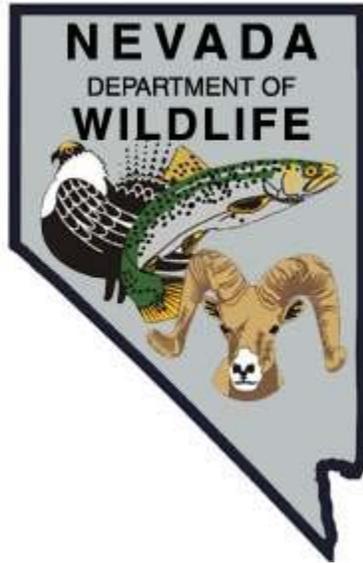


NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE SPORT FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-53
2017

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**

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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, 2017 through December 31, 2017*

SUMMARY

Wilson Sink Reservoir received above average amounts of water in the form of winter/spring precipitation during 2017, with the reservoir filling throughout February. The reservoir reached full capacity and overflow occurred through the spillway for a long duration during March through late June. Assessment of reservoir conditions including volume, water quality, temperature, road conditions, and stocking opportunities was conducted in March 2017. Coordination with hatchery personnel and NDOW Conservation Education Division regarding preferred stocking dates and fishery conditions allowed for maximum use of the resource with minimum loss of fish through entrainment over the spillway. Downstream irrigation demands and evaporation 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 was still considered light compared to other regional fisheries and historic trends, with angler success being sporadic and directly associated with angler efforts. Ten days of opportunistic angler contacts conducted in 2017 contacted 50 anglers, consisting of 35 trout anglers and 16 largemouth bass/trout anglers. Trout anglers reported catching 45 rainbow trout and harvesting 14 (31% of total rainbow trout caught) in 80 hrs of fishing effort, for a catch rate of 0.56 rainbow trout per hour. Average size of 13 rainbow trout measured during creel surveys was 15.8 in total length (TL). Sixteen largemouth bass anglers reported fishing 29 hrs to catch 89 largemouth bass, for an annual catch rate of 3.07 largemouth bass per hour and 5.56 largemouth bass per angler. The average size of the two largemouth bass measured during creel surveys was 11.0 in total length.

A total of 44,980 Eagle Lake and Tahoe strain rainbow trout, weighing 11,039 lbs and averaging 8.6 in fork length (FL) was stocked during June and October. Approximately 900 three-inch bluegill sunfish were introduced into Wilson Sink Reservoir on June 9, 2017 to diversify the largemouth bass diet and add to angler opportunity.

An electroshocking survey on August 2, 2017 captured 63 largemouth bass, seven bridgelip suckers, four rainbow trout, and one bluegill sunfish. Approximately 66% of the bass sampled were classified as Class III (5.0 - 6.2 inches TL) fish, indicating a successful carryover of bass from 2016, the first good water year after a 4-year drought.

In conjunction with the summer electroshocking survey, five largemouth bass and four rainbow trout were collected for mercury concentration analysis. The largemouth bass averaged 11.2 inch TL (range 7.0 – 13.2 inches TL) and had an average mercury concentration of 0.22 ppm (range 0.13 - 0.31 ppm). The four rainbow trout averaged 16.1 inch TL (range 10.6 – 18.7 inch TL) and had an average mercury concentration of 0.15 ppm (range 0.07 - 0.21 ppm).

No plankton/quagga mussel samples were collected at Wilson Sink Reservoir during 2017 due to time constraints associated with intensified sampling at both South Fork and Wildhorse reservoirs.

Fish salvages below Wilson Sink Reservoir spillway and plunge pool did not occur in 2017 because the sportfish presence during ocular surveys was negligible and identified as not cost effective.

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.

- Collect five rainbow trout and five largemouth bass for mercury concentration analysis.
- Introduce bluegill into Wilson Sink Reservoir to supplement largemouth bass diet.
- 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 June to July 2017. 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 2, 2017, the Smith-Root/Clark 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. Sampling areas were the boat launch to the rocky point on the north side of the reservoir, 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. The electroshocking box settings and other relevant survey information were:

Pulse – DC	Pulse Frequency – 120	Shocking Efficiency - Fair
Volts – 480	Pulse Width - 5 milliseconds	Time of Day – 2030 – 2230
Output – 7-9 amps	Shocking Time ~2,390 sec.	Water Temp. – 73.4°F
Water Conditions – Algae absent, water level approximately 90% of capacity, weeds low.		

Plankton net tows were not conducted in July. Visual observations of shoreline substrate revealed no presence of quagga mussels.

FINDINGS

Opportunistic Angler Contacts and Surveys

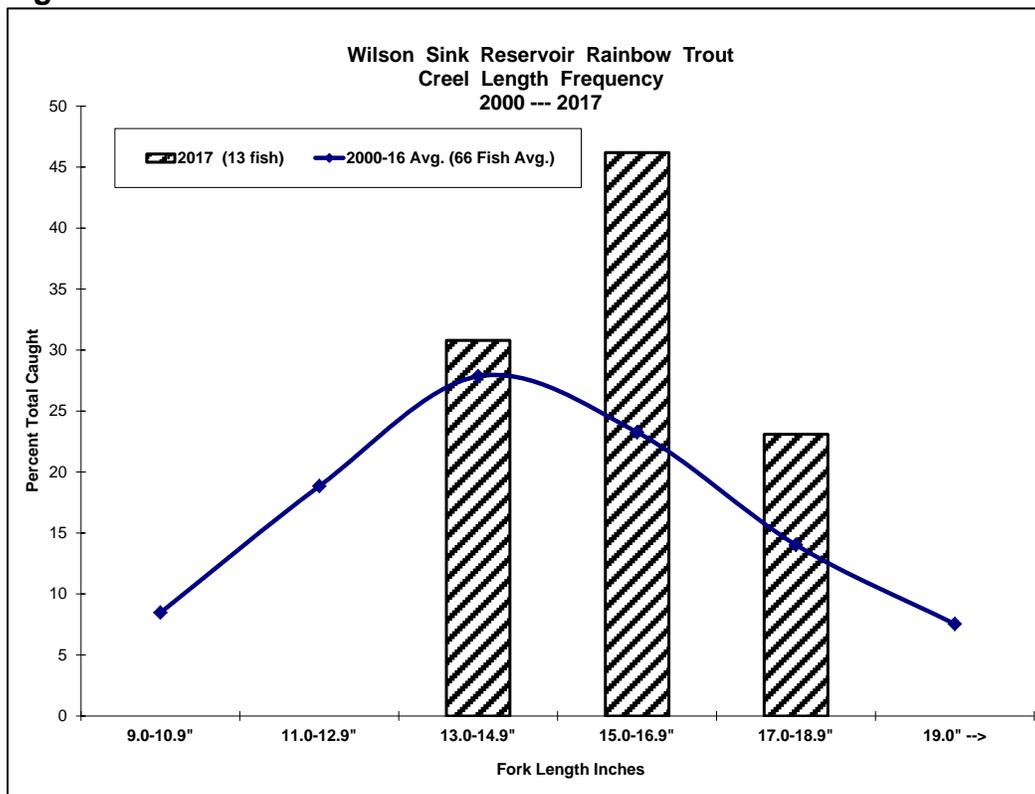
The 2017 monthly and annual angler use, catch rate, and harvest summaries for Wilson Sink Reservoir are presented in Table 1. Ten days of random angler surveys

resulted in contacting 50 anglers, who consisted of 35 rainbow trout anglers and 16 largemouth bass anglers and/or combination (bass/trout) anglers.

Trout anglers reported catching 45 rainbow trout and harvesting 14 rainbow trout (31% of total rainbow trout caught) in 80 hours of fishing effort. This equates to a catch rate of 0.56 rainbow trout per hour, which is slightly lower than the long-term average of 0.70 rainbow trout per hour.

During the opportunistic angler contact survey, 13 rainbow trout were measured and ranged in size from 13.6 to 18.3 in TL. The measured average size of 15.8 in TL exceeded the management goal of 13.0 to 14.0 inches average harvest length. Figure 1 illustrates the length frequency analysis of the 13 rainbow trout caught in 2017 compared to the long-term trend from 2000 to 2016. Fish larger than 15 in TL exceeded the cumulative 17-year long-term average (69% of 2017 total catch); however, total number of rainbow trout measured in 2017 was significantly down from the historic annual average.

Figure 1.



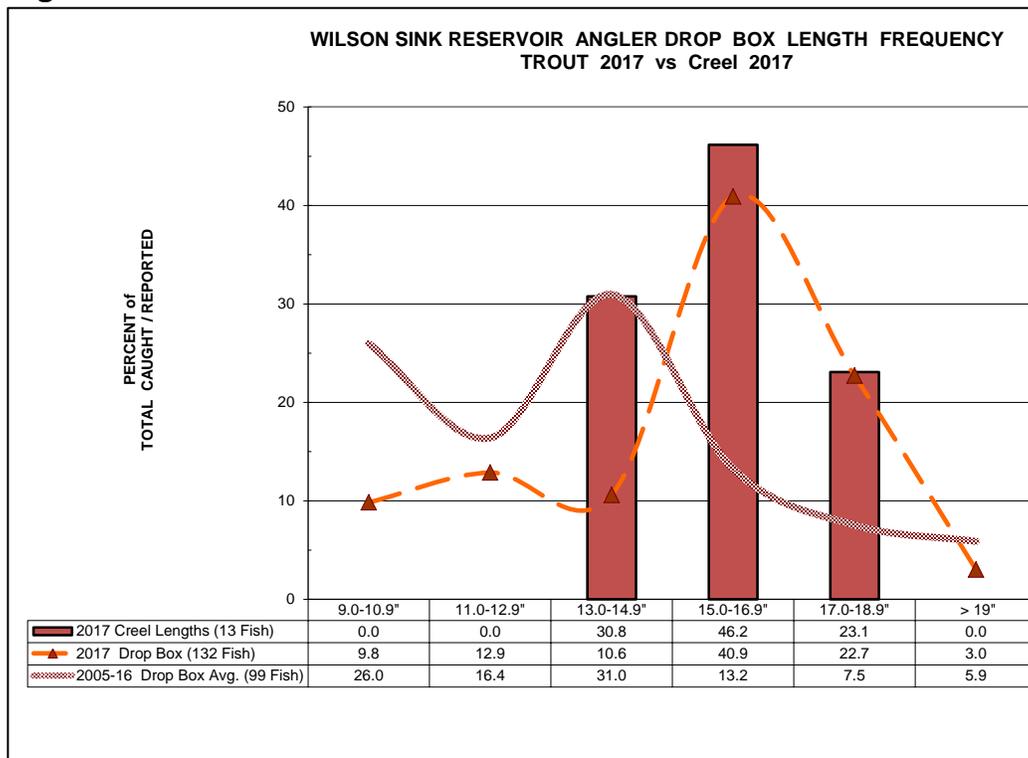
Twelve rainbow trout were weighed during the angler contact survey for body condition analysis. The average body condition was 4.05 for a rating of good. Composition of these rainbow trout revealed 33% in poor body condition, 33% fair, 17% in good, and 16% in excellent condition.

A total of 44,980 Eagle Lake and Tahoe strain rainbow trout, weighing 11,039 lbs and averaging 8.6 in FL were stocked during June and October 2017 (Table 2). The long-term average number of stocked catchable trout is 46,441 per year at Wilson Sink Reservoir. Approximately 900 three-inch bluegill were introduced into Wilson Sink Reservoir on June 9, 2017 to diversify the largemouth bass diet and potentially establish a secondary panfish fishery. Of the 900 bluegill stocked in 2017, approximately 20% were five inches or greater, indicating potential spawning activity could have occurred in late spring 2017.

Interest in largemouth bass angling was fair for the summer even though success was fair to good. Sixteen bass anglers reported fishing 29 hrs to catch 89 largemouth bass for an average catch rate of 3.07 largemouth bass per hour and 5.6 largemouth bass per angler, significantly higher than the long-term average. The average size of two largemouth bass measured during angler surveys was 11.0 in TL.

The volunteer angler drop-box was in use in 2017, with 26 surveys received from April through October. Twenty-five anglers fished 145 hrs to catch 148 fish (132 rainbow trout and 16 largemouth bass) for a catch rate of 1.0 fish per angler hour and 5.9 fish per angler, significantly higher than the 2017 angler contact survey results. Lengths were reported for 132 rainbow trout, with the majority (40.9%) being in the 15.0 to 16.9 in size range. This corresponds directly with the 2017 contact angler survey for measured rainbow trout, but does not correspond with the long-term angler drop-box average lengths (Figures 1 and 2). Anglers also reported measurements for 16 largemouth bass, with 88% (14 largemouth bass) reported in the 9.0 to 12.9 inch size range.

Figure 2.

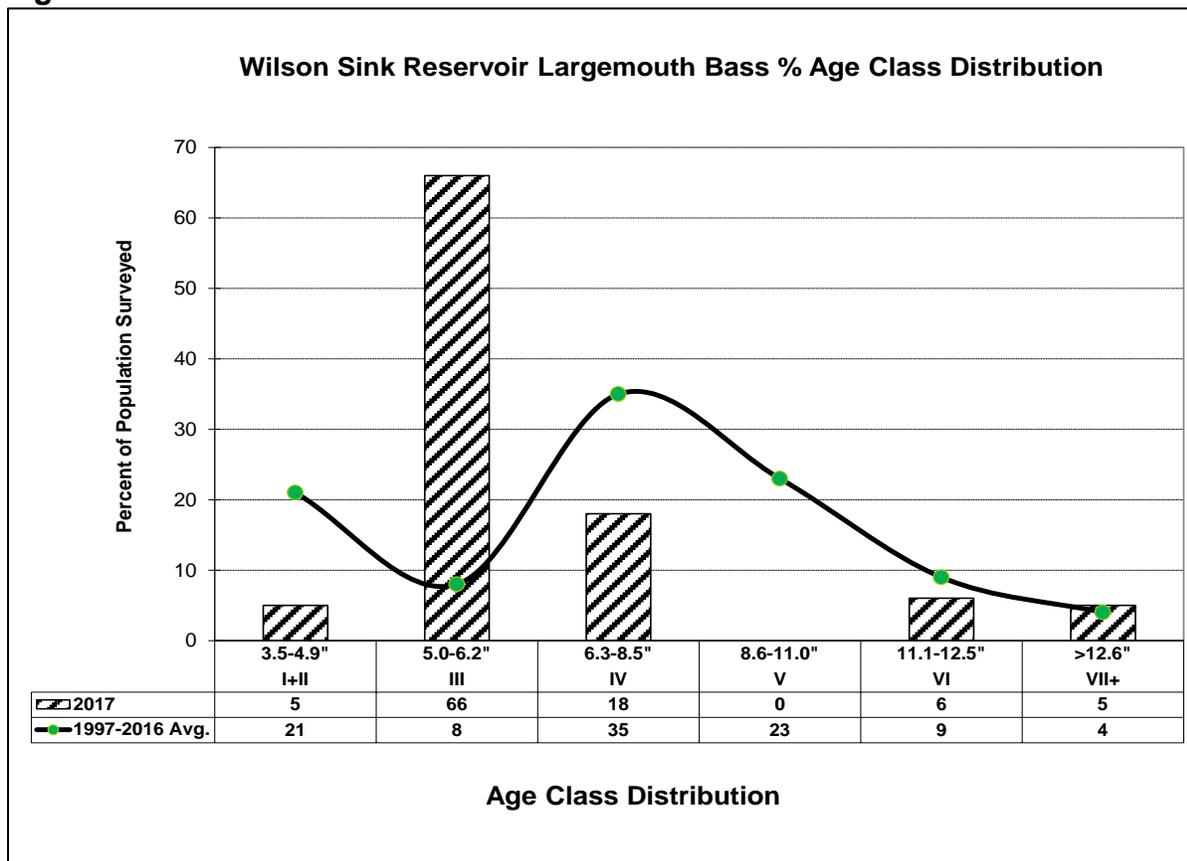


Electroshocking Survey

A total of 63 largemouth bass were captured during the early August sampling effort, ranging in total length (TL) from 2.4 to 15.9 in, with an average size of 6.5 in TL. A total of four rainbow trout were netted and measured, with an average size of 16.1 in TL (size range 10.6 – 18.7 in TL). Seven Bridgelip suckers averaging 9.0 in TL and one bluegill at 5.6 in TL were also collected during the electroshocking survey.

An electroshocking effort of approximately 2,390 seconds (39.8 minutes) caught 63 largemouth bass, equating to a capture rate of 95 largemouth bass per hour (Table 3). Age class distribution was 5% class I+II (three fish), 66% (41 fish) class III, 18% (11 fish) class IV, 0% class V, 6% (four fish) class VI, and 5% (3 fish) class VII and older (Figure 3). The largest largemouth bass captured in 2017 was 15.9 inches TL and weighed in at 2.9 pounds. The RSD-10 (Relative Stock Density-10 inch) quotient was 75 for 2017, indicating a largemouth bass population weighted toward the younger fish (<8.0 in).

Figure 3.



Largemouth bass body condition values and ratings were calculated on eight measured largemouth bass greater than 8.0 in TL and ranged from 4.51 (fair) to 7.25 (excellent). The overall sample average was 5.76 (Excellent); however, caution should be exercised since only eight largemouth bass were weighed.

The 2017 electroshocking survey was considered average for numbers and for slightly smaller-sized largemouth bass sampled (6.5 in TL), with limited percentages for keeper-sized largemouth bass (class V+, >8.6 inches TL). Recovery from the previous 4-year drought was evident and should continue to rebound in the next couple of years. Anglers did report catching decent size largemouth bass during the summer of 2017, with a fair amount of keepers.

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 2017, 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 depending on duration and intensity of springtime overflow and amount of game fish present.

Collection of Sport Fish for Mercury Concentration Analysis

In conjunction with the summer electroshocking survey, five largemouth bass and four rainbow trout were collected for mercury concentration analysis. Figure 4 illustrates that largemouth bass averaged 11.2 inch TL (range 7.0 – 13.2 inches TL) and had an average mercury concentration of 0.22 ppm (range 0.13 - 0.31 ppm). The four rainbow trout averaged 16.1 inch TL (range 10.6 – 18.7 inch TL) and had an average mercury concentration of 0.15 ppm (range 0.07 - 0.21 ppm). The concentration of mercury in sport fish tissue varies from species to species and from year to year, as Figures 4 and 5 illustrate. Periodic sampling of game fish for mercury should continue every five years to document changes and variations in concentrations and environmental conditions.

Quagga Mussel Monitoring

No plankton/quagga mussel samples were collected at Wilson Sink Reservoir during 2017 due to time constraints associated with intensified sampling at both South Fork and Wildhorse reservoirs. Visual observations of shoreline substrate revealed no presence of quagga mussels.

Bluegill Introduction

On June 9, 2017, approximately 900 bluegill averaging three inches (Photograph 1) was stocked into Wilson Sink Reservoir to supplement the largemouth bass diet and potentially establish a secondary panfish fishery. A second stocking was to occur in late August, but a mechanical problem with the fish truck precluded the stocking. All bluegill were captured from Andorno Pond in Humboldt County. One 5.6-inch TL bluegill was recaptured during the August 2, 2017 electroshocking survey and various sightings from anglers indicate good distribution of bluegill within the reservoir. Of the 900 bluegill stocked in 2017, approximately 20% were five inches or greater, indicating potential spawning activity could occur in late spring 2017.

Figure 4.

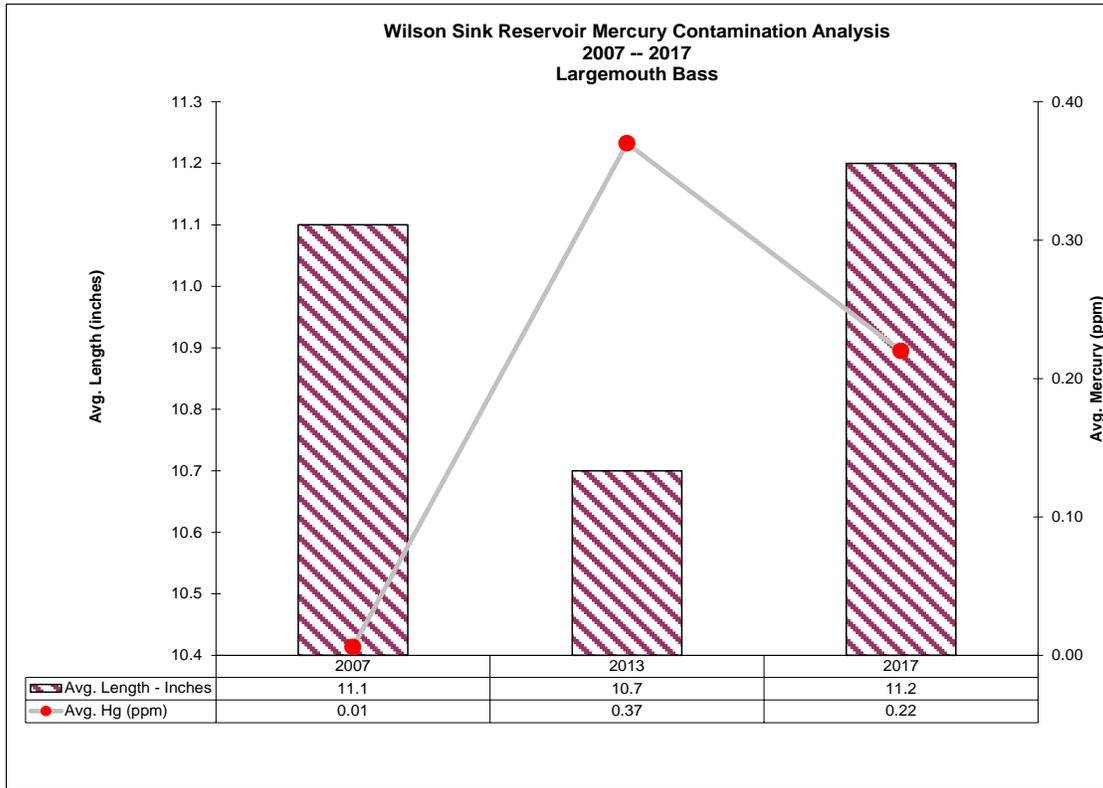
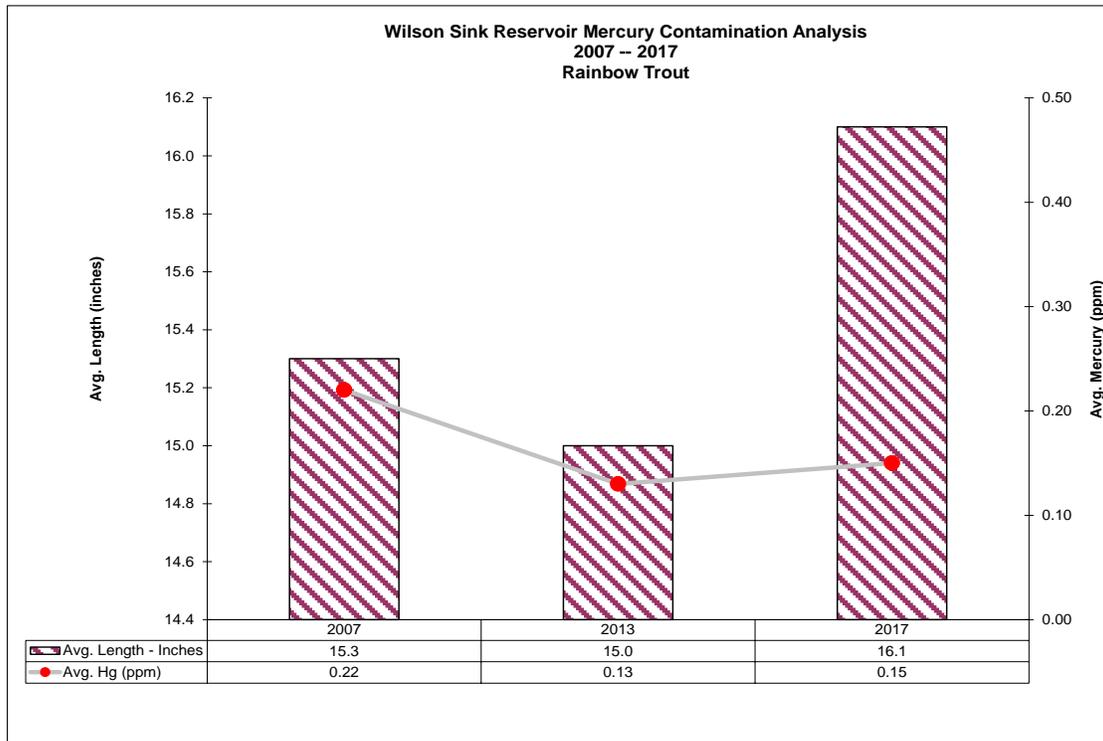


Figure 5.



Photograph 1.



A 3.5-inch bluegill captured from Andorno Pond, Humboldt County and transplanted into Wilson Sink Reservoir on June 9, 2017. Numerous age classes of bluegill were transplanted, conceivably allowing for a spawn and recruitment to occur in 2017.

MANAGEMENT REVIEW

All relevant job objectives for Wilson Sink Reservoir were completed in 2017. Tapered 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 towards continued rebuilding of 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 electroshocking survey on a three-year rotational basis to assess age class distribution, body condition, and RSD of the largemouth bass population and document the status of the introduced bluegill population.
- Monitor efficacy and continue salvaging game fish from below the Wilson Sink Reservoir spillway when necessary.

- Collect quagga mussel plankton samples on an annual basis when needed.

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Eastern Region
Fisheries Biologist

Date: January 2018

Table 1

Wilson Sink Reservoir

2017 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	1	0	3	3	0	0	1	0	0	10
Avg. Reservoir Water Temp.	Ice=12		44	48		66	74						58
No. Anglers Checked	0		0	1		17	32			0			50
No. of Trout Anglers				1		17	17						35
No. of Bass Anglers				0		0	16						16
Total Hours Fished				1.0		35.0	73.0						109.0
Total Hours Fished -Trout				1.0		35.0	44.0						80.0
Total Hours Fished - Bass				0		0.0	29.0						29.0
Total Trout Caught				5		20	20						45
Total Bass Caught				0		3	86						89
Total Fish Harvested				5		2	12						19
Rainbow Trout				5		2	7						14
Largemouth Bass				0		0	5						5
Measured Fish Harvest Size													
Rainbow Trout No.				5		2	6						13
Average Size (inches FL)				15.6		17.2	15.6						15.8
Black Bass No.				0		0	2						2
Average Size (inches TL)							11						11.0
Angler Catch Rates													
Trout / Hour				5.00		0.57	0.45						0.56
Trout / Angler				5.00		1.18	1.18						1.29
Bass / Hour							2.97						3.07
Bass / Angler							5.38						5.56

Table 2

Wilson Sink Reservoir Fish Stocking

2017

Date	Number of Fish Stocked	Pounds	Avg. Size (in.)	Species	Number / Pound	Strain	Water Temp.	Tank Temp.
June 9, 2017	900	125	3.0	Bluegill Sunfish	20.0	Andorno Pond	61	61
June 14, 2017	7,880	2,000	8.6	Rainbow Trout	3.9	Eagle Lake	62	52
June 16, 2017	8,500	2,000	8.4	Rainbow Trout	4.3	Eagle Lake	66	53
June 19, 2017	7,860	2,000	8.6	Rainbow Trout	3.9	Eagle Lake	75	54
June 21, 2017	3,760	1,139	9.1	Rainbow Trout	3.3	Eagle Lake	73	54
October 5, 2017	8,700	2,000	8.3	Rainbow Trout	4.4	Tahoe	56	53
October 6, 2017	8,360	1,900	8.3	Rainbow Trout	4.4	Tahoe	55	53
TOTALS	45,960	11,164	8.6	Average	4.0	Avg. Temp. =	64	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
2017	95	63	6.5	75	5.76	Excellent
1997 - 2016 Avg.=	179	119	7.9	50	5.31	Good

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

RSD 10 2017 = 6 fish > 10 inches (*relative* quality catch length) / 8 TOTAL f fish > 8.0 inches (*minimum* stock length) = 75

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.

Figure 6.

