

California Department of Fish and Wildlife
Inland Fisheries Assessment and Monitoring Program

Stampede Reservoir Kokanee Fishery Evaluation – 2022

by

Jana Lott
Scientific Aid
Fisheries Branch



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ABSTRACT

Stampede Reservoir, located in Tahoe National Forest, is a popular fishing spot for anglers of varying experience. Due to its strong natural spawn run, Stampede is the sole source of Kokanee eggs for the CDFW Landlocked Salmon Program. To be able to manage the Kokanee and other sport fisheries at this reservoir, angler access point surveys were conducted during the summer season of 2022. A CDFW scientific aid interviewed anglers after their day fishing. Information regarding number of anglers, total rods used, total hours fished, species targeted, and number of fish kept and released (separated by species) were collected. Anglers were also asked to rate their satisfaction with overall angling experience, number and size of fish caught. Fish kept were identified to species and total lengths were taken. Kokanee measured during the surveys had a total length average of 346mm, which meets the management goal of 330mm. The majority (98%) of anglers targeted Kokanee and the other 2% consisted of anglers targeting Smallmouth Bass and Lake Trout. Anglers were generally satisfied with their overall fishing experience, number of fish caught, and size of fish. Kokanee from the 2022 population averaged 74mm larger than last years population. Further studies on zooplankton populations and Kokanee recruitment rates at Stampede would provide additional information in the development of future adaptive management strategies

INTRODUCTION

Stampede Reservoir was formed by the completion of the Stampede Dam in 1970. The dam itself is owned and operated by the US Bureau of Reclamations and is a part of the Washoe project, which serves as the drainage basins of the Truckee and lower Carson Rivers to supply irrigation water to other projects (US Bureau of Reclamation 2020). The reservoir provides flood control, recreation for water enthusiasts of all kinds, and is a popular destination for recreational anglers. The reservoir contains a variety of sport fish: Kokanee (KOK), Rainbow Trout (RT), Brown Trout (BN), Smallmouth Bass (SMB), Lake Trout (LT), and Lahontan Cutthroat Trout (LCT). The California Department of Fish and Wildlife (CDFW) has a long history of stocking Stampede Reservoir with Kokanee, Brown Trout, Lahontan Cutthroat, Lake Trout, and Rainbow Trout. Currently, LCT and KOK are the only sport fish being stocked annually. Stampede Reservoir is utilized by CDFW as its sole Kokanee egg take location for the Landlocked Salmon Program; this is because of Stampede's strong natural run of Kokanee and it is easily accessible thus making it an ideal location for the egg take operation.

Angler surveys are conducted as a means to track the different sport fisheries present, but specifically to evaluate the Kokanee fishery and its needs. Surveys include questions for anglers and collection of scale samples when possible. This data is used by fishery managers when developing adaptive management strategies for these fisheries; actions such as assessing

management goals, fish stocking needs, or regulation changes all utilize information provided by anglers.

STUDY LOCATION

Stampede Reservoir is a man-made reservoir, located in Sierra County and part of the Tahoe National Forest, approximately 30 minutes from the town of Truckee, California. It is situated at an elevation of just under 6000 feet above sea level (Fig. 1). The reservoir has a capacity of 226,500 acre-feet of water, a max depth of 120 feet, a surface area of about 3,450 acres and about 25 miles of shoreline (US Bureau of Reclamation 2022). Inflow to Stampede Reservoir is provided by three main tributaries: Little Truckee River, Sagehen Creek, and Davies Creek. Stampede drains back into the Little Truckee River, which is impounded to form Boca Reservoir, which flows into the Truckee River. As part of the Washoe Project, the water reserved in this reservoir is used for a variety of fishery enhancement strategies; primarily for the spawning of the endangered Cui-ui along the Truckee River and the operation of the Pyramid Lake Fishway (US Bureau of Reclamation 2022). The effects of California's persistent drought are still evident at Stampede Reservoir. During the months of the angler survey, the reservoir reached a low of 49% capacity, compared to 2021 which reached a low of 35% capacity (California Department of Water Resources 2022) (Fig. 2).

METHODS

ANGLER SURVEY

CDFW conducted access point angler surveys at Stampede Reservoir from May 7, 2022, to September 5, 2022. A CDFW scientific aid, stationed at the Camp Roberts boat launch, conducted angler surveys from 0800h to 1300h. The surveys were stratified between weekdays and weekends/holidays to account for heavier usage by anglers. Additionally, weather conditions and surface water temperatures were taken at the beginning of each survey. Anglers were surveyed once they had finished fishing for the day to ensure that the results represented complete fishing trips. The survey collected the following information: number of anglers, number of rods used, total hours fished, species targeted, number of fish kept and released (separated by species) and county of residence. If the angler was from out of state, their state of residence was recorded (and not county). Additionally, anglers were asked to rate their satisfaction of their overall experience, number of fish caught, and size of fish caught that day. The satisfaction ratings were on a scale from 1 to 5, with 1 being very dissatisfied and 5 being very satisfied. If the angler did not catch anything during their day fishing, they were only asked to rate their overall experience. Fish kept by anglers were identified to species and total length (TL) was measured to the nearest millimeter.

RESULTS

ANGLER SURVEY

From May 7th through September 5th, 2022, 484 angler groups were interviewed, representing 1063 individual anglers, and a total of 3624.25 hours were fished. Approximately 98% (n=1039) of anglers interviewed targeted Kokanee, 1% (n=15) targeted Smallmouth Bass, 1% (n=7) did not have a target species, and <1% (n=2) targeted Lahontan Cutthroat Trout. No anglers reported targeting Rainbow Trout. Approximately 35% (n=168) of angling groups interviewed were from the state of Nevada, 20% (n=98) of groups were from Placer County, 15% (n=71) were from Sacramento County and 14% (n=69) were from Nevada County; the remaining 16% (n=74) of groups came from 19 other counties, which each represented <5% of angling groups (Fig. 3). Anglers targeted Kokanee most frequently with a total of 3559.25 hours fished, followed by Smallmouth Bass (51 hours), and Lahontan Cutthroat trout (3.5 hours) (Table 2). The majority of fish caught were Kokanee (n=4578), representing 3805 kept Kokanee and 773 released. A total of 54 Smallmouth Bass were caught and 52 of them were released by anglers. Additionally, 12 Rainbow Trout, 28 Lahontan Cutthroat Trout, 9 Brown Trout, 12 Lake Trout, and 6 "Other" (including Pikeminnow, Squaw Fish and Whitefish) were recorded to be caught during the season (Table 1).

Angler satisfaction ratings are separated into target species and are on a scale from 1 (very dissatisfied) to 5 (very satisfied). Kokanee anglers rated their overall experience an average of 4.5, the number of fish caught a 4.3 and the size of fish a 4.4. Anglers targeting Smallmouth Bass rated their overall fishing experience a 2.9, the number of fish caught a 2.4 and the size of bass a 1.6. Anglers targeting Lake trout rated their overall experience a 2.9 and anglers without a target species rated their overall experience a 4 (Fig. 4).

A total of 2601 Kokanee were measured with total lengths ranging from 250mm to 419mm, and a mean length of 346mm; the majority of Kokanee measured were between 330-355mm (Fig. 5). Lahontan Cutthroat Trout averaged 382mm, Brown Trout averaged 403 mm, Rainbow Trout averaged 378mm and Lake Trout averaged 381mm (Fig. 6 & Fig.7). Kokanee angler hours had a catch per unit effort (CPUE) of 1.29 and a Harvest per unit effort (HPUE) of 1.07.

DISCUSSION

Anglers enjoy the various sport fishing opportunities available at Stampede Reservoir. Kokanee continue to be the main targeted species. Comparing to years past, anglers targeting KOK expressed being satisfied with the overall experience, number of fish caught and size of fish this season.

A review of the catch data shows that there was a significant increase in the size of KOK from the 2021 to 2022 season that meets the management goal for this water. Age analysis could not be completed due to staffing issues, but early analysis shows the average age of Kokanee to

be two years old; this is age structure matches the age at maturity of the 2021 and 2020 populations. The 2022 Kokanee population averaged 74mm larger than the prior year creel results. The reason for this significant change in age at maturation is poorly understood, but maturation timing is strongly influenced by environmental factors like water temperature, food abundance, etc. Fish population densities and stocking rates could also be contributing factors.

The environment has a strong influence over the annual fish size in this reservoir. The supplemental stocking rate coupled with natural production affects the fish density. The department has no control over environmental changes but can control the stocking rate. Therefore, it is recommended that stocking densities should be considered in developing future adaptive management strategies designed to increase angler satisfaction of the Kokanee fishery.

LITERATURE CITED

California Department of Water Resources (CDWR). 2022. California Data Exchange Center [online database]. Daily Reservoir Storage Summary. Stampede Reservoir Information. Stampede Dam Information. Available: <https://cdec.water.ca.gov>

US Bureau of Reclamation (USBR). 2022. Projects & Facilities, Stampede Dam. Projects & Facilities, Washoe Project. Available: <https://www.usbr.gov>

US Bureau of Reclamation (USBR). 2020. Lahontan Basin Area Office. Programs and Activities. Washoe Project. Available: <https://www.usbr.gov>

TABLES

Table 1. The total number of fish caught by species at Stampede Reservoir.

	KEPT	RELEASED	TOTAL
KOKANEE	3805	773	4578
LAHONTAN CUTTHROAT	18	10	28
BROWN TROUT	5	4	9
RAINBOW TROUT	6	6	12
SMALLMOUTH BASS	2	52	54
LAKE TROUT	10	2	12
OTHER	0	6	6

Table 2. The number of anglers, hours fished, and total rods used for each species at Stampede Reservoir.

	NUMBER OF ANGLERS	HOURS FISHED	TOTAL RODS
KOKANEE	1039	3559.25	1336
LAKE TROUT	2	3.5	3
SMALLMOUTH BASS	15	51	16
UNSPECIFIED	7	10.5	7

FIGURES

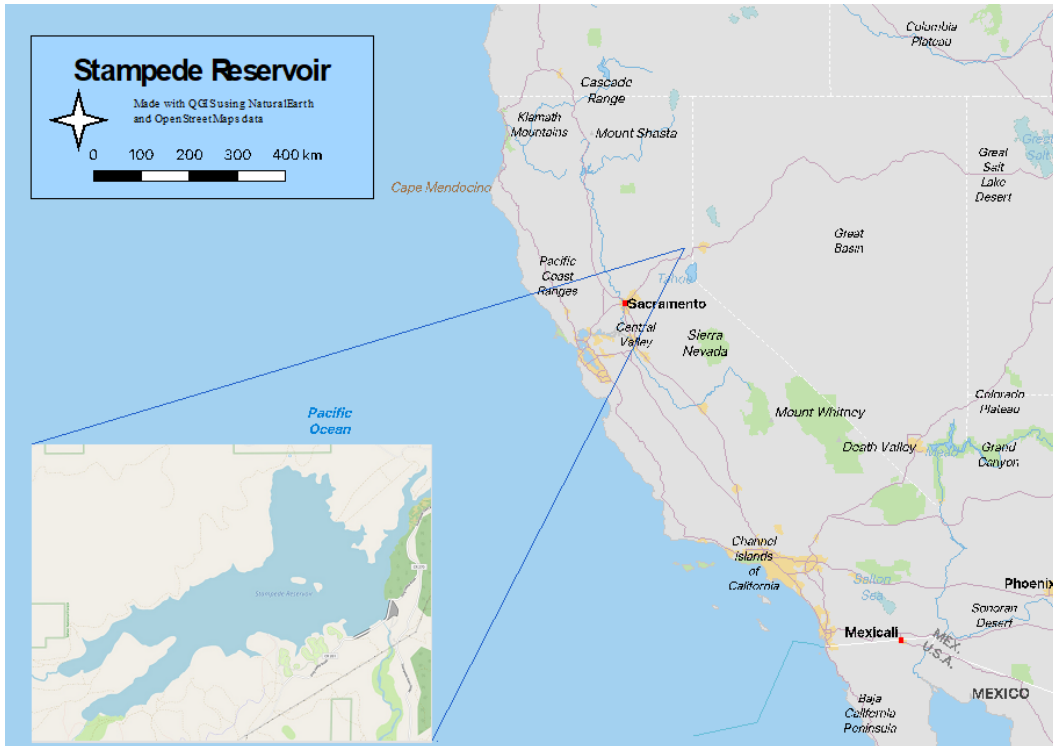


Figure 1. Map showing the location of Stampede Reservoir. Made using QGIS

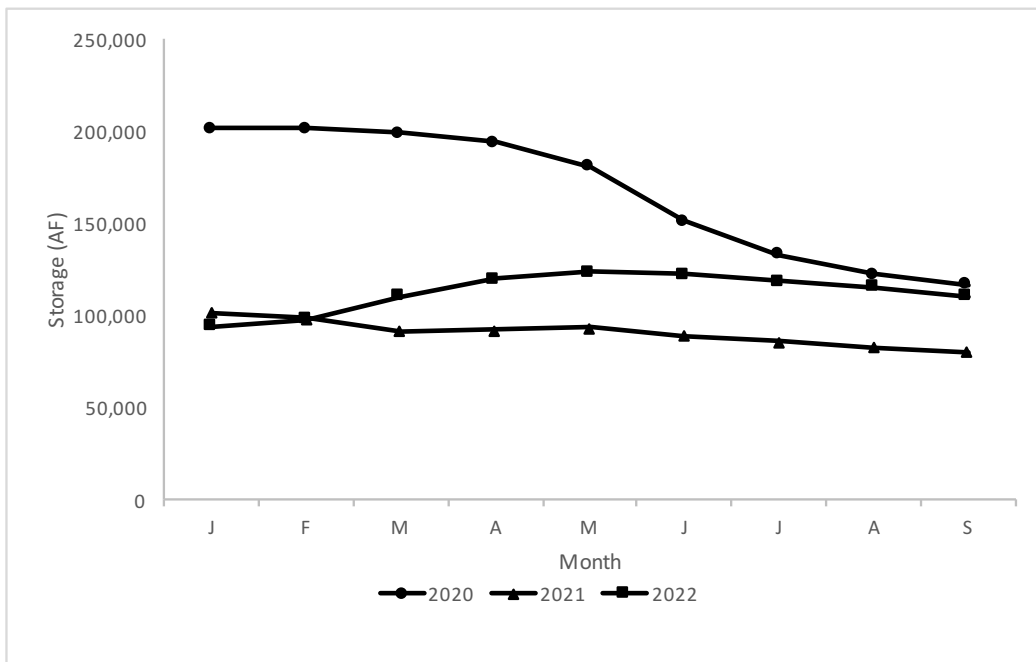


Figure 2. Storage levels at Stampede Reservoir from the months of January to September comparing the years of 2020, 2021, and 2022. Data was taken from the California data exchange center (<https://cdec.water.ca.gov/>)

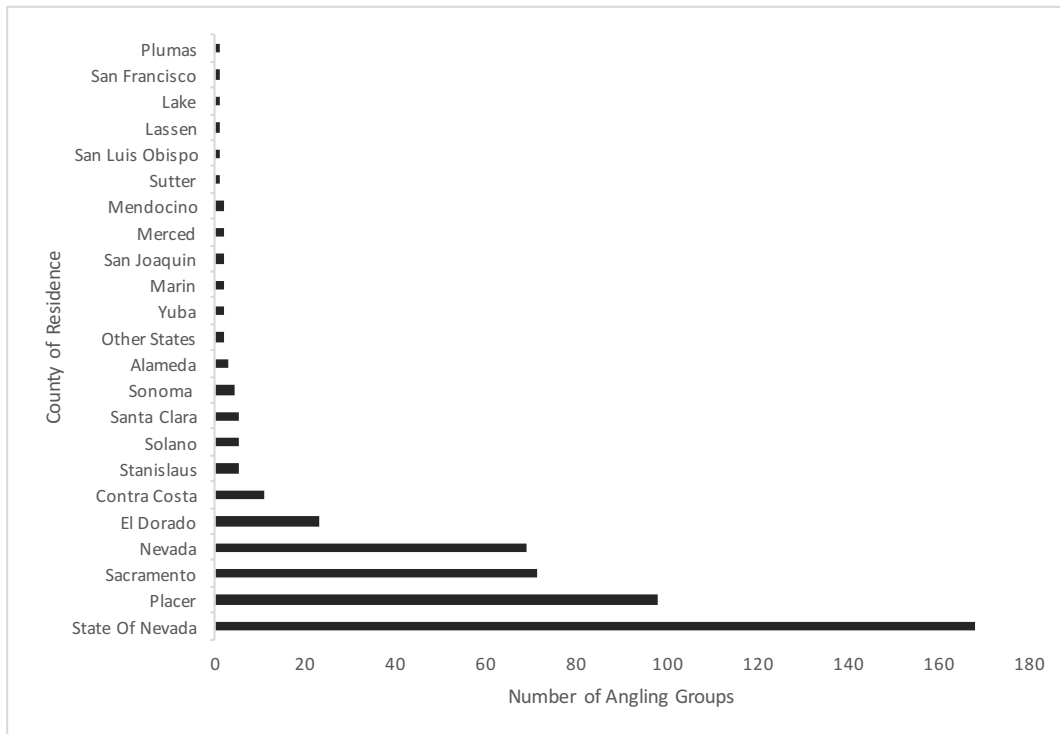


Figure 3. County of residence of anglers at Stampede Reservoir

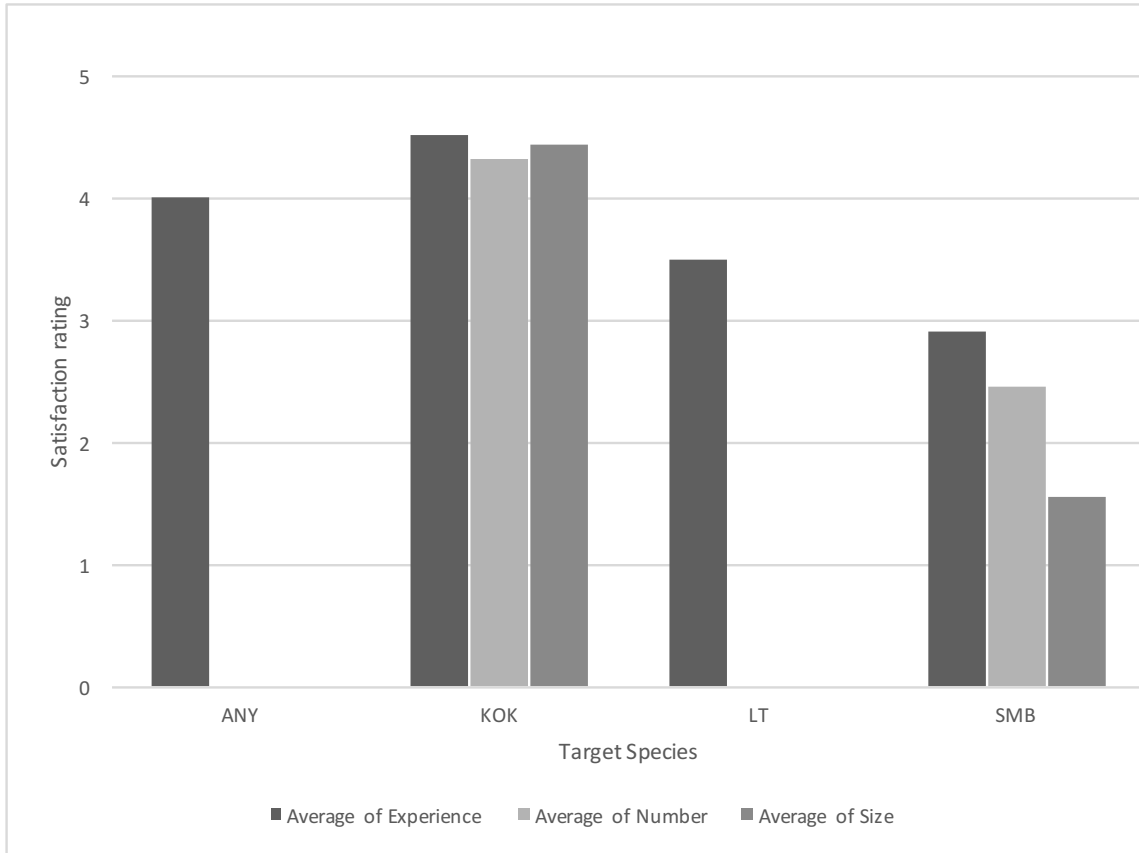


Figure 4. Average satisfaction ratings of size of fish, number of fish caught, and overall experience of the days fishing (separated by target species).

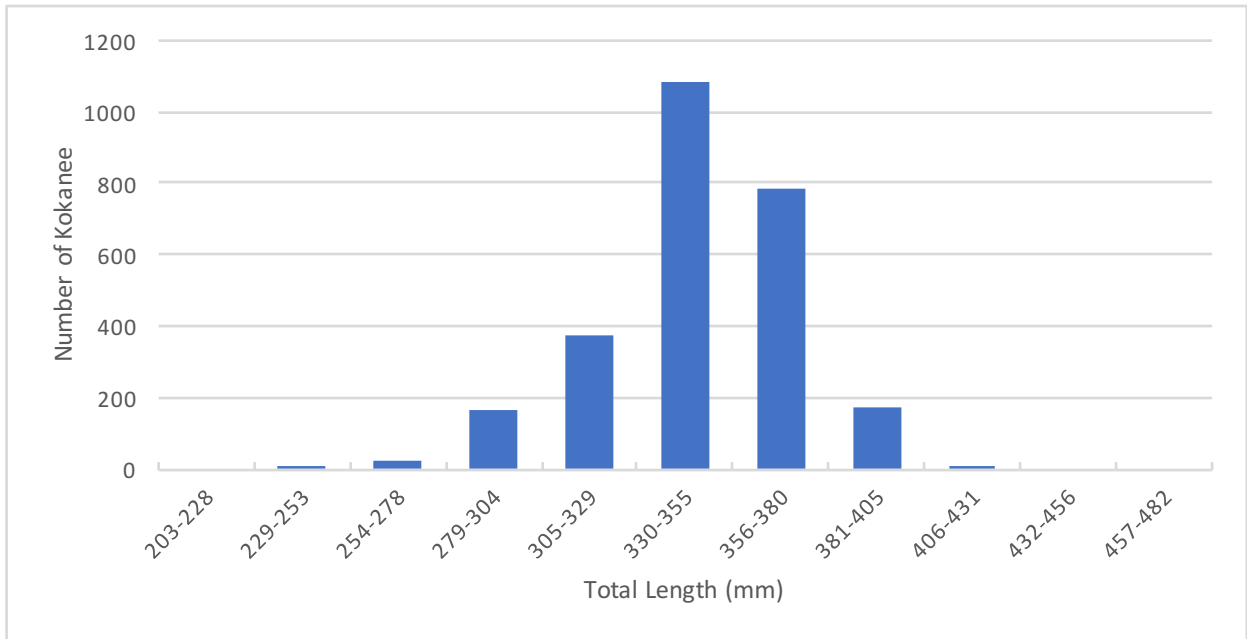


Figure 5. Total length distribution of Kokanee measured during the 2022 survey at Stampede Reservoir.

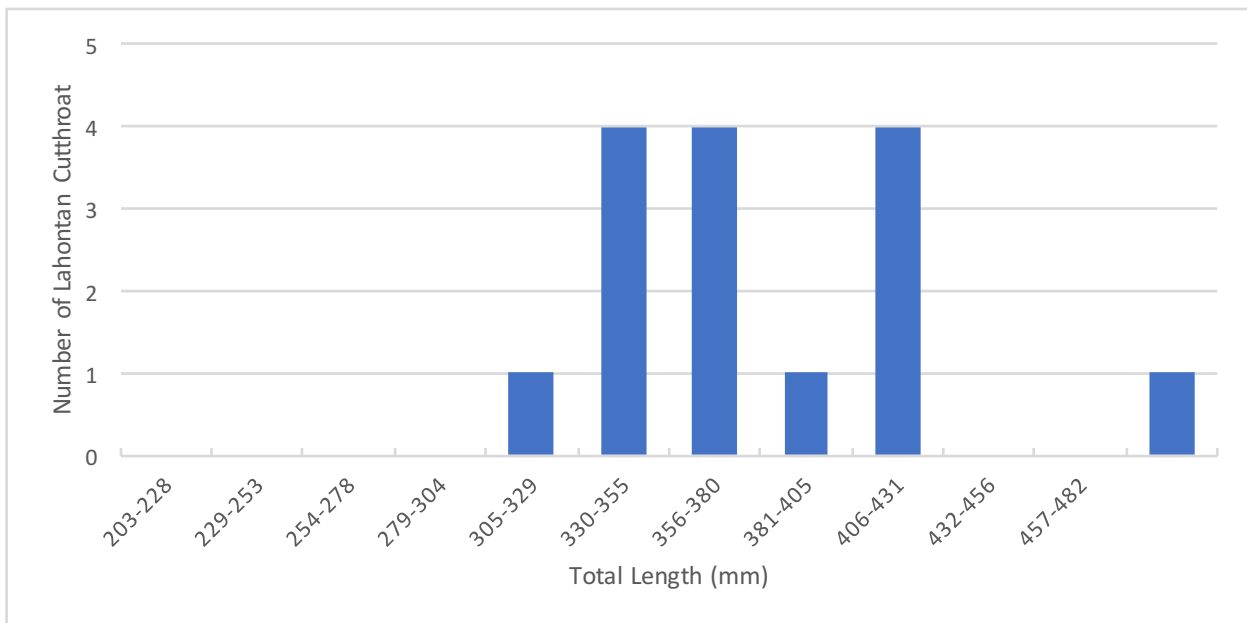


Figure 6. Total length distribution of Lahontan Cutthroat measured during the 2022 survey at Stampede Reservoir.

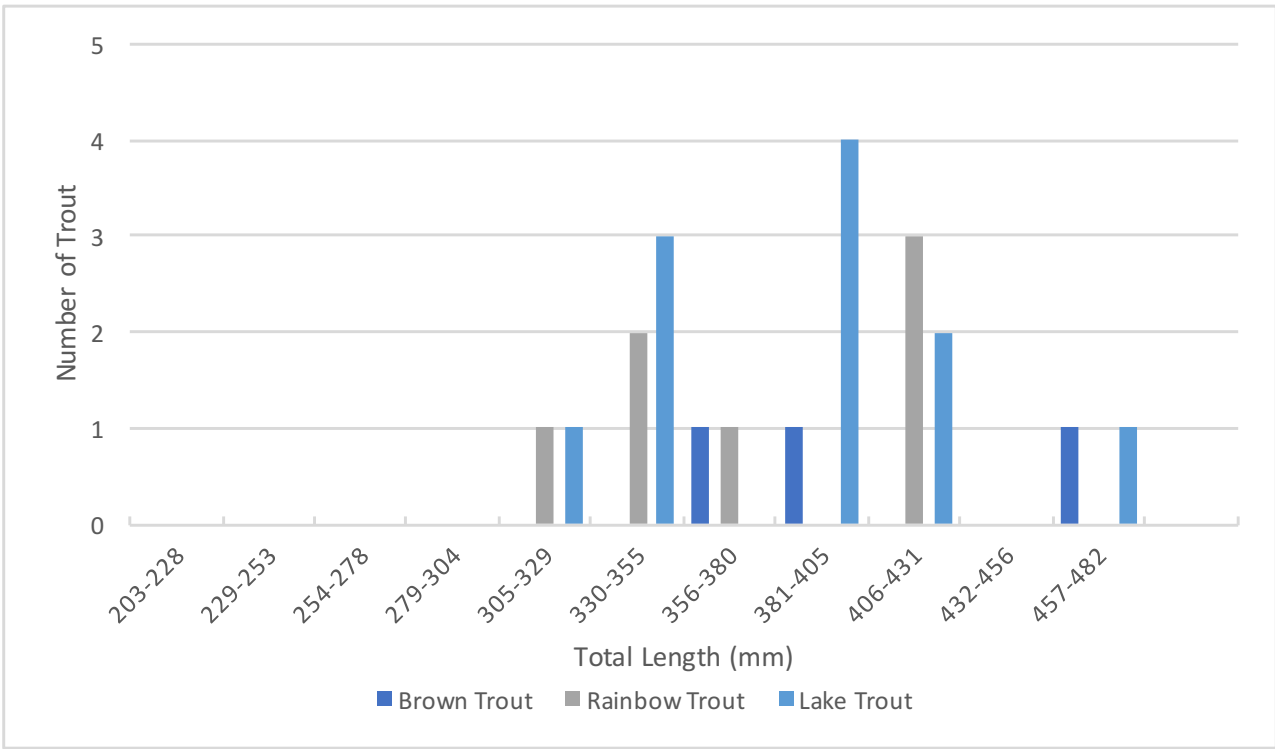


Figure 7. Total length distribution of Brown Trout, Rainbow Trout, and Lake Trout surveyed in Stampede Reservoir in 2022.