

## Site Selection and Feasibility of Enumerating Dolly Varden using Dual Frequency Identification Sonar in the Hulahula River, Arctic National Wildlife Refuge, Alaska, 2006

A study using a fixed-location, Dual Frequency Identification Sonar (DIDSON) was initiated in 2004 to assess the population status of Dolly Varden *Salvelinus malma* in the Hulahula River, Alaska. An abundance estimate from the DIDSON data was generated to describe the variability in run size and timing of Dolly Varden. During 2006 data collection began August 1 and continued through September 20. A total of 1,157 hours of data was collected, providing an estimate of 7,471 Dolly Varden migrating upriver. Species identification was accomplished with hook and line sampling, beach seining, and an underwater camera. A total of 127 fish was captured, identified as Dolly Varden, sexed, and measured. Based on observed swimming pattern, estimated size, and lack of other species observed or captured, all fish enumerated were assumed to be Dolly Varden. Visual observations using an underwater video camera positioned in the ensounded zone detected 125 fish and of these, 68 were identified as Dolly Varden. The remaining 57 fish were too small to identify. No fish were observed during two aerial surveys conducted using helicopter (September 17 and 20) flown from the DIDSON site to the river mouth. Positional data indicated that most fish were detected by the DIDSON with few fish observed near the outer range limits of acoustic detection. Most fish traveled on the river bottom. The peak daily count of 535 fish occurred on September 1. The hourly passage rates of upriver fish showed a slight diel pattern (highest during nighttime hours). The estimate of Dolly Varden migration upriver is conservative because it only included fish that passed while DIDSON was in operation.

Citation; Site Selection and Feasibility of Enumerating Dolly Varden using Dual Frequency Identification Sonar in the Hulahula River, Bruce M. Osborne and Jeff L. Melegari, U. S. Fish and Wildlife Service, Office of Subsistence Management, Fisheries Resource Monitoring Program, Final Report (Study No. 04-103) Arctic National Wildlife Refuge, Alaska, 2006