Emigration timing and morphology of adult steelhead in the Situk River, Alaska

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# ABSTRACT

A bipod and picket weir has been used to count and sample steelhead *Oncorhynchus mykiss* kelts emigrating from the Situk River in Southeast Alaska since 1995. This presentation will exhibit kelt count data in relation to trends in environmental variables, size-sex attributes of sampled kelts, and condition factors found in sampled kelts. Passive integrated transponder (PIT) tagging return rates and fishery statistics will also be addressed. The Situk River drainage is located in coastal Southeast Alaska near the northern limit of steelhead distribution in Alaska. The drainage is approximately 44 km long, contains 3 lakes, 2 significant tributaries and encompasses 397 ha. The river mainstem is low gradient rising 1.3 m per km, but the headwater tributaries reach up to 600 m in elevation. Steelhead in the Situk River have been recorded spawning at 97 m in elevation down to 2 m. Peak kelt counts recorded during the last decade have ranged from 12 – 15,000 fish. The most recent year’s count of 7,533 in 2013 is lower than the most recent 10 year average of 9,237 (SE 1,104), but slightly higher than the long-term average of 7,234 (SE 647) kelts. The date that the first steelhead emigrated through the Situk Weir ranged from 30 April to 24 May (median date = 10 May), and the mid-point of emigration varied from 18 May to 16 June (median date = 31 May). The date of the last emigrant ranged from 20 June to 6 August (median date = 17 July). During each year of this study the onset of high daily kelt counts was associated with river temperatures that exceeded 6o C. The average total length of male emigrants averaged 768 mm (SE = 7.4), and females averaged 773 mm (SE = 4.5). Average total length was the largest on record in 2009 for female kelts (824 mm; SE 5.4), and that year also produced the second largest average total length for male kelts (821 mm; SE 8.5). The range of total lengths recorded since 1995 for both sexes was 450 mm to 1,100 mm. The average total length of kelts did not show a consistent up or down trend across years. The number of kelts counted annually showed a negative association with total length of steelhead of both sexes. Throughout this study male kelts had more observable wounds, a higher incidence of fungus growth, were less numerous in samples, and were generally classified lower in condition factor than female kelts. Previously PIT tagged kelts returned to the Situk weir at a constant return rate from 9 to 11% throughout this study. Most PIT tagged kelts that returned, did so only one time, but up to three returns were recorded. The annual sport harvest of steelhead was low throughout the last decade averaging 16 fish (SE = 7.1), but 87 steelhead were harvested in 2012 which was the highest number recorded during this study. The annual catch of steelhead averaged 10,186 (SE 1,171) for the last decade. The most recent catch in 2012 was 10,611. Sport fishing regulations were enacted throughout Southeast Alaska in 1995 to limit harvest of steelhead to one fish per day, two per year, with a size limit of 36 inches or larger. Bait is also not allowed for angling on the Situk River, and a section of the river is closed to angling to protect spawning fish. Steelhead abundance information for the Situk River is available dating back to 1940. However meaningful comparisons are difficult with data prior to 1988 because the weir site location and steelhead survey protocols were not consistent.