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Diversity of Juvenile Anadromous Salmonid Assemblages in Coastal Oregon Basins with Different Levels of Timber Harvest

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Abstract. -We examined the relationships of timber harvest, stream habitat complexity, and diversity of juvenile anadromous salmonid assemblages in 14 small- to intermediate-sized basins in coastal Oregon between 1985 and 1989. Diversity (the inverse of a species dominance index) of assemblages in streams in basins with low harvest levels (<25% of the basin area harvested) was greater than in streams in basins with high harvest levels (>25% of the basin area harvested) ($P = 0.02$). Assemblages in basins with high levels of harvest were more dominated by a single species than were assemblages in basins with low harvest. Percent of basin harvested was more strongly associated with assemblage diversity ($P = 0.07$) than were basin area ($P = 0.90$) or gradient ($P = 0.22$) when the influence of the other two factors was controlled. Habitat features were compared between three pairs of streams. Streams in basins with low timber harvest had more complex habitat, as manifested by more large pieces of wood per 100 m ($P < 0.01$). We conclude that a community and basin-level perspective is necessary to fully assess the effects of timber harvest and other human activities on stream fish.