



2005 Accomplishments

TECHNICAL DISCUSSIONS/TOOL DEVELOPMENT

Following up on a series of technical discussions in 2004 that led to the refinement of hatchery reform principles and the development of prototype decision-support tools, HSRG and co-manager scientists and technical staff participated in bi-monthly technical discussions from April through December 2005 on key topics relating to implementing hatchery reform. These topics included refinements to the All-H Analyzer (AHA) and Managing for Success (MFS) tools discussed below; developing a hatchery research agenda (see Appendix E); considering ecological interactions between hatchery and wild fish; and reviewing the products of the co-managers' Risk Assessment Management Project (RAMP).

LLTK facilitated, coordinated, provided conference calling and desktop sharing, and maintained a technical discussions web site as a repository for background materials and working drafts. This facilitated the exchange of information and allowed co-managers from across the Puget Sound and coastal Washington region to participate in the technical discussions.

State, tribal and HSRG scientists developed and tested AHA during technical discussions and regional technical workshops in 2004 (the tool is described in more detail in last year's report to Congress). AHA helps managers explore the likely results of alternative habitat, harvest and hatchery actions and strategies, putting the three "H's" on one page. AHA allows users to apply a scientific approach in the face of the uncertainty always present in natural resource management. AHA fosters accountability, by documenting goals, assumptions, hypotheses, management decisions and the rationale behind these decisions.

AHA is now being used by managers throughout Washington state and on the Columbia River. But there is still need for a practical and cost-effective tool that helps managers monitor, evaluate and adaptively manage salmon and steelhead programs, to ensure they are successful and accountable for results. The HSRG and co-manager scientists worked throughout 2005 to develop such a tool, MFS. MFS will:

- Feature a publicly-accessible, user-friendly web site where decision-makers, technical personnel and other stakeholders can access information, make queries, generate reports, analyze trends, prioritize projects and determine if goals are being met.
- Answer key management questions, while simplifying and/or automating routine management tasks, so that both decision-makers and technical staff have incentive to maintain the system. In this way, it will be both "top down" and "bottom up."
- Answer questions like: "Where are we now? Where are we going? How are we doing? Have we done what we set out to do? Are we getting the expected responses? What will proposed actions cost? What changes do we need to make to reach our goals?"



MFS is available online as a prototype (www.mobrand.com/mfs; log in with user name “public” and password “public”), including hatchery actions and outcomes datasets for Puget Sound and coastal Washington, from the Hatchery Reform Project. When the MFS interface is completed, managers will have a complete set of scientific framework, recommendations and tools for implementing hatchery reform and the new approach to salmon and steelhead management.

LLTK, the HSRG, WDFW, the Northwest Power and Conservation Council and others have begun demonstrating the tools for various interested parties. USFWS—with facilitation assistance from LLTK—is applying AHA, MFS and other Hatchery Reform Project principles and tools in a review of hatchery programs it owns or operates on the Columbia (see USFWS Work in Progress section). WDFW has committed to using AHA to evaluate all stocks it manages and finalizing, hosting and maintaining MFS (see WDFW Work in Progress section).

RESEARCH AND SCIENTIFIC PUBLICATIONS

The HSRG continued in 2005 to oversee a competitive grant program to fund research projects that fill knowledge gaps about using hatcheries to meet harvest and/or conservation goals. In February, the HSRG held its annual research review meeting at the NOAA Sand Point Auditorium in Seattle, receiving reports from funded researchers. Following this review, the HSRG decided to continue funding for two projects: Hamma Hamma Steelhead and Snow Creek Coho.

In June, an HSRG essay entitled *Hatchery Reform in Washington State: Principles and Emerging Issues* was published as the feature article in *Fisheries*, the magazine of the American Fisheries Society (see Appendix K). The HSRG is working on manuscripts providing greater detail on several of these emerging issues in hatchery reform. Those will also be submitted to peer-reviewed journals (see section on HSRG Work in Progress).

As mentioned above, the HSRG worked with co-manager scientists during 2005 technical discussions to develop hatchery research priorities. The HSRG’s resulting technical discussion paper on the topic is attached as Appendix E.

AGENCY SCIENCE TEAMS

(Information below provided by the Washington State Department of Fish and Wildlife)

A central 2005 hatchery reform accomplishment for the WDFW hatchery science team was participating in the development of the MFS tool (see above). Ensuring compatibility with MFS required modifications to existing methods and types of data collected at WDFW hatcheries. WDFW began developing a web-based, hatchery data management application that incorporates the documentation of hatchery broodstock integration/segregation plans and allows remote WDFW fish rearing facilities to organize fish rearing information, and share data with each other and WDFW’s Olympia headquarters. The initial emphasis has been on organizing hatchery data, with a secondary effort to organize various related data sets presently maintained by headquarters staff. This work is expected to continue through 2006–07.



WDFW science staff also evaluated WDFW Chinook and coho hatchery programs in Puget Sound, the coast and the Columbia River regions using the AHA tool, to determine current levels of integration/segregation, and outline potential program modifications to move the programs toward HSRG guidelines. This review resulted in the development of integration/segregation broodstock management plans for six Chinook and one coho program in Puget Sound (Kendall spring Chinook; Marblemount spring, summer and fall Chinook; Issaquah fall Chinook; Wallace summer Chinook and coho) and three coho programs on the Columbia River (Elochoman, Washougal, Kalama; while these Columbia River programs are outside the scope of the HSRG review, WDFW felt that applying HSRG recommendations to the Columbia will aid in the use of WDFW hatcheries for recovery of listed populations in this region). The Chinook plans are now being discussed with the co-managers for implementation in fall 2006.

To lessen potential impacts to listed fish and comply with HSRG recommendations, some hatchery programs were reduced or eliminated. The Elwha Hatchery Chinook program was reduced from 3.85 million to 2.7 million fish. The Hoodspout Hatchery Chinook program was reduced from three million to 2.8 million fingerlings, and from 250,000 to 120,000 yearlings. The Big Beef Chinook program of 200,000 sub-yearlings was eliminated. Coho programs were reduced at George Adams and Soos Creek hatcheries. There were also reductions in steelhead, chum and pink salmon hatchery programs.

Hatchery equipment needed to integrate hatchery broodstocks and increase efficiency was acquired at several hatcheries. These included rearing tanks, broodstock stunning machines, fish pumps, dewatering towers, and an automated snout snipper for coded-wire tag recovery. Ongoing major hatchery renovations, as per HSRG recommendations, include Skookumchuck Hatchery and Palmer Rearing Ponds.

(Information below provided by the Northwest Indian Fisheries Commission)

Tribal hatchery reform funding not devoted to implementation projects at tribal facilities (see below) has been used to support the tribal hatchery science team within the Enhancement Services Division at NWIFC, as well as the tribal representative to the HSRG, based at the Nisqually Tribe. The NWIFC hatchery reform-funded science team consisted of a geneticist, a biometrician and a salmon ecologist, who are supervised by a senior geneticist. The geneticists provided technical support for commission and tribal staff on issues involving genetics and salmon recovery including: appropriate uses of hatcheries in salmon recovery programs; planning, implementation and monitoring of hatchery research; risk assessment; and mixed stock fishery analysis using genetic data. The salmon ecologist provided technical support for tribal programs on issues involving ecology and artificial production such as the role of fish behavior, interspecies interactions and freshwater and nearshore habitats in designing hatchery programs; planning, implementation and monitoring of research for hatchery activities; and risk assessment of hatchery programs. The biometrician provided technical support for NWIFC and tribal enhancement staff on experimental design and monitoring, statistical analysis and database maintenance.

FY 2005 tribal science team work activities:

- NWIFC staff geneticists worked with tribes on genetic issues associated with the development of hatchery management and reform plans; helped collect and analyze morphological and DNA data



on all Puget Sound Chinook and Lake Ozette sockeye; developed tribal research to evaluate genetic changes in hatchery and wild populations; helped the Tulalip Tribe establish its genetics laboratory for monitoring its hatchery programs; reviewed proposals for reintroducing salmon to areas in the Puget Sound where they had been extirpated; reviewed proposals for new hatchery programs in the Nooksack and White rivers; provided technical expertise to the HSRG in the continuing development of the AHA tool and in identifying research priorities for hatchery reform; coordinated information exchange between the co-managers, the HSRG, other independent scientific review groups such as the Recovery Science Review Panel, federal regulatory agencies, and the Shared Strategy for Salmon Recovery in Puget Sound; and developed the only probabilistic quantitative models available to assess genetic and ecological risks of hatchery programs.

- The NWIFC staff biometrician worked with the tribes to develop statistical techniques for assessing the contribution of hatchery and wild fish to natural spawning aggregations; analyzed data on returns of hatchery fish, which is useful for evaluating the success of hatchery programs; and provided statistical consulting on tribal research and monitoring projects. The biometrician has assisted the HSRG in developing monitoring and evaluation criteria that can be used to determine the success of a hatchery program in meeting its goals and objectives. These criteria will also consider what data is needed for future research on hatcheries. The biometrician worked individually with tribes in the different regions to tailor monitoring and evaluation criteria to the features and circumstances of their region.
- The NWIFC salmon ecologist helped tribes develop and implement estuary research for investigating co-occurrence between hatchery and wild fish; expanded the acoustic tracking study of juvenile salmon migration initiated by the tribes to a multi-agency, Puget Sound effort; continued to build upon a literature database on ecological interactions; and is developing a database of tribal hatchery reform recommendations and completed hatchery reform projects. The ecologist also worked with individual tribes to assist in development and implementation of ecological studies funded through the Hatchery Reform effort.
- New hatchery management software and a database have been developed and distributed, to greatly improve the amount of information available to hatchery managers. The software, called HatPro, improves monitoring, management and planning capabilities for hatchery managers, as well as allowing on-site electronic transfer of key hatchery data directly to state, tribal and federal agencies. Four group training workshops, and numerous on-site training sessions, have been provided to tribal hatchery managers.

Implementation Projects

The goal of tribal hatchery management is to protect, restore and enhance the productivity, abundance, and diversity of salmon and their ecosystems to sustain ceremonial, subsistence, commercial and recreational fisheries, non-consumptive fish benefits and other cultural and ecological values. The purpose of these grants is to promote that goal through hatchery reform by providing financial resources for: 1) scientific support for integrating ecological and genetic factors affecting hatchery success into hatchery management; 2) identifying and developing projects that improve, evaluate, or monitor hatchery practices and strategies; or 3) modifying or constructing hatchery facilities to improve hatchery operations in tribal hatcheries.



To this end, the western Washington Treaty tribes have used hatchery reform funding to: 1) compile and maintain accurate information on tribal programs in hatchery and genetic management plans (HGMPs); 2) employ a team of three scientists at NWIFC to provide scientific support to the tribes for hatchery reform initiatives; 3) develop and award funding for hatchery reform projects through a rigorous process to solicit, develop and evaluate proposals; and 4) coordinate with NOAA Fisheries and the HSRG to ensure that tribal hatcheries programs pose no jeopardy to ESA listed species and are consistent with the intended management goals, respectively.

The HSRG's independent review and recommendations of hatchery programs have been an important source of ideas and criteria for hatchery reform proposals and projects. Improvements in the process for developing tribal hatchery reform proposals, including technical review of the proposals by NWIFC scientists and others, has helped maintain competitive balance among proposals from different tribes and is leading to higher quality projects.

In Fiscal Year (FY) 2005, the competitive selection and ranking process resulted in seventeen projects receiving tribal hatchery reform funding for a total funding amount of \$535,610. Twelve of these projects focused on improving, evaluating or monitoring hatchery practices (Type I projects), for a cumulative funding amount of \$428,362. Five tribal hatchery reform projects received funding to improve tribal hatchery facilities and operations (Type II projects), for a cumulative cost of \$107,248.

The majority of funded projects focused on Chinook salmon (*Oncorhynchus tshawytscha*), which is listed under ESA. This reflects the high priority given to projects associated with salmon recovery in the project ranking process and the importance of this species to the tribes. The largest portion of projects funded to improve hatchery practices (Type I) focused on adult abundance and contribution monitoring, followed by projects to develop and/or improve baseline genetic data for broodstock selection and monitoring. Other projects focused on evaluating rearing and release strategies and critical knowledge gaps in understanding juvenile production, habitat use and interactions between hatchery and wild fish. Type II projects allowed tribal programs to upgrade facility structures and equipment, allowing for improved operational efficiency and management options. Appendix C summarizes funded projects by rank order, respective of project type and associated project cost, and then provides greater detail on each project. The table below provides the number and description of tribal hatchery reform projects funded for FY 2005.

Project Type	Number of Projects Funded	Project Description Category
I	2	Broodstock choice, juvenile rearing and release strategies
I	5	Adult abundance and contribution monitoring
I	2	Hatchery / wild juvenile production and habitat use
I	3	Genetic monitoring and characterization
II	5	Hatchery facility improvements



(Information below provided by the US Fish and Wildlife Service)

FY 2005 USFWS science team work activities included:

- Participation of a USFWS fish geneticist as a member of the HSRG, including preparation of reports and scientific papers.
- Implementing HSRG recommendations at Quilcene, Makah and Quinault NFHs.
- Participation in a USFWS Hatchery Review Working Group that designed a process for applying the HSRG's principles, tools and recommendations to all USFWS facilities on the Columbia (see section on USFWS Work in Progress).

COMMUNICATIONS AND OUTREACH

Progress Report to Congress

In April, the HSRG and LLTK provided Congress with an annual report on hatchery reform implementation. The report includes the HSRG's synopsis and evaluation of state, tribal and federal regional progress updates. While emphasizing the overall good progress made by the co-managers, the HSRG reiterated the necessity of both systemic reform and specific improvements in a watershed context.

Regional Salmon Management Processes

Throughout 2005, LLTK and subcontractors Gordon Thomas Honeywell helped the co-managers reach consensus on changes to salmon management documents and processes through which they can implement hatchery reform. This included serving on the Development Committee of the Shared Strategy for Salmon Recovery in Puget Sound and facilitating regional co-manager decision-making meetings (most actively in the Stillaguamish/Snohomish, Hood Canal and South Sound regions). Included in the appendices are letters from WDFW Director Jeff Koenings to the chairs of the Puget Sound and coastal Washington tribal chairs (Appendix H) and to Shared Strategy for Salmon Recovery in Puget Sound chair Bill Ruckelshaus (Appendix I) about each of these processes.

Hatchery Reform Conference

In October, LLTK sponsored and coordinated *Hatchery Reform: Managing for Success*, a day-long conference held in Seattle. The Mountaineers (one of the Northwest's oldest and largest conservation organizations) hosted the conference and provided the meeting facilities. The event highlighted the independent scientific recommendations and co-manager implementation actions resulting from the Puget Sound and Coastal Washington Hatchery Reform Project. Joint presentations by WDFW, treaty Indian tribes, and the HSRG included the role of hatcheries, and hatchery reform in the future of salmon recovery and sustainable fisheries. Conference attendees included congressional and other federal agency officials and staff; legislative and gubernatorial officials and staff; tribal officials and staff; state and tribal agency representatives; and scientific, academic, fishing, and environmental representatives. The conference was cablecast by TV-W, the public access channel of Washington state government. A summary document is attached separately as Appendix L and/or available from



the project's web site. Included in Appendix J is a letter from WDFW Director Jeff Koenings to all WDFW staff about the conference.

Hatchery Reform Coalition

LLTK has convened a coalition of organizations to build a constituency for hatchery reform. The Hatchery Reform Coalition includes organizations that are not always on the same side on all issues, but all have agreed that the HSRG's principles and recommendations represent the right way to proceed with managing the hatchery system. The Mountaineers, Northwest Sportsfishing Industry Association, Puget Sound Anglers, Recreational Fishing Alliance, Trout Unlimited, Wild Steelhead Coalition and other recreation, sports fishing and conservation organizations have signed letters of support for hatchery reform as recommended by the HSRG. The Coalition now features 20 regional and national organizations and advocates, with a combined membership base greater than 300,000. LLTK coordinated and facilitated meetings approximately every other month during 2005, where Coalition members received presentations from state, tribal and federal managers on topics central to hatchery reform.

Other Communications/Outreach

Throughout 2005, LLTK worked with the HSRG and the co-managers to implement a strategy for communicating Hatchery Reform Project background, activities and progress to federal, state, tribal, regional and local stakeholders (see Appendix B for more detail). This included providing briefings for legislators, agency managers and their staffs; making presentations at a wide range of venues; authoring or being interviewed for articles on the project for mainstream and stakeholder media publications; keeping project communication materials (such as the project overview sheet, website and PowerPoint presentation) updated; and many other activities. Preparing for the Hatchery Reform Conference in October 2005 (see above) also required a concerted communications effort.