

FY 2002 Study Status Report – October 31, 2002

Title: Tracking Sockeye Salmon Home: Salmon Conservation to Meet Park Mandates
PMIS # 54327

Investigator Information: Dan Young, Lake Clark National Park,
1590 Jones Rd. Fairbanks, AK 99709,
907-455-7197, ftdby@uaf.edu
Dr. Carol Ann Woody, U.S. Geological Survey,
Alaska Science Center, 1011 E. Tudor Rd.
Anchorage, AK 99503, 907-783-3314

Project Description:

Major sockeye salmon spawning aggregations were identified in the Lake Clark watershed using radio telemetry. Salmon were tagged as they entered Lake Clark and followed to their final spawning grounds. Basic habitat parameters were collected from select spawning areas. Contemporary migration paths and spawning distributions will be compared with historic spawning areas, subsistence and sport fishing areas, as well as with current development around Lake Clark.

Study Objectives and Progress

1. **Objective** – Locate and map all major spawning aggregations, including those in glacial regions.

Progress – Three hundred thirty two adult sockeye salmon were captured with a seine as they entered Lake Clark and radio-tagged with an esophageal tag (n=175 in 2000, n=157 in 2001). Fish were radio-tracked every 5 – 10 days by boat or airplane to final spawning locations. Remote telemetry stations established on three tributaries and on the lakeshore collected additional movement data. We estimated spawn time and verified spawning areas with seines or visual observation (Figure 1). A map of contemporary spawning habitats was created (Figure 2).

Results – Spawning locations for 302 of 332 tagged fish were determined. Forty one fish remained at the tagging area (or downriver) and were not included in further analyses. We identified 30 different spawning areas through radio telemetry (n=23 in 2000, n = 26 in 2001). An additional 5 spawning sites were identified through visual observation and seining.

2. **Objective** – Determine basic characteristics of spawning habitats.

Progress – Habitat data was collected from 20 different spawning aggregations. We classified all spawning areas as clear or glacial (turbidity greater than 5 NTU at time of peak spawning). A catalog describing the characteristics of each spawning area will be completed this fall. Remote temperature sensing units measured winter intergravel temperatures at 14 spawning locations. Tim

Brabets, USGS-WRD, completed his report on the water quality of the 6 major Lake Clark tributaries.

Results – More than half of the tagged fish spawned in glacial habitats and more than two thirds spawned in beach habitats. Approximately seventy five percent of all tags that returned to beach habitats spawned along the shoreline of Lake Clark.

3. **Objective** – Determine the distribution of private land uses and subsistence/sport use locations in relation to salmon spawning habitat.

Progress – Historic and current subsistence fishing data was gathered and entered into GIS as part of a Traditional Ecological Knowledge (TEK) project already underway. A final report detailing the TEK information will be completed in October. Current land use development relative to spawning areas was documented with aerial photography and on the ground surveys.

Difficulties Encountered:

Approximately half of the remote temperature-sensing units failed to collect accurate data. Units were placed in new locations in 2002 and temperature data will be retrieved in spring 2003. Estimating spawning habitat in glacial beach areas was difficult because of poor visibility and deep water. Substrate samples could not be collected from these areas. We suggest that SCUBA divers be contracted to collect this data in the spring before glacial runoff begins. In addition, hydroacoustic equipment could be used to estimate the extent of spawning in beach habitats.

Planned Products:

Final report (December 31, 2002)
Spawning habitat catalog (December 31, 2002)



Figure 1. Dan Young holding sockeye salmon caught while verifying spawning in Little Lake Clark.

Figure 2. Beach and Tributary Spawning Areas Identified by Radio Telemetry and Visual Observation

Tlikakila River Insert

Tlikakila River

Little Lake Clark

