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**Presentation Title: Using a Mark-Recapture experiment to estimate the abundance of Karluk River steelhead**

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In 2017, a mark-recapture study was implemented to estimate the spawning population of Karluk River steelhead *Oncorhynchus mykiss*. In two sampling trips, 75 steelhead were tagged using Floy brand T-anchor tags and released after gathering age, sex, length and genetic samples. Tagging occurred prior to and during spawning in late April and early May and tags were recovered during normal counting operations at the Karluk River weir from May 24 through the end of July. All steelhead kelts observed at the weir were counted and assessed for tags and 410 steelhead were sampled for age, sex and length information. A total of 4,624 steelhead kelts were counted with 21 tags and/or marks recovered. An estimated 28% of the total 2017 steelhead spawning population were counted as kelts in 2017 leading to a preliminary spawning population estimate of about 16,500 steelhead. Approximately 72% of fish tagged in the marking event were female, and about 59% were female from those sampled at the weir. Age compositions consisted primarily of age 3.2s fish in their first spawning event. Approximately 21% (13 fish) of tagged steelhead were repeat spawners and 2% (1 fish) were multi-repeat spawners. Approximately 7% (26 fish) of steelhead sampled at the weir were repeat spawners and 1% (5 fish) were multi-repeat spawners.

The Karluk River is located on the southwest side of Kodiak Island and supports the largest steelhead sport fishery on Kodiak Island by both catch and angler effort. There is a long history of anglers and subsistence users targeting steelhead in the Karluk River drainage, but the fishery has recently increased in popularity with anglers seeking a remote and uncrowded steelhead fishing destination. Karluk River steelhead return only in the fall from late-September through November and anglers primarily target steelhead in the Karluk River during the month of October at a location known as “the Portage”. In the last 10 years, about 1,500 steelhead have been caught and release annually. Assessment of the steelhead run has occurred primarily through spring kelt counts at a weir focused on counting sockeye salmon at the head of the Karluk Lagoon. Since 2008, counts have ranged from 836 to 4,624 fish and averaged 2,010 fish during this same time. One of the largest counts on record occurred in 2017 and coincided with this study and numerous angler reports of a large fall steelhead run on the Karluk. Counts of out-migrant kelts at the weir are considered only partial counts as spawning and migration occurs from mid-April through early June, while the weir is installed in mid to late-May.