SKIATOOK LAKE MANAGEMENT PLAN

Background

Skiatook Lake impounds Hominy Creek, 5 miles west of Skiatook in Osage County, Oklahoma (Figure 1). Skiatook Lake covers 10,540 surface acres and was constructed in 1984 by the U.S. Army Corps of Engineers and is one of five projects in the Bird Creek Basin plan to meet the comprehensive water resources needs of the area. Skiatook Lake serves the purposes of flood control, water quality, water supply, recreation and fish and wildlife management. The 350 square mile watershed of Skiatook Lake drains mostly grassland and cross-timber areas. At conservation pool, 714 feet MSL (above sea level), the lake has 160 miles of shoreline. Skiatook Lake has a mean depth of 32 feet, a shoreline development ratio of 11.3 (the ratio between length of shoreline and surface area), a low water exchange rate of 0.5 (inflow/storage capacity) and a secchi disc visibility of around 68

inches in the main pool in August; turbidity is primarily from plankton.

A five year stage fill plan was implemented under a cooperative agreement between the Corps of Engineers and the Oklahoma Department of Wildlife Conservation. The lake was filled in annual stages until reaching normal pool elevation in early 1989. This five year stage fill allowed re-growth of cleared timber in some areas of the lake which provides some shoreline cover. Seventeen large brush rows were constructed in the cleared area of the lake prior to impoundment.

In 2004, ten new brush piles were constructed throughout the reservoir and marked with buoys for anglers. In 2002 and 2003, aquatic vegetation (water willow) was transplanted into the reservoir to establish weed beds for protective escape cover in largemouth bass habitat.

Fish habitat consists primarily of rocky shorelines, flooded timber and aquatic vegetation, primarily water willow. Although some limestone rock can be found in the lower pool, sandstone is the primary rock that lines the shoreline. A total of 4.9 miles of rip-rap habitat is

found in three locations: on the face of the dam (1.4 miles), along Highway 20 that crosses mid-lake (1.9 miles) and along a county road above Twin Points recreation area (1.6 miles). There are five major areas of flooded timber: the upper-end of Hominy Creek, Wildhorse Creek, Bull Creek, Cedar Creek and Turkey Creek. Water willow is slowly spreading where suitable habitat occurs and is located primarily in Osage Cove and the upper reaches of Turkey Creek. Skiatook lake is very scenic with rock bluffs, islands, clear water and cross-timbers on the horizons.

Water quality

Chemical properties measured by the Oklahoma Water Resources Board from November 2006 to August 2007 stated the trophic state index (TSI) using chlorophyll-a averaged 47 and classified Skiatook Lake as mesotrophic, indicating moderate levels of primary productivity and nutrient levels. Thermal stratification occurs throughout the lake during late summer. Depth of stratification in the lower and mid pool areas of the lake ranges from 20 to 30 feet with corresponding temperatures of 83.3 to

78.8 degrees. Conductivity is low and ranges from 230 to 260 umho/cm at the surface.

History of Fishery

Largemouth bass

The largemouth bass fishery at Skiatook Lake can be described as fair to good. Electrofishing catch per hour (C/f) has ranged from 36 to 99 bass/hour, with a recent 6 year mean of 48 fish/hour. Total bass abundance is just above the acceptable value for a quality fishery (C/f=40) and catch rates for bass >14 inches ranges from 3-9 bass/hour and is below the acceptable value of 10/hour. (Table 2, Figure 2). However, shortly after impoundment, from 1988 through 1997, quality largemouth bass abundance was much higher and ranged from 10-19 bass/hour. Competition with the emerging spotted, and smallmouth bass populations as well as the ending of the stage fill plan in 1989 may be contributing factors to this decrease in abundance.

In the fall of 2001, tissue samples from 50 largemouth bass, collected throughout the reservoir, were

tested for the presence of Largemouth Bass Virus. Results concluded that the virus was present in the bass population but no bass fish kills have ever been reported in the history of the lake. A 14 inch minimum length limit was imposed on all black bass prior to impoundment to minimize the potential for over harvest.

In 2002, 2003 and 2005 Florida largemouth bass were reintroduced into Skiatook Lake in order to enhance the genetic structure of the largemouth bass population (Table 1). In 2006, the Florida stockings were evaluated using electrophoresis indicating 15% of Age-1 largemouth bass collected were pure Florida bass and 3% were F1 (first generation Florida x Northern crosses). These results were considered very good considering the numbers and size of the bass stocked (Table 1).

In spring of 2009 age and growth data were collected from the largemouth bass sample (Figure 3). Growth rates were fair with bass at Age 3 reaching 13.4 inches and 14.8 inches at Age 4. The current lake record for largemouth bass is 9.3 pounds and was 23.5 inches in length.

Spotted bass

The abundance of spotted bass increased abruptly in 1994 with the first night electrofishing sample (Table 4, Figure 4). It appears spotted bass are more readily captured at night as 2004 and 2009 catch rates exemplify. Due to slow growth rates, few spotted bass reach harvestable size (>14 inches). In 1997, the 14 inch length limit was removed on spotted bass to encourage harvest of smaller size fish and prevent stockpiling and in 2009 a regulation change removed the creel limit on spotted bass to encourage additional angler harvest and thereby reduce competition with largemouth and smallmouth bass.

Smallmouth bass

Reservoir-strain smallmouth bass were stocked in 1990 and 1991 and natural reproduction occurred the following year (Table 1). Electrofishing catch rates remain low (C/f<15) because largemouth bass is the targeted species

and are found in different habitat (Table 5, Figure 5). During spring night electrofishing, Age 1 smallmouth bass dominate the rip-rap at the dam indicating consistent recruitment with suitable habitat. Angler feedback through bass tournaments and the lake record program indicate a quality fishery. The current lake record is 6.6 pounds.

There is a 14 inch minimum length limit on smallmouth bass.

White crappie

Skiatook Lake has historically produced a marginal crappie fishery as measured by gill netting. The abundance of crappie collected by gill netting (C/f number per 24 hours) has been below the acceptable value (C/f>4.8) in half the samples (Table 6). However, due to increased threadfin shad abundance starting in 2004, the numbers of quality sized crappie (>10 inches) and crappie growth rates, increased (Table 6 and 7, Figure 6).

White bass

White bass were initially collected in Skiatook in 1993 and were probably introduced by an angler.

Abundance has fluctuated as strong year classes move through the population. Gill net catch rates are high and have ranged from 3.4 to 15.1 per day in recent sample years (Table 8, Figure 7). Due to increased numbers and direct competition with hybrids the white bass daily creel limit and size limit was removed in 2003.

The daily limit for striped bass hybrids and white bass was initially 5 fish (combined) with only 2 over 25 inches. In 2003 the limit was changed to 5 hybrids of which only 2 may be 20 inches or longer while the white bass daily limit and size limit was removed.

Hybrid white bass x striped bass

Skiatook Lake has received an annual stocking of hybrids since 1985 and most year classes have been strong. The abundance of hybrid striped bass continued to be high in recent years (Table 9, Figure 8). However, during the drought year of 2006 with the lake 8 feet below normal pool, the gill netting catch rate was near a record high (C/f=24.2). Low water levels may have

concentrated the hybrids and made them more vulnerable to netting. By the fall of 2008, following two years of flood releases, catch rates fell below average (C/f=7.2) and catches of hybrids in Bird Creek were reported. Hybrids will emigrate through dams during high flood water releases.

Age and growth data has been collected since 1990 and indicates moderate growth rate with hybrids reaching 15.1 inches at Age 1 and 17.8 inches at Age 2 (Table 10). Condition values have been below the recommended values in recent sample years.

The daily limit for striped bass hybrids and white bass was initially 5 fish (combined) with only 2 over 25 inches. In 2003 the limit was changed to 5 hybrids of which only 2 may be 20 inches or longer while the white bass daily limit and size limit was removed.

Walleye

Walleye were initially stocked shortly after impoundment (1985-1989) and again in 2008 and 2009 (Table 1). Although stockings were successful, and reproduction occurs annually, abundance levels have been low (Table

11). Age data indicates fast growth rates with fish reaching legal size (18 inches) after three years. An 18 inch minimum length limit was initiated in 1994.

Recent stockings were made to increase abundance levels and also to introduce different genetic material that may be better suited for Skiatook Lake. Fish stocked in the 1980's were from northern states while the more recent stockings were from Nebraska broodstock.

Blue catfish

Blue catfish were stocked from 1985, 1986 and 1988. Abundance has been generally low with few fish over 16 inches being caught in gill net surveys (Table 12 Figure 9). Gill net catch rates in recent sample years range from 0.7-5.5 per day. Blue catfish inhabit the upper reaches of the lake as well as the flooded timbered coves and arms.

Forage

Gizzard shad and threadfin shad are the dominate forage fish species. Total gizzard shad abundance has fluctuated widely over the years with recent gill net

catch rates ranging from 2.9 to 10.1 per day. The abundance of gizzard shad <8 inches has been marginal with catch rates ranging from 0.5 to 5.8 per day (Table 13, Figure 10).

Threadfin shad were first collected in 1998 and probably introduced by an angler. Initially, abundances were low and a winter kill in 2000 further reduced the population. After restocking threadfin shad in 2001 an increasing trend developed and peaked in 2006 with a gill net catch rate of 45.6 per day (Table 14, Figure 11). The condition values of most sport fish in Skiatook Lake indicated adequate forage abundance (Table 2-9).

Threats to fishery

The presence of zebra mussels in Skiatook lake was confirmed in 2010. Zebra mussels compete directly with not only shad but all planktivorus young game and forage fish. It will be several years before the full impact of Zebra mussels is known. The spread of Zebra mussels is usually by boaters from an infested body of water. Anglers and boaters can clean off boats, motors and trailers and empty bait buckets and live wells in the

same place where they were filled to prevent the transport of aquatic invaders.

Anglers need to be aware of the proximity of white perch to Skiatook Lake. White perch is an invading species that can have very sever effects on our native fisheries. Reproducing populations occur in Kaw, Keystone and Sooner lakes and the Arkansas River. White perch are related to white bass and are very prolific; are egg predators; reproduce before white bass; compete with other predators for food; rarely exceed 12 inches in length and can take over a lake by their overwhelming numbers. Anglers must be careful not to mistake white perch for white bass since the two species are similar in appearance.

Management Objectives

Largemouth bass

Since total largemouth bass abundance is just above the acceptable level (C/f=40/hour) and quality sized bass (>14 inches) has been below the acceptable value,

(C/f=10/hour) efforts have been made to increase largemouth bass densities by introductions of water willow in 2003 and 2004. Additional aquatic plant introductions are planned in the future. By increasing the amount of aquatic vegetation in the reservoir, the amount of protective, escape cover for small fingerlings will increase resulting in higher abundances of largemouth bass overall in Skiatook Lake.

The management goal is to reach or exceed the acceptable catch rate for quality sized bass (>10 per hour).

When fish are available, stockings of Florida largemouth bass should be made at the recommended stocking rate since past stockings where successful. Electrofishing sampling should be conducted every other year and to coincide with each Florida bass stocking to evaluate the percentage of Florida alleles.

Hybrid white bass x striped bass

Fall gill net sampling should be conducted every other year and age and growth data collected. Annual fingerling stockings should be maintained at 10 per acre.

Since zebra mussels compete directly with gizzard and threadfin shad, hybrid stocking rates may have to be reevaluated. Stockings can be adjusted if growth rates slow and body conditions decrease. The target catch rate should be between 5-10 per net day.

Walleye

Future gill net surveys will be used to evaluate the 2008 and 2009 stockings and their eventual offspring. Hopefully, walleye abundance will increase due to the introductions of different genetic material from the Nebraska broodstock. The goal is to reach the minimum acceptable gill netting catch rate of 2.4 walleye per day.

Table 1. Species, number and size of fish stocked in Skiatook Lake from 1984 - 2010.

DATE	SPECIES	NUMBER	SIZE
1984	Bluegill	1,010,191	1.0 inch
1985	Walleye	550,000	Fry
1985	Largemouth bass (Florida)	54,800	1.5 inch
1985	Largemouth bass (Native)	149,000	2 inch
1985	Hybrid stripers	27,500	1.5 inch
1985	Channel catfish	50,577	1.0 inch
1985	Blue catfish	53,934	1.5 inch
1985	Bluegill	418,000	1.0 inch
1986	Walleye	1,200,000	Fry
1986	Hybrid stripers	300,000	Fry
1986	Largemouth bass (Florida)	122,470	1.5 inch
1986	Largemouth bass (Native)	30,000	3.5 inch
1986	Channel catfish	95,551	5.6 inch
1986	Blue catfish	41,846	5.0 inch
1987	Walleye	742,500	Fry
1987	Hybrid stripers	750,000	Fry
1987	Hybrid stripers	55,000	1.5 inch
1987	Channel catfish	26,612	3 inch
1987	Channel catfish	38,280	4 inch
1988	Channel catfish	71,699	8 inch
1988	Walleye	92,000	1.5 inch
1988	Hybrid stripers	8,844	2.5 inch
1988	Hybrid stripers	82,849	1.5 inch
1988	Blue catfish	21,721	4 inch
1989	Walleye	94,220	1 inch
1989	Walleye	11,000	1.5 inch
1989	Hybrid stripers	36,300	1.7 inch
1989	Hybrid stripers	13,700	2.5 inch
1990	Threadfin shad	4,250	1-2 inch
1990	Hybrid stripers	100,070	1.5 inch

1990	Smallmouth bass	109,506	1.5 inch
1990	Channel catfish	260,298	3-5 inch
1991	Smallmouth bass (Lake Strain)	105,200	1½ inch
1991	Hybrid striped bass	104,605	1½ inch
1992	Hybrid striped bass	104,200	1-1½ inch
1992	Channel catfish	260,500	3 inch
1993	Hybrid striped bass	38,500	1 inch
1993	Hybrid striped bass	67,000	1.25 inch
1994	Hybrid striped bass	104,925	1.5 inch
1995	Hybrid striped bass	82,654	1.5 inch
1995	Hybrid striped bass	21,400	1.75 inch
1996	Hybrid striped bass	105,000	1.25 inch
1997	Hybrid striped bass	98,313	1.75 inch
	Hybrid striped bass	40,710	2.0 inch
1998	Hybrid striped bass	105,000	1.5 inch
1999	Hybrid striped bass	105,400	1.5 inch
2000	Hybrid striped bass	10,730	2.5 inch
	Hybrid striped bass	95,000	1.75 inch
2001	Hybrid striped bass	105,000	1.25 inch
2002	Hybrid striped bass	110,450	1.5 inch
	Florida largemouth bass	7,585	3.0 inch
2003	Hybrid striped bass	110,425	1.5 inch
	Florida largemouth bass	74	14 inch
	Florida largemouth bass	103,000	1.5 inch
2004	Hybrid striped bass	108,000	2.0 inch
2005	Hybrid striped bass	105,865	1.5 inch
2005	Florida largemouth bass	210,858	1.5 inch
2007	Hybrid striped bass	106,424	1.5 inch
2008	Hybrid striped bass	88,875	1.5 inch
2008	Walleye	300,000	fry
2009	Walleye	106,752	1.3 inch
2009	Hybrid striped bass	85,822	2.0 inch
2009	Hybrid striped	19,980	1.5 inch
2010	Hybrid striped bass	105,444	1.5 inch

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

	Total (≥40)		<8 inch (15-45)		8-12inch (15-30)		≥12inch (≥15)		≥14inch (≥10)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r	C/f	W_r
1986	98	14.1	6.5	99	5.9	101	1.7	96	0.4	99
1987	208	50.1	18.6	84	22.9	93	8.6	99	2.9	110
1988	187	98.9	26.5	79	42.3	93	30.2	102	8.5	108
1989	179	49.2	11.8	82	14.8	89	22.5	100	10.4	106
1990	178	45.2	7.6	81	8.6	90	28.9	97	18.8	100
1991	189	61.0	13.9	81	20.6	86	26.5	96	18.1	99
1992	202	56.7	12.6	78	15.4	85	28.7	93	13.5	97
1994*	228	74.8	8.9	92	29.5	87	36.4	88	10.5	89
1996*	164	43.0	3.4	86	10.5	87	29.1	86	13.4	87
1997*	173	48.9	8.5	87	16.7	84	23.7	84	10.7	87
1998*	113	55.4	15.7	87	19.6	83	20.1	87	9.8	87
1999**	157	38.6	21.6	105	8.8	99	8.1	91	2.5	94
2000*	166	83.0	23.0	91	30.5	91	29.5	87	16.0	87
2001*	180	58.4	12.6	86	27.2	83	18.5	80	5.8	82
2002*	112	46.1	9.1	90	18.5	86	18.5	86	9.1	89
2003*	162	36.0	10.4	89	12.7	88	13.1	89	6.4	90
2004	111	49.3	20.4	82	16.4	85	12.4	85	4.0	86
2006*	232	58.0	15.8	88	25.0	87	18.0	86	8.5	86
2007*	185	41.1	13.1	89	16.7	85	11.3	84	3.3	84
2009	222	46.7	18.3	87	13.1	92	15.4	88	6.7	89

* Spring night electrofishing
**Fall night electrofishing

Table 3. Age, number, mean length at age and % of sample of

largemouth bass collected by spring electrofishing from Skiatook Lake in 2009.

AGE	NUMBER	MEAN LENGTH	% OF SAMPLE
1	79	6.6″	40
2	52	10.9″	26
3	38	13.4	19
4	15	14.8″	8
5	7	15.6″	4
6	4	16.8″	2
8	2	18.3″	1

Table 4. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **spotted bass** collected by spring electrofishing from Skiatook Lake. Acceptable W_r values are $\geq$90.

Total	<8inch	8-12inch	$\geq$12inch	$\geq$14inch

Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r	C/f	W_r
1986	11	1.6	1.4	110	1.7	92				
1987	16	3.9	1.3	90	2.0	105	2.0	104	0.3	117
1988	13	6.9	4.2	75	2.1	114	0.5	84		
1989	9	2.5			1.6	108	0.8	108		
1990	4	1.0			0.5	100	0.5	101	0.3	104
1991	25	8.1	0.3	82	2.3	98	5.4	100	1.0	105
1992	37	10.4	1.7	91	5.6	95	3.1	95	0.8	93
1994*	149	48.9	16.1	79	23.3	79	9.5	81	1.0	80
1996*	172	45.1	6.8	72	18.1	79	20.2	79	4.2	82
1997*	88	24.9	4.8	78	15.5	76	4.5	77	0.8	82
1998*	63	30.9	9.8	71	15.7	76	6.9	82	1.0	83
1999**	138	33.9	19.2	103	9.0	96	5.7	89		
2000*	56	28.0	7.0	85	12.0	88	9.0	84	1.0	78
2001*	65	31.0	12.4	90	14.3	89	4.3	84	1.0	85
2002*	62	25.5	7.0	86	16.9	87	1.6	85	0.4	91
2003*	91	20.2	4.9	91	12.9	90	2.4	87	0.2	85
2004	38	16.9	2.0	91	12.9	86	1.6	80	0	
2006*	135	33.8	9.5	90	18.0	91	6.3	88	0.3	87
2007*	100	22.2	7.6	93	12.9	88	1.8	81	0.4	80
2009	34	7.2	0.6	108	2.7	99	3.2	90	0.2	87

* Spring night Electrofishing
** Fall night electrofishing

Table 5. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **smallmouth bass** collected by electrofishing from Skiatook Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥15)		<8inch -		8-12inch -		≥12inch -		≥14inch (≥2)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r	C/f	W_r
1991[1]	80	30.2	14.3		16.2					
1992[3]	18	5.1	2.3	76	2.5	97	0.3	112		
1993[1]	62	14.8	7.7		3.6	81	3.6	82	0.5	82
1994[2]	47	15.4	5.6		2.0	86	7.9	92	3.3	94
1996[2]	54	14.2	4.5	77	8.1	78	1.6	78	0.3	82
1997[2]	56	15.8	6.8		6.8	81	2.3	80	0.8	78
1998[2]	63	30.9	17.2		8.3	78	5.4	82	1.5	89
1999[1]	78	19.2	12.0	102	4.4	92	2.7	86	0.7	78
2000[2]	34	17.0	3.0	91	6.5	81	7.5	79	2.0	80
2001[2]	49	23.3	20.5	84	1.9	84	1.0	75		
2002[2]	10	4.1	2.5	79	1.2	87	0.4	77	0.4	77
2003[2]	83	18.4	2.7	86	13.1	84	2.7	81	0.9	87
2004	12	5.3	1.8		0.9	84	1.8	80	0.9	90
2006[2]	35	8.8	6.8	84	1.3	86	0.8	83	0.3	82
2007[2]	35	7.8	2.9	81	3.8	79	1.1	76	0.9	77
2009	19	4.0	0.6	81	1.3	86	2.1	82	1.1	80

[1] Fall night electrofishing
[2] Spring night electrofishing
[3] Spring daytime electrofishing

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

	Total (≥4.8)		<8 inch (1.2-7.2)		≥8 inch (≥1.9)		≥10 inch (≥1.0)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1986	55	5.3	3.1		2.2			
1987	37	4.1	1.9	84	2.2	97	0.5	96
1988	52	5.3	1.9	88	3.4	96	0.5	95
1989	42	4.6	1.9	89	2.6	91	0.7	93
1990	33	3.6	1.0	87	2.6	94	0.2	92
1991	42	4.6	1.0	84	3.6	93	0.5	92
1992	22	2.2	1.0	82	1.2	87	1.2	86
1993	34	3.4	1.4	80	1.9	92	0.5	90
1994	24	2.6	1.0	87	1.4	94	1.2	98
1995	61	5.8	2.9	87	2.9	92	1.0	96
1996	48	5.3	3.8	93	1.4	89	0.2	86
1997	29	3.4	2.6	88	0.7	87	0.7	94
1998	49	5.5	3.6	83	1.9	88	0.2	92
1999	49	5.5	2.2	89	3.4	93	1.2	94
2000	43	4.6	0.7	86	3.8	89	2.9	89
2001	17	1.7	1.4	94	0.2	84	0.0	92
2002	25	2.6	2.2	85	0.5	87	0.0	95
2003	25	2.6	1.7	87	1.2	92	0.7	93
2004	43	4.6	1.7	89	3.1	93	1.9	93
2006	39	4.3	1.2	84	3.1	92	1.9	93
2008	56	6.2	1.7	87	4.6	92	2.6	89
2010	54	4.3	2.2	80	2.2	87	1.7	87

Table 7. Mean length at age of **crappie** collected by gill netting from Skiatook Lake. Numbers in parentheses represent values for acceptable growth rates.

Age 1	Age 2	Age 3	Age 4

Year	(≥6.2 inch)	(≥8.0 inch)	(≥9.0 inch)	(≥10 inch)
1992	6.5	8.8	9.7	
1993	6.2	9.3	10.2	
1994	5.5	9.3	12.3	10.9
1995	6.5	8.9	9.5	
1996	5.5	8.6	11.1	10.8
1997	6.5	7.3	9.4	
1998	6.7	7.8	10.1	13.6
1999	7.1	9.9	10.5	11.1
2000	7.1	9.7	10.6	
2001	6.8	9.2	10.4	
2002	6.9	8.3	9.7	12.1
2003	6.5	9.5		
2004	7.6	10.0	11.4	10.4
2006	7.6	10.4	11.5	
2008	7.5	10.1	12.6	12.9
2010	6.4	7.7	11.2	12.2
Lake mean	**6.7**	**9.1**	**10.6**	**11.7**

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

	Total (≥2.4)		<8 inch (≥.72)		8-12 inch (≥1.2)		≥12 inch (≥0.5)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r

1993	11	1.2			1.0	101	0.1	97
1994	10	1.0	0.1	90	0.2	90	0.7	99
1995	23	2.2	0.2	92	0.5	96	1.4	98
1996	73	8.2	1.0	89	0.7	94	6.5	94
1997	8	1.0			0.2	85	0.5	93
1998	40	4.6	0.2	87	1.0	85	3.1	92
1999	127	14.4	3.1	90	9.4	93	1.9	94
2000	124	12.7	1.2	88	6.0	87	5.8	86
2001	33	3.4	0.5	79	0.5	78	2.4	76
2002	32	3.4	0.7	87	1.4	84	1.2	86
2003	51	5.8	0.7	2	1.2	84	3.6	85
2004	120	13.0	5.0	91	5.3	91	2.6	90
2006	137	15.1	3.6	89	5.8	87	5.8	88
2008	129	14.4	4.3	88	4.3	90	6.0	92
2010	78	6.2	0.2	97	1.2	86	5.0	83

Table 9. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **striped bass x white bass hybrids** collected by gill netting from Skiatook Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are $\geq$90.

	Total (≥2.4)		<12 inch (≥.72)		12-20 inch (≥1.2)		≥20 inch (≥.48)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1986	34	3.4			3.4			
1987	22	2.4	1.0	96	1.4	117		

1988	152	15.6	9.8	93	4.8	87	0.7	102
1989	79	8.97	0.5	96	7.2	87	1.2	92
1990	44	4.8	3.6	92	1.0	89	0.2	93
1991	73	7.9	1.7	88	5.5	89	0.7	87
1992	46	4.6	0.7	85	2.6	85	1.2	86
1993	207	20.4	13.9	96	5.8	90	1.0	84
1994	74	7.9	1.9	91	5.5	90	0.2	86
1995	136	13.0	6.5	93	5.8	91	0.7	85
1996	95	10.6	1.7	81	7.4	91	1.4	87
1997	93	10.3	1.0	79	7.4	84	1.9	94
1998	98	11.0	3.6	80	6.0	87	1.2	80
1999	154	17.5	5.5	87	10.3	86	1.7	74
2000	94	9.8	2.4	82	5.5	81	1.7	77
2001	98	10.1	0.7	5	7.93	77	1.4	74
2002	96	9.8	0.5	83	6.57	80	2.9	87
2003	83	9.1	2.6	83	5.5	79	1.2	85
2004	133	14.9	5.8	89	7.9	87	1.4	78
2006	204	24.2	0.0		21.4	82	2.6	79
2008	64	7.2	2.2	85	4.3	81	0.7	77
2010	94	7.7	0.5	78	5.8	78	1.4	75

Table 10. Mean length at age (mm) of **striped bass hybrid** collected by gill netting from Skiatook Lake, 1990 to 2008. Numbers in parentheses represent regional mean values for each age.

Year	Age 1 (14.5 inch)	Age 2 (17.6 inch)	Age 3 (19.4 inch)	Age 4 (21.2 inch)
1990	16.5	19.2		22.8
1991				
1992	15.3	18.9	21.3	22.3
1993	15.6	18.0	19.6	20.6
1994	16.2	18.1	18.8	20.1
1995	15.0	18.5	18.9	19.0
1996	15.4	17.8	19.6	20.8
1997	14.6	17.6	20.4	21.1
1998	14.8	17.5	19.5	20.7
1999	15.1	17.3	18.7	19.6

2000	15.0	17.6	18.5	19.7
2001	14.4	17.0	18.5	19.1
2002	13.5	18.0	19.6	20.4
2003	13.8	16.9	20.0	20.1
2004	15.4	17.7	18.8	19.3
2006	14.6	17.6	18.7	19.6
2008	15.6		18.6	19.3
2010	13.6	17.4	19.3	
Mean	**15.1**	**17.8**	**19.3**	**20.3**

Table 11. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **walleye** collected by gill netting from Skiatook Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are $\geq$90.

	Total (>2.4)		<12 inch ($\geq$1.4)		12-16 inch ($\geq$.5)		$\geq$16 inch ($\geq$.5)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1987	1	0.1					0.1	96
1988	0							
1989	2	0.2	0.1	85			0.1	93
1990	3	0.2			0.1	79	0.2	84
1991	1	0.1					0.1	88
1992	1	0.1					0.1	88
1993	8	0.7	0.2	96			0.7	88
1994	6	0.7	0.1	88			0.5	87
1995	2	0.2			0.1	84	0.1	81
1996	2	0.2	0.2	88				
1997	4	0.5			0.2	84	0.2	85
1998	4	0.5			0.2	84	0.2	82
1999	2	0.2					0.2	82
2000	0							
2001	5	0.5						
2002	6	0.7	0.2	88			0.5	92
2003	7	0.7	0.5	88	0.2	95	0.2	86
2004	15	1.7	0.2	87	0.2	85	1.0	86
2006	2	0.2			0.2	87	0.2	87
2008	7	0.7			0.2	90	0.5	89
2010	1	0.0					0.0	88

Table 12. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **blue catfish** collected by gill netting

from Skiatook Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥2.4)		<12 inch (≥1.2)		≥12 inch (≥1.2)		≥16 inch (≥.7)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1986	5	0.5	0.1		0.5			
1987	5	0.5	0.2	94	0.2	105		
1988	5	0.5	0.2	96	0.2	120	0.1	155
1989	3	0.2	0.1	102	0.2	107	0.2	107
1990	4	0.5			0.5	114	0.5	114
1991	1	0.1					0.1	96
1992	2	0.2			0.2	102	0.2	102
1993	4	0.5			0.5	107	0.5	107
1994	0							
1995	0							
1996	1	0.2			0.2	100	0.2	100
1997	5	0.5	0.2	108	0.2	109	0.2	109
1998	3	0.2	0.2	92	0.2	116	0.2	116
1999	7	0.7	0.7	94	0.2	90		
2000	16	1.7	1.0	93	0.7	85	0.1	90
2001	8	0.7	0.5	93	0.5	92	0.2	94
2002	9	1.0	0.2	8	0.7	86	0.2	92
2003	46	5.5	2.9	90	2.6	86	0.2	88
2004	28	3.1	1.7	88	1.4	88	0.2	88
2006	14	1.4	0.5	91	1.2	86	0.2	88
2008	17	1.9	0.7	90	1.0	88	1.0	88
2010	27	2.2	0.2	86	1.9	82	1.4	82

Table 11. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **gizzard shad** collected by spring electrofishing and gill netting from Skiatook Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are $\geq$90.

	Total* (≥40)		<8inch* (≥20)		Total[2] (≥4.8)		<8inch[2] (≥2.4)		Age 0[1] (<6 inch)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r	No.	C/f
1986	234	59.0	55.0		2.4		2.4			
1987	274	89.3	83.7	91	3.8	81	3.6	80		
1988	172	113.9	95.4	83	0.7	89	0.7	92		
1989	148	42.3	38.6	86	4.8	82	4.6	83		
1990	222	79.9	71.2	79	2.9	86	2.4	86		
1991	114	36.8	26.1	87	0.7	75	0.5	74		
1992	76	21.3	16.9	86	5.0	85	3.6	82		
1993					7.4	84	4.6	84		
1994*	162	79.0	25.9	85	1.4	82	1.0	82		
1995					7.0	79	6.5	79		
1996*	169	157.9	131.8	89	9.6	81	7.2	81		
1997*	165	101.9	62.3	81	6.2	86	2.2	87		
1998*	40	19.6	8.3	87	3.1	79	1.7	82		
1999[3]	138	78.8	39.4	86	3.6	76	2.2	78		
2000*	97	48.5	16.0	86	8.9	79	3.4	82		
2001*	171	162.9	36.2	79	5.5		0.5		19	1.9
2002*					4.8		3.6		12	1.2
2003					10.1		5.8		12	1.4
2004					4.3		2.2		4	0.5
2006					4.1		1.4		2	0.2
2008					2.9		0.5		0	
2010					13.9		6.2		68	5.3

[1]Age 0 shad (<6 inch)
[2] Gill netting
* Spring night electrofishing
[3] Fall night electrofishing

Table 14. Total number (No.) and catch rates (C/f) of **threadfin shad** and **hybrid shad** collected by gill netting from Skiatook Lake.

	Threadfin shad						Hybrid Shad	
	Total[1]		Total[2]		Total Age 0*[3]		Total	
Year	No.	C/f	No.	C/f	No.	C/f	No.	C/f
1998			2	0.5	-	-		
1999			19	2.2	-	-		
2000			36	3.8	-	-	23	2.4
2001			0		0		8	0.7
2002			22	2.2	20	2.2	4	0.5
2003			93	10.3	59	6.7	24	2.9
2004			152	16.6	97	10.6	7	0.7
2006			411	45.6	222	25.2	14	1.7
2008			179	20.4	119	13.2	0	
2010			0		0		10	0.7

[1]* Age 0 shad (<5inch)

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Figure 1

SKIATOOK LAKE

Figure 2

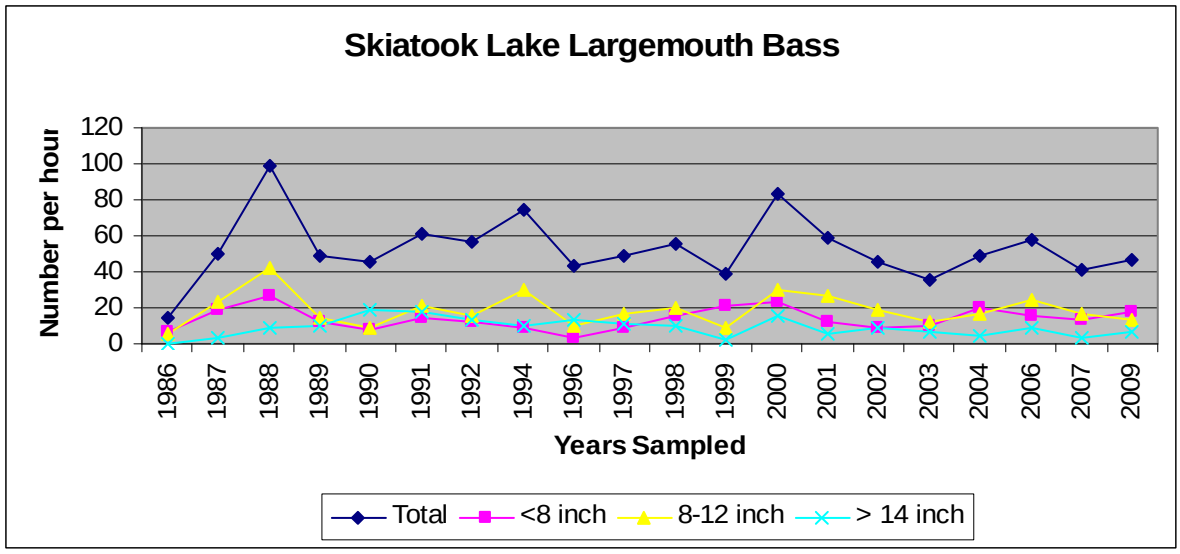


Figure 3

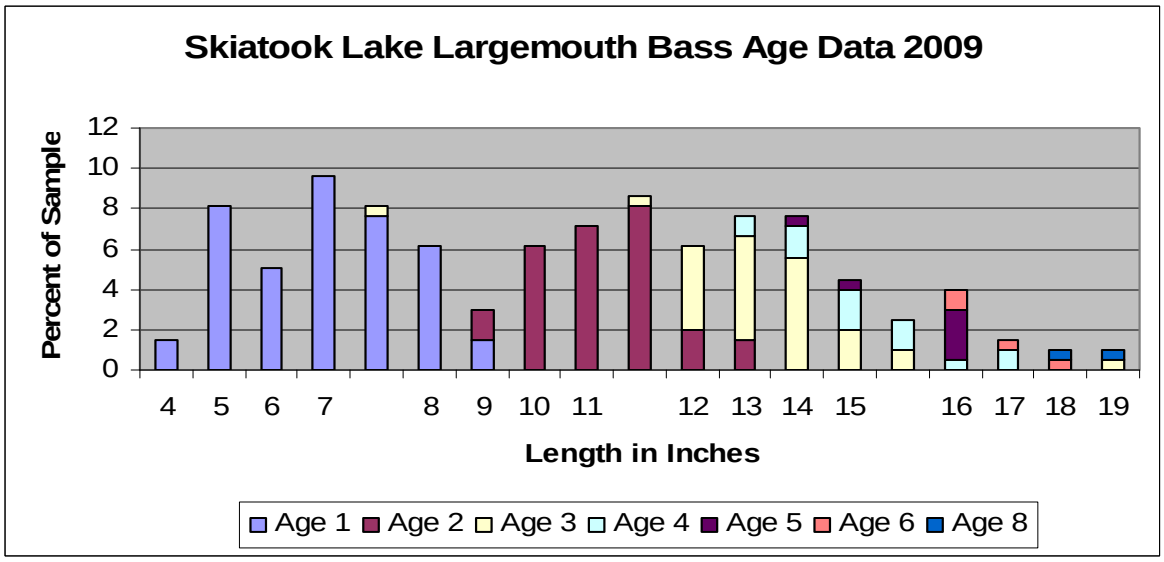


Figure 4

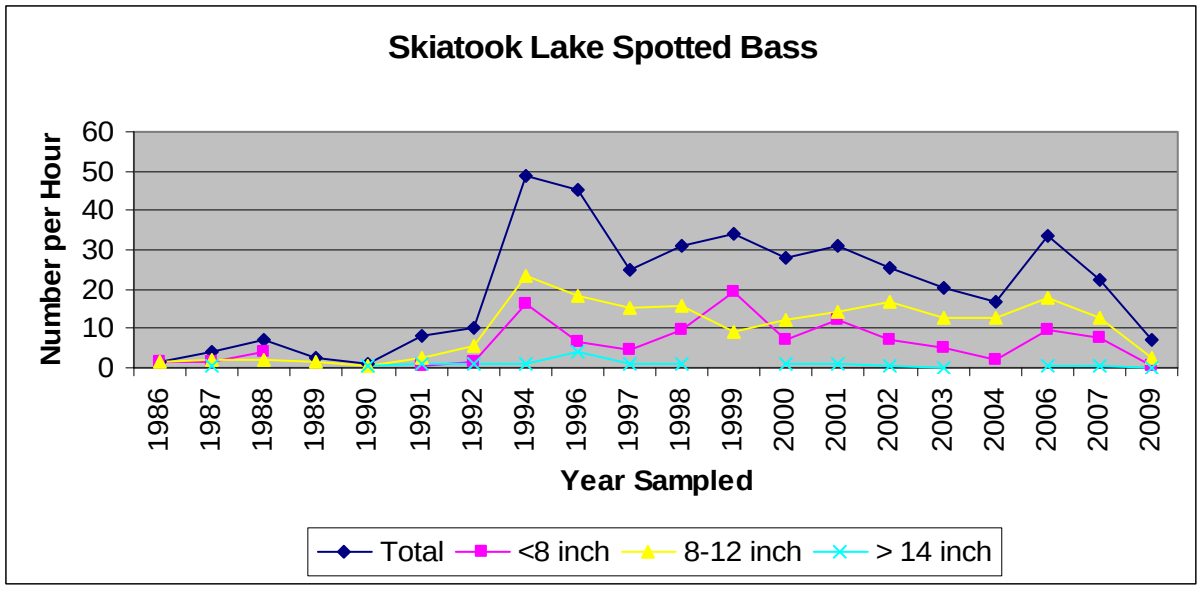


Figure 5

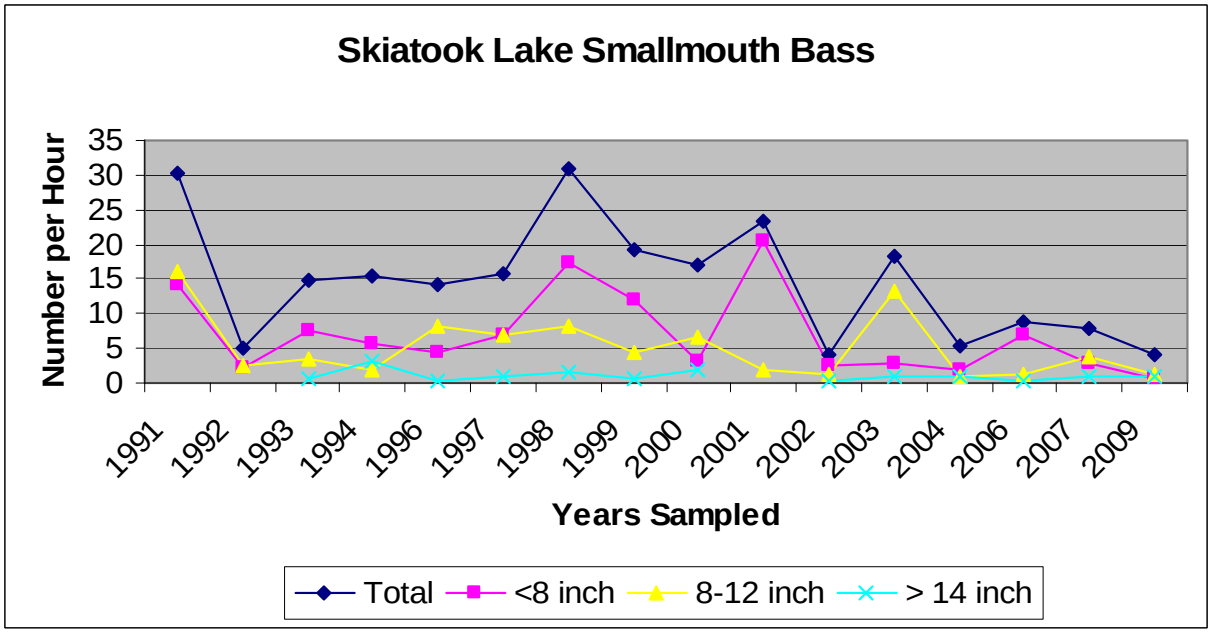


Figure 6

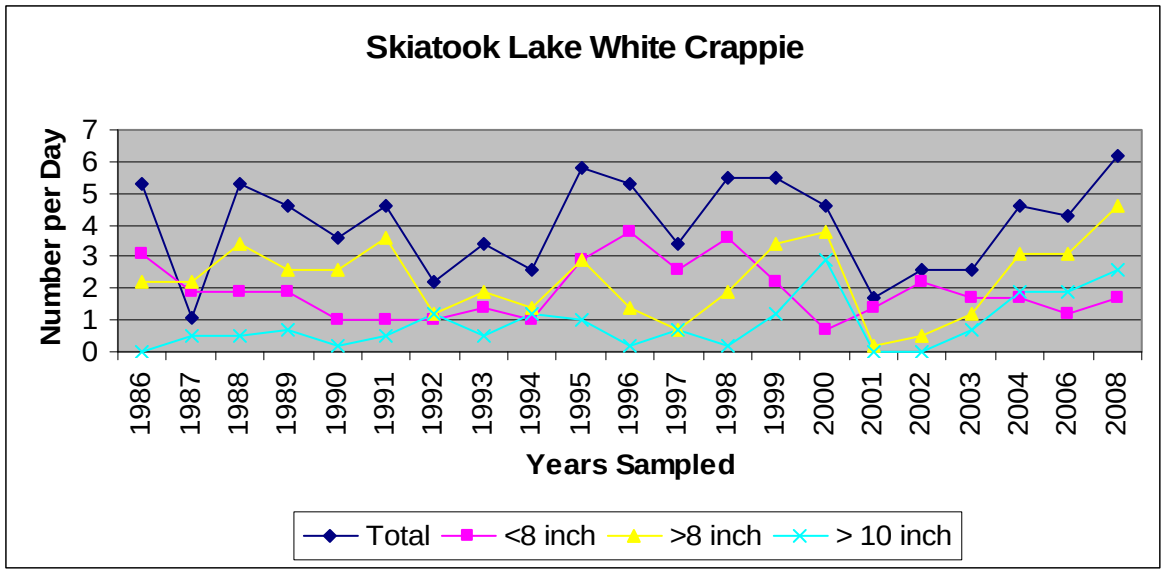

Skiatook Lake White Crappie
Number per Day
0
1
2
3
4
5
6
7
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2006
2008
Years Sampled
Total
<8 inch
>8 inch
> 10 inch

Figure 7

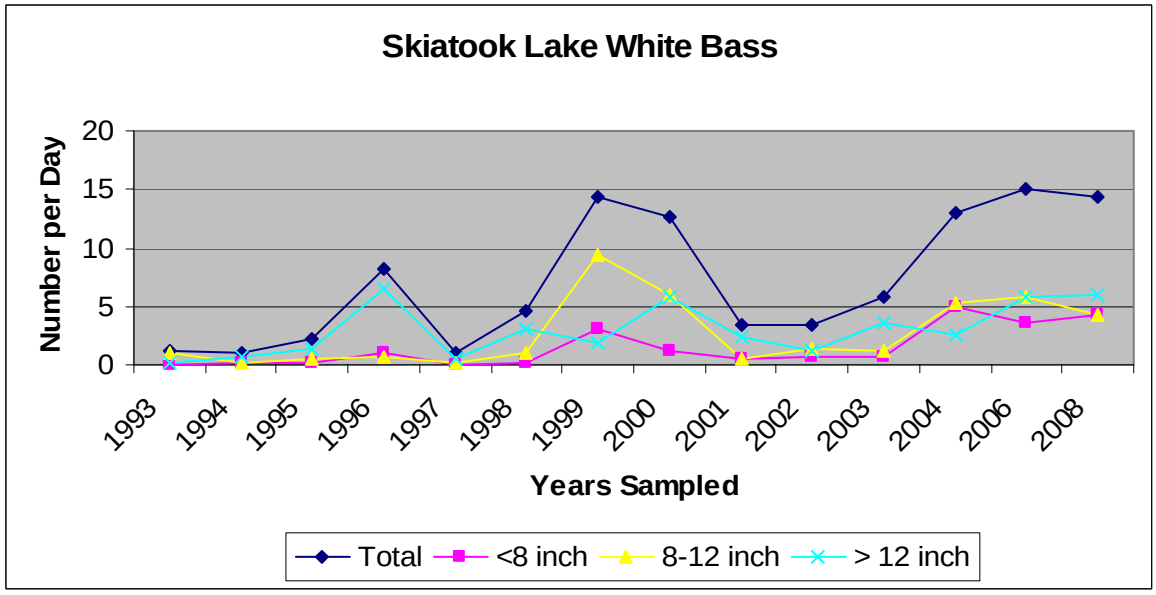

Skiatook Lake White Bass
Number per Day
0
5
10
15
20
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2006
2008
Years Sampled
Total
<8 inch
8-12 inch
> 12 inch

Figure 8

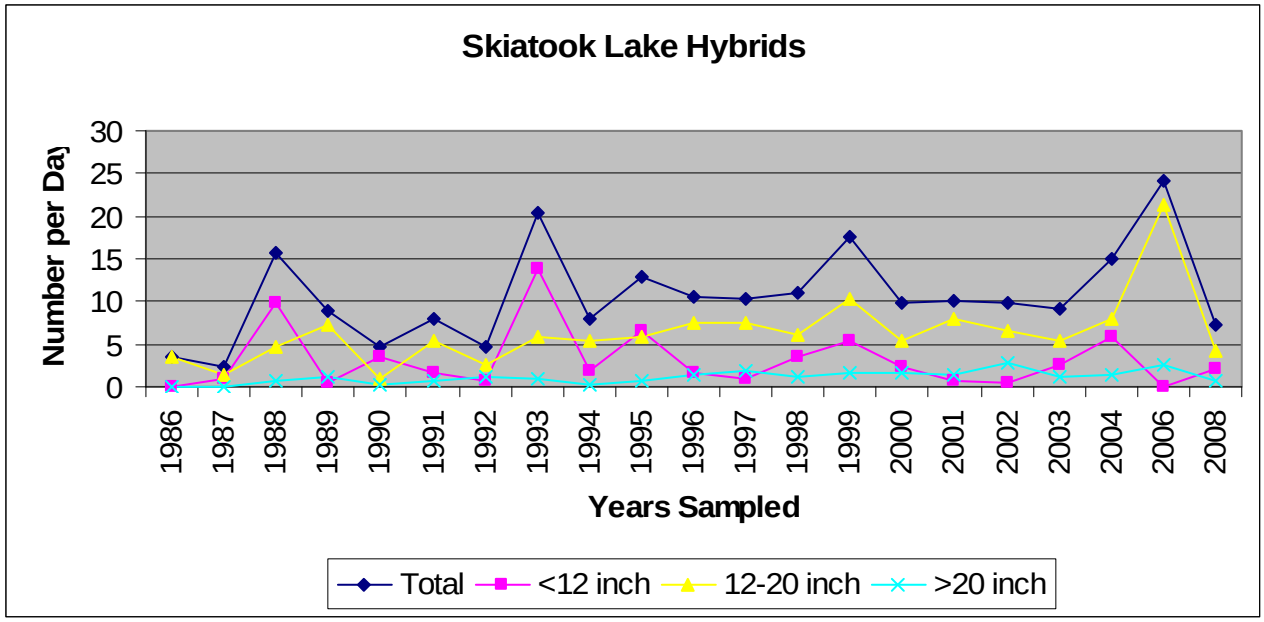


Figure 9

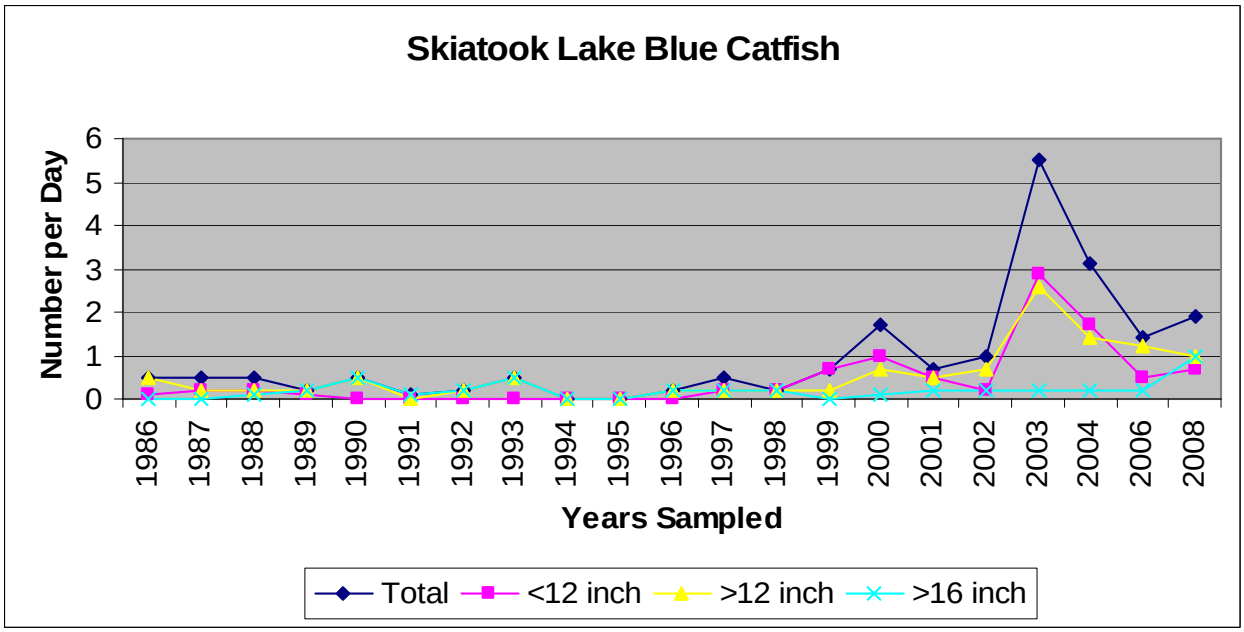


Figure 10

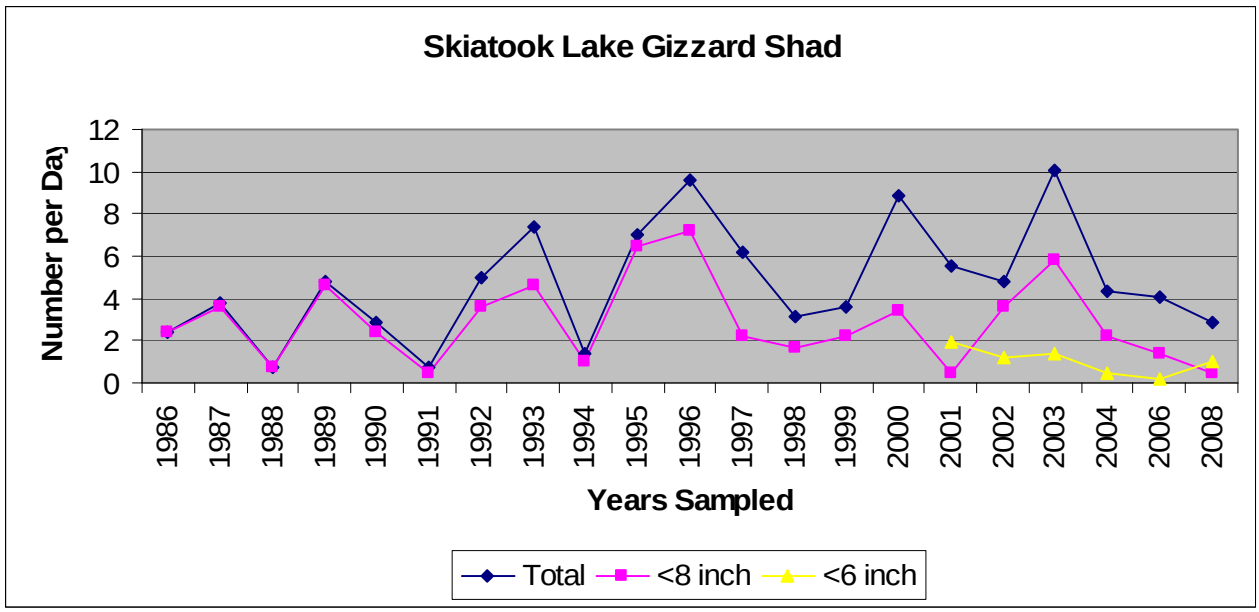
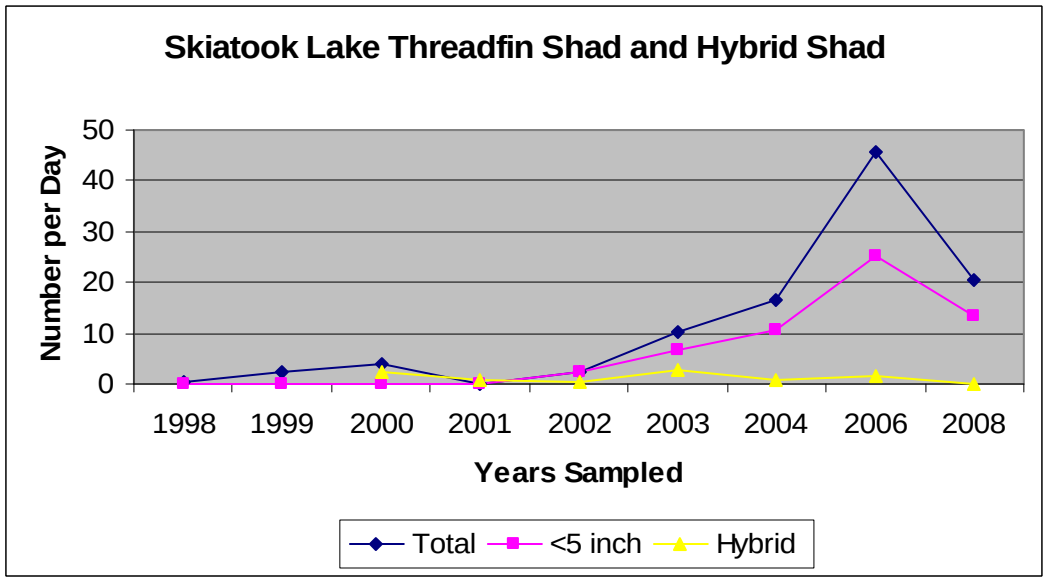

Skiatook Lake Gizzard Shad
Number per Day
12
10
8
6
4
2
0
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2006
2008
Years Sampled
Total
<8 inch
<6 inch

Figure 11


Skiatook Lake Threadfin Shad and Hybrid Shad
Number per Day
50
40
30
20
10
0
1998
1999
2000
2001
2002
2003
2004
2006
2008
Years Sampled
Total
<5 inch
Hybrid