

## **Northern Land Use Institute 1999/2000 Faculty Grant Final Report**

### **Genetic Analysis of Early and Late Run Sockeye Salmon on the Klukshu River: Implications for Sport, Aboriginal, and Commercial Fisheries Management**

#### **Project Objective:**

The primary objective of the proposed research was to determine the level of genetic differentiation between early- and late-run Klukshu River sockeye salmon using molecular genetic markers.

#### **Summary of Impact:**

The Klukshu sockeye genetic project was highly successful in terms of both science, and impact. The research will form the basis of an important paper in a peer-reviewed journal. The work also formed the undergraduate thesis of a northern UNBC student (Elizabeth Fillatre), who has entered graduate school (MSc) to continue her studies on the Yukon sockeye salmon. The NLUI finding was successfully leveraged with the Yukon Wildlife Enhancement Trust Fund and Yukon DFO to support additional sampling and an expansion of the scope of the analysis. Finally, Ms Fillatre is scheduled to present her findings at the national Canadian Conference for Fisheries Research in Toronto in January 2001.

#### **Summary of Results:**

Spawning sockeye salmon (*Oncorhynchus nerka*) return to their natal streams in the Klukshu River watershed (Yukon) in early (prior to Aug 15<sup>th</sup>) and late (after Aug 15<sup>th</sup>) runs. This diverse run timing makes effective management difficult, as well as controversial, since many competing user groups all want access to the fishery. We show that, historically, the sockeye salmon returns in the Klukshu River have a bimodal distribution (early and late runs) over the last 20 years (1978-1996). The early and late run Klukshu River sockeye salmon were scored for allele variation at five microsatellite loci for two years (1997 and 1999). We found that the early and late runs were significantly genetically divergent, and that there was also a significant divergence between the 1997 and 1999 late run stocks (the 1997 and 1999 early runs were not genetically divergent). We preliminarily recommended that the early and late runs of sockeye salmon on the Klukshu River be managed as separate management units, at least until our extended data set was complete and analyzed.