



# Estimation of Adult Steelhead Trout Entering Crooked and Nikolai Creeks, Kenai National Wildlife Refuge, Alaska, 2005



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## Introduction

Steelhead trout populations in Crooked and Nikolai creeks, tributaries to the Kasilof River watershed, support popular fall and spring sport fisheries in the lower Kasilof River. Prior to 2005, Crooked Creek was the only known stream to support a spawning population of steelhead trout originating from the Kenai National Wildlife Refuge. Because steelhead trout sport fishing has been increasing in popularity with little known information regarding their distribution, run size and timing, two studies were developed using underwater video to monitor steelhead trout in Crooked and Nikolai creeks.



*Crooked Creek Steelhead Trout*



*Nikolai Creek Steelhead Trout*

## Methods

- Steelhead trout returning to Crooked and Nikolai creek were enumerated using an underwater video system consisting of a digital video recorder (DVR) and underwater camera and lights.
- Steelhead trout at Crooked Creek were channeled through the video system using the Alaska Department of Fish and Game fish hatchery and rigid weir.
- Steelhead trout at Nikolai Creek were channeled through the video system using a resistance board weir.
- Video from Nikolai Creek was transmitted via microwave to the road system for easier data access.
- Age, sex, and length were collected from steelhead trout based on a stratified sample design.



*Crooked Creek Steelhead Trout*



*Underwater video system and weir*

## Results

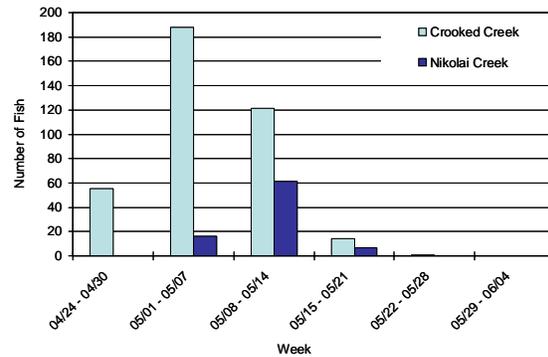
### *Crooked Creek*

- Four species of fish, including 379 steelhead trout and 10 rainbow trout, 10 Chinook salmon, one Pacific lamprey, and an unknown number of Dolly Varden were passed through the video chute located at the Crooked Creek Hatchery between 29 April and 31 May 2005.
- Peak weekly passage of steelhead trout occurred between 1 and 7 May.
- Median cumulative passage of steelhead trout occurred on 5 May with the daily peak passage occurring on 8 May.
- Age, sex, and length data were collected from 70 steelhead trout at Crooked Creek between 1 and 17 May 2005.
- Females accounted for 86% of the sample with a mean mid-eye-fork (MEF) length of 617 mm. The mean MEF length for male steelhead trout was 608 mm.
- Scales were collected for age determination but analysis is not complete.

### *Nikolai Creek*

- Three species of fish, including 84 steelhead trout and unknown numbers of round whitefish and Dolly Varden passed the Nikolai Creek weir and video system.
- Peak weekly passage of steelhead trout occurred between 8 and 14 May.
- Median cumulative passage date occurred on 9 May with the peak daily passage occurring on 11 May.
- Age, sex, and length data were collected from three steelhead trout at Nikolai Creek during 2005. The sample size was small due to problems associated with trapping the steelhead trout.
- Sex of steelhead trout (85% female; 15% male) was determined during video review.

**Acknowledgements:** The Alaska Department of Fish and Game provided support throughout each project and also provided us with access to the Crooked Creek fish hatchery.



Weekly escapement of steelhead trout in Crooked and Nikolai creek, 2005

## Discussion

The installation of weirs and video equipment was delayed on both streams due to late spring ice and snow melt off. Some steelhead likely migrated upstream prior to weir installation resulting in conservative estimates of run size during 2005. Weather permitting, we hope to have both projects up and running by mid-April in 2006. Information collected will be used to refine management strategies for this species in the Kasilof River watershed.



Underwater video image of a steelhead trout

<http://www.sf.adfg.state.ak.us/region2/areas/kenai/KenaiResearchVideos.cfm>

For further information on these projects, please review the report:

Abundance and run timing of adult steelhead trout in Crooked and Nikolai Creeks, Kenai Peninsula, Alaska, 2005 or contact Ken Gates at [Kenneth\\_gates@fws.gov](mailto:Kenneth_gates@fws.gov)