



**FORSYTH RESERVOIR  
2022 TREND NET SURVEY**

Report prepared by:  
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**BACKGROUND:** Since the mid-1990s, the Forsyth Reservoir fishery has been managed with sterile hybrid tiger (TG) and splake (SPL) trout in order to help protect Colorado River cutthroat trout (CRCT) in UM Creek from the threat of hybridization with rainbow trout (RBT). Current annual stocking quotas consist of 8,000 TG and 4,000 SPL (Table 1). A quota of 5,000 CRCT is also requested annually, though actual stocking is dependent on excess production at the Dougherty Basin brood, which has been inconsistent. Excess TG have been stocked periodically in recent years, while the 2019 SPL quota was not stocked due to hatchery production shortages.

Water level fluctuation has consistently affected trout populations in Forsyth Reservoir – the reservoir can be drawn down almost completely during drought years. While trout are often lost from the reservoir during these periods, it appears that at least a significant portion survive by traveling downstream to UM Creek and Mill Meadow Reservoir. TG and SPL also regularly migrate upstream into upper UM Creek. Forsyth Reservoir was treated with rotenone in 2012 and 2021 in conjunction with low water to remove illegally introduced yellow perch. The most recent drawdowns occurred in 2018 and 2021.

The fishery at Forsyth Reservoir is monitored through trend net surveys conducted on even years. Since 2012 a new gill net design recommended by the American Fisheries Society (AFS) has been utilized in these surveys. The random placement of differing mesh sizes is intended to avoid “leading” fish into the net and, thus, reduce bias in the net catch – as opposed to nets previously used for decades (“DWR” nets), which comprised of graduating mesh sizes. As in most waters, catch rate trends observed since 2012 indicate that the AFS nets catch about 50% fewer trout at Forsyth Reservoir than did the DWR nets, though the reduced catches are still sufficient to provide measures of population dynamics.

**METHODS:** Four experimental gill nets (two floating and two diving) were set in Forsyth Reservoir on April 25, 2022, and were 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 for many years, though EMLD was moved in 2020 from the south shore of the Short Creek cove to the north shore of the same (Figure 1). Fish caught were removed from nets on the morning of April 26, measured to the nearest millimeter (total length) and weighed to the nearest gram. Trout body condition was measured by the calculation of Fulton’s  $K_{TL}$  (generated from total length [TL]):

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

Results of the 2022 survey were compared with those from historic trend net surveys.

**RESULTS:** A total of 21 trout were collected in four nets at Forsyth Reservoir on April 26, 2022 for a catch rate of 5.25 trout per net-night (Table 2). Cutthroat trout made up of 90% of the catch, totaling 19 fish (Table 2, Figure 2). CRCT ranged from 326-372 mm (12-14.6 in.) in length, and reached 480-633 g (1-1.3lbs.) in weight, with a mean condition ( $K_{TL}$ ) of 1.30 (Table 2). Just two TGR were collected in the trend nets, weighing 374 g (.82 lbs.) and 653 g (1.4lbs.), with a total length of 330-413 mm (12.9-16.25 in.) and a mean condition of 0.98 (Table 2, Figure 3-4). Mean length, weight and condition for the two TGR were all slightly higher than the long-term mean (Table 3). No other species were observed.

**DISCUSSION:** Water level fluctuation continues to present the greatest challenge to the Forsyth Reservoir sport fishery. Stocked hybrid trout exhibit favorable survival and growth when water levels remain high enough to sustain suitable conditions. The fishery has been required to “reset” multiple times in the last decade due to repeated drawdowns, often coupled with rotenone treatments to remove yellow perch. The inconsistent nature of the fishery has also led to limited use by anglers, even when conditions are good.

Because of the drastic drought conditions in the fall of 2021 water users drained the reservoir, flushing many fish downstream. DWR personnel took advantage of the low water conditions and conducted a rotenone treatment on the stream channel that resulted from draining the reservoir. The main focus of applying rotenone was to remove the perch that remained in the system. Based on the 2022 survey results all perch were successfully eliminated. However, it is likely that the CRCT found refuge in UM Creek above the reservoir and returned when water levels increased to more favorable conditions. The CRCT collected in 2022 survey were found to have a mean condition ( $K_{TL}$ ) of 1.30, indicating good health condition (Table 2). Based on stocking reports of CRCT these fish were likely stocked in July of 2020 (Table 1). It is unknown how long these fish spent in the stream channel due to low water levels, and therefore the condition cannot be directly attributed to the circumstances of the reservoir.

Multiple anglers reported catching yellow perch at Forsyth Reservoir in 2020. It has been hypothesized that fish may be able to pass upstream through the Forsyth dam outlet during low water (two RBT were observed in the 2016 netting survey). In an effort to prevent unwanted fish movement upstream a fish passage barrier was constructed in UM Creek, upstream of Mill Meadow Reservoir, in 2021. Perch typically do not show the same inclination for upstream movement and the population in Mill Meadow Reservoir is maintaining at a low density. Continual trend net surveys will monitor perch appearances in the reservoir.

#### **RECOMMENDATIONS:**

1. Ensure that only triploid RBT are stocked in Mill Meadow Reservoir.
2. Maintain annual quotas of TG and SPL. Continue to stock CRCT as they are available.
3. Conduct trend nets surveys every two years to evaluate trout stocking and monitor yellow perch population dynamics.

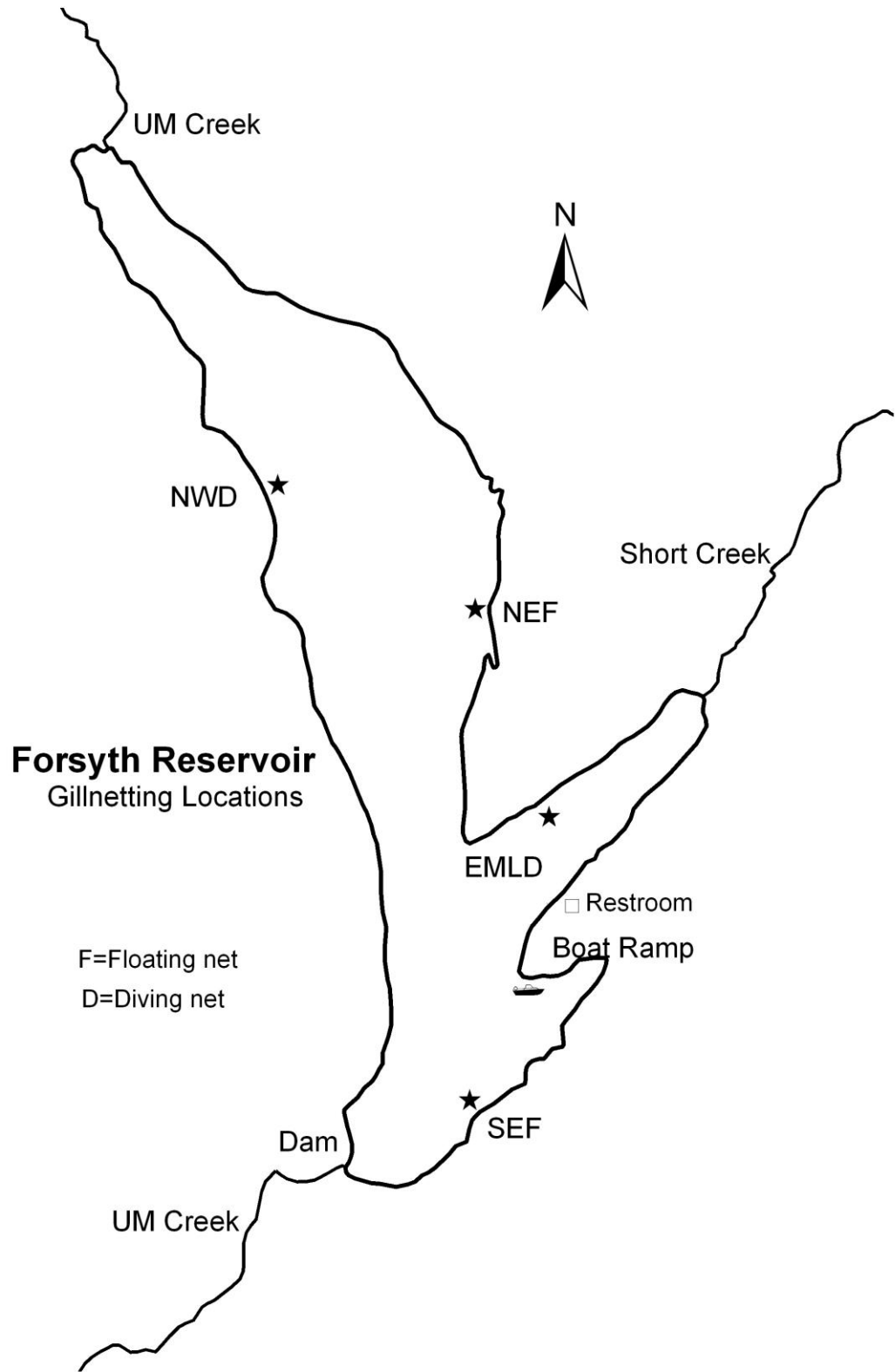


Figure 1. Locations of gillnets set at Forsyth Reservoir during the 2022 trend net survey.

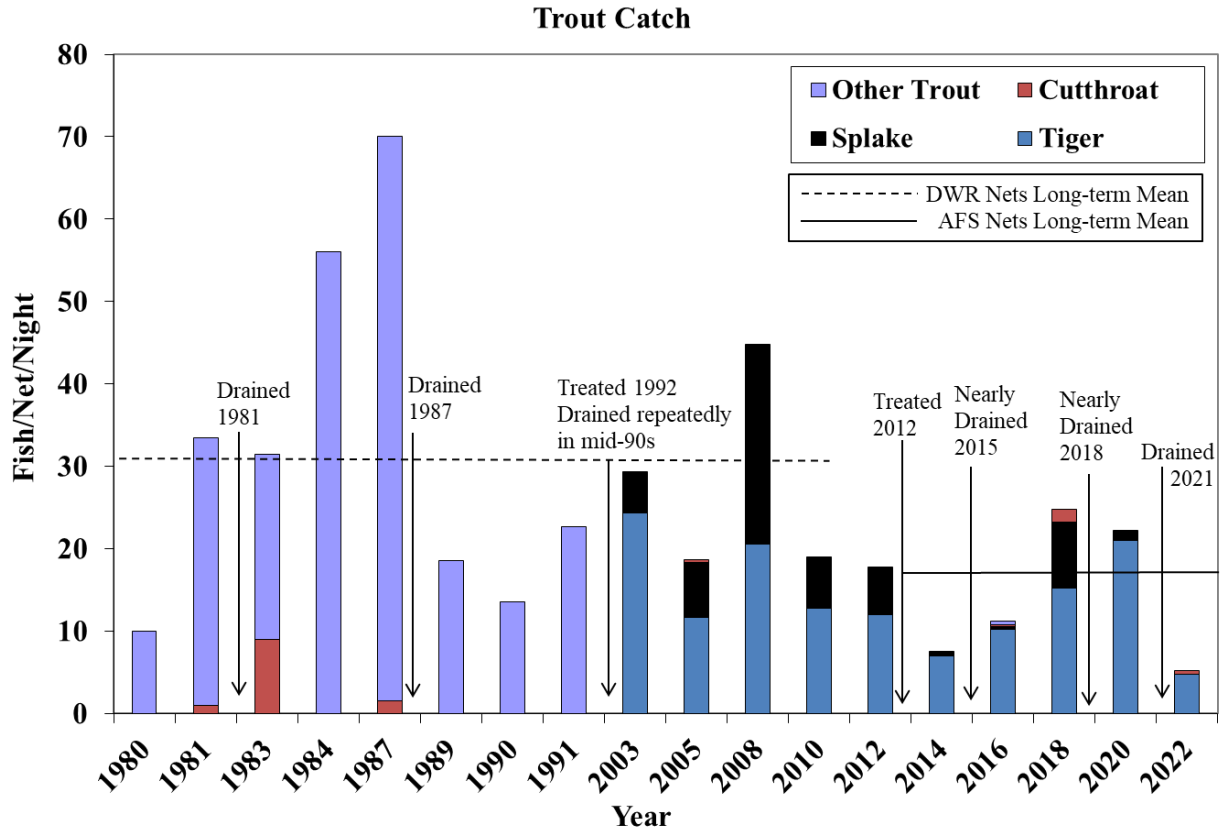


Figure 2. Trout catch rates during trend net surveys at Forsyth Reservoir, from 1980-2022.

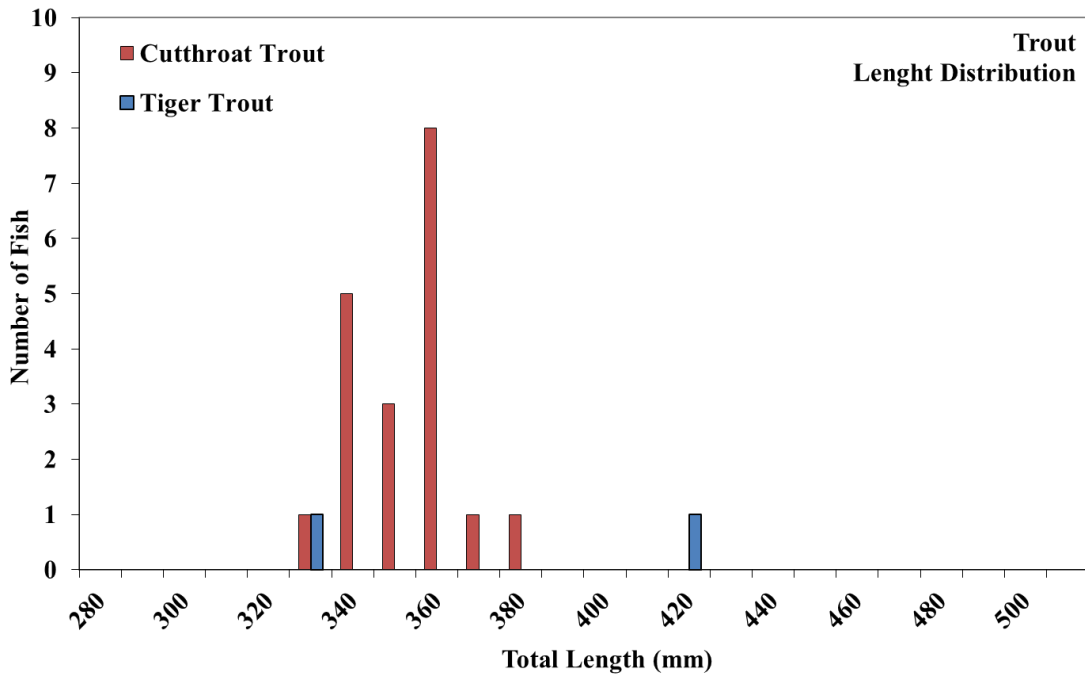


Figure 3. The length distribution of all trout collected at Forsyth Reservoir on April 26, 2022.



Figure 4. Picture of six cutthroat (five on left, one bottom right) and two tiger trout (top right) caught in the trend net survey at Forsyth Reservoir on April 26, 2022.

Table 1. Record of trout stocking in Forsyth Reservoir from 2016-2022.

<b>Year</b>	<b><u>Tiger Trout</u></b>		<b><u>Splake Trout</u></b>		<b><u>Cutthroat Trout</u></b>	
	<b>Number</b>	<b>Size (in)</b>	<b>Number</b>	<b>Size (in)</b>	<b>Number</b>	<b>Size (in)</b>
2016	8,008 <sup>a</sup>	3.2	4,013	3.6	5,040	2.0
	10,080 <sup>b</sup>	3.2				
2017	8,021 <sup>a</sup>	3.6	4,511	3.4		
2018	8,012 <sup>a</sup>	2.7	4,045	2.9		
	4,000 <sup>b</sup>	2.1				
2019	10,008 <sup>a</sup>	2.6				
	5,040 <sup>b</sup>	5.4				
2020	8307 <sup>a</sup>	3.0	4,000	3.05	2,356	7.6
	7309 <sup>b</sup>					
2021	2500	6.59				
2022 <i>Quota</i>	8,000	3.0	4,000	5	5,000	7.0

<sup>a</sup> – Requested quota.

<sup>b</sup> – Excess stocking.

Table 2. Summary of the results from the 2022 trend net survey at Forsyth Reservoir.

<b>Water:</b>	Forsyth Reservoir			<b>Catalog #:</b>	I 503									
<b>Date Set:</b>	4/25/2022		<b>Time Set:</b>	13:00		<b>Weather:</b>	Calm, cloudy							
<b>Date Pulled:</b>	4/26/2022		<b>Time Pulled:</b>	9:00		<b>Water Temp:</b>	46 F							
<b># Nets:</b>	2 floaters, 2 divers; AFS design			<b>Collectors:</b>	M. Hadley, M. Roundy, T. Whitesell, R. Oplinger									
<b>Summary for Sport Fish</b>														
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		
Tiger Trout	2	1.03	0.05	372	41.5	330-413	514	139.5	374-653	0.98	0.06	0.92-0.04	9.52	8.86
Cutthroat Trout	19	10.55	4.75	350	2.7	326-372	555	11	480-633	1.30	0.02	1.04-1.38	90.48	91.13
Trout	21	11.58	5.25	351.95	4.01	326-413	551.48	14.35	374-653	1.27	0.03	0.92-1.38	100.00	100.00
<b>Summary for Non-Sport Fish</b>														
Species	N	Total Weight (kg)	fish per net/night	% total catch	% total biomass	Length range (mm)								
None														
<b>Comments:</b>	NWD filled with algae													

Table 3. Trend net survey results at Forsyth Reservoir from 1980-2022.

Date	Net Sets		Total Trout	All Trout per Net-Night	Splake All Ages			Tiger Trout			Comments
	Flo	Div			Mean TL (mm)	Mean W (g)	Mean Ktl	Mean TL (mm)	Mean W (g)	Mean Ktl	
	22-May-80	0			2	22	11				
19-May-81	0	2	67	34							Drained '81
10-May-83	2	0	63	32							
10-May-84	2	0	112	56							
19-May-87	2	0	140	70							Drained '87
18-May-89	2	0	37	19							
26-Apr-90	2	0	27	14							
24-Apr-91	2	1	66	22							Treated '92
7-May-03	2	1	88	29	400	584	0.89	358	431	0.89	
3-May-05	2	1	56	19	290	281	0.90	320	339	0.88	1 CRCT
30-Apr-08	2	2	179	45	359	416	0.88	376	490	0.81	
4-May-10	2	2	76	19	430	795	0.91	419	693	0.86	3 Yellow Perch
2-May-12	2	2	71	18	329	419	0.94	376	552	0.90	87 Yellow Perch
29-Apr-14	2	2	30	8	412	717	1.03	304	317	0.99	Treated '12
26-Apr-16	2	2	45	11				304	253	0.87	Nearly drained 2015
23-Apr-18	2	2	99	25	373	534	1.00	380	549	0.99	Nearly drained 2018
28-Apr-20	2	2	89	22	426	930	1.12	353	521	0.98	
26-Apr-22	2	2	21	21				371.5	513.5	0.98	Drained/Treated 2021
Long-term mean				26	365	496	0.92	359	479	0.90	
DWR Nets (1980-2010)				31							
AFS Nets (2012-present)				18							
DWR nets since change to SPL/TG				28							
Mean since 03				22							
Mean AFS nets				18							