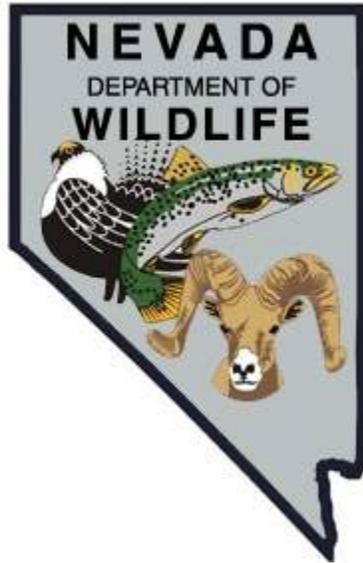


NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE SPORT FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORT

F-20-54
2018

SOUTH FORK 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: *South Fork Reservoir*
Period Covered: *January 1, 2018 through December 31, 2018*

SUMMARY

The fishery of South Fork Reservoir received moderate angler use in 2018 due in part to good water levels, healthy fish stocks, and a close proximity to urban areas in Elko County. South Fork Reservoir finished 2018 at approximately 85% of capacity (35,000 acre-feet of storage), with both improved boat ramps in service and no major angler/boater inconveniences observed. Coordination with NDOW hatchery personnel and the Conservation Education Division regarding preferred stocking dates, fishery conditions, updates, and fishing predictions allowed for maximum use of resources.

Fourteen days of random angler surveys contacted 117 anglers from January through December. Anglers reported fishing 338 hrs to catch 170 fish for annual average catch rates of 0.50 fish per hour and 1.45 fish per angler. The average harvest size for rainbow trout was 16.8 in TL. A total of 94,217 trout (46,305 were catchable size, >8.0 in) and 15,000 4.5-inch channel catfish were stocked during 2018 to augment existing populations.

Three spring gill net sets caught 20 rainbow trout, 2 smallmouth bass, 2 largemouth bass, 1 bowcutt trout, 1 wiper, and 15 Lahontan tui chub for a survey total of 41 fish. Rainbow trout ranged from 11.2 to 20.6 in TL and averaged 14.7 in TL, the bowcutt trout measured 11.7 in TL, smallmouth averaged 11.9 in TL, largemouth bass averaged 16.1 in TL, and the wiper measured 21.1 in TL. Lahontan tui chub averaged 14.0 inches TL.

A total of 249 largemouth bass and 40 smallmouth bass were sampled during the electroshocking survey, with good representation of all age classes present for largemouth bass. From 141 largemouth bass measured, the average was 11.4 inches TL and range from 2.6 (YOY) to 18.1 in TL. The 40 smallmouth bass had an average size of 7.3 in TL (size range from 3.3 [YOY] to 15.7 in TL), with 65% being Age Class III (5.0 to 7.9 in TL).

On June 25 and 26, 2018, 28 artificial fish habitat structures consisting of 5 Root Wads, 3 Root Wad kits, 2 Trophy Trees, 1 Trophy Tree kit, 2 Safe Haven kits, 6 Honey Hole shrubs, 6 Honey Hole Trees, and 3 Fishiding Fortresses were submerged via boat within 6 to 15 feet of water. Suitable locations were determined based on bathometric maps and then identified at the reservoir with a fish finding sonar.

South Fork Reservoir was first sampled for quagga mussels on May 29, with two of three samples coming back positive for zebra mussels via PCR testing. These results initiated additional sampling and on June 12 and July 9 and again with mussels being detected at all sites. A final round of sampling occurred in October, showing negative results for zebra and quagga mussel via PCR. All samples sent out for microscopy analysis in 2018 came back negative. As water levels dropped in late summer, visual surveys of exposed substrates produced no evidence of invasive mussels.

BACKGROUND

Unusual in concept for Nevada, the South Fork Dam was constructed in 1988 exclusively to create a recreationally based reservoir. The 40,000 acre-ft impoundment inundates approximately 1,650 acres and is a year-around multi-recreational attraction. The reservoir filled for the first time in 1995 and angler visits alone exceeded 25,000 days. A multi-storied fishery of stocked trout, black bass, catfish, and wipers has been established since water was first stored. Currently managed under a Coldwater, Quality Fishery Management Concept and, despite heavy angling pressure, the fishery continues to produce quality and an occasional trophy-sized game fish on a consistent basis. Careful attention is required in administration of management initiatives and monitoring of angler harvest and fish body condition as both recreational sport fish interest and the regional angler population increases.

OBJECTIVES and APPROACHES

Objective: General Sport Fisheries Management

Approaches:

- Conduct a general fisheries assessment through scheduled surveys to monitor for marked fish returns and body condition of game fish during drought conditions.
- Utilize gill nets for 3 net-nights and electroshocking to determine absence/presence of yellow perch.
- Salvage fish below South Fork Reservoir spillway after spring runoff as needed. Captured fish may be utilized for augmentation at other regional fisheries if needed (e.g., Cave Lake and Willow Creek Reservoir)
- Purchase and stock 10,000 channel catfish.
- Sample for occurrence of quagga mussel veligers through plankton net tows conducted two to four times between June and September at up to three sites. Conduct visual and tactile surveys of artificial and natural solid substrates in conjunction with veliger sampling.
- Install and map artificial fish habitat structures submerged in 2018 to document fish usage through ocular and sonar surveys.

PROCEDURES

General fisheries assessments consist of creel surveys scheduled a minimum of one day per month that document and analyze trends within the primary trout fishery. Data collected includes number of anglers, location, target species, and harvest. Harvest data includes identifying species, measuring size and weight, and noting fin clips or marks.

Three gill nets were set overnight in separate areas of the reservoir on May 24, soaked overnight, and retrieved on May 25, 2018. Nets measured 150 ft x 6 ft. One net was set along the east shoreline mid- to south end of the reservoir near the North Shore Campground. The second net was a buoy set on the west side, near Dixie Creek road access/west side park entrance in 7.0 ft of water. The third net was set at 1945 hrs off the southwest shoreline, west of the river inlet. Nets were fished overnight totaling 39.5 hours, or 13.2 hours each. Surface water temperature was 63°F on May 24 and 61°F on the morning of May 25. All game fish caught were weighed, measured, and returned back to the water if alive. Non-game fish were identified to species, measured, and then removed from the food chain.

The black bass population inventory occurred on October 17, 2018 utilizing the barge Smith-Root/Clark Electrofisher. The two fixed probe anodes were utilized along with the barge serving as the cathode. Electroshocking efficiency was fair to good in drawing and holding fish despite the late time of year. All fish were netted and held in a live well until completion of the transect. Fish were measured, weighed, and then released. The Smith-Root VVP-15B Electrofisher settings and other relevant information during this inventory are listed below:

South Fork Reservoir Electroshocking Survey – (October 17, 2018)

Pulse - DC	Pulse Width (millisec) – CPS - 3	Time – 1840 -- 2140
Volts – 550	Pulse Freq. (per sec) – 90	Water Condition – algae & weeds light
Output (amps) – 8-10	Shocking Time – 3,529 secs. (58.8 minutes = 0.98 Hr.)	Water Temp (°F) – 54°

Two different survey techniques were utilized for monitoring quagga mussels: plankton net tows and visual/tactile surveys of visible/exposed substrate. Plankton net tows were conducted May through October with a 63-µm mesh plankton net towed vertically from various depths.

In 2017, Habitat Conservation Fee contributed to the Eastern Region Aquatic Habitat Development Project (FY18 HCF Project #215). Artificial habitat structures were purchased for South Fork and Wildhorse reservoirs. Mossback Fish Habitat, Pond King Honey Hole, and Fishiding.com structures were made of nontoxic “scuffed” PVC trunks with composite limbs, poly pipe limbs, PVC flats that simulate shrubs, and trees

or root structures that would be found in a natural environment. The types of Mossback structures were Root Wad, Root Wad Kit with 3 Posts, Safe Haven, and Trophy Tree Kits.

FINDINGS

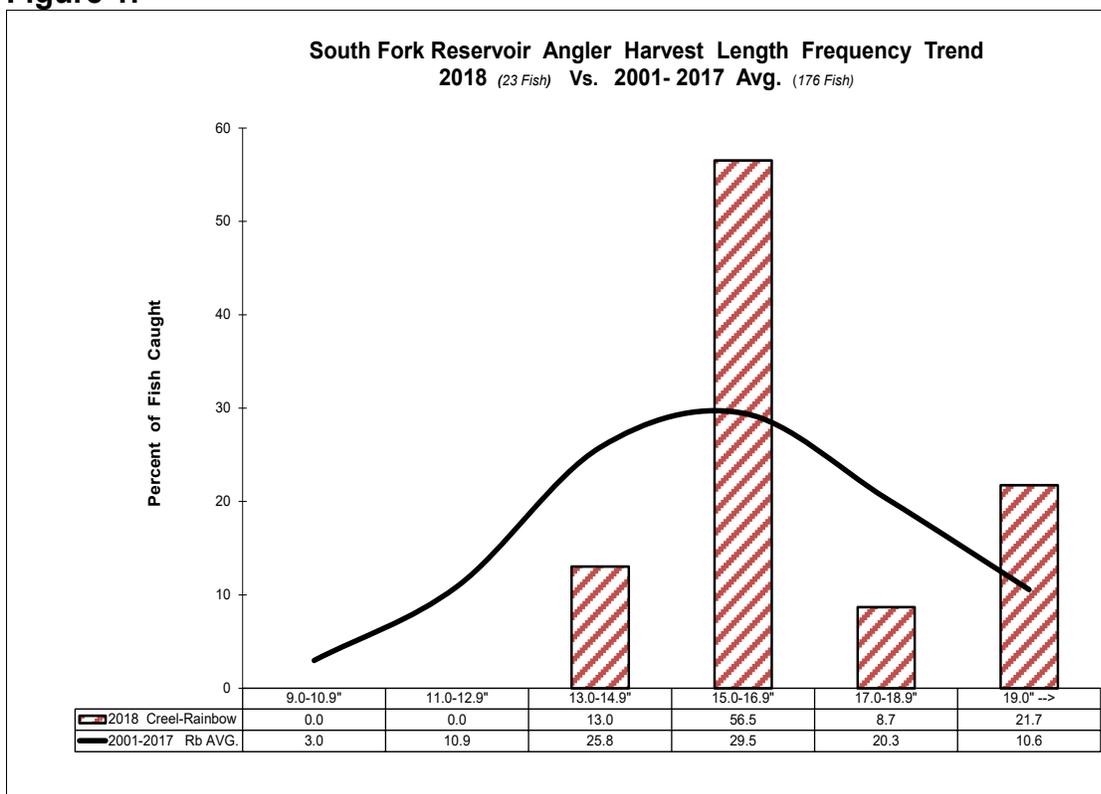
Opportunistic Angler Contacts and Surveys

During 2018, 117 anglers were contacted at South Fork Reservoir during 14 days of roving angler surveys (Table 1). Anglers fished 338 hrs and caught 170 fish, of which 136 were released (80% of total catch). Total angler success averaged 0.50 fish per hour and 1.45 fish per angler, trending up from last year and near the 2003 to 2017 long-term average of 0.56 fish per hour and 1.55 fish per angler. The average harvest size for 23 rainbow trout was 16.8 in TL.

Figure 1 illustrates angler harvest of rainbow trout length frequency compare to the 17-year average. Approximately 30% of the rainbow trout sampled in 2018 were greater than 17.0 in FL. This was comparable to the long-term average from 2001 to 2017; however, the 2018 overall sample size was only 23 fish.

All 23 rainbow trout were weighed for body condition analysis, resulting in 8.7% in fair condition, 65.2% in good condition, and 26.1% in excellent condition. Fish averaged 16.8 in TL and 2.16 lbs and had an overall body condition rating of good.

Figure 1.



Only one bowcutt or cuttbow trout was caught and surveyed, measuring 16.2 in TL and most likely stocked in 2017. No catchable size cuttbow trout were stocked in 2018 due to poor egg production. This hybrid trout species continues to assist in biological control of non-desirable fishes and in improving recreational angling opportunities for larger trout.

No wipers or channel catfish were caught or measured during angler surveys in 2018. However, a new water record wiper was established on April 20, 2018 that measured 30 inches TL and weighed 16 pounds 4 ounces (Photo 1).

In 2018, South Fork Reservoir received 46,305 catchable trout (>8.0 in TL) and 47,912 sub-catchable trout (Table 2). On April 25, approximately 15,000 five-inch channel catfish were stocked to augment the existing population.



Photograph 1. *Spring Creek, NV resident Everett Wisener with the new South Fork Reservoir water record wiper – 16 pounds 4 ounces and 30 inches in length!*

Spillway Fish Salvage

No fish salvage in the spillway channel occurred during 2018 due to the low sportfish presence. A low spring water level and controlled runoff within the basin resulted in reservoir discharge to occur only through the outlet tubes, thus resulting in minimal fish entrainment or escapement from the reservoir.

Quagga Mussel Surveys

Surveys conducted in May produced positive PCR results for zebra mussels at two of three sites. This result prompted additional sampling that occurred in June and July. PCR results again were positive and at levels higher than the May samples for all three samples. Fall sampling produced negative PCR results. However, all samples evaluated via microscopy resulted in finding no zebra or quagga mussel veligers. This was similar to results from 2014, followed by two years of consistently negative results. With no additional positive test results, i.e., microscopy or live mussels, South Fork Reservoir will continue to be a Watch List Water and surveys follow up surveys will be completed in 2019.

Sport Fish Population Surveys

The black bass electroshocking survey occurred on October 17 at West Side flats, Jet Ski Beach Mote, Northern Points, and the spillway inlet/dam face. Areas were sampled from 1640 to 2140 hours under cool and calm conditions. Water temperature was 54°F at six inches depth. Water clarity was clear, with algae and weed growth minimal throughout most transects, and shocking efficiency was good.

During the survey, 249 largemouth bass and 40 smallmouth bass were sampled, with good representation of all age classes for largemouth bass. Of the largemouth bass captured, 141 were measured and they averaged 11.4 inches TL (size range from 2.6 [YOY] to 18.1 in TL). Smallmouth bass had an average size of 7.3 in TL (size range from 3.3 [YOY] to 15.7 in TL), with 65% of the 40 being Age Class III (5.0 to 7.9 in TL).

The Relative Stock Density-10 (RSD-10) for smallmouth bass equated to 56, indicating a balanced population dominated by younger age class fish (78% <8.0 inches TL) in comparison to the last two years (Table 3, Figures 2 and 3). Wet winters from 2015 through 2017 increased available habitats for all species, with smallmouth bass illustrating good reproductive success and having an increase in carryover of younger age classes. However, relative abundance and body size of smallmouth bass continue to be static in South Fork Reservoir.

What was once a smallmouth bass dominated black bass fishery continues to transition toward and favor largemouth bass, in both body size and percent occurrence. Observed increases in shallow weedy habitats, woody shoreline cover, and slightly warmer water temperatures within the reservoir have benefitted largemouth bass and could explain the observed increase.

Figure 2.

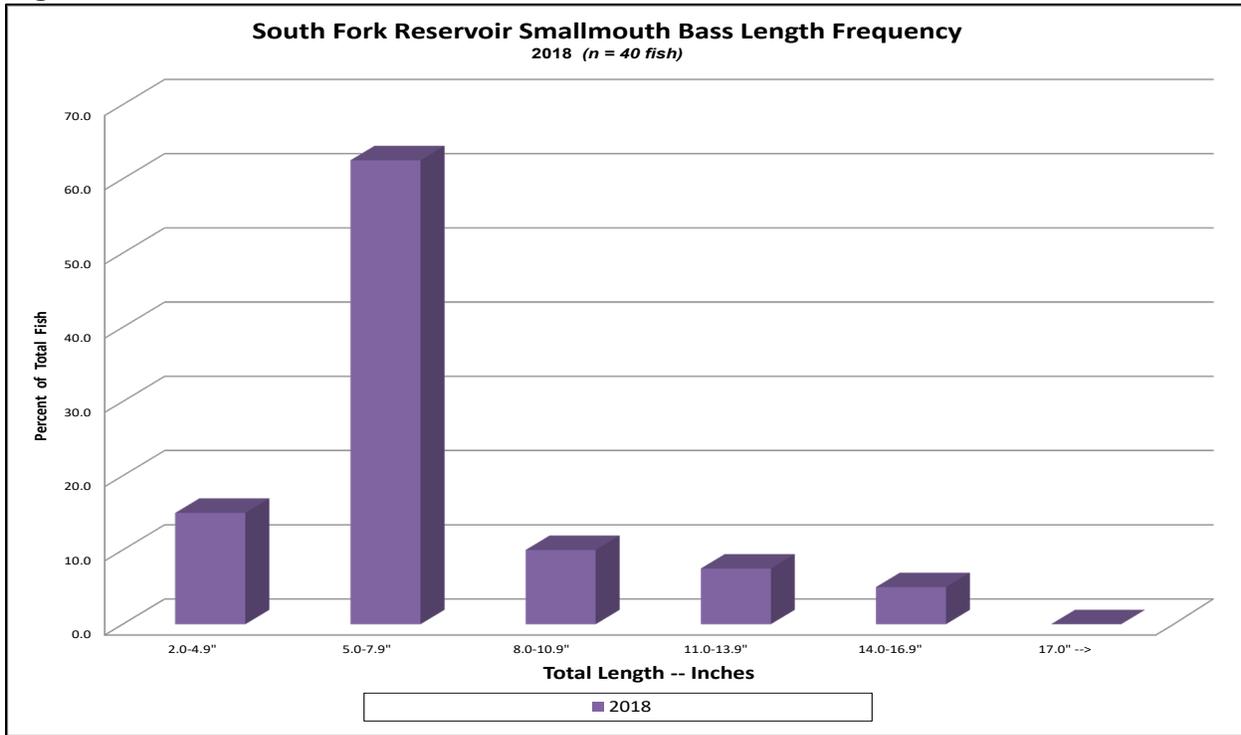
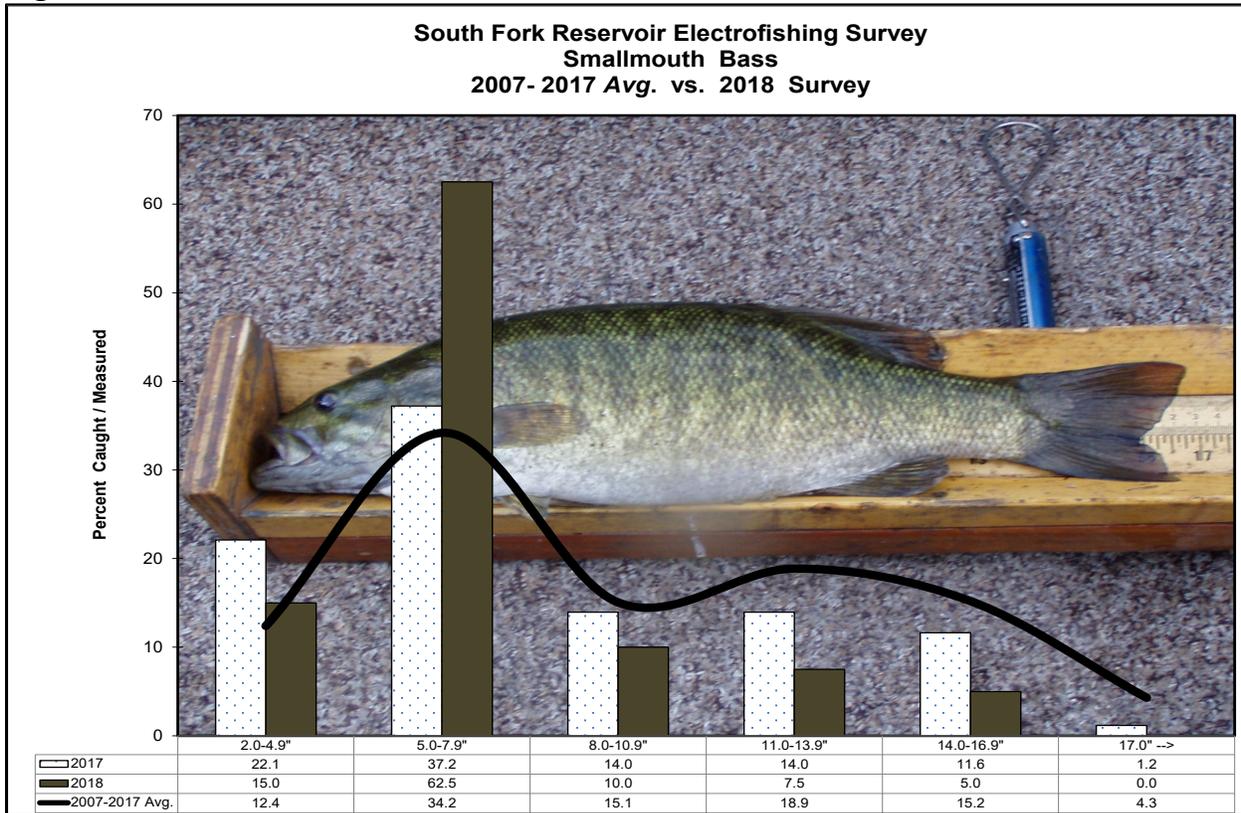


Figure 3.



The largemouth bass surveyed in 2018 were in great body condition again, with the largest measuring 18.1 inches and weighing 3.9 pounds. The 141 largemouth bass averaged 11.1 inches TL. Of these, 47, averaging 14.7 in TL, 2.11 pounds, were used for body condition analysis, which the average came to 5.79 for a rating of “Excellent” (Table 4). Approximately 21% of largemouth bass surveyed were 14.0 in TL or greater. The largemouth bass population continues to expand every year, with the dominant cohort (Age Class VII+; 2006-year class) observed carrying forward (Figure 4).

Figure 4

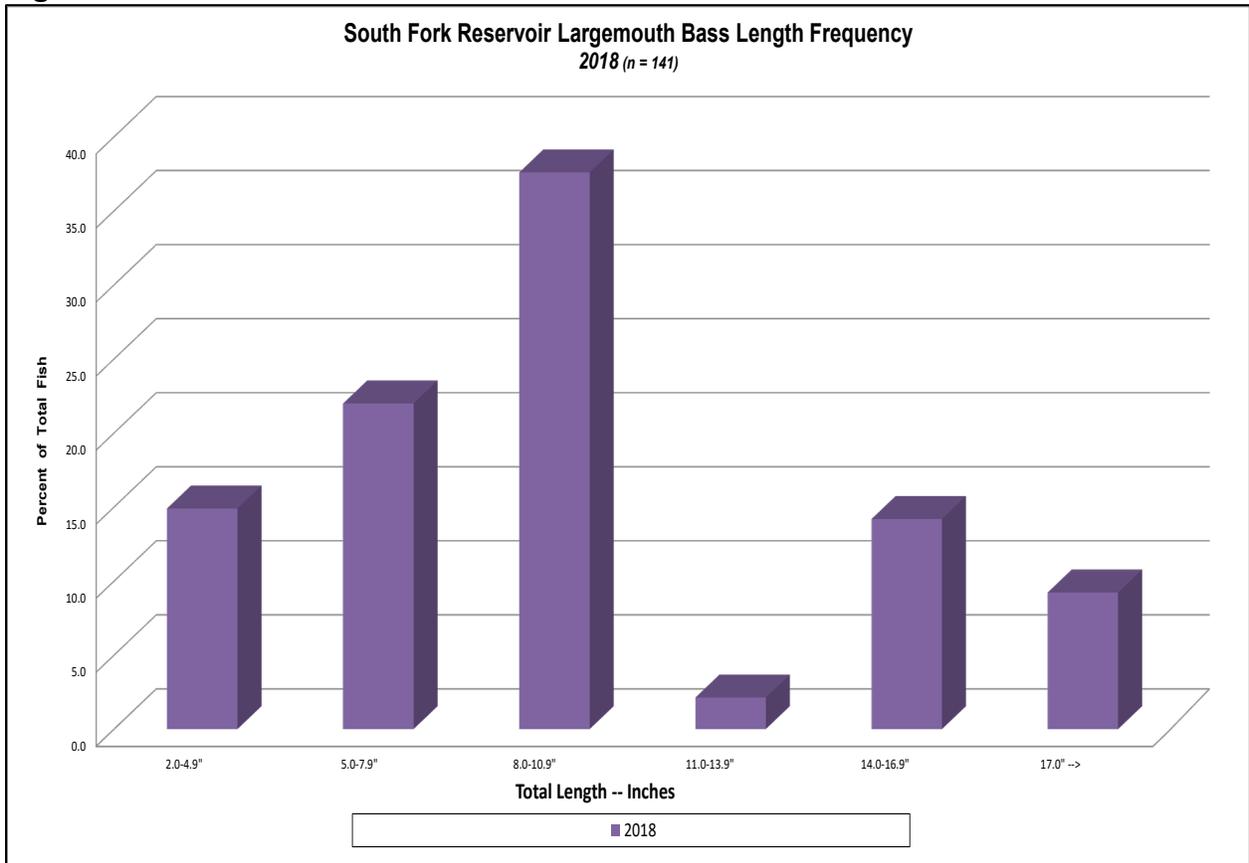
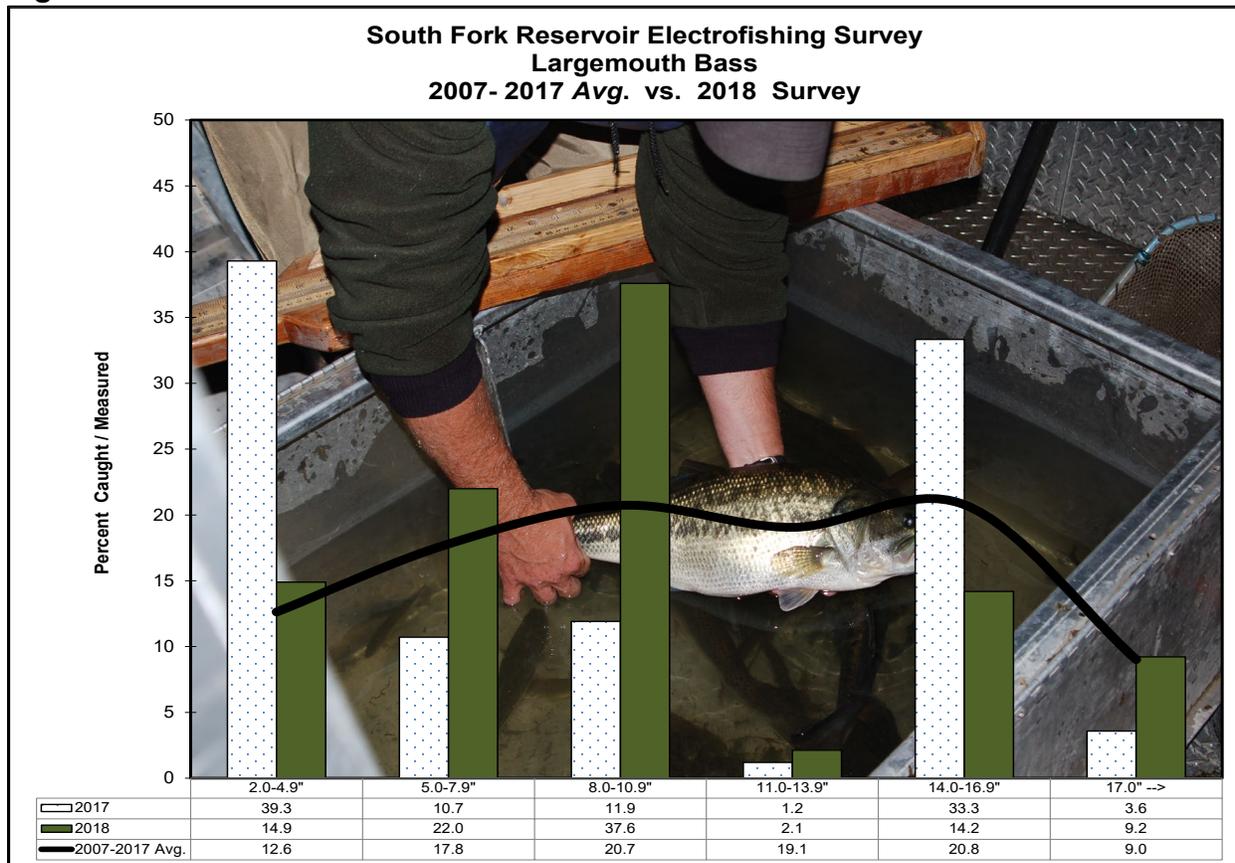


Figure 5 looks at the 11-year cumulative average (2007 to 2017) for largemouth bass electroshocked in comparison to 2017 and 2018. Larger bass (>17.0 inches TL) were surveyed in fall 2018; however, the last two years indicated a low presence of 11.0 to 13.9 in TL age classes in comparison to the 11-year average. This was most likely a result of lower reservoir water levels associated with dam repairs and the 4-year drought.

Figure 5



Gill nets caught 20 rainbow trout, 1 bowcutt trout, 2 smallmouth bass, 2 largemouth bass, 1 wiper, and 15 Lahontan tui chub for a survey total of 41 fish (Table 5). Rainbow trout ranged from 11.2 to 21.7 inches and averaged 14.7 inches TL, the bowcutt trout was 11.7 in TL, smallmouth bass averaged 11.9 in TL, largemouth bass averaged 16.1 in TL, and the wiper measured 21.1 in TL. Lahontan tui chub averaged 14.0 inches TL.

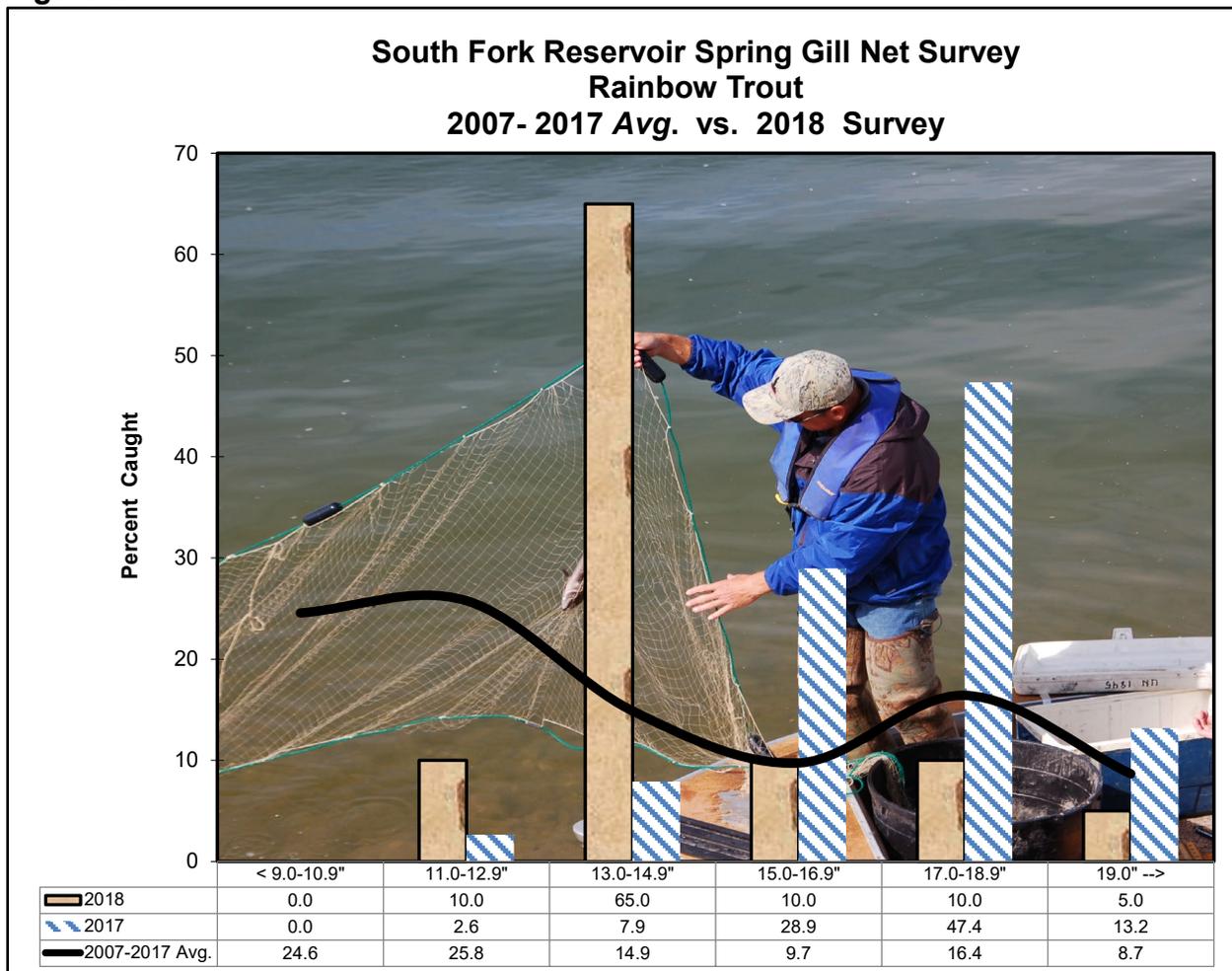
K-factor analysis and body condition rating were performed on all rainbow trout. They average 14.7 inches TL and 23.4 ounces, and had an average K-factor of 4.36 for a rating of good. One fish showed a rating of poor (5%), 15% fair (3 fish), 30% good (6 fish) and 50% received a rating of excellent (10 fish).

Figure 6 illustrates the length frequency of the rainbow trout captured from gill net over the past two years in comparison to the 2007 to 2017 average. Approximately 65% (10 fish) from 2018 were 13.0 to 14.9 in TL. This cohort of rainbow trout should provide good carryover into 2019, improving the current catch rates.

Fish composition from gill netting showed rainbow trout at 49%, largemouth bass at 5%, smallmouth bass at 5%, wiper at 2.5%, bowcutt trout at 2.5%, and Lahontan tui chub at 37%. The non-game fish to game fish ratio was 0.6:1.0, or a percent ratio of 37% to 63% (Figure 7). This trend is still below the 23-year average of 1.04:1.0 non-

game to game fish ratio observed (1996 to 2018). However, the ratio has been trending upwards over the last three years. No yellow perch were contacted in the reservoir in 2018, although a small population resides below the dam at the confluence of 10-Mile Creek and South Fork Humboldt River. The capture of the chub and sucker is common in spring at South Fork Reservoir. The size of the adult non-game fish (>10 inches, TL) and the diminishing survey results of smaller and younger age classes of chub and sucker illustrates the use of biological control agents (wiper, black bass, channel catfish, piscivorous species of trout) are having positive effect in controlling those populations within the reservoir. Only 15 adult tui chub and no suckers were captured in 2018.

Figure 6

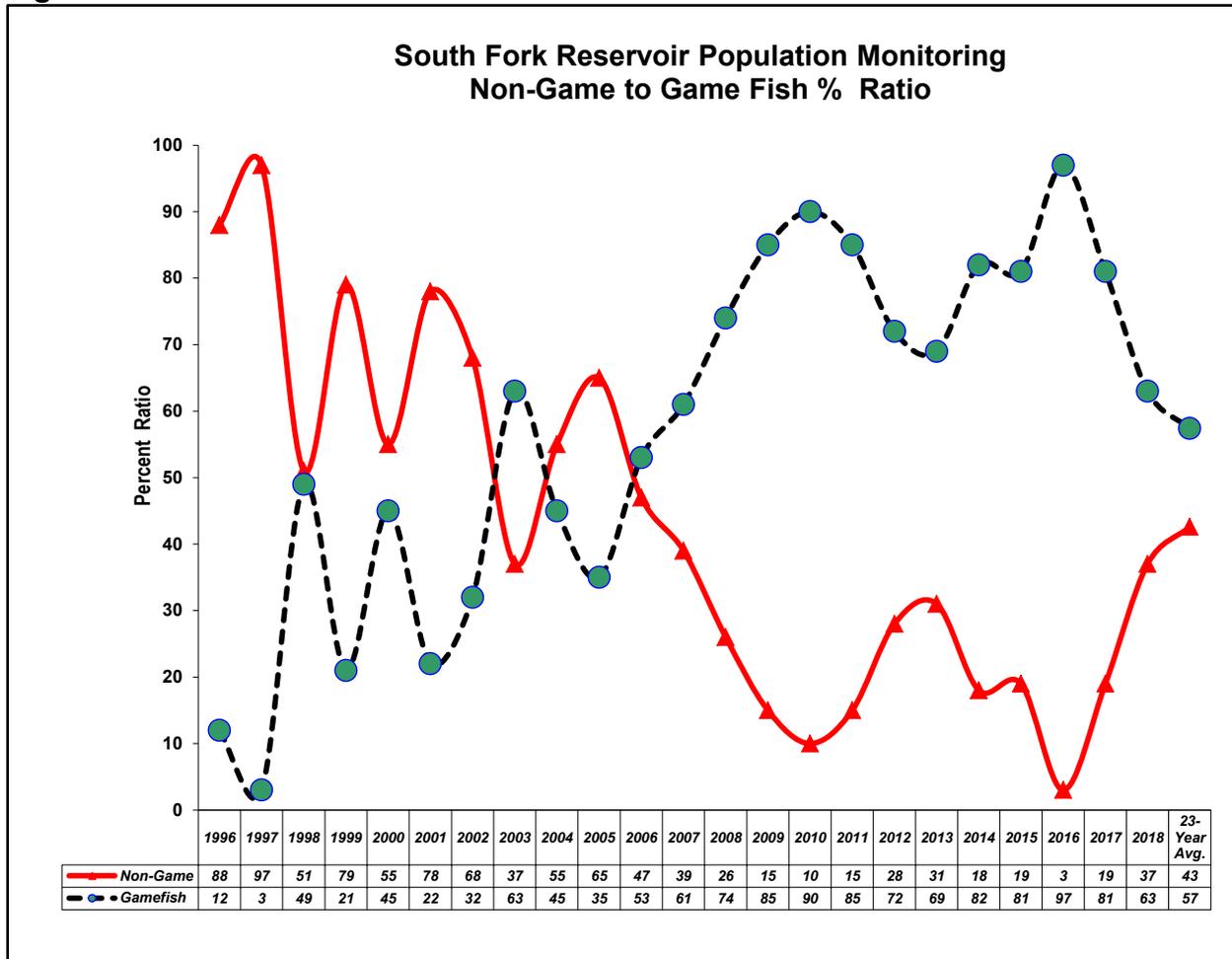


Artificial Fish Habitat Structure Installation

All structures were constructed on site at South Fork Reservoir on June 25 and 26 and transported to the install locations by boat. A total of 28 artificial fish habitat structures consisting of 5 Root Wads, 3 Root Wad kits, 2 Trophy Trees, 1 Trophy Tree kit, 2 Safe Haven kits, 6 Honey Hole Shrubs, 6 Honey Hole Trees, and 3 Fishing Fortress were submerged in the reservoir. Suitable locations were determined based on bathometric maps and then installed using fish finding sonar. Structures were

anchored using cement bases, tire chains, and one or more cinder blocks. They were placed in at least 6.0 ft of water and not more than 15.0 ft in order to target areas where all fish species are most vulnerable to predation. Placement occurred where there was an environment suitable for spawning of warmwater fishes. Structures also provide protection for offspring as well. GPS locations were recorded for each structure to locate during future monitoring. Some of the locations identified were actually from groups of two or three smaller-sized habitats. A map and table showing the location of habitat structure are provided in Figure 7 and Table 6, respectively.

Figure 7



Photograph 2 was taken mid-Fall 2018 as water clarity improved throughout the reservoir. Although no fish were identified at the time the picture was taken, organic materials readily attached to the PVC limbs, which generally attract smaller forage fish. PVC provides extended longevity of structures, compared to similar-sized woody structures (e.g., willows, brush, trees, etc.)



Photograph 2. Underwater shot of Honey Hole Shrub artificial fish habitat on Nov. 14, 2018, showing good algae growth/detritus attachment to PVC limbs.

MANAGEMENT REVIEW

- Angler surveys were conducted throughout most of the 2018-fishing season with fair catch rates and angler satisfaction reported.
- A spillway fish salvage this year was not required.
- Black bass electroshocking surveys were completed in the fall with good results.
- Quagga mussel monitoring was completed.
- Gill net surveys revealed continued success in preserving nongame fish to game fish ratios and showing good carryover of planted trout.
- Channel catfish were stocked in April.
- Installation of artificial fish habitat structures was completed in June.

RECOMMENDATIONS

- Continue angler surveys to develop an accurate assessment of angler use and harvest of all fish species.
- Conduct an electroshocking survey to examine age class distribution, body condition, and RSD of black bass and to examine expansion of their populations.
- Continue monitoring game fish to nongame fish ratios.

- Continue channel catfish augmentation, monitoring, and evaluation to provide added control of nongame fish and provide diversified angling opportunities with trophy fish potential.
- Monitor fish use and preference of artificial structures by depth and construction/design type.

Prepared by: Chris Drake
Fisheries Biologist
Eastern Region

Date: January 2019

Table 1

SOUTH FORK RESERVOIR
2018 Creel Census Angler Use and Harvest Summary

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Totals
No. Days Checked	1	1	2	0	3	3	1	1	0	1	0	1	14
Avg. Water Temp.		42	42		60	69	76	78		55		Ice = 6"	60.3
No. Anglers Checked	5	0	4		21	66	14	4		3		0	117
No. of Hours Fished	21		2.0		59.0	177	50	20		9			338.0
Total Fish Caught	3		1		40	60	38	22		6			170
Total Fish Harvested:	3		1		0	19	3	3		5			34
<i>Rainbow Trout</i>	3		0		0	19	0	0		5		0	27
<i>Brown Trout</i>	0		0		0	0	0	0		0		0	0
<i>Bow-cuttt Trout</i>	0		1		0	0	0	0		0		0	1
<i>Black Bass</i>	0		0		0	0	3	3		0		0	6
<i>Wiper</i>	0		0		0	0	0	0		0		0	0
<i>Channel Catfish</i>	0		0		0	0	0	0		0		0	0

Average Measured Fish Harvest Size

<i>Rainbow Trout No.</i>	3		0		0	15	0	0		5		0	23
<i>Avg. Size (FL-in.)</i>	18.6					16.1				17.9			16.8
<i>Brown Trout No.</i>	0		0		0	0	0	0		0		0	0
<i>Avg. Size (FL-in.)</i>													
<i>Bow-cuttt Trout No.</i>	0		1		0	0	0	0		0		0	1
<i>Avg. Size (FL-in.)</i>			16.2										16.2
<i>Black Bass No.</i>	0		0		0	0	3	2		0		0	5
<i>Avg. Size (TL-in.)</i>							17.2	17					17.0
<i>Wiper Bass No.</i>	0		0		0		0	0		0		0	0
<i>Avg. Size (TL-in.)</i>													
<i>Channel Catfish No.</i>	0		0		0		0	0		0		0	0
<i>Avg. Size (TL-in.)</i>						24							

Angler Catch Rate

Fish / Hour	0.14		0.50		0.68	0.34	0.76	1.10		0.67			0.50
Fish / Angler	0.60		0.25		1.90	0.91	2.71	5.50		2.00			1.45

Table 2

South Fork Reservoir Fish Stocking

2018

Date	# of Fish Stocked	Pounds	Avg. Size (in.)	Species	# / Pound	Strain	Stocking Location	Water Temp.	Tank Temp.
April 17, 2018	8,340	2,000	8.4	Rainbow Trout	4.2	Eagle Lake	Main Boat Ramp	49	50
April 18, 2018	7,880	2,000	8.6	Rainbow Trout	3.9	Eagle Lake	Main Boat Ramp	50	50
April 19, 2018	6,750	1,500	8.2	Rainbow Trout	4.5	Eagle Lake	Main Boat Ramp	50	52
April 19, 2018	2,100	500	8.4	Rainbow Trout	4.2	Eagle Lake	Main Boat Ramp	50	52
April 23, 2014	7,560	2,000	8.7	Rainbow Trout	3.8	Eagle Lake	Main Boat Ramp	54	51
April 24, 2018	6,800	2,000	9.0	Rainbow Trout	3.4	Eagle Lake	Main Boat Ramp	59	53
April 25, 2018	15,000	345	4.5	Ch. Catfish	43.5	Arkansas/CO	Main Boat Ramp	54	53
June 14, 2018	2,667	700	8.7	Rainbow Trout	3.8	Eagle Lake	Main Boat Ramp	68	53
October 15, 2018	10,480	2,000	7.8	Rainbow Trout	5.2	Erwin-Arlee	Main Boat Ramp	55	49
October 16, 2018	9,780	2,000	6.8	Rainbow Trout	4.9	Kamloop	Main Boat Ramp	55	53
October 17, 2018	4,208	850	8.0	Rainbow Trout	5.0	Kamloop	Main Boat Ramp	50	49
October 19, 2018	4,300	860	7.9	Rainbow Trout	5.0	Kamloop	Main Boat Ramp	55	53
October 23, 2018	10,058	1,350	6.9	Brown Trout	7.5	Sheep Creek	Main Boat Ramp	55	53
November 2, 2018	5,050	625	6.8	Brown Trout	8.1	Sheep Creek	Main Boat Ramp	52	48
November 2, 2018	8,244	1,800	6.8	Rainbow Trout	4.6	Erwin-Arlee	Main Boat Ramp	54	53
Total Catchable Trout (>8.0 inches):	46,305	11,550	<i>(x = 4.1 fish/pound)</i>				Avg. Water Temp. =	54.0	51.5
Total Sub-catchables Trout (4.0-7.9 inches):	47,912	8,635	<i>(x = 5.5 fish/pound)</i>						
Total Fingerling Trout (< 4.0 inches):	0	0							
Total Warm Water Fish:	15,000	345							
TOTALS	109,217	20,530							

BC/CB Trout = 0 in 2018

Brown Trout = 15,108 sub-catchable in 2018

Table 3

SOUTH FORK RESERVOIR

Smallmouth Bass Population Status-Electrofishing Survey Trends

Year	Number of Bass Sampled	Number of Bass Measured	Avg. Size TL - Inch	Number of Bass / Hour	RSD-10 Factor	K-Factor	Rating
1989	84		< 2.0 inches	227	N/A - First year of survey - YOY survey		
1990	136	60	7.9	227	88	5.20	Good
1991	72	41	6.5	419	0	5.08	Good
1992	59	47	8.9	113	54	5.47	Good
1993	23	14	13.5	43	93	5.85	Excellent
1994	16	14	6.8	31	50	5.48	Good
1995	38	14	8.0	61	100	5.95	Excellent
1996	73	29	7.4	130	17	5.62	Good
1997	No Data						
1998	184	82	10.2	263	44	6.03	Excellent
1999	114	48	9.5	185	43	5.85	Excellent
2000	71	71	12.0	186	87	6.22	Excellent
2001	62	39	12.8	214	85	5.86	Excellent
2002	26	13	13.7	37	92	6.06	Excellent
2003	31	20	13.9	55	90	6.19	Excellent
2004	81	44	14.4	104	100	5.87	Excellent
2005	49	17	12.4	49	71	6.11	Excellent
2006	38	20	11.5	49	75	5.40	Good
2007	47	47	6.5	28	56	5.29	Good
2008	76	76	6.6	138	75	5.53	Good
2009	147	57	10.6	403	73	5.57	Good
2010	68	55	7.7	93	67	5.36	Good
2011	60	60	8.3	67	69	5.68	Good
2012	23	23	13.2	43	86	5.48	Good
2013	27	27	13.2	40	76	5.52	Good
2014	104	104	10.2		84		
2015	25	25	11.5	16	91	5.54	Good
2016	183	159	8.9	126	83	5.22	Fair
2017	86	86	8.2	91	69	5.73	Good
2018	40	40	7.3	41	56	5.10	Fair
1998-2018 Avg.=	73	53	10.6	111	75	5.68	Good

RSD 10 = # of fish > 254mm (relative quality catch length) / Total # of fish > 203 mm (= minimal stock length 8.0 inches)

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

Special regulation in effect at South Fork Reservoir (15 inch minimum size, legal harvest from 7/1-2/29).

2018 Included 1 reservoir electrofishing survey for smallmouth bass

Table 4

SOUTH FORK RESERVOIR

Largemouth Bass Population Status-Electrofishing Survey Trends

Year	Number of Bass Sampled	Number of Bass Measured	Avg. Size TL - Inch	RSD-10 Factor	K-Factor	Rating
1989						
1990						
1991			Size Range 7 - 13.0 inches			
1992	377		11.20			
1993	14	7	14.20	86	6.27	Excellent
1994	2	1	15.90			
1995	8		~3.2			
1996						
1997			No Data			
1998	3					
1999	1		~2.0			
2000	0					
2001	11					
2002	11					
2003	16					
2004	75	37	5.38			
2005	36					
2006	0					
2007	8	8	14.7			
2008	35	35	10.7	80	6.54	Excellent
2009	67	39	10.7	69	6.60	Excellent
2010	89	85	7.6	46	6.23	Excellent
2011	68	68	10.4	64	6.41	Excellent
2012	56	56	11.8	69	5.57	Good
2013	89	89	10.6	69	5.49	Good
2014	190	190	11.7	92	5.43	Good
2015	111	111	12.5	100	5.41	Good
2016	257	242	11.4	99	5.64	Excellent
2017	84	84	9.3	76	6.27	Excellent
2018	249	141	11.4	52	5.79	Excellent
2007-2018 Avg.=	109	96	11.1	74	5.94	Excellent

RSD 10 = Relative Stock Density w 10 inch pref. catch length; = # of fish > 254mm (relative quality catch length) / Total # of fish > 203 mm (= minimal stock length 8.0 inches)

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

Special regulation in effect at South Fork Reservoir (15 inch minimum size, legal harvest from 7/1-2/29).

2018 1 reservoir electrofishing survey

Table 5

**SOUTH FORK RESERVOIR
Population Sampling Catch Record
2018**

		Gill Net / Sample #	#1-3	Electrofish		
		Date:	05/24/2018	10/17/2018		
SPECIES				TOTALS	% of Species Composition	
<i>Rainbow Trout</i>	Number	20	4	24	7.2	
	Avg. Size (Inches-FL)	14.7	17.1	15.1		
<i>Bow-Cutt Trout</i>	Number	1	0	1	0.3	
	Avg. Size (Inches-FL)	11.7		11.7		
<i>Smallmouth Bass</i>	Number	2	40	42	12.6	
	Avg. Size (Inches-FL)	11.9	7.3	7.5		
<i>Largemouth Bass</i>	Number	2	249	251	75.1	
	Avg. Size (Inches-TL)	16.1	11.4	11.4		
<i>Wiper</i>	Number	1	0	1	0.3	
	Avg. Size (Inches-TL)	22.8		22.8		
<i>Channel Catfish</i>	Number	0	0	0	0.0	
	Avg. Size (Inches-TL)					
<i>Yellow Perch</i>	Number	0	0	0	0.0	
	Avg. Size (Inches-TL)					
<i>Lahontan tui chub</i>	Number	15	0	15	4.5	
	Avg. Size (Inches-TL)	14.0		14.0		
<i>Tahoe Sucker</i>	Number	0	0	0	0.0	
	Avg. Size (Inches-TL)					
TOTAL FISH		41	293	334		
HOURS		39.5	0.98	40.5		
% Non-desirable Fish		36.6	0.0	4.5		
Fish / Net-Shocking Hour		1.0	299.0	8.3		
Avg. Res. Water Temp. (F°)		62.0	54.0	58.0		
Approx. Reservoir Capacity		99%	90%			

Net/Sample Locations:

1. North Camp ground point. Experimental Mesh gill net, 150 feet long.
2. South end of the reservoir, West side in 8 feet water, near river inlet. Experimental Mesh gill net, 150 feet long.
3. Northwest Side near Dixie Cr. Rd. access. Experimental Mesh gill net, 150 feet long.
4. One Electrofish survey (Oct. 17, 2018) included West side shoreline through mote, Northern points and Spillway/Dam face.

Figure 7

South Fork Reservoir Artificial Habitats Locations

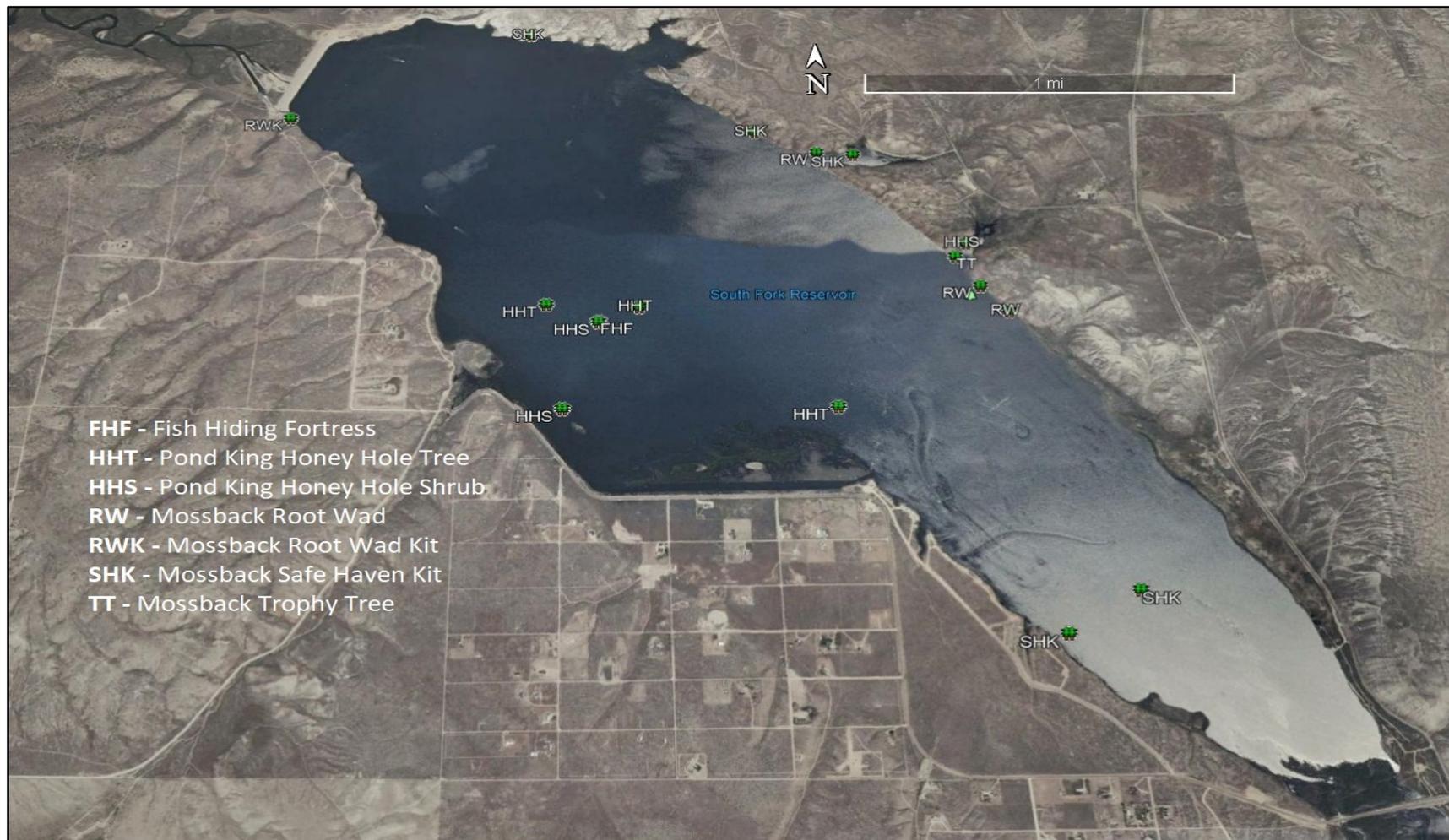


Table 6

South Fork Reservoir Artificial Habitat Locations Coordinates 2018

Type	Easting	Northing	Label
Pond King Honey Hole Shrub	604025.9560	4502897.9320	HHS
Fish Hiding Fortress	604028.1700	4502902.8480	FHF
Pond King Honey Hole Shrub	603887.1970	4502452.7630	HHS
Pond King Honey Hole Tree	603816.4210	4502992.1510	HHT
Pond King Honey Hole Tree	604188.9420	4502976.6030	HHT
Pond King Honey Hole Tree	604952.5160	4502454.0770	HHT
Pond King Honey Hole Shrub	605526.4290	4503315.2460	HHS
Mossback Trophy Tree	605476.7600	4503241.1500	TT
Mossback Root Wad	605562.2610	4503078.0400	RW
Mossback Root Wad	605663.5540	4502940.1380	RW
Mossback Root Wad Kit	602701.1930	4504075.2750	RWK
Mossback Safe Haven Kit	605097.1870	4503833.3310	SHK
Mossback Root Wad	604945.6020	4503847.0640	RW
Mossback Safe Haven Kit	604687.6950	4503973.7730	SHK
Mossback Safe Haven Kit	605993.2920	4501586.1650	SHK
Mossback Safe Haven Kit	603722.3870	4504598.2010	SHK
Mossback Safe Haven Kit	605709.1350	4501399.6970	SHK

- FHF** - Fish Hiding Fortress
- HHT** - Pond King Honey Hole Tree
- HHS** - Pond King Honey Hole Shrub
- RW** - Mossback Root Wad
- RWK** - Mossback Root Wad Kit
- SHK** - Mossback Safe Haven Kit
- TT** - Mossback Trophy Tree