

Predation by hatchery yearling salmonids on wild subyearling salmonids in the freshwater environment: A review of studies, two case histories, and implications for management

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We conducted a literature review on predation by hatchery yearling salmonids on wild subyearling salmonids in the western United States. The review included 14 studies from the Pacific Northwest and California. In most instances, predation by hatchery yearling salmonids on wild subyearling salmonids occurred at low levels. However, when multiple factors contributing to the incidence of predation were met, localized areas of heavy predation were noted. Total prey consumed ranged from 456 to 111 000 subyearlings for the few studies in which enough information was gathered to make the estimate. We examined two of these studies in more detail: one detecting relatively low predation in four western Washington rivers and one detecting relatively high predation in the Trinity River in northern California. In the case of the rivers in western Washington, over 70% of wild subyearlings had migrated by the time hatchery steelhead were planted and those remaining had grown large enough to reduce their vulnerability to predation. In the case of the Trinity River, less than 20% of wild subyearlings had migrated by the time hatchery steelhead were planted and most were small enough to remain highly vulnerable to predation. We found that managers can effectively minimize the predation rate of hatchery yearling salmonids by reducing the spatial or temporal overlap of predator and prey. Unknown is the extent to which low predation rates, which likely occur in most places hatchery yearlings are released, might still negatively impact prey populations that are at low abundance because of other anthropogenic factors.

Keywords: Hatchery, Salmon, Steelhead, Predation, Piscivore