

NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE SPORT FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-48
2012

WILSON SINK RESERVOIR
EASTERN REGION



**NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION
ANNUALJOB PROGRESS REPORT**

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**NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION
ANNUAL JOB PROGRESS REPORT**

State: *Nevada*
Project Title: *Statewide Fisheries Program*
Job Title: *Wilson Sink Reservoir*
Period Covered: *January 1, 2012 through December 31, 2012*

SUMMARY

Wilson Sink Reservoir and headwaters received below average amounts of water in the form of winter/spring precipitation during 2012, with the reservoir slowly filling and spilling by early April and continuing spilling until mid-June. The duration and intensity of runoff and subsequent spilling was below average compared to previous years.

Fourteen days of random angler surveys conducted in 2012 contacted 54 anglers consisting of 45 trout anglers and 13 largemouth bass/trout anglers. Trout anglers reported catching 109 rainbow trout and harvesting 34 (31% of total rainbow trout caught) in 112.5 hrs of fishing effort for a catch rate of 0.97 rainbow trout per hour. Average size of 24 rainbow trout measured was 15.4 in (FL), and was above the long-term average of previous rainbow trout harvest lengths. Thirteen largemouth bass anglers reported fishing 37 hrs to catch 124 largemouth bass for annual catch rates of 3.35 largemouth bass per hour and 9.54 largemouth bass per angler. The average size of the five largemouth bass measured was 11.6 in (TL). A total of 45,100 rainbow trout weighing 11,800 lbs and averaging 8.7 in (FL) were stocked in the spring and fall.

Sport fish population surveys for Wilson Sink Reservoir consisted of one night of electrofishing in mid-May to assess the largemouth bass population and a gill net survey to evaluate the rainbow trout population in conjunction with a rainbow trout strain evaluation study. A total of 88 largemouth bass were captured, ranging from 3.7 to 19.9 in (TL). Electrofishing approximately 2,029 seconds to capture 88 largemouth bass and 40 rainbow trout equated to a capture rate of 229 fish per hour. The mid-May sampling produced a larger than average catch frequency of larger age classes (+V) of largemouth bass and was 60% higher than the long-term trend data over the last 14 years.

Three gill nets were fished in mid-May for a total of 38.5 hrs, with a total capture of 63 rainbow trout and 14 bridge lip sucker for a capture rate of 2.0 fish per net hour. The rainbow trout had an average size of 14.3 in (TL) and an average weight of 19.6 oz. The largest rainbow trout captured in 2012 was 20.6 in TL and weighed 3.08 lbs.

A digital recording thermograph was placed in Wilson Sink Reservoir during May to estimate the timing and thermal limitations that influence success of the largemouth bass spawn. Preferred largemouth bass nesting and spawning temperatures were reached by the second week of May in 2012, with only one significant water

temperature fluctuation occurring near the end of May, which should not have impacted the largemouth bass spawn.

Ocular surveys conducted in July 2012 below the Wilson Sink Reservoir spillway and plunge pools revealed minimal numbers of game fish present. It was determined that a salvage was not practical or cost effective this year.

BACKGROUND

Largemouth bass were first introduced into Wilson Sink Reservoir in 1976 to serve as a biological control of nongame fish species that were found to be detrimental to the rainbow trout fishery. Within six years of largemouth bass introductions, nongame fish populations disappeared, with the exception of bridgeline sucker. Emphasis and management of largemouth bass as a secondary sport fishery then began in 1984. Due to declining mature age classes of largemouth bass and annual recruitment that was attributed to angling pressure and harvest, an 11 in minimum harvest length regulation was implemented in 1987.

In the spring of 1994, the reservoir and water rights owner, Petan Ranch, notified the Division of Wildlife of its intent to drain the reservoir to facilitate repairs to the outlet gate system. Largemouth bass were salvaged from the reservoir and relocated in other regional waters. On July 22, 1994, all possession limits and harvest size regulations for rainbow trout and largemouth bass were lifted to allow the general public to harvest game fish prior to the impending draining of the reservoir. The reservoir was drained to a minimum pool of 610 acre-ft by October and dam repairs were completed in November. Restoration of rainbow trout and largemouth bass fisheries began in the spring of 1995. Reintroduced largemouth bass naturally reproduced and rapidly reestablished.

OBJECTIVES and APPROACHES

Objective: General Sport Fisheries Management

Approach:

- Conduct a general fisheries assessment through opportunistic angler contacts.
- Recover stranded sport fish from the pool below the dam after spring runoff and return them to the reservoir as needed.

Objective: Evaluate the effects of the minimum size regulation on largemouth bass.

Approach:

- Install a digital recording thermograph to document temperature variations that relate to black bass activity.
- Examine the largemouth bass population by electrofishing 2 established transects one night in late summer.
- Set experimental gill nets for 3 net-nights in the spring.

PROCEDURES

Angler surveys were conducted throughout the year, with most of the fishing pressure occurring from April through July 2012. Data collected from contacted anglers included number of anglers in party, target species, amount and type of effort, and what they harvested. Harvest data was recorded by species, weight of selective individuals and species, and fin clip or tag markings. For all sampling methods used, fork length was measured on trout and total length for all other species. Data were recorded and summarized on standard forms and maintained in the Regional Fisheries database.

During nighttime of May 16, 2012, the Clark-Coffelt electrofishing barge was used to survey the largemouth bass population in Wilson Sink Reservoir. The fixed, twin anode system with two bow netters was used. Sample areas were the boat launch to the rocky point on the north, the rocky shoreline at the Petan Cabin, the rocky shoreline along the canyon arm, the dam face and the gravel shoreline in front of the main campground. All largemouth bass age classes were targeted for capture. All captured bass and trout were measured and selected individuals weighed for body condition appraisals. Electrofisher transformer box settings and other relevant survey information were:

Pulse – DC	Pulse Frequency – 60	Shocking Efficiency - Fair
Volts – 850	Pulse Width - 6 milliseconds	Time of Day – 2045 –2130
Output – 4-5 amps	Shocking Time ~2,029 sec.	Water Temp. – 61°F
Water Conditions – Algae absent, water level high and weeds low.		

On May 16, 2012, three variable mesh gill nets measuring 150 ft long by 6 ft wide were set at Wilson Sink Reservoir to primarily capture trout. Location of the gill nets included net-1 set 250 yards south of the boat launch, net-2 set approximately 500 yards upstream of the spillway outlet, and net-3 set northeast of the Petan Ranch cabin. All nets were fished overnight and retrieved the next morning. All species of fish were identified, measured, and counted.

A temperature recording Onset Optic Stow Away WTA08 thermograph was placed at a water depth of 30 in on the northern rocky shoreline in Wilson Sink Reservoir on May 1 and retrieved on July 1, 2012.

FINDINGS

Opportunistic Angler Contacts and Surveys

The 2012 monthly and annual angler use, catch rate, and harvest summaries for Wilson Sink Reservoir are presented in Table 1. Fourteen days of random angler surveys resulted in contacting 54 anglers, which consisted of 45 trout anglers and 13 largemouth bass anglers and/or combination anglers. Trout anglers reported catching a total of 109 rainbow trout and harvesting 34 rainbow trout (31% of total rainbow trout caught) in 112.5 hrs of fishing effort. This equates to a catch rate of 0.97 rainbow trout per hour, which is higher than the long-term average of 0.68 rainbow trout per hour. The long-term average catch rate continues to meet the management objective of 0.50 to 0.75 rainbow trout per hour as described in the 2008 Wilson Sink Reservoir Fisheries Management Plan.

During the opportunistic angler survey, 24 rainbow trout were measured and ranged in size from 12.2 to 18.9 in. The average size of 15.4 in exceeded the management goal of anglers catching an average size of 13.0 to 14.0. Figure 1 illustrates the length frequency analysis of rainbow trout caught in 2012 compared to the long-term trend from 2000 to 2011. Harvest of quality-sized trout (15.0-18.9 in) was trending upward in comparison to the long-term average, indicating a healthy and productive trout fishery meeting desired management expectations.

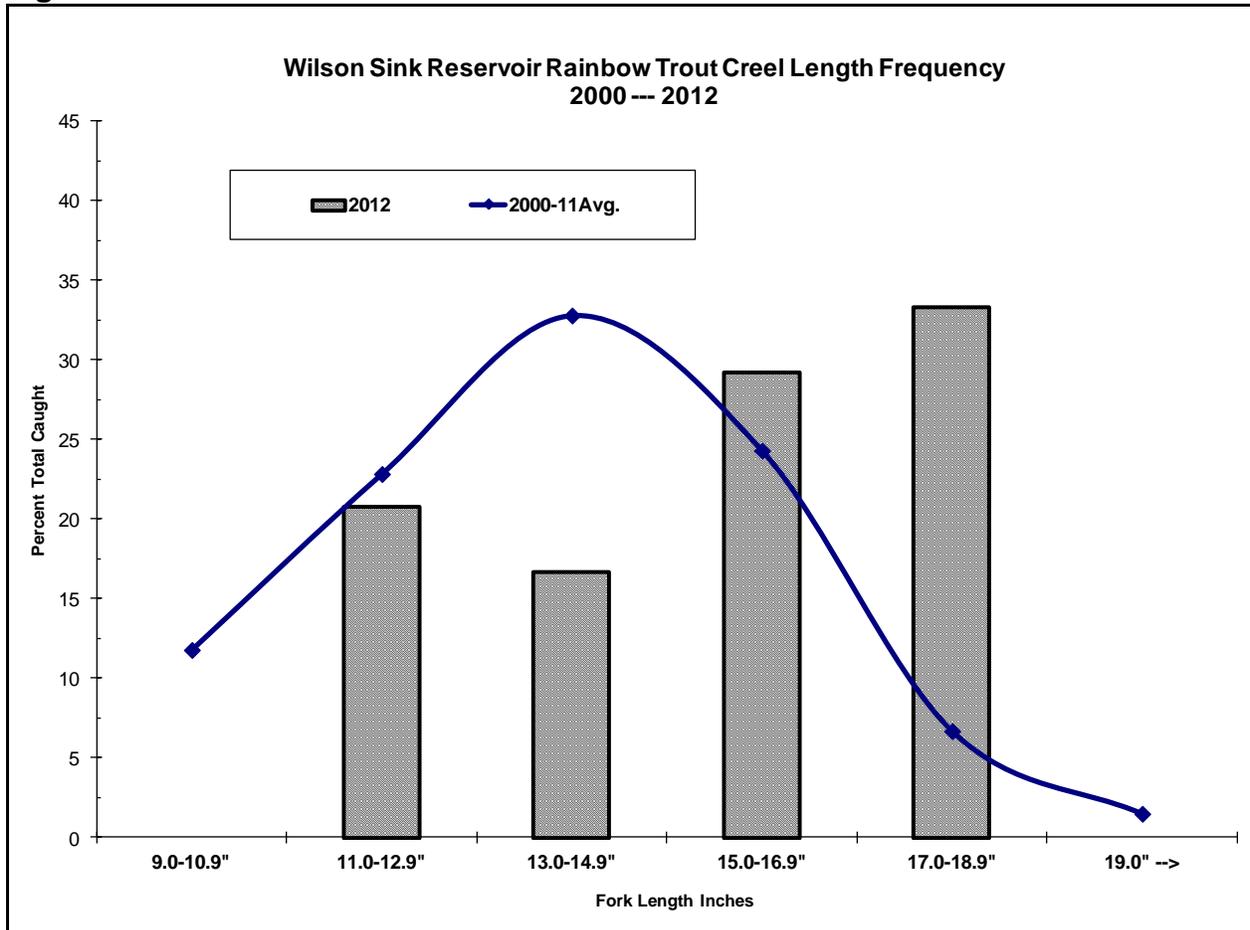
Eight rainbow trout were also weighed to calculate C-Factor. The average C-Factor was 4.40 with a rating of good. Composition of these rainbow trout revealed none in poor body condition, 37.5% in fair, 50% in good, and 12.5% in excellent condition.

Interest in largemouth bass angling was static during late spring and summer even though success was high. Thirteen bass anglers reported fishing 37 hrs to catch 124 largemouth bass for annual average catch rates of 3.35 largemouth bass per hour and 9.54 largemouth bass per angler. The average size of the five largemouth bass measured during random angler surveys was 11.6 in. Overall catch rates for largemouth bass in 2012 were above the long-term average of 0.83 bass per hour and 2.7 bass per angler day. Wilson Sink Reservoir continued to meet or exceed the management goal of a warm water fishery objective of 2.00 largemouth bass per angler day and a harvest size of 11.5 to 12.5 in.

Eight volunteer angler drop-box surveys were received from May through October. Anglers fished 48.5 hrs to catch 84 fish (72 rainbow trout and 12 largemouth bass) for catch rates of 1.7 fish per angler hour and 8.4 fish per angler. Lengths were

reported from 69 rainbow trout, with the majority (36.1%) being in the 13.0 to 14.9 in size range, which does not correspond with the 2012 creel survey length frequencies (Figure 2). Anglers also reported measurements from 38 largemouth bass, with the majority (81.6%) being in the 9.0 to 10.9 in size range.

Figure 1.



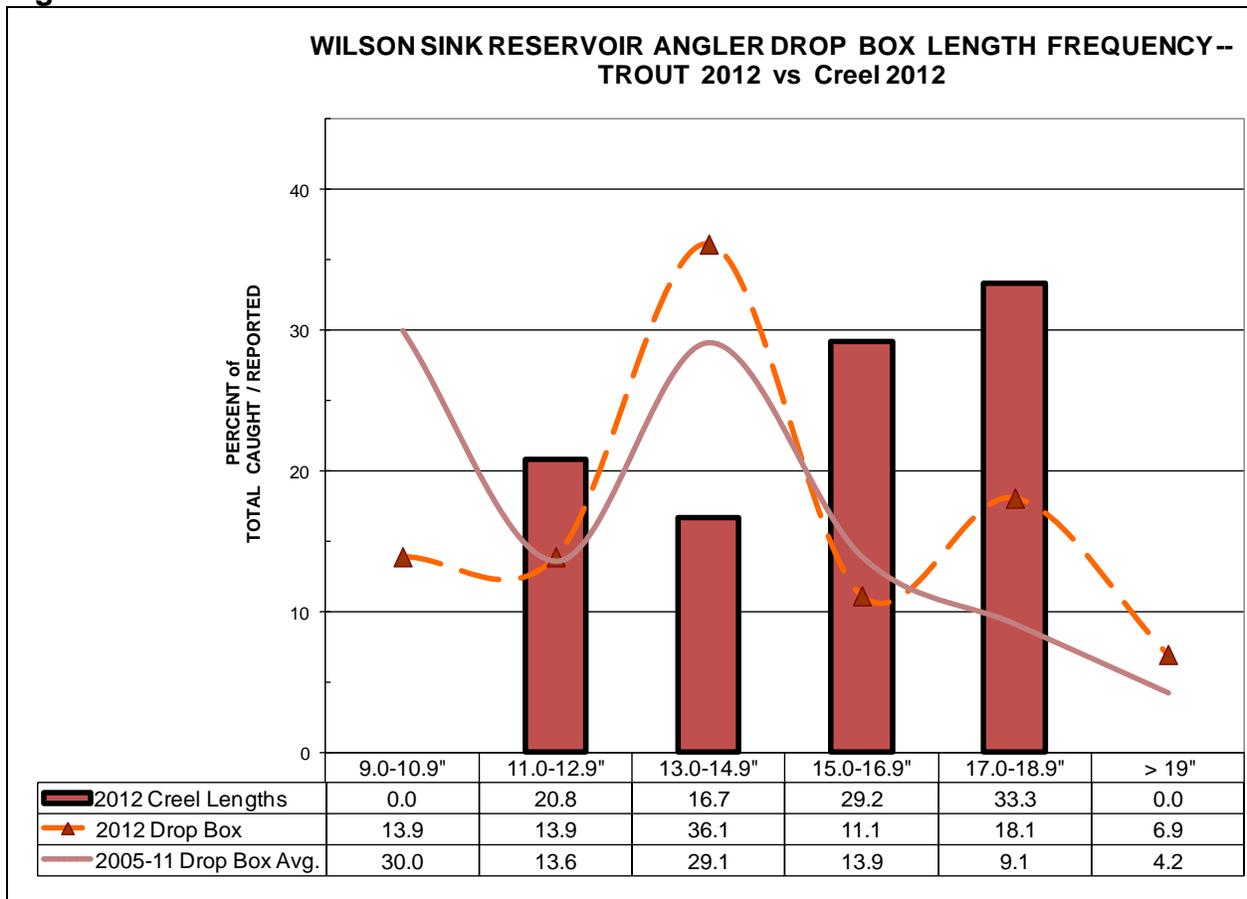
A total of 45,100 rainbow trout representing two different strains, weighing 11,800 lbs, and averaging 8.7 in were stocked into Wilson Sink Reservoir during the spring and fall of 2012 (Table 2). Stocking in the spring was held off until mid-May to allow for the spilling of the reservoir to subside. This was done to prevent entrainment of a large number of recently stocked rainbow trout from the reservoir.

Spillway Channel Fish Salvage

Ocular surveys below the Wilson Sink Reservoir spillway and plunge pools in July 2012 revealed minimal numbers of game fish present. It was determined that a fish salvage from these pools was not practical or cost effective for the summer of 2012.

This effort will be evaluated on a year-by-year basis, dependent on duration and intensity of springtime overflow and amount of game fish present.

Figure 2.



Black Bass Electrofishing Population Survey

A total of 88 largemouth bass were captured during the mid-May sampling effort, ranging in total length from 3.7 to 19.9 in. A total of 40 rainbow trout were also electrofished and measured, with the average size being 13.5 in, and ranging from 7.7 to 20.5 in. Four clipped rainbow trout representing two different strains were contacted, showing modest growth increase (3.3 - 4.9 in growth) since being stocked in July 2011.

An electrofishing effort of 2,029 sec caught 88 largemouth bass and 40 rainbow trout, which equates to a capture rate of 229 fish per hour. The mid-May sampling effort produced slightly above the 16-year average numbers of largemouth bass for age classes V-VII+ (8.6 to >12.6 ins), primarily due to a warmer water temperature (61°F) and higher water levels. Age class distribution for the electrofishing inventory was 5% (4 fish) class I and II, 7% (6 fish) class III, 28% class IV (25 fish), 38% class V (33 fish), 12% (11 fish) class VI, and 10% (9 fish) class VII and older (Figure 3 and Table 4). The

largest bass captured in 2012 was 19.9 in that weighed in at 5.9 lbs.

The RSD-10 (Relative Stock Density at 10 inch) quotient was 62 in 2012, indicating a balanced largemouth bass population. The average size of all 88 bass measured was 9.6 in (Table 3).

Largemouth Bass body condition values and ratings were calculated on 57 bass and ranged from 4.06 (poor) to 8.35 (excellent) for an overall average of 5.35 (good). The average condition had decreased from 6.02 (excellent) in 2011, but was slightly above the 16-year average of 5.32 (Good) (Table 4). Percent composition by group showed 3.8% were in poor shape, 26.4% in fair, 54.8% in good, and 19.3% in excellent.

The bass population appears to be in very good health and was dominated by the 8.5 to 12.5 in fish during the 2012 survey (Figure 4). Approximately 41% of the bass sampled were larger than the regulatory minimum length of 10 in, significantly higher than previous sampling efforts.

Figure 3.

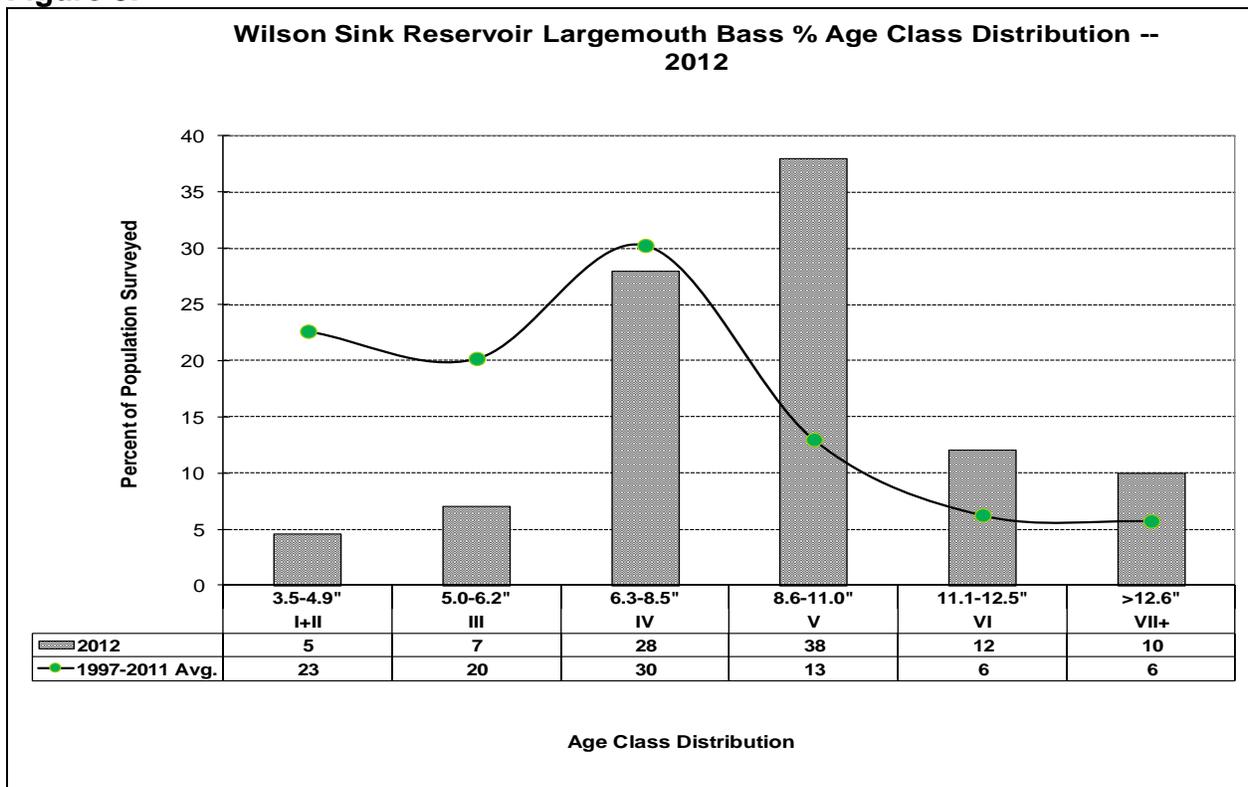
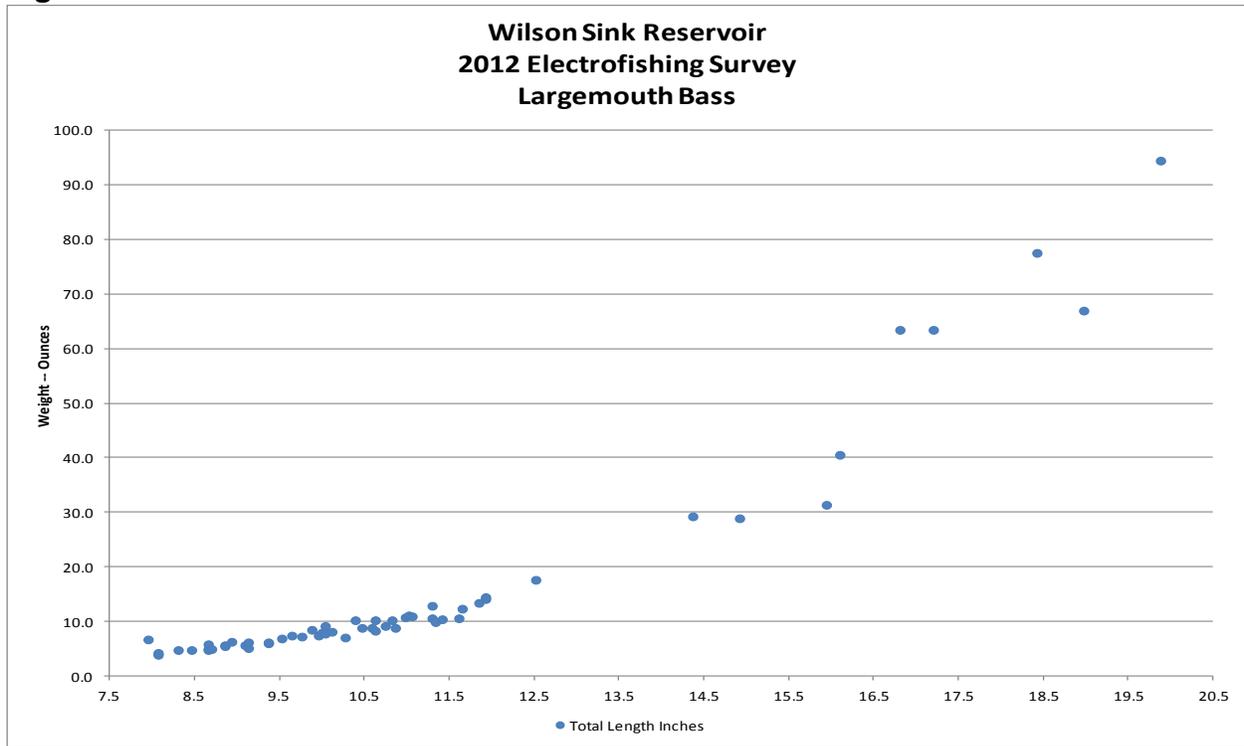


Figure 4.



Gill Net Survey

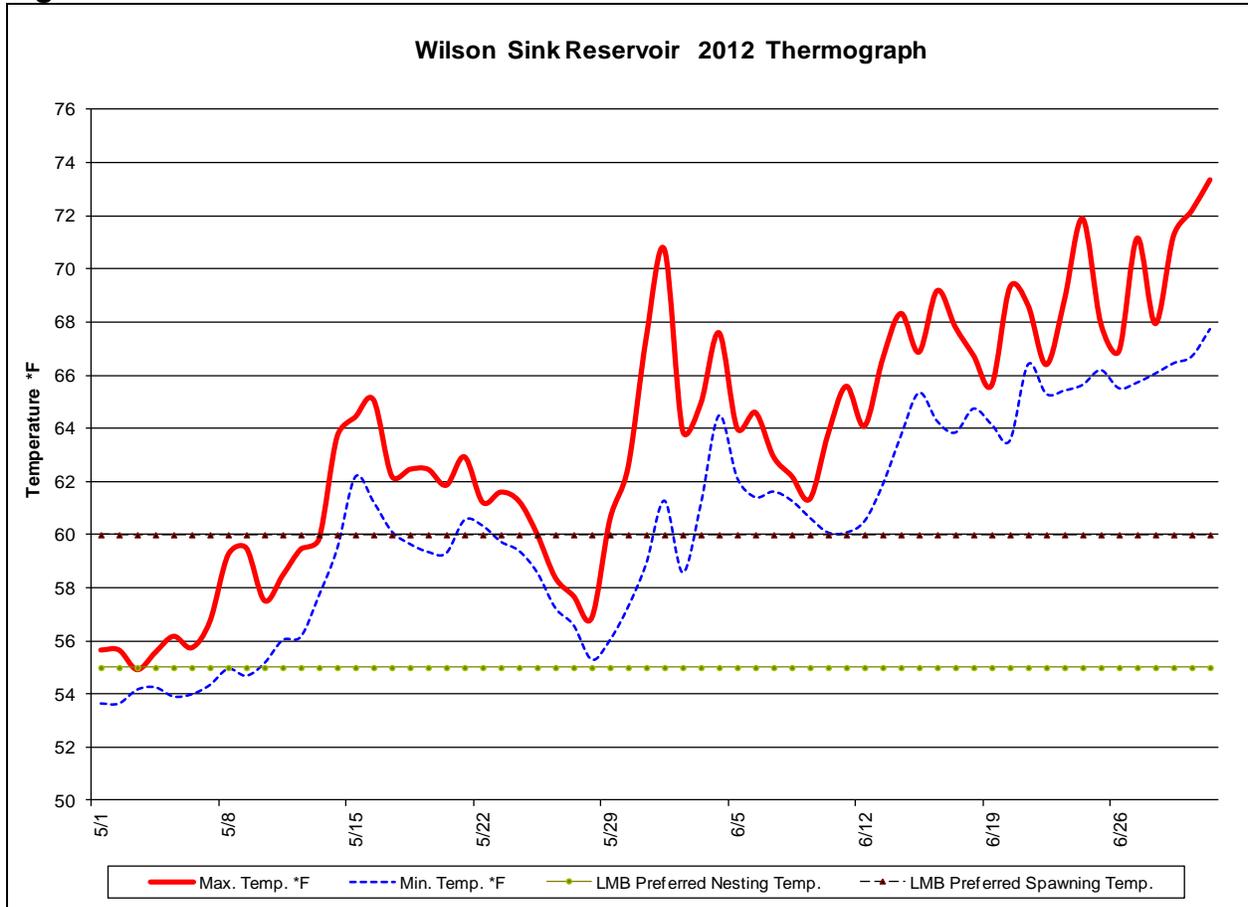
Three gill nets fished for a total of 38.5 hrs captured 63 rainbow trout and 14 bridge lip sucker for a capture rate of 2.0 fish per net hour. Rainbow trout had an average size of 14.3 in and an average weight of 19.6 oz. The largest rainbow trout was 20.6 in and 3.08 lbs. No largemouth bass were captured during the 2012 gill net survey. The 14 bridge lip suckers captured in the Cabin net set had an average size of 8.8 in. Previous gill net surveys produced very few suckers, so the 2012 survey results were unusual, but not be of concern. A body condition value and rating was calculated on all 63 rainbow trout, with 3 fish in the poor range (4.8%), 17 fish in the fair range (27%), 37 fish in the good range (58.7%), and 6 fish (9.5%) in the excellent range. The average size of fish was 14.3 in and the average C-factor was 4.01, for a body condition rating of good.

Of the 63 rainbow trout captured, 7 fish were marked with an adipose fin clip (Bel-Air strain) and 5 fish were marked with a left pectoral fin clip (Eagle Lake strain) from the 2011 stocking effort. An additional 40 rainbow trout were captured during the May 16, 2012 electrofishing survey, of which 4 were marked (2 Bel-Air and 2 Eagle Lake strain). This is the second consecutive year that marked trout were caught in the gill net and electrofishing surveys.

Water Temperature Monitoring

A thermograph was placed in Wilson Sink Reservoir on May 1 and retrieved on July 1, 2012. The thermograph recorded daily reservoir water temperatures (Figure 5). Desired largemouth bass nesting and spawning temperatures were not reached until the second week of May, with one cold front causing a temperature fluctuation on May 25. The temperature quickly returned to the seasonal norm shortly thereafter. A seasonal high temperature of 73.3°F was recorded on July 1.

Figure 5.



MANAGEMENT REVIEW

- All objectives for Wilson Sink Reservoir were completed in 2012. Stranded fish in pools below the spillway were observed, but it was determined that game fish salvage was not practical or cost effective this year.

RECOMMENDATIONS

- Continue opportunistic angler surveys to provide an accurate assessment of use and harvest of rainbow trout and largemouth bass.
- Maintain the volunteer angler drop-box to document activity and compare/analyze with contact creel data.
- Monitor the largemouth bass fishery and examine the effects of the 10-inch minimum size harvest limit.
- Conduct an electrofishing survey to assess age class distribution, body condition, and RSD of the largemouth bass population.
- Monitor the reservoir water temperature during the spring to evaluate and predict largemouth bass spawning success.
- Continue salvaging game fish from below the Wilson Sink Reservoir spillway when necessary.

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Eastern Region Fisheries Biologist

Date: February 2013

Table 1

Wilson Sink Reservoir

2012 Creel Survey Angler Use and Harvest Summary

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Totals
No. Days Checked	1	0	1	2	2	2	3	1	1	1	0	0	14
Avg. Reservoir Water Temp.	Ice=2"		40	50	59	62	73	73	65	52			59
No. Anglers Checked	0		0	10	13	15	16	0	0	0			54
No. of Trout Anglers				10	13	15	7						45
No. of Bass Anglers				0	0	0	13						13
Total Hours Fished				26.5	30.0	29.0	44.0						129.5
Total Hours Fished -Trout				26.5	30.0	29.0	27.0						112.5
Total Hours Fished - Bass				0	0.0	0.0	37.0						37
Total Trout Caught				28	8	46	27						109
Total Bass Caught				0	0	2	122						124
Total Fish Harvested				19	4	7	40						70
Rainbow Trout				19	4	5	6						34
Black Bass				0	0	2	34						36

Measured Fish Harvest Size

Rainbow Trout No.				16	4	3	1						24
Average Size (inches FL)				15.3	15.1	17.0	13.2						15.4
Black Bass No.						0	5						5
Average Size (inches TL)							11.6						11.6

Angler Catch Rates

Trout / Hour				1.06	0.27	1.59	1.00						0.97
Trout / Angler				2.80	0.62	3.07	3.86						2.42
Bass / Hour							3.30						3.35
Bass / Angler						0.13	7.63						9.54

Table 2

Wilson Sink Reservoir Fish Stocking

2012

Date	Number of Fish Stocked	Pounds	Avg. Size (in.)	Species	Number / Pound	Strain	Water Temp.	Tank Temp.
May 17, 2012	7,000	2,000	8.9	Rainbow Trout	3.5	Eagle Lake	64	55
May 21, 2012	7,000	2,000	8.9	Rainbow Trout	3.5	Eagle Lake	63	55
May 23, 2012	7,000	2,000	8.9	Rainbow Trout	3.5	Eagle Lake	63	55
May 24, 2012	7,000	2,000	8.9	Rainbow Trout	3.5	Eagle Lake	63	53
October 11, 2012	8,550	1,900	8.2	Rainbow Trout	4.5	Jumper	61	53
October 11, 2012	8,550	1,900	8.2	Rainbow Trout	4.5	Jumper	61	53
TOTALS	45,100	11,800				Avg. Temp. =	62.5	54

Table 3

WILSON SINK RESERVOIR
Largemouth Bass Population Status-Electrofishing Survey Trends

Year	Number of Bass / Hour	Number of Bass Measured	Average Fish Size TL Inches	RSD 10 Factor	K-Factor	Rating
1988	155			79	4.85	Fair
1989	133			57	4.81	Fair
1990	383			46	4.96	Fair
1991	244			-		
1992	309			29	5.05	Good
1993	816			-	5.15	Good
1994	Bass Salvage/Relocation					
1995	Reservoir Draining/No limits					
1996	Bass Stocking/Augmentation					
1997	549	159	7.5	8.2	4.97	Good
1998	298	136	8.2	16	4.89	Good
1999	339	208	5.7	55	5.27	Good
2000	113	40	7.0	100	5.58	Good
2001	85	47	8.9	60	5.08	Good
2002	157	94	9.0	56	5.18	Good
2003	72	115	10.0	81	4.96	Good
2004	123	117	7.1	35	5.33	Good
2005	83	99	6.9	38	5.20	Good
2006	141	181	7.5	58	5.50	Good
2007	134	298	8.8	34	5.23	Good
2008	216	114	8.3	54	5.52	Good
2009	189	119	5.9	32	5.18	Good
2010	162	130	7.9	39	5.80	Excellent
2011	249	142	6.9	18	6.02	Excellent
2012	156	88	9.6	62	5.35	Good
1997-2012 Avg.=	192	130	7.8	47	5.32	Good

RSD 10 = # of fish > 10 inches (*relative* quality catch length) / # of fish > 8.0 inches (*minimum* stock length)

RSD 10 between 40 and 60 is desired, indicating a balanced population

Biologists employ numerical descriptors of length-frequency data such as Proportional Stock Density (PSD) and Relative Stock Density (RSD) when evaluating fish populations. Proportional Stock Density is calculated by dividing the number of fish > minimum quality length by the number of fish > minimum stock length x 100.

Quality length is defined as the minimum size of fish most anglers like to catch. Stock length is the minimum length at which a fish provides recreational value.

Relative Stock Density (RSD) is simply the percentage of any designated length group found within a population. RSD is calculated by dividing the number of fish > specified length by the number of fish > minimum stock length x 100.

Table 4

WILSON SINK RESERVOIR
Largemouth Bass % Age Class Distribution

Percent of Age Class

Year	I+II 3.5-4.9"	III 5.0-6.2"	IV 6.3-8.5"	V 8.6-11.0"	VI 11.1-12.5"	VII+ >12.6"
1988	15	25	13	32	14	2
1989	21	24	13	43	12	6
1990	50	27	12	5	3	3
1991	31	51	8	3	4	3
1992	23	20	21	28	4	4
1993	19	45	27	6	2	1
1994	Bass Salvage/Relocation					
1995	Reservoir Draining/No limits					
1996	Bass Stocking/Augmentation					
1997	33	17	40	6	4	0
1998	5	34	41	13	7	0
1999	55	2	9	12	19	2
2000	35	15	0	5	8	10
2001	13	13	38	3	8	25
2002	46	18	19	10	2	5
2003	37	30	11	7	4	6
2004	9	31	49	7	0	5
2005	25	16	38	16	3	2
2006	9	20	47	15	7	3
2007	1	14	24	51	8	2
2008	22	14	19	22	15	11
2009	33	23	34	4	3	2
2010	10	21	39	14	5	11
2011	6	35	46	10	1	2
1997-2011 Avg.=	23	20	30	13	6	6
2012	5	7	28	38	12	10

All age class size distributions are approximations based on previous scale readings.