

## **Are Hatchery Effects Forever? - Use of Hatchery Stocks to Reintroduce Extirpated Coho Salmon to the Mid and Upper Columbia Basin**

Peter F. Galbreath<sup>1</sup>, Michael A. Bisbee, Jr.<sup>2</sup>, Cory M. Kamphaus<sup>3</sup> and Todd Newsome<sup>4</sup>

<sup>1</sup> Columbia River Inter-Tribal Fish Commission, 503-731-1250, galp@critfc.org

<sup>2</sup> Nez Perce Tribe – Fisheries Resource Management, 208-791-1871, michaelb@nezperce.org

<sup>3</sup> Yakama Nation - Mid-Columbia Fisheries Program, 509-548-9413, cory@mid-columbia-coho.net

<sup>4</sup> Yakama Nation - Yakima Klickitat Fisheries Program, 509-865-6262, tnews@yakama.com

The Columbia River treaty tribes have been actively involved in efforts to reestablish coho salmon populations within their ceded areas in the Mid and Upper Columbia basin – the native populations having been extirpated from the basin above McNary Dam. The Yakama Nation has enacted reintroduction programs in the Yakima, Wenatchee and Methow rivers, as has the Nez Perce Tribe in the Clearwater River. These programs were initiated by stocking juveniles produced from a lower river hatchery stock (Eagle Creek NFH, Estacada OR), followed by continued supplementation with progressive integration of in-basin adult returns into the program's hatchery broodstock. However, not only was the original stock of out-of-basin origin, it had also been in a segregated hatchery program for well over 15 generations, and could be considered as being highly domesticated. In light of concerns associated with deleterious effects of hatchery rearing on the natural fitness potential of a salmon stock, many would question whether the stock retained the genotypic and phenotypic capacity to reestablish a naturally productive population. In spite of what negative domestication effects may have occurred within this stock, a portion of the reintroduced hatchery smolts not only returned as mature adults to these rivers, but they also successfully spawned, and their natural progeny are returning in generally increasing numbers. There have been dramatic increases in both annual escapement and in total redd counts in each of these subbasins. It would appear that accumulated domestication effects within this out-of-basin hatchery stock are being reduced by the effects of broodstock management and by natural selective forces, creating populations of increasing natural productivity.