys at 1.9/nn and 0.5/nn respectively (Appendix A). Threadfin Shad are present as four specimens were sampled while trap netting (Appendix A). No Gizzard Shad or Threadfin Shad were sampled by these techniques during the 2017 report year (Lang and Mauk 2018). Bluegill were sampled during the trap net survey at 11.7/nn (Appendix A) which was higher than the 2017 survey of 3.7/nn (Lang and Mauk 2018). While an attempt at electrofishing took place in the spring of 2022, no shad or Bluegill were sampled.

Channel Catfish: The gill net catch rate of Channel Catfish was 1.3/nn in 2022 which is similar to the 1.1/nn in 2018. No Channel Catfish were captured during the 2010 survey. Sub-stock length fish dominate the population as seen in the 2021 trap net survey with a catch rate of 170.0/nn sub-stock length fish (Appendix A). No quality-length (16-inch) fish were sampled by gill net in 2022 as compared to the 2018 survey with a PSD of 40 (Figure 2).

Temperate Bass: Striped Bass catch rates decreased from 2.6/nn in 2018 to 0.9/nn in 2022 (Figure 3). Prior to 2018, no Striped Bass had been sampled in the reservoir since 2006. No fish sampled in 2022 were below 21-inches in length. Relative weights ranged from 80 to 110 indicating good body condition

for all length categories (Figure 3). The gill net survey took place after the Golden Alga fish kill in December 2021, this shows a population of Striped Bass still exists. The 2021 fry stocking were shore stocked which might influence survival due to muddy roads and a gate closure that kept them from being boat stocked. No White Bass have been documented since 2006.

Largemouth Bass: Anecdotal evidence suggests Largemouth Bass fishing is good at Kemp Reservoir. Largemouth Bass were captured electrofishing in 2017 with a catch rate of 15.0/hr with no fish sampled over 14 inches in length (Lang and Mauk 2018). The 2013 sample only included one Largemouth Bass (Lang and Mauk 2018). Since 2017, anglers have reported success targeting Largemouth Bass. A spring electrofishing survey was attempted in 2022. At time of sampling, the conductivity of Kemp Reservoir was 4,781 μS , which exceeds the effective threshold of the eletrofishing unit. No Largemouth Bass were captured; a few larger scaled fish (Common Carp and Striped Bass) were observed and affected by the electricity. Electrofishing was used in the spring of 2021 to capture Common Carp for a virus study by the TPWD Hatchery system. While capturing Common Carp many Largemouth Bass were observed, but not sampled because that was not the objective.

White Crappie: The trap net catch rate of White Crappie was 3.7/nn in 2021, lower than in 2017 (4.6/nn) and higher than 2009 (0.1/nn; Figure 4). The PSD was 96 and was higher than the PSD in 2017 and 2009 (Figure 4). Body condition was good with a mean relative weight greater than 83 for all inch groups which is similar to 2017 results (Figure 4). Anglers reported catching memorable length (12-inch) fish during the winter of 2021.

Fisheries Management Plan for Kemp Reservoir, Texas

Prepared – July 2022

ISSUE 1: District Reservoirs Diversion and Kemp are both located within the Waggoner Ranch. In 2017, public access to Diversion Reservoir was terminated by the new ranch ownership leading to concerns about future Kemp Reservoir access. Kemp Reservoir access is still available with payment of an entry fee which is currently \$15.

MANAGEMENT STRATEGY

1. Monitor any changes in access policy for Kemp Reservoir by the Waggoner Ranch.

ISSUE 2: Golden alga is still a threat to the sport fish populations at Kemp Reservoir.

MANAGEMENT STRATEGY

1. Monitor the reservoir for golden alga fish kills.

ISSUE 3: Striped Bass anglers have been enjoying the fishery since 2015. Based on our survey results and angler reports, consistent stockings are needed to maintain the fishery. The frequency of stocking has been sporadic mainly because they have consisted of excess Striped Bass available from the hatchery. The 2021 fry stocking probably failed due to the truck getting stuck on the muddy roads that caused the stocking to be from the bank and not boat stocked. In addition a minor golden alga kill occurred in late 2021.

MANAGEMENT STRATEGY

1. Request fingerling Striped Bass stocked at a reduced rate of 5/acre every other year. Stocking rate of requests may vary to account for golden alga, access, and effective surface acreage issues.

ISSUE 4: The high conductive water hinders the ability to use electrofishing technique to survey the Largemouth Bass.

MANAGEMENT STRATEGIES

1. Record anecdotal evidence from anglers for reference for future management of Largemouth Bass and other species as information is provided.
2. Conduct rod and reel angling surveys to collect information to better determine absence/presence at Kemp Reservoir.
3. Watch conductivity levels for potential electrofishing opportunities.

ISSUE 5: Blue Catfish were once present in good abundance in Kemp and have been requested by anglers. The golden alga caused fish kills seem to have eradicated them from the reservoir. They were last stocked in 2002 and none have been documented since. The reservoir has made a nice recovery for most fish species and we would like to reintroduce Blue Catfish.

MANAGEMENT STRATEGY

1. Request a stocking of Blue Catfish at a reduced rate of 20/acre in 2022.

ISSUE 6: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches, and plugging engine cooling systems. Giant salvinia and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing, and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for invasive species to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state.

MANAGEMENT STRATEGIES

1. Cooperate with the controlling authority to maintain appropriate signage at access points around the reservoir.
2. Educate the public about invasive species through the use of media and the internet.
3. Make a speaking point about invasive species when presenting to constituent and user groups.
4. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

Objective-Based Sampling Plan and Schedule (2022–2026)

Sport fish, forage fish, and other important fishes

Since the reservoir elevation attained full pool in 2015 following the drought of record, many species have recovered. Largemouth Bass, Striped Bass, Channel Catfish and crappie are important species that anglers target. Bluegill and Gizzard Shad are important prey species for the predators.

Low-density fisheries

White Bass, Blue Catfish and Flathead Catfish have not been sampled since 2006.

Survey objectives, fisheries metrics, and sampling objectives

Historically, electrofishing catch rates of Largemouth Bass, Bluegill, and Gizzard Shad have not been representative because of the reservoir's high conductivity leading to sampling inefficiency. Anecdotal evidence and rod and reel angling may provide as good an indication of the population. We will record and file informal angler information when it is presented to determine general Largemouth Bass and other species angling success. The goal of a rod and reel survey will be to determine presence/absence. Multiple trips will be made to not weigh the Largemouth Bass population on a single survey. For each survey the target will be to catch five or more Largemouth Bass and the length and weight will be recorded for each fish. Bluegill and Gizzard Shad will be monitored for presence/absence through gill netting and trap netting recording CPUE-total for each species.

Requesting Striped Bass fingerlings stocked at a rate of 5/acre every other year calls for gill net surveys for Striped Bass during the spring of 2024 and 2026 for general monitoring trend data. Stocking success and recruitment can be determined from size structure of CPUE-total with no stated goal of total number of fish. Gill net sets will increase to 10 randomly selected sites from the 7 sites in 2022. Impractical effort would be needed to achieve precision of RSE of CPUE-stock ≤ 25 at 80% confidence level (36 net nights), so no extra sampling will occur.

Channel Catfish will be sampled with gill nets at 10 randomly selected sites during the spring of 2024 and 2026 for general monitoring. Historically the catch rate of Channel Catfish per gill net is 0.5. The 2018 and 2022 surveys have had similar catch rates of 1.1 and 1.3 respectively. Trap netting CPUE of 170.0 sub-stock length Channel Catfish poses hope that these fish will be susceptible to gill nets in 2024 and 2026. The target will be ≥ 50 stock-length Channel Catfish for size structure to assess PSD and length frequency and RSE ≤ 25 CPUE-stock for precision of relative abundance. No extra sampling will occur if the target is not reached due to potential impacts of golden alga.

White Crappie will be sampled using trap nets at 7 random sites for trend data to determine relative abundance and size structure with targets of CPUE-stock RSE ≤ 25 and catch of ≥ 50 stock length fish in 2025. Due to the potential impacts of golden alga, no extra sampling will occur.

The proposed sampling schedule is available in Table 8.

Literature Cited

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Tables and Figures

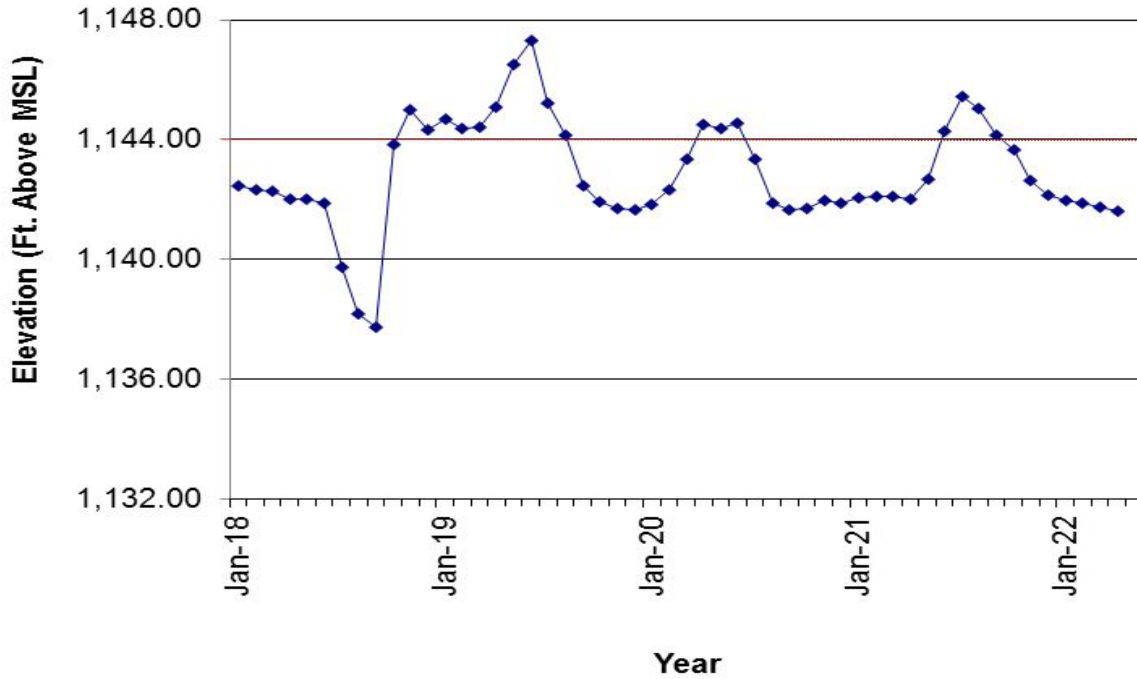


Figure 1. Monthly water level elevations in feet above mean sea level (MSL) recorded for Kemp Reservoir, Texas. Conservation level is represented by the red line at 1,144.00 feet above MSL.

Table 1. Characteristics of Kemp Reservoir, Texas.

Characteristic	Description
Year constructed	1923
Controlling authority	City of Wichita Falls and Wichita County WID No. 2
County	Baylor
Reservoir type	Mainstem
Shoreline Development Index	7.3
Conductivity	4,124 μ S/cm

Table 2. Boat ramp characteristics for Kemp Reservoir, Texas, July, 2021. Reservoir elevation at time of survey was 1,145.7 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Moonshine Bay	33.74800 -99.15552	Y	30	1,121	Good
Wilbarger Bass Club	33.76905 -99.15483	Y	25	1,133	Good
McKinney Point	33.78635 -99.15715	Y	5	1,139	Good
Herring Point	33.77708 -99.16928	Y	5	1,134	Good
Weddle Point	33.74807 -99.20830	Y	10	1,136	Poor

Table 3. Harvest regulations for Kemp Reservoir, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies ^a	25 (in any combination - only 10 can be 20 inches or greater in length)	No minimum length
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Striped	5	18-inch minimum
Bass, Largemouth	5	14-inch minimum
Crappie: White and Black crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

^a State-wide catfish regulations changed on September 1, 2021.

Table 4. Stocking history of Kemp Reservoir, Texas. FGL = fingerling; AFGL = advanced fingerling; ADL = adults; FRY = fry; UNK = unknown.

Year	Number	Size	Year	Number	Size
	<u>Threadfin Shad</u>			<u>Largemouth Bass</u>	
1999	725	ADL	1967	7,500	UNK
			1970	100,000	UNK
	<u>Blue Catfish</u>		1971	35,000	UNK
1989	165,496	FGL	Species Total	427,000	
1990	168,011	FGL			
1991	143,977	FGL		<u>Florida Largemouth Bass</u>	
2002	112,857	FGL		<u>Bass</u>	
<u>2022</u>	<u>146,546</u>	FGL	1977	174,200	FRY
Species Total	736,887		1990	415,356	FRY
			1999	414,186	FGL
	<u>Channel Catfish</u>		<u>2005</u>	<u>194,404</u>	FGL
1967	17,500	AFGL	Species Total	1,198,146	
1969	6,000	AFGL			
1970	12,000	AFGL		<u>Red Drum</u>	
1971	300	UNK	1954	58	UNK
1972	210,000	AFGL	1955	16	UNK
2005	297,239	FGL	1956	1,304	UNK
2009	97,512	FGL	1957	4	UNK
<u>2021</u>	<u>14,730</u>	FGL	<u>1981</u>	<u>204,837</u>	UNK
Species Total	655,281		Species Total	206,219	
	<u>Striped Bass</u>			<u>Bluegill</u>	
1979	81,961	UNK	2020	14,355	AFGL
1981	211,961	UNK			
1983	164,859	UNK			
1987	28,000	FGL			
1988	167,386	FRY			
1989	130,355	FGL			
1992	20,800	FGL			
1993	126,674	FGL			
1994	83,543	FGL			
1994	4,000,000	FRY			
1995	82,796	FGL			
1995	3,000,000	FRY			
1997	33,323	FGL			
1998	728	AFGL			
1998	82,700	FGL			
1999	98,087	FGL			
2004	37,796	FGL			
2005	149,771	FGL			
2009	186,119	FRY			
2015	21,818	FGL			
2017	89,900	FGL			
2018	38,390	FGL			
2018	440,031	FRY			
2021	618,387	FRY			
2021	2,652	AFGL			
<u>2022</u>	<u>55,320</u>	FGL			
Species Total	10,128,866				

Table 5. Objective-based sampling plan components for Kemp Reservoir, Texas 2021-2022.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Trap netting</i>			
Crappie	Exploratory	Presence/Absence	Practical Effort
<i>Gill Netting</i>			
Striped Bass	Exploratory	Presence/Absence	Practical Effort
Channel Catfish	Exploratory	Presence/Absence	Practical Effort

Table 6. Survey of structural habitat types, Kemp Reservoir, Texas, 2017. Shoreline habitat type units are in miles and flooded terrestrial is in acres.

Habitat type	Estimate	% of total
Natural	130.3 miles	82.2
Rocky	25.2 miles	15.9
Rocky with boat docks	3.1 miles	2.0
Flooded terrestrial	1,089.0 acres	7.2

Table 7. Survey of aquatic vegetation, Kemp Reservoir, Texas, 2001, 2005, 2009, 2013, 2017, and 2021. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2001	2005	2009	2013	2017	2021
Native submersed	505.0 (3.6)	52.3 (<0.1)			1.0 (<0.1)	3.4 (<0.1)
Native floating-leaved						
Native emergent	0.1 (<0.1)					

Channel Catfish

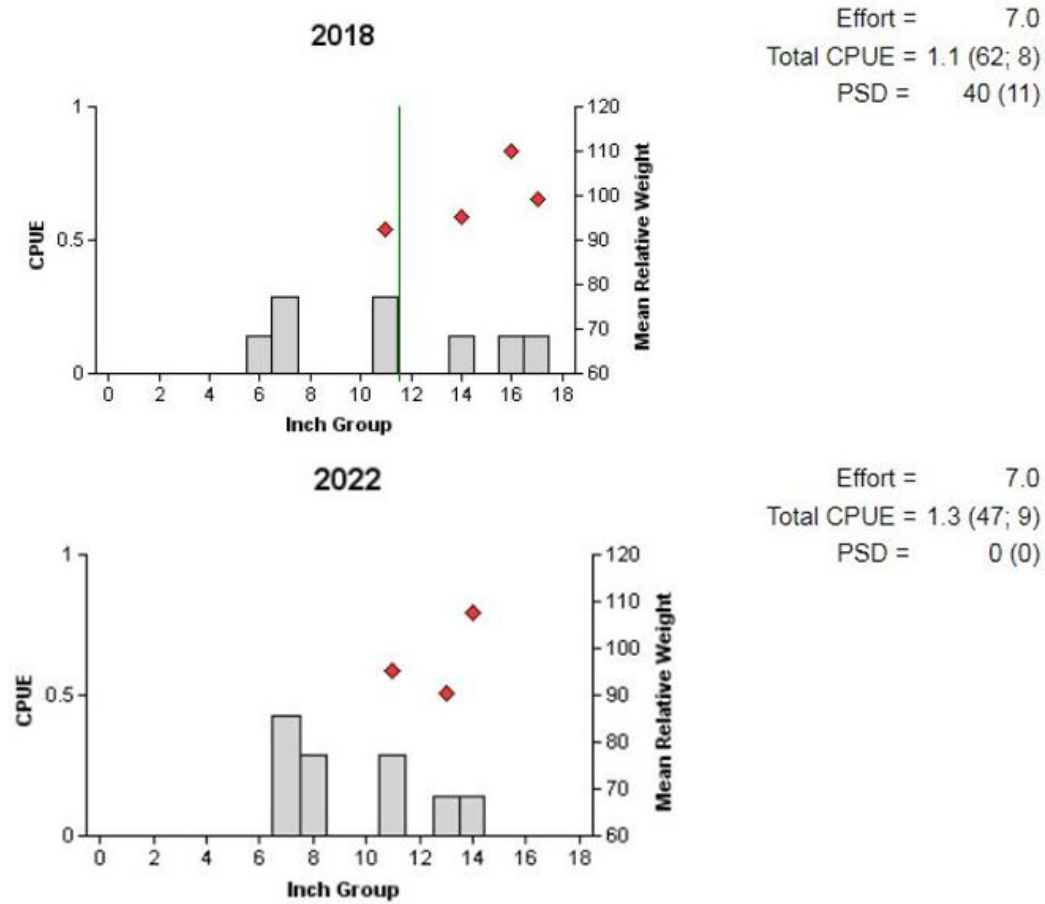


Figure 2. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Kemp Reservoir, Texas, 2018 and 2022. No Channel Catfish were caught in 2010 survey. Vertical green line represents 12-inch minimum length limit that changed September 1, 2021 to no minimum length limit with a bag of 25 fish in combination, but only 10 fish can be longer than 20-inches.

Striped Bass

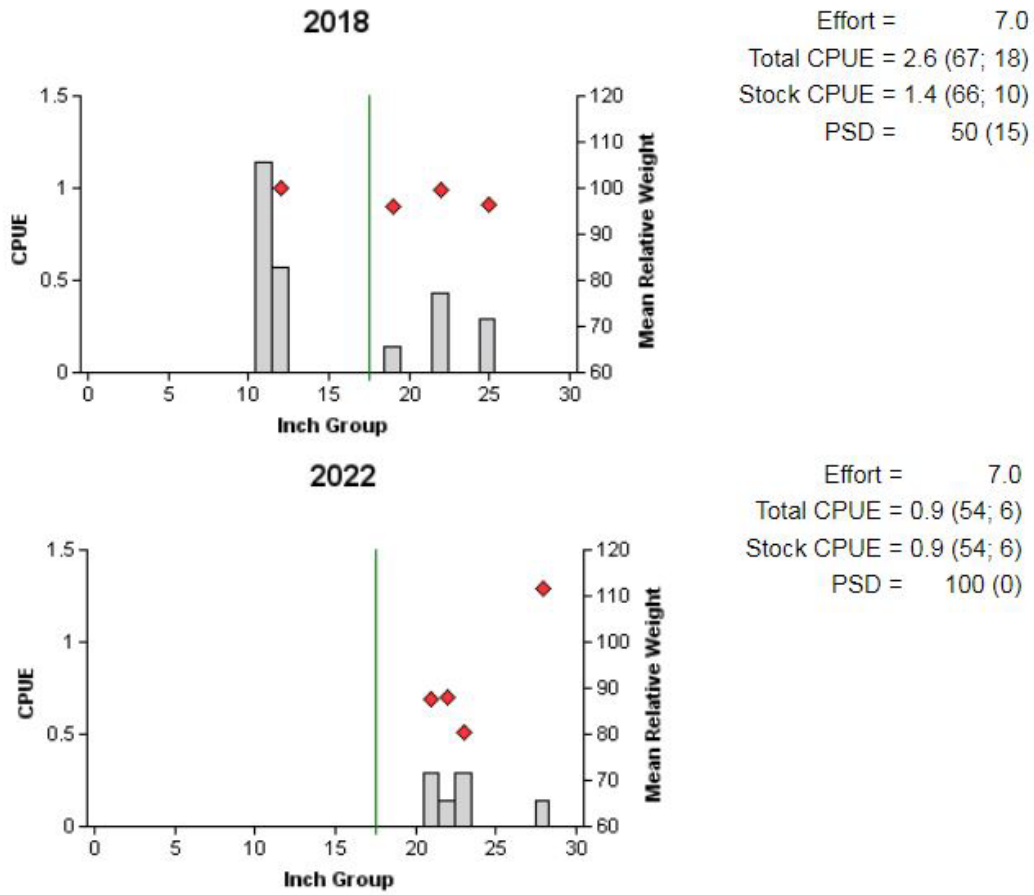


Figure 3. Number of Striped Bass caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Kemp Reservoir, Texas, 2018, and 2022. Prior to these samples, no Striped Bass had been collected since 2006. Vertical line indicates minimum length limit at time of sampling.

White Crappie

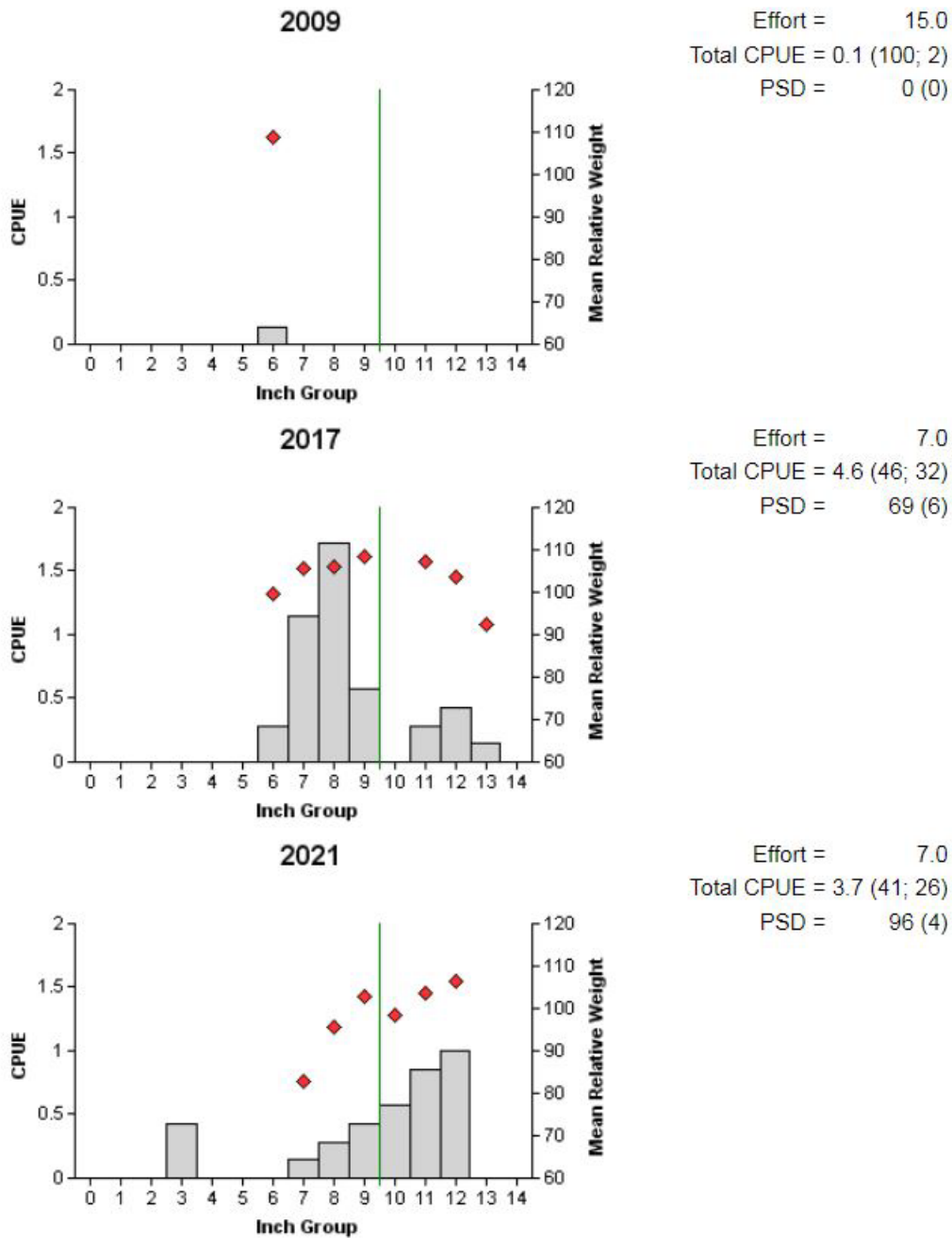


Figure 4. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Kemp Reservoir, Texas, 2009, 2017, and 2021. Vertical line indicates minimum length limit.

Proposed Sampling Schedule

Table 8. Proposed sampling schedule for Kemp Reservoir, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall.

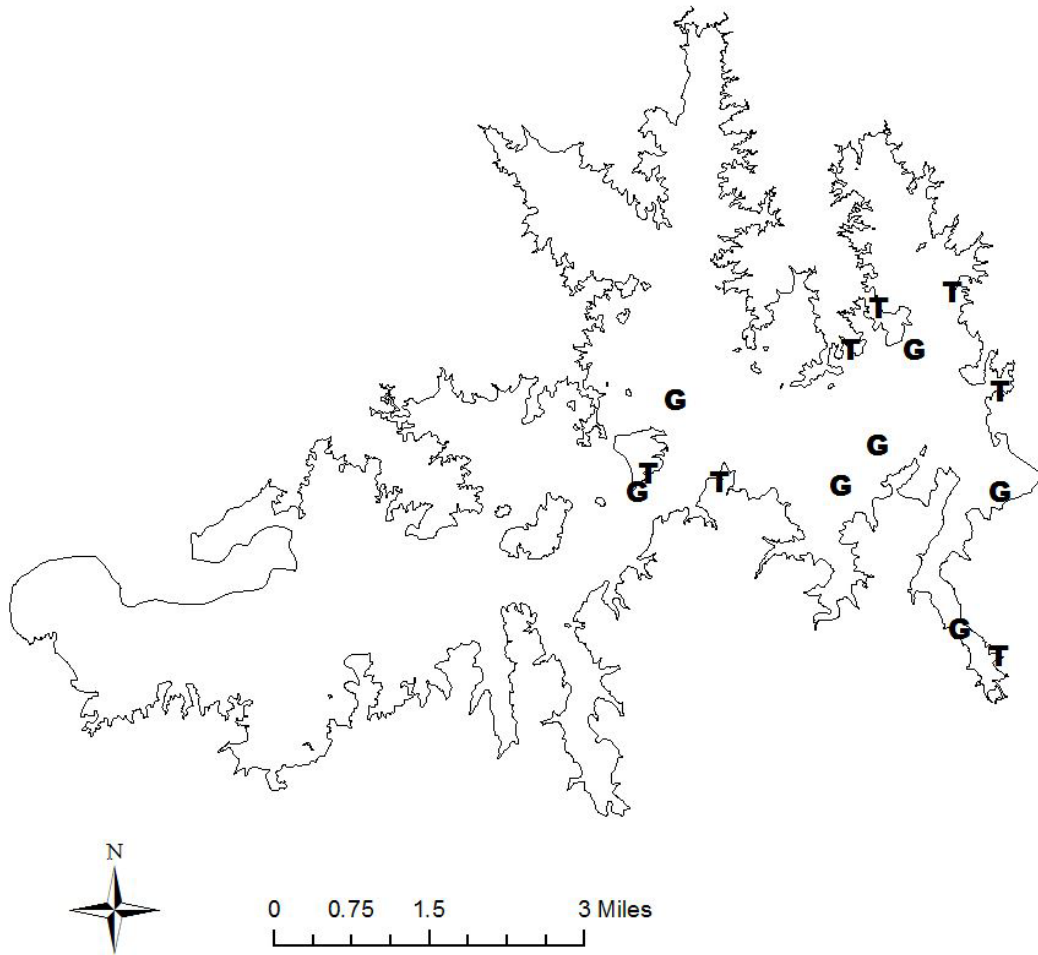
	Survey year			
	2022-2023	2023-2024	2024-2025	2025-2026
Angler Access				X
Structural habitat				X
Vegetation				X
Trap netting				X
Gill netting		X		X
Report				X

APPENDIX A – Catch rates for all species from all gear types

Number (N) and catch rate (CPUE) (RSE in parentheses) of all species collected from all gear types from Kemp Reservoir, Texas, 2021-2022. Sampling effort was 7 net nights for gill netting and 7 net nights for trap netting.

Species	Gill Netting		Trap Netting	
	N	CPUE	N	CPUE
Gizzard Shad	13	1.9 (83)	5	0.7(59)
Threadfin Shad			4	0.6(65)
Common Carp	8	1.1 (59)	113	16.1(47)
Channel Catfish	9	1.3 (47)	1,190	170.0(54)
Striped Bass	6	0.9 (54)		
Green Sunfish			3	0.4(69)
Bluegill			82	11.7(75)
Longear Sunfish			44	6.3(27)
Largemouth Bass			5	0.7(40)
White Crappie			26	3.7(41)
Logperch			1	0.1(100)

APPENDIX B – Map of sampling locations



Location of sampling sites, Kemp Reservoir, Texas, 2021-2022. Trap net and gill net stations are indicated by T and G respectively. Water level was 2 feet below conservation pool at time of sampling.

APPENDIX C – Historical catch rates of targeted species by gear type for Kemp Reservoir, Texas.

Historical catch rates for targeted species by gear type for Kemp Reservoir, Texas.

Gear	Species	Year								
		1998	2001	2002	2003	2004	2005	2006	2009	2010
Gill Netting (fish/net night)	Blue Catfish	0.2	1.7	1.9	0.3	1.7	0	0	0	0
	Channel Catfish	0.7	1.4	0.3	0.3	0.1	0	0	0	0
	White Bass	1.2	0.5	3.8	0.1	15.2	1.5	0.2	0	0
	Striped Bass	5.8	2.0	5.7	0	0	0.5	0.3	0	0
Electrofishing (fish/hour)	Gizzard Shad	173.0	211.0				154.5		674	
	Green Sunfish	2.5	4.0				8.0		1.5	
	Bluegill	29.0	2.0				3.0		1.5	
	Longear Sunfish	49.5	30.0				3.5		1.5	
	Largemouth Bass	18.5	15.0				25.0		0	
Trap Netting (fish/net night)	White Crappie	4.6	5.7			0.1			0.1	

APPENDIX C – Continued

Gear	Species	Year					Avg
		2013	2017	2018	2021	2022	
Gill Netting (fish/net night)	Blue Catfish			0		0	0.5
	Channel Catfish			1.1		1.3	0.5
	White Bass			0		0	2.0
	Striped Bass			2.6		0.9	1.6
Electrofishing (fish/hour)	Gizzard Shad	31.0	42.0				214.3
	Green Sunfish	0	5.0				3.5
	Bluegill	0	4.0				6.6
	Longear Sunfish	0	1.0				14.3
	Largemouth Bass	1.0	15.0				12.4
Trap Netting (fish/net night)	White Crappie		4.6		3.7		3.1



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