

SOONER LAKE MANAGEMENT PLAN

Background

Lake Sooner impounds Greasy Creek, 15 miles south of Ponca City in Noble and Pawnee Counties, Oklahoma (Figure 1). The Grease Creek basin that Sooner Lake impounds is a small, prairie grass watershed.

The silt load is light and is trapped on the West side of Highway 177. Overall water quality is very high due to the small size and quality of the watershed which results in very stable water levels even during heavy spring rain events. Sooner Lake covers 5,400 surface acres and was constructed in 1976 by the Oklahoma Gas and Electric Company to serve as a cooling reservoir. The thermal impact of the plant is limited to the west side of the lake which only cover about 25 percent of the total area of the lake, so the main body of Sooner lake is thermally unaffected. Sooner Lake is located close to the Arkansas River and was initially filled and water levels are now maintained by pumping water from the Arkansas. Sooner Lake has a mean depth of 28 feet and a maximum depth of 89 feet, a shoreline development ratio of 5.2 (the ratio between length of shoreline and surface area), a very low water exchange rate of 0.05 (inflow/storage capacity) and a secchi disc visibility of around 70 inches in the main pool in August; turbidity is primarily from plankton.

Fish habitat consists primarily of aquatic vegetation, primarily pondweed, water milfoil and cattails. Due to stable water levels and clear water, aquatic vegetation covers most shorelines

and extends out to a depth of six feet. Standing timber is restricted to several coves south of Highway 15 and is not accessible by boat from the main body of the lake. Rip-rap habitat originally covered 9.7 miles but the more exposed stretches were concreted in to prevent further wave erosion. The remaining rip-rap areas are located behind the north and central dykes and covers 4.1 miles of shoreline. Substrates are largely clay with some limited areas of sandstone rock. The surrounding topography is open tall grass prairie which leaves the lake open to the prevailing winds.

Water quality

Chemical properties measured by the Oklahoma Water Resources Board from November 2006 to August 2007 stated that the trophic state index (TSI) using chlorophyll-a averaged 46, classified the lake as mesotrophic, indicative of moderate levels of primary productivity and nutrient conditions. Thermal stratification occurs throughout the lake during late summer with 52 percent of the water column experiencing anoxic conditions. Depth of stratification ranges from 33 to 36 feet with corresponding temperatures of 80.6 to 78.4 degrees. Water hardness typically is 240ppm and pH ranges from 7.2 to 8.5. Conductivity can range from 1300 to 1900 umho/cm indicated high concentrations of electrical current conduction compounds (salt) were present in the lake.

History of Fishery

Largemouth bass

The largemouth bass fishery at Sooner Lake can be described as very good to excellent. Total bass abundance is very high ($C/f > 80$) and catch rates for fish > 14 inches ranges from 19-47 bass per hour in recent sample years (Table 2) (Figure 2). Sooner lake is also known for "big bass" or fish > 8 pounds. Sooner was stocked with Florida bass in 1977 and 1983 through 1986. Stockings were resumed in 2001 (Table 1). A 14 inch minimum length limit was imposed on all black bass in 1979 to minimize the potential for over harvest.

In the fall of 2001, tissue samples from 36 largemouth bass, collected throughout the reservoir, were tested for the presence of Largemouth Bass Virus. Results concluded that the virus was present in the largemouth bass population. Seven of the 36 fish sample tested positive resulting in an occurrence of 19.4%. This percent occurrence is fairly low compared to other Oklahoma lakes with viral infections. No fish kills have been reported in the history of the lake.

White Crappie

Crappie abundance peaked in 1978 ($C/f = 12.5$) and has settled to very low numbers ($C/f = 1.1$) in recent sample years (Table 4). Body condition values are strong and growth rates are fast, however, due to low abundance few anglers target crappie at Sooner Lake (Table 5).

White bass

White bass abundance is general high with recent gill net catch rates ranging from 16.6 to 6.7 per day (Table 6) (Figure 4). Body

condition values decrease with size and few fish exceed 14 inches in length. Due to their smaller size and poor body condition, this fishery is rated as fair.

Striped bass

Striped bass have been stocked on an irregular basis since 1990 with the goal of creating a trophy fishery (Table 1). Fingerling stocking rates have ranged from one to five fish per acre and have been successful. Stripers in the 10 to 20 pound range have been caught on a regular basis by anglers. Gill net catch rates are low (0.24 to 1.4 per day) and generally fish under six pounds are caught (Table 7). This trophy fishery is in part due to the high water quality of Sooner Lake namely the favorable summer water temperatures at the mesocline (78-80 degrees Fahrenheit). Adult striped bass stop feeding at temperatures above 81 degrees and mortality begins after six weeks. No known summer die-off has occurred on Sooner Lake.

Hybrid white bass x striped bass

Sooner Lake was the first lake in Oklahoma to be stocked with striped bass hybrids in 1977. Fry stockings were successful from 1977-1984 but subsequent fry stockings (1986 and 1987) recruited few fish (Table 1). The new, plankton rich lake had given way to high water clarity and reduced plankton abundance. Fingerling stockings were initiated in 1989 and year class strength improved. Recent gill net catch rates have been fairly stable ranging from 6.2 to 12.5 per day (Table 8) (Figure 5). Growth rates are generally below

the regional average (Table 9). An aggregate creel limit of five white bass, striped bass or hybrids was initiated in 1982 for the warm water discharge area only. No creel or length limits were placed on striped bass hybrids in the main lake until 2006. This regulation limits striped bass, striped bass hybrids or white bass to 20 combined per day, of which only five may be 20 inches or longer. Angler sentiment felt that the hybrid fishery had declined in size and numbers in recent years and were in favor of a more restrictive creel limit in the main body of the lake.

Saugeye

Saugeye were stocked every other year from 1993 to 1999 but discontinued due to slow growth rates and forage competition with other predators. Recruitment was strong for each year class but the 18" minimum length limit (initiated in 1994) was not reached until the fourth or fifth growing season (Table 10) (Table 11) (Figure 6). Starting in 2001 low numbers of naturally recruited saugeye have been caught.

Blue catfish

Although blue catfish have never been stocked they have been collected in low numbers since 1978. The source of the fish appears to be from the Arkansas River when the lake was being filled. Gill net catch rates in recent sample years range from 0.24 to 1.68 per day and blues up to 20 pounds are not uncommon (Table 12). The current lake record weighs 66 pounds. Blue catfish anglers usually fish in the warm water portion of the lake in the winter months for trophy sized fish.

Forage

Threadfin shad and inland silversides dominate the forage base available to predators. These two forage fish are small in size when compared to a gizzard shad forage base. As a result, smaller sized predators have higher relative weight values than larger sized predators. For example, crappie have excellent body condition while white bass >12 inches have consistently poor body condition factors. Also, striped bass and hybrid stripers < 12 inches have higher condition values than larger fish. Threadfin abundance had been high and fairly stable since 2000 but a declining trend started in 2005. In 2007, only six individuals were collected (Table 13) (Figure 7). The gizzard shad population is made up of fish too large to be eaten by most predators and range from 12 to 16 inches. Only rarely do gill net samples collect gizzard shad <10 inches (Table 14) (Figure 8). Gizzard shad abundance levels had been stable until 2007 when numbers fell off sharply. Bluegill abundance appears to be adequate due to the extensive areas of aquatic vegetation.

Threats to Fishery

Three invasive species were first identified in Sooner Lake during 2006. By 2007, zebra mussels have become well established in the main body of the lake but few individuals were observed on the warm water side of the lake. A record number of veligers (>600/l) was enumerated in 2007. The decline in shad abundance may be associated with the reduction in plankton abundance attributed to zebra mussels.

White perch abundance increased from 10 individuals in 2007, to 53 in 2008 but most individuals were Age 0 (Table 15) (Figure 9). Both white perch and zebra mussels were probably pumped into the lake from the Arkansas River by O G & E during regular water level maintenance.

The third species is hydrilla, a prohibited aquatic plant located adjacent to the West boat ramp. Herbicide treatments, consisting mainly of aquathol, were applied in 2007 and 2008 with follow up treatments scheduled for 2009. Although the size of the affected area is small, it is slowly expanding.

Management Objectives

Largemouth bass

The largemouth bass fishery at Sooner Lake can be described as very good to excellent. Total bass abundance is very high (C/f>80) and catch rates for fish >14 inches ranges from 19-47 bass per hour in recent sample years (Table 2). Recent age and growth data indicated strong recruitment each year and fast growth (Figure 3). Bass anglers can rely on Sooner Lake to be stable and clear when other area lakes are turbid and in the flood pool. Sooner Lake is THE destination for "big bass" in north central Oklahoma and south central Kansas due to the Florida bass stocking program. Bass weighting from 8-11 pounds are landed each year during bass

tournaments. Maintaining adequate levels of Florida and/or F1 phenotype >15 percent is necessary for continued stockings and Sooner lake has exceeded that criteria even though stocked at 5/acres. Twenty fingerlings per acre is the recommended stocking rate. Some of the best bass habitat is located on the warm water side of the lake and adjacent to the west ramp, so, Florida bass are stocked into prime habitat.

Electrofishing sampling should be conducted every other year due to the high profile status of the lake. Florida bass stockings should be made every other year with tissue samples from Age 1 bass collected the spring after each stocking to evaluate the percentage of Florida alleles.

Numerous marked and unmarked brush piles were constructed for fish attractors prior to impoundment. After receiving input from bass anglers, sixteen brush piles have been constructed since 2005 in locations and depths targeting largemouth bass.

Hybrid white bass x striped bass

Since Sooner lake has been stocked on a regular basis for 31 years, most area striper/hybrid anglers and guides are familiar with this fishery. Sooner Lake is not noted for big hybrids but for numbers. The heaviest hybrids collected in recent gill net samples range from 3.4 - 3.9 pounds. Abundance levels for hybrids <20 inches exceed the minimum values while hybrids >20 inches are equal to the minimum value. Age and growth data has been collected since impoundment and indicates moderate growth to 18 inches then a slow down.

Annual gill net sampling should continue and age and growth data collected. Annual fingerling stockings should be maintained at 10 per acre. Stockings can be adjusted if growth rates slow and body condition factors decrease and remain low. If zebra mussels are responsible for the decreasing abundance of threadfin and gizzard shad, reductions in hybrid stocking rates may have to be made.

Striped bass

Since Sooner Lake has proven it can produce trophy sized striped bass, periodic stockings should be continued. Fingerling stockings at the rate of 1 to 2 fish per acre every second or third year should be adequate. With these low stocking rates, gill netting catch rates range from 0.24 to 0.96 per day and usually only catch smaller sized fish. However, feedback from anglers and guides have proven valuable over the years in evaluating this fishery. Striped bass up to 20 pounds have been verified. Since hybrid striped bass rarely achieve a trophy size in Sooner Lake, striped bass are the answer for a trophy sized Morone.

Blue catfish

At the present level of abundance, blue catfish generally have acceptable body condition factors. No age and growth data is available from Sooner. Without any management effort, blues continue to maintain a stable population and produce trophy sized fish. Few anglers target blue catfish but creel information is lacking.

Table 1. Species, number and size of fish stocked in Sooner Lake, 1977-2009.

DATE	SPECIES	NUMBER	SIZE
1977	Channel catfish	110,000	3-5 inch
1977	Hybrid striped bass	300,000	fry
1977	Largemouth bass	100,000	fingerling
1977	Largemouth bass (Florida)	125,000	fingerling
1978	Hybrid striped bass	316,000	fry
1980	Hybrid striped bass	218,500	fry
1980	Threadfin shad	9,300	adults
1982	Hybrid striped bass	540,000	fry
1983	Largemouth bass (Florida)	20,000	2 inch
1984	Hybrid striped bass	540,000	fry
1984	Largemouth bass (Florida)	17,109	2.5 inch
1984	Threadfin shad	2,448	adults
1985	Channel catfish	54,000	4 inch
1985	Threadfin shad	8,000	3 inch
1986	Hybrid stripers	276,000	fry
1986	Largemouth bass (Florida)	54,893	1-2 inch
1987	Hybrid stripers	550,000	fry
1988	Channel catfish	37,100	4 inch

1989	Hybrid stripers	69,600	1.5 inch
1990	Striped bass	12,000	fry
1990	Hybrid striped bass	57,914	1.75 inch
1990	Channel catfish	139,168	3 inch
1991	Hybrid striped bass	55,325	1.25 inch
1991	Channel catfish	134,767	3 inch
1992	Striped bass	200,000	fry
1992	Hybrid striped bass	54,000	1.5 inch
1992	Striped bass	5,000	2 inch
1992	Channel catfish	61,835	4 inch
1992	Channel catfish	74,448	3.3 inch
1993	Hybrid striped bass	55,200	1 inch
1993	Saugeye	112,895	1.5 inch
1993	Saugeye	475,000	fry
1995	Saugeye	108,300	1.5 inch
1995	Hybrid stripers	54,000	1.5 inch
1996	Striped bass	200,000	FRY
1996	Striped bass	5,500	1.25 inch
1996	Hybrid striped bass	51,060	1.75 inch
1997	Saugeye	1,000,000	FRY
1997	Saugeye	180,659	1.25-2.0 inch
1997	Hybrid striped bass	51,060	1.75 inch
1997	Hybrid striped bass	54,000	2.0 inch
1998	Hybrid striped bass	61,900	1.5 inch
1998	Striped bass	10,235	1.5 inch
1998	Striped bass	700,000	Fry
1999	Saugeye	110,677	2.0 inch
1999	Hybrid striped bass	55,950	2.0 inch
2000	Hybrid striped bass	54,200	2.0 inch
2001	Largemouth bass (Florida)	185	3.0 inch
2002	Hybrid striped bass	58,535	1.5-2.0"

2002	Largemouth bass (Florida)	27,027	3.0 inch
2003	Hybrid stripers	28,545	1.5 inch
2003	Striped bass	28,420	1.25 inch
2003	Largemouth bass (Florida)	28,515	3.0 inch
2004	Hybrid stripers	27,200	1.5 inch
2005	Hybrid stripers	56,600	1.5 inch
	Largemouth bass (Florida)	16,040	3.0 inch
2006	Hybrid stripers	16,947	3.0 inch
2007	Striped bass	500,000	Fry
2007	Hybrid stripers	53,470	1.5 inch
2007	Striped bass	5,175	2.0 inch
2007	Striped bass	25,000	1.5 inch
2008	Striped bass	47,000	1.25 inch
2008	Hybrid stripers	27,230	1.5 inch
2009	Striped bass	28,200	2.0 inch
2009	Hybrid striped bass	25,000	2.0 inch

Table 2. Total number (No.), catch rates (C/f=catch/hour), and relative weights (W_r) by size groups of **largemouth bass** collected by spring electrofishing from Sooner Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥ 90 .

Year	Total ¹ (≥ 40)		<8inch (15-45)		8-12inch (15-30)		≥ 12 inch (≥ 15)		≥ 14 inch (≥ 10)	
	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r	C/f	W_r
1979	123	14.0	1.3		5.9		6.9		1.0	
1980	145	18.7	5.2		6.2		7.4		4.6	
1982	269	34.7	6.3		15.4		13.0		9.2	
1983	251	29.0	8.3		9.0		11.6		4.2	
1985	79	16.0	2.4		7.1		6.5		2.6	
1988	171	124.9	41.6	84	45.3	85	38.0	93	13.1	98
1989	175	71.7	9.4	86	34.4	85	27.9	85	6.6	92
1990	159	63.6	11.6	86	22.4	82	29.6	83	7.2	87
1991	154	72.0	11.7	89	20.6	87	39.7	87	11.2	91
1993	169	82.0	11.2	83	45.1	82	25.7	83	12.1	86
1996 ³	164	89.1	6.5	83	39.1	81	43.5	78	11.4	81
1998 ³	169	106.3	13.8	78	39.0	83	53.5	86	29.6	86
1999 ³	158	78.2	9.4	77	24.3	79	44.6	80	19.3	80
2002 ³	161	114.2	9.2	88	30.5	92	74.5	87	44.7	86
2004	367	86.4	22.1	94	24.2	90	40.0	87	24.9	86
2006 ³	455	100.9	12.4	91	39.2	86	49.5	83	18.6	84
2008 ³	371	82.4	4.7	89	12.9	89	64.9	85	47.3	85

¹ Spring electrofishing

³ Spring Night electrofishing

Table 3. Age, number, mean length at age and % of sample of **largemouth bass** collected by spring electrofishing from Sooner Lake in 2008.

AGE	NUMBER	MEAN LENGTH	% OF SAMPLE
1	63	8.4"	26
2	47	12.2"	20
3	43	14.1"	18
4	40	16.7"	17
5	30	17.3"	13
6	8	18.3"	3
7	3	19.3"	1
8	1	18.7"	0.4
9	2	19.9"	1
10	1	20.6"	0.4
12	1	18.2"	0.4

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

		Total (≥ 4.8)	<8inch (4.8-7.2)	≥ 8 inch (≥ 1.9)	≥ 10 inch ($\geq .96$)			
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1977	14	3.10	2.60		0.50		0.50	
1978	104	12.5	1.90		10.6		1.00	
1979	55	6.20	0.70		5.50		0.50	
1980	26	3.10	1.00		2.20		0.20	
1982	26	2.40	0.50		2.00		0.70	
1983	39	3.60	1.20		2.40		0.70	
1984	28	2.40	0.20		2.40		0.70	
1985	39	3.80	0.70		3.10		1.40	
1986	34	3.40	0.50		2.90		1.20	
1988	9	1.00			1.00	94	0.70	92
1989	11	1.20	0.70	93	0.50	94	0.20	86
1990	13	1.40	0.20	83	1.00	93	0.50	90
1991	18	1.90	0.50	94	1.40	90	1.20	90
1992	8	0.70			0.70	89	0.20	95
1993	14	1.40	0.70	90	0.70	87	0.50	86
1994	11	1.00	0.20	93	1.00	93	0.70	92
1995	6	0.70	0.20	80	0.50	88	0.50	88
1996	6	0.70	0.20	97	0.50	97	0.50	100
1997	6	0.70			0.70	95	0.20	93
1998	24	2.90			2.90	90	1.90	89
1999	7	0.70			0.70	94	0.70	93
2000	13	1.40	0.20	118	1.20	89	0.70	83
2001	9	1.00			1.00	94	1.00	94
2002	4	0.50			0.50	98	0.20	96
2003	13	1.40	0.50	97	1.00	94	0.70	95

2004	15	1.70	0.20	90	1.20	94	0.20	94
2005	16	1.70	0.20	97	1.70	99	1.00	98
2006	4	0.50	0.20	105	0.50	89	0.20	86
2007	5	0.50	0.50	101	0.20	96	0.20	96
2008	11	1.20	0.20	104	1.00	85	0.50	75

Table 5. Mean length at age of **crappie** collected by gill netting from Sooner Lake. Numbers in parentheses represent values for acceptable growth rates.

Year	Age 1 (≥ 6.3 inch)	Age 2 (≥ 8.0 inch)	Age 3 (≥ 8.9 inch)	Age 4 (≥ 9.8 inch)
1992	9.3	10.2		
1993	7.1	10.1	11.7	
1994	6.5	10.2	11.3	
1995			10.9	11.9
1996	10.0	11.1		
1997	8.5	12.0	12.4	
1998	9.1	10.2		
1999	9.8	11.4	12.1	
2000	8.7	11.3		12.2
2001	9.0	10.9	12.4	
2002	9.3	12.6	11.5	
2003	9.2	11.3		12.6
2004	8.7	10.1	12.4	
2005	9.3	11.7		
2006	9.8	10.5		
2008	9.3		12.6	
Lake Mean	8.9	11.0	11.9	12.2

Table 6. Total number (No.), catch rates (C/f=catch/day), and relative weights (W_r) by size groups of **white bass** collected by gill netting from Sooner Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥ 90 .

Year	Total (≥ 4.8)		<8 inch (≥ 1.2)		8-12 inch (1.2-7.2)		>12 inch (≥ 2.4)	
	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1977	0							
1978	5	0.50					0.5	
1979	120	13.7	10.3		2.9		0.5	
1980	34	4.69	1.4		2.9			
1982	180	17.5			9.6		7.2	
1983	120	11.3	2.9		8.2		5.0	
1984	58	5.3	0.7		4.3		0.2	
1985	218	21.6	13.4		4.8		3.4	
1986	113	10.8	4.3		3.4		1.9	
1988	138	22.1	4.1	87	7.0	82	4.1	78
1989	173	18.7	8.2	91	4.1	85	6.2	79
1990	111	11.5	2.2	85	5.3	82	4.1	75
1991	54	6.0	1.7	87	2.6	83	1.4	72
1992	122	11.8	2.2	87	6.0	81	3.6	75
1993	152	14.4	5.0	91	5.3	82	4.3	75
1994	100	9.4	2.6	86	2.9	81	3.8	76
1995	64	7.0	2.2	84	2.6	81	2.4	74
1996	49	5.5	0.5	87	2.2	85	2.9	84
1997	80	9.1	1.4	88	2.9	81	4.6	78
1998	86	9.8	1.9	86	2.9	81	5.0	76
1999	68	7.7	1.2	84	2.6	81	3.8	75
2000	168	18.2	7.4	90	5.5	83	5.3	77
2001	141	15.6	3.4	84	7.4	83	4.8	73
2002	157	16.6	9.6	88	4.3	84	2.9	80
2003	109	13.0	3.8	87	6.2	79	2.6	72
2004	125	13.7	6.2	91	5.0	85	2.2	77
2005	128	15.6	3.4	90	6.7	85	5.3	79
2006	98	11.8	5.0	81	1.7	75	4.3	71
2007	66	6.7	1.2	87	3.4	83	2.2	80

2008 64 7.0 2.6 84 2.4 80 2.2 74

Table 7. Total number (No.), catch rates (C/f=catch/day), and relative weights (W_r) by size groups of **striped bass** collected by gill netting from Sooner Lake. Acceptable W_r values are ≥ 90 .

Year	Total		<12inches		12-20inches		>20inches	
	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1993	4	0.5			0.5	87		
1994	0							
1995	0							
1996	0							
1997	1	0.2			0.2	86		
1998	6	0.7	0.2	87	0.2	82		
1999	5	0.5			0.5	82	0.2	75
2000	3	0.2			0.2	76	0.2	53
2001	2	0.2			0.2	80	0.2	65
2002	1	0.1			0.1	73		
2003	7	1.0	0.2	83			0.7	70
2004	12	1.4			1.2	84	0.2	68
2005	5	0.7			0.7	79	0.2	74
2006	3	0.2					0.2	73
2007	4	0.5	0.5	88				
2008	14	1.7			1.4	81	0.2	57

Table 8. Total number (No.), catch rates (C/f=catch/day), and relative weights (W_x) by size groups of **striped bass x white bass hybrids** collected by gill netting from Sooner Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_x values are ≥ 90 .

Year	Total (≥ 2.4)		<12 inch (≥ 0.7)		12-20 inch (≥ 1.2)		≥ 20 inch (≥ 0.5)	
	No.	C/f	C/f	W_x	C/f	W_x	C/f	W_x
1977	17	3.8	1.4		2.4			
1978	98	11.8	1.0		10.6		0.2	
1979	36	4.1			3.4		0.7	
1980	28	3.4			1.4		1.9	
1982	49	4.8	3.6		0.5		0.7	
1983	55	5.0	0.2		4.6		0.2	
1984	62	5.5	3.4		1.7		0.5	
1985	51	5.0			4.1		1.0	
1986	21	1.9	0.5		1.2		0.2	
1988	10	1.2			0.2	83	0.7	75
1989	8	1.0	0.1	85	0.2	74	0.5	82
1990	36	3.8	2.4	85	1.0	80	0.5	71
1991	47	5.3	0.2	91	4.8	81	0.2	73
1992	83	7.9	2.6	86	5.3	76	0.1	75
1993	76	7.2	1.9	84	4.8	79	0.7	74
1994	35	3.4			2.9	75	0.5	75
1995	27	2.9			1.9	75	1.0	70
1996	67	7.7	2.2	86	4.8	82	0.7	70
1997	72	8.2	0.2	79	7.2	78	0.7	80
1998	94	10.8	5.0	80	5.5	74	0.2	69
1999	80	8.9	1.9	85	6.2	75	0.7	71
2000	94	10.3	0.5	87	9.4	76	0.2	71
2001	61	6.7			6.2	71	0.5	67
2002	59	6.2	3.4	83	2.6	76	0.2	70
2003	53	6.2	0.2	84	5.8	74	0.1	62
2004	59	6.5	0.7	85	5.5	73	0.2	82
2005	99	12.5	6.7	88	5.0	73	0.7	66
2006	54	6.7	1.0	84	4.6	72	1.2	69
2007	70	7.2	2.2	85	5.0	78		
2008	67	7.7	0.7	87	6.7	72	0.1	69

Table 9. Mean length at age of **striped bass hybrids** collected by gill netting on Sooner Lake. Numbers in parentheses represent regional mean

values for each age.

Year	Age 1 (14.5 inch)	Age 2 (17.9 inch)	Age 3 (19.6 inch)	Age 4 (21.6 inch)
1990	14.7	NS	20.3	21.3
1991	14.8	18.4	NS	
1992	13.7	16.8	21.3	NS
1993	14.4	16.9	19.3	23.6
1994	14.6	17.4	19.0	20.8
1995	NS	17.0	18.9	20.4
1996	14.9	NS	18.2	19.1
1997	15.3	18.2	NS	19.7
1998	14.2	17.0	18.9	NS
1999	14.1	17.0	18.5	20.1
2000	13.9	16.3	17.2	19.3
2001	14.5	16.1	17.4	19.3
2002	NS	16.6	17.8	18.9
2003	13.3	NS		18.5
2004	14.0	16.7	NS	19.2
2005	14.6	16.9	18.3	NS
2006	13.9	17.1	19.2	19.8
2007	13.2	16.5	18.5	
2008	14.2	15.8	17.6	19.1
Lake Mean	14.3	16.9	18.7	19.9

NS= Age class absent, lake was not stocked that year.

Table 10. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **saugeye** collected by gill netting from Sooner Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥ 90 .

Year	Total (>2.4)		<12 inch (≥1.4)		12-16 inch (≥.5)		≥16 inch (≥.05)	
	No.	C/f	C/f	W _r	C/f	W _r	C/f	W _r
1993	42	4.1	4.1	89				
1994	23	2.2	0.2	83	1.9	83	0.1	79
1995	54	5.8	2.2	86	1.4	81	2.2	81
1996	64	7.4			1.9	91	5.5	88
1997	75	8.4	1.9	88			6.5	86
1998	30	3.4	0.2	80	2.6	84	0.7	77
1999	71	7.9	2.4	91	3.8	83	1.7	82
2000	44	4.8	0.2	68	2.6	82	2.2	73
2001	36	4.1	0.2	107	1.2	84	2.9	82
2002	36	3.8			0.2	71	3.6	81
2003	9	1.2	0.5	96	0.2	102	0.7	79
2004	19	2.2	0.2	87	0.2	72	1.9	85
2005	2	0.2					0.2	74
2006	5	0.7					0.7	73
2007	6	0.7	0.2	100	0.2	102	0.5	72
2008	4	0.5					0.5	71

Table 11. Mean length at age of **saugeye** collected by gill netting on Sooner Lake. Numbers in parentheses represent regional mean values for each age.

Year	Age 1 (14.0 inch)	Age 2 (17.2 inch)	Age 3 (20.0 inch)	Age 4 (21.6 inch)

1994	13.5			
1995	NS	16.3		
1996	15.2	NS	17.5	
1997	NS	17.9	NS	19.2
1998	12.7	NS	18.0	NS
1999	NS	15.1	NS	20.7
2000	13.9	NS	17.2	NS
2001	NS	16.1	NS	16.7
2002	NS	NS	18.5	NS
2003	NS	NS	NS	18.0
2004	15.5	NS	NS	NS
2006	NS	16.7	NS	NS
2007	15.4	NS	NS	NS
2008		16.8		

Lake Mean 14.4 16.5 17.8 18.7

NS= Age class absent, lake was not stocked that year.

Table 12. Total number (No.), catch rates (C/f=catch/day), and relative weights (W_x) by size groups of **blue catfish** collected by gill netting from Sooner Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_x values are ≥ 90 .

Year	Total (≥ 2.4)		<12inch (≥ 1.2)		≥ 12 inch (≥ 1.2)		≥ 16 inch ($\geq .7$)	
	No.	C/f	C/f	W_x	C/f	W_x	C/f	W_x
1977	0							
1978	7	1.0	0.7		0.2		0.1	
1979	10	1.2	0.1		1.0		0.2	
1980	5	0.5			0.5		1.0	
1982	1	0.1					0.1	
1983	3	0.2	0.1		0.2		0.2	
1984	8	1.9			0.7		0.7	
1985	1	0.1	0.1					
1986	4	0.5	0.2		0.2		0.2	
1988	8	1.0	0.5	89	0.5	86	0.1	98
1989	5	0.5			0.2	96	0.2	105
1990	5	0.5			0.5	93	0.5	94
1991	3	0.2			0.2	111	0.2	125
1992	5	0.5			0.5	90	0.5	90
1993	4	0.5			0.5	97	0.2	102
1994	5	0.5	0.2	72	0.5	96	0.5	96
1995	11	1.2			1.2	91	1.0	92
1996	12	1.4			1.4	95	1.4	95
1997	6	0.7			0.7	101	0.7	101
1998	10	1.2			1.2	95	1.2	95
1999	8	1.0			1.0	84	0.7	84
2000	9	1.0			1.0	78	0.7	78
2001	5	0.5			0.5	82	0.5	85
2002	11	1.2			1.2	90	1.0	90
2003	4	0.5			0.5	82	0.5	82
2004	2	0.2			0.2	79	0.2	79
2005	4	0.5			0.5	89	0.5	89
2006	14	1.7	0.2	81	1.4	85	1.4	85
2007	8	1.0			1.0	95	0.7	97
2008	18	2.2	0.1	91	1.9	89	1.4	90

Table 13. Total number (No.) and catch rates (C/f=catch/day) of **threadfin shad** and **silversides** collected by spring electrofishing,

gill netting, and seining from Sooner Lake.

Year	Threadfin shad						Silversides	
	Total ¹		Total ²		Total ³		Total ⁴	
	No.	C/f	No.	C/f	No.	C/f	No.	C/f
1980			5	0.5			3439	69
1982			3	0.2			6414	137
1983			148	13.9			6604	141
1984			61	5.5			13447	287
1985			14	1.4				
1986			130	12.5				
1988			57	6.2				
1989	20	8.2	40	4.3				
1990	6	2.4	72	7.4				
1991	1	0.5	22	2.4				
1992			83	7.9				
1993	22	10.7	140	13.2				
1994			69	6.5				
1995			8	1.0				
1996	0	0.0	2	0.2				
1997			0					
1998	10	6.3	52	6.0				
1999			54	6.0				
2000			160	17.3	337	36.5		
2001			24	2.6	330	36.5		
2002			116	12.2	50	5.3		
2003			221	25.9	372	43.7		
2004			263	28.8	221	24.0		
2005			176	21.8	204	25.4		
2006			136	16.3	36	4.1		
2007			2	0.2	4	0.5		
2008			23	2.6	21	2.4		

¹ Spring electrofishing

² Gill netting - 3/4 to 3 inch meshes (>125mm)

³ Gill netting - 1/2 to 5/8 inch meshes (<125mm)

⁴ Seining

Table 14. Total number (No.), catch rates (C/f=catch/day, and relative weights (W_r) by size groups of **gizzard shad** collected by spring electrofishing, gill netting, and seining from Sooner Lake.

Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_x values are ≥ 90 .

Year	Total ¹ (≥ 40)		<8inch ¹ (≥ 20)		Total ² (≥ 4.8)		<8inch ² (≥ 2.4)		Age 0 ³ -	
	No.	C/f	C/f	W_x	C/f	W_x	C/f	W_x	No.	C/f
1977					0.5		1.0			
1978					0.2		0.2			
1979	286	32.7	31.2		5.0		4.8			
1980	91	11.7	10.6		3.6		2.9			
1982	57	7.4	3.1		9.1		4.6			
1983	75	8.7	3.5		3.8		5.0			
1984					3.8					
1985	36	7.2			10.1		2.9			
1986					14.9		3.4			
1988	18	13.1			6.2	88				
1989	96	39.3	0.4		3.1	82	0.5	88		
1990	45	18.0			7.0	86				
1991	30	14.0			2.2	83				
1992					5.5	83				
1993	33	16.0	1.0	85	3.4	82	<0.2	84		
1994					4.8	89				
1995					4.1	84	0.2	76		
1996	29	15.8	0		7.4	85	1.0	83		
1997					1.7	81	0.2	83		
1998	36	22.6	0		7.9	84	1.0	131		
1999	98	48.5	0.5	85	7.9	84				
2000					7.4	83	0.2		2	0.2
2001					10.3		2.4			
2002					5.3		1.7		2	0.2
2003					7.4		2.6		17	1.9
2004					7.7		0.1		0	
2005					4.8		1.7		6	0.7
2006					7.2		0.5		14	1.7
2007					1.9		<0.2		1	0.1
2008					2.4		0.1		0	0.1

¹ Spring electrofishing

² Gill netting - 3/4 to 3 inch meshes

³ Gill netting - 1/2 to 5/8 (<150mm)

Table 15. Total number (No.) and catch rates (C/f=catch/day) of **white perch** collected by gill netting from Sooner Lake.

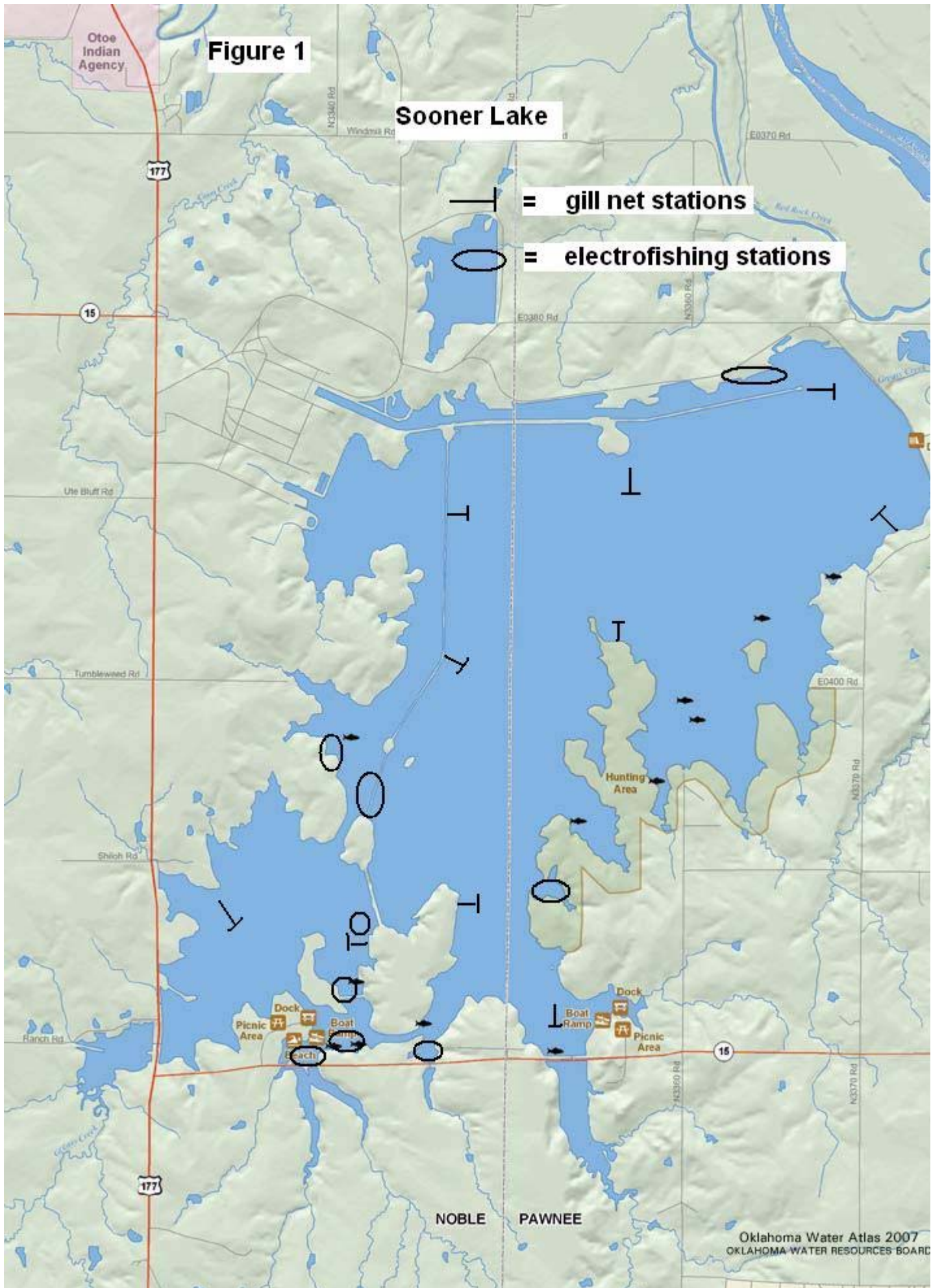
Year	No.	C/f	C/f <6 inches	C/f >6 inches
2006	2	0.2	0.2	
2007	11	1.0	0.5	0.5
2008	53	6.0	4.6	1.5

Figure 1

Sooner Lake

= gill net stations

= electrofishing stations



NOBLE PAWNEE

Figure 4

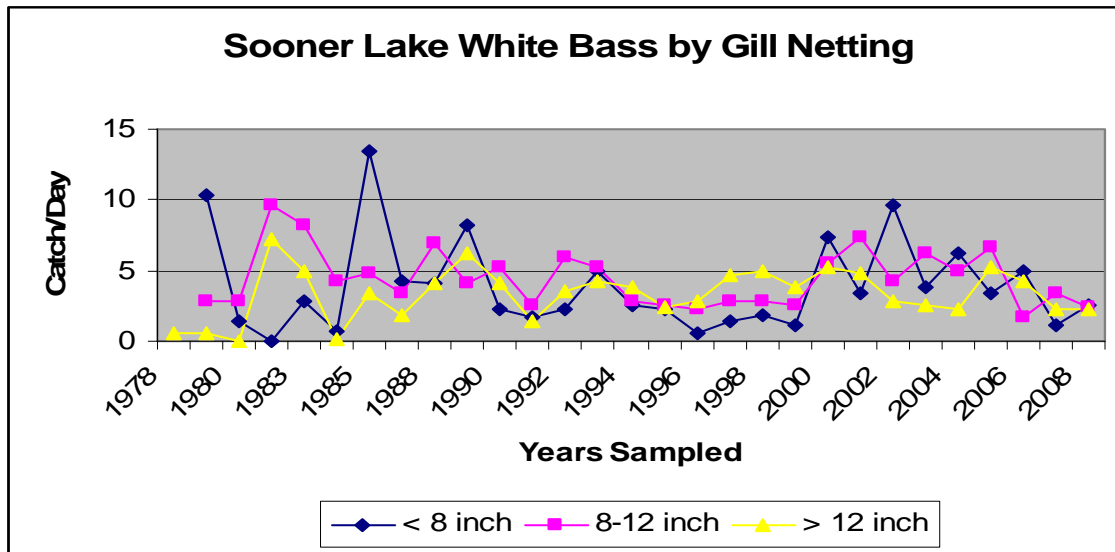


Figure 5

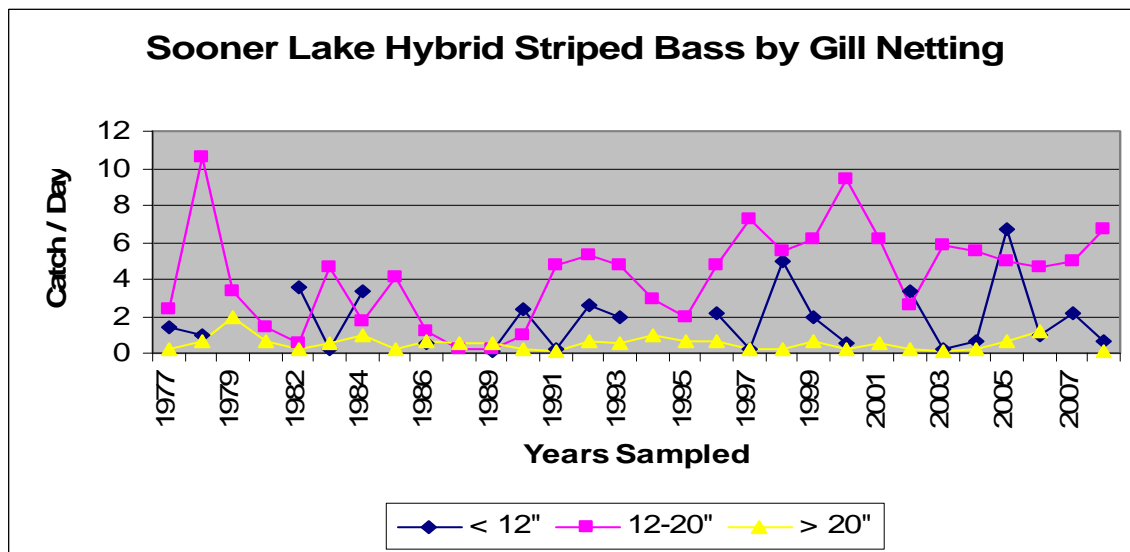


Figure 6

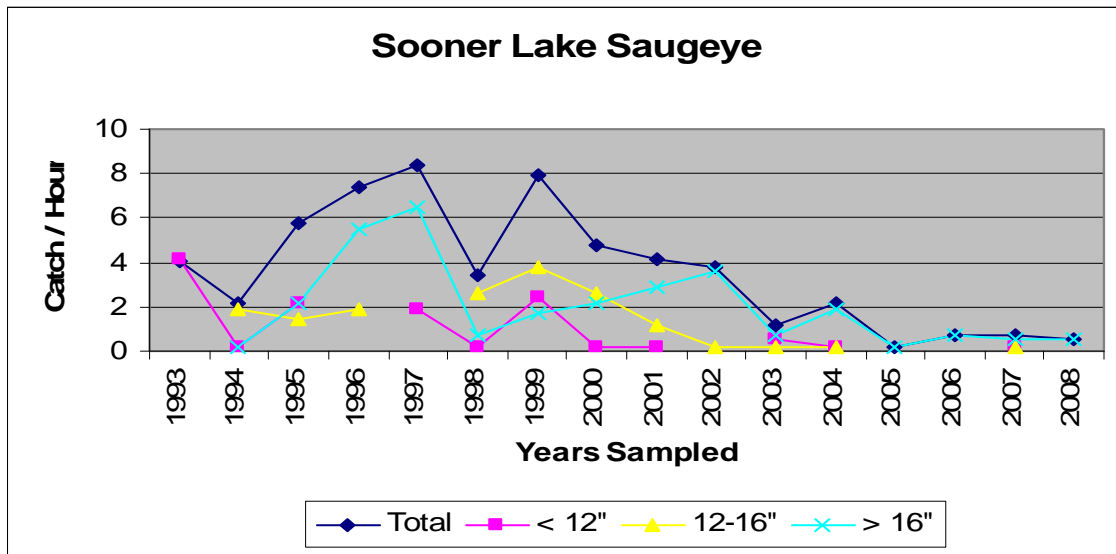


Figure 7

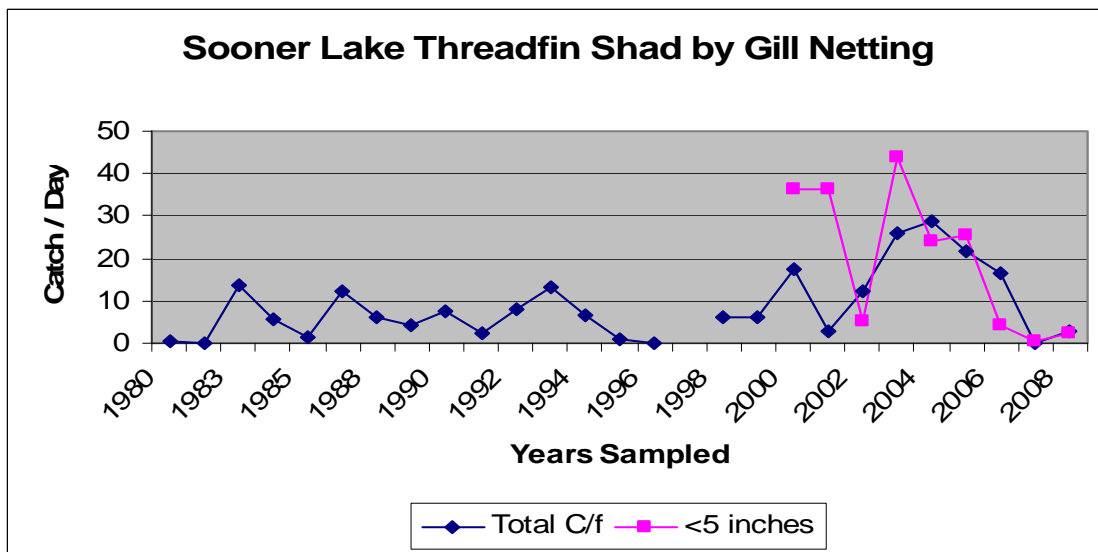


Figure 8

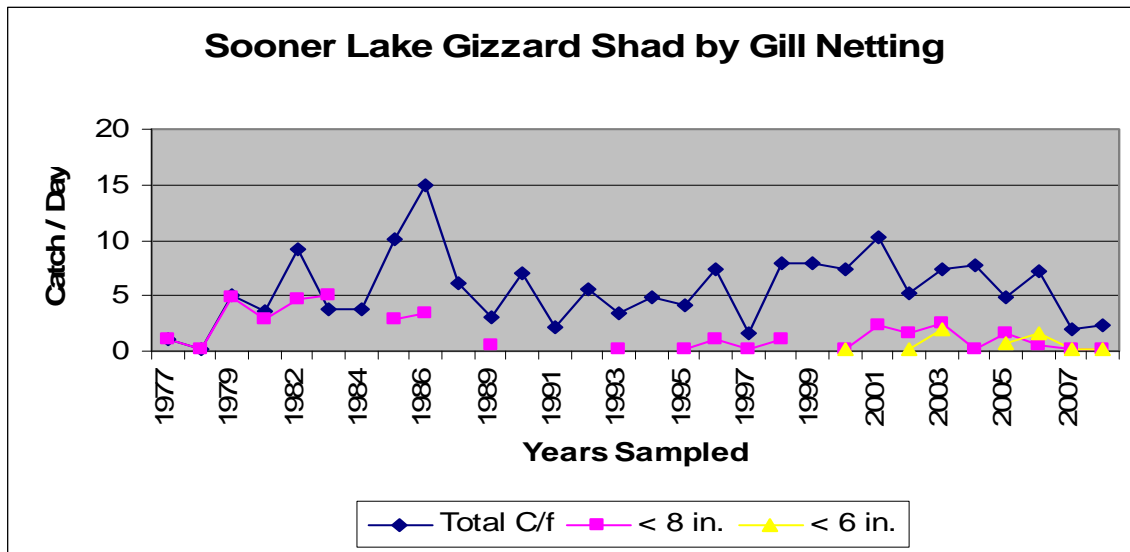


Figure 9

