Title: Escapement estimates for Lake Clark sockeye salmon  
Study Number: FIS01-095  
Primary Investigators:  
Dr. Carol Ann Woody, U.S. Geological Survey, Biological Resources Division, 1011 E. Tudor Rd. Anchorage, AK 99503, 907-786-3314  
Dr. Ray Hilborn, University of Washington School of Fisheries, Seattle, WA 98195, 206-543-3587

Study Objectives and Progress

1. Objective – Monitor escapement of sockeye salmon to the Newhalen River. Progress* – Counting crews and towers were established at RM22 of the Newhalen from 18 June to 10 August. An estimated 221,418 sockeye salmon were counted past the RM22 towers. This number represents ~20% of the estimated 1,084,556 Kvichak escapement (Figure 1). Aerial escapement estimates for 31 July 2001 by Pat Poe indicate low returns of spawners to the Newhalen and Alexi Creek system compared to historical ADFG estimates. Aerial estimates indicated 1,185 sockeye in the Newhalen and 600 to the Alexi Creek system on the 31 July.

2. Objective – Monitor escapement of sockeye salmon into the Tazimina River. Progress* - The Tazimina pilot escapement program began 31 July and ended 24 August. Initial aerial escapement (31 July by Pat Poe) indicated 765 sockeye in river above the tower sites. An estimated 7,014 sockeye salmon were counted past the tower in addition to the aerial estimate of 765 for a total estimated return of 7,779 to the Tazimina River.

*Problems encountered on the escapement program are detailed under methods.

Consultations and Capacity Development

Newhalen/Iliamna/Nondalton- 1 July – 15 August 2001. Students from the USGS Native Alaskan Internship in Fisheries Program were rotated through both counting tower projects. Students learned counting and data entry techniques.  
Kijik Coorporation – 4 September 2001 – Updates regarding the progress of the escapement program were mailed to the Kijik Coorporation for distribution to members.  
Bristol Bay RAC- 4 Sept. 2001. Updates mailed to all members of the RAC to inform them of progress on the Lake Clark sockeye salmon research program.
Methods

Flooding on the Newhalen and Tazimina Rivers occurred this summer due to higher than average snow pack and warm June temperatures (Figure 2). No sockeye salmon were observed past RM22 by 28 June. Because high flows delayed fish passage by RM22 in the past (Poe and Mathisen. 1981. Enumeration of sockeye salmon escapements to the Newhalen River-Lake Clark system in 1979 and 1980), an index count was initiated at RM1 (Figure 1) and below and above a potential velocity barrier at RM6.5. No fish were observed past the falls in daily 7-hour observations (20 min/hr) until 7 July when flows were estimated at 27,350 cfs. Fish were observed past the falls daily thereafter until 12 July when these observations were discontinued. Deployment of the Tazimina tower was delayed due to flooding - the river was observed above bank full from 18 June to 20 July - and because no fish were observed schooling at the mouth by mid July. The Tazimina towers were established on 31 July after consultation with the Federal Office of Subsistence. An initial aerial survey was conducted by Pat Poe to determine the number of fish above the selected tower site. Difficulty was experienced obtaining accurate counts of sockeye into the Tazimina, as groups would school near the tower site and would circle by the tower. A different site was selected for 2002, which may provide more accurate counts by reducing potential for circling.
Figure 1. Escapement estimates for the Kvichak and Newhalen Rivers 2001. Newhalen escapement estimates from 2000 included for comparative purposes.
Figure 2. Escapement estimates for the Newhalen River mile 22 (RM22) for 1980 and 2001. Discharge in cubic feet per second (cfs) included showing relationship between fish passage by RM22 and discharge. Discharge above 26000 cfs delays fish passage by falls at RM 6.5.