Abstract View

Volume 24, Issue 2 (May 2004)

North American Journal of Fisheries Management
Article: pp. 506–517 | Full Text | PDF (453K)

DOI: 10.1577/M03-068.1
North American Journal of Fisheries Management 2004;24:506–517

Ecological Effects of Hatchery-Reared Juvenile Chinook and Coho Salmon on Wild Juvenile Salmonids in Two Washington Streams

Stephen C. Riley

National Marine Fisheries Service, Northwest Fisheries Science Center, Manchester Research Station, Post Office Box 130, Manchester, Washington 98353, USA

Howard J. Fuss and Larry L. LeClair

Washington Department of Fish and Wildlife, 600 Capitol Way North, Olympia, Washington 98501, USA

Abstract.—We observed wild salmonid fry at sites downstream (treatment) and upstream (control) from experimental releases of hatchery-reared Chinook salmon *Oncorhynchus tshawytscha* smolts and coho salmon *O. kisutch* fry in two streams to estimate the effects of hatchery releases on the density, group size, microhabitat use, and size of wild fish. Most hatchery-reared Chinook salmon smolts that were released left treatment sites within a few days; hatchery-reared coho salmon fry remained at treatment sites for at least several weeks. We found limited evidence to suggest that the release of hatchery-reared Chinook salmon smolts or coho salmon fry caused consistent, significant effects on the density, group size, microhabitat use, or size of wild coho salmon fry in the two streams. We observed significant decreases in the densities of wild coho salmon and trout fry (steelhead [anadromous rainbow trout] *O. mykiss* and cutthroat trout *O. clarki* combined) after hatchery-reared Chinook salmon were released, but they did not occur when large numbers of hatchery fish were present at treatment sites. We observed an increase in the group size of wild coho salmon in one stream when Chinook salmon were released, but not in the other stream. We observed few changes in microhabitat use by wild coho salmon fry associated with the release of hatchery-reared fish; most changes were observed in only a single stream or occurred after only some of the releases. The lengths and weights of wild coho salmon fry over the sampling season were not significantly different between treatment and control sites in one study stream. These results suggest that small-scale releases of hatchery-reared Chinook or coho salmon have few significant ecological effects on wild salmonid fry in small, coastal Washington streams, particularly when wild fry occur at low densities.

Received: April 9, 2003; Accepted: July 25, 2003

top