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*Transactions of the American Fisheries Society* 2005;134:44–58**Competition between Hatchery-Reared and Wild Juvenile Chinook Salmon in Enclosures in the Sacramento River, California**

Edward D. Weber and Kurt D. Fausch

*Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, Colorado 80523-1474, USA*

**Abstract.**—We conducted two types of experiments in the upper Sacramento River, California, to test the effects of hatchery-reared juvenile Chinook salmon *Oncorhynchus tshawytscha* on the emigration, growth, and survival of their wild counterparts. In 3 years of displacement experiments, emigration rates from 8-m<sup>2</sup> enclosures into downstream traps were similar between control enclosures that contained 40 wild fish and treatment enclosures to which 33 or 40 hatchery fish were also added. The mean number of wild fish in enclosures at the end of experiments differed by less than one fish between treatments and controls during all 3 years, indicating that hatchery fish prompted few wild fish to emigrate. In 2 years of competition experiments wherein fish could not emigrate, the enclosures contained wild fish (40 fish), wild fish plus hatchery fish (40 wild fish plus 33 or 40 hatchery fish), or wild fish at the same total density as the treatment with wild plus hatchery fish (73 or 80 wild fish). During 2001, survival and specific growth rates of wild fish were similar among treatments, probably because resources were not limiting. During 2002, survival was similar among treatments, but the mean specific growth rate was 0.008 g/d higher in the treatment with 40 wild fish than in the treatment with wild plus hatchery fish (95% confidence interval [CI], 0.005–0.011 g/d). These data indicated a negative effect on wild fish growth of adding hatchery fish. The specific growth rate in the high-density wild fish treatment was intermediate and 0.003 g/d higher than in the treatment with hatchery fish (95% CI, –0.0005 to +0.006 g/d), providing some evidence that hatchery fish had a greater negative effect on wild fish growth than an equal density of wild fish did.

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Tel: 301/897-8616 . Fax: 301/897-8096 . E-mail: [main@fisheries.org](mailto:main@fisheries.org)