



**MORRELL POND
2022 TREND NETTING**

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BACKGROUND

Morrell Pond is a 7-acre enhanced, on-stream lake sitting at an elevation of 7,990 feet on the North-slope of Thousand Lake Mountain, in Sevier County. The lake holds approximately 100 acre-feet of water, has a maximum depth of about 10 feet, and receives water from Meeks Lake and Farrell Pond.

The dam at Morrell Pond was acquired from the Baker Ranch, which is owned by Castle Valley Ranches, LLC (CVR), along with the dams Meeks Lake and Round Lake by the Utah Division of Wildlife Resources (UDWR) in July 2007. In order to maintain and improve fish habitat and recreation opportunities. The dams were in disrepair and could not pass current state inspection standards. CVR desired to construct new ponds on private property downstream and relocate the water rights to these new ponds. It was determined that UDWR would be gifted a one-time fill of the lakes, given responsibility for the maintenance of the dams at Meeks Lake, Round Lake, and Morrell Pond, as well as pay a lump sum of \$10,000 every 20 years to CVR for compensation of evaporative losses in exchange for the relocation of CVR water rights. The UDWR is under a special-use agreement with Fish Lake National Forest for the maintenance of the dams.

Morrell Pond was treated with liquid rotenone in 1997 to remove illegally introduced Utah chubs (UTC) and redbreast shiners (RSS). UTC and RSS were illegally introduced into the drainage sometime in the early 1990's. These two species became abundant in Morrell Pond by 1995, causing the sport fishery to decline dramatically. The survival of stocked trout was poor and angler success was low. Netting in 2003 was the first sampling following the 1997 treatment and it was found that no nongame fish were collected, indicating the apparent success of the 1997 fish eradication project.

Stocking quotas at Morrell Pond have changed in recent years. When the 2012 survey was completed the stocking quotas consisted of 1,500 rainbow trout (RBT), and 500 brook trout (BRK) on alternating years, and stocking of 5,000 Bonneville cutthroat (CTT) annually. Though Colorado River cutthroat trout (CRCT) would be the preferred subspecies of cutthroat in Morrell Pond, sufficient numbers to sustain sport fish stocking were not produced from brood operations regularly until 2014. Therefore, Bonneville cutthroat were stocked through 2014. From 2015 to present time, Colorado River cutthroat trout have been used to sustain the sportfish stocking quota. Recent surveys showed little return of stocked BRK so, in 2021 the BRK quota was converted to tiger trout (TG). The current stocking quotas consist of 750 RBT, 2,000 CRCT, and 250 TG (Table 1).

METHODS

One diving, experimental gill net was set on the west shore of Morrell Pond on June 20, 2022, and was allowed to fish overnight. Nets measured 6 ft. x 80 ft., with eight panels of randomly-arranged mesh size (1.5", 2.25", 1", 0.75", 2.5", 1.25", 2"). Net locations have been consistent since the 1980's (Figure 1). Fish caught were removed from nets on the morning of June 21st, and all fish were measured to the nearest mm (total length) and weighed to the nearest gram. Trout body condition was measured by the calculation of Fulton's KTL (generated from total length [TL]):

$$K_{TL} = (Weight/Length^3) \times 100,000$$

Results were compared with those from historic trend net surveys.

RESULTS AND DISCUSSION

A total of 20 fish were collected in the gill net at Morrell Pond on June 21, 2022. The catch was comprised of nine CRCT, six RBT, four TG, and one BRK, for a catch rate of 20 fish/net-night (Figure 2, 3, Table 2). Overall, the trout total length (TL) spanned a range of 226-327 mm (8.89-12.8 in.), and the condition factors (K_{TL}) ranged from 0.78-1.16 (Figure 4, Table 2). Cutthroat trout were most abundant (9), and had a mean total length (TL) of 275 mm (10.82 in.), with a mean weight of 200 g (0.44 lbs.), and a mean condition factor of 0.96 (K_{TL}) (Figure 7-5, Table 2). Six RBT were collected in the sampling and had a mean total length (TL) of 284 mm (11.18 in.), a mean weight of 255 g (0.56 lbs.), and a mean condition factor of 1.07 (K_{TL}) (Figure 6, Table 2). Four TG were sampled, with a mean total length of 253 mm (9.96 in.), a mean weight of 175 g (0.38 lbs.), and a mean condition factor of 1.06 (K_{TL}) (Figure 7, Table 2). Only one BRK was collected in the netting survey, with a total length of 304 mm (11.96 in.), a weight of 325 g (0.71 lbs.), and a condition factor (K_{TL}) of 1.15 (Figure 8, Table 2). No nongame fish were sampled or observed.

All trout collected had a mean condition factor of 1.02 (K_{TL}) (Table 2). Cutthroat condition factor (K_{TL}) was similar to those found in 2012, while RBT increased and BRK decreased (Figure 4, Table 3). The condition factors of the CRCT and RBT found in the netting were lower than the long-term means. Although netting surveys have been sporadic, BRK have not been observed since 1993 (Table 3). Because of the stocking changes, the last group of BRK stocked in Morrell Pond was in the summer of 2020 (Table 1). The BRK quota was converted to TG in 2021. Since this is the first year collecting TG, they could not be compared to previous years. In the year TG have been present in Morrell Pond, they have achieved almost the same mean length as RBT and CRCT, which had multiple year classes. Management at Morrell Pond has always focused on higher abundance and angler catch rates, so reduced growth and condition are acceptable. Better survival as demonstrated in the TG over BRK, will help achieve these goals. It is recommended that netting surveys be conducted on a more consistent rotation, every 3-5 years, so that more accurate monitoring and stocking adjustments can be made in the future.

RECOMMENDATIONS

1. Conduct trend net surveys more consistently every 3-5 years, with the next netting survey taking place between the years 2025-2027.
2. Continue to monitor and assess the annual stocking quota and angler harvest.



Figure 1. Location of gill nets set at Morrell Pond during trend netting surveys.

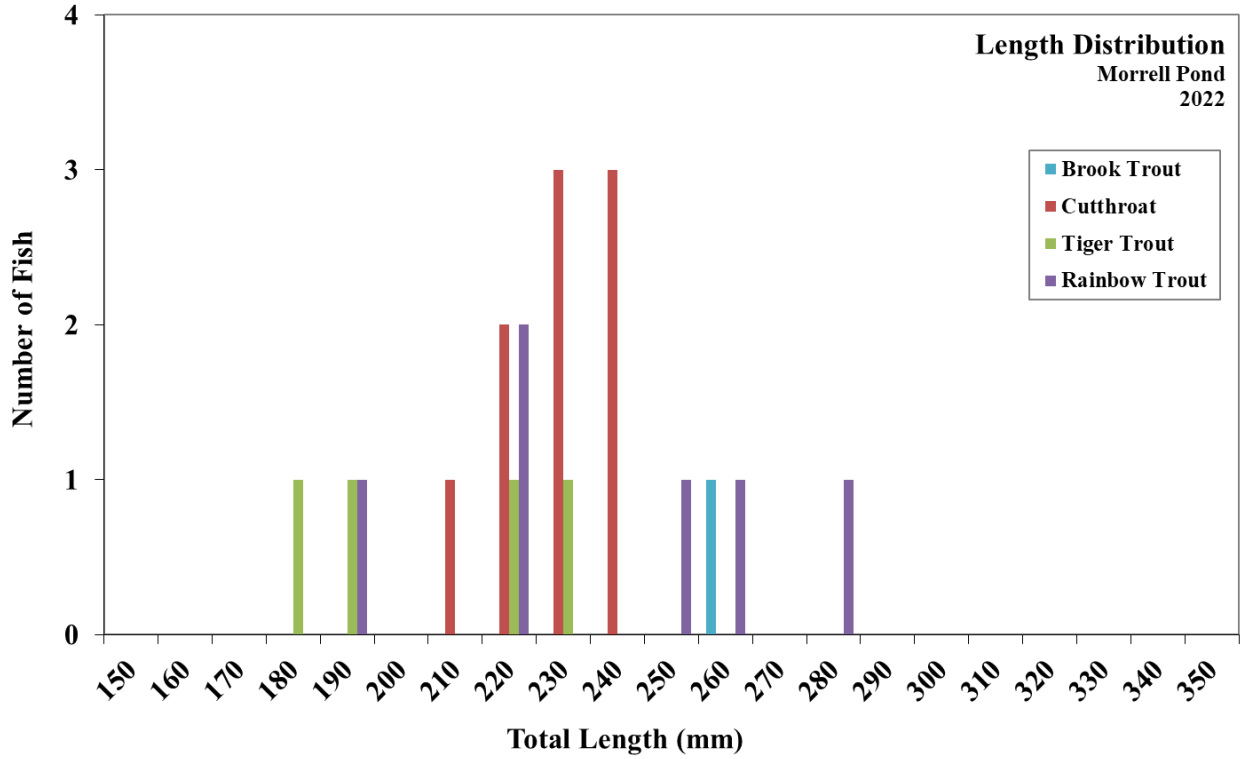


Figure 2. Length distribution of all trout collected at Morrell Pond during trend netting survey on June 21, 2022.

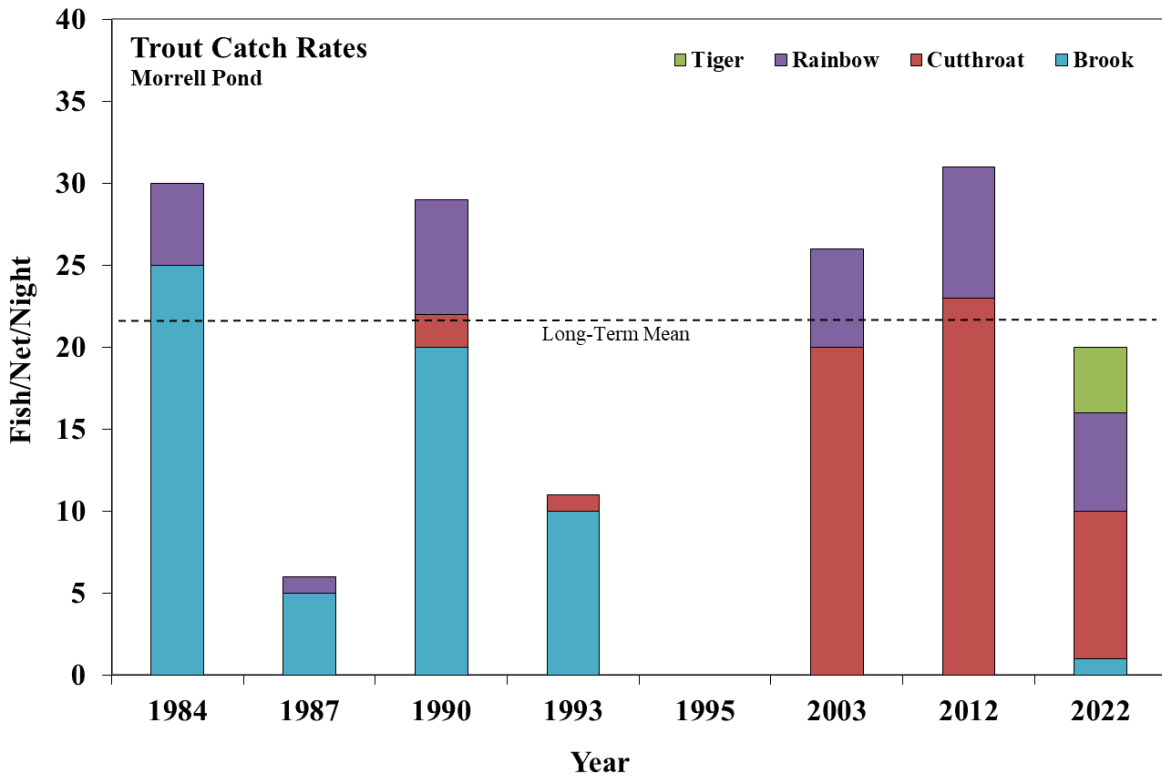


Figure 3. Trout catch rates at Morrell Pond from 1984-2022.

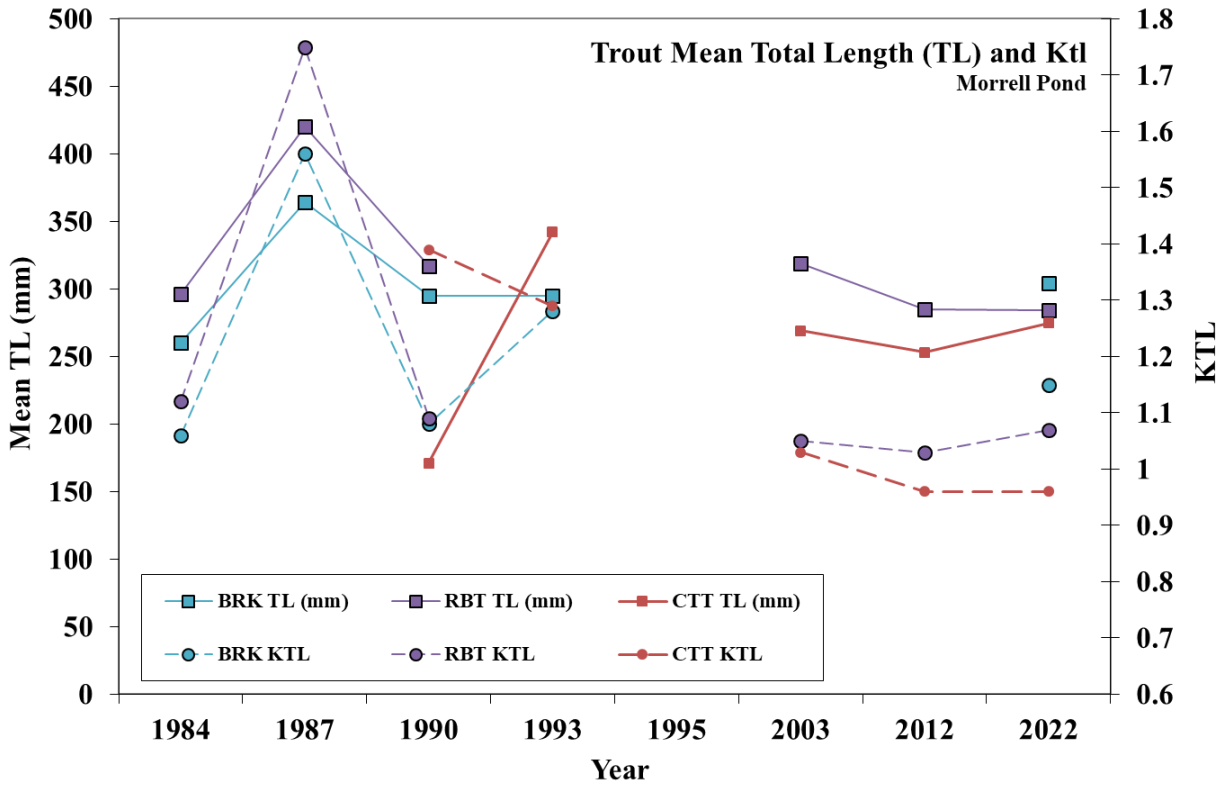


Figure 4. Mean total length (TL) mm and condition factor (K_{TL}) of brook, rainbow, and cutthroat trout collected during trend netting surveys at Morrell Pond from 1984-2022.



Figure 5. Cutthroat trout collected in trend netting at Morrell Pond on June 21, 2022.



Figure 6. Rainbow trout collected in trend netting survey at Morrell Pond on June 21, 2022.



Figure 7. Tiger trout collected in trend netting at Morrell Pond on June 21, 2022.



Figure 8. Brook trout caught in trend netting survey at Morrell Pond on June 21, 2022

Table 1. Record of all trout stocking in Morrell Pond from 2015-2022.

<u>Year</u>	<u>Rainbow Trout</u>		<u>Brook Trout</u>		<u>Cutthroat Trout</u>		<u>Tiger Trout</u>	
	<u>Number</u>	<u>Size (in)</u>	<u>Number</u>	<u>Size (in)</u>	<u>Number</u>	<u>Size (in)</u>	<u>Number</u>	<u>Size (in)</u>
2015	788	3.83	269	2.55	--	--	--	--
2016	779	4.11	268	3.34	5,000	1.79	--	--
2017	811	3.32	269	3.16	5,048	1.60	--	--
2018	778	5.34	255	3.42	5,000	2.43	--	--
2019	872	3.33	252	3.03	5,083	1.75	--	--
2020	960	3.14	256	2.69	--	--	--	--
2021	900	2.54	--	--	2,013	1.98	259	4.47
2022 Quota	750	3.0	--	--	2,000	2.0	250	3.0

Table 2. Summary of the 2022 trend netting results at Morrell Pond.

Water:	Morrells Pond (TLM)	Catalog #:	VI 513											
Date Set:	6/20/22	Weather:	Sunny, calm											
Date Pulled:	6/21/22	Water Temp:												
# Nets:	1 AFS DIVER	Collectors:	D.Brown, M.Thorley, M.Roundy, T.Whitesell											
Summary for Sport Fish														
Species	N	Total Weight (kg)	fish per net/night	Total Length (mm)			Weight (g)			Condition (Ktl)			% total catch	% total biomass
				Mean	SE	Range	Mean	SE	Range	Mean	SE	Range		
Rainbow Trout	6	1.53	6	284	13.3	237-327	255	33.9	143-357	1.07	0.02	1.02-1.12	30.00	35.11
Tiger Trout	4	0.70	4	253	11.7	226-275	175	26.6	124-226	1.06	0.04	0.96-1.13	20.00	16.06
Brook Trout	1	0.33	1	304	0.0	304	325	0.0	325	1.15	0.00	1.15	5.00	7.47
Cutthroat Trout	9	1.80	9	275	3.25	260-290	200	8.7	155-225	0.96	0.03	0.78-1.06	45.00	41.36
Total Trout	20	4.35	20	275	5.4	226-327	218	14.4	124-357	1.02	0.02	0.78-1.16	100.00	100.00
Summary for Non-Sport Fish														
Species	N	Total Weight (kg)	fish per net/night	% total catch	% total biomass	Length range (mm)								
None														

Table 3. Summary of trend netting results at Morrell Pond from 1984-2022.

Date	Net Sets		Total Trout	Trout Per Net-Night	Brook Trout All ages				Cutthroat Trout All ages				Rainbow Trout All ages				Non Game per Net-Night	Comments
	Flo	Div			Mean TL (mm)	Mean W (g)	Mean Ktl	Per Net	Mean TL (mm)	Mean W (g)	Mean Ktl	Per Net	Mean TL (mm)	Mean W (g)	Mean Ktl	Per Net		
	12-May-84				1	30	30	260	186	1.06	25					296		
9-May-87		1	6	6	364	752	1.56	5					420	1300	1.75	1		
1-Jun-90		1	29	29	295	310	1.08	20	171	70	1.39	2	317	351	1.09	7		
27-Jul-93		1	11	11	295	332	1.28	10	342	516	1.29	1						
25-Jul-95		1															30	14 UTC, 16 RSS
9-Jan-03		1	26	26					269	203	1.03	20	319	341	1.05	6		
22-Aug-12		1	31	31					253	174	0.96	23	285	243	1.03	8		
21-Jun-22		1	20	20	304	325	1.15	1	273	200	0.96	9	284	255	1.07	6		
	Long-term mean			22	266	412	1.09	12	240	171	1.00	11	304	325	1.09	6	30	