

**State of California  
The Natural Resources Agency  
Department of Fish and Wildlife  
North Central Region**

**Jackson Meadows Reservoir, Sierra & Nevada Counties  
General Fish Survey  
October 10<sup>th</sup>-11<sup>th</sup>, 2017**



**Mitch Lockhart, Environmental Scientist  
&  
Luc Mitchell, Scientific Aide  
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## Introduction

Jackson Meadows Reservoir is in Sierra and Nevada counties, approximately ten miles southeast of Sierra City, California (**Figure 1**) and sits at an elevation of 6,100 feet above mean sea level. The Nevada Irrigation District (NID) maintains two boat launching areas and eight campgrounds to accommodate visitors and recreational use.

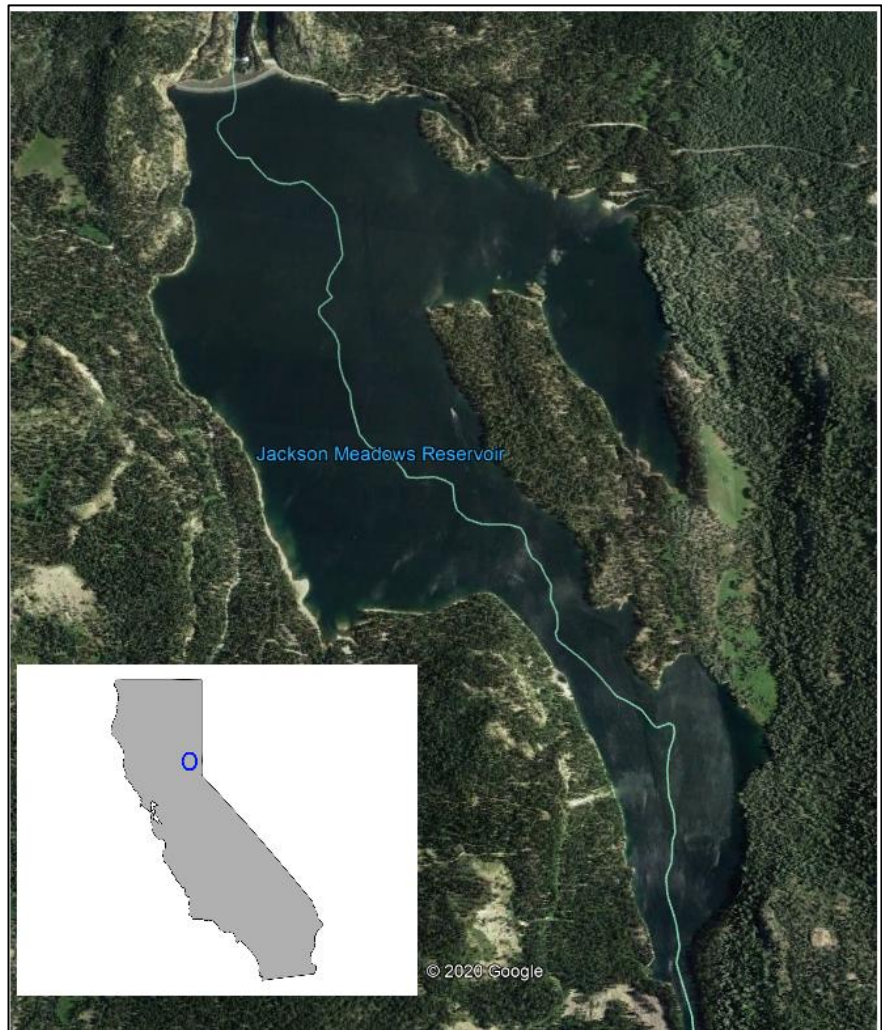
Fish species known to occur in Jackson Meadows Reservoir include: Rainbow Trout (RT; *Oncorhynchus mykiss*); Brown Trout (BN; *Salmo trutta*); Brown Bullhead (BB; *Ameiurus nebulosus*); Inland Silverside (SS; *Menidia beryllina*); and Speckled Dace (DC-S; *Rhinichthys osculus*).

California Department of Fish and Wildlife (CDFW) plants an average of 11,382 catchable fish per year (**Table 3**) to supply a put-and-take, as well as a put-and-grow fishery during peak recreation season. In 2016, the CDFW North Central Region (NCR) was awarded grant funding to assess stocked waters using electrofishing general fish surveys (GFS) and volunteer angler surveys (SFRA F16AF00285). This report summarizes the results of the first GFS conducted at Jackson Meadows Reservoir using these funds.

## Survey Effort

Two CDFW Environmental Scientists operated a Smith-Root electrofishing boat (SR-18) during nighttime hours on October 10, 2017 and October 11, 2017 to sample the shallow littoral habitat around the perimeter of Jackson Meadows Reservoir. Eighteen randomly selected transects were sampled over a two-night sampling period. The crew sampled each transect for 600 seconds (10 minutes) using a constant electrical field while maneuvering the boat slowly clockwise along the lake shore. Generator output was set between 40% to 60% DC Low at 120 pulses per second. Sampling occurred from 7:30 to 10:30 PM on October 10 and 6:00 to 10:00 PM on October 11 for a total survey effort of 7 hours.

After netting, captured fish were transferred to a live well to be held for processing and recovering from stunning. Total length (TL) in millimeters (mm) was recorded for all fish, and a subset of at least 30 fish of each sport fish species were weighed to the nearest gram (g) using



**Figure 1: Google Earth overview image of Jackson Meadows Reservoir, Sierra and Nevada Counties, California. The green line displays the county line (retrieved Jul. 2020).**

a digital scale. Non-game fish species were measured but not weighed. All fish were released alive back into the lake after recovery.

### **Analysis Methods**

Catch rates for each species were calculated as catch per unit effort (CPUE), by dividing the number of fish captured by the hours sampled.

Length frequency histograms are a visual descriptor of length data. Length frequency data were generated for each species by counting the number of fish sampled whose total lengths fell within twenty-millimeter length intervals or size classes (Anderson and Neumann 1996). The length frequencies are plotted by length interval using Microsoft Excel©. The modal size class was determined by finding the size interval with the greatest frequency of fish.

Stock, quality, preferred, and memorable sizes referenced in this summary are based on standards developed for each species by the American Fisheries Society (Behnke 1992). The designation of “juvenile size” has been assigned to any fish smaller than stock size.

Relative weight ( $W_r$ ) is a numerical descriptor of length-weight data that can provide insight into the condition and health of adult fish relative to other adult fish of the same species and size (Anderson and Neumann 1996). The equations are only appropriate for fish that exceed a minimum length dependent upon the species of fish.  $W_r$  values of 100 or higher indicate fish of “optimal” condition or health for a given size class.  $W_r$  is calculated as follows (Wege and Anderson 1978):

$$W_r = (W/W_s) * 100$$

$W$  equals the measured weight of an individual adult fish and  $W_s$  is a predicted weight from a length specific regression constructed to represent the species.

### **Results and Discussion**

Catch data are summarized in **Table 1**. In total, 65 fish were captured during 7 hours of sampling for a catch-per-unit-effort (CPUE) of 9.3 fish per hour. Five species of fish were captured: BB, BN, RT, SS and DC-S.

**Table 1.** Summary of Electrofishing Catch for Jackson Meadows Reservoir, 10.10.2017 to 10.11.2017. Numbers in parentheses equal the total number of fish from the sample (n) included in each given measurement.

| <i>Species</i>    | <i>Number Caught</i> | <i>Percent Catch</i> | <i>CPUE (catch/hr)</i> | <i>Mean Total Length (mm)</i> | <i>Mean Weight (g)</i> | <i>Condition (Mean <math>W_r</math>)</i> |
|-------------------|----------------------|----------------------|------------------------|-------------------------------|------------------------|--|
| <b>Total</b>      | <b>65</b>            | <b>100%</b>          | <b>9.3</b>             |                               |                        |  |
| Brown Bullhead    | 1                    | 2%                   | 0.1                    | 295mm (1)                     | 385g (1)               | 38500 (1)                                |
| Brown Trout       | 1                    | 2%                   | 0.1                    | 305mm (1)                     | 375g (1)               | 122 (1)                                  |
| Rainbow Trout     | 19                   | 29%                  | 2.7                    | 360mm (19)                    | 662g (19)              | 92 (19)                                  |
| Inland Silverside | 39                   | 60%                  | 5.6                    | 89mm (19)                     | 8g (30)                | 763 (30)                                 |
| Speckled Dace     | 5                    | 8%                   | 0.7                    | 66mm (5)                      | 6g (1)                 | 600 (1)                                  |

A single BB and a single BN were captured during sampling efforts. Most of the total catch consisted of SS and most of the sportfish catch consisted of RT.

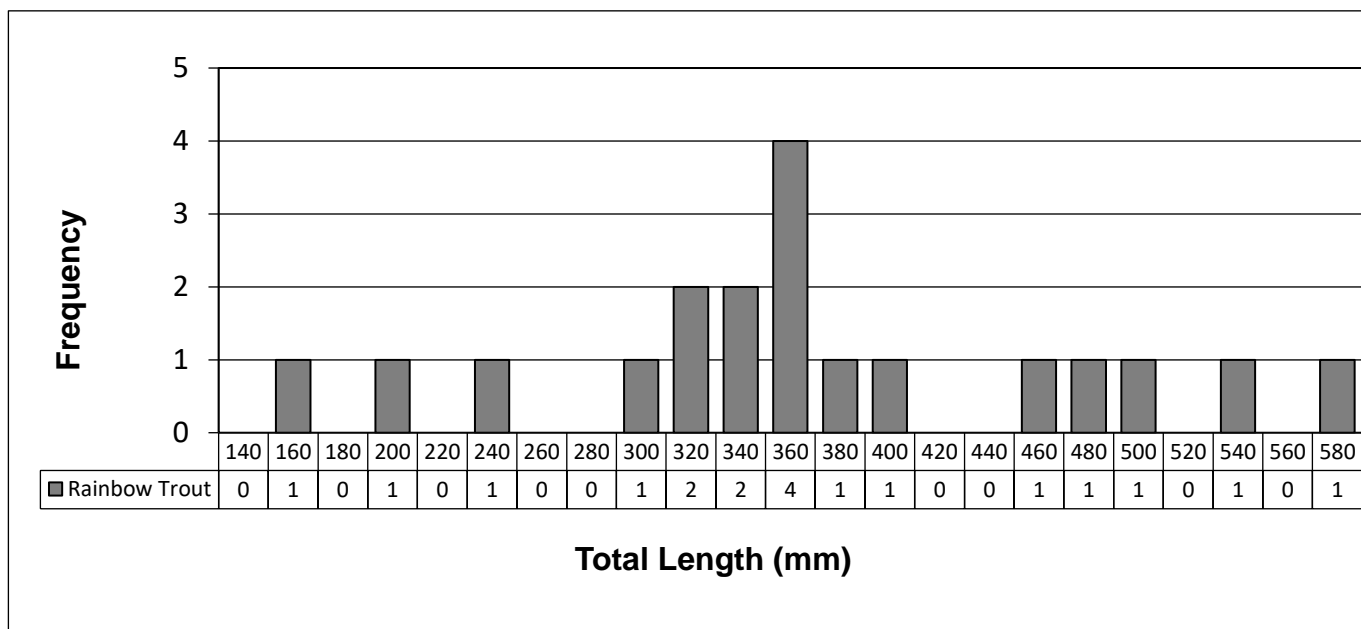
*Rainbow Trout:*

Nineteen RT were captured ranging from 160mm to 567mm in TL with a modal size class of 341-360 mm. **Table 2** and **Figure 2** summarize the RT catch by size class, and show the majority of RT captured (84%) were stock-size adult fish (TL ≥250mm; Anderson & Neumann 1996). Three (16%) RT captured were juvenile-size fish (TL<250mm) and had a mean TL of 190mm.

Five fish captured were of quality-size (TL ≥400mm), and three fish captured were of preferred size (TL≥500mm). These fish are likely holdovers from the prior stocking events. RT weight varied between 39g to 2,316g with a mean weight of 662g.

**Table 2.** Summary of Rainbow Trout Catch by Size Category at Jackson Meadows Reservoir, 10.10.2017 to 10.11.2017. Stock size includes Quality- and Preferred-sized fish. Likewise, Quality-size includes Preferred-size fish. Numbers in parentheses equal the total number of fish from the sample (n) included in each given measurement.

| Size           | Length  | Number    | Percent RT Catch | CPUE (catch/hr) | Mean Total Length (mm) | Mean Weight (g) | Condition (Mean W <sub>r</sub> ) |
|----------------|---------|-----------|------------------|-----------------|------------------------|-----------------|----------------------------------|
| <b>Total</b>   |         | <b>19</b> | <b>100%</b>      | <b>2.7</b>      |                        |                 |                                  |
| Juvenile size  | ≤ 249mm | 3         | 16%              | 0.4             | 189mm (3)              | 76g (3)         | 87 (3)                           |
| Stock size     | ≥ 250mm | 16        | 84%              | 2.3             | 393mm (16)             | 772g (16)       | 93 (16)                          |
| Quality size   | ≥ 400mm | 5         | 26%              | 0.7             | 503mm (5)              | 1487g (5)       | 96 (5)                           |
| Preferred size | ≥ 500mm | 3         | 16%              | 0.4             | 534mm (3)              | 1719g (3)       | 93 (3)                           |



**Figure 2.** Rainbow Trout length frequency histogram from the electrofishing effort in Jackson Meadows Reservoir, 10.10.2017-10.11.2017. The x-axis displays fish total length divided into 20 mm size intervals and labeled by the upper limit of the interval's range. For example, the largest fish caught was a RT with a total length between 561 and 580 mm. The y-axis displays the number of fish included in each size interval.

**Table 3. CDFW Jackson Meadows Reservoir Fish Stocking History, 2020-2010**

| <i>Year</i> | <i>Species</i> | <i>Number of Fish Planted</i> | <i>Size</i> |
|-------------|----------------|-------------------------------|-------------|
| 2020        | RT             | 50,000                        | Fingerling  |
| 2020        | BN             | 10,032                        | Fingerling  |
| 2019        | RT             | 1,200                         | Catchable   |
| 2019        | RT             | 1,700                         | Catchable   |
| 2019        | RT             | 23,920                        | Fingerling  |
| 2019        | BN             | 10,044                        | Fingerling  |
| 2018        | RT             | 1,300                         | Catchable   |
| 2018        | BN             | 9,984                         | Fingerling  |
| 2018        | RT             | 6,300                         | Catchable   |
| 2017        | BN             | 2,415                         | Fingerling  |
| 2016        | RT             | 1,848                         | Catchable   |
| 2016        | RT             | 3,360                         | Catchable   |
| 2016        | BN             | 29,824                        | Fingerling  |
| 2015        | RT             | 2,600                         | Catchable   |
| 2015        | RT             | 31,250                        | Fingerling  |
| 2015        | RT             | 6,000                         | Catchable   |
| 2015        | BN             | 20,000                        | Fingerling  |
| 2014        | RT             | 9,900                         | Catchable   |
| 2014        | RT             | 50,224                        | Fingerling  |
| 2014        | RT             | 6,000                         | Catchable   |
| 2014        | RT             | 4,000                         | Catchable   |
| 2014        | RT             | 1,500                         | Catchable   |
| 2014        | BN             | 22,747                        | Fingerling  |
| 2013        | RT             | 2,280                         | Catchable   |
| 2013        | RT             | 6,006                         | Catchable   |
| 2013        | RT             | 50,000                        | Fingerling  |
| 2012        | RT             | 4,002                         | Catchable   |
| 2012        | RT             | 6,038                         | Catchable   |
| 2012        | RT             | 37,524                        | Fingerling  |
| 2012        | RT             | 4,400                         | Catchable   |
| 2011        | RT             | 5,700                         | Catchable   |
| 2011        | RT             | 2,300                         | Catchable   |
| 2011        | RT             | 32,000                        | Fingerling  |
| 2011        | RT             | 6,000                         | Catchable   |
| 2010        | RT             | 12,000                        | Catchable   |
| 2010        | RT             | 8,000                         | Catchable   |
| 2010        | RT             | 46,223                        | Fingerling  |

RT and BN comprise most of the fish stocked into Jackson Meadows Reservoir with both species being stocked as recently as 2020. The remaining fish species that are not stocked by CDFW are either self-sustaining or immigrating from upstream sources. CDFW has not stocked



**Figure 3.** Anecdotal evidence of a Lahontan Cutthroat Trout caught at Jackson Meadows Reservoir (anonymous 2017).

Lahontan Cutthroat Trout (*Oncorhynchus clarki henshawi*; LCT) into Jackson Meadows Reservoir, yet large individuals have been captured by recreational anglers (**Figure 3**). The fish pictured is an immigrant from upstream populations. The other species captured during the survey (BB, SS, and DC-s) are persistent, self-sustaining populations.

These survey results provide evidence of natural trout reproduction. However, the

estimated levels of natural reproduction would likely not be sufficient to maintain self-sustaining trout populations. Jackson Meadows Reservoir would be an ideal waterbody to stock with more RT. Many transects sampled during the boat electro-fishing survey yielded zero fish. There is an abundance of unoccupied littoral habitat around the entire perimeter of the reservoir. The proximity of the reservoir itself to highly frequented roadways draws in many recreational anglers during peak angling seasons. The vast number of forage fish collected during this boat electro-fishing survey demonstrates that the reservoir could sustainably support an increase in stocked trout. The findings of this GFS support an increase in the allotment of catchable RT at Jackson Meadows Reservoir, with a preference for piscivorous strains.

### Literature Cited

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