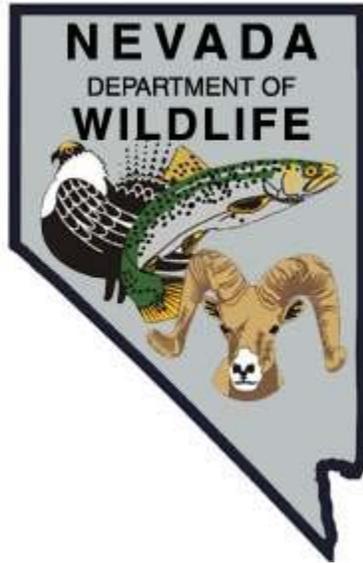


NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE SPORT FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-52
2016

WILSON SINK RESERVOIR
EASTERN REGION



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

Table of Contents

<u>Contents</u>	<u>Page</u>
SUMMARY	1
BACKGROUND	2
OBJECTIVES and APPROACHES	2
PROCEDURES	2
FINDINGS	3
MANAGEMENT REVIEW	7
RECOMMENDATIONS	7

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

List of Figures

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Rainbow Trout Creel Length Frequency 2000-2016	4
2	Rainbow Trout Creel Length Frequency 2016 vs. Angler Drop Box	5
3	Largemouth Bass Electrofishing Trends 2001-2016	6

List of Tables

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	2016 Creel Census Angler Use and Harvest Summary	9
2	2016 Fish Stocking	10
3	Largemouth Bass Electrofishing Trends 2001-2016	11

**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, 2016 through December 31, 2016*

SUMMARY

Wilson Sink Reservoir received above average amounts of water in the form of winter/spring precipitation during 2016, with the reservoir filling throughout February. The reservoir reached full capacity and overflow occurred through the spillway for a long duration during March through mid-June. Downstream irrigation demands during the late summer reduced the reservoir capacity to approximately 50% by November, with the improved boat ramp still operational through the fall.

Angler visitation to Wilson Sink Reservoir is still considered light compared to other regional fisheries and historic trends and angler success was sporadic and directly associated to angler efforts. Thirteen days of opportunistic angler contacts conducted in 2016 contacted 43 anglers consisting of 39 trout anglers and four largemouth bass/trout anglers. Trout anglers reported catching 109 rainbow trout and harvesting 35 (32% of total rainbow trout caught) in 107 hrs of fishing effort, for a catch rate of 1.02 rainbow trout per hour. Average size of 19 rainbow trout measured during creel surveys was 16.2 in fork length (FL). Four largemouth bass anglers reported fishing 11 hrs to catch 38 largemouth bass for an annual catch rate of 3.45 largemouth bass per hour and 9.5 largemouth bass per angler. The average size of the two largemouth bass measured during creel was 11.4 in total length. Approximately 32,137 Eagle Lake strain rainbow trout weighing 10,975 lbs and averaging 9.5 in FL was stocked between June and October 2016. Fall trout stocking was reduced due to lower reservoir water levels and reduction in Tahoe strain rainbow trout availability within the region.

On July 25, plankton/quagga mussel samples were collected at Wilson Reservoir. The samples were collected near the dam and processed by two separate laboratories, which resulted in both the microscopy and PCR testing coming back negative.

Fish salvages below Wilson Sink Reservoir spillway and plunge pool did not occur in 2016 because the sportfish presence during ocular surveys was negligible and identified as not cost effective.

Largemouth bass augmentation did not occur in 2016 due to good electrofishing and creel survey results identifying sustainable and improving largemouth bass population during 2016.

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, which continues today.

OBJECTIVES and APPROACHES

Objective: General Sport Fisheries Management

Approach:

- Recover stranded sport fish from the pool below the spillway overflow and barriers after spring runoff and return them to the reservoir as needed.
- Monitor previous drought effects on fishery population health and non-game fish population status. Electroshock to assess the fishery when applicable and feasible.
- Sample for occurrence of quagga mussel veligers through plankton net tows conducted two to four times between June and September at one site. Conduct visual and tactile surveys of artificial and natural solid substrates in conjunction with veliger sampling.

PROCEDURES

Angler contacts were conducted throughout the year, with most of the fishing pressure occurring from May through July 2016. 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 August 31, 2016, the Clark-Coffelt electroshocking 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, and 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. Electro-fisher box settings and relevant survey information were:

Pulse – DC	Pulse Frequency – 60	Shocking Efficiency - Fair
Volts – 680	Pulse Width - 5 milliseconds	Time of Day – 1930 – 2200
Output – 4-5 amps	Shocking Time ~2,872 sec.	Water Temp – 66°F
Water Conditions – Algae absent, water level approx. 50% capacity, weeds low.		

Plankton net tows were conducted in July, utilizing a 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

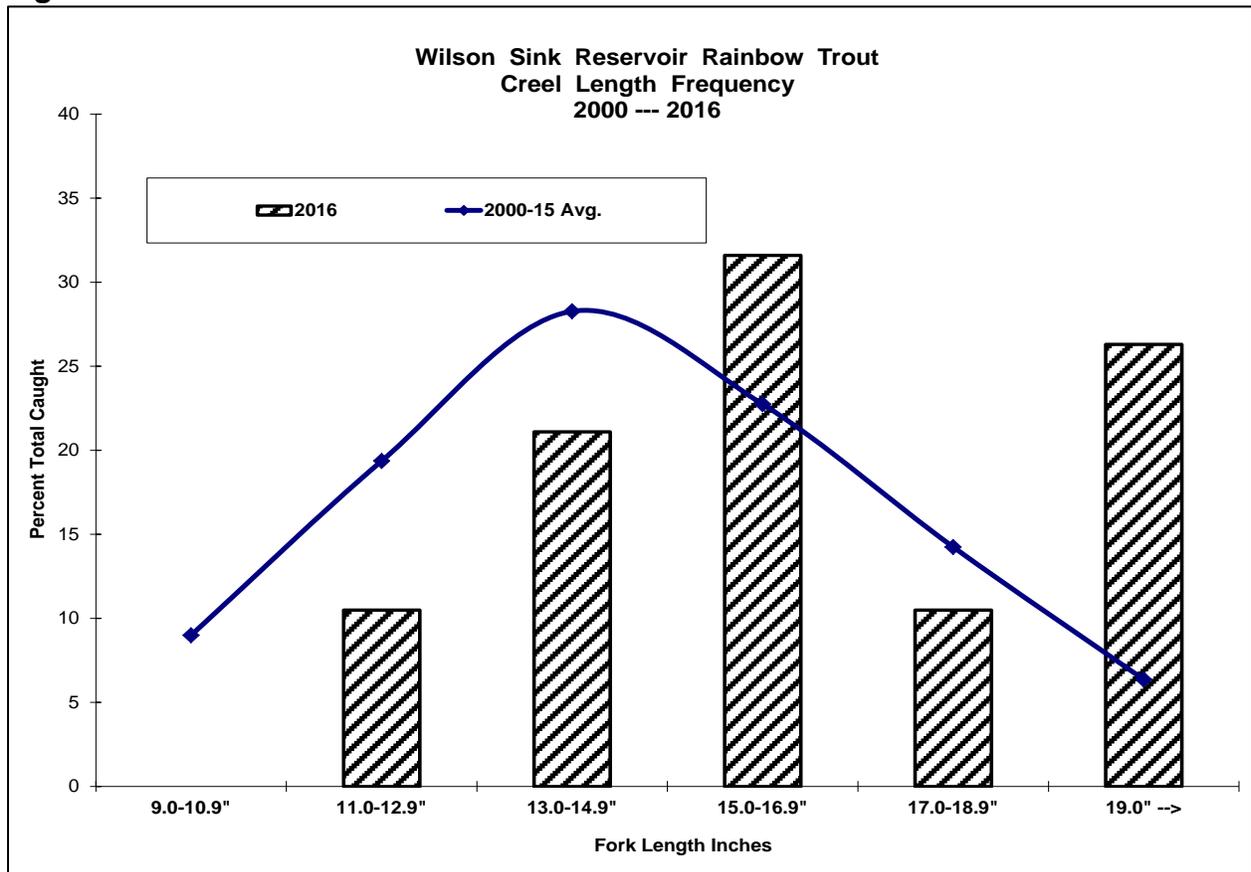
The 2016 monthly and annual angler use, catch rate, and harvest summaries for Wilson Sink Reservoir are presented in Table 1. Thirteen days of random angler surveys resulted in contacting 43 anglers, which consisted of 39 trout anglers and four largemouth bass anglers and/or combination (bass/trout) anglers.

Trout anglers reported catching 109 rainbow trout and harvesting 35 rainbow trout (32% of total rainbow trout caught) in 107 hours of fishing effort. This equates to a catch rate of 1.02 rainbow trout per hour, which is higher than the long-term average of 0.70 rainbow trout per hour.

During the opportunistic angler contact survey, 19 rainbow trout were measured and they ranged in size from 11.7 to 20.7 in FL. The measured average size of 16.2 in FL exceeds the management goal of 13.0 to 14.0 inches average harvest length. Figure 1 illustrates the length frequency analysis of the 19 rainbow trout caught in 2016, compared to the long-term trend from 2000 to 2015. Fish larger than 17 inches FL exceeded (37% of 2016 total catch) the cumulative 16-year long-term average; however, total number of rainbow trout measured was significantly down from the historic average of 285 rainbow trout caught per year.

Fifteen rainbow trout were weighed for body condition analysis during the angler contact survey. The average body condition was 3.27 for a rating of poor. Composition of these rainbow trout revealed 53% in poor body condition and 47% fair condition. The majority of trout measured in 2016 were spillway fish caught below the falls and had extended residency in the swift current provided limited food resources and decreased body weight.

Figure 1.

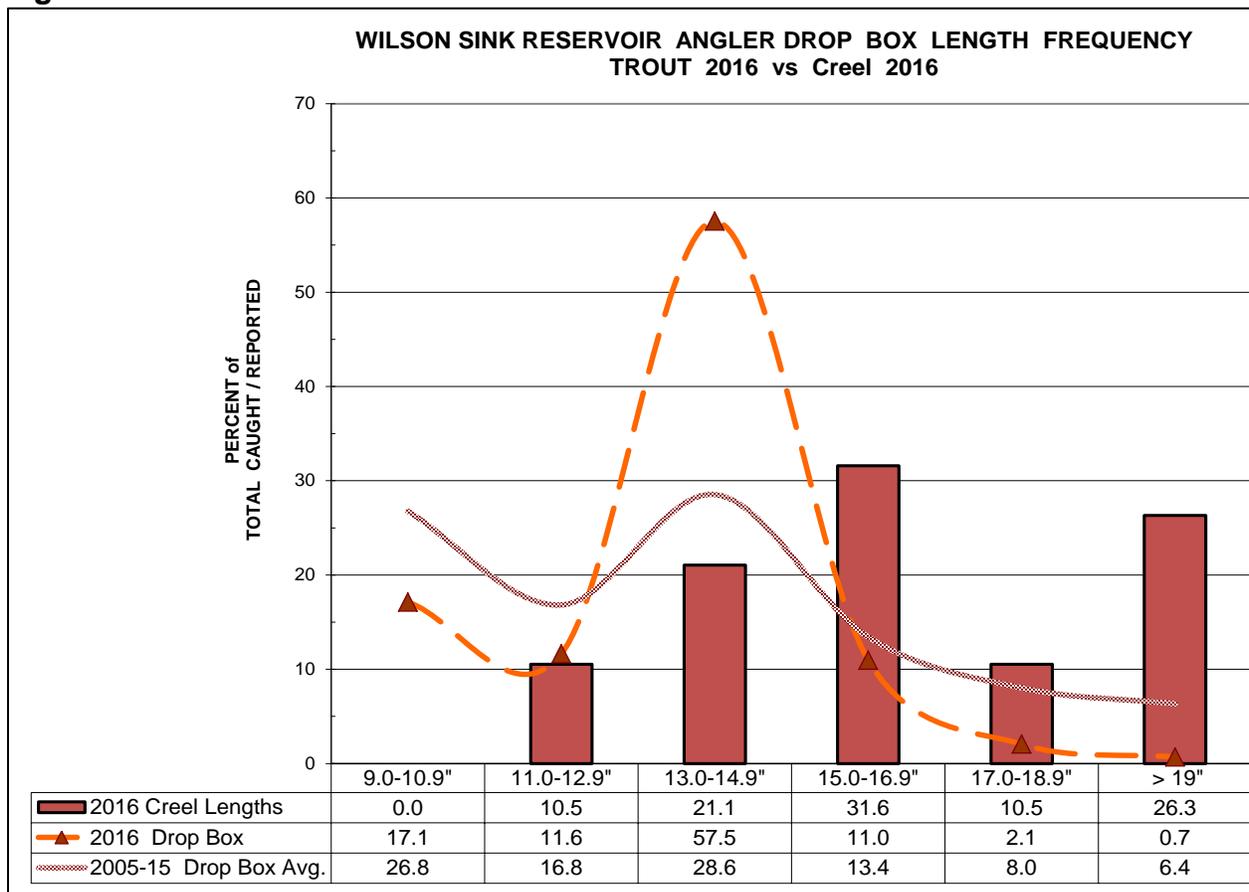


Approximately 32,137 Eagle Lake strain rainbow trout weighing 10,975 pounds and averaging 9.5 in FL were stocked over five days in June and October 2016. This was significantly less than previous stocking allocations to accommodate regional stocking adjustments (shortages) to area fisheries in 2016 (Table 2). The long-term average number of catchable trout stocked is 46,441 per year at Wilson Sink Reservoir.

Interest in largemouth bass angling was light for late spring and summer even though success was fair to good. Four bass anglers reported fishing 11 hrs to catch 38 largemouth bass for an annual average catch rate of 3.45 largemouth bass per hour and 9.5 largemouth bass per angler, significantly higher than the long-term average. The average size of two largemouth bass measured during angler surveys was 11.4 in TL.

The volunteer angler drop-box was in use in 2016, with 27 surveys received from June through September. Twenty-nine anglers fished 187 hrs to catch 260 fish (146 rainbow trout and 114 largemouth bass) for a catch rate of 1.4 fish per angler hour and 9.0 fish per angler, significantly higher than the 2016 angler contact survey results. Lengths were reported for 146 rainbow trout, with the majority (57.5%) being in the 13.0 to 14.9 in. size range. This does not directly correspond with the 2016 contact angler survey for measured trout, but does with the long-term harvest average lengths (Figures 1 and 2). Anglers also reported measurements for 114 largemouth bass, with 82% (93 fish) reported in the 9.0 to 10.9 inch size range.

Figure 2.



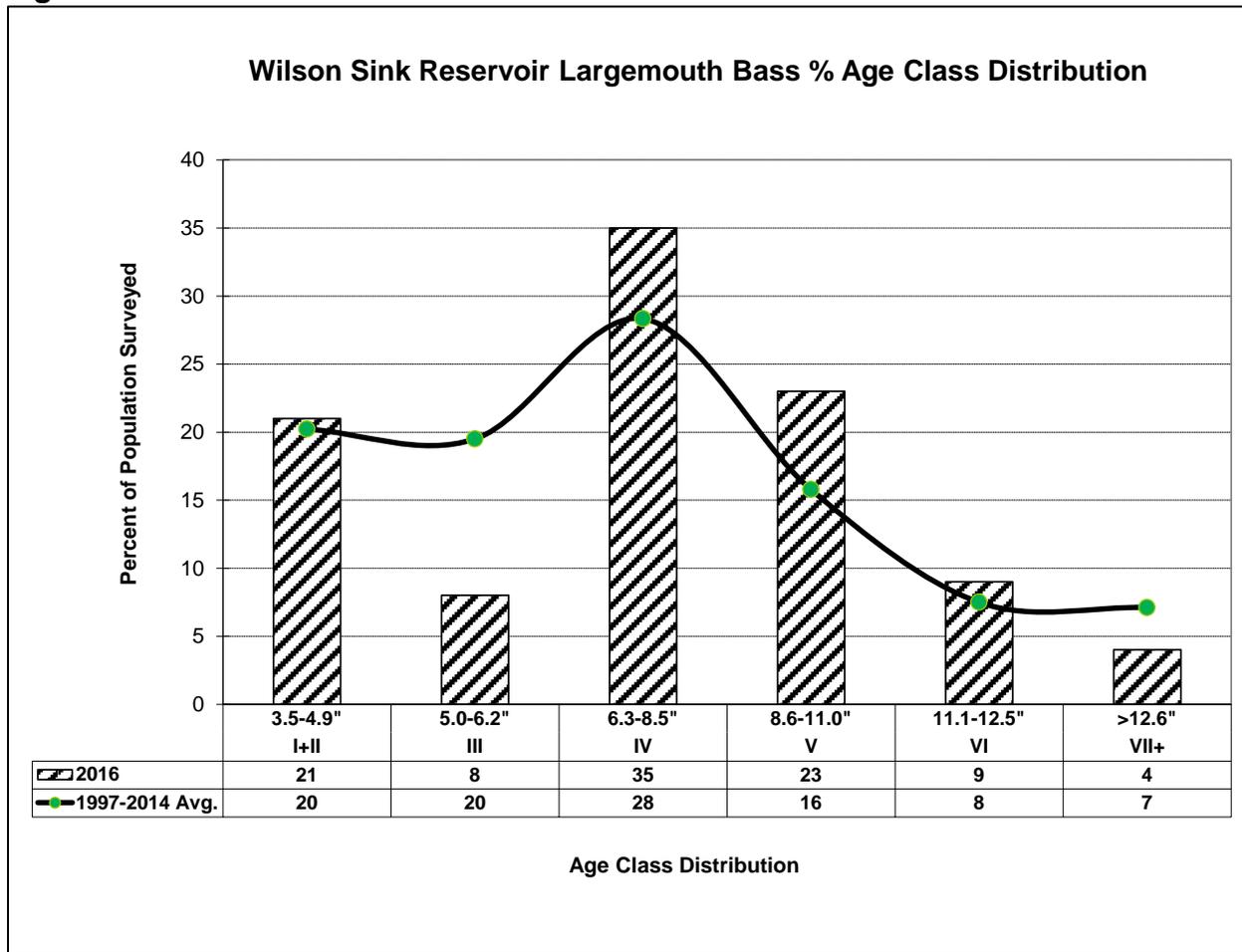
Electrofishing Survey

A total of 103 largemouth bass were captured during the late August sampling effort, ranging in total length (TL) from 2.8 to 13.7 inches, with an average size of 7.3 inches TL. A total of 17 rainbow trout averaged 14.2 in TL (size range 9.6 – 18.7 in TL), 13 Bridgelp suckers averaged 7.2 in TL, and two reidside shiners averaged 2.9 inches TL.

An electrofishing effort of approximately 2,872 seconds (47.9 minutes) caught 103 bass that equates to a capture rate of 129 bass per hour. Age class distribution in

the electroshocking inventory was 21% classes I and II (20 fish), 8% (eight fish) class III, 35% (33 fish) class IV, 23% class V (22 fish), 9% (eight fish) class VI and 4% (four fish) class VII and older (Figure 3). The largest bass captured in 2016 was 13.7 inches TL and weighed in at 1.2 pounds. The RSD-10 (Relative Stock Density-10 inch) quotient is 61 for 2016, indicating a largemouth bass population weighted toward the smaller fish (<10 in).

Figure 3.



Largemouth Bass body condition values and ratings were calculated on 36 measured bass greater than 8.0 in TL and ranged from 4.42 (fair) to 6.12 (excellent), for an overall sample average of 5.08 (good). The average condition value decreased from 5.30 (good) in 2014 and down from the 19-year average value of 5.32 (Good) (Table 3). Percent composition by group ratings in 2016 were 0% poor, 30.5% fair, 52.8% good, and 16.7% excellent.

The 2016 electrofishing survey was considered average for numbers and slightly smaller bass size sampled (7.3 in TL), but still provided adequate percentages for keeper size bass (Class V+ > 8.6 inches TL). Recovery from the previous 4-year drought was evident and should continue to rebound the next couple of years.

Spillway Channel Fish Salvage

No salvages occurred below the Wilson Sink Reservoir concrete spillway because there were minimal amounts of game fish residing in the spillway channel and pools in 2016 despite a long duration of reservoir spill. Reservoir capacity achieved a level of 100% by March. 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.

Quagga Mussel Monitoring

On July 25, plankton/quagga mussel samples were collected at Wilson Sink Reservoir. The samples were collected near the dam and processed by two separate laboratories, which resulted in both the microscopy and PCR testing coming back negative for this body of water.

Largemouth Bass Augmentation

No largemouth bass were augmented into Wilson Sink Reservoir during 2016 due to good observations and positive results of the 2016 electroshocking and angler surveys. Data suggests there is a natural rebuilding of the largemouth bass fishery.

MANAGEMENT REVIEW

All relevant job objectives for Wilson Sink Reservoir were completed in 2016. Diminished angler interest in fishing Wilson Sink Reservoir produced below average results for all objectives. These realizations were expected due to the previous years of drought. Future management should be directed at continued 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.

Prepared by: Chris Drake
Eastern Region
Fisheries Biologist

Date: February 2017

Table 1

Wilson Sink Reservoir

2016 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	1	1	2	1	3	1	0	1	1	0	13
Avg. Reservoir Water Temp.	<i>Ice=6.5</i>	<i>Ice=11</i>	45	48	63	71	73	76			51		61
No. Anglers Checked	0	0	0	0	20	2	21	0			0		43
No. of Trout Anglers					20	2	17						39
No. of Bass Anglers					0	0	4						4
Total Hours Fished					51.0	5.0	62.0						118.0
Total Hours Fished - Trout					51.0	5.0	51.0						107.0
Total Hours Fished - Bass					0.0	0.0	11.0						11.0
Total Trout Caught					55	3	51						109
Total Bass Caught					0	0	38						38
Total Fish Harvested					14	3	23						40
Rainbow Trout					14	3	18						35
Largemouth Bass					0	0	5						5
Measured Fish Harvest Size													
Rainbow Trout No.					12	3	4						19
Average Size (inches FL)					17.0	15.6	14.2						16.2
Black Bass No.					0		2						2
Average Size (inches TL)							11.4						11.4
Angler Catch Rates													
Trout / Hour					1.08	0.60	1.00						1.02
Trout / Angler					2.75	1.50	3.00						2.79
Bass / Hour							3.45						3.45
Bass / Angler							9.50						9.50

Table 2

Wilson Sink Reservoir Fish Stocking

2016

Date	Number of Fish Stocked	Pounds	Avg. Size (in.)	Species	Number / Pound	Strain	Water Temp.	Tank Temp.
June 2, 2016	5,400	2,000	9.7	Rainbow Trout	2.7	Eagle Lake	67	54
June 2, 2016	5,400	2,000	9.7	Rainbow Trout	2.7	Eagle Lake	67	53
June 3, 2016	6,600	2,000	9.1	Rainbow Trout	3.3	Eagle Lake	64	54
June 3, 2016	6,600	2,000	9.1	Rainbow Trout	3.3	Eagle Lake	70	56
June 6, 2016	4,042	1,225	9.1	Rainbow Trout	3.3	Eagle Lake	69	55
October 6, 2016	4,095	1,750	10.2	Rainbow Trout	2.3	Eagle Lake	57	53
TOTALS	32,137	10,975	9.5	Avgerage	2.9	Avg. Temp. =	66	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	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
2015	No Survey					
2016	129	103	7.3	61	5.08	Good
1997 - 2014 Avg.=	181	120	8.0	50	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.