

GROUNDHOG RESERVOIR

Jim N. White
Aquatic Biologist
Southwest Region



Water: Groundhog Reservoir
Sampling Date: June 7, 2016
Gear: Gillnet
Drainage: Dolores
Water Code: 90275

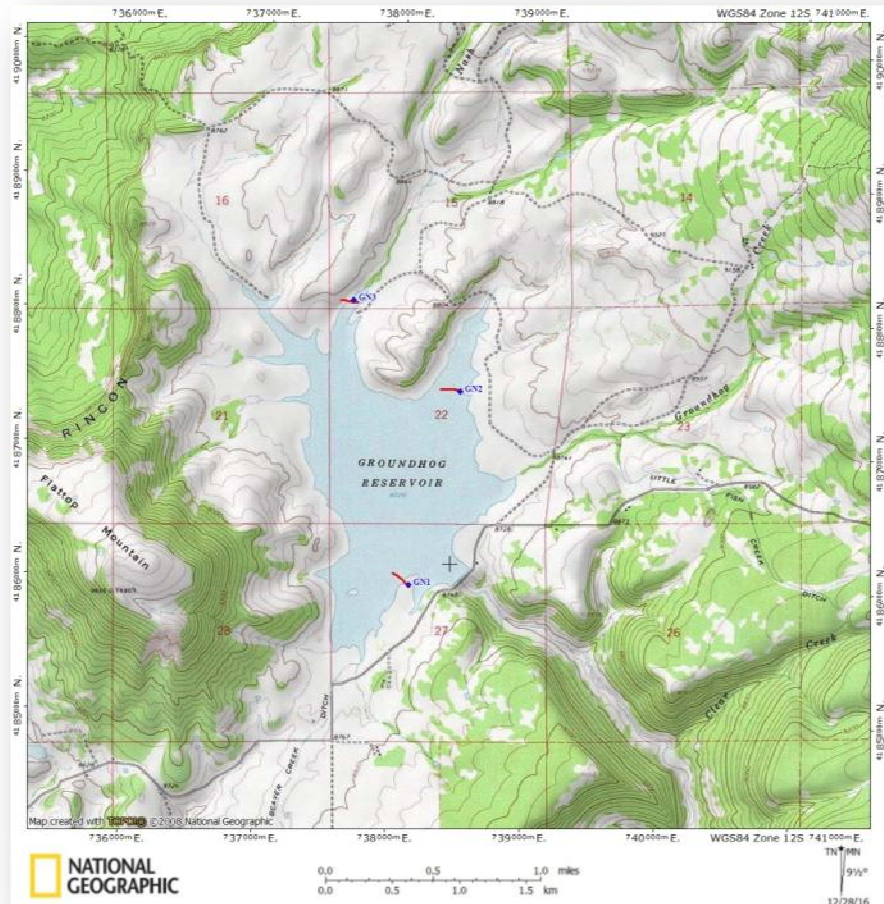
OBJECTIVE

To assess the relative abundance and condition of trout after changing from a primarily cutthroat trout stocking strategy to a mixture of rainbow and cutthroat trout.

HISTORY

Groundhog Reservoir was built in 1905 and enhanced to its current size of 590 surface acres (21,710 AF) in 1938 by the Montezuma Valley Irrigation Company (MVIC). Groundhog sits at 8,724 ft in elevation making it one of the highest reservoirs in Area 15. CPW retains a fish pool of 30 feet deep (on the gauge which goes to 70 feet) which is about 3960 AF. In June 2011 a new bathymetric study was done on the reservoir which revealed an additional 4,410 AF of water bringing the total volume to 26,120 AF. MVIC filed a claim in water court and successfully acquired the additional water in 2016.

Groundhog has a fine reputation for producing quality sized rainbow and cutthroat trout. However that was not always the case. Longnose sucker were abundant in the lake until they were removed with rotenone in September 1980. MVIC drained the lake to fix the outlet and the Colorado Division of Wildlife took advantage of the lower water levels to remove the nuisance fish. MVIC also drained the lake in 2004 to repair the outlet works. An emergency fish salvage was put into place in anticipation of a total loss of the fishery. Not all fish were lost but the severe reduction in the density of rainbow trout in the lake posed an opportunity to try and establish a premier native Colorado River cutthroat trout fishery. Cutthroat trout fingerlings were stocked exclusively from 2005-2008 (Figure 1). Poor recruitment of cutthroat trout and angler dissatisfaction with the current state of the fishery motivated CPW to return to a mix of cutthroat and rainbow trout stocking. The purpose of this year's survey is to assess that change in management.



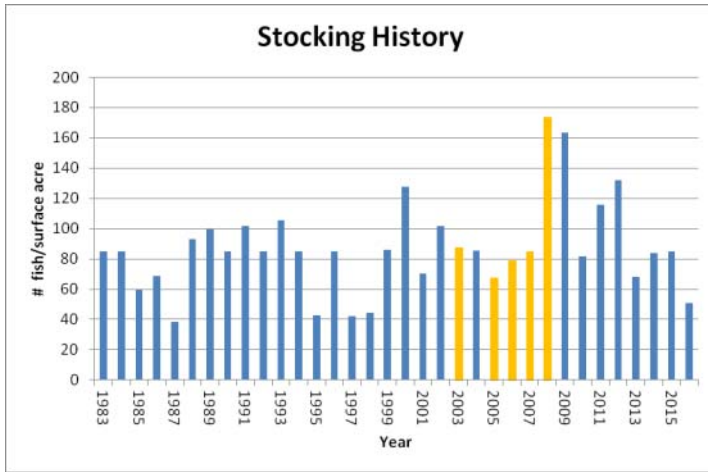


Figure 1. Stocking density (fish per surface acre) for Groundhog Reservoir. Yellow bars are years when only Colorado River cutthroat trout were stocked. Most other years were a combination of rainbow and various strains of cutthroat trout (mostly Snake River cutthroats).

RESULTS

Three gillnets were set out overnight in historic locations. A total of 113 trout were captured, most (80%) were rainbow trout or rainbow trout hybrids (Figure 2). Although last stocked in 2012, Colorado River cutthroat trout represented about 8% of the catch.

Trout (all species) ranged from 6.7 to 17.2 inches (both CRN; Table 1). Rainbow trout averaged 12.6 inches in size with a maximum of just over 16 inches captured in the survey. Compared to historic surveys the percentage of rainbow trout in the catch and average size were similar to pre-cutthroat trout stocking (Figure 3).

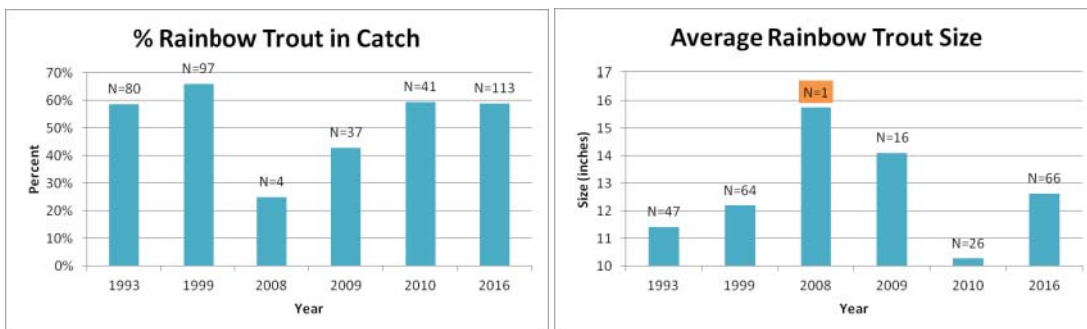
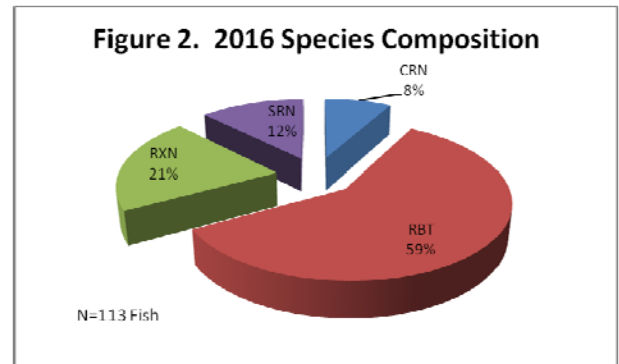



Figure 3. Percent (left) and average size (right) of rainbow trout in historic gillnet surveys. N for % rainbow trout is the total number of fish in the catch and N for average size is the total number of just rainbow trout measured. 2008 is an outlier because it was a 5 hour day set, not an overnight gillnet set like the rest of the surveys.

Table 1. Groundhog gillnet summary report, June 7, 2016.

Combined Summaries											
		Water # 90275	Groundhog Reservoir		Date 6/7/2016						
		Station DO0307	Groundhog Reservoir								
Drainage Dolores River				UtmX 209729	UtmY 4187900	Elevation 8724 ft					
Surveyors J. White, P. Deren, R. Lane, J.B. White, and CPW t				Length	Width	Area					
Gear GILLNET				Effort 42.00	Metric HOURS	Protocol CPUE					
Proportional Stocking Density and Catch/Unit Effort											
Species	Total Catch	Min Cut inch	Max Cut inch	Total used	Proportional Stock Density (%)	Percent Stock Size	Percent Quality Size	Percent Preferred Size	Percent Memorable Size	Percent Trophy Size	Max Length inches
COLORADO RIVER	9	3.94		9	66.67	22.22	66.67				17.24
RAINBOW TROUT	66	7.87		66	1.52	95.45	1.52				16.38
RAINBOW X CUTTHROAT	24	7.87		23	0.00	100.00					15.83
SNAKE RIVER	14	3.94		14	0.00	100.00					12.20
Mean, Minimum and Maximum Length and Weight											
Species	Total Catch	Min cut inch	Max cut inch	Total Used	Length (inches)			Weight (lb)			
					Mean	Minimum	Maximum	Mean	Minimum	Maximum	
COLORADO RIVER	9	3.94		9	13.14	6.69	17.24	0.98	0.09	2.11	
RAINBOW TROUT	66	7.87		66	12.36	8.70	16.38	0.80	0.27	1.85	
RAINBOW X CUTTHROAT	24	7.87		23	12.16	10.08	15.83	0.77	0.41	1.49	
SNAKE RIVER CUTTHROAT	14	3.94		14	11.09	10.43	12.20	0.56	0.43	0.72	
Relative Abundance and Catch/Unit Effort											
Species	Total Catch	Min.Cut inch	Max.Cut inch	Total used	Weight Lbs	Percent		Catch per Unit Effort			
						Number	Weight	Number/Effort	Unit Effort	Lbs/Effort	
COLORADO RIVER CUTTHROAT	9	3.94		9	8.86	8.04	10.20	0.21		0.21	
RAINBOW TROUT	66	7.87		66	52.62	58.93	60.56	1.57		1.25	
RAINBOW X CUTTHROAT	24	7.87		23	17.62	20.54	20.28	0.55		0.42	
SNAKE RIVER CUTTHROAT	14	3.94		14	7.79	12.50	8.97	0.33		0.19	
Abundance and Biomass											
Species	Total Catch	Min.Cut inch	Max.Cut inch	Total Used	Population estimate	Biomass Lbs	Percent		Density estimates		
							Number	Weight	Lb/Acre	Fish/Acre	Fish/Mile
COLORADO RIVER	9	3.94		9		8.86	8.04	10.20			
RAINBOW TROUT	66	7.87		66		52.62	58.93	60.56			
RAINBOW X CUTTHROAT	24	7.87		23		17.62	20.54	20.28			
SNAKE RIVER CUTTHROAT	14	3.94		14		7.79	12.50	8.97			
Notes: Purpose of survey was to evaluate the recruitment, growth, and condition of rainbow and rainbow hybrid stocking in Groundhog Reservoir. Gillnets were set late in the evening and picked first thing in the morning to try and avoid excessive mortality. It did not work. We lost most of the fish either from warmer water or crayfish predation or both.											

Fish caught per gillnet hour or Catch per Unit Effort (CPUE) were the highest recorded in the 23 year survey record (Figure 4). Despite the abundance of fish in the reservoir the relative weight or “plumpness” of the fish was approaching 100% relative to other populations of trout (Figure 4 and 5) suggesting that food resources are adequate and that the stocking rate is appropriate.

Cutthroat trout, although a small percentage of the population, contribute the highest percentage of quality fish in the lake. “Quality” cutthroat trout (fish over 14 inches) ranged from about 27% to 67% of the historic catch while rainbow trout ranged from 1% to 35%.

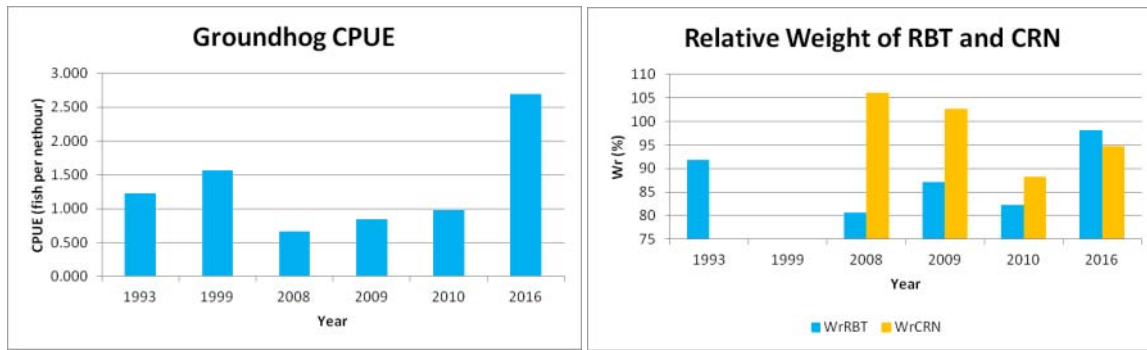


Figure 4. CPUE (left) and average relative weight (right) of fishes caught in Groundhog Reservoir.

Finally, there appears to be a large cohort of 12-13 inch rainbow trout that should be moving into the quality size range next year (Figure 5). Colorado River cutthroat trout also appear to be reproducing in either Groundhog or Nash creeks based on the capture of a 6 inch fish. As for the best condition among the trout species, Snake River cutthroats and rainbow hybrids (Snake River crossed with a rainbow trout) appear to be doing quite well (Figure 5; right) with relative weights over 100%.

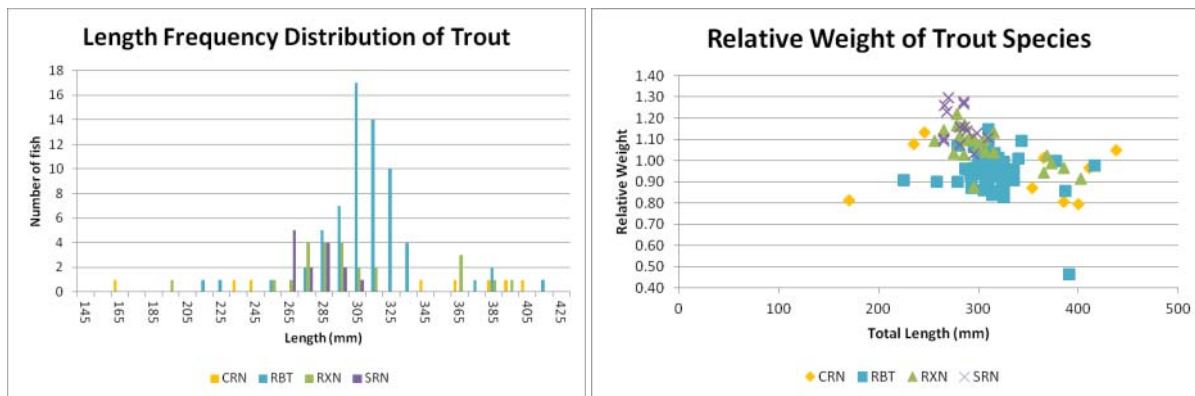


Figure 5. Length frequency (left) and relative weight (right) of trout species captured in 2016 at Groundhog Reservoir.

CONCLUSIONS

Trout abundance, demographics, and condition suggest the stocking rate and strategy are working well.

MANAGEMENT RECCOMENDATION SUMMARY

Management: Maintain category 404 management strategy: Fingerling and subcatchable coldwater lake over 500 surface acres.

Stocking: Continue stocking about 30,000-40,000 rainbow trout or hybrids along with 20,000 cutthroat trout (combination of CRN and SRN)

Regulations: No changes proposed.

Habitat Improvement: None needed.

Access/ Facilities: Improve boat ramp access at low water.

Information and Education: Promote quality salmonid fishery. Some of the best eating fish in the Area because of the “salmon” like flesh created by a diet of crayfish and copepods.



Photo 1. Ryan Lane, foreground left, and Pete Deren pick net as John White (red shirt) and Dillon look on.



Photo 4. Lone Dome.



Photo 2. Cutthroat.



Photo 5. John White fishing while we pick the nets.



Photo 3. Crayfish and fish in net.



Photo 6. Satisfied angler, fall 2016.