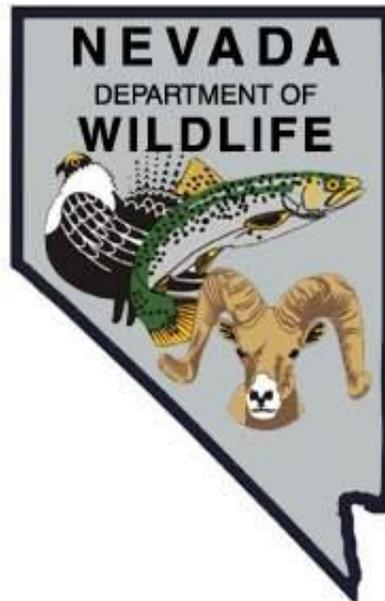


NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-53
2017

RYE PATCH 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: *Rye Patch Reservoir*
Period Covered: *January 1, 2017 through December 31, 2017*

SUMMARY

Rye Patch Reservoir received significant water from the Humboldt River in 2017. The water level was low starting in January and increased steadily until July when the reservoir began to level off and decline due to downstream irrigation demands. The main boat ramp was accessible to anglers all year and the Pitt Taylor boat ramp was accessible from April through December. Reservoir storage varied from a minimum of 14,758 AF to a maximum of 193,110 AF.

Angler success was gauged through angler contacts and mail-in angler questionnaire data. While performing other work at the reservoir, anglers were contacted and asked about results of their fishing. Mail-in angler questionnaire data was received from 2016 and summarized for Rye Patch Reservoir. Walleye, wiper, channel catfish, crappie, bluegill, and rainbow trout were stocked into Rye Patch Reservoir during 2017. Nevada Carp Corporation commercially fished during later winter and harvested Sacramento blackfish.

Surveys were conducted throughout the summer and fall to assess fish populations. In the fall and winter of 2015, a fish die off occurred at Rye Patch Reservoir that was caused by a bloom of toxic golden algae. The loss to the fishery was significant, but increased fish stocking started in 2016 and continued in 2017 to rebuild the fishery.

BACKGROUND

Rye Patch Reservoir, located on the Humboldt River east of Lovelock, Nevada in Pershing County, covers 10,280 surface acres, stores 196,000 AF, and has a maximum depth of 61 feet when full. The water in the reservoir is controlled by PCWCD for irrigation of crops downstream in Lovelock Valley. The reservoir is located within the Rye Patch State Recreation Area managed by Nevada Division of State Parks.

Reservoir levels have historically fluctuated as irrigation demands changed and in recent years the below normal precipitation failed to fill the reservoir. This greatly influenced angler use and success. Rye Patch Reservoir is currently managed as a general warmwater fishery, supporting one of the few walleye fisheries in the state. Other popular game fish include wiper, crappie, catfish, largemouth bass, smallmouth bass, spotted bass, bluegill, yellow perch, and rainbow trout. Commercial fishing operations are also present and targets Sacramento blackfish.

OBJECTIVES

- Conduct a general fisheries assessment through opportunistic angler contacts and mail-in, angler questionnaire data.
- Conduct a general habitat assessment by monitoring reservoir storage and water quality when on site.
- Monitor fish species and body condition (relative weight) by conducting 2 net-nights of gill netting, 2 net-nights of frame netting, 10 electroshocking transects, and 5 beach seining transects.
- Stock approximately one million walleye fry, 3,000 walleye, 2,000 channel catfish, 5,000 white bass, 2,000 crappie, 2,000 yellow perch, and 3,000 wipers.
- Coordinate with the Bureau of Reclamation for quagga mussel veliger sampling using plankton tows at established transects at least three times per year.
- Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates when on-site.
- Coordinate with the commercial fishing operator to measure length and weight on game fish species collected and to collect 20 Sacramento blackfish samples for mercury analysis by EPA.

PROCEDURES

Conduct a general fisheries assessment through angler contacts and mail-in angler questionnaire data. Opportunistic angler contacts were conducted throughout 2017. Angler contacts were made in June, August, September, and November and success was measured as fish per angler and fish per hour. Species were also identified and all fish were measured.

The 2016 mail-in angler questionnaire data was summarized. The voluntary angler questionnaire is mailed to 30,000 of the fishing license holders for the year to estimate angler use and success for waters around the state.

Conduct a general habitat assessment by monitoring reservoir storage and water quality when on site. While on site at Rye Patch Reservoir, visual assessments were made regarding the general habitat condition, reservoir level, and storage in 2017.

Monitor fish species and body condition (relative weight) by conducting 2 net-nights of gill netting, 2 net-nights of frame netting, 10 electroshocking transects, and 5 beach seining transects. Monitoring populations of fish was completed throughout the summer and fall of 2017. Gill netting was conducted for six net-nights using 140 feet long and six feet tall monofilament experimental gillnets. Gillnets were divided into seven different 20 feet long panels with mesh sizes ranging from 0.5 inches to 2.0 inches. Frame net surveys were conducted for two net-nights using fyke-type frame nets with two 25-foot wings and one 50 foot lead. Nets were anchored to shore and set perpendicular to the shoreline. Two 100 meter beach seining transects were completed and electroshocking was completed for 5,400 seconds.

Stock approximately one million walleye fry, 3,000 walleye, 2,000 channel catfish, 5,000 white bass, 2,000 crappie, 2,000 yellow perch, and 3,000 wipers. Walleye, wiper, channel catfish, bluegill, crappie, and rainbow trout were stocked into Rye Patch Reservoir in 2017.

Coordinate with the Bureau of Reclamation for quagga mussel veliger sampling using plankton tows at established transects at least three times per year. Veliger sampling followed guidelines outlined in the Bureau of Reclamation Sample Collection Protocols for Dreissenid Veliger Early Detection Monitoring was conducted by BOR.

Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates when on-site. Tactile and visual monitoring for the presence of adult quagga mussels around boat docks and reservoir substrates was completed throughout 2017.

Coordinate with the commercial fishing operator to measure length and weight on game fish species collected and to collect 20 Sacramento blackfish samples for mercury analysis by EPA. The commercial fishing operation collected 10 Sacramento blackfish to test for mercury. Samples were sent and analysis was conducted by EPA in the Richmond, CA lab.

FINDINGS

Conduct a general fisheries assessment through opportunistic angler contacts and mail-in angler questionnaire data. Ten anglers were contacted at Rye Patch in 2017 while conducting other monitoring surveys. Angler success rates were 0.56 fish per angler and 0.23 fish per hour. Table 1 summarizes data by month and Table 2 summarizes fish length by species.

Table 1. Rye Patch Reservoir Opportunistic Angler Surveys 2017

Month	Survey Days	Anglers	Angler Hours	Fish	Fish/Angler	Fish/Hour
June	2	3	6	3	1.0	0.50
August	2	4	12	5	1.25	0.42
September	1	2	2	0	0	0
November	1	1	1	0	0	0
Summary	6	10	21	8	0.56	0.23

Table 2. Length Frequency and Species Composition Data 2017

Species	# Caught	Size Class							
		<10"	10-11.9"	12-13.9"	14-15.9"	16-17.9"	18-19.9"	20-24.9"	>25"
Channel catfish	2	0	0	1	1	0	0	0	0
Wiper	2	0	0	0	0	2	0	0	0
Yellow perch	4	2	2	0	0	0	0	0	0

Angler success for 2016 mail-in angler questionnaire were 0.43 fish per day and 1.99 fish per angler, which was below the 5-year average of 1.85 fish per day and 7.73 fish per angler. The 5-year mail-in angler questionnaire and angler success are portrayed Figures 1 and 2.

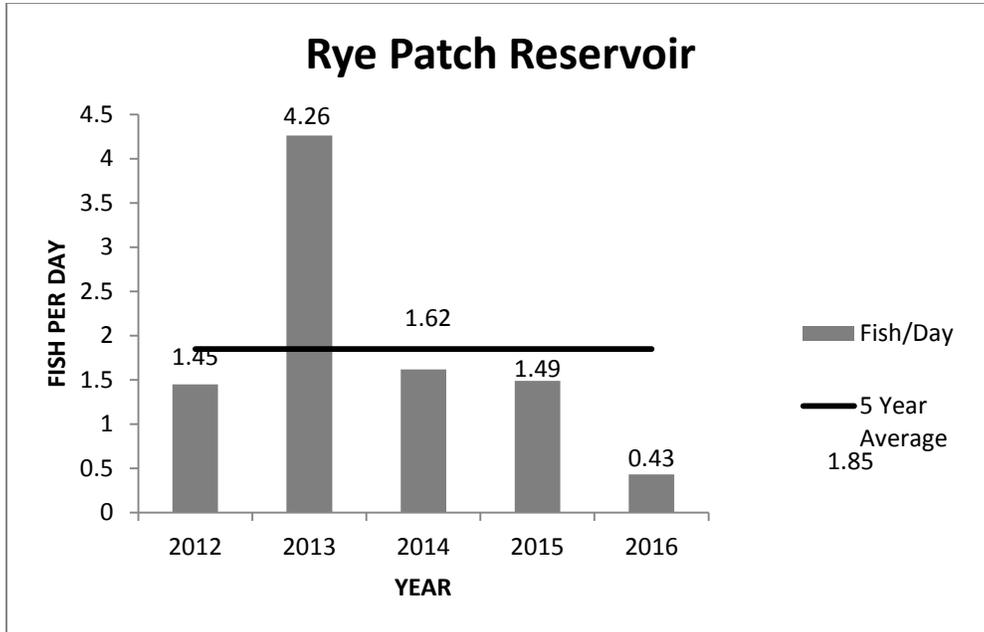


Figure 1. Rye Patch Reservoir Angler Questionnaire fish/day, 2012-2016

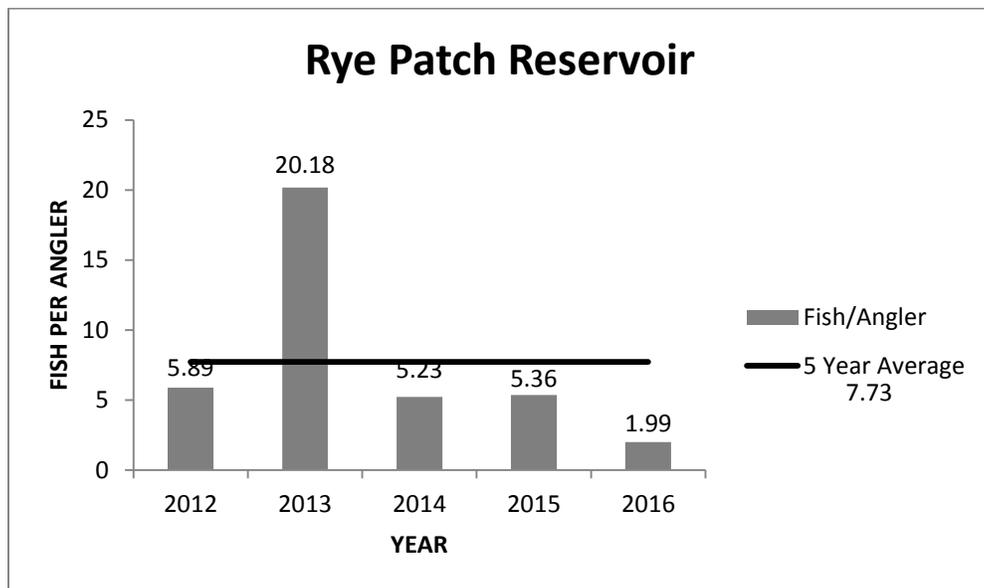


Figure 2. Rye Patch Reservoir Angler Questionnaire fish/angler, 2012-2016

Conduct a general habitat assessment by monitoring reservoir storage and water quality when on site. During 2017, Rye Patch Reservoir received a significant amount of water from the Humboldt River. Reservoir water levels increased from January to July, leveled off, and began declining from July to December. Pershing

Figure 3 shows monthly water storage for Rye Patch Reservoir that was recorded by the County Water Conservation District.

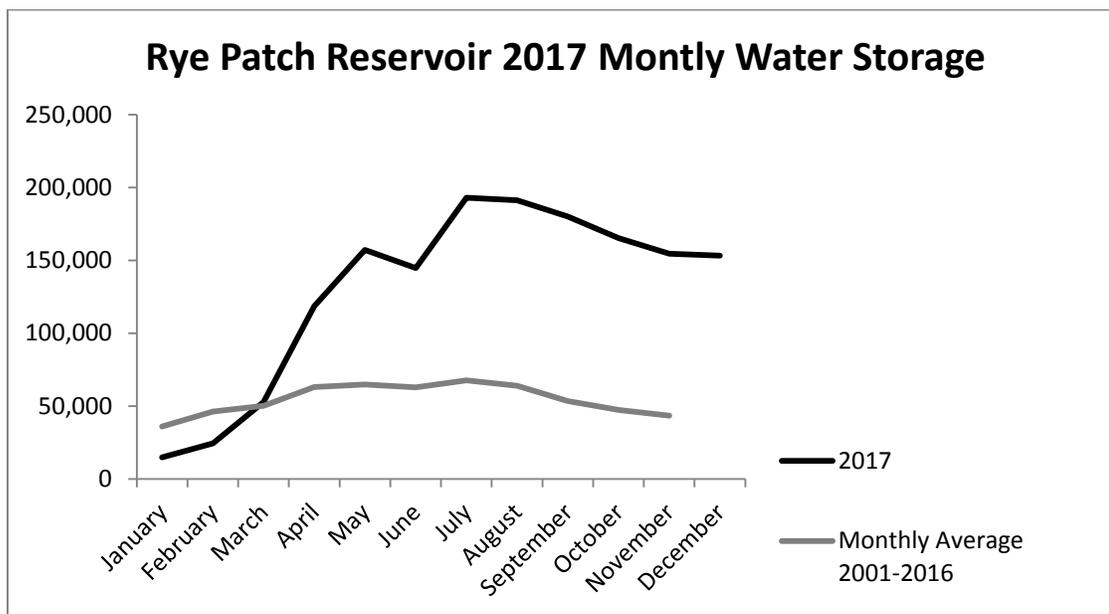


Figure 3. Monthly water storage at Rye Patch Reservoir, 2017

During each visit to Rye Patch Reservoir, a general habitat assessment included measuring water temperature, water level, water clarity, and road conditions. Table 3 summarizes the assessments that occurred in 2017.

Table 3. General habitat assessments at Rye Patch Reservoir, 2017.

Date	Water Temperature (°F)	Water Level % Capacity	Water Clarity	Road Conditions
3/8/2017	43	30%	Clear 3-4 feet visibility	Good
4/26/2017	56	50%	Murky	Good
6/8/2017	59	100%	Murky	Good
6/20/2017	70	100%	Cloudy	Good
7/24/2017	74	100%	Cloudy	Good
8/28/2017	74	90 %	Cloudy 1-2 feet visibility	Good
10/26/2017	52	90%	Cloudy	Good
11/1/2017	50	85 %	Cloudy	Good
11/30/2017	42	85%	Cloudy	Good

Monitor populations of fish species and body condition (relative weight) by conducting 2 net nights of gill netting, 2 net nights of frame netting, 10 electrofishing transects, and 5 beach seining transects. Fish populations were monitored during eleven sampling events in June, August, and November, and Table 4 summarizes the type and location of sampling that occurred in 2017. Sampling included gill netting, frame netting, beach seining, and electroshocking.

Table 4. Rye Patch Reservoir beach seine, gill net, and frame net locations, 2017

Sample Number	Date	Sample Type	UTM (NAD 83)		Time		Soak Time/shock time
			Easting	Northing	Set	Pulled	
1	6/20	Gill Net	389170	4484834	13:15	12:15	1 net night
2	6/20	Gill Net	389096	4488064	13:00	11:30	1 net night
3	6/20	Gill Net	388741	4484127	12:30	10:00	1 net night
4	6/20	Gill Net	386549	4498781	11:00	13:00	1 net night
5	6/20	Gill Net	388813	4494562	11:30	14:00	1 net night
6	6/20	Gill Net	386417	4496150	11:15	13:15	1 net night
7	6/20	Frame Net	388535	4485704	12:45	12:00	1 net night
8	6/20	Frame Net	389520	4494552	11:45	13:30	1 net night
9	8/28	Beach Seine	389576	4494505	12:00	13:00	--
10	8/28	Beach Seine	387781	4499022	11:00	12:00	--
11	11/1	Electrofishing	-	-	-	-	5,400 seconds

Fish monitoring surveys resulted in capturing 842 fish from Rye Patch Reservoir. The total number of each species caught, species composition, and the average fish length are summarized in Table 5 and Figure 4. The survey results based on method and calculated CPUE are summarized in Table 6.

Table 5. Fish species captured and average length Rye Patch Reservoir, 2017

<i>Species</i>	<i>Total caught</i>	<i>Average length (mm)</i>
Sacramento Blackfish	449	75
Carp	219	N/A
Green sunfish	117	47
Crappie	36	69
Channel Catfish	10	237
Walleye	5	86
Wiper	3	375
Smallmouth bass	2	173
Yellow Perch	1	180
<i>Total</i>	842	

Wiper and channel catfish were measured and weighed during surveys to determine body condition. Relative weight is an index calculated as,

$$W_r = (W/W_s) * 100$$

Where W is the individual weight of a fish, W_s is the length-specific standard weight predicted from a weight-length regression developed to represent a species across a geographic range. The standard weight equation (W_s) used in this analysis was obtained from Blackwell et al. 2000. The relative weight index uses 100 as a benchmark for the standard body condition of fish. Measures that are over 100 are considered good body conditions and measures less than 100 indicate fish to be in

poorer condition with the severity depending on the distance from the benchmark of 100 (Guy and Brown, 2007). The relative weight index for wiper ($n=3$) ranged from 82.5 to 96.5 with the average being 90.6 and channel catfish ($n=3$) ranged from 141.4 to 144.7 and averaged 142.8.

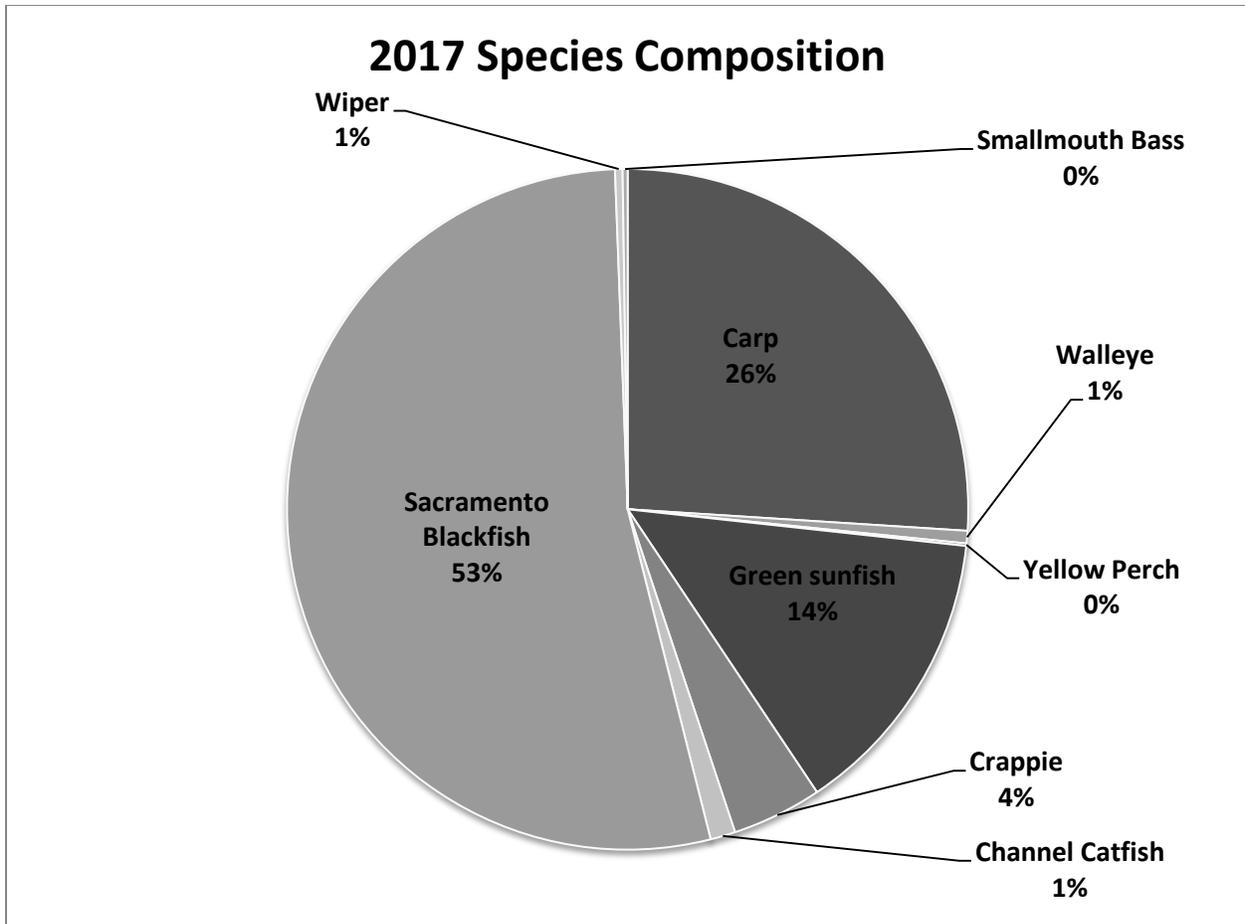


Figure 4. Rye Patch Reservoir fish species composition, 2017

Stock approximately one million walleye fry, 3,000 walleye, 2,000 channel catfish, 5,000 white bass, 2,000 crappie, 2,000 yellow perch, and 3,000 wipers. Rye Patch Reservoir received 1.3M walleye fry, 3,300 channel catfish, 6,758 wipers, 700 bluegill, 1,100 crappie, 3,000 walleye, and 1,008 rainbow trout in 2017. A five-year stocking history is summarized in Table 7.

Coordinate with the Bureau of Reclamation for quagga mussel veliger sampling using plankton tows at established transects at least three times per year. Results from BOR quagga mussel veliger sampling in 2017 were negative. NDOW did not conduct sampling in 2017.

Table 6. Rye Patch Reservoir population survey results - 2017

Survey Method		CPUE
<i>Electroshocking</i>		
	Smallmouth bass	0.67 fish/hour
	Green sunfish	16 fish/hour
	Carp	14.66 fish/hour
	All fish	31.33 fish/hour
	General warmwater sportfish**	16.67 fish/hour
<i>Gill nets</i>		
	Channel catfish	0.83 fish/net night
	Smallmouth bass	0.17 fish/net night
	Wiper	0.50 fish/net night
	Carp	29.5 fish/net night
	Sacramento Blackfish	12.0 fish/net night
	Yellow perch	0.17 fish/net night
	All fish	43.17 fish/net night
	Trophy sportfish*	0.5 fish/net night
	General warmwater sportfish**	1.67 fish/net night
<i>Frame nets</i>		
	Crappie	0.33 fish/net night
	Carp	0.17 fish/net night
	Channel catfish	0.83 fish/net night
	All fish	1.33 fish/net night
	General warmwater sportfish**	1.17 fish/net night
<i>Beach seine</i>		
	Crappie	7.0 fish/100m
	Walleye	2.5 fish/100m
	Sacramento Blackfish	188.5 fish/100m
	Carp	9.5 fish/100m
	Green sunfish	50.0
	All fish	257.5 fish/100m
	General warmwater sportfish**	1.25 fish/100 m

*Trophy sportfish = Wiper

** General warmwater sportfish = Walleye, channel catfish, crappie, yellow perch, smallmouth bass, and green sunfish.

Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates when on-site. The main Rye Patch Reservoir boat dock, Pitt-Taylor boat launch, and several areas with substrates that appeared suitable for adult quagga mussel attachment were surveyed visually and

tactilely on different visits in 2017. All tactile and visual surveys were negative for quagga mussels.

Table 7. Rye Patch Reservoir Fish Stocking Records, 2013-2017

Year	Species	Strain	Source	Number of Fish	Pounds of Fish	Average Size (inches)
2013	Rainbow	Eagle Lake	Mason Valley	500	222	10.4
	Walleye	—	Gavins Point NFH, SD	300,000	—	0.5
	Wiper	—	Colorado Catch	20,000	900	4
2014	—	—	—	—	—	—
2015	Walleye	--	Gavins Point NFH	1,000,000	--	--
	Rainbow	Triploid	Mason Valley, NV	518	175	9.5
2016	Walleye	--	Gavins Point NFH, SD	1,200,000	--	0.5
	Channel catfish	--	Colorado Catch	4,135	364	5
	Wiper	--	Colorado Catch	2,091	239	7
	Rainbow	Triploid	Mason Valley, NV	500	169	7.5
2017	Rainbow	Eagle Lake	Mason Valley, NV	504	160	9.3
	Walleye	—	Gavins Point NFH, SD	1,300,000	—	—
	Channel Catfish	—	Colorado Catch	1,300	112	6
	Wiper	—	Colorado catch	2,383	294	7
	Bluegill	—	Andorno Pond	700	—	4
	Channel Catfish	—	Colorado Catch	2,000	200	7
	Wiper	—	Colorado Catch	4,375	175	5
	Walleye	—	Colorado Catch	3,000	250	6
	Rainbow	Tahoe	Mason Valley	504	200	10
Crappie	—	Willow Creek Res.	1,100	—	4	

— No data available

Coordinate with the commercial fishing operation to collect length and weight data on game fish species, and to collect 20 Sacramento blackfish samples for mercury level analysis by EPA. The commercial fishing operation collected 10 Sacramento blackfish for NDOW to determine mercury concentration. Fish were sent to EPA in Richmond, CA for analysis. Sacramento blackfish ranged in size from 274 to 402 mm and averaged 340.7 mm and mercury concentrations ranged from 0.36 to 0.68 mg/kg with an average of 0.533mg/kg. Table 8 summarizes mercury analysis of Sacramento blackfish.

MANAGEMENT REVIEW

Analysis of the mail-in angler questionnaire data from 2016 revealed that angler success was below average throughout 2016. The 2017 catch rates from the opportunistic angler survey were low as well. Angler success in 2016, which was measured as fish per day and fish per angler from the angler questionnaire survey, was

below the five-year average for Rye Patch Reservoir. Anglers caught 0.43 fish per day and 1.99 fish per angler compared to the five-year averages of 1.85 fish per day and 7.73 fish per angler. Angling success in 2016 was not consistent with the standards described in the General Warmwater Fishery Concept of 1.0 to 2.0 fish per day. It is not surprising that angler success was low since there was a fish die-off that occurred in the winter of 2015.

The catch rate of warmwater sport fish from Rye Patch Reservoir during gill netting was 1.67 fish/net-night. This was consistent with CPUE values for other general warmwater fisheries in Nevada, which ranged between 0.9 and 15.7 fish per net night suggesting the fish community is on its way to recovering.

Table 8. EPA mercury analysis results for Sacramento blackfish, 2017

<i>Species</i>	<i>Length (mm)</i>	<i>Mercury (mg/kg)</i>	<i>Date Sampled</i>
Sacramento Blackfish	365	0.45	12/12/2017
Sacramento Blackfish	402	0.64	12/12/2017
Sacramento Blackfish	400	0.68	12/12/2017
Sacramento Blackfish	387	0.8	12/12/2017
Sacramento Blackfish	386	0.51	12/12/2017
Sacramento Blackfish	305	0.43	12/12/2017
Sacramento Blackfish	279	0.48	12/12/2017
Sacramento Blackfish	308	0.53	12/12/2017
Sacramento Blackfish	301	0.45	12/12/2017
Sacramento Blackfish	274	0.36	12/12/2017
Average	340.7	0.533	

The reservoir was stocked with 1,300,000 walleye fry, 3,300 channel catfish, 6,758 wiper, 700 bluegill, 1,100 crappie, 3,000 walleye, and 1,008 rainbow trout. Supplementary funding was obtained through NDOW’s Habitat Conservation Fee to purchase additional warmwater fish for 2018. Additional fish were stocked to help restore the fisheries after the 2015 fish die-off.

Patch Reservoir received a large amount of water from the Humboldt River, which received an above average snowpack in the winter of 2016/2017. In 2017, the reservoir stored a maximum of 193,110 AF, which was 99% of the reservoir’s capacity. Water was released for irrigation, which drew the reservoir down to 153,300 AF by December 2017.

BOR collected plankton tow samples to monitor for the presence of invasive mussels. No quagga or zebra mussels were found. Visual observations at the boat ramp, dam, and other hard substrates near the boat ramp did not reveal adult invasive mussels.

Fish monitoring surveys revealed that Sacramento blackfish were the most abundant species in the reservoir, representing 53% of the fish species captured. The

large abundance of Sacramento blackfish was not surprising, because the fish die-off that occurred in the winter of 2015 affected mostly other fishes. Sacramento blackfish is a main forage fish for wiper and walleye and the lack of these predators possibly resulted in an increase of Sacramento blackfish in the reservoir.

Wiper and channel catfish caught during population surveys were measured and weighed in order to collect information on body condition. Channel catfish were found to be in good condition at an average W_r of 142.8, but wipers showed a less than optimal body condition at an average of 90.6. Several factors can influence relative weight such as the time of year fish are sampled. This was the first year that fish were assessed for body condition and over time, standard weights can be developed for the species in Rye Patch Reservoir. This will require sampling a larger number of fish at different times of the year, for example during pre- or post-spawning periods, for several years.

Artificial fish habitat structures were purchased using Habitat Conservation Fee funding in order to provide additional escape cover for juvenile gamefish and baitfish in areas that lack protective cover and structure (see Appendix A). Rye Patch Reservoir has a lack of escape cover for fish, especially during periods of low water. Complex aquatic habitat with various types and layers of structure promotes healthy, abundant populations of many fish species through protection from predation and production of an invertebrate food source. Available habitat also attracts larger fish and in turn increases angler opportunity.

RECOMMENDATIONS

- Conduct a general fisheries assessment through opportunistic angler contacts and mail-in, angler questionnaire data.
- Conduct a general habitat assessment by monitoring reservoir storage and water quality when on site.
- Monitor fish species abundance, distribution, and body condition (relative weight) by conducting 2 net-nights of gill netting, 2 net-nights of frame netting, electroshock 10 transects, and beach seine 5 transects.
- Stock approximately 1M walleye fry, 3,000 walleye, 2,000 channel catfish, 5,000 white bass, 2,000 crappie, 2,000 yellow perch, 1,000 bluegill, 1,000 largemouth bass, 1,000 smallmouth bass, and 3,000 wipers.
- Coordinate with the Bureau of Reclamation for quagga mussel veliger sampling using plankton tows at established transects at least three times per year.
- Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates when on-site.

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Prepared by: Brad Bauman
Fisheries Biologist
Western Region

Date: March 14, 201

Artificial Aquatic Habitat Structures



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2017**

Artificial fish habitat structures were purchased using Habitat Conservation Fee funding in order to provide additional escape cover for gamefish and baitfish fry and fingerlings in waters that lack cover and structure. Rye Patch Reservoir was chosen for the habitat improvement due to its lack of escape cover for fish during periods of low water. Complex aquatic habitat with various types and layers of structure promotes healthy, abundant populations of many fish species through protection from predation and production of invertebrates as a food source. Available habitat also attracts larger fish and, in turn, increases angling opportunity. When the water level is low, Rye Patch Reservoir lacks beneficial habitat for fish.

From 2012 to 2015, severe drought in the Great Basin resulted in low water levels in most of Nevada reservoirs. During times when water levels are low due to drought, there is no inundated terrestrial vegetation to provide juvenile gamefish or baitfish with habitats to hide and escape from larger piscivorous fish. Rye Patch Reservoir has walleye and wiper which prey mainly on Sacramento blackfish and black and white crappie.

Annual surveys revealed there were reductions in the number of smaller baitfish, particularly Sacramento blackfish, during the drought. In 2014, the body condition of walleye in Rye Patch Reservoir was very poor resulting from the lack of smaller size class Sacramento blackfish.

Artificial fish habitat structures were purchased from Mossback Fish Habitat. These structures are designed to provide escape cover for smaller gamefish and baitfish. Mossback Fish Habitat structures are made of PVC pipe with slots cut into the main pipe where limbs are inserted. The limbs are made of a combination of low-density polyethylene, paper, and pulp. Three different types of structures were purchased: Root Wad Kit, Safe Haven Kit, and Safe Haven Single Tree (Figure 1 through 3).



Figure 1. Root Wad Kit is designed to increase habitat in shallow water areas and provides cover for baitfish and smaller gamefish (<https://mossback-rack-2.myshopify.com/>).



Figure 2. The Safe Haven Kit adds structure from the shoreline to deeper waters and provides cover for baitfish and smaller gamefish (<https://mossback-rack-2.myshopify.com/>)



Figure 3. Safe Haven Single Tree is designed for both shallow and deep water to provide structure and cover for baitfish and smaller gamefish as well as ambush cover for predatory fish (<https://mossback-rack-2.myshopify.com/>)

In 2017, 12 structures were placed in Rye Patch Reservoir at three different locations (Figure 4). Location selection of each structure was near the last four year observed low water mark. Various types of structures were placed in clusters at each of the three locations (Table 1). Various cluster arrangements were chosen to provide for a diverse array of escape cover for baitfish and juvenile game fish.

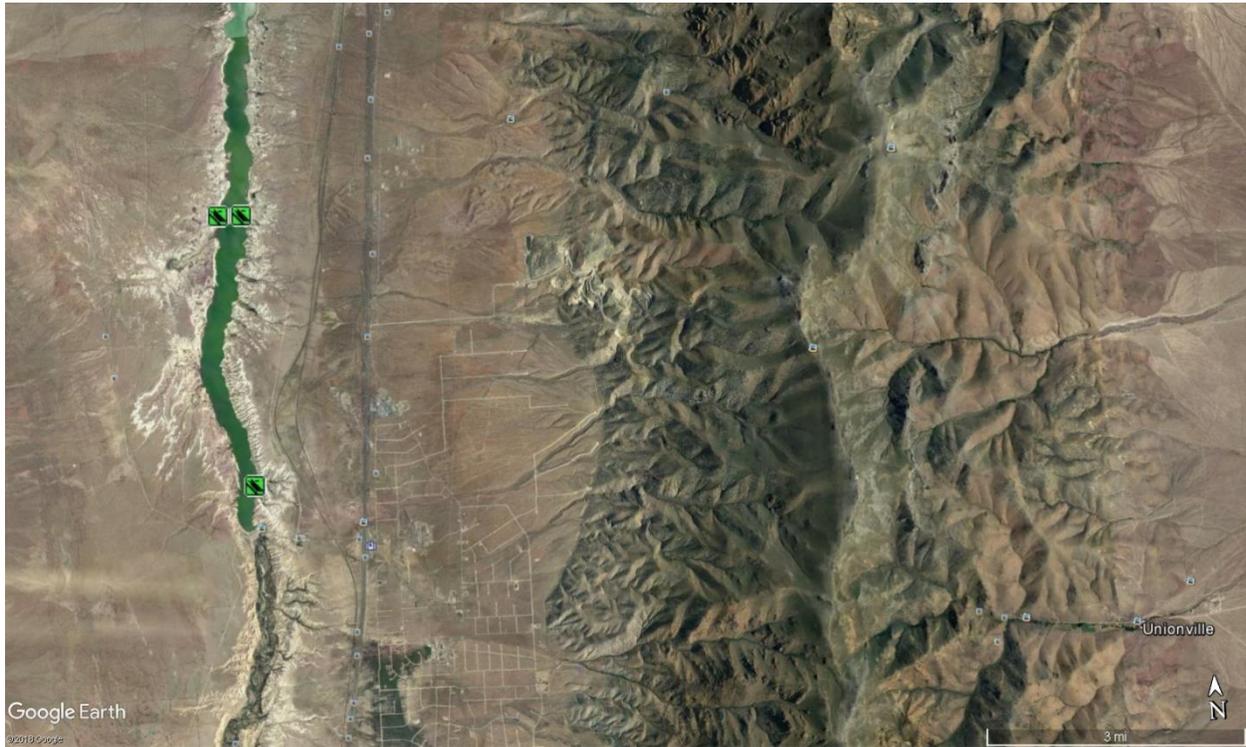


Figure 4. Locations where structures were placed in clusters at Rye Patch Reservoir in 2017.

Table 1. UTM locations and type of structures placed in Rye Patch Reservoir.

Easting	Northing	Type of Habitat
389120	4481526	2 Safe Havens, 1 Root wad, 1 Single Tree
388276	4483765	3 Safe Havens, 1 Root Wad, 1 Single Tree
388811	4486185	2 Safe Havens, 1 Single Tree

A high-resolution 3D structure scan, fish finding sonar unit was purchased in 2017 to monitor habitat structures and associated fish (Figure 5). A learning curve comes with this technology and it will take time to finely-tune reading this sonar. In the future, better imagining detail will be taken to increase the efficiency of monitoring fish species. A high definition underwater camera system was also purchased to monitor structures. It will be utilized in 2018.

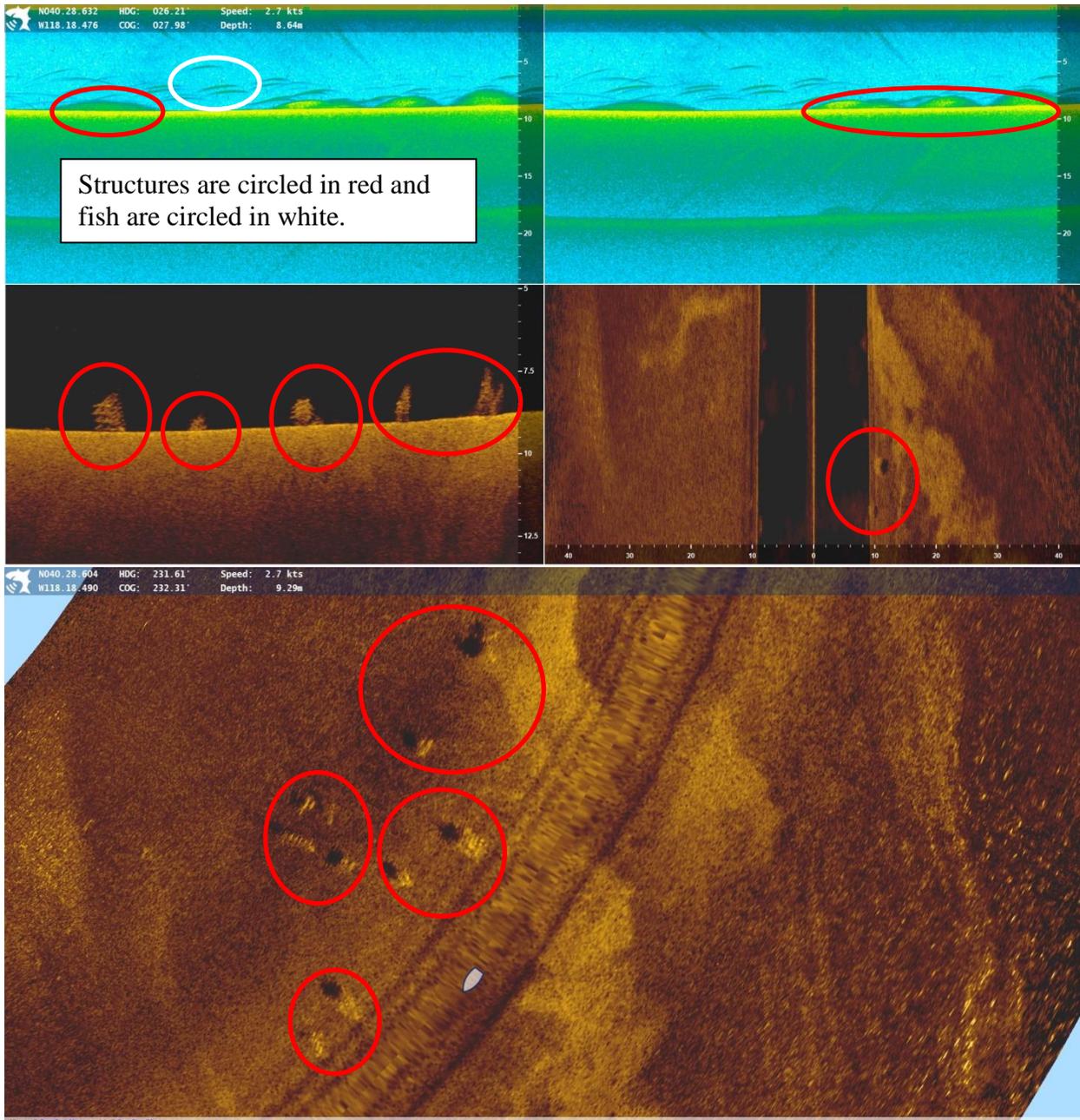


Figure 5. Sonar images of the fish habitat structures in Rye Patch Reservoir 2017.