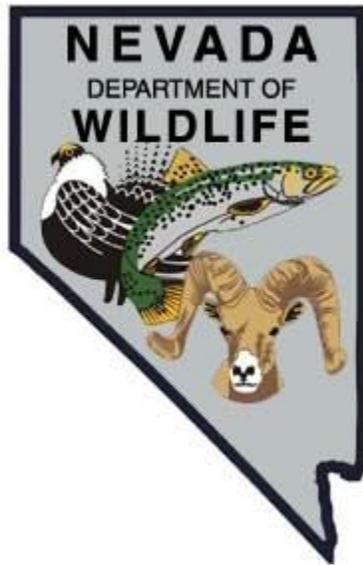


NEVADA DEPARTMENT OF WILDLIFE  
STATEWIDE SPORT FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-50  
2014

WILSON SINK RESERVOIR  
EASTERN REGION



**NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION  
ANNUAL JOB 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, 2014 through December 31, 2014*

**SUMMARY**

Wilson Sink Reservoir received below average amounts of water in the form of winter/spring precipitation during 2014 for the third consecutive year, with the reservoir slowly filling throughout the spring. The reservoir did not reach full capacity and no overflow occurred through the spillway during 2014. Downstream irrigation demands during the late summer reduced the reservoir capacity to approximately 25% by October, with the improved boat ramp out of water by September.

Angler visitation was considered light and angler success was limited and directly associated to drought related conditions. Thirteen days of opportunistic angler contacts conducted in 2014 contacted 28 anglers, consisting of 26 trout anglers and two largemouth bass/trout anglers. Trout anglers reported catching 46 rainbow trout and harvesting 17 (37% of total rainbow trout caught) in 88 hrs of fishing effort, for a catch rate of 0.53 rainbow trout per hour. Average size of nine rainbow trout measured during creel surveys was 16.9 in FL. Two largemouth bass anglers reported fishing six hours to catch two largemouth bass for an annual catch rate of 0.33 largemouth bass per hour and 1.0 largemouth bass per angler. The average size of the two largemouth bass was 13.7 in TL. Approximately 23,000 Shasta strain rainbow trout weighing 7,800 lbs and averaging 9.5 in FL were stocked May 2014, which was significantly less than previous stocking allocations that addressed regional drought conditions and low reservoir levels.

Sport fish population surveys for Wilson Sink Reservoir consisted of one night of electrofishing in late June to assess the largemouth bass population and a gill net survey to evaluate and assess the rainbow trout population in conjunction with a rainbow trout strain evaluation study. A total of 15 largemouth bass were captured, ranging from 3.5 to 15.7 in TL. Electrofishing 3,087 seconds to capture 12 largemouth bass equated to a CPUE of 14 bass per hour. Two gill nets were fished overnight on June 30 for 25.8 hrs, with a total capture of 18 rainbow trout and 3 largemouth bass for a CPUE of 0.81 fish per net hour. Rainbow trout had an average size of 13.7 in TL and an average weight of 21.9 oz, with the largest rainbow trout captured in 2014 being 20.4 in TL.

On August 25, plankton/quagga mussel samples were collected at Wilson Sink Reservoir. Two samples were collected and processed by separate labs, resulting in one positive PCR test for zebra mussels and one negative microscopy result. The positive sample was followed by concurrent negative samples in October 2014, with no

observed veligers or mussel DNA found.

No ocular surveys or fish salvages below Wilson Sink Reservoir spillway and plunge pools occurred in 2014 because the reservoir did not reach full capacity or spill for the second consecutive year.

## **BACKGROUND**

Largemouth bass were first introduced into Wilson Sink Reservoir in 1976 to serve as a biological control of nongame fish species found to be detrimental to the primary rainbow trout fishery. Within six years of largemouth bass introduction, nongame fish populations disappeared, with the exception of bridgelip sucker. Management emphasis of largemouth bass as a secondary sport fishery began in 1984. Due to declining mature age classes and annual recruitment in the largemouth bass population attributed to high 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 and relocated to 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 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 the rainbow trout and largemouth bass fisheries began in the spring of 1995. Reintroduced largemouth bass naturally reproduced and rapidly established a population.

## **OBJECTIVES and APPROACHES**

Objective: General Sport Fisheries Management

Approach:

- Conduct a general fisheries assessment through opportunistic angler contacts (FY15).
- Recover stranded sport fish from the pool below the dam after spring runoff and return them to the reservoir as needed (FY15).
- Examine the largemouth bass population by electrofishing two established transects one night in late summer (FY14).
- Set experimental gill nets for three net-nights in the spring (FY14).
- Sample for occurrence of quagga mussel veligers through plankton net tows conducted two to four times between June and September at one site (FY15).

## PROCEDURES

Angler contacts were conducted throughout the year, with most of the fishing pressure occurring from April through July 2014. Data collected from anglers contacted included number of anglers in party, target species, amount and type of effort, and harvest. Harvest data was recorded by species, including length, weight of selected individuals, and fin clip or tag markings. Data were recorded and summarized on standard forms and maintained in the Regional Fisheries database.

During the nighttime hours of June 30, 2014, the Clark-Coffelt electrofishing barge was utilized 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 were weighed for body condition appraisals. Electrofisher box settings and relevant survey information were:

<b>Pulse – DC</b>	<b>Pulse Frequency – 60</b>	<b>Shocking Efficiency - Fair</b>
<b>Volts – 850</b>	<b>Pulse Width - 5 milliseconds</b>	<b>Time of Day – 2100 – 2245</b>
<b>Output – 5 amps</b>	<b>Shocking Time ~3,087 sec.</b>	<b>Water Temp. – 66°F</b>
<b>Water Conditions – Algae absent, water level below spilling and weeds low.</b>		

Also on June 30, 2014, two variable mesh gill nets measuring 150 feet long by six feet wide were set at Wilson Sink Reservoir to primarily capture trout species. The locations of the gill nets were: net 1 was set near the northwest corner of the dam and net 2 was set northeast of the Petan Ranch cabin. Both nets were fished overnight, retrieved the next morning, with all species of fish identified, measured, and counted.

Plankton net tows were conducted in August and October, utilizing 63 µm mesh plankton net to take vertical samples at various depths for the presence of quagga mussel veligers. These samples were then preserved in ethanol and sent off for analysis.

## FINDINGS

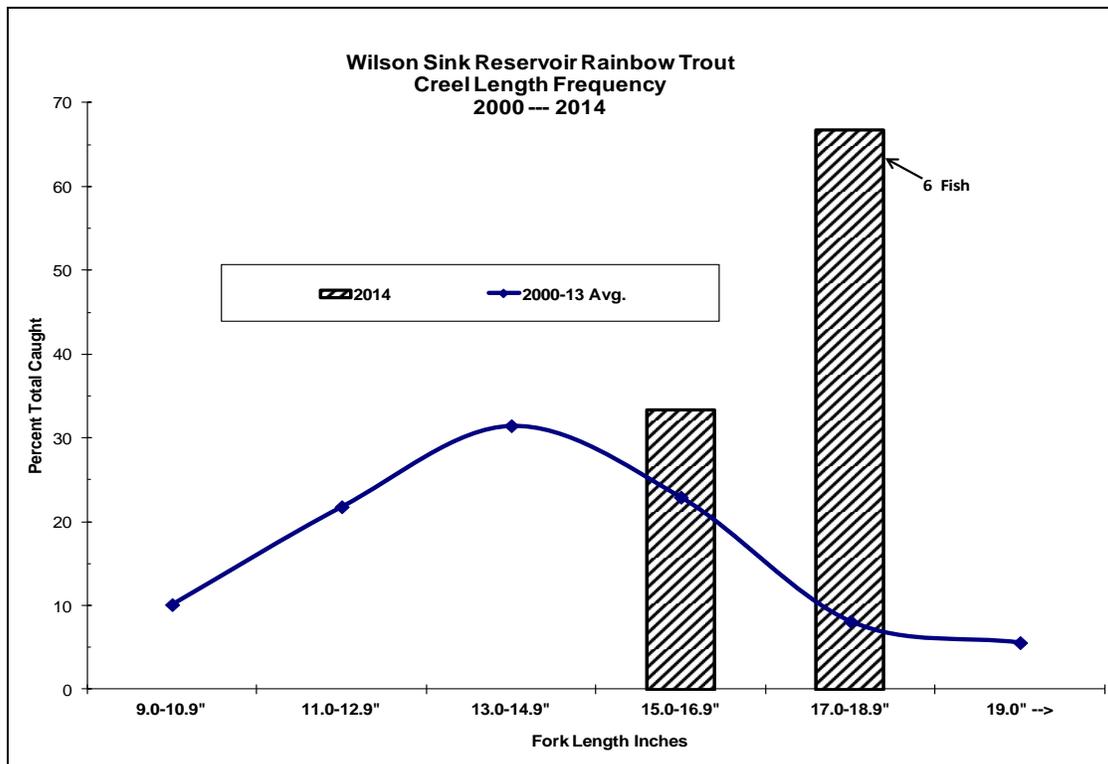
### Opportunistic Angler Contacts and Surveys

The 2014 monthly and annual angler use, catch rate, and harvest summaries for Wilson Sink Reservoir are presented in Table 1. Thirteen days of random angler surveys resulted in contacting 28 anglers, which consisted of 26 trout anglers and two largemouth bass anglers and/or combination (bass/trout) anglers. Trout anglers

reported catching 46 rainbow trout and harvesting 17 rainbow trout (37% of total rainbow trout caught) in 87.5 hrs of fishing effort. This equates to a catch rate of 0.53 rainbow trout per hour, which is lower than the long-term average of 0.68 rainbow trout per hour.

During the opportunistic angler contact survey, only nine rainbow trout were measured and ranged in size from 15.0 to 18.0 in FL. The measured average size of 16.9 in FL exceeds the management goal of 13.0 to 14.0 in average harvest length. Figure 1 illustrates the length frequency analysis of the nine rainbow trout caught in 2014 compared to the long-term trend from 2000 to 2013. Six rainbow trout were weighed for K-Factor analysis during the angler contact survey. The average K-Factor was 4.01 for a rating of good. Composition of these rainbow trout revealed none in poor body condition, 50% fair, 33% good, and 17% in excellent condition.

**Figure 1.**

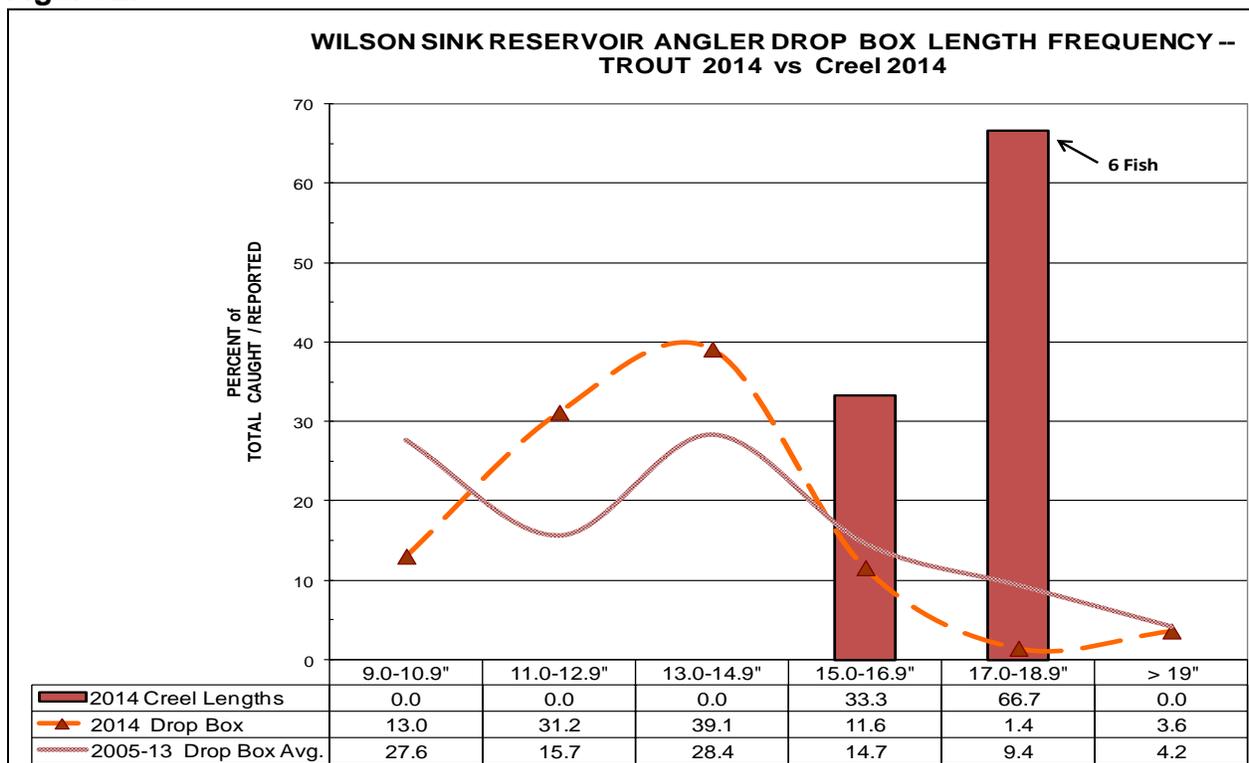


Interest in largemouth bass angling was light for late spring and summer even though success was fair. Two bass anglers reported fishing six hrs to catch two largemouth bass for an annual average catch rate of 0.33 largemouth bass per hour and 1.0 largemouth bass per angler. The average size of the two largemouth bass measured during angler surveys was 13.7 in TL. Overall, catch rate and fish per angler for largemouth bass in 2014 were approximately 30% below the long-term average of 0.86 bass per hour and 2.8 bass per angler day.

The volunteer angler drop-box was in use in 2014, with 14 surveys received from January through October. Anglers fished 119 hrs to catch 143 fish (138 rainbow trout and 5 largemouth bass) for a catch rate of 1.2 fish per angler hour and 9.0 fish per angler, significantly higher than the 2014 angler contact surveys results. Lengths were reported from 138 rainbow trout, with the majority (39.1%) being in the 13.0 to 14.9 in size range. This does not directly correspond with the 2014 contact angler survey length frequencies for measured trout, but does with the long-term harvest average lengths (Figures 1 & 2). Anglers also reported measurements from five largemouth bass, with 80% (4 fish) reported in the 13 to 14.9 inch size range.

A total of 23,000 rainbow trout, weighing 7,800 lbs, and averaging 9.5 in FL were stocked into Wilson Sink Reservoir during May 2014 (Table 2). No fall trout stocking occurred because of expected and realized low reservoir water levels due to extended drought conditions within the region.

**Figure 2.**



### Spillway Channel Fish Salvage

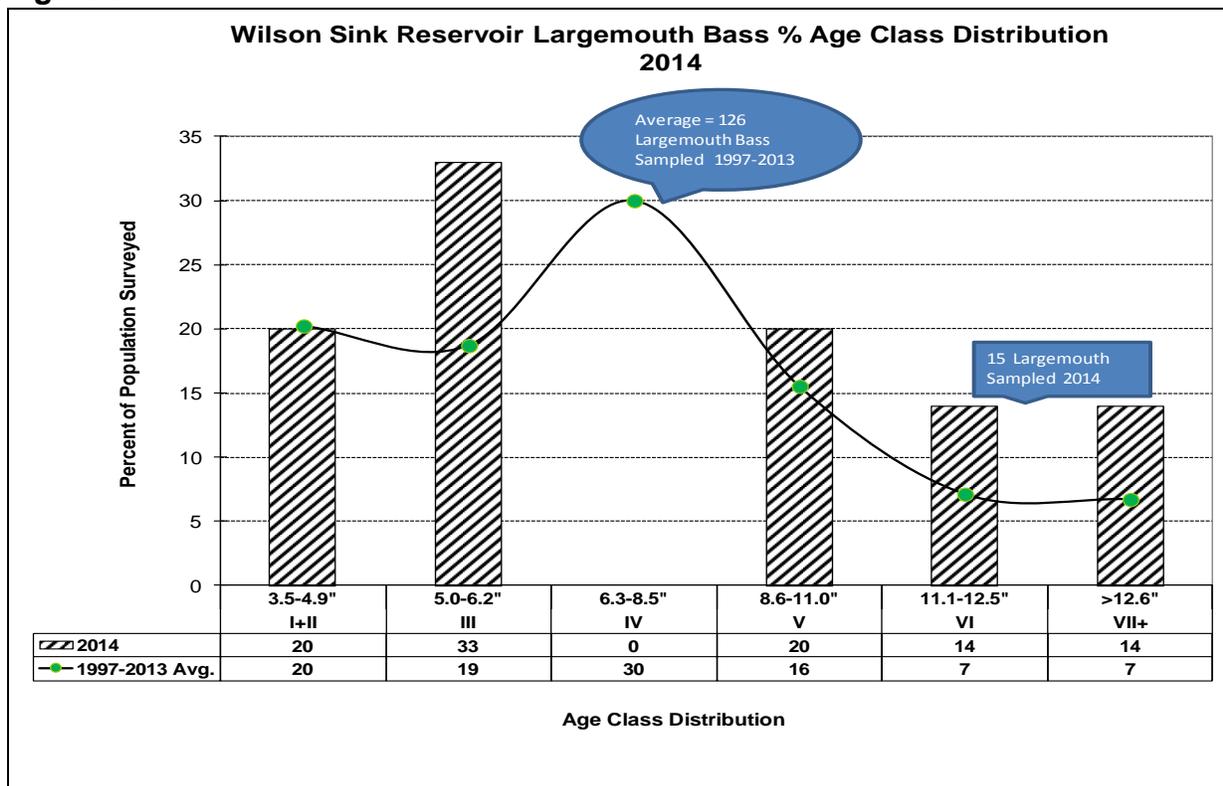
No surveys or salvages occurred below the Wilson Sink Reservoir concrete spillway because no water spilled over the spillway during 2014. Reservoir capacity was estimated to have achieved a level of 85%. This objective will be evaluated on a year-by-year basis, dependent on duration and intensity of springtime overflow and amount of game fish present.

## Black Bass Electrofishing Population Survey

A surprisingly low total of only 15 largemouth bass (12 electrofishing, three gill netting) were captured during the late June sampling effort, ranging in total length from 3.5 to 15.7 inches, with an average size of 8.3 inches TL.

An electrofishing effort of approximately 3,087 seconds to capture 12 bass equated to a low capture rate of 14 bass per hour. The 2014 electrofishing survey's small sample size of 15 bass made it difficult to accurately compare bass population trend data with the cumulative 16 year average (1997-2013), of which 190 bass per hour was the average CPUE prior to 2014. Age class distribution from the electrofishing inventory was 20% class I and II (three fish), 33% class III (five fish), 0% class IV, 20% class V (three fish), 13% class VI (three fish), and 13% class VII and older (two fish) (Figure 3 and Table 4). The largest bass captured in 2014 was 15.7 inches TL and 1.8 pounds. The RSD-10 (Relative Stock Density-10 inch) quotient was 72 for 2014, indicating a largemouth bass population weighted toward the larger mature fish (>10 inches). The average size of all 15 bass measured during 2014 sampling was 8.3 inches TL.

**Figure 3.**



### Water Temperature Monitoring

Due to the extended drought experienced at Wilson Sink Reservoir over the past three years and low water levels, no thermograph was installed in the spring to document the reservoir temperature pattern and effects that it could have on black bass spawning behavior during 2014.

### Gill Net Population Survey

Two gill nets were fished for a total of 25.8 hours, with a total capture of 18 rainbow trout and three largemouth bass for a capture rate of 0.81 fish per net hour. The rainbow trout had an average size of 13.7 inches TL and an average weight of 21.9 ounces, with the majority (77%) of the trout captured being represented by spring rainbow trout planted in 2013 (11-13 inch size class). The largest rainbow trout captured in 2014 was 20.4 inches TL. The three largemouth bass captured during the 2014 gill net survey averaged 7.4 inches TL, and were added to the electrofishing bass survey results.

A body condition value and rating was calculated on 17 rainbow trout captured in the gill nets, with 0 fish in the poor range, 2 fish (11.6%) in the fair range, 10 fish in the good range (58.9%), and 5 fish (29.5%) in excellent of body condition. The overall rating for the average size of fish was 13.7 inches TL and a K-factor of 4.39, with a body condition rating of good. No rainbow trout were captured during nighttime electrofishing efforts on June 30, 2014.

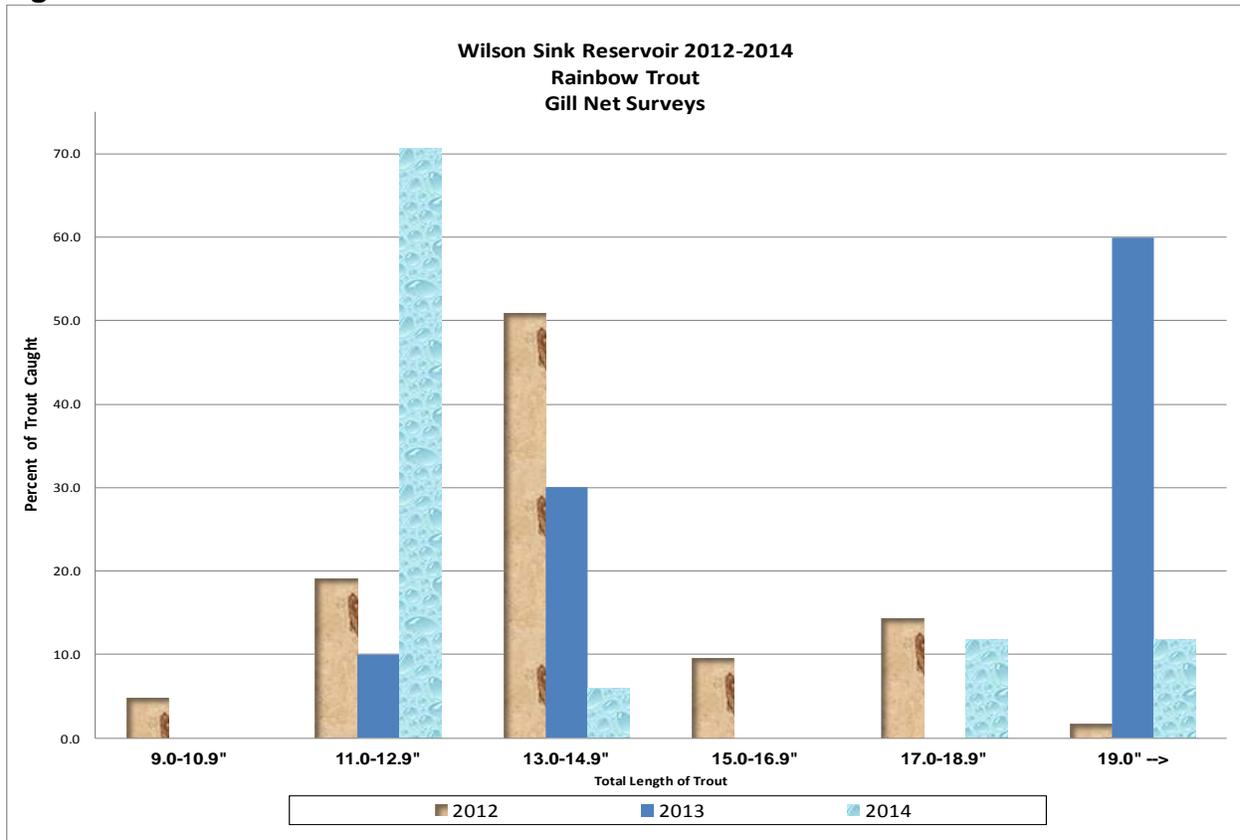
Of the 18 rainbow trout captured in the 2014 gill net surveys, no fish were marked with an adipose fin clip (Bel-Air strain) and no fish were marked with a left pectoral fin clip (Eagle Lake strain) from the 2011 stocking effort.

Figure 4 illustrates and evaluates the 2014 gill net survey compared to the 2012 and 2013 gill net survey for measured rainbow trout lengths. Larger trout (>17.0 inches TL) were limited to four fish in the 2014 gill net survey, however, a few were documented during the angler contact surveys in 2014.

### Quagga Mussel Monitoring

On August 25, two plankton/quagga mussel veliger samples were collected at Wilson Sink Reservoir. The samples were collected and processed by two separate labs, resulting in one positive PCR test for zebra mussels and one negative microscopy result. The positive sample required additional sampling, which produced negative results in October 2014. With no observed veligers or adult mussels found in the October 2014 samples, Wilson Sink Reservoir was considered clean.

**Figure 4.**



## **MANAGEMENT REVIEW**

All relevant job objectives for Wilson Sink Reservoir were completed in 2014, with low water concerns eliminating the need for the thermograph deployment and spillway salvage. The realized low water and diminished angler interest in fishing Wilson Sink Reservoir produced below average results for all objectives. These realizations were expected due to three consecutive years of drought. Future management should be directed at rebuilding the popular fishery to attainable and established baseline goals.

## **RECOMMENDATIONS**

- Continue opportunistic angler surveys when necessary 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.
- Conduct an electrofishing survey on a three year rotational basis to assess age class distribution, body condition, and RSD of the largemouth bass population.

- Monitor efficacy and continue salvaging game fish from below the Wilson Sink Reservoir spillway when necessary.

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Date: January 2015

Table 1

## Wilson Sink Reservoir

### 2014 Creel Survey Angler Use and Harvest Summary

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Totals
No. Days Checked	1	1	0	1	2	4	2	0	1	0	1	0	13
Avg. Reservoir Water Temp.	Ice=12"			0	55	62	77		70		Ice		53
No. Anglers Checked	0	0		5	7	5	11		0				28
No. of Trout Anglers	0	0		5	5	5	11						26
No. of Bass Anglers	0	0		0	2	0	0						2
Total Hours Fished	0	0		20.0	28.0	8.0	37.5						93.5
Total Hours Fished - Trout	0	0		20.0	22.0	8.0	37.5						87.5
Total Hours Fished - Bass	0	0		0	6.0	0.0	0.0						6.0
Total Trout Caught	0	0		3	10	11	22						46
Total Bass Caught	0	0		0	2	0	0						2
Total Fish Harvested	0	0		3	4	2	10						19
Rainbow Trout	0	0		3	2	2	10						17
Largemouth Bass	0	0		0	2	0	0						2

#### Measured Fish Harvest Size

Rainbow Trout No.	0	0	0	3	2	2	2	0	0	0			9
Average Size (inches FL)				17.0	16.2	16.9	17.5						16.9
Black Bass No.				0	2	0	0						2
Average Size (inches TL)					13.7								13.7

#### Angler Catch Rates

Trout / Hour				0.15	0.45	1.38	0.59						0.53
Trout / Angler				0.60	2.00	2.20	2.00						1.77
Bass / Hour					0.33								0.33
Bass / Angler					1.00								1.00

Table 2

**Wilson Sink Reservoir Fish Stocking**

**2014**

Date	Number of Fish Stocked	Pounds	Avg. Size (in.)	Species	Number / Pound	Strain	Water Temp.	Tank Temp.
May 13, 2014	6,000	2,000	9.4	Rainbow Trout	3.0	Shasta		
May 21, 2014	6,000	1,800	9.4	Rainbow Trout	3.0	Shasta		
May 28, 2014	6,000	2,000	9.4	Rainbow Trout	3.0	Shasta		
May 29, 2014	5,000	2,000	9.9	Rainbow Trout	2.5	Shasta		
<b>TOTALS</b>	<b>23,000</b>	<b>7,800</b>	<b>9.5</b>	Avgerage	<b>2.9</b>	Avg. Temp. =		

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
2013	186	61	10.0	80	5.36	Good
2014	14	12	8.3	72	5.30	Good
<b>1997 - 2013 Avg.=</b>	<b>191</b>	<b>126</b>	<b>8.0</b>	<b>49</b>	<b>5.32</b>	<b>Good</b>

**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
2012	5	7	28	38	12	10
2013	0	8	28	31	15	18
<b>1997-2013 Avg.=</b>	<b>20</b>	<b>19</b>	<b>30</b>	<b>16</b>	<b>7</b>	<b>7</b>
2014	20	33	0	20	14	14

All age class/size distributions are approximations based on previous Wilson Sink Reservoir bass scale readings.