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INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2011 Survey Report

E. V. Spence Reservoir

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in E. V. Spence Reservoir have not been surveyed since 2009 because of extreme low water level. This report contains a management plan for the reservoir.

- **Reservoir Description:** E. V. Spence Reservoir is a 14,950-acre reservoir, when full, located on the Colorado River near Robert Lee, Coke County, Texas. It has a history of prolonged water level declines and has never filled to conservation pool. Golden algae *Prymnesium parvum* blooms caused substantial fish kills in the winters of 2001, 2002, and 2003 that effectively eliminated the fish community. Subsequently, toxic conditions have been recorded on an annual basis. In fall of 2011, water level was 83 feet below conservation level and prevented fish population sampling. There was no boat access via boat ramps or the shoreline.

- **Management History:** The management of this reservoir has been impacted by chronic toxic golden alga blooms since 2001 and low water level. Florida-strain largemouth bass, striped bass, bluegill and channel catfish were stocked in multiple years following major fish kills due to toxic golden alga blooms. These stockings failed to produce a viable fishery. No stocking has been conducted since 2008.

- **Fish Community:** The status of all prey and sport fish is unknown, however, due to the extreme low water level and susceptibility to fish kills caused by golden algae, it is likely that few desirable fish species remain in the reservoir.

- **Management Strategies:** Fish population sampling is contingent on the reservoir being accessible by boat. As soon as water level rises to the point where launching a boat is possible, conduct additional electrofishing, trap netting, and gill netting. Conduct standard monitoring in 2015/2016. Continue monitoring for toxic golden alga blooms at least annually. When water quality and quantity are suitable, stock sport fish and prey fish to re-establish those communities.

INTRODUCTION

The purpose of the document is to provide fisheries information and make management recommendations to protect and improve the sport fishery at E. V. Spence Reservoir. Management strategies and recommendations are included to address existing issues.

Reservoir Description

E. V. Spence Reservoir is a 14,950-acre impoundment, when full, constructed in 1969 on the Colorado River. It is located in Coke County near the town of Robert Lee and is approximately 45 miles north of San Angelo. It has a history of prolonged low water level and has never filled to conservation pool. The reservoir is operated and controlled by the Colorado River Municipal Water District (CRMWD). Primary water uses included water supply and recreation. Land use around the reservoir is primarily pastureland. In the winters of 2001, 2002, 2003 golden alga *Prymnesium parvum* blooms caused major fish kills in the reservoir that essentially eliminated the fish community. Subsequently, toxic conditions have been recorded on an annual basis and have prevented the re-establishment of sport fish and prey communities. Water level has been consistently low and was 83 ft. below conservation pool in fall 2011 (Figure 1). The reservoir was at about 0.5% capacity with a surface area of less than 450 acres. Boat ramps have been unusable since 2009 due to the extreme low water level. Other descriptive characteristics for E. V. Spence Reservoir are shown in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Farooqi and Scott 2008) included:

1. Continue monitoring golden alga cell density and toxicity levels to determine water quality.
   Actions: Toxic golden alga blooms have continued on an annual basis. In January 2010, routine monitoring of E. V. Spence Reservoir was incorporated into a collaborative study to examine the relationship between water quality parameters and toxic golden alga blooms in reservoirs of the upper Colorado River being conducted by Matt VanLandeghem and Rey Patino of Texas Tech University. The project is currently in the data analysis and report writing phase.
2. If toxic golden alga blooms continue on a regular basis, consideration should be given to suspend fish stockings until sustained improvements in water quality are documented.
   Action: As a result of annual toxic golden alga blooms, fish stocking has been suspended since 2009.

Harvest regulation history: Sport fish in E. V. Spence Reservoir are currently managed with statewide regulations (Table 2).

Stocking history: A number of fish species have been stocked in E. V. Spence Reservoir. The reservoir was last stocked in 2008. The complete stocking history is shown in Table 3.

Vegetation/habitat history: E. V. Spence Reservoir has no significant vegetation/habitat management history.

Water Transfer: The CRMWD uses this reservoir as one of its three major sources of surface water. The District provides raw water (non potable) to rural users and municipal and industrial (oil/gas) customers. Municipal customers include the cities of Big Spring, Snyder, Stanton, Midland, and Odessa. The City of Robert Lee also uses this reservoir for their raw water source. The City of San Angelo also has infrastructure at this reservoir capable of pumping water for their municipal needs. Their facility has

not been used since the early 2000's. There are no interbasin transfers. Historically, transfers occurred between E. V. Spence, Colorado City Reservoir, and Moss Creek City Reservoir.

METHODS

No surveys were conducted in 2011 or 2012 because of extreme low water level. Source for water level data was the United States Geological Survey website (http://nwis.waterdata.usgs.gov).

RESULTS AND DISCUSSION

Habitat: A habitat survey was last conducted in 2007 (Farooqi and Scott 2008). The littoral zone habitat consisted primarily of flooded dead terrestrial vegetation (62.4%) and rocky shoreline (20.9%).

Fish community: No results are presented because the reservoir could not be surveyed in 2011 or 2012 due to extreme low water level.

Fisheries management plan for E. V. Spence Reservoir, Texas

Prepared – July 2012.

ISSUE 1: E. V. Spence Reservoir has had toxic golden alga blooms on a regular basis since 2001 resulting in numerous fish kills. Since 2011, the fish population has been further impacted by extreme low water level. As of April 2012, the reservoir was 84 feet below conservation level and at 0.4% capacity.

MANAGEMENT STRATEGIES

1. In view of the cyclical nature of the blooms, revise the golden alga monitoring regime by reducing the frequency of sampling to the peak months of December, January, and February or consider a similar sampling regime to reduce sampling effort while still effectively monitoring for change.
2. When water quality and quantity is suitable, stock with bluegill, striped bass, largemouth bass, channel catfish, and white crappie to re-establish the sport fish and prey communities.

ISSUE 2: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (*Dreissena polymorpha*) 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 (*Salvinia molesta*) 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 post appropriate signage at access points around the reservoir.
2. Contact and educate marina owners about invasive species, and provide them with posters, literature, etc… so that they can in turn educate their customers.
3. Educate the public about invasive species through the use of media and the internet.
4. Make a speaking point about invasive species when presenting to constituent and user groups.
5. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes mandatory monitoring in 2015/2016 (Table 4). This schedule is adequate for monitoring the status of the most important game fish species. When water level rises to a point where boating is possible, conduct additional electrofishing, trap netting, and gill netting. .

LITERATURE CITED

Farooqi, M. A., and M. K. Scott. 2008. Statewide freshwater fisheries monitoring and management program survey report for E. V. Spence Reservoir, 2008. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.

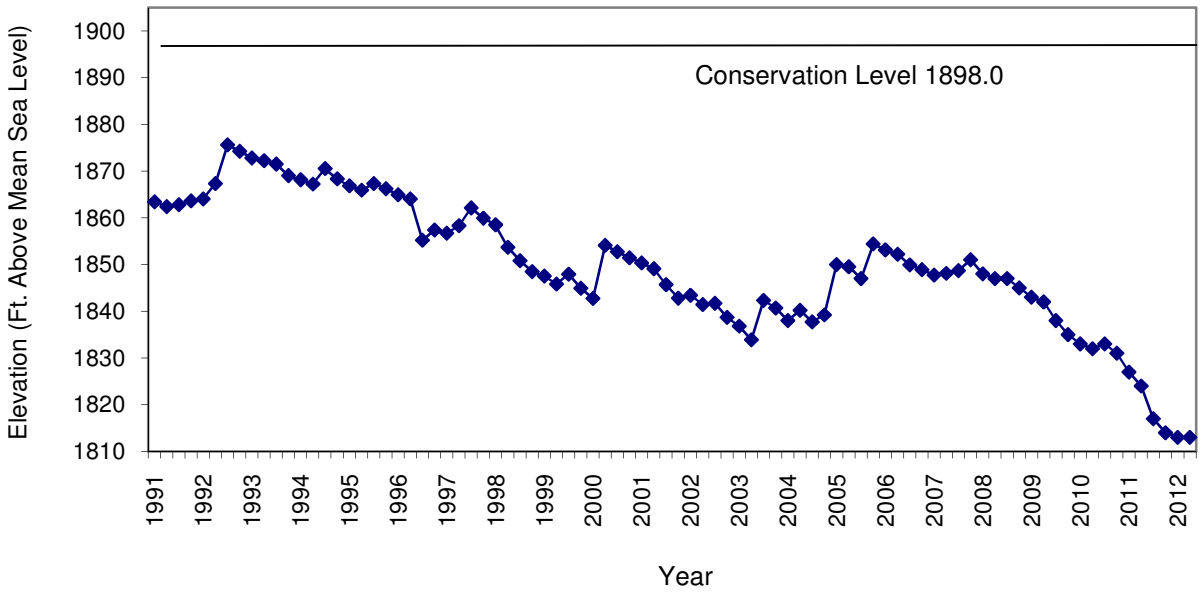

Figure 1. Quarterly water level elevations in feet above mean sea level recorded for E. V. Spence Reservoir, Texas (1991-2012).

Table 1. Characteristics of E. V. Spence Reservoir, Texas.

Characteristic	Description
Year constructed	1969
Controlling authority	Colorado River Municipal Water District
County	Coke
Reservoir type	Main stream
Shoreline Development Index	8.00
Conductivity	≥ 2,300 µmhos/cm

Table 2. Harvest regulations for E. V. Spence Reservoir, Texas.

Species	Bag Limit	Minimum-Maximum Length (inches)
Catfish: channel and blue catfish, their hybrids and subspecies	25 (in any combination)	12 - No Limit
Catfish, flathead	5	18 - No Limit
Bass, white	25	10 - No Limit
Bass, striped	5	18 - No Limit
Bass: largemouth	5	14 - No Limit
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10 - No Limit

Table 3. Stocking history of E. V. Spence Reservoir, Texas. Size categories are: FRY = ≤1 inch, FGL = 1-3 inches, ADL = adults, and UNK = unknown. Continued on next two pages.

Species	Year		Number	Size
Threadfin shad	1980		4,000	UNK
	1981		3,000	UNK
	1982		1,200	UNK
	1984		5,700	UNK
		Total	13,900	
Blue catfish	1971		4,325	UNK
	1973		13,000	UNK
	1979		120,359	UNK
	1980		42,228	UNK
	1981		49,996	UNK
	1988		15	ADL
	1992		60,810	FGL
	2002		2,715	FGL
	2004		125,000	FGL
		Total	418,448	
Channel catfish	1968		138,000	UNK
	1969		87,650	UNK
	1970		16,000	UNK
	1971		34,200	UNK
	1972		10,000	UNK
	2003		132,861	FGL
	2004		85,471	FGL
	2005		187,342	FGL
	2006		233,974	FGL
	2007		183,235	FGL
	2008		162,061	FGL
		Total	1,270,794	
Flathead catfish	1969		26	UNK
	1971		1,825	UNK
	1973		4,000	UNK
		Total	5,851	
White bass	1982		100	UNK
Striped bass	1969		34,500	FGL
	1970		3,000	FGL
	1971		47,328	FGL
	1972		51,835	FGL
	1973		69,834	FGL
	1974		51,075	FGL
	1975		82,068	UNK
	1976		34,975	UNK
	1977		29,698	UNK
	1979		30,525	UNK
	1981		84,182	UNK
	1982		50,000	UNK
	1984		119,500	FGL
	1986		105,384	FGL
	1988		2,000,000	FRY

Table 3. Stocking history continued.

Species	Year		Number	Size
Striped bass	1988		150,274	FGL
	1990		152,136	FGL
	1991		68,644	FGL
	1992		62,700	FGL
	1993		107,545	FGL
	1993		62,950	FRY
	1994		17,500	FGL
	1995		71,346	FGL
	1996		10,403	FRY
	1996		24,794	FGL
	1997		25,229	FGL
	1998		25,223	FGL
	2000		15,010	FGL
	2004		27,041	FGL
	2005		37,243	FGL
	2007		35,774	FGL
		Total	3,670,216	
Palmetto bass	1975		51,748	UNK
Bluegill	2002		301,201	FGL
	2005		374,684	FGL
	2006		473,763	FGL
	2007		180,800	FGL
	2008		176,660	FGL
		Total	1,507,108	
Smallmouth bass	1980		500	UNK
	1981		146,817	UNK
	1982		144,837	UNK
	1985		258	ADL
		Total	292,412	
Largemouth bass	1968		10,990	UNK
	1969		786,000	UNK
	1970		26,000	UNK
	1971		46,946	UNK
	1972		4,500	UNK
	1973		1,650	UNK
	2005		100,885	FGL
		Total	979,971	

Table 3. Stocking history continued.

Species	Year	Number	Size
Florida largemouth bass	1980	37,900	FGL
	1981	86,000	FGL
	1996	349,276	FGL
	2000	200,031	FGL
	2003	148,516	FGL
	2004	124,706	FGL
	2005	188,526	FGL
	2007	181,428	FGL
	2008	164,710	FGL
		Total 1,481,093	
Green X redear sunfish	1971	70,000	UNK
	1972	2,700	UNK
		Total 72,700	

Table 4. Proposed sampling schedule for E. V. Spence Reservoir, Texas. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Standard surveys denoted by S. Additional sampling will be conducted before 2015 if and when water level increases to allow boater access.

Survey Year	Electro-fisher	Trap Net	Gill Net	Access Survey	Report
Summer 2012-Spring 2013					
Summer 2013-Spring 2014					
Summer 2014-Spring 2015					
Summer 2015-Spring 2016	S	S	S	S	S