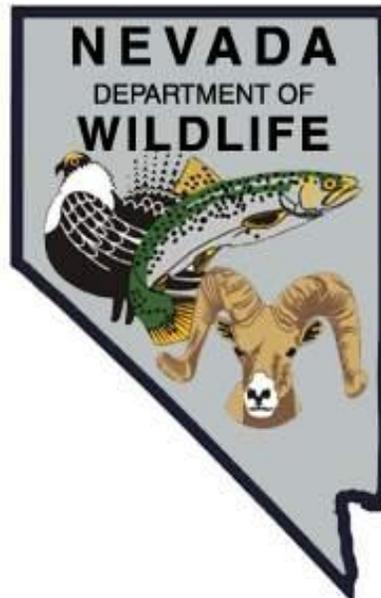


NEVADA DEPARTMENT OF WILDLIFE STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-49
2013

CHIMNEY RESERVOIR WESTERN REGION



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

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

State: *Nevada*
Project Title: *Statewide Fisheries Program*
Job Title: *Chimney Reservoir*
Period Covered: *January 1, 2013 through December 31, 2013*

SUMMARY

Chimney Reservoir was accessible to anglers and boaters throughout 2013 though angling opportunities were limited due to the fishery still being young. It reached maximum storage at 4,312 acre-ft on March 31, 2013 and a minimum storage of 1,665 acre-ft on October 8, 2013. Water releases from the reservoir continued until December for livestock watering, but releases for irrigation ended in September. Some anglers reported catching wipers in the summer. Monitoring results for detecting quagga mussels were negative.

The rotenone treatment planned in the North Fork and South Fork Little Humboldt rivers was not conducted in 2013. Electroshocking of these waters to determine the extent of carp was completed.

Fish restocking began in 2011 following the rotenone treatment of the reservoir and included walleye fry, channel catfish, and largemouth bass. In 2012, walleye fry, wipers, channel catfish, and largemouth bass were stocked. Stocking continued in 2013 with walleye fry, wipers, channel catfish, largemouth bass, and white crappie. Sacramento blackfish were not stocked since source populations in Rye Patch and Lahontan reservoirs tested positive for quagga mussel veligers.

BACKGROUND

Chimney Reservoir is located on the Little Humboldt River and is fed by the North Fork Little Humboldt River and the South Fork Little Humboldt River. The reservoir was built in 1974 to provide storage for downstream irrigation. When full, Chimney Reservoir covers 2,150 SA and stores 35,000 acre-ft, with an average depth of 16 ft and a maximum depth of 55 ft.

Chimney Reservoir is managed as a general warmwater fishery. Currently walleye, wipers, white crappie, channel catfish, and largemouth bass are the only warm water game fish present. In the early 1990's, trout were stocked, but a fishery did not become established. Both forks of the Little Humboldt River support Lahontan cutthroat trout in the headwaters, which may contribute to a very limited trout fishery in Chimney Reservoir.

OBJECTIVES

General Management Objectives:

- Conduct a general fisheries assessment through opportunistic angler contacts and mail-in angler questionnaire data.
- Collect stream flow data on the north and south forks of the Little Humboldt River (above the reservoir) and Little Humboldt River (below the reservoir).
- Evaluate the feasibility of stocking tiger muskie (muskellunge x northern pike sterile hybrid) for controlling carp.
- Conduct quagga mussel Veliger sampling through plankton tows at established transects at least twice per year.
- Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates when on-site.

Study Specific Objectives:

- Conduct up to 5 days of electroshocking surveys on the North Fork Little Humboldt River to determine the sections that need to be chemically treated to remove carp.
- Coordinate with Nevada First Corporation and Bureau of Land Management to complete a second rotenone treatment on the South Fork Little Humboldt River and North Fork Little Humboldt River.
- Conduct a chemical treatment using rotenone to remove fish from the South Fork Little Humboldt River and North Fork Little Humboldt River upstream of Chimney Reservoir. Rotenone will be applied at no greater than 4 ppm and follow State permitting instruction.
- Conduct post-project population monitoring through visual observation and backpack electroshocking surveys along treated sections to confirm the success of the treatment project.
- Develop the sport fishery by augmenting the population with walleye fry, channel catfish, white crappie, wipers, largemouth bass, and yellow perch. Fish for restocking will be obtained utilizing source stock from local fisheries as well as purchasing fish from approved commercial/government suppliers.
- Determine a source for Sacramento blackfish to add additional forage fish, and stock Sacramento blackfish if a source stock is located.
- Examine recruitment of sport fish during late summer by beach seining 5 transects.
- Monitor population and recruitment of fish species during summer/fall electroshocking on 10 transects.
- Monitor population of fish species by conducting 4 net nights of gill netting and 4 net nights of frame netting.

PROCEDURES

General Management Objectives

Conduct a general fisheries assessment through opportunistic angler contacts and mail-in angler questionnaire data. Angler questionnaires were sent to 30,000 anglers purchasing a Nevada fishing license. Information returned to the Department was entered into a database and analyzed for use in assessment of individual fisheries. Opportunistic angler contacts were made when on site conducting other work.

Collect stream flow data on the north and south forks of the Little Humboldt River (above the reservoir). Nevada Division of Water Resources (NDWR) provided stream gauge data on water delivered to Chimney Reservoir in the South Fork Little Humboldt River and North Fork Little Humboldt River during 2013 along with reservoir capacity levels throughout 2013.

Evaluate the feasibility of stocking tiger muskie (muskellunge x northern pike sterile hybrid) for controlling carp. An investigation was conducted to assess the feasibility of using tiger muskie to control the carp population in the reservoir.

Conduct quagga mussel veliger sampling through plankton tows at established transects at least twice per year. Veliger sampling, which followed guidelines outlined in the *Bureau of Reclamation Sample Collection Protocols for Dreissenid Veliger Early Detection Monitoring*, was conducted on June 25, 2013 at two sites near the dam. A sampling net with a mesh size of 80 µm and an opening of 29.5 cm was hauled vertically through the water column. Samples were preserved in 70% ethanol and mailed to EcoAnalysts for analysis.

Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates when on-site. Monitoring for adult quagga mussel was completed by conducting visual and tactile surveys around the dam and boat ramp on June 25 and 26, and August 28, 2013.

Study Specific Objectives

Conduct up to 5 days of electroshocking surveys on the North Fork Little Humboldt River to determine the sections which need to be chemically treated to remove carp. Two days and seven miles of electroshocking surveys were conducted on the North Fork Little Humboldt River above Chimney Reservoir during August 2013.

Coordinate with Nevada First Corporation (landowners) and Bureau of Land Management to complete a second rotenone treatment on North Fork Little Humboldt River. Coordination was conducted among NDOW, Nevada First Corporation, and BLM regarding rotenone treatment of the North Fork Little Humboldt River.

Conduct a chemical treatment using rotenone to remove fish from the South Fork Little Humboldt River and North Fork Little Humboldt River upstream of Chimney Reservoir. Rotenone will be applied at no greater than 4 ppm and follow State permitting instruction. A chemical treatment using rotenone was not conducted on the South Fork and North Fork Little Humboldt rivers in 2013.

Conduct post-project population monitoring through visual observation and backpack electroshocking surveys along treated sections to confirm the success of the treatment project. Post-project population monitoring was conducted in August 2013.

Develop a sport fishery by restocking with 1 million walleye fry, 1,000 white crappie, 1,000 largemouth bass, 500 yellow perch, 500 channel catfish, and 2,000 pounds of Sacramento blackfish. Fish for restocking will be obtained utilizing source stock from local fisheries as well as purchasing fish from approved commercial/government suppliers. Walleye fry, wipers, channel catfish, white crappie, and largemouth bass were stocked in Chimney Reservoir in 2013.

Determine a source for Sacramento blackfish to add additional forage fish, and stock Sacramento blackfish if a source stock is located. An investigation was conducted to find a source of Sacramento blackfish for an additional forage fish in 2013.

Examine recruitment of stocked fish during late spring or summer by beach seining 5 transects twice a year. Beach seining was completed once in the summer of 2013 on 5 transects in Chimney Reservoir.

Monitor population and recruitment of fish species during summer/fall electroshocking on 10 transects. Electroshocking to monitor fish populations and recruitment was not conducted at Chimney Reservoir in 2013.

Monitor population of fish species by conducting 4 net nights of gill netting and 4 net nights of frame netting. Monitoring populations of fish species was conducted with 2 net-nights of gill netting and 2 net-nights of frame netting on Chimney Reservoir in 2013. The number of net-nights was reduced from four to two due to the ongoing drought and resultant low reservoir levels.

FINDINGS

General Management Objective

Conduct a general fisheries assessment through opportunistic angler contacts and mail-in angler questionnaire data. Five anglers were contacted while on site conducting other fisheries work. These anglers reported fishing a total of 8 hrs, catching one wiper that measured 296 mm (11.7 in).

Mail-in questionnaire data for 2012 for Chimney Reservoir indicated that 128 anglers fished 249 days to catch 15 fish (Table 1). As expected, angler success was below the 5-year average, which can be attributed to the chemical treatment in 2010 and 2011 and the extremely low water conditions that persisted in 2013.

Table 1. Chimney Reservoir Angler Questionnaire Results, 2008-2012

Year	Anglers	Days	Fish	Fish/Day	Fish/Angler	Days/Angler
2008	38	113	12	0.11	0.32	2.97
2009	134	901	1,209	1.34	9.02	6.72
2010	151	312	203	0.65	1.34	2.07
2011	137	144	8	0.06	0.06	1.05
2012	128	249	15	0.06	0.12	1.95
Average	117.6	343.8	289.4	0.44	2.17	2.95

Collect stream flow data on the north and south forks of the Little Humboldt River (above the reservoir) and Little Humboldt River (below the reservoir). Upstream flow data for the South Fork and North Fork Little Humboldt rivers were received from the Nevada Department of Conservation and Natural Resources. The South Fork Little Humboldt River only had flowing water in April 2013 and provided 15.33 acre-ft of water into Chimney Reservoir. The North Fork Little Humboldt River had flowing water from April through July, and provided 1,459.29 acre-ft of water to Chimney Reservoir. The North Fork and South Fork Little Humboldt rivers provided a combined total of 1,474.52 acre-ft of water to Chimney Reservoir. Flows on the South Fork and North Fork Little Humboldt rivers during 2013 were some of the lowest in recent history (Figure 1).

During 2013, water storage was measured nearly once a month in the reservoir from March to September by Nevada Division of Water Resources. The maximum water stored was measured on March 31, 2013 at 4,312 acre-ft. Conversely, on October 8, storage was at its lowest at 1,665 acre-ft (Figure 2). A total of 1,495.98 acre-ft of water was discharged from the reservoir, which is virtually the same amount that flowed into it.

Figure 1. Yearly Total Discharge of Water into Chimney Reservoir.

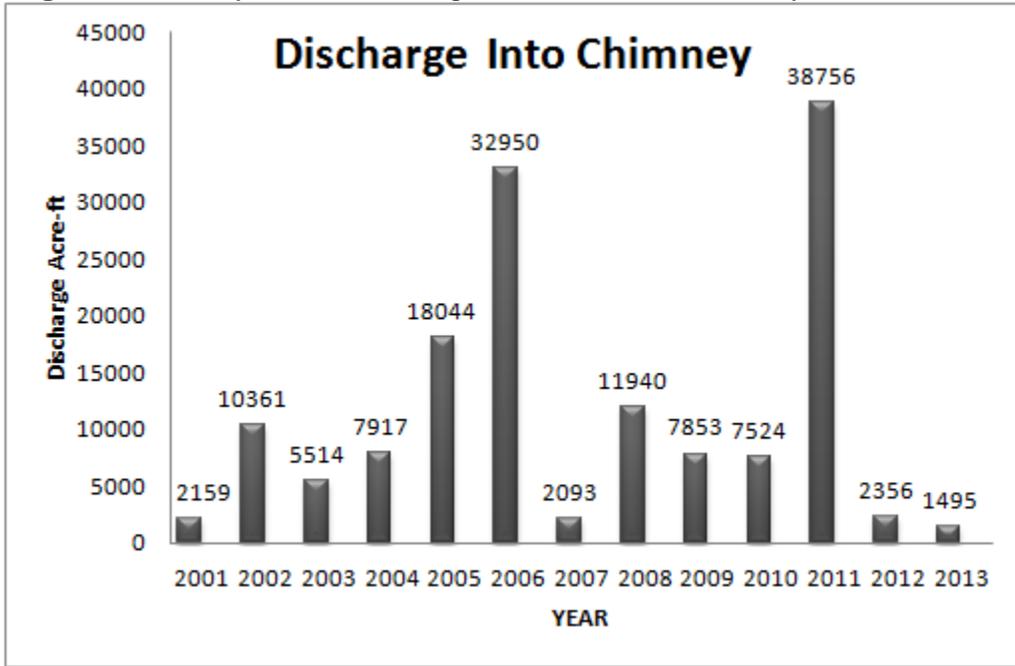
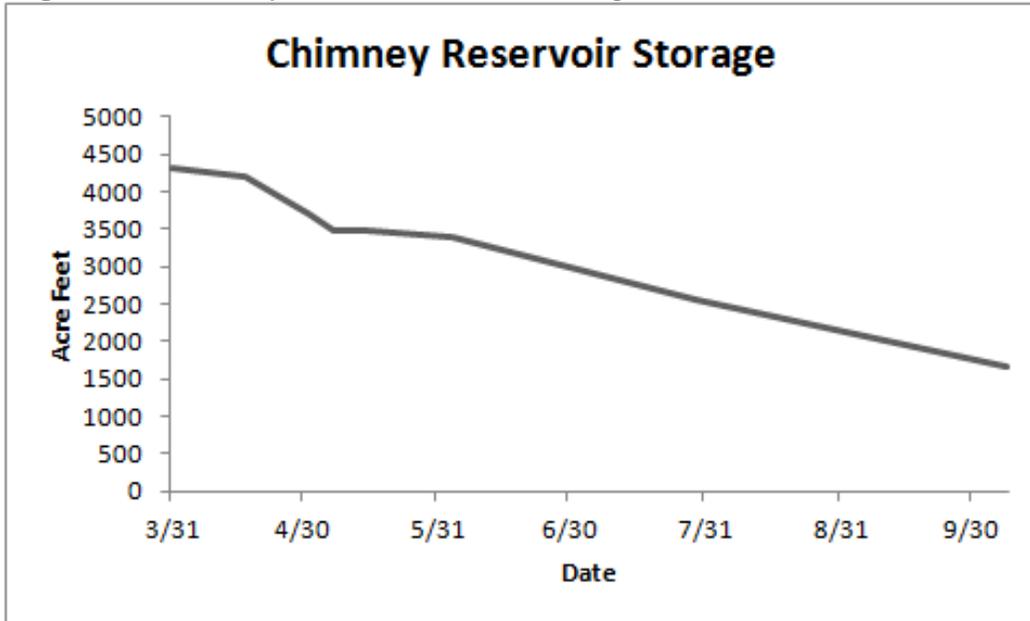


Figure 2. Chimney Reservoir Water Storage - 2013



Evaluate the feasibility of stocking tiger muskie (muskellunge x northern pike sterile hybrid) for controlling carp. In 2013, an investigation was conducted to assess the feasibility of using tiger muskie to control the carp population in the reservoir. From the investigation, there needs to be an Environmental Assessment developed and submitted to the USFWS in order to introduce a new fish species into Chimney Reservoir.

Conduct quagga mussel veliger sampling through plankton tows at established transects at least twice per year. Veliger sampling was conducted on June 25 at two sites near the dam. EcoAnalysts analyzed the samples and both samples collected were negative for quagga mussel veligers.

Monitor for the presence of quagga mussels by conducting tactile surveys around boat docks and reservoir substrates when on-site. The presence of adult quagga mussel was assessed through tactile and visual surveys around the dam and boat ramp areas on June 25 and 26 and August 28. All surveys were negative in 2013.

Study Specific Objectives

Conduct up to 5 days of electroshocking surveys on the North Fork Little Humboldt River to determine the sections which need to be chemically treated to remove carp. Two days of electroshocking 7 mi on the North Fork Little Humboldt River during August 2013 was conducted. The majority of the river was dry during the survey. A few pools of water were encountered, but no fish were observed.

Coordinate with Nevada First Corporation (landowners) and Bureau of Land Management to complete a second rotenone treatment on North Fork Little Humboldt River. Coordination was conducted among NDOW, Nevada First Corporation, and BLM regarding the potential rotenone treatment of the North Fork Little Humboldt River. Due to extremely dry conditions, and that the lower 7 mi of North Fork Little Humboldt River was entirely dry, a second rotenone treatment was not conducted in 2013.

Conduct a chemical treatment using rotenone to remove fish from the South Fork Little Humboldt River and North Fork Little Humboldt River upstream of Chimney Reservoir. Rotenone will be applied at no greater than 4 ppm and follow State permitting instruction. A chemical treatment using rotenone was not conducted on the South Fork and North Fork Little Humboldt rivers in 2013 due to most sections being dry in the summer.

Conduct post-project population monitoring through visual observation and backpack electroshocking surveys along treated sections to confirm the success of the treatment project. Post-project population monitoring was conducted along sections of North Fork Little Humboldt River and almost the entire treatment area was dry. A few standing pools of water were encounter, but no fish were found in those pools.

Develop a sport fishery by restocking with 1 million walleye fry, 1,000 white crappie, 1,000 largemouth bass, 500 yellow perch, 500 channel catfish, and 2,000 pounds of Sacramento blackfish. Fish for restocking will be obtained utilizing source stock from local fisheries as well as purchasing fish from approved commercial/government suppliers. On April 2, 200,000 walleye fry obtained from

Gavin's Point National Fish Hatchery were stocked. On June 26, 10,000 wipers (sterile white bass x striped bass hybrids) and 4,000 channel catfish, purchased from Colorado Catch in Colorado, were stocked. The piscivorous nature of wipers is expected to act as a biological control of juvenile carp. On April 23, 639 largemouth bass collected from Bilk Creek Reservoir were stocked in Chimney Reservoir. A total of 1,805 white crappie from Willow Creek Reservoir in Elko County was stocked on July 16. A five-year fish stocking history for Chimney Reservoir is summarized in Table 2.

Table 2. Five-Year Chimney Reservoir Stocking History 2009-2013.

Year	Species	Source	Number of Fish	Pounds of Fish	Average Size (inches)
2009	—	—	—	—	—
2010	—	—	—	—	—
2011	Walleye	Gavin's Point NFH, SD	200,000	—	—
	Wiper	Colorado Catch	3,250	813	7-9
	Channel catfish	Colorado Catch	500	50	5
2012	Walleye	Gavin's Point NFH, SD	600,000	—	—
	Largemouth Bass	Bilk Creek Reservoir	363	96	9.6
	Wiper	Colorado Catch	2,200	550	7.9
	Channel catfish	Colorado Catch	900	200	8.0
2013	Walleye	Gavin's Point NFH, SD	200,000	—	—
	Wiper	Colorado Catch	10,000	—	4
	Channel Catfish	Colorado Catch	4,000	400	5
	Largemouth Bass	Bilk Creek Reservoir	639	—	9.6
	White Crappie	Willow Creek Reservoir	1,805	—	4.69

Determine a source for Sacramento blackfish to add additional forage fish, and stock Sacramento blackfish if a source stock is located. An investigation was conducted to find a source of Sacramento blackfish that could be used to establish a forage base for Chimney Reservoir. Rye Patch Reservoir has been identified as the best source of Sacramento blackfish; however, PCR tests conducted by the BOR resulted in a weak positive result from routine veliger sampling conducted in 2011. As a result, plans to utilize Rye Patch as a source for Sacramento blackfish will be postponed until such time that there is a higher confidence level that quagga mussels will not be introduced into new waters. Currently, Rye Patch Reservoir has not had a positive test for quagga mussels in three years. In the next few years, if Rye Patch Reservoir sampling continues to be negative, then there may be an opportunity to add Sacramento blackfish as a forage fish to Chimney Reservoir.

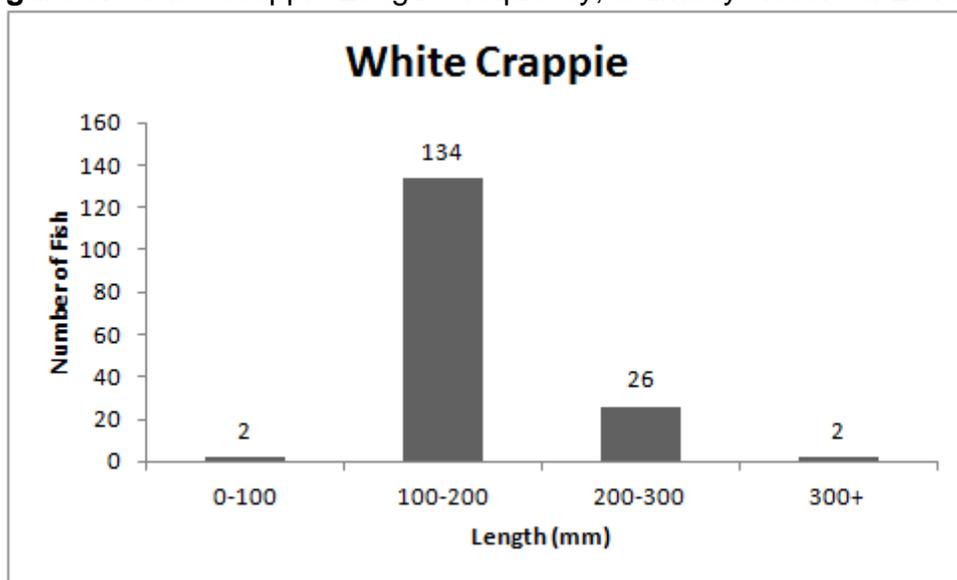
Examine recruitment of stocked fish during late spring or summer by beach seining 5 transects twice a year. Beach seining was completed once in the summer of 2013 on 5 transects in Chimney Reservoir. A total of 28 white crappie were captured representing one age class. The average length of white crappie was 146 mm (5.8 in). Only 13 carp were captured during beach seining, all representing one age class. Average carp length was 156 mm (6.1 in). One walleye and a wiper were caught measuring 296 mm (11.7 in) and 330 mm (13.0 in), respectively.

Monitor population and recruitment of fish species during summer/fall electroshocking on 10 transects. Electroshocking to monitor fish populations and recruitment was not conducted at Chimney Reservoir in 2013 due to mechanical problems with the electroshocking boat.

Monitor population of fish species by conducting 4 net nights of gill netting and 4 net nights of frame netting. Monitoring populations of fish species was conducted with 2 nights of gill netting and 2 nights of frame netting on Chimney Reservoir in 2013. Survey results included 164 white crappie averaging 150 mm (5.9 in) in length, 40 walleye averaging 296 mm (11.7 in), 16 wiper averaging 372 mm (14.6 in), and 62 carp averaging 167 mm (6.6 in). Multiple age classes of white crappie, walleye, and wiper were caught, but only one age class of carp was caught during the survey. Results of gill netting and frame netting are summarized in Figures 3-6.

Stomach samples from 5 walleye and 5 wipers were taken while gill netting. All walleye had empty stomachs. Two of the wiper stomach samples each had one carp and three stomachs were empty. The carp in the stomachs of the wipers measured 165 mm (6.5 in) and 171 mm (6.7 in).

Figure 3. White Crappie Length Frequency, Chimney Reservoir 2013



GENERAL MANAGEMENT REVIEW

Angler utilization and success at Chimney Reservoir were below average during 2013, but were above levels seen in 2012. Since the time of the eradication project in 2010 and 2011, NDOW has restocked Chimney Reservoir with walleye, wiper, white crappie, channel catfish, and largemouth bass. Angler questionnaire data from 2012 indicate that anglers are starting to have limited success post-eradication. Population monitoring confirms the fishery is reestablishing itself and should angler success in the coming years should improve. Water levels in 2013 were the lowest recorded since

2001. Monitoring results for aquatic invasive species, mainly quagga mussels, were all negative in 2013. Ongoing monitoring and boater education should help prevent establishment of aquatic invasive species into Chimney Reservoir and the Little Humboldt River.

Figure 4. Walleye Length Frequency, Chimney Reservoir 2013.

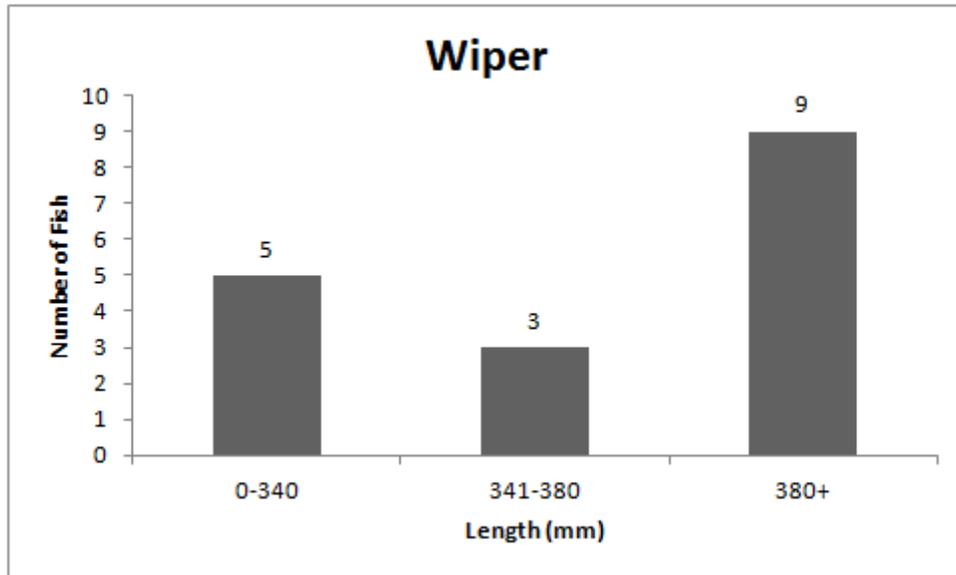


Figure 5. Wiper Length Frequency, Chimney Reservoir 2013.

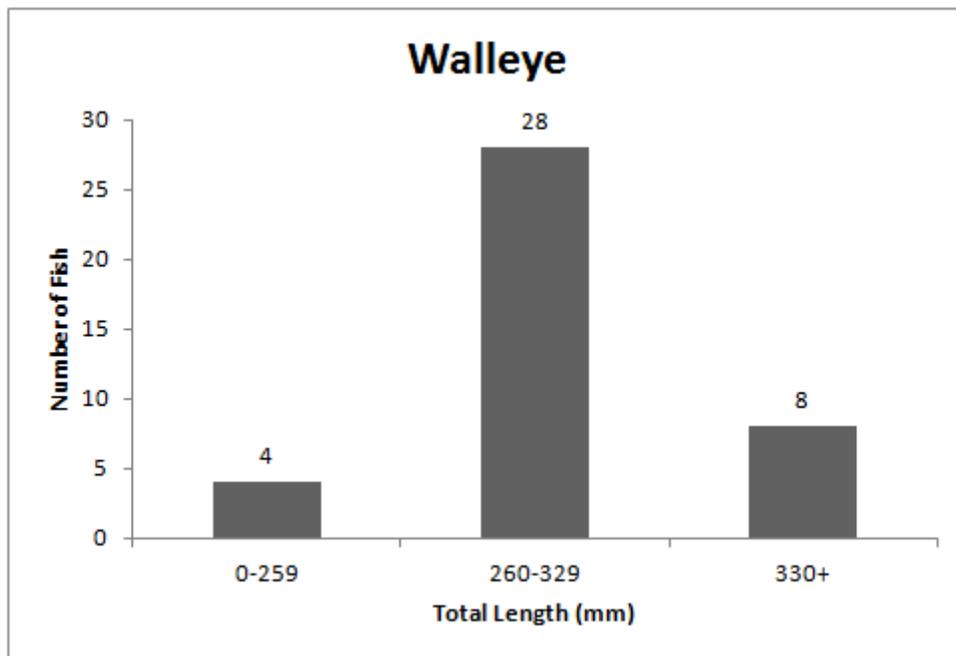
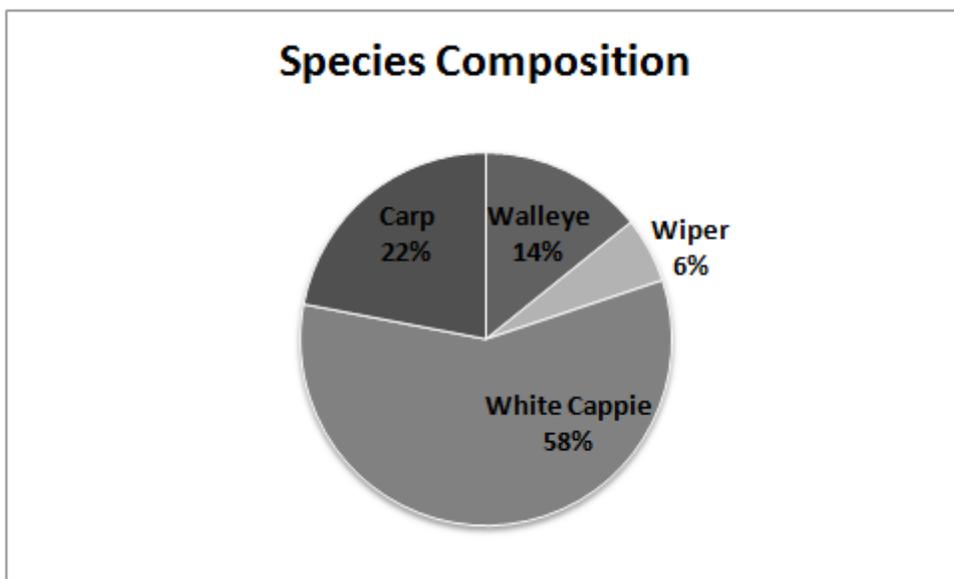


Figure 6. Fish Species Composition for Chimney Reservoir in 2013.



STUDY REVIEW

Electroshocking surveys of the North Fork (NFLHR) and South Fork Little Humboldt rivers did not find carp present in the sections of stream above Chimney Reservoir. The fact that these stream sections were almost entirely dry during the summer of 2013 was a major contributing factor to their absence in the survey results. Although 7 mi of the NFLHR were evaluated, the majority of the stream was dry. It is speculated, however, that there may be carp found further upstream, but it remains an unknown at the present time. With extreme dry conditions seen in 2013, a planned rotenone treatment on the North Fork and South Fork Little Humboldt rivers was not carried out because those sections of stream were dry.

Reservoir restocking efforts were successful in 2013 and included walleye fry, channel catfish, wipers, white crappie, and largemouth bass. Netting results indicated there were catchable size walleye, wiper, and white crappie. Largemouth bass and channel catfish that were stocked into Chimney Reservoir over the past two years were of catchable size, but they did not show up in netting and sampling that occurred in 2013. All carp caught in various nets were the same size/age class averaging 167 mm, and stomach samples from wipers, albeit limited, indicated wipers were utilizing the same age class of carp as forage.

Introducing Sacramento blackfish into Chimney Reservoir as an additional forage fish has been explored. At the present time, there has not been a source stock of Sacramento blackfish identified as being suitable of introduction into Chimney Reservoir. Rye Patch Reservoir is the most likely water to obtain Sacramento blackfish, but a positive quagga veliger result from BOR has prevented moving any fish from Rye Patch Reservoir.

RECOMMENDATIONS

General Management Objective

- Conduct a general fisheries assessment through opportunistic angler contacts and mail-in, angler questionnaire data.
- Analyze stream gauge data collected by the Department of Conservation and Natural Resources on the north and south forks of the Little Humboldt River (above the reservoir) and Little Humboldt River (below the reservoir).
- Augment the reservoir with approximately 200,000 walleye fry, 2,000 channel catfish, and 2,000 wipers.
- Augment the largemouth bass population with 1,000 largemouth bass from a suitable nearby water.
- Monitor fish species by conducting 2 net-nights of gill netting, 2 net-nights of frame netting, 5 electrofishing transects, and 3 beach seining transects.
- Develop an Environmental Assessment to evaluate the impacts of tiger muskie (muskellunge x northern pike sterile hybrid) introduction to Chimney Reservoir.
- Conduct quagga mussel veliger sampling through plankton tows at established transects at least twice per year.
- Monitor for the presence of quagga mussels by conducting substrate sampling around boat docks and reservoir substrates when on-site.

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