SURVEY REPORT

OKLAHOMA FISHERIES MANAGEMENT PROGRAM

FISH MANAGEMENT SURVEYS AND RECOMMENDATIONS

FOR

LAKE HEYBURN

1998

PERFORMANCE REPORT

State: Oklahoma Project No.: F-44-D

Project Title: Oklahoma Fisheries Management Program

Study Title: Surveys and Recommendations - Heyburn Reservoir

Period Covered: 1 January 1998 - 31 December 1998

LAKE HEYBURN

ABSTRACT

Lake Heyburn was sampled by fall gillnetting in 1998 to determine fish population trends. White crappie were moderate in abundance (C/f = 0.245) and above the value for a quality fishery (C/f = 0.2). Channel catfish were in low abundance (C/f = 0.029). The abundance of gizzard shad appears to be moderate, and they should provide an abundant forage base.

Recommendations included recharging of existing fish attractors and construction of new attractors, the seeding of mudflats with Japanese millet to provide habitat and soil stability, and the transplanting of aquatic vegetation.

INTRODUCTION

Lake Heyburn impounds the Polecat Creek, 18 km southwest of Sapulpa in Creek County, Oklahoma (Fig. 1). Heyburn covers 396 surface hectares and was constructed in 1950 by the U.S. Army Corps of Engineers. Heyburn Lake has a mean depth of 2.6 m, a maximum of 43.5 m, and a secchi disc visibility of around 50 cm in the main pool in August; turbidity is primarily from suspended clay and plankton. Fish habitat consists primarily of aquatic vegetation, rock, flooded timber.

Recent fish stockings include 35,534 channel catfish (Table 1) in 1998. The crappie population shows a moderate abundance that is having problems with forage and recruitment.

Heyburn was sampled in 1998 by fall gill netting to evaluate the progress of crappie, channel catfish, blue catfish and the availability of gizzard shad for forage.

<u>Crappie</u>

1. Crappie abundance from 1998 fall gillnetting (C/f = 0.245) was comparable to the minimum acceptable value for a quality fishery (Table 2).
2. The abundance of crappie for all size groups was satisfactory.
3. Body condition values (W_r) were satisfactory for <200 mm, but those ≥200 mm and ≥250 mm were in fair condition (Table 2).
4. Mean lengths for all ages of crappie were below acceptable values for a quality fishery (Table 3).

Channel Catfish

1. Channel catfish abundance from 1998 fall gillnetting (C/f = 0.196) was comparable to the minimum acceptable value for a quality fishery (C/f = 0.20; Table 4).
2. The abundance of channel catfish ≤300 mm was satisfactory, while those ≥300 mm and ≥400 mm were below acceptable values (Table 4).
3. Body condition values (W_r) were satisfactory for the ≥300 mm and ≥400 mm size groups but those <300 mm were in excellent condition.

Blue Catfish

1. Blue catfish abundance from 1998 fall gillnetting (C/f = .029) was below the minimum acceptable value for a quality fishery (C/f = .20; Table 5).
2. The abundance of blue catfish in all size groups were unsatisfactory (Table 5).
3. Body condition values (W_r) were satisfactory for <300 mm but those ≥300 mm and ≥400 mm were in poor condition (Table 5).

Gizzard Shad

1. Shad abundance from 1998 fall gillnetting (C/f = 0.039) was well below the minimum acceptable value for a quality forage supply (C/f = 0.2; Table 6).
2. In fall gillnetting, the abundance of shad <200 mm was unsatisfactory.
3. In fall gillnetting, body condition values (W_r) were satisfactory overall.

Other Species

1. Two freshwater drum were collected in 1998 (Table 7).

1. Only 4 river carpsuckers were sampled by fall gill netting (Table 7).

1. Common carp were moderately abundant in 1998 gill net sample (Table 7).

RECOMMENDATIONS

Habitat Enhancement

1. Shoreline seeding should be conducted with Japanese millet.

2. Transplanting of aquatic vegetation.

3. Recharging of existing fish attractors.

4. Construction of new fish attractors.

Fish Stockings

1. Growout channel catfish stockings should continue, and increase upon availability in hopes of helping the natural reproducing population.

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Table 1. Species, number and size of fish stocked in Lake Heyburn, 1998.

DATE	SPECIES	NUMBER	SIZE
1980	Largemouth Bass	666,600	Fingerlings
1981	Florida LMB	444,000	Fingerlings
1981	Channel Catfish	33,000	Growouts
1981	Walleye	789,000	Fry
1982	Blue Catfish	45	Adults
1983	Smallmouth Bass (Reservoir Strain)	198	Sub-adults
1984			
1985			
1986			
1987	Channel Catfish	12,400	4" Growouts
1988	Blue Catfish	4,900	51/2" Growouts
1988	Channel Catfish	50,000	5" Growouts
1990	Northern LMB	25,608	3" Fingerlings
1991			
1998	Channel Catfish	35,534	7" Growouts

Table 2. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of crappie collected by gill netting from Lake Heyburn. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥.20)		<200 mm (.05-.30)		≥200 mm (≥.08)		≥250 mm (≥.04)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1980								
1981								
1982								
1983								
1984								
1985								
1986								
1987								
1988								
1989								
1990								
1991								
1998	25	0.245	0.157	118	0.088	89	0.049	82

Table 3. Mean Length at age of crappie collected by trap netting from Lake Heyburn. Numbers in parentheses represent values for acceptable growth rates.

Year	Age 1 (≥160 mm)	Age 2 (≥200 mm)	Age 3 (≥225 mm)	Age 4 (≥250 mm)
1980				
1981				
1982				
1983				
1984				
1985				
1986				
1987				
1988				
1989				
1990				
1991				
1998	124	200	200	260

Table 4. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of channel catfish collected by gill netting from Lake Heyburn. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥.20)		<300 mm (≥.10)		≥300 mm (≥.10)		≥400 mm (≥.05)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1980								
1981								
1982								
1983								
1984								
1985								
1986								
1987								
1988								
1989								
1990								
1991								
1998	3	0.196	0.147	115	0.049	95	0.029	97

Table 5. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of blue catfish collected by gill netting from Lake Heyburn. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥.20)		<300 mm (≥.10)		≥300 mm (≥.10)		≥400 mm (≥.05)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1980								
1981								
1982								
1983								
1984								
1985								
1986								
1987								
1988								
1989								
1990								
1991								
1998	3	0.029	0.01	97	0.02	67	0.02	67

Table 6. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of gizzard shad collected by spring electrofishing, gill netting, and seining from Lake Heyburn. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are $\geq$90.

	Spring Electrofishing				Fall Gillnetting				Seining	
	Total ($\geq$.40)		<200 mm ($\geq$20)		Total ($\geq$.20)		<200 mm ($\geq$.10)		Age 0 ---	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r	C/f	W_r
1980										
1981										
1982										
1983										
1984										
1985										
1986										
1987										
1988										
1989										
1990										
1991										
1998					0.039	92	0.010	--		

Table 7. Total number (No.) and catch rates (C/f) of non-game fish collected by gill netting from Lake Heyburn.

	Freshwater Drum		River Carpsucker		Carp		Total	
Year	No.	C/f	No.	C/f	No.	C/f	No.	C/f
1980								
1981								
1982								
1983								
1984								
1985								
1986								
1987								
1988								
1989								
1990								
1991								
1998	2	0.020	4	0.039	5	0.049		