

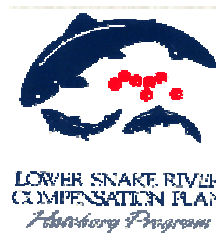
Chinook Salmon Recreational Fishery Creel Survey on Lookingglass Creek for the 2001 Run Year

Fish Research and Development, Northeast Region
Oregon Department of Fish and Wildlife



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Abstract

In 2001, a large number of hatchery origin Chinook salmon *Oncorhynchus tshawytscha*, 1,717, were expected to return to Lookingglass Creek. Most of the projected returns were from the Rapid River stock, a non-native hatchery stock of salmon that was no longer in use in the basin due to its non-local origin and high stray rates. Concern over potential disease transmission to Endangered Species Act listed stocks of Chinook salmon being reared at Lookingglass Fish Hatchery led to a management decision to not allow Chinook salmon spawning above the hatchery and to limit spawning to a short section of stream below the hatchery water intake. Because most returning Chinook salmon were from a stock that was no longer in use in hatchery programs in the basin and co-managers had decided that it was undesirable that they spawn in the wild, co-managers decided to remove as many as possible from the stream by providing recreational and tribal fishing opportunities. Recreational angling for Chinook salmon was allowed on Lookingglass Creek from 26 May through 1 July 2001. An intensive creel survey was conducted to monitor angling effort, catch rates and impacts on non-target stocks and species. We conducted 1,606 angler interviews during the 2001 season on Lookingglass Creek. We estimate that 741 Chinook salmon were caught and 541 were kept by anglers. Catch rates were good throughout the season with mean catch rates of 12.0 and 12.3 h/fish in May and June, respectively, and 8.7 h/fish on 1 July.

Acknowledgements

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Introduction

Lookingglass Creek is a tributary of the Grande Ronde River located on the left bank at river kilometer 137 (Figure 1). Lookingglass Fish Hatchery is located on Lookingglass Creek approximately 3.7 km from the mouth. A weir and trap, located at the hatchery water intake, control upstream passage of adult salmon *Oncorhynchus* sp. and steelhead *O. mykiss*.

Due to concerns about possible disease transmission to Endangered Species Act listed stocks of Chinook salmon *O. tshawytscha* being reared in Lookingglass Fish Hatchery from anadromous fish spawning and rearing in

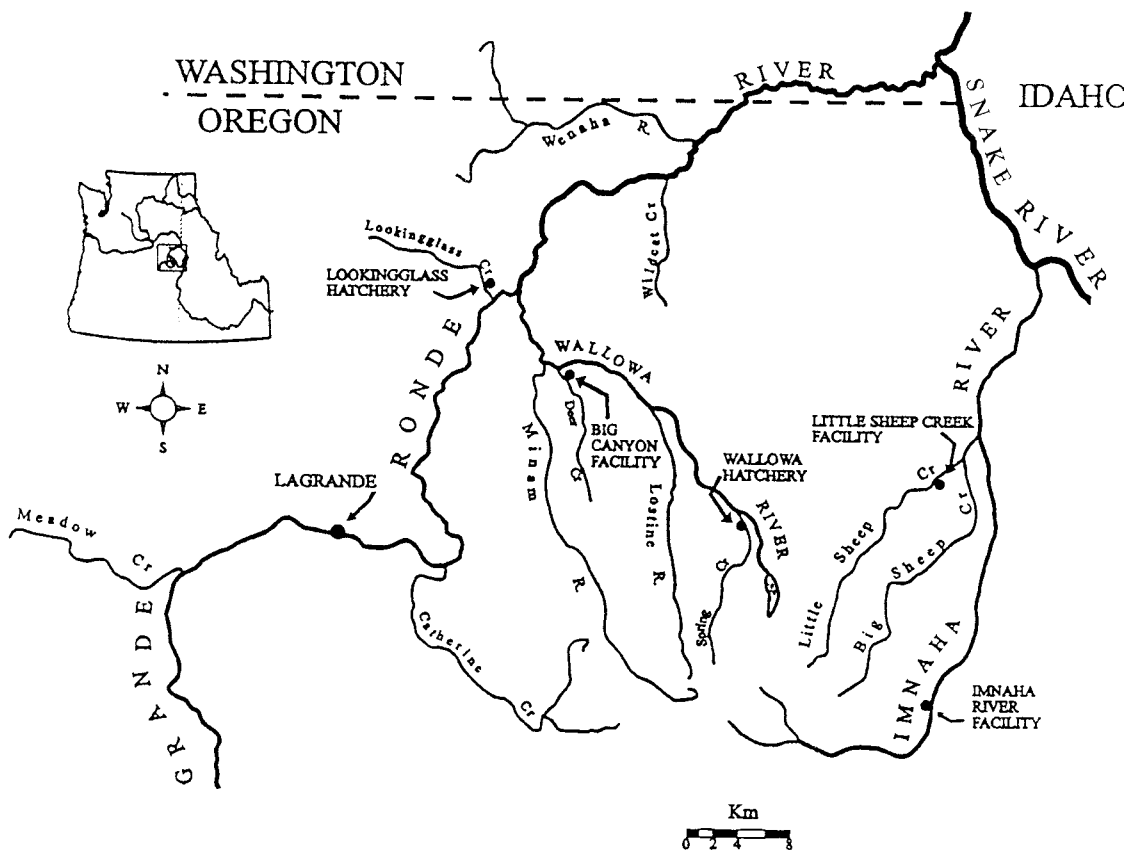


Figure 1. Map of the Grande Ronde River basin with Lookingglass Creek and Lookingglass Fish Hatchery. The 2001 Chinook salmon fishery was conducted from the mouth of Lookingglass Creek to the hatchery.

Lookingglass Creek above the hatchery water intake, no adult Chinook salmon have been intentionally released upstream from the hatchery intake since 1997, though some fish passage may occur during periods of high flow. The stock of Chinook salmon most recently released as juveniles into Lookingglass Creek was the Rapid River stock, originally obtained from Rapid River Fish Hatchery, Riggins, Idaho. While adult returns to Lookingglass Creek were good using this stock, numbers of strays recovered during spawning ground surveys conducted throughout the basin were high in some years. Straying of hatchery Chinook salmon was of particular concern in the Minam and Wenaha rivers (Figure 1), which are Wallowa and Grande Ronde river tributaries managed for endemic, wild Chinook salmon production. Rapid River stock Chinook salmon released as juveniles into Lookingglass Creek were coded wire tagged and given adipose and right ventral (AdRV) fin clips so that they could be visually identified. In an effort to minimize straying of Rapid River stock salmon into non-natal streams, beginning in 1995, returning adult Chinook salmon with AdRV fin clips were trapped by the National Marine Fisheries Service at Lower Granite Dam and trucked to Lookingglass Fish Hatchery. The last release of juvenile Rapid River stock Chinook salmon was in 1999 from brood year 1997. Use of the Rapid River stock in the Grande Ronde Basin was discontinued due to space constraints at Lookingglass Fish Hatchery, continuing concerns over stray rates, and conservation needs for natural populations. Final adult returns were expected in 2000, 2001, and 2002.

In 2001, run projections for adult spring Chinook salmon returns to the Snake River were too high for all AdRV-marked fish, fish destined for Lookingglass Fish Hatchery, to be feasibly sorted and removed at the adult trap at Lower Granite Dam. Projected returns of Rapid River stock Chinook salmon to Lookingglass Creek in 2001 were 1,717 four and five year old fish. Since large numbers of AdRV-clipped fish were projected to return to Lookingglass Creek, none of which would be passed above the hatchery, limited available natural spawning habitat below the hatchery and no need for these fish for supplementation or hatchery broodstock, co-managers decided that a fishery to remove as many AdRV-clipped fish as possible would be desirable.

The 2001 Chinook salmon recreational fishery was opened on 26 May and was tentatively scheduled to close on 1 July. This timing minimized the exposure of steelhead to the fishery and provided fishing opportunities while Chinook salmon numbers were high and while flesh quality was still good. The area open to angling for Chinook salmon was from the road bridge just upstream from the mouth of Lookingglass Creek to the cable across the river on the hatchery grounds, a distance of 3.7 km. Two AdRV-clipped Chinook salmon could be retained by anglers each day. All unclipped (naturally produced) or adipose only-clipped (strays from other programs or progeny of unmarked parents that were trapped and spawned at Lookingglass Fish Hatchery) salmon were to be released unharmed. In order to facilitate the unharmed release of bull trout *Salvelinus confluentus*, steelhead, and unclipped or adipose only-clipped Chinook salmon, use of bait by anglers was not allowed.

Since it had been a number of years since a Chinook salmon fishery had been open on Lookingglass Creek, we were unsure how intense fishing pressure would be. Also, several species of fish that were listed as either endangered or threatened under the Endangered Species Act could have been affected by this fishery. For these reasons, we decided to conduct intensive creel surveys.

The objectives of the creel survey were to:

1. Estimate angler effort.
2. Estimate total angler harvest and catch rate of Chinook salmon.
3. Estimate catch of non-target fish species.
4. Collect snouts from retained salmon for coded wire tag extraction and analysis.
5. Determine residence of anglers fishing on Lookingglass Creek.
6. Determine length frequency, age structure and gender of fish caught and retained by anglers.

Methods

Sample days were assigned by weekend versus weekdays. Within weeks, survey days were selected randomly. Surveys were conducted on three out of five weekdays throughout the season. On weekends, one weekend day was sampled on each of the first two weekends and all weekend days were sampled for the remainder of the season (Figure 2). On survey days, a check station was operated at the downstream end of the hatchery access road within sight of the mouth of Lookingglass Creek. All anglers except those camping in the fishery

Lookingglass Creek Creel Schedule - 2001

May

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

June

					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

July

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Figure 2. Surveyed days (shaded) during the Chinook salmon season on Lookingglass Creek, 2001. The season opened on 26 May and closed on 1 July 2001.

area had to pass the check station to enter or leave the fishery area with the exception of anglers fishing a small area on the far bank of the creek directly across from and clearly visible from the check station. Surveyors arrived in the morning and ran the check station until dark or nearly dark, at which time they drove up the road leading to the hatchery, surveying anglers who were camping along the stream. For the first four days of surveys, surveyors arrived at 07:30 in the morning. After hearing reports of anglers finishing fishing and leaving prior to our arrival, we changed our start time to 05:00.

Anglers were asked a series of questions including whether they were targeting Chinook salmon, their residence, the time that they started and finished fishing, whether they fished continuously or took extended breaks, the type of gear used, the number and species of fish caught and the disposition of those fish. Chinook salmon that were retained were measured for fork length and examined for fin clips. With angler permission, snouts were retained from most fish for extraction of coded wire tags. Statistical methods were as described by Carmichael et al. (1988).

Results

The Chinook salmon fishery on Lookingglass Creek opened on 26 May and closed on 1 July 2001. During the fishery we surveyed 25 days (Figure 2), conducted 1,606 angler interviews and checked 407 fish. We estimate that 9,026.7 hours of effort were expended during the 37 day season, 1,943.4 h or 323.9 h/day during May, 6,917.3 h or 230.6 h/day in June and 166.1 h on 1 July (Figure 3). We estimate that 519 angler days were expended in May, 1,828 in June, and 40 in July (Figure 4). We estimate that a total of 741 Chinook salmon were caught during the 2001 season. Of the 741 fish caught, 574 were AdRV-clipped fish retained by anglers, 83 were either AdRV or Ad only-clipped fish that were released back into the stream and 84 were fish without an identifiable clip and were released (Figure 5). Catch rates were good throughout the season with catch rates of 12.0 and 12.3 h/fish in May and June, respectively, and 8.7

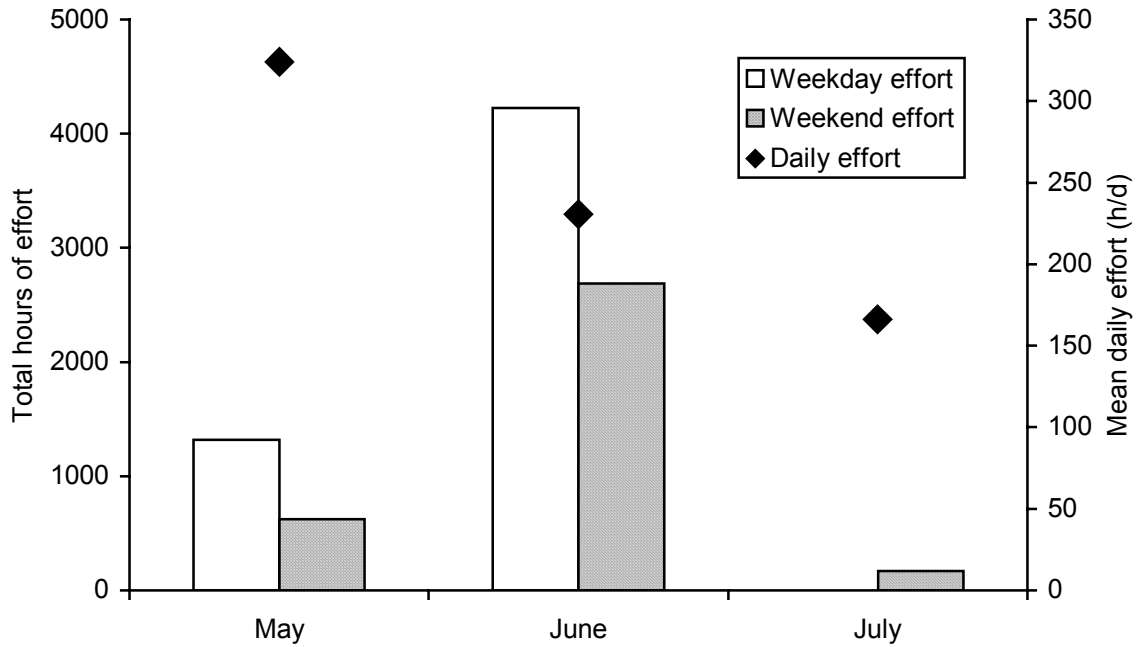


Figure 3. Total and mean daily angling effort by month during the Chinook salmon fishing season on Lookingglass Creek, 2001.

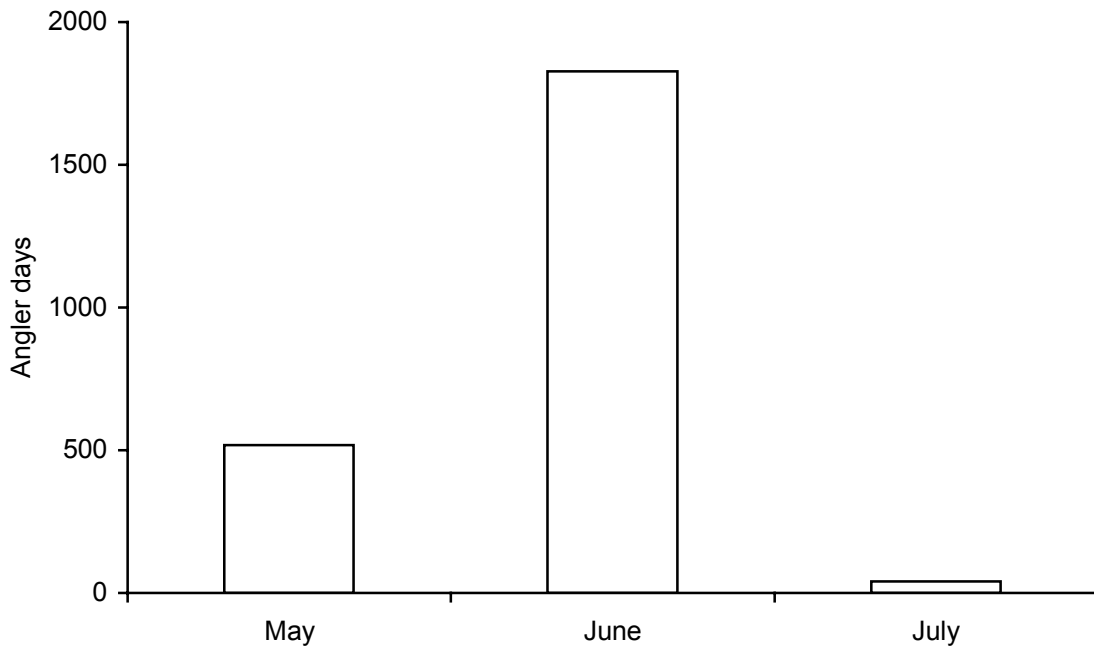


Figure 4. Angler days expended by month during the Chinook salmon fishing season on Lookingglass Creek, 2001.

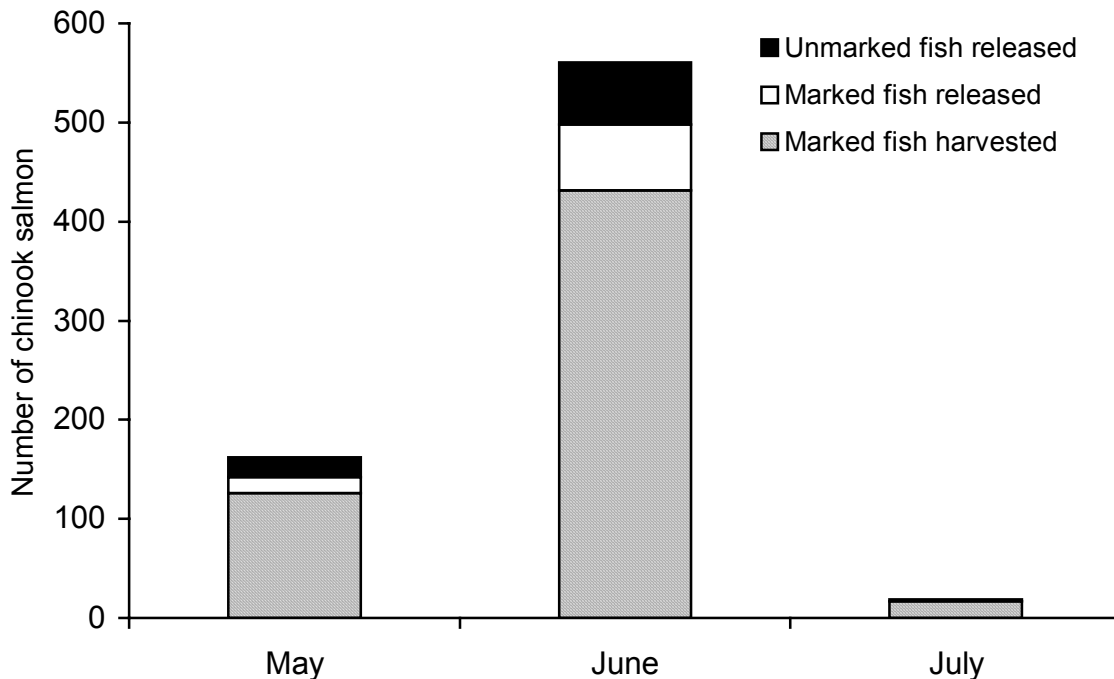


Figure 5. Estimated total catch and disposition of Chinook salmon caught by anglers during the Chinook salmon fishing season on Lookingglass Creek, 2001.

h/fish on 1 July (Figure 6). In addition to the Chinook salmon caught, we estimate that 134 bull trout were caught and released, 32 in May, 99 in June and 3 in July (Figure 7). An estimated eight steelhead and 195 other trout were caught by anglers targeting Chinook salmon.

We observed 407 Chinook salmon that were harvested during the 2001 Chinook salmon fishing season on Lookingglass Creek and were able to collect snouts from 353 fish (Table 1). Six of the snouts did not contain coded wire tags and the tags from two snouts were lost. One of the sampled fish was a four year old stray from the Warm Springs National Fish Hatchery and the remainder were from Lookingglass Hatchery releases. Nearly 94% of the Chinook salmon sampled for coded wire tags were four year old fish with a mean length of 726

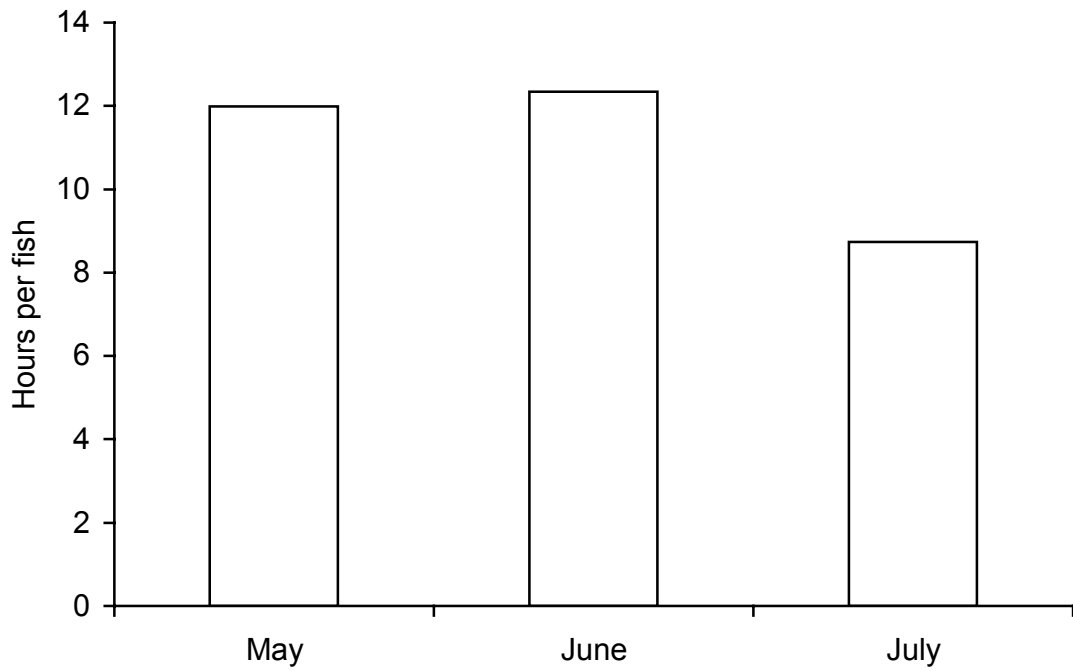


Figure 6. Estimated catch rates for Chinook salmon caught by anglers during the Chinook salmon fishing season on Lookingglass Creek, 2001.

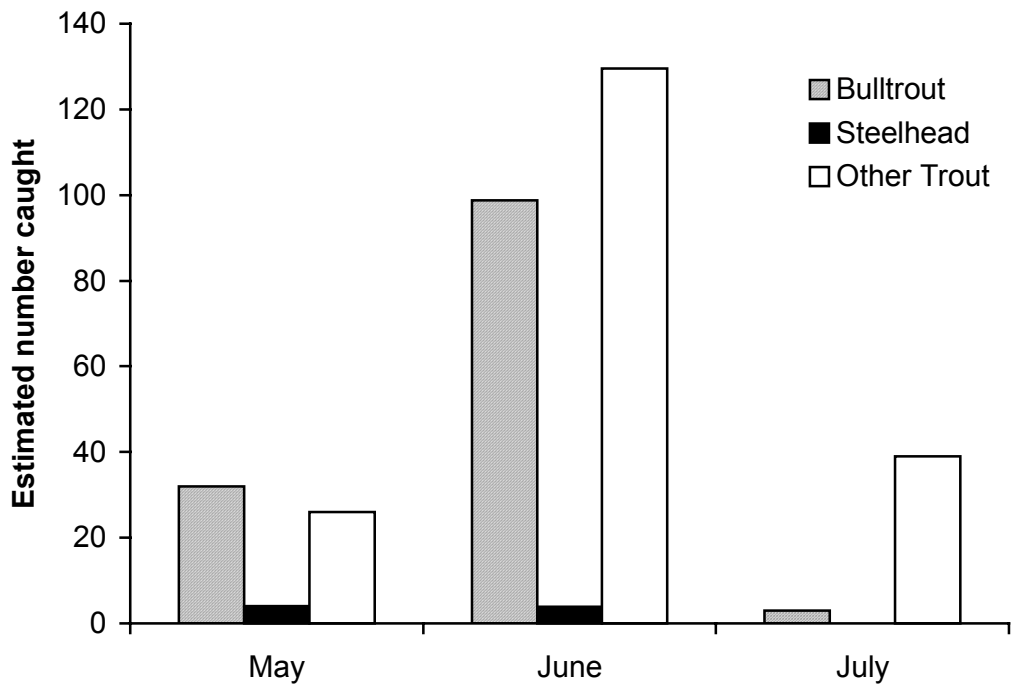


Figure 7. Estimated total catch of bull trout, steelhead and other trout during the Chinook salmon fishery on Lookingglass Creek, 2001.

mm (Table 2). The remaining 6.4% of the Chinook salmon that had coded wire tags were five year old fish with a mean length of 845 mm.

Of the 1,606 anglers interviewed during the 2001 Chinook salmon fishing season on Lookingglass Creek, 83% were residents of either Union or Wallowa counties in Oregon (Table 3). Nearly all of the other anglers interviewed (14%) were Oregon residents from other counties. Only 2.7% were nonresidents with 1.6% from Washington state and 1.1% from elsewhere.

Table 1. Observed and expanded number of AdRV and CWT-marked Chinook salmon recovered in Lookingglass Creek during the 2001 fishery.

Tag Code	Release site	Experimental group	Brood year	Number recovered	
				Observed	Expanded
053011	Warm Springs R.	-	97	1	2
070148	Lookingglass Crk.	Production	97	56	88
070749	Lookingglass Crk.	Production	97	53	83
075309	Lookingglass Crk.	Production	96	6	10
075311	Lookingglass Crk.	Production	96	2	3
075850	Lookingglass Crk.	Production	96	4	6
092209	Lookingglass Crk.	Production	96	2	3
092210	Lookingglass Crk.	Production	96	2	3
092211	Lookingglass Crk.	Production	96	3	5
092212	Lookingglass Crk.	Production	96	3	5
092620	Lookingglass Crk.	Production	97	67	110
092621	Lookingglass Crk.	Production	97	67	101
092622	Lookingglass Crk.	Production	97	79	125
No Tag				6	
Tag Lost				2	
Not Sampled				70	

Table 2. Percent age composition and mean fork length (\pm 95% confidence interval) of hatchery Chinook salmon sampled in creel surveys on Lookingglass Creek during the 2001 fishery using known age coded wire tagged fish.

Sex	Age composition (%)				Mean fork length (mm)			
	N	age3	age 4	age 5	N	age 4	N	age 5
Male	86	0	79	7	79	737 \pm 95.7	7	888.7 \pm 82.3
Female	130	0	124	6	124	722.0 \pm 70.3	6	838.3 \pm 54.8
Unknown	129	0	120	9	120	722.9 \pm 85.5	9	816.2 \pm 67.6
Total	345	0	323	22	323	726.0 \pm 83.5	22	845.3 \pm 90.8

Table 3. Residence of Chinook salmon anglers from interviews completed during creel surveys on Lookingglass Creek during the 2001 fishery.

Number of anglers	Percent from:			
	Union/Wallowa Counties	Other Oregon Counties	Washington	Other States
1606	83.0	14.3	1.6	1.1

Discussion

In 2001, a large number of hatchery origin Chinook salmon were expected to return to Lookingglass Creek, a stream with limited available spawning habitat due to passage restrictions placed on the stream to protect Endangered Species Act listed salmon being reared in Lookingglass Fish Hatchery. Most of the projected returns were from a non-native stock of salmon that was no longer in use in the basin due to high stray rates. Because these fish were from a stock that was no longer in use in hatchery programs in the basin and co-managers had decided that it was undesirable that they spawn in the wild, co-managers decided to attempt to remove as many as possible from the stream while providing recreational opportunities by opening a fishing season on these fish. We conducted an intensive creel survey to monitor the success and impacts of this season and to gather biological data.

We conducted 1,606 angler interviews during the 2001 Chinook salmon fishing season on Lookingglass Creek. We estimate that 741 Chinook salmon were caught and that 541 of those were kept by anglers. Catch rates were good throughout the season at 12.0, 12.3, and 8.7 h/fish in May, June, and July respectively. These catch rates are similar to those observed during recent Chinook salmon recreational fisheries on the Imnaha River where catch rates were 5.8, 17.4, and 13.3 h/fish in 2001, 2002, and 2003, respectively (ODFW unpublished data).

Angler comments during the season were generally very positive. Some concern had been expressed prior to the season that a large number of anglers attempting to fish a relatively short stream reach could lead to problems. Concern was also expressed that concurrent tribal and recreational fisheries might lead to conflict. These problems did not occur. A few people stopped at the check station and said that they hadn't bothered fishing because it was too crowded but the majority of anglers reported that they had a positive experience and that anglers interacted in a friendly and positive manner. Many anglers expressed appreciation for the courtesy shown by both tribal members and recreational anglers. Several anglers said that they enjoyed watching tribal fishermen using traditional methods. One complaint that was prevalent towards the end of the recreational season was that there was a great deal of litter left along the stream. The Oregon Department of Fish and Wildlife did provide portable restroom facilities and litter barrels throughout the season. In the future, the number of litter barrels could be increased in an effort to reduce the amount

of litter left along stream banks. The Oregon State Police reported a fairly high rate of non-compliance with regulations with enforcement actions being taken with 21% of anglers contacted by officers. Violations consisted primarily of snagging, failure to validate harvest tags, and littering.

During spawning ground surveys conducted after the close of the fishing season, 86 redds were counted in Lookingglass Creek. Using a figure of 3.26 fish/redd (Lofy and McLean 1994), 86 redds would equal a spawning population of 280 Chinook salmon. Anglers harvested an estimated 541 Chinook salmon. Tribal harvest by both the Nez Perce Tribe and Confederated Tribes of the Umatilla Indian Reservation was not monitored during this survey.

We conclude that opening a recreational Chinook salmon fishery on Lookingglass Creek was an effective management tool for removing excess fish from the stream. In addition, the fishery allowed us to gather important data on the fish population and gave us the opportunity to collect snouts for coded wire tag extraction and analysis. Finally, the fishery on Lookingglass Creek provided anglers with a rare opportunity to fish for Chinook salmon in Northeast Oregon.

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