

NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

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2018

SQUAW CREEK RESERVOIR
WESTERN REGION



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

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

State: *Nevada*
Project Title: *Statewide Fisheries Program*
Job Title: *Squaw Creek Reservoir*
Period Covered: *January 1, 2018 through December 31, 2018*

SUMMARY

The Squaw Creek Reservoir mail-in angler questionnaire survey estimated that 472 anglers fished 682 days in 2017. Total catch was estimated to be 1,658 fish and the success rate was 2.4 fish per angler day. The number of anglers and angler days were lower than reported in 2016 and substantially lower than the long-term averages (903 anglers and 3,262 angler days). The decline in use may be attributed to dewatering and dredging of the reservoir in 2017.

Water conditions (quantity and quality) were documented throughout the summer and fall of 2018. The reservoir filled in 2018 after it was drawn down and in 2017, and was maintained near capacity for most of the year.

A total of 2,000 6.0-inch channel catfish were stocked into Squaw Creek Reservoir in 2018. Additionally, 5,104 hatchery-reared trout were also released into the reservoir.

BACKGROUND

Squaw Creek Reservoir is located in northern Washoe County, approximately 20 mi north of Gerlach. At maximum capacity, the reservoir is 47.5 SA, stores 1,200 acre-ft, and is 45 ft deep (spillway elevation). Of the two tributaries entering the reservoir, the east tributary flows from a warmwater spring.

The reservoir was constructed in 1952 and was privately used for water storage. The Nevada Department of Wildlife negotiated with the Holland Land and Livestock Company and agreed to manage/maintain the fishery as long as the reservoir would remain open to public fishing. Mr. Jaksick is the present owner of the reservoir, surrounding land, and water rights. A history of public abuse at the reservoir has prompted the landowner to post signs that notify the public of a set of 'regulations' for the reservoir.

The fishery consists of hatchery maintained rainbow, bowcutt, and brown trout. Tiger trout have also been stocked in recent years, although carryover is somewhat questionable. It also supports wild, self-sustaining populations of largemouth bass, spotted bass, bullhead, channel catfish, and green sunfish. The reservoir is managed under the Coldwater and Warmwater General Fishery Management Concepts, with established objectives for angler success rates of 0.25 to 0.75 fish per hour and 1.0 to 2.0 fish per angler day.

OBJECTIVES

- Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts and mail-in angler questionnaire data.
- Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) when onsite.
- Augment the fishery with 2,500 channel catfish.
- Conduct a population assessment by electroshocking previously established transects for one night in the fall.
- Work with the private landowner to acquire a long-term public access agreement.

PROCEDURES

Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts and mail-in angler questionnaire data. Angler use and success at Squaw Creek Reservoir was assessed through a statewide Mail-in Angler Questionnaire Survey. Data was derived from a survey mailed to 30,000 license purchasers from the previous year.

Squaw Creek Reservoir was visited numerous times in 2018; however, no anglers were contacted during any visit.

Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) when onsite. General habitat conditions were documented during several site visits throughout 2018 and while enroute to other northern Washoe County reservoirs. Habitat assessment was based on visual observations of lake level and clarity.

Augment the reservoir with 2,500 channel catfish. Channel Catfish were purchased from Colorado Catch and delivered to Squaw Creek Reservoir along with other regional waters on October 18, 2018.

Conduct population assessment by utilizing electroshocking surveys on previously established transects for one night in the fall. Electrofishing surveys were conducted utilizing an 18 ft Smith Root electroshocking boat outfitted with a Smith-Root generator powered electroshocker. The boat serves as the ground and the anode consisted of two electrode arrays, one at each corner of the bow. Each electrode array consists of six stainless steel electrode droppers. One netter operated at the bow of the boat while another maneuvered the boat. On October 10, four transects were completed in littoral habitat that contained rock and hardstem bulrush habitats. These four transects mimicked those that were completed in 2014 (one transect was added at the dam face). A map of transect locations is found in Attachment 1.

During electroshocking, fish were placed in a freshwater live well that was supplied with dissolved oxygen. At the conclusion of each transect, fish were identified to species, measured to fork length (FL), and weighed on a battery-powered scale if greater than 200

mm FL. Many black bass expressed characteristics of both largemouth and spotted bass. For the purposes of this survey, both fish types were simply classified as black bass.

Work with the private landowner to acquire a long-term public access agreement. Throughout 2018, several meetings, phone conversations, and email correspondence took place with the private landowner or his representatives in an effort to acquire a long-term public access agreement at Squaw Creek Reservoir.

FINDINGS

Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts and mail-in angler questionnaire data. Despite visiting Squaw Creek Reservoir on several occasions and enroute to other area waters, no anglers were contacted at the fishery in 2018.

Results from the mail-in angler questionnaire estimated that 472 anglers fished 682 days in 2017. Total catch was estimated to be 1,658 fish and the success rate was 2.4 fish per angler day. The estimated number of anglers and angler days were lower than reported in 2016 and substantially lower than long-term averages (903 anglers and 3,262 angler days). The decline in use may be attributed to dewatering and dredging that occurred in 2017 by the landowner. The reservoir sat well below capacity for most of 2017, making angling conditions difficult.

Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) when onsite. After the draining and dredging work in 2017, the reservoir began 2018 at approximately 70 percent of capacity. After spring runoff, the reservoir was restored to nearly full, which was maintained for the remainder of the year. During the electroshocking survey in October, the reservoir was observed partially spilling at the dam spillway, indicating it was at maximum capacity. Reservoir turbidity appeared similar to past years.

Augment the reservoir with 2,500 channel catfish. A total of 2,000 6.0-inch channel catfish were purchased and stocked into Squaw Creek Reservoir on October 18. Additionally, 5,104 hatchery-reared trout were stocked in 2018 (Table 1). These were catchable-sized fish consisting of 4,052 rainbow trout and 1,052 bowcutt trout.

Table 1. Stocking Summary, 2018.

| Species | Number | Size (in.) | Date |
|----------------------|--------------|------------|------------|
| Bowcutt | 1,052 | 9.4 | 10/8/2018 |
| Channel Catfish | 2,000 | 6.0 | 10/18/2018 |
| Rainbow | 1,534 | 10.5 | 4/11/2018 |
| Rainbow | 1,517 | 9.5 | 4/17/2018 |
| Rainbow | 1,001 | 9.6 | 10/8/2018 |
| Total Trout | 5,104 | | |
| Total Catfish | 2,000 | | |
| Total Fish | 7,104 | | |

Conduct population assessment by utilizing electroshocking surveys on previously established transects for one night in the fall. Fish population sampling at Squaw Creek Reservoir resulted in the capture of spotted bass, brown bullhead catfish, channel catfish, largemouth bass, rainbow trout, bowcutt trout, and green sunfish. Squaw Creek Reservoir is managed as a multi-species fishery with the stocking of hatchery-raised rainbow, brown, hybrid trout, and channel catfish along with wild recruitment of black bass, brown bullhead catfish, green sunfish, and channel catfish.

Table 2. Squaw Creek Reservoir Species Composition Survey Results.

| | Avg Length (mm) | T1 | T2 | T3 | TDAM | Spot Shock | Total |
|-------------------|-----------------|----|----|----|------------|------------|-------|
| Bullhead | 255.3 | 9 | 6 | 3 | 2 | 3 | 23 |
| Channel | 431.0 | 1 | 0 | 3 | 0 | 2 | 6 |
| LMB | 134.4 | 21 | 45 | 31 | 10 | 5 | 112 |
| RB | 270.2 | 6 | 8 | 2 | 2 | 0 | 18 |
| GS | 64.3 | 0 | 4 | 9 | 9 | 0 | 22 |
| Total Fish | | | | | 181 | | |

Black Bass

A total of 107 black bass were captured at four transects during the electroshocking survey, with an additional five captured during spot shocking between transects. The average fork length was 134.4 mm (5.3 in), with a range of 42.0 mm (1.7 in) to 421.0 mm (16.6 in). The average weight for those over 200 mm was 430.2 g (0.9 lb).

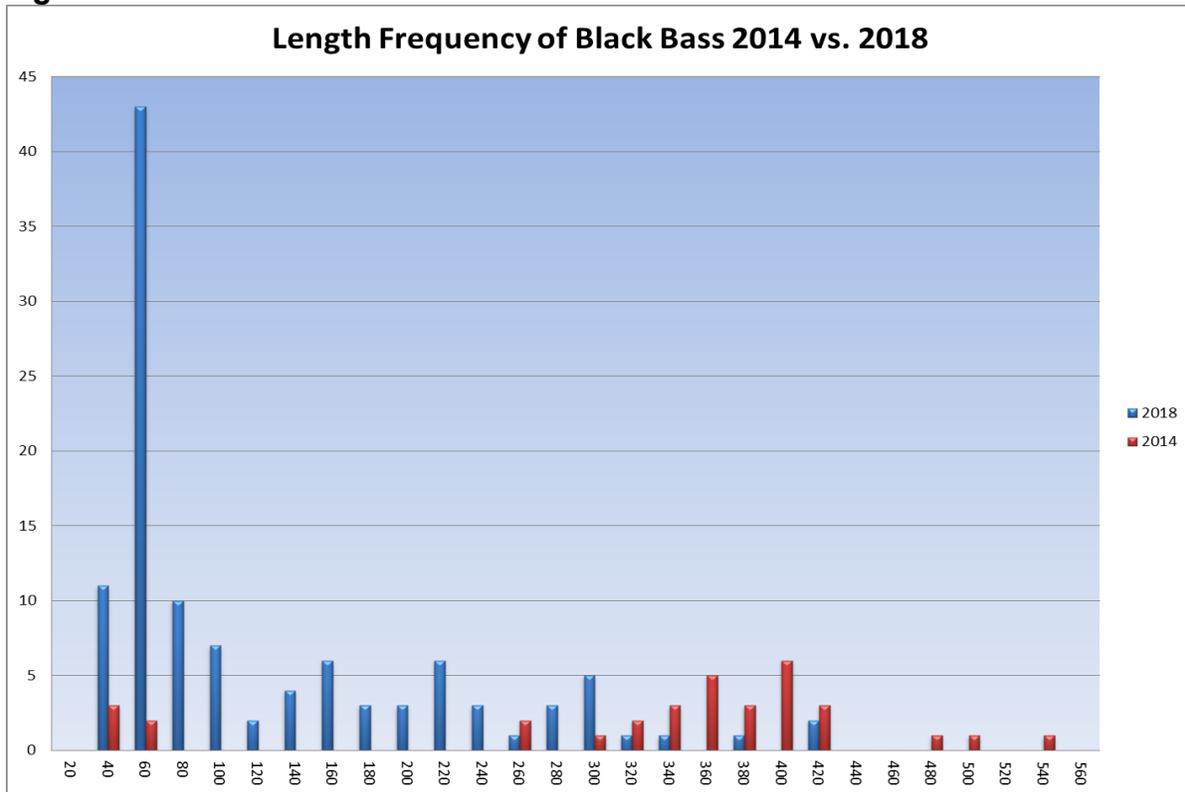
A length frequency analysis of black bass revealed five distinct size classes (Figure 1). Proof of recruitment was found in the youngest and largest age class that was less than 120 mm. These results differ from the 2014 electroshocking survey when the most heavily represented size class averaged 420 mm FL. The 2018 shift in size structure was likely attributed to reservoir dewatering in 2017. This left the reservoir near minimum pool for most of the summer, resulting in a large loss of older and larger fish. The large spike in young-of-the-year in 2018 appears a compensatory response to the loss of the older fish (also the apex predators) in the reservoir.

Rainbow Trout

Eighteen rainbow trout were captured at four transects during the electroshocking survey. The average fork length was 270 mm (10.6 in), with a range of 185 mm (7.3 in) to 373 mm (14.7 in). The average weight for those over 200 mm was 201.2 g (0.4 lb). A K-factor analysis was performed on 17 of the 18 rainbow trout, showing fish were in poor condition (K=0.87).

Additional fish species captured included brown bullhead catfish ($n=23$; avg=255 mm/10.1 in, FL), bowcutt trout ($n=1$: 340 mm/13.4 in, FL), channel catfish ($n=6$; avg=431 mm/17.0 in, TL), and green sunfish ($n=22$; avg=64 mm/2.5 in, FL).

Figure 1.



Work with the private landowner to acquire a long-term public access agreement. Throughout 2018, several meetings, phone calls, and email correspondence took place with the private landowner or his representatives in an effort to acquire a long-term public access agreement at Squaw Creek Reservoir. In coordination with the Nevada Department of Wildlife Habitat Division, the idea of acquiring and maintaining restroom facilities for the reservoir to offset the litter that accumulates from users annually was discussed. The landowner agreed that if NDOW could purchase and maintain restroom facilities he would be open to some form of agreement that secured free public access for a specific number of years. At the close of 2018 grant funding for the purchase of the vault toilet was secured and the contract details with the landowner were still being discussed.

MANAGEMENT REVIEW

Angler use and success rate results from the Mail-in Angler Questionnaire Survey met the guidelines of a General Fishery Management Concept, which calls for 2.0 to 3.5 fish per angler day. This fishery is popular with anglers for producing quality catch rates and the opportunity to fish in a semi-remote setting.

It was apparent that a drastic reservoir drawdown in 2017 has influenced the fishery in Squaw Creek Reservoir. A shift in the evenly distributed size class structure of black bass to having a heavier juvenile presence was found in the 2018 survey. This likely represented a compensatory response from black bass. The drawdown and habitat

dredging appeared to result in increasing the available habitat of the northern arm of the reservoir. While larger fish in the system may have suffered this work, the long-term benefits will improve the fishery as a whole. Stocked trout in Squaw Creek Reservoir, while prevalent, were in poor condition. The cause for this is unknown, but the accumulation of water turbidity, competition with warmwater species, and limited forage most likely play a part. Stocking trout in Squaw Creek Reservoir is a valuable component of fisheries management as it increases angler catch rates. Long-term survival of trout is not expected and, therefore, their poor body condition was expected and not a major concern.

The acquisition of a long-term public access agreement with the landowner is optimistic and will be completed in 2019.

RECOMMENDATIONS

- Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts and mail-in angler questionnaire data.
- Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) when onsite.
- Augment the reservoir with 2,500 channel catfish.
- Work with the private landowner to acquire a long-term public access agreement.

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Date: January 10, 2018

2018 Squaw Creek Reservoir Electrofishing Transects

