U.S. Fish and Wildlife Service
Office of Subsistence Management
Fisheries Resource Monitoring Program

# Copper River Steelhead Harvest Monitoring Project

Final Report No. FIS01-035

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December 31, 2003

## FINAL REPORT SUMMARY PAGE

**Title:** Copper River steelhead harvest monitoring

**Study Number:** FIS01-035

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**Management Regions:** Cook Inlet/Gulf of Alaska

**Information Type:** Subsistence Harvest Monitoring

**Issues Addressed:** Increased rainbow trout/steelhead incidental harvest that may result from lengthening the subsistence-fishing season for the Copper River. The Federal Subsistence Board extended the subsistence fishing season in 2001 from June 1 - September 30 to May 15 - September 30. Insufficient information is available to fully assess the impact of the extended season in the Glennallen Subdistrict of the Upper Copper River District, on the rainbow/steelhead trout population. It is assumed that catch of this species will increase in spring, but the magnitude of the catch cannot be determined. The catch of these fish will result in some unknown incidental mortality. Concern regarding the effects of the extended season on steelhead arose during proposal 16 staff analysis by both the National Park Service and the Bureau of Land Management. Doug Vincent-Lang with ADFG also presented concerns during Federal Board Staff Committee discussions regarding harvest of steelhead over wintering in the Copper River if Proposal 16 is adopted.

**Study Cost:** $27,426 annually

**Study Duration:** May 2001 to December 2003

**Key Words:** Cook Inlet/Gulf of Alaska, Copper River, rainbow trout, steelhead, adult, fish wheel, harvest monitoring, National Park Service, Copper River Native Association

**Citation:** Veach, E.R. and T. Jackson. Copper River steelhead harvest monitoring project. USFWS Office of Subsistence Management, Fisheries Resource Monitoring Program, Annual Report No. FIS01-035, Anchorage, Alaska.

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# EXECUTIVE SUMMARY

**Title:** Copper River Steelhead Monitoring Project

**Study Number:** FIS01-035

**Investigator(s) Information:** Copper River Native Association (CRNA) P.O. BOX H, Mile 104 Old Richardson Hwy. Copper Center, Alaska 99573; Eric R. Veach (eric_veach@nps.gov 907-822-7408) Wrangell - St. Elias National Park and Preserve, P.O. Box 439 Mile 106.8 Richardson Hwy., Copper Center, Alaska 99573. Tonilee Jackson Copper River Native Association (CRNA) P.O. BOX H, Mile 104 Old Richardson Hwy. Copper Center, Alaska 99573;

The objective of the project was to estimate rainbow/steelhead trout incidental catch by fish wheels that occurs in the Glennallen Subdistrict of the Upper Copper River Subsistence fishery in response to the lengthened season, May 15 to May 31, enacted by the Federal Subsistence Board beginning in 2001.

Two fish wheels were placed in the Copper River in the Tazlina area, approximately Mile 110 of the Richardson Highway during the last half of May 2001, 2002 and 2003 to function as test wheels. Local rural residents experienced in using fish wheels to harvest salmon operated fish wheels. Operating conditions were recorded; these conditions included changes in water flow, debris levels, ice conditions and other circumstances that affected successful operation of the fish wheel. All harvested fish were identified by species and enumerated.

Two over flights of the Glennallen Subdistrict were conducted each year between May 17 and May 31 to determine how many fish wheels were either fishing in the river (determined by the wheel in the water spinning) or preparing to fish (determined by the wheel's placement in the water, but not spinning).

**Consultations and Capacity Development**

1. Copper River Native Association – The project was performed in cooperation with CRNA
2. Subsistence Resource Commission and South Central Regional Advisory Council – consultation with both groups was performed during their spring meetings.

Two Ahtna shareholders were hired by CRNA to operate fish wheels and collect data from May 15$^{th}$ – May 31$^{st}$.

**Schedule**
The schedule was met this year due to good spring weather and water conditions. A final project report is anticipated to be completed by 12/31/03.

**Budget**
The $3000 provided to the NPS for this project was used to fund the aerial surveys of fish wheels.

## INTRODUCTION

In 2000, the Federal Subsistence Board changed the regulations for the subsistence fishing season in the Glennallen Subdistrict of the Copper River to allow harvest of salmon beginning May 15. Prior to this decision the fishing season had not opened until June 1. This decision was made to increase the opportunity for harvest by federally qualified subsistence users.

Potential impacts of the extended Federal subsistence salmon fishing season to rainbow and steelhead trout stocks was raised as an issue surrounding this decision, particularly since these stocks are at the northern extreme of the species' range. Abundance of these stocks is highly variable, production is low, and the rainbow/steelhead trout sport fishery is conservatively managed with most effort in Copper River tributaries rather than the main stem.

Steelhead enter the Copper River as early as late-July with the majority moving through the Glennallen Subdistrict during September and October. These fish over winter in the Upper River and tributaries with spawning occurring in the spring. Not all steelhead die after spawning. Fish, which survive, referred to as "kelts", migrate downstream in early May and June. Expanding the season dates may increase the incidental capture and increase mortality of this migrating steelhead.

## OBJECTIVES

The primary objective of this study is to estimate rainbow/steelhead trout incidental catch by fish wheels that occurs in response to the lengthened season, May 15 to May 31, enacted by the Federal Subsistence Board beginning in 2001.

## METHODS

Aerial counts of fish wheels were performed by park staff on the Copper River from the mouth of the Slana River to the bridge at Chitina. At least 2 flights per year occurred between 5/17 and 5/31 to count the number of fish wheels installed in the Copper River and to document whether or not they were operating (Table 1).

The Copper River Native Association (CRNA) operated 2 fish wheels each year for the purpose of monitoring incidental catch of steelhead/rainbow trout. In 2001 one fish wheel was located near Tazlina, the other near Chistochina. Both fish wheels were located near the Tazlina area in 2002 and 2003 (Figure 1).

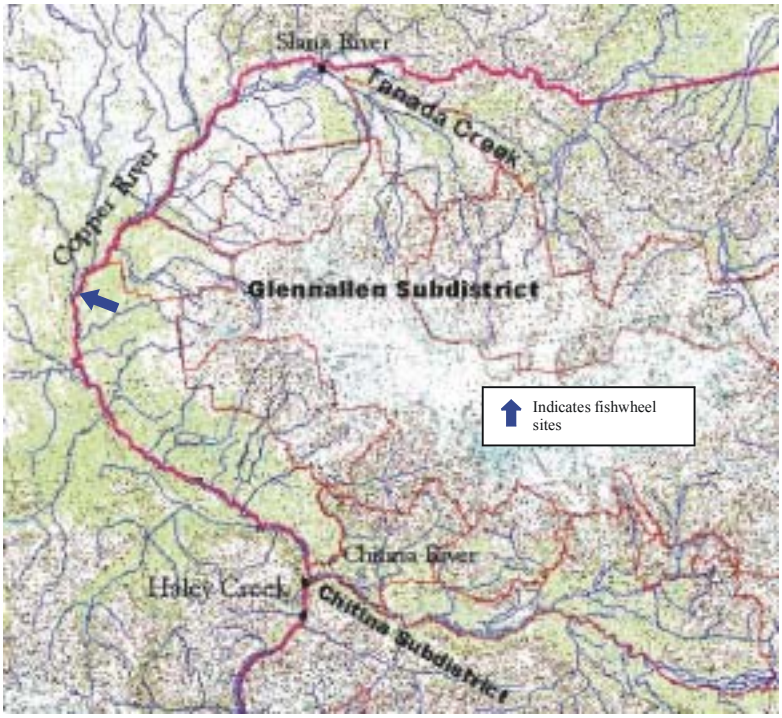


Figure 1. Location of CRNA fish wheels on the Copper River

Operating conditions were recorded; these conditions included changes in water flow, debris levels, ice conditions and other circumstances that affected successful operation of the fish wheel. All harvested fish were identified by species and enumerated.

## RESULTS

Two flights were conducted from fixed wing aircraft during the monitoring period. The two surveys encompassed the stretch of the Copper River beginning at the bridge in Chitina and terminating at the mouth of Tanada Creek. Fish wheels that were in the river with baskets turning were documented as "fishing". Fish wheels that were in the river but did not have baskets turning were documented as "ready to fish". The observations made during the flights are displayed in Table 1. In 2003 nearly twice as many fish wheels were fishing or preparing to fish as had been observed in either of the previous 2 years. However, the number of wheels observed even near the end of May was only

approximately one fourth of the total number of wheels (133) registered for use in the Glennallen Subdistrict by either local or non-local residents in 2003.

Two fish wheels were placed in the Copper River in the Tazlina area, Mile 110 of the Richardson Highway, on May 15, 2003. In 2003, conditions were optimal for operating the fish wheels and both wheels were operated continuously. One fish wheel did incidentally catch 1 steelhead during the period of May 23 to May 30 (Table 2). This is slightly less than in 2002 when 4 steelhead were harvested in the test wheels and greater than in 2001 when no steelhead were harvested in the test wheels. In all years steelhead harvest in the test wheels was low. A substantial number of targeted salmon were harvested in the test wheels in 2003, which is in contrast to the previous 2 years in which few salmon were harvested.

| Year | Date | Wheels Fishing | Wheels preparing to fish |
|---|---|---|---|
| 2001 | May 17 | 1 | 8 |
| | May 25 | 4 | 13 |
| | May 31 | 3 | 25 |
| 2002 | May 20 | 1 | 5 |
| | May 29 | 4 | 13 |
| 2003 | May 20 | 9 | 20 |
| | May 28 | 11 | 36 |

Table 1. Summary of aerial observations of fish wheel use on the Copper River May 2001-2003.

| Year | Steelhead | Sockeye | Chinook | Other | Days of Operation (total both wheels) |
|---|---|---|---|---|---|
| 2001 | 0 | 29 | 0 | 6 | 13 |
| 2002 | 4 | 3 | 0 | 2 | 14 |
| 2003 | 1 | 152 | 23 | 0 | 32 |

Table 2. Summary of fish caught in test wheels.

## DISCUSSION

### *Fish wheel Operation*

Fish wheel operating conditions in 2003 were substantially better than in either 2001 or 2002. Fish wheels were easily installed by May 15, water flow levels were low and the river was nearly ice and debris free and remained in this condition through May 31.

During the extended portion of the Federal subsistence fishing season (May 15 to May 31) of 2001 and 2002, icy conditions in the river prohibited the installation of fish wheels in the river on or before May 15. Muddy conditions limited access to the fish wheel sites. Once the wheels were operating, all wheel operators reported ice and debris in the river in 2001 and 2002 as increasing the difficulty of operating the fish wheels. The total potential number of days that the two test fish wheels in combination could legally operate during this period was 32. In 2001 and 2002, the two fish wheels were unable to operate even 50 percent of the days during this period (Table 2). In 2003, both fish wheels operated continuously from May 15 through May 31.

The aerial surveys of fish wheels operating during the extended portion of the season suggest that other operators found both access and operating conditions more amenable to successful fishing than in 2001 and 2002.

Due to the relatively small sample size (3 years) it would be inappropriate to attempt to determine the specific percentage of years in which fish wheel operators might find amenable conditions for successful fishing as early as May 15. However, it does appear that in the majority of years, access and operating conditions will limit fishing until some time after May 20.

### *Fish wheel Catch*

In 2003, 1 steelhead was harvested (Table 2) while 152 sockeye and 23 Chinook salmon were harvested. Even though a higher number of wheels were operating or preparing to fish than in the previous two years, this data suggests that steelhead harvest throughout the Glennallen subdistrict was likely low during the extended portion of the season. Harvest of targeted salmon species was substantially higher in 2003 than in the previous 2 years.

In 2002, test wheels operating during the extended season harvested 4 steelhead. While steelhead harvest was likely low throughout the Glennallen subdistrict in 2002 as well, it is important to note that during the extended portion of the season in 2002, steelhead were the most commonly caught species and the harvest of steelhead exceeded the harvest of salmon. The intent of the Federal Subsistence Board in extending the season was to increase the opportunity of Federally qualified users to harvest salmon.

In 2001, no steelhead were harvested, while 29 sockeye salmon were harvested. The upstream wheel, near Chistochina, did not harvest any fish until June 2, after the end of the extended portion of the season. Operating conditions were extremely challenging for the lower wheel that was able to harvest salmon that it is the opinion of the investigators that the operator would not have chosen to operate his wheel if he was not participating in this project.

A confident quantitative estimate of steelhead harvest between May 15 and May 31 is not possible based upon this data. However, a qualitative assessment of this data suggests that steelhead harvest during the extended portion of the season is typically low. The data collected for this project suggests that the Federal Subsistence Board has not created a conservation concern for steelhead by extending the Federal fishing season in the Glennallen subdistrict.

While assessing the success of the FSB in increasing fishing opportunity was not a stated objective of this project, a cursory review of the catch of targeted salmon species suggests that in some years, the earlier opening date has not resulted in substantially increased opportunity for Federally qualified users. However, occasionally, as in 2003, the extended season does provide opportunity for some harvest of salmon in May prior to the opening of the State subsistence season. Fortunately this project was conducted over fairly diverse range of fishing conditions for the Copper River in May so we believe it is reasonable to conclude that steelhead harvest in May is likely to be low even if fishing conditions are good enough to result in a higher level of effort by Federally qualified subsistence fishers.

## CONCLUSIONS

Presence of ice and debris in the river and muddy access conditions delayed fishing until after May 20 in 2 of the 3 years. At most, four fish wheels were observed fishing during the extended season in 2001 and 2002. As many as nine wheels were observed fishing during the extended season in 2003. Total incidental steelhead harvest from the successful wheel was 4 fish during an 8-day period near the end of May of 2002 and 1 fish on May 26, 2003. Based on our results we do not believe the lengthened subsistence-fishing season in the Glennallen subdistrict has created a conservation concern for steelhead/rainbow trout population in the Copper River. We also conclude

that the extended season only occasionally increases opportunity for federally qualified users to harvest salmon.

## ACKNOWLEDGEMENTS

The U.S. Fish and Wildlife Service, Office of Subsistence Management, provided funding support for this project through the Fisheries Resource Monitoring Program, under agreement number FIS01-035.

## LITERATURE CITED

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