Salmonids on the Fringe: Distribution, Habitat use, and Response of Salmonids to Upslope Riparian Forest Composition in High Gradient Headwater Streams, Southeast Alaska[AFS]

Mason D. Bryant and Brenda E. Wright
USDA Forest Service, Pacific Northwest Research Station
2770 Sherwood Ln., 2A, Juneau, AK 99801
mdbryant@fs.fed.us

Nikolas Zymonas
Ecology Department, Fish and Wildlife Program
Montana State University, Bozeman, MT 59717

We compared the species composition, habitat relationships, and longitudinal distribution of salmonids in small, 1st to 2nd order, high gradient headwater streams in two extensively logged watersheds in southeast Alaska. Fish populations were sampled by electrofishing and with minnow traps, and habitat measurements characterized channel morphology, large woody debris, and riparian vegetation. Dolly Varden (*Salvelinus malma*) were predominant in the high gradient reaches and were found in reaches with gradients exceeding 20 percent. Ripe sea-run Dolly Varden were observed in the uppermost accessible reaches. Juvenile coho salmon (*Oncorhynchus kisutch*) fry and parr were also found in high gradient ($\leq$ 10%) reaches and were the dominant species in the low gradient reaches. Juvenile steelhead trout (*O. mykiss*) were present during the spring and fall. Coastal cutthroat trout (*O. clarki clarki*) were found in one stream. Density of all species decreased as gradient increased. Significant and positive relationships were observed between density of Dolly Varden as well as juvenile coho salmon and the abundance of pools. A positive relationship was observed between juvenile coho salmon density and the number of pieces of large wood. The abundance of coho salmon parr was lower in streams with a history of landslides. Salmonids will use high gradient reaches where they are accessible and pools are present. Headwater tributaries comprise a large proportion of the stream length in most watersheds and the combined contribution from these tributaries to the fish community may be large. These results underscore the importance of maintaining continuity throughout the entire watershed.