

NEVADA DEPARTMENT OF WILDLIFE STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORT F-20-52 2016

Lahontan Reservoir
WESTERN REGION



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

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

State: *Nevada*
Project Title: *Statewide Fisheries Program*
Job Title: *Lahontan Reservoir*
Period Covered: *January 1, 2016 through December 31, 2016*

SUMMARY

It was an average water year in the Carson Basin and snow-water equivalent was 107% of average for 2016, however, through the first nine months of the water year (ending out 2016 and going into 2017), it was at 212% of average. The past several years have been poor with 60% of average in 2015, 28% of average in 2014, and a very low 25% of average in 2013. The reservoir elevation dropped from June through October and the Nevada Division of State Parks closed all boat ramps when the reservoir level was unsafe for launching. Boat launching from shore is allowed and signs are posted that boating is “at your own risk.”

Bureau of Reclamation (BOR) had a positive contact for quagga mussel veligers during routine monthly plankton monitoring in April 2011. Subsequent monitoring by Nevada Department of Wildlife (NDOW) and BOR, however, have been negative. A boat inspection program began in spring 2013 with two decontamination stations operating through the summer of 2016 and located at the North Shore Marina and near the State Parks entrance on the Churchill County side of the reservoir.

Commercial fishing operators at Lahontan Reservoir have traditionally hauled live Sacramento blackfish to markets outside of Nevada. In 2016, commercial fishing efforts were limited and only conducted during November and December due to low reservoir levels, low blackfish numbers, and submerged vegetation which made fishing difficult.

Gill netting surveys conducted during 2016 were successful in documenting the persistence of carp, walleye, white bass, crappie, white catfish, and channel catfish. Adult sport fish were also monitored through coordination with the commercial operator during inspections. Carp dominated the catch during gill netting (68% of total fish caught), channel and white catfish combined accounted for 20% of the gill netting catch while walleye accounted for 6%. White bass and crappie combined accounted for 4% of total fish caught. During 2015, no gill netting was conducted, however, in coordination with the commercial fishing operation, sportfish were monitored with crappie dominating the game fish catch with 230 averaging 10 inches. In addition, ten white bass, eight channel catfish, six white catfish, five walleye, and three wipers were caught.

Walleye fry were stocked to help augment natural reproduction. Wipers were stocked during April, 1,000 of which were tagged as part of a study aimed at evaluating the status of wipers and the reservoir’s potential to support a trophy wiper fishery.

BACKGROUND

Lahontan Reservoir was created in 1915 by the construction of Lahontan Dam, which impounded water from the Carson River and Truckee River (via the Truckee Canal) for farmland irrigation, hydropower, flood control, domestic water, and recreation. This was part of the Newlands Reclamation Project created by the Bureau of Reclamation.

Maximum surface area of the reservoir is 14,600 acres with a maximum storage of 319,000 acre-ft (AF). At maximum pool, the deepest point reaches 85 ft. The reservoir is eutrophic, which creates a very productive fishery. As a result of Comstock mining practices, an estimated 7,500 tons of mercury were discharged into the Carson River drainage and, consequently, methylmercury concentrations in many fishes are above the safe state and federal consumption levels. Division of Public and Behavioral Health and NDOW advise “No consumption of fish from Lahontan Reservoir, the Carson River below Dayton, and all waters in Lahontan Valley.”

Despite the health advisory, Lahontan Reservoir continues to provide excellent recreation through angling. The prominent sport fishes include white bass, wipers (white bass x striped bass hybrid), largemouth bass, smallmouth bass, channel and white catfish, white and black crappie, yellow perch, and walleye. Fingerling wiper and larval walleye are generally stocked annually.

In 1981, NDOW began issuing a commercial fishing permit at Lahontan Reservoir in an attempt to reduce the Sacramento blackfish population. Prior to commercial fishing, substantial blackfish mortality events were documented in the reservoir at the Carson River inlet during the spring when blackfish would spawn. During the first four years of commercial operation, the average annual harvest of blackfish was nearly 350,000 lbs. In 2005, a harvest moratorium was instituted due to declining catch rates, which was viewed as a possible indication of a population decline. The blackfish harvest moratorium was withdrawn in 2008 and an annual commercial collection permit was again issued to the previous permittee.

OBJECTIVES

General Management Objectives:

- Conduct a general fisheries assessment 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) at least three times per year.
- Document dissolved oxygen and temperature when conducting veliger sampling.
- Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates at least three times per year.
- Conduct quagga mussel veliger sampling through plankton tows at established transects at least three times per year.
- Stock 1 million walleye fry and 5,000 juvenile wipers.

- Monitor sport fish populations through electroshocking four established transects in late spring/early summer.
- Monitor sport fish populations through gill netting four net-nights in late spring/early summer.
- Assess YOY species composition and production through beach seining at least eight locations during late spring/early summer.
- Increase habitat complexity and provide additional juvenile habitat cover.

Study Specific Objectives:

- Tag 2,000 hatchery raised wipers with color specific Floy tags.

PROCEDURES

Conduct a general fisheries assessment through opportunistic angler contacts and mail-in angler questionnaire data. Information obtained from anglers included time fished; number, size and species of fish caught; location where fished; place of residence; and type of bait or lure used. Mail-in angler questionnaire data was derived from a survey mailed to 30,000 anglers purchasing a Nevada fishing license.

Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) at least three times per year. Lake level data was received throughout the year from USGS gauge number 10312100 near the dam. Clarity was measured directly using a Secchi disk and measurements were taken on June 2, 2016 and July 20, 2016, near the dam.

Document dissolved oxygen and temperature when conducting veliger sampling. Temperature was recorded with each visit to the reservoir. Dissolved oxygen was not recorded due to malfunction of the Hydrolab.

Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates at least three times per year. Surveys were conducted through inspection of the boat dock at Churchill Beach boat launch. Buoys and rock structures near the dam were also inspected for adult quagga mussels by snorkeling during three occasions during April, June, and July.

Conduct quagga mussel veliger sampling through plankton tows at established transects at least three times per year. Veliger sampling was conducted on two occasions, June 2 and July 20, 2016 at the dam and Churchill Beach boat launch and not in the Narrows due to the area being dry during sampling.

Stock one million walleye fry and 5,000 juvenile wipers. On April 20, 900,000 walleye fry were received from Gavin's Point National Fish Hatchery in South Dakota and stocked near Blackbird Point to help augment the natural reproduction of the reservoir's walleye population. On May 26, 2,091 wipers were received from Colorado Catch Hatchery and stocked at Churchill Beach boat launch.

Monitor sport fish populations through electroshocking four established transects in late spring/early summer. No electroshocking surveys were conducted during 2016 due to launching conditions during the summer. Both of the boat launches managed by Nevada State Parks were closed due to low water levels and the beaches were inundated with mud, which limited access by four-wheel drive vehicles.

Monitor sport fish populations through gill netting four net nights in late spring/early summer. Gill nets were set on April 27; however, only three net-nights were sampled due to low reservoir levels. One of the historic sites was dry. Gill nets were set in Virginia Beach, Coyote Island, and the island near the dam. Sites were chosen based on public safety, angler creel information, commercial harvester data, historical locations, and reservoir level. Nets were set perpendicular to shore and anchored with three-pound weights. Nets were 120 ft long, six feet deep, and mesh size ranged from 0.5 to 2.5 in, which increased by 0.5 in increments every 20 ft. Nets were allowed to fish over one 24 hour period.

Assess YOY species composition and production through beach seining at least eight locations during late spring/early summer. No beach seining survey was completed during 2016 due to muddy beaches and inundated weeds (cocklebur), which made it difficult to walk and effectively sample without damaging the seine.

Increase habitat complexity and provide additional juvenile habitat cover with additional habitat structures. The structures, purchased from Mossback Fish Habitat, were made of nontoxic “scuffed” PVC trunks with composite limbs to simulate trees or root structures as found in a natural environment. Three different types of structures were utilized consisting of Safe Havens (Figure 1), Root Wad 3 Posts, and Trophy Tree Kits. Product dimensions and specifications are presented in Table 1.

Figure 1. Safe Haven Fish Habitat Structure



Table 1. Mossback Habitat Specifications

	Dimensions	Limbs	Number of Anchors
Safe Haven	50" x 50"	24	1
Root Wad 3 Post	25" x 50"	12	1
Trophy Tree Kit	50" x 50"-100"	36	2

All structures were constructed in Fallon and transported to the reservoir on a small flatbed trailer. The structures were then transported to the install locations with the use of an 18 ft aluminum Delta Angler boat. Suitable locations were determined based on bathometric maps and then proofed using depth measuring devices. All structures were placed in at least 6-ft of water and not more than 15 ft in order to target areas where all fish species were most vulnerable to predation. These locations and depths also function as suitable spawning habitat for warmwater species, which produce offspring that will utilize the structures as well. Structures were submerged and anchored using six-ft of nylon coated aircraft cable and had one or two cinder blocks. GPS locations were recorded for each structure put into place for future monitoring purposes.

Study Specific Procedures:

Tag 2,000 hatchery raised wipers with color specific Floy tags. Tags used were model FD-94, 3/4 inch monofilament Long T manufactured by Floy Tag & MFG., INC. On May 26, 1,000 wipers were given bright green tags numbered 2001 to 3000. Fork lengths of a representative sample of 53-tagged fish were recorded. No anesthetic was used and tagged fish were given 15 minutes of recovery time in long troughs before being released into the reservoir at the Churchill Beach boat launch.

FINDINGS

Conduct a general fisheries assessment through opportunistic angler contacts and mail-in angler questionnaire data. Currently, Lahontan Reservoir holds the Nevada record for walleye (15 lbs 4 oz caught in 1998) and wiper (25 lbs 9 oz caught in 2009). This year, 19 anglers surveyed caught mostly carp; however, walleye, smallmouth bass, and catfish were also caught. All fish measured were large adults; three walleye were weighed at 2.5 lbs, 3.0 lbs, and 5.0 lbs. One smallmouth bass was measured at 14 in and one channel catfish was measured at 18 in. The catch rate was 0.81 fish per hour and 2.42 fish per day, which represented a decrease from the 2010 – 2015 average. Comparatively during 2015, 17 anglers surveyed mostly caught carp; however, white bass and catfish were also caught. During 2015, the catch rate was 1.05 fish per hour and 1.29 fish per day, which also represented a decrease from the 2010 – 2014 average. During 2014, 18 anglers caught mostly white bass, but wipers and channel catfish were also caught. The catch rate was 1.38 fish per hour and 3.61 fish per day. In 2013, 23 anglers caught mostly white bass, but wipers and walleye were also caught. The catch rate was 2.07 fish per hour and 6.65 fish per day. Angler use in 2016 was similarly low compared to the previous four years and was likely due to low reservoir levels. Catch rates were down in 2016, which was likely the result of the continued decline of sport fish populations from extremely low water levels during summer and fall.

Angler use reported from the mail-in angler questionnaire was again low in 2015 (Table 2), which was likely due to the low reservoir level. Even though use was about half of what was documented in 2014, the catch rate was up significantly. Investigation

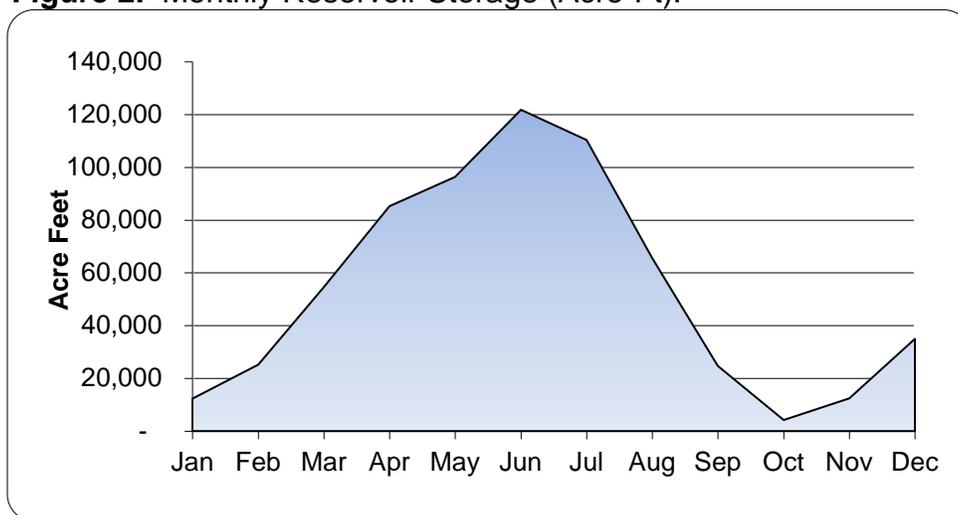
into this abnormally high catch rate revealed one angler from Douglas County reported catching 75 fish during two days of fishing. This was likely someone fishing near the dam and catching spawning carp. The 14-year average catch rate was still higher than catch rates observed over the past six years (Table 2).

Table 2. Historical, Mail-in, Angler Questionnaire Survey Summary

	2008	2009	2010	2011	2012	2013	2014	2015	14 YR AVE
No. Anglers	2,020	3,375	2,495	2,267	2,651	1,304	593	312	2,923
No. Days Fished	11,082	18,065	13,110	10,668	17,208	7,556	1,793	1,620	19,879
No. Fish Caught	66,960	46,804	28,845	19,208	35,494	18,369	5,306	7,197	60,124
No. Fish Per Angler Day	33.01	2.59	2.20	1.80	2.06	2.43	3.58	23.07	6.00
Average Storage	76,139	76,887	93,203	189,783	132,729	68,273	42,844	23,157	122,158

Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) at least three times per year. Figure 2 shows reservoir levels as measured by USGS gauge 10312100. Measurements reported here were taken from the first of each month.

Figure 2. Monthly Reservoir Storage (Acre-Ft).



Maximum capacity at Lahontan Reservoir is 319,000 acre-ft and in 2016, the lowest storage was recorded on September 21 at 3,820 acre-ft (AF), or 1% of capacity (Table 3). Comparatively during 2015, the lowest storage was recorded on July 4 at 5,490 AF, or 2% of capacity. From 2012 through 2016, the reservoir fluctuated dramatically and dropped rapidly in summer, which likely affected spawning, growth, and survival of many fish species. Many of the sport fish species in Lahontan Reservoir use inundated vegetation during spring and early summer as spawning habitat, which additionally provides cover for their young during summer. When reservoir levels are

low and/or drop dramatically, this crucial habitat is not available, which can have a detrimental impact on the fishery.

Table 3. Lahontan Reservoir Annual Storage (acre-feet).

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Jan	159,900	91,200	39,530	27010	95,790	188,600	65,140	40,880	14,870	12,330
Feb	174,900	101,900	56,040	49600	117,200	201,600	78,410	54,480	23,790	25,220
Mar	205,600	110,300	74,830	71970	132,100	211,400	98,580	74,830	43,230	54,620
Apr	231,900	121,100	103,500	99800	176,100	216,800	123,900	95,880	57,990	85,240
May	233,400	106,200	107,400	115400	185,500	200,600	119,600	82,810	61,250	96,390
Jun	223,100	120,600	144,700	134000	202,500	184,500	115,300	73,420	37,340	121,800
Jul	182,500	108,900	155,900	180900	282,900	142,100	89,110	42,950	8,120	110,400
Aug	136,500	69,990	108,200	142700	292,200	97,040	51,010	15,580	5,870	65,570
Sep	92,600	30,040	66,010	95970	235,100	56,920	17,610	15,920	5,870	24,760
Oct	65,340	16,890	33,890	67900	194,900	33,990	7,530	8,910	5,830	4,170
Nov	59,460	11,540	18,670	66420	181,500	23,640	18,640	3,930	6,120	12,400
Dec	67,730	25,010	13,970	66760	181,600	35,560	34,450	4,540	7,600	34,930
Avg.	152,744	76,139	76,887	93,203	189,783	132,729	68,273	42,844	23,157	53,986

The average monthly reservoir level during 2016 was 53,986 AF, which was well below the 2008-2016 average of 84,111 AF and the 2000-2007 average of 161,519 AF. During 2015, average storage was 23,157 AF, which represented the lowest in recent history. During 2014, the average monthly reservoir level was 42,844 AF and in 2013, it was 68,273 AF. Maximum reservoir storage recorded during 2016 occurred on June 14 at 126,700 AF, or 40% of capacity. Comparatively, maximum reservoir storage during 2015 was reached on April 29 at 61,850 AF, or 19% of capacity. At these levels, much of the terrestrial vegetation (for example willows) in bays, the river inlet, and sandy beaches is not inundated. Secchi depths were taken in June and July and showed an average visibility of four feet.

Document dissolved oxygen and temperature when conducting veliger sampling. Dissolved oxygen was not measured during 2016, however, during 2015 it was measured on two occasions in June and ranged from 4.0 mg/L to 8.0 mg/L. Water temperatures were measured three feet below the surface on at least 10 days throughout the year and ranged from 35°F (February) to 71°F (September). Temperature and dissolved oxygen levels were suitable for warmwater fish survival throughout the year.

Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates at least three times per year. Physical inspection of boat docks, buoys, rocky substrates, and boats all came up negative for adult quagga and zebra mussels.

Conduct quagga mussel veliger sampling through plankton tows at established transects at least three times per year. All NDOW veliger testing results have been negative since the original positive finding by the Bureau of Reclamation.

Stock one million walleye fry and 5,000 juvenile wipers. On April 20, 900,000 walleye fry received from the Gavin's Point National Fish Hatchery, South Dakota were

stocked near Blackbird Point in Lahontan Reservoir to help augment the natural reproduction of the lake's walleye population (Table 4). On May 26, 2,091 wipers were received from Colorado Catch Hatchery and stocked at the Churchill Beach boat launch.

Table 4. Lahontan Reservoir Stocking History.

Year	County	Date	Species	Source	Number	Size (in)
2016	Churchill	4/20/2016	Walleye	Gavins Point NFH	900,000	0.5
		5/26/2016	Wiper	Colorado Catch	2,091	5.5
2015	Churchill	4/23/2015	Walleye	Gavins Point NFH	720,000	0.5
2014	Churchill	N/A			-	
2013	Churchill	4/24/2013	Walleye	Gavins Point NFH	285,000	0.5
2012	Churchill	5/3/2012	Walleye	Gavins Point NFH	438,000	0.5
	Lyon	5/3/2012	Walleye	Gavins Point NFH	500,000	0.5
	Churchill	5/4/2012	Wiper	Colorado Catch	1,000	8
2011	Churchill	6/1/2011	Wiper	Colorado Catch	3,700	9
	Lyon	4/21/2011	Walleye	Gavins Point NFH	475,000	0.5
2010	Churchill	6/3/2010	Wiper	Colorado Catch	3,162	8
	Churchill	4/23/2010	Walleye	Gavins Point NFH	365,000	0.5
	Lyon	4/23/2010	Walleye	Gavins Point NFH	400,000	0.5
2009	Churchill	5/27/2009	Walleye	Gavins Point NFH	486,540	0.5
	Lyon	5/27/2009	Walleye	Gavins Point NFH	437,838	0.5

Monitor sport fish populations through gill netting four net nights in late spring/early summer. Gill netting data for 2016 is included in the gill netting history in Table 5. From 2005 to 2007, intensive gill netting surveys resulted in an average of 376 net hours; however, in the years since that time, effort has been lessened.

Table 5. Lahontan Reservoir 2005 - 2016 Gill Net Data.

	White bass		Walleye		Crappie		Wiper		Sac. Blackfish		Catfish Combined		Net Hours
	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	
2016	1	0.01	3	0.04	1	0.01	0	0	0	0	10	0.14	72
2014	4	0.04	9	0.10	3	0.03	0	0.00	4	0.04	41	0.45	92
2013	6	0.06	5	0.05	21	0.21	13	0.13	7	0.07	23	0.23	99
2012	1	0.01	20	0.22	54	0.60	5	0.06	13	0.15	38	0.42	89.5
2011	0	0.00	9	0.09	14	0.14	0	0.00	1	0.01	8	0.08	99
2010	1	0.01	8	0.08	13	0.12	1	0.01	22	0.21	61	0.58	106
2009	0	0	4	0.05	43	0.52	1	0.01	19	0.23	30	0.36	83
2007	266	0.74	105	0.29	78	0.22	262	0.73	28	0.08	160	0.44	360
2006	892	2.19	211	0.52	58	0.14	320	0.78	0	0	55	0.13	408
2005	2	0.01	57	0.16	5	0.01	21	0.06	0	0	19	0.05	360

No wipers have been caught in gill nets since 2013; however, during 2015 and 2016 several large wipers (greater than 10 lbs) were caught during commercial seining operations. Sacramento blackfish had an increase in CPUE to 0.15 during 2012 only to have it drop back to 0.07 in 2013, 0.04 in 2014, and no blackfish were caught during 2016. Numbers of blackfish harvested by the commercial operator remained similar during 2014 and 2015 averaging approximately 1,300 lbs per month; however due to low reservoir levels and concern over blackfish populations, commercial operations

were only conducted during November (500 lbs harvested) and December (795 lbs harvested) of 2016. Crappie were caught at a rate of 0.21 fish per net-hour during 2013, but numbers fell to 0.03, which was near the ten year low. During 2015, crappie was the most abundant species caught, however, only one was caught during 2016. Three walleye were caught in gill nets during 2016, which represented an all-time low in CPUE. The walleye catch during 2012 was 0.22, which was the highest in the past seven years. This, coincidentally, was the most recent above average storage year. White catfish and channel catfish were evaluated together and previously appeared to be the least affected by the four-year drought. Fish per net-hour nearly doubled from 2013 to 2014 (0.23 and 0.45, respectively) only to have it fall to 0.14 in 2016, which was near the ten year low. The drought even appears to be affecting catfish now.

White bass numbers have remained low compared to densities documented in 2006 and 2007. In Lahontan Reservoir, white bass tend to exhibit large boom and bust cycles. This is represented in Table 5 by a low CPUE of 0.01 during 2005, a high CPUE of 2.19 in 2006, and again a low CPUE of 0.00 in 2009. This is likely attributed to good water years when spawning activity is highly successful due to the abundance of inundated vegetation, which provides protection to YOY white bass and results in increased survival. In 2014 and again in 2015, juvenile white bass dominated beach seining surveys, which suggests a successful spawn occurred during the spring. However, adult numbers remained low, which suggests poor recruitment into the adult sport fish population.

The wild populations of sport fish in Lahontan Reservoir continued to persist despite dramatic fluctuations and extreme low water levels experienced over the past four years. Reservoir levels are forecasted to rebound during the summer of 2017 as the Carson Basin snowpack is approximately 212% of average for the 2016 water year as of February 2017.

Assess YOY species composition and production through beach seining at least eight locations during late spring/early summer. No beach seining was conducted during 2016 and only one transect was available for beach seining in 2015 due to extremely low water levels. White bass dominated this limited survey effort, which suggests a small successful spawn occurred during the spring in 2015. During 2015, total catch was comprised of 31 white bass averaging 56 mm (2.2 in) and seven crappie averaging 96 mm (3.8 in). During 2014, one yellow perch and three adult catfish were also caught in addition to white bass and crappie.

Increase habitat complexity and provide additional juvenile habitat cover with additional habitat structures. Installation of the structures was completed throughout the course of several months and GPS locations were recorded at each site (Table 6, Figure 3). Several structures that had been placed during the spring had to be moved to deeper water during late summer due to a rapidly declining reservoir level. Boat anglers were observed fishing near the structures and anecdotal information suggests that the structures are providing a higher concentration of fish, which anglers

are targeting. It is likely that the structures are attracting larger fish by providing a concentrated forage base of younger non-game and game fish species.

Table 6. Mossback GPS Locations – 2016.

Label	Water Body	Easting	Northing	Zone
S-1	Lahontan	319286.07	4363829.56	11
S-13	Lahontan	319226.45	4363812.09	11
S-14	Lahontan	319222.71	4363803.18	11
S-15	Lahontan	320683.68	4366264.11	11
S-16	Lahontan	320684.12	4366260.66	11
S-18	Lahontan	319001.37	4363859.19	11
S-19	Lahontan	319015.51	4363910.63	11
S-2	Lahontan	319292.59	4363831.72	11
S-20	Lahontan	320205.28	4366352.37	11
S-21	Lahontan	320233.36	4366447.82	11
S-22	Lahontan	321636.25	4368146.84	11
S-23	Lahontan	321560.52	4368067.29	11
S-24	Lahontan	321498.88	4367957.85	11

Study Specific Findings:

Tag 2,000 hatchery raised wipers with color specific Floy tags. Only 1,000 wipers were tagged due to time constraints and concern over fish stress resulting from the longer than average time required tagging wipers that did not receive anesthesia. On May 26, wipers were given bright green Floy tags (model FD-94) numbered 2001 to 3000. Fork lengths of 53-tagged fish were recorded. Wipers averaged 161 mm (6.3 in) and all fish appeared healthy before and after tagging (Figure 4). Several pelicans “keyed in” on the tagging operation and swallowed several wipers swimming near the surface.

MANAGEMENT REVIEW

All sport fish species appear to be feeling the effects of prolonged drought. Carp dominated the angler catch (89% of total catch). Walleye, smallmouth bass, and channel catfish were the only sport fish species recorded during angler surveys and comprised 11% of the total catch.

Walleye fry stocking augments natural reproduction in the reservoir and during extremely low water such as in 2008-2010 and 2012-2016, when natural reproduction was limited, it may prove beneficial.

Figure 3. Mossback Habitat Locations – 2016.

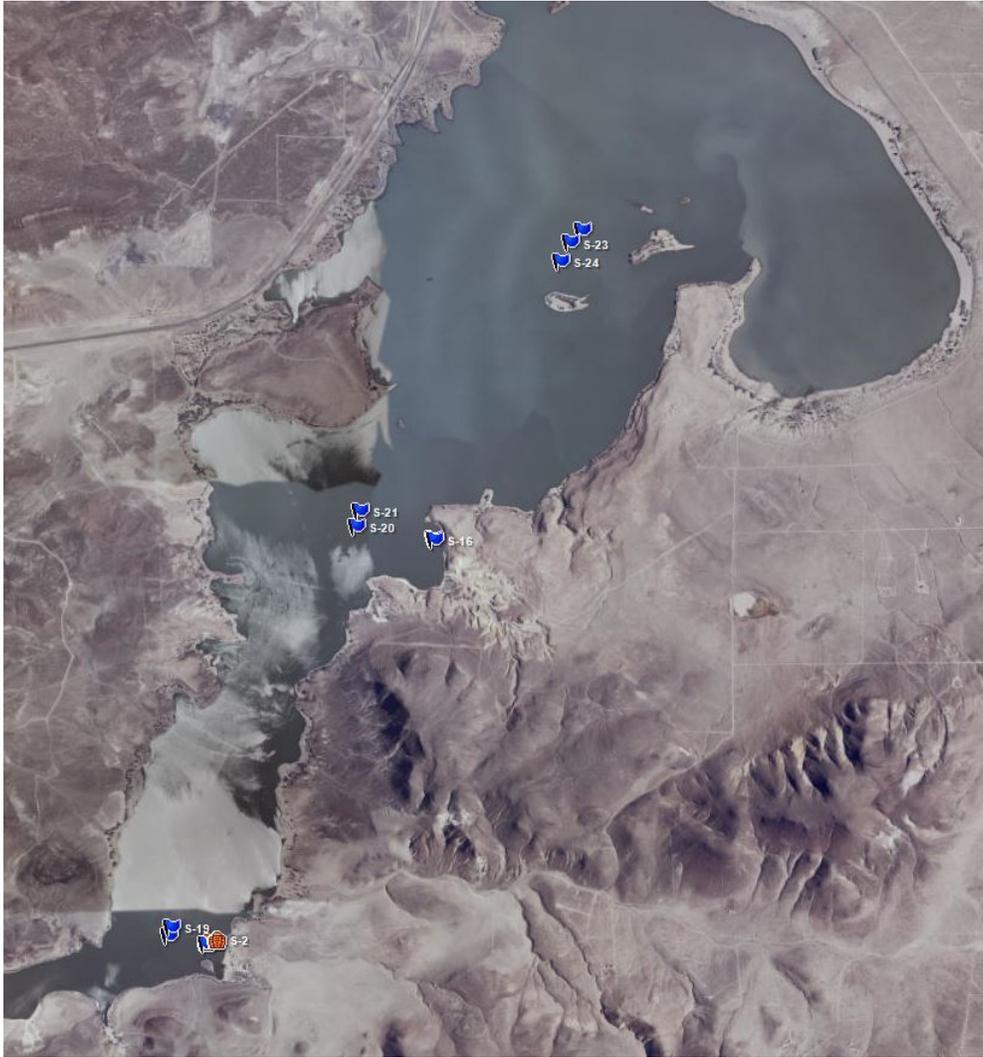


Figure 4. Floy-Tagged Wiper – 2016.



Only large walleye were caught during commercial seining in 2015 and gill netting in 2014 and 2016. No large walleye were caught during gill netting in 2013. During 2012, more than half (60%) of the walleye caught during gill netting surveys were under 10 in, which was a large increase from previous years and suggested that natural reproduction was successful and/or an increase in survivorship of stocked fry occurred during early spring. Conversely, between 2013 and 2016, walleye less than 10 in were not caught suggesting reproduction and survival of juveniles was limited during extremely low water years.

Several large wipers were observed during 2015 and 2016, however, none was observed during 2014. During 2013, all wipers caught during gill netting were in the 7.5 to 10.1 in range suggesting that stocking 8.0 in fish during 2012 was successful, though growth was slow during 2013. Wipers were stocked again during 2016 (none had been stocked since 2012) and these fish will be monitored through angler harvest, gill netting, and commercial seining operations.

No large-scale fish die offs were reported during 2016. A carp removal project during July 2015 was successful in reducing overall fish biomass in the reservoir by approximately 500 pounds when the reservoir level was at its lowest. It was evident that all fish populations benefitted from above average reservoir levels during 2011; however, population survey results from 2012-2016 indicated that overall reproduction and survival of sport fish and forage fish were negatively affected because of drought conditions.

The Truckee Canal breached in 2008 and, after temporary repairs, the Army Corps of Engineers allowed for a maximum of 350 cfs to be diverted from the Truckee River to Lahontan Reservoir in 2009. Very limited flow occurred in 2010 and no flow was observed in 2011. Major reconstruction of portions of the canal was completed during 2012 and from 2013 to 2015, 350 cfs at Derby Dam continued to flow and by the time water reached the reservoir the actual flow dropped to about 200 cfs due to evaporation and infiltration. The canal flowed for most of 2013 and the early part of 2014, 2015 and 2016. When flows in the Truckee River cannot meet downstream demands in the Truckee Basin or flows from the Carson River are high enough to meet Carson Basin demands, the canal is turned off and flow is discontinued to Lahontan Reservoir. The Truckee River Operating Agreement between the Bureau of Reclamation, Pyramid Lake Paiute Tribe, State of Nevada, State of California, and Truckee Carson Irrigation District was finally signed after nearly 27 years of conflict and negotiations. It is currently unknown what effect, if any, this will have on the flows from the Truckee River via the Derby Canal to Lahontan Reservoir because a "normal" water year has not happened since then, it has either been drought or flood.

The addition of protective cover for juvenile warmwater game fish continued and further monitoring of population structure and habitat use will determine if artificial habitat results in increasing the angler catch rate, maximum size, or relative abundance. Even though angling was less successful during 2014 and 2015, it is likely a result of persistent drought and subsequent low reservoir levels and not due to the addition of

artificial habitat structures. Artificial habitat was placed in Lahontan Reservoir where cover was limited and will be monitored during the summer 2017. In addition to providing cover for juvenile warmwater game fish, artificial habitat should also provide protection for other forage fish species. Additional artificial structures should be placed into the lake and monitored for use by juvenile sport fish and non-game fish. Additional monitoring techniques should be evaluated to maximize detection efficiency.

RECOMMENDATIONS

General Management Objectives:

- Conduct a general fisheries assessment 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) at least three times per year.
- Document dissolved oxygen and temperature when conducting veliger sampling.
- Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates at least three times per year.
- Conduct quagga mussel veliger sampling through plankton tows at established transects at least three times per year.
- Stock one million walleye fry and 5,000 juvenile wipers.
- Monitor sport fish populations through gill netting four net-nights in late spring/early summer.
- Monitor sport fish populations through electroshocking four established transects in late spring/early summer.
- Coordinate with the commercial fishing operation to collect 20 Sacramento blackfish for mercury level analysis by EPA.
- Increase habitat complexity and provide additional juvenile habitat cover with additional artificial habitat structures.

Study Specific Objectives:

- Tag 1,000 hatchery raised wipers with color specific Floy tags.

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