

NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-50
2014

KNOTT CREEK 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: Knott Creek Reservoir
Period Covered: January 1, 2014 through December 31, 2014

SUMMARY

The 2014 fishing season started on June 14, 2014 and ended on November 15, 2014. Knott Creek Reservoir was stocked with 5,000 rainbow trout and 1,764 tiger trout. Anglers participating in the 2013 Mail-in, Angler Questionnaire Survey reported catching 8.82 fish per day and 18.85 fish per angler, which was slightly below the five-year average. Anglers participating in the voluntary drop-box survey reported a catch rate of 8.9 fish per angler and 1.12 fish per hour. Opportunistic angler contact surveys resulted in catch rates of 5.4 fish per angler and 3.0 fish per hour.

The water level in Knott Creek Reservoir varied slightly throughout the fishing season. Overall, however, it was considered low. After coordination with NDOW, Knott Creek Ranch drew down the reservoir below the minimum pool of 1,000 acre-ft of water to repair several safety concerns to the dam.

BACKGROUND

Knott Creek Reservoir is located in the Pine Forest Range at an elevation of 6,400 feet. The dam was reconstructed in 1988 when an initial 500 acre-feet minimum pool was purchased, allowing the reservoir to cover 216 surface acres, store 2,700 acre-ft, and have a maximum depth of 24 ft. In 2003, another 500 acre-feet was purchased through the Southern Nevada Public Lands Management Act and added to the state's minimum pool. In addition to angling, Knott Creek Reservoir is also used for irrigation at Knott Creek Ranch.

Currently, Knott Creek Reservoir is managed as a trophy fishery with special regulations in place. Only artificial lures and flies with single barbless hooks are permitted. The limit is one trout per day and one in possession with a minimum size of 18 inches.

OBJECTIVES

General Management Objectives

- Conduct a general fisheries assessment through opportunistic angler contacts, angler drop-box surveys, and mail-in, angler questionnaire data.
- Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) when on site.

- Conduct up to five days of visual surveys looking for spawning rainbow trout and redds along Knott Creek upstream of the reservoir during the spring.
- Monitor Knott Creek upstream of the reservoir in the summer and fall for two days to spot electroshock and look for juvenile trout.

Study Specific Objectives

- Collect 10 stomachs each from rainbow trout, bowcutt trout, and tiger trout (all greater than 14 inches) using hook-and-line.
- Conduct a macroinvertebrate survey in the reservoir when stomach samples are collected.

PROCEDURES

General Management Objectives

Conduct a general fisheries assessment through opportunistic angler contacts, angler drop-box surveys, and Mail-in Angler Questionnaire Survey. Opportunistic angler contacts were made in June 2014. The majority of anglers at Knott Creek Reservoir use float tubes or boats so contacts were made while anglers were on shore and not actively fishing. The angler drop-box was maintained prior to the fishing season opening on June 14 through November 15, which was the last day of the season. Participating anglers rated their satisfaction in angling experience, size of fish, and number of fish caught on a scale of -2 (worst) to +2 (best). The 2013 mail-in angler questionnaire data was summarized. The questionnaire was randomly mailed to 30,000 fishing license holders for the year to estimate angler use and success.

Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) when on site. Knott Creek Reservoir was visited monthly in April, May, June, July, September, October, and November to monitor lake level, water clarity, and aquatic vegetation.

Conduct up to five days of visual observations surveys along Knott Creek upstream of the reservoir during the spring for spawning rainbow trout and redds. Visual observation surveys were conducted along Knott Creek in April, May, and June.

Monitor Knott Creek upstream of Knott Creek Reservoir in the summer and fall using visual observations and two days of spot electroshocking for juvenile trout. Monitoring for juvenile trout in Knott Creek upstream of the reservoir was not conducted due to extremely low flows.

Study Specific Objectives

Collect 10 stomach samples each from rainbow trout, bowcutt trout, and tiger trout (all greater than 14 inches) using hook-and-line methods. Hook-and-line

trout sampling was not completed due to time spent assisting Knott Creek Ranch with resolving safety concerns to the dam.

Conduct a macroinvertebrate survey during the time when stomach content samples are collected. Macroinvertebrate surveys were not conducted since stomach samples were not collected.

FINDINGS

General Management Objectives

Conduct a general fisheries assessment through opportunistic angler contacts, Angler Drop-Box Surveys, and Mail-in Angler Questionnaire Survey. Knott Creek Reservoir was stocked with a total of 5,000 triploid rainbow trout and 1,741 tiger trout on April 15. The stocking history from 2010 through 2014 is summarized in Table 1.

Table 1. Knott Creek Reservoir Stocking Data 2010-2014.

Year	Species	Strain	Number of Fish	Pounds of Fish	Average Size (inches)	Annual Total	
						Number	Pounds
2010	Bowcutt		2,499	886	9.6	2,499	886
2011	Bowcutt		2,498	724	9.2	5,998	1,989
	Rainbow	Tahoe	3,500	1,265	8.9		
2012	Tiger Trout		450	182	10	450	182
2013	Rainbow	Triploid	4,357	2,010	10.5	7,743	3,135
	Bowcutt		2,522	1,025	10.1		
	Tiger		864	100	6.6		
2014	Rainbow	Triploid	5,000	1,760	9.6	6,764	2,440
	Tiger		1,764	680	9.9		

The mail-in, angler questionnaire results for 2013 indicated angler use was down from previous years and below the five-year average. The decrease in angler use can be attributed to an algae bloom and resulting die-off of fish that occurred during last summer. In 2013, angler success estimated from the questionnaire was 8.82 fish per day and 18.85 fish per angler, which was below the five-year average. Data is summarized in Table 2.

Table 2. Knott Creek Reservoir Angler Questionnaire Data 2009-2013.

Year	Anglers	Days	Fish	Fish/Day	Fish/Angler	Days/Angler
2009	905	2,765	21,227	7.68	23.46	3.06
2010	965	2,928	27,035	9.23	28.02	3.03
2011	436	1,314	13,107	9.97	30.06	3.01
2012	728	2,599	24,077	9.26	33.07	3.57
2013	274	585	5,162	8.82	18.85	2.13
Average	661.6	2,038.2	18,121.6	8.99	26.69	2.96

Anglers completed 21 drop-box forms in June, July, October, and November. The average satisfaction rating for angling experience was 1.08, size of fish 0.96, and number of fish caught 1.04. Angler success was 8.9 fish per angler and 1.12 fish per hour. Angler drop-box data is summarized in Tables 3 and 4.

Table 3. Monthly Angler Use, Success and Satisfaction Data – Drop Box.

Month	# of Anglers	# of Angler Hours	Angler Satisfaction			# of Fish Caught	# of Fish Harvested	Fish/Angler	Fish/Hour
			Angling Experience	Size of Fish	# of Fish				
June	12	178.5	0.50	0.5	0.33	180	0	15.0	0.99
July	6	67.0	1.83	1.83	1.83	120	0	20.0	1.79
October	1	5.0	1.00	1.00	1.00	4	0	4.0	0.80
November	2	5.5	1.00	0.50	1.00	11	0	5.5	2.00
Annual Summary	21	256.0	1.08	0.96	1.04	315	0	8.9	1.12

Table 4. Length Frequency and Species Composition Data – Drop Box.

Species	# Caught	Size Class							
		<10"	10-11.9"	12-13.9"	14-15.9"	16-17.9"	18-19.9"	20-22"	>22"
Rainbow trout	243	16	42	73	68	26	10	5	3
Tiger trout	13	2	4	5	2	0	0	0	0
Bowcutt	59	0	1	13	10	14	12	7	2

Opportunistic angler contacts were made on June 14 and 15. Due to the majority of anglers using float tubes or boats, contacts were made while on shore. Angler success averaged 5.4 fish per angler and 3.0 fish per hour. The data is summarized in Tables 5 and 6.

Table 5. Opportunistic Angler Surveys - 2014

Month	Survey Days	Anglers	Angler Hours	Fish	Fish/Angler	Fish/Hour
June	2	25	98	197	7.8	2.01
Summary	2	7	12	22	3.25	1.84

Table 6. Length Frequency and Species Composition Data – Opportunistic Surveys

Species	# Caught	Size Class							
		<10"	10-11.9"	12-13.9"	14-15.9"	16-17.9"	18-19.9"	20-22"	>22"
Rainbow trout	103	7	15	31	22	22	3	3	0
Tiger Trout	41	20	15	6	0	0	0	0	0
Bowcutt	53	0	0	5	14	17	10	1	6

Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) when on site. At the start of the fishing season with below normal runoff, Knott Creek Reservoir was at approximately 50% capacity. Knott Creek Ranch released water throughout the summer to meet their irrigation demands, which brought the reservoir down to the minimum pool of 1,000 acre-ft by August. In October, Knott Creek Ranch requested to

drop the reservoir below the minimum pool in order to address safety concerns with the dam and make repairs. The reservoir was then lowered approximately three feet below minimum pool.

The water clarity at Knott Creek Reservoir remained good throughout the season. In the summer of 2013, an algae bloom caused water clarity and quality issues, but in 2014, no algae blooms were observed outside of the normal levels.

Conduct up to 5 days of visual observations surveys along Knott Creek upstream of the reservoir during the spring for spawning rainbow trout and redds. Five days of visual observation took place in April, May, and June to document the occurrence of spawning rainbow trout and spawning redds. A total of 64 rainbow trout were observed in the creek above the reservoir, however, no redds or paired trout were observed. In 2014, stream flow was very low and there was virtually no spawning habitat available.

Monitor Knott Creek upstream of Knott Creek Reservoir in the summer and fall using visual observations and 2 days of spot electroshocking for juvenile trout. Electroshocking Knott Creek upstream of the reservoir did not occur due to very low water flow.

Study Specific Objective

Collect 10 stomach samples each from rainbow trout, bowcutt trout, and tiger trout (all greater than 14 inches) using hook-and-line methods. Hook-and-line sampling of trout was not completed due to extra time spent assisting Knott Creek Ranch with resolving safety concerns to the dam.

Conduct a macroinvertebrate survey during the time when stomach content samples are collected. Macroinvertebrates were not sampled due to time spent assisting Knott Creek Ranch with the dam.

MANAGEMENT REVIEW

The angler success reported from angler drop-box, mail-in angler questionnaire, and opportunistic angler contact surveys was consistent with standards for the Trophy Fisheries Management Concept. Overall angler use was down in 2014, most likely due to anglers knowing there was an algae bloom in 2013 that resulted in fish dying. Anglers were not confident that the fishery was stable despite published media reports from NDOW that the fishery was not heavily impacted from the die off. Some anglers did make their way to this remote fishery and reported catching fish throughout the season.

Water levels at Knott Creek Reservoir continued to drop throughout the year and approached the 1,000 acre-ft minimum pool by the end of the irrigation season. After this, Knott Creek Ranch requested further releases in order to conduct repairs to the

dam. Several leaks were repaired in October and the dam should hold water more efficiently.

RECCOMENDATIONS

General Management Objectives

- Conduct a general fisheries assessment through opportunistic angler contact, angler drop-box, and mail-in angler questionnaire surveys.
- Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity) when on site.
- Conduct up to five days of visual surveys along Knott Creek upstream of the reservoir during the spring for spawning redds and pairing rainbow trout adults.
- Visually monitor Knott Creek upstream of the reservoir in the summer and fall and conduct two days of spot electroshocking to document the presence/absence of juvenile trout.

Study Specific Objectives

- Determine if trout species in Knott Creek Reservoir are utilizing specked dace as forage by collecting ten stomachs from rainbow trout, bowcutt trout, and tiger trout (all greater than 14 inches). Collect trout using a hook-and-line survey.

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