

Lake Dunlap

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 Lake Dunlap were last surveyed in 2018 using low-frequency electrofishing and hoop netting. These data will not be presented due to current reservoir conditions. In May 2019, the 91-year-old dam suffered a spillgate failure and the reservoir dewatered back to the historical river channel and fish populations were not surveyed during this report period. A management plan for the reservoir has been prepared and will be initiated once the dam structure is repaired (estimated dam construction year 2023) and the reservoir fills to conservation pool elevation. A habitat restoration and enhancement project is being led by Texas Parks and Wildlife Department (TPWD) with assistance from several project partners including the controlling authority.

Reservoir Description: Lake Dunlap is a 410-acre impoundment located in New Braunfels, Texas and is part of the Guadalupe River chain lakes. Its main purpose are water supply, hydro-power production, and recreation. The upper section is composed primarily of rock and gravel, while the middle and lower sections of the reservoir are composed of clay, sand, and silt. Habitat features included boat docks, rocks, flooded timber, and several native vegetation species. In May 2019, the reservoir dam suffered a gate failure, the reservoir was dewatered to the river channel. Guadalupe Blanco River Authority (GBRA) and the newly formed Lake Dunlap Water Control Improvement District (WCID) are working in close coordination to replace the dam scheduled for completion in 2023.

Management History: Important sport fish include Blue, Channel, and Flathead Catfishes, Largemouth Bass, and crappies. The management plan from the 2018 survey report focused on implementing a creel survey to collect fisheries dependent data and stocking FLMB fingerlings to augment growth potential in the population and to maximize the production of trophy fish for this popular fishery. All sport fishes have been regulated according to statewide size and bag limits. In September 2021, the statewide regulation for Blue and Channel Catfish was modified to include no minimum length limit and only 10 fish of the 25-fish total daily bag may be ≥ 20 inches total length.

Fish Community: Due to reservoir conditions, fish community data are not presented in this report. Historical fisheries data are available in the Lake Dunlap Fisheries Management Survey Report (McDonald and Binion 2018).

Management Strategies: Continue to manage sport fish populations with existing regulations. Work with GBRA and other project partners on habitat restoration and enhancement initiatives pre- and post-reservoir refilling. Work with Texas Department of Transportation (TxDOT) and other project partners to promote safety and improve general site conditions at the IH-35 public access location. Pursue funding opportunities (Boating Access Grant Program) and leverage partnerships to implement a boat ramp construction improvement project. When dam infrastructure is repaired and the reservoir refills, stock with sport fish and forage species. Maintain cooperative relationship with GBRA to monitor and control aquatic invasive species.

Introduction

This document is a summary of conditions at Lake Dunlap in 2022. The purpose of this document is to provide fisheries relevant information and make management recommendations to protect and improve the sport fishery. Management strategies are included to address existing problems and/or opportunities. Fisheries population sampling was not conducted in 2019-2022, due to current reservoir conditions (i.e., dewatered to river channel). Historical data for Lake Dunlap can be referenced from McDonald and Binion (2018).

Reservoir Description

Lake Dunlap is a 410-acre impoundment located on the Guadalupe River in Guadalupe County and is regulated by the Guadalupe-Blanco River Authority. The reservoir, impounded in 1928, is used for water supply, hydroelectric power generation, and recreation. The reservoir is mainstem and maintains a fairly consistent water level. Substrate in the upper section is composed primarily of rock and gravel, while the middle and lower sections of the reservoir are composed of clay, sand and silt. Land around the reservoir has been heavily developed for residential use. When full, shoreline habitat is comprised of bulkhead, boat docks, woody debris, and undercut bank. In 2019, the reservoir experienced a spillgate failure resulting in dewatering to the Guadalupe River channel. Fish mortality was not observed after the dewatering event and it is assumed that the majority of sport fish in the reservoir were either flushed downstream or remained in the river channel. Additional descriptive characteristics of Lake Dunlap can be found in Table 1.

Angler Access

Lake Dunlap has one public boat ramp and one pay-to-use boater access location. Due to reservoir conditions, the IH-35 boater access point is currently out of water and only usable to paddle craft and shoreline access is limited to the park area under the TxDOT bridge right-of-way at IH-35. A temporary boat launch has been installed at the Schumans pay-to-use site and can be used for a fee. Additional boat ramp characteristics are in Table 2.

Management History

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

1. Incorporate a creel survey to quantify angler effort, catch and harvest of sport fishes.

Action: A creel survey was planned for 2019. The spill gate failure and subsequent dewatering in 2019 interrupted the creel survey during the second of planned quarters. The survey was not completed, and insufficient data was collected for analysis.
2. Stock Florida Largemouth Bass (FLMB) annually to augment growth and trophy production potential.

Action: Due to a dam failure and reservoir dewatering in May 2019, FLMB stockings were not pursued.
3. Monitor presence, distribution, and spread of aquatic invasive species (AIS) and implement control measures, as needed.

Action: Prior to reservoir dewatering, and in close coordination with GBRA and TPWD's invasive species program coordinator, aquatic invasive species (i.e., aquatic vegetation, zebra mussels) were monitored with routine sampling (aquatic vegetation) and settlement samplers (zebra mussels). Further, TPWD staff disseminated AIS signage to GBRA to distribute to all boater access locations.

Harvest regulation history: Sport fishes in Lake Dunlap have always been managed with statewide regulations (Table 3). In September 2021, the statewide regulation for Blue and Channel Catfish was modified to include no minimum length limit and only 10 fish of the 25-fish total daily bag may be \geq 20 inches total length.

Stocking history: Lake Dunlap was stocked with 6,093 ShareLunker Largemouth Bass fingerlings in 2013. Prior to 2013, the reservoir has not been stocked since 2001 (Blue Catfish). Triploid grass carp were stocked in 1995 and 1996 for hydrilla control. A complete stocking history can be found in Table 4.

Vegetation/habitat management history:

Lake Dunlap has a history of various invasive aquatic plant species. Prior to 1996, Lake Dunlap had a severe hydrilla infestation which was controlled through herbicide treatments and the introduction of triploid grass carp. Hydrilla has not been detected in the reservoir since 2005. Water hyacinth was also present in Lake Dunlap Reservoir prior to 1996 and was discovered again in the Fall of 2012 after which TPWD and GBRA conducted regular water hyacinth surveys and mechanically removed all the water hyacinth that was encountered. The 2012 water hyacinth infestation was the result of a lake-front homeowner introducing the plant in her boat slip. East Indian hygrophylla, an invasive and potentially nuisance species, was documented actively growing in Lake Dunlap Reservoir in 2004 but has not been observed since 2009. Although Indian hygrophylla has been present in the Comal River (upstream of Lake Dunlap Reservoir) for many years, it is not expected to cause access problems due to the limited areas for growth in Lake Dunlap.

Lake Dunlap Reservoir has an 8.4-acre submerged timber field located near the dam. This submersed timber field has withstood numerous flood events and is an important habitat feature to the Lake Dunlap aquatic ecosystem. In December 2011, lake-front homeowners, without proper authorization, removed the upper 4-6 feet of timber in 3.8 acres of the submersed timber field while the reservoir was drawn down for dam maintenance. These timbers were cut an additional 4 – 6 feet after the reservoir dewatered and were exposed.

In 2014, TPWD district staff began a native vegetation planting effort to increase native aquatic plant community abundance and diversity and to offset losses of woody debris – planting American waterwillow, American pondweed, Illinois pondweeds, and wild celery in several littoral locations around the reservoir. Additionally, in 2021 an extensive habitat restoration and enhancement project was initiated to restore and enhance fish habitat in many locations throughout the reservoir. This habitat project is being funded by the TPWD Habitat and Angler Access Program (\$50,000) and contributions from GBRA (\$20,000). Project grant funds and services are being leveraged to grow the scope and scale of the restoration initiative and includes additional services, in-kind support, and funding opportunities with various partners and stakeholder groups including the Texas Water Development Board (TWDB), Preserve Lake Dunlap Association (PLDA), Texas B.A.S.S Nation, Canyon Bass Club Friends of Reservoir Chapter, and waterfront property owners.

Water transfer: Before the spillgate failure, Lake Dunlap was primarily used for hydroelectric power generation, water supply, recreation, and to a lesser extent flood control. Currently, without spillgates the primary use is recreation. There are currently no pumping stations on the reservoir and no inter-basin transfers are known to exist.

Methods

No fisheries surveys were conducted over the current survey period (2019-2022) due to the reservoir's current condition (i.e., low water level) and lack of boater access to the entire reservoir.

Results and Discussion

Results and species composition data from the most recent survey collections (2018) are presented in Appendix A. Results collected in historical surveys can be accessed in McDonald and Binion (2018).

Fisheries Management Plan for Lake Dunlap, Texas

Prepared – July 2022

ISSUE 1: Substantial losses in aquatic habitat occurred after reservoir dewatering in May 2019.

MANAGEMENT STRATEGIES

1. Work with Guadalupe-Blanco River Authority (GBRA) and other project partners (e.g., Texas Water Development Board, Preserve Dunlap Reservoir Association, Canyon Friends of Reservoir chapter, Texas B.A.S.S Nation, etc.) to restore and enhance aquatic habitat through a holistic, integrated approach and implementation of various habitat restoration/enhancement initiatives leveraged through the TPWD Habitat and Access Program.
2. Provide technical support and guidance materials to landowners and local constituency regarding habitat conservation best management practices (BMP's) and promote long-term stewardship of aquatic resources.
3. Identify new funding opportunities and leverage partnerships to implement habitat projects.

ISSUE 2: Substantial reductions to important fish populations and other aquatic communities occurred after reservoir dewatering in May 2019. Prior to its dewatering, Lake Dunlap was valued for its high-quality Largemouth Bass fishery and production of trophy fish (≥ 8 pounds). Waterbody catch records (water body record = 14.94 pounds), submissions into the ShareLunker program, and anecdotal reports indicate the reservoir regularly produces large fish.

MANAGEMENT STRATEGIES

1. Once the reservoir refills to full pool (2023), TPWD will stock an various species to reestablish recreationally important sport fish and prey populations including, Channel Catfish, Bluegill and Lone Star Bass fingerlings, which are 2nd generation offspring of pure Florida strain ShareLunker Largemouth Bass that have proven to be able to grow to ≥ 13 pounds.
2. Implement habitat enhancement measures to increase the performance and recruitment of stocked fish.
3. Promote the Lake Dunlap stocking program, the ShareLunker Program, and angling opportunities by disseminating press releases to local and statewide media.

ISSUE 3: General site amenities (i.e., signage, lighting) and shoreline angling access are limited at the IH-35 public access location. Additionally, flow conditions can create difficult and oftentimes unsafe boat launching and loading. Further, the only other public access point (Schumans) is a privately owned pay-to-use site. With reduced water levels, the timing is appropriate to conduct a revitalization project at this site.

MANAGEMENT STRATEGIES

1. Work with Texas Department of Transportation (TxDOT) and other project partners to promote safety and improve general site conditions at the IH-35 public access location.
2. Work with TxDOT and other local partners to post appropriate safety and conservation signage at both public access points.
3. Enhance shoreline access at the IH-35 location through strategic trail and brush clearing and maintenance.
4. Pursue funding opportunities such as the Boating Access Grant Program and leverage partnerships to implement a boat ramp construction improvement project.

ISSUE 4: 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. Invasive plants can restrict recreational use and can impact the quality of fish and wildlife habitat restricting growth and colonization of native vegetation. Further, the financial costs of controlling and/or eradicating 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. Provide cost-share funding and cooperate w/GBRA on vegetation control activities and monitor invasive vegetation w/vegetation surveys.
2. Work with GBRA and other local partners to post appropriate signage at access points around the reservoir.
3. Contact and educate marina owners about invasive species, and provide them with posters, literature, and other guidance materials so that they can in turn educate their customers.
4. Disseminate educational materials to the public about invasive species using media and the internet (press releases, social media).
5. 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)

Note: Upon completion of dam construction project (projected: Summer 2023), Lake Dunlap will undergo a rebuilding phase with the primary objective to reestablish important sport fish and prey populations. Therefore, sampling described below will be exploratory in nature to document presence/absence of all fishes in the reservoir and to evaluate the success of stocking programs.

Sport fish, forage fish, and other important fishes

Sport fish in Lake Dunlap include Blue, Channel, and Flathead Catfishes, Largemouth Bass, and crappies. Important forage species include Gizzard Shad, Redbreast, Redear and Bluegill Sunfishes.

Survey objectives, fisheries metrics, and sampling objectives

Catfishes: An exploratory gill net survey will be conducted to identify presence/absence of Blue Catfish, Flathead Catfish, and Channel Catfish. Additional population level data (relative abundance, size composition, relative weight) will be collected for specimens sampled. A minimum of 10 gill nets set at randomly-selected stations will be used.

Largemouth Bass: An exploratory electrofishing survey will be conducted to identify presence/absence and to aid in evaluating stocking success. Additional population level data (relative abundance, size composition, relative weight) will be collected for specimens sampled. A minimum of 12 randomly-selected electrofishing sites will be sampled to collect Largemouth Bass.

Shads and Sunfish: Sampling with electrofishing per Largemouth Bass will be sufficient to identify presence/absence of forage fishes. Additional population level data (relative abundance, index of vulnerability, size composition) will be recorded on specimens collected.

Literature Cited

McDonald, D., and G. Binion. 2018. Statewide freshwater fisheries monitoring and management program survey report for Dunlap Reservoir, 2017. Texas Parks and Wildlife Department, Federal Aid Report F-221-M3, Austin.

Figures and Tables

Table 1. Characteristics of Lake Dunlap, Texas.

Characteristic	Description
Year constructed	1928
Controlling authority	Guadalupe-Blanco River Authority
County	Guadalupe
Reservoir type	Mainstem
Shoreline Development Index	2.25
Conductivity	450-550 $\mu\text{S}/\text{cm}$
Mean Water Level	575.75 ft. msl

Table 2. Boat ramp characteristics for Lake Dunlap, Texas, August 2021. Reservoir elevation at time of survey was 563.2 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
I-35 Bridge	29.69259 -98.10756	Y	25+	570	Out of water. Paddle craft only.
Schuman's Ramp (pay-to-use)	29.67143, -98.06956	Y	8	574	Original is out of water. Temporary boat ramp in use.

Table 3. Harvest regulations for Lake Dunlap, Texas.

Species	Bag limit	Length limit
Gar, Alligator	1 ^a	none
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 ^b (in any combination)	none ^b
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-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 Mandatory harvest reporting required for all harvested Alligator Gar (reporting available through the My Texas Hunt Harvest app or at <https://apps.tpwd.state.tx.us/huntharvest/home.faces>)

^b Only 10 fish for Blue and Channel Catfish, their hybrids and subspecies can be ≥ 20 " in total length.

Table 4. Stocking history of Lake Dunlap, Texas. FGL = fingerling; ADL = adults.

Species	Year	Number	Size
Coppernose Bluegill	1983	15,000	FGL
Blue Catfish	1988	16	ADL
	1995	41,000	FGL
	1996	34,400	FGL
	1997	41,553	FGL
	2001	34,308	FGL
	Total	151,277	
Channel Catfish	1968	2,000	FGL
	1973	6,000	FGL
	Total	8,000	
Florida Largemouth Bass	1978	16,400	FGL
	1988	41,194	FGL
	Total	57,594	
Largemouth Bass	1966	8,400	FGL
	1967	10,000	FGL
	1987	20,200	FGL
	Total	38,600	
ShareLunker Largemouth Bass	2013	6,093	FGL
Striped Bass	1978	4,000	FGL
	1983	5,340	FGL
		9,340	
Triploid Grass Carp*	1995	25	ADL
	1996**	3	ADL
		28	

*Radio-tagged fish

** Replace dead radio-tagged fish

Proposed Sampling Schedule

Table 5. Proposed sampling schedule for Lake Dunlap, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, electrofishing surveys are conducted in the fall and low-frequency electrofishing surveys are conducted in the summer. Surveys may need to be delayed if dam construction project is not completed at time of expected surveys.

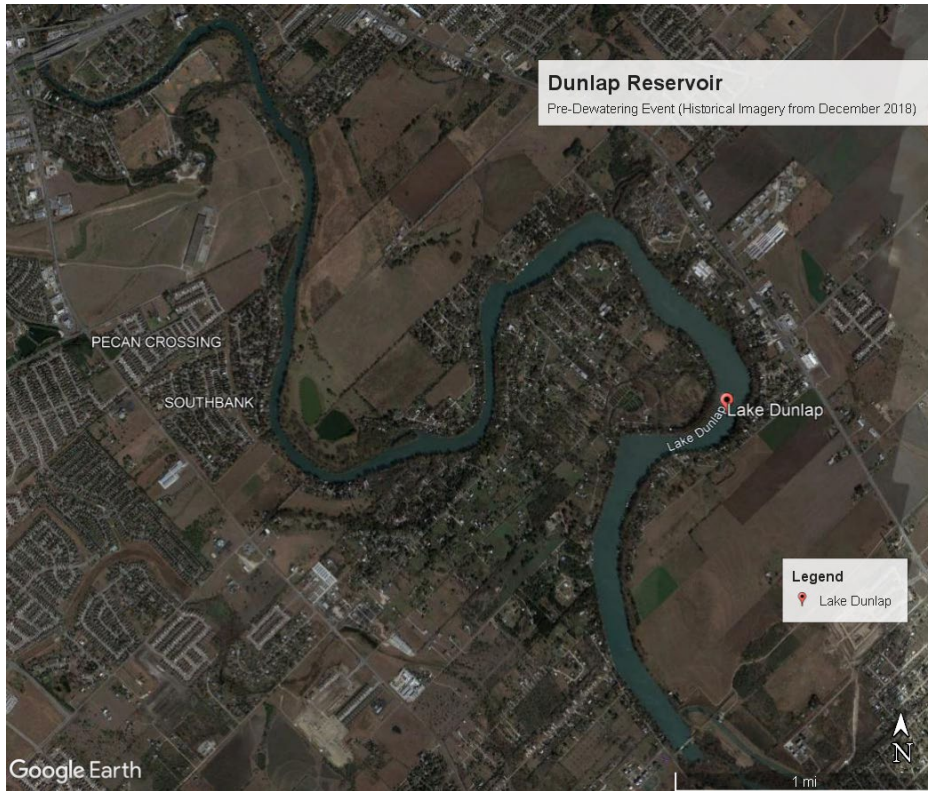
	Survey year			
	2022-2023	2023-2024	2024-2025	2025-2026
Angler Access				X
Structural Habitat				X
Vegetation		X		X
Electrofishing – Fall		X		X
Gill netting				X
Low-frequency Electrofishing		X		
Report				X

APPENDIX A – Catch rates for all species from all gear types, 2018-2019

Number (N) and catch rate (CPUE) (RSE in parentheses) of all species collected from all gear types from Dunlap, Texas, 2018-2019. Sampling effort was 5 net nights for hoop netting, and 1 hour for low-frequency electrofishing.

Species	Hoop Netting		Low-Frequency Electrofishing	
	N	CPUE	N	CPUE
Gizzard Shad	1	0.2 (100)		
Channel Catfish	1	0.2 (100)	22	22.0 (89)
Flathead Catfish			2	2.0 (61)
Suckermouth Catfish			1	1.0 (100)
Redbreast Sunfish	19	3.8 (94)		
Warmouth	3	0.6 (67)		
Bluegill	10	2.0 (57)	1	1.0 (100)
Longear Sunfish	3	0.6 (67)	1	1.0 (100)
Redear Sunfish	18	3.6 (93)		
Largemouth Bass	3	0.6 (67)		
White Crappie	20	4.0 (76)		

APPENDIX B – Pre- and post-reservoir dewatering images





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