

Remember the Columbia River: lessons learned and applied to a cooperative sockeye salmon research program, Lake Clark, Alaska



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ABSTRACT

Alaskan salmon populations are generally regarded as "healthy" relative to those in the Columbia River. However, recent dramatic declines of historically productive populations (e.g. Yukon and Kvichak rivers) concern resource users and managers.

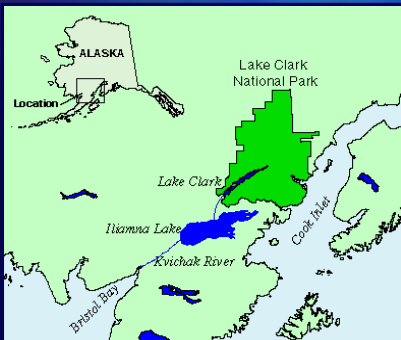
Lessons learned from the demise of Columbia River salmon populations stress the importance of trend monitoring, habitat conservation and the ability to discern among populations at risk for conservation purposes.

In response to sockeye salmon declines in the Kvichak/Lake Clark watershed, tribal, state and federal stakeholders prioritized research needs. Research focused on the Lake Clark component of the Kvichak River return includes:

- A long-term escapement monitoring program
- Identification of critical spawning habitats
- Genotyping regional populations to assess feasibility of managing for "at risk" populations.

STUDY SITE

Lake Clark drains into Lake Iliamna via the Newhalen River. The entire system drains into Bristol Bay via the Kvichak River.



Objective 1. Monitor annual abundance and population trends. The monitoring program focuses on escapement estimates conducted from towers (a., b.), trend analysis through collection of age, size and fecundity data (c.) and hydrologic monitoring. The graph compares 2001 and 1980 escapement and discharge data. Discharge rates >25,000 cfs impede fish passage to spawning sites. Note the difference in abundance and run timing between years.



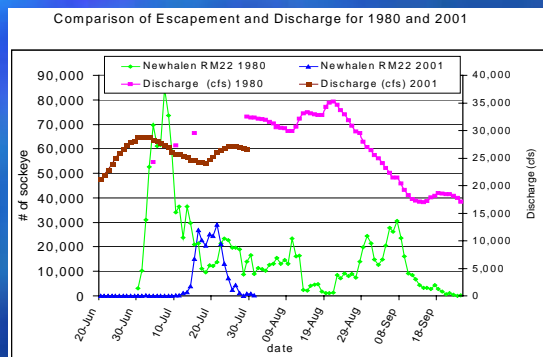
a.



b.

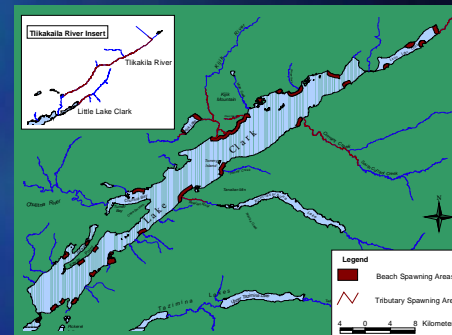


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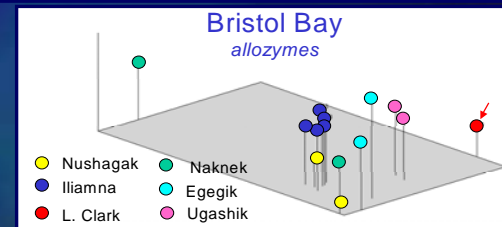


View of the radio tagging field camp site, Lake Clark outlet, Alaska.

Objective 2. I.D. and map spawning habitats. Radio tagged salmon (n=357) were tracked to final spawning destinations. GIS maps generated from the data will be used to protect spawning areas from development impacts.



Objective 3. Determine Lake Clark genotypes and level of differentiation among Bristol Bay sockeye populations. Preliminary analysis (below) indicate genetic markers may be useful in distinguishing and, therefore, conserving declining Kvichak/Lake Clark sockeye salmon.



CONCLUSIONS

Lessons learned from the Columbia River underscore the need to:

- monitor salmon population trends
- identify and protect critical spawning habitats
- differentiate among populations and protect those in decline