It's all in the genes—including the tracking device

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Parentage-based tagging (PBT) is an emerging genetic-based fish tagging method that involves genotyping hatchery broodstock. PBT is a passive non-invasive approach to stock identification because the parents, not the offspring, are genetically sampled at spawning, thereby "tagging" the offspring. This method provides the same information as traditional physical tags but also allows for collection of more detailed information that previously was impossible or impractical to gather using traditional tagging methods.

According to the article published today in the *Canadian Journal of Fisheries and Aquatic Sciences*: "This study in the Snake River basin is one of the first large-scale implementations of PBT in salmonids and lays the foundation for adopting this technology more broadly, thereby allowing the unprecedented ability to mark millions of smolts and an opportunity to address a variety of fisheries-based research and management questions."

Genetically tagging hatchery-reared fish using PBT is extremely efficient because genotyping hundreds of broodstock parents results in millions of tagged offspring. When fully implemented, PBT can "tag" 100% of hatchery-origin fish.

"The role of genetic methods in fisheries management has reached a milestone," says Craig Steele, a researcher at the Idaho Department of Fish and Game's Fish Genetics Laboratory in Eagle, Idaho, and lead author of the study. "The main application of this technology is to

provide information on the origin and age of hatchery fish. But it can also provide additional information relevant to conservation and management efforts including assessments of genetic diversity, relative reproductive success, and the heritability of different physical or behavioral traits."

Since 2008, a regional sampling effort by collaborating state, tribal, and federal agencies has resulted in the implementation of this genetic tagging approach in hatchery-origin steelhead and spring-summer Chinook in the Snake River Basin. The Idaho Department of Fish and Game (IDFG) and the Columbia River Inter-Tribal Fish Commission (CRITFC) verified the accuracy of this new approach and presented the results of their collaborative study in the *Canadian Journal of Fisheries and Aquatic Sciences*.

The IDFG is committed to adopting PBT as a tool for fisheries management. Collaborative efforts with CRITFC are now underway to expand genetic sampling outside the Snake River Basin and throughout the Columbia River Basin. Adopting this genetic approach for large-scale fisheries management positions the region among the first to use this cutting-edge technology.

More information: www.nrcresearchpress.com/doi/a … 1139/cjfas-2012-0451

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