



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Fisheries Science Center
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F/NWC1

Memorandum

6 April, 2005

To: Usha Varanasi, Science Director, NOAA Fisheries, NW Fisheries Science Center
Rob Walton, Division Chief, Salmon Recovery Division, NOAA Fisheries,
Northwest Regional Office
Jeff Koenings, Director, Washington Department of Fish and Wildlife

From: The Puget Sound Technical Recovery Team

Re: Technical review of the AHA model

At your request, the Puget Sound Technical Recovery Team (TRT) hereby submits our synthesis of technical reviews of the All-H Analyzer (AHA) model. As you know, the AHA model was developed by the Hatchery Scientific Review Group (HSRG) as a tool to help hatchery management planning. The state and western Washington treaty tribes have begun to use the AHA model, and there is discussion of applying it broadly in the Columbia River region as a way of examining the joint effects of hatchery, habitat and harvest management on salmon populations. During discussions of hatchery reform and recovery planning with the Shared Strategy (a coalition of tribes, state and federal agencies, local governments, and citizens that has undertaken developing recovery plans for the Puget Sound), Dr. Jeff Koenings of the Washington Department of Fish and Wildlife (WDFW) described a potential role for the AHA model and requested that the Puget Sound Technical Recovery Team (TRT) to review the model. NOAA Fisheries also was interested in potential use of the model in other salmon recovery regions and supported a technical review of the model.

The reviewers were generally in agreement that the strength and most attractive feature of the AHA model is the ability to incorporate information about assumed productivity and capacity from habitat, harvest, and hatchery management in a single “what-if” analysis. Because of its simplicity, it is most useful for heuristic purposes, such as identifying possible hatchery management strategies that are consistent with assumptions about habitat and harvest actions, and weighing the relative merits of alternative hatchery management schemes. The model focuses only on effects of all “H” management strategies on abundance and productivity and does not consider effects on diversity and spatial distribution. A major shortcoming of the model that was reviewed was its lack of documentation, which made it difficult to understand the basis for some of the results. Also, the reviewers pointed out that the inability to actually measure many of the program-specific parameters called for by the model or to incorporate uncertainty in the estimates means that it cannot be used to predict realistic consequences in a way that it

can be used allocate effects between different “H”s or decide “how much is enough” for recovery actions with any known amount of precision..

In short, the review we attach indicates that the AHA model could be a useful tool for evaluating scenarios in recovery planning, provided that the question(s) it can and cannot address are clearly understood. We greatly appreciate the care taken by reviewers in evaluating this model and append their individual comments for your information.

Cc: Billy Frank, Northwest Indian Fisheries Commission