

## LAKE FISHERY INVESTIGATION (10/22-11/5/21)

**Lake:** Kezar Lake (0097), Lovell

**Acres:** 2,600 (both basins)

**Purpose:** Monitor LLS age & growth.

**CW Management Goal:** (1) Manage the lake for quality sized LLS with the presence of some fish => 4 pounds; and (2) LLS fishery is the management priority with LKT fishery of secondary importance.

**Regulations:** KEZAR LAKE, Lovell, Stoneham (South Region). General fishing laws apply, except: S-2, S-3, S-22. Daily bag limit on togue: 6 fish; minimum length limit: 14 inches, only 1 may exceed 23 inches. Minimum length limit on landlocked salmon: 16 inches. From October 1 - December 31: ALO, S-7.

**Stocking History:** No LKT stocked since 2001. LLS and LKT stocking has varied over the years, but in general the lake has received 1000-1200 SY LLS (0.8-1.0/acre) and 1000-1200 LKT (0.8-1.0/LKT acre) annually. Stocking rates are based on upper basin habitat only (~1200 acres). LLS stocking was reduced to 600 SY (0.5/acre) beginning in 2007, and LLS stocking was further reduced in 2012 to 400 SY (0.3/acre), which is consistent w/ stocking rate recommendations for this species.

### Findings:

- A single trapnet was fished off Boulder Brook (off from the log/rock wind break) for a total of 337.5 net hours and yielded the following catch: 15-LLS, 2-LKT, 1-WHP, 3-WHS, and 2-FLF.
- LLS age and growth data is summarized in the table below:

Kezar L (0097) - LLS		2009	2011	2013	2015	2017	2019	2021
Age	Data							
I+	Ave Length (in/mm (n))	13.0/329 (2)	13.5/343 (5)	10.6/268 (2)	13.9/354 (2)	---	15.1/383 (1)	--
	Ave Weight (lb/g)	0.7/320	0.8/358	0.6/265	0.9/415	---	0.9/430	--
	Ave Kfactor	0.89	0.88	1.00	0.92	---	0.77	--
II+	Ave Length (in/mm (n))	18.9/481 (26)	17.6/446 (33)	17.3/439 (24)	18.9/480 (40)	18.6/472 (38)	20.1/510 (1)	17.0/431 (7)
	Ave Weight (lb/g)	2.5/1157	1.9/857	1.8/829	2.6/1165	2.3/1047	3.0/1380	1.6/704
	Ave Kfactor	1.02	0.96	0.97	1.04	0.99	1.04	0.87
III+	Ave Length (in/mm (n))	21.8/553 (21)	20.9/530 (10)	20.0/509 (16)	21.7/552 (8)	22.2/563 (9)	20.5/521 (11)	18.1/460 (6)
	Ave Weight (lb/g)	4.3/1933	3.2/1448	3.0/1367	3.9/1768	4.2 (1888)	3.2/1442	1.9/877
	Ave Kfactor	1.11	0.96	1.03	1.05	1.05	1.02	0.89
IV+	Ave Length (in/mm (n))	22.3/566 (6)	22.8/580 (5)	---	21.1/537 (7)	21.2/539 (4)	22.2/565 (1)	19.7/500 (1)
	Ave Weight (lb/g)	4.6/2082	4.3/1965	---	3.7/1694	3.5/1610	3.6/1640	2.6/1180
	Ave Kfactor	1.14	1.00	---	1.08	1.00	0.91	0.94
V+	Ave Length (in/mm (n))	---	23.7/601 (1)	---	---	---	---	--
	Ave Weight (lb/g)	---	4.8/2200	---	---	---	---	--
	Ave Kfactor	---	1.01	---	---	---	---	--
VI+	Ave Length (in/mm (n))	---	---	---	21.9/556 (1)	---	---	22.1/562 (1)
	Ave Weight (lb/g)	---	---	---	3.9/1780	---	---	2.2/1010
	Ave Kfactor	---	---	---	1.04	---	---	0.57
UM	Ave Length (in/mm (n))	16.2/410.9 (11)	17.5/447 (7)	18.5/469 (7)	19.9/505 (2)	17.2/436 (3)	19.1/484 (6)	**
	Ave Weight (lb/g)	2.3/1038	1.9/860	2.8/1260	3.4/1535	2.1/947	2.6/1182	**
	Ave Kfactor	1.09	0.94	1.15	1.18	1.12	1.03	**
All	Ave Length (in/mm (n))	19.5/495 (66)	18.3/465 (61)	18.1/459 (49)	19.4/494 (60)	19.3/491 (54)	19.9/504 (20)	18.0/456 (15)
	Ave Weight (lb/g)	3.2/1443	2.3/1026	2.3/1043	2.9/1305	2.7/1223	2.9/1320	1.8/825
	Ave Kfactor	1.07	0.96	1.01	1.05	1.01	1.00	0.86

Note: UM LLS in 2021 were aged via scale analysis and so included in calculations of age and growth for their respective age classes. More information below.

- Overall, salmon size quality and condition declined since sampling in 2019. This held true within all age classes as well, with the exception of a single age IV+ salmon.

- The longest LLS examined was 22.1” inches long and weighed 2.2 pounds (UM), while the heaviest was 19.7 inches long and 2.6 pounds (UM).
- 3 of the 15 LLS (20%) were unmarked and were determined to be of wild origin after scale analysis. This value is relatively high but may be influenced by our small sample size this year. This proportion is reduced from 30% wild LLS captured in 2019.
- The three UM LLS were age III+, IV+, and VI+. Average length, weight, and condition for all UM LLS was 493 mm/19.4”, 960 g/2.1 lbs, and 0.82, respectively.
- 0 LLS exceeded 3 pounds, indicating poor weights overall.
- The incidence of observed hooking wounds was 13.3%, down from 25% in 2019.

#### **Conclusions:**

- Unfortunately, our sample size was relatively small for most age classes and limits our ability to make strong conclusions. Regardless, overall growth and size quality were highly concerning and appear to be reduced from 2019 sampling.
- Size quality objectives (LLS over 4lbs) continued a decline from 13.0% in 2017 to 5.0% in 2019 to 0% in 2021. Only two LLS older than III+ were sampled but the oldest fish (VI+) was in exceptionally poor condition (K=0.57). Condition was good on the single IV+ LLS, but overall size was reduced from averages seen in past age IV+ classes (less than 20 inches long, under 3 pounds).
- Some of our recent data suggests the winter fishery may be contributing to a high incidence of hooking wounds (possible mortality and/or low salmon abundance), which may complicate or jeopardize the trophy management goal(s) in the future.
- The LKT population has not been stocked in 20 years and has shifted to completely wild production. It is possible that expanded LKT growth may be impacting LLS.
- Sampling may have occurred later in the season than is ideal, which could have impacted our ability to investigate the peak of the LLS run and collect a sample.

#### **Recommendations:**

- Caution should be exercised in that changes designed to promote trophy/quality-sized salmon do not overly stress an already precarious predator/prey relationship. This type of management will likely require intensive monitoring of LLS age and growth. The Kezar Lake LLS fishery should be trapnetted at least bi-annually to monitor the fishery. Given poor returns in 2019 and 2021, trapnetting should be repeated in 2022.
- Maintain stocking rate of 400 SY LLS (0.3/acre). Should LLS condition worsen, consider reduction in stocking rate.
- Continue to monitor the recruitment of wild LLS to the fishery, which may require further adjustments in LLS stocking rates.

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