

## **Northwest Power and Conservation Council -- Fish Tagging Forum Meeting**

**May 10, 2012 – Portland, OR**

### **Draft Meeting Notes**

**Attendees: See Meeting Roster on FTF Web Page**

#### Meeting Objectives and Recap of Last Meeting – Kevin Kytola

Kevin reviewed the agenda. Primary purpose of the meeting is to cover coded wire tag (CWT) technology during today's meeting. In response to a question about the purpose of the Fish Tagging Forum (FTF), Kevin reviewed the FTF Evaluation Framework. The FTF charter and 2009 ISAB Tagging Report were also mentioned. Program and cost effectiveness will also be part of the FTF work.

Tony G. – We also want the FTF to address why we are tagging fish and if any improvements be made in our various tagging programs. Tony reviewed the various tagging technologies under review by the FTF.

Guy N. – the adequacy of the various tagging programs is also an issue.

#### Report from Management Question Subcommittee – Guy Norman (WDFW) and Jim Ruff (NPCC)

Jim Ruff reviewed the status of the work done so far by the Management Question Subcommittee.

Larry Rutter asked why the subcommittee is trying to match the various management questions to particular forums, since these forums do not necessarily pay for funding of tagging programs/projects? He also pointed out the cost of a tag is not the full cost of a tagging technology.

Guy/Tony – this spreadsheet needs more work, and we recognize there is a base infrastructure cost required for each of the tagging technologies.

Kevin – the subcommittee needs to document the rationale for how the group arrived at its consensus rankings.

Larry R. – why isn't the PFMC listed as a forum under the Harvest tab? It's a major forum that covers the ocean harvest of fall Chinook and Willamette salmon stocks, among others.

Guy/Pete – no specific reason; PFMC could and should be added to the spreadsheet and ranked accordingly.

## **Presentations on the Coded Wire Tag (CWT) Program**

(see <http://www.nwcouncil.org/fw/tag/meetings.asp> to review each CWT presentation below.)

### Overview of Coded Wire Tag (CWT) Program – George Nandor (PSMFC)

See George's powerpoint slides for background information about CWT program, the types of CWT marking studies, and CWT marking procedures. About 56 million smolts are coded wire tagged each year at about 260 hatcheries along the West Coast at a total cost of about \$9 M (a cost of roughly 17 cents per fish). In CRB, between 22-24 M fish are coded wire tagged. In response to a question, the emphasis of the CWT Program is on tagging Chinook and coho, with smaller numbers of steelhead and only a few sockeye tagged each year. BPA funds approximately 29% of the CWT program.

George said there is over 40 years of CWT data available, so there is a large historic database of information available. Also, the CWT Program supports coast-wide harvest management, which George said is connected to Council's F&WL Program and critical to protecting listed stocks in the Columbia River Basin (CRB).

Goal is to sample about 20% from each of the fisheries for CWTs; there is also escapement sampling (with a goal of sampling 5% from each spawning ground and 100% hatchery returns).

There was much discussion about the slide on CWT sampling effort.

Tony -- How are expansions of total catch done for each fishery? George -- It's done by various agencies for each of the fisheries – need to ask them how they do it.

Tony – I calculate the recovery rate for total CR CWTs recovered compared to total catch is about 0.35 percent; is that correct?

Larry R. – goal was to have something like an 80% probability of being within 20% of true value of recovering CWTs for hatchery stocks recovered in fisheries.

Phil R. – what are the parameters for sampling, who decides what they are and what the expansion factors are, e.g., what is the system and who manages it?

Pete H. – salmon managers determine the sampling rates based on the catch rates. For example even through there is a general tributary sample rate of 5%, there are some tributaries in Idaho where the management questions requires a sampling rate is 10 to 20%.

Barbara Shields (BPA) – see recent AFS publication “Precision and Accuracy of Estimators of the Proportion of Hatchery-Origin Spawners.” This paper recommended that, to maximize the accuracy and precision of estimating the proportion of hatchery-origin spawners in spawning areas (p), 100% of hatchery releases should be tagged. [This paper will also be posted on the FTF web site.]

George – PSMFC manages the CWT program system, including registering all the codes that are used in fish each year, by each agency.

Tony – is there a ceiling on number of wire codes that can be used? No, that's not a problem at this point.

George also covered the PSMFC's CWT data management and Regional Mark Information System (RMIS) as part of the Regional Mark Processing Center.

Tony – how long does it take for a fish snout with a CWT to be analyzed?

George/Dan R. – regional fish agencies prioritize CWT data based on management needs and will turn some high priority data (i.e., in-season fishery) within about a weeks' time. Instances where turn-around time has been reported to be as long as two years are outliers.

Dan – Our goal at WDFW is to get our CWT data into RMIS within one year; first Chinook data, then coho. Each agency has their own data management systems to support shorter-term analysis and decision-making.

Pete H. – fish run characteristics influence data management timing (e.g., steelhead data is collected year-round where Chinook data is more seasonal).

Phil – How can CWTs be used to help evaluate habitat effectiveness and what confidence level should be used?

George – would need to tag a stock within a particular habitat and measure recoveries over time.

Pete/Larry – it all depends on the management question being asked. Using CWTs to evaluate habitat effectiveness is probably not the tagging technology of choice because there are not enough tag recoveries. We also have mortality rates throughout the salmon life cycle to account for using any tagging technology.

Dave Marvin – CWTs are the major tag technology used in ocean for harvest management.

Barbara S. – We shouldn't forget about genetic mark technology, which can also be used in ocean fisheries using genetic stock identification, or GSI. This year geneticists have been able to identify up to 98% of the parentage of fish harvested in ocean.

Tony – we'll address comparisons of all the various tagging technologies toward the end of the FTF once we've heard about each of the tagging technologies.

Blane B. – In my opinion, the FTF should focus most on tag coordination and not technology.

## CWTs and the Pacific Salmon Treaty – Larry Rutter (NOAA Fisheries)

Larry said the CWT system has provided greater advancements in salmon harvest management than other technologies. He said that various steps have been taken over the years by the PSC to review and improve the CWT Program. He noted that while genetic stock identification (GSI) can tell us where a fish may have originated, it cannot tell us the overall survival rate of a stock.

Larry said various steps have been implemented to improve the data reporting systems in OR and WA. Also developing a decision tool to assist with tagging and sampling targets, which is now in final stages of development. NOAA receives tens of millions of dollars annually to help support regional CWT program, which goes to funding states and tribes' participation. The PSC does evaluate other technologies. For example, the PSC is working on coordination and logistics with genetic marking and providing some funding for development of SNIPS.

Larry -- While genetic marking technology has improved in recent years, the data provided by the CWT Program is essential to implementation of the PST regimes for Chinook and coho salmon and the region will continue to rely on CWT data for the foreseeable future. Double index tagging has not yet been completely proven for Chinook.

Larry R. – While there is a fisheries management and data collection system, there is not one entity that serves a controlling body for decision making. Management of the system relies on coordination and collaboration.

Jim G. – BPA has developed a similar decision tool to help salmon managers with tagging and sampling targets at [onefishtwofish.net](http://onefishtwofish.net).

Dan R. -- CWTIT has funded several beneficial CWT improvement projects, including: a) ODFW's CWT data base (data loggers); and b) WDFW's tule fall Chinook monitoring study designs (mark-recapture programs).

## Use of CWT System in Chinook Management – Marianne McClure (CRITFC)

Marianne identified and discussed six major aspects or benefits of the CWT Program/system: 1) it exists as a system, 2) it is an important system for PST, 3) it faces certain challenges, 4) it is irreplaceable now (although salmon managers are evaluating ways to incorporate GSI data in PST), 5) it needs to be bolstered, and 6) it is efficient.

Shawn Narum (CRITFC) – GSI does have biases and misclassification. But genetic parentage methodology (PBT) has much greater accuracy due to higher recovery rates.

Marianne – the PST folks are trying now to integrate and use data from both CWT and genetic technologies.

Pete – again, the specific tagging technology used will depend on what the management question is and what data are needed to address the specific question.

Tony – the primary purpose of the FTF is to identify connections between the various tagging technologies and the Council’s F&WL Program; we’re not trying to re-invent the tagging needs of the PST.

In response to a question about the availability of CWT data for wild fish, Marianne explained that CWT system uses hatchery fish as surrogates for wild stocks, and we CWT a few wild stocks such as Hanford reach fall Chinook, SR fall Chinook, and Deschutes and Lewis River Chinook.

Pete – we need to know if/when changes occur in various salmon fisheries, and then we need to be sampling to understand effects of such harvest changes.

Larry – the ocean is often referred to as a “black box” of uncertain ocean related mortality. The CWT derived data related to harvest exploitation rates takes some uncertainty out of the equation.

#### CWTs and Chinook Fishery Regulation Assessment Model (FRAM) -- Peter McHugh (WDFW)

This talk relates primarily to PFMC and Stevens-Magnuson Act processes. FRAM is a fishery (Chinook and coho) impact assessment tool which uses scalars for abundance and catch effort.

There is also PSC’s Chinook Technical Committee (CTC) Chinook model, which provides inputs to FRAM for Alaska and Canada fisheries.

Tony – who defines what the core stocks are and how is the model calibrated?

Larry -- Those stocks were identified in late 1970s by fishery experts from U.S. and Canada. The base period for Chinook fishery is 1979-1982. During this period of time fishing was extensive, therefore data on the location of stocks is broad and robust.

Peter – FRAM is a complex model with an unwieldy calibration process; but model verification is done every year.

Tony – Will the model be updated to use a more modern platform?

Peter – It would be more important to make improvements in the CWT sampling system first.

#### CWTs for Columbia River Conservation and Fish Management – Cindy LeFleur (WDFW)

CWT recovery is done at about 12 hatcheries in CRB, as well as in 20-30 tributaries for natural spawners, to get total returns by age and stock.

Tony – Is NOAA comfortable with this approach to estimating harvest rates on ESA stocks?

Response – Yes; CWTs can also provide an indication of where various stocks migrate in ocean.

Guy -- U.S. v OR TAC analyzed fall Chinook run timing of various upriver stocks and didn't find much difference in run timing between the stocks.

Cindy – CWTs are also used in-season to modify the fisheries.

Shawn N. – Based on GSI analysis, we've found that median return timing of SR fall Chinook at BON Dam has been consistently later over the last 3 years; we have a paper published on results.

Cindy – Due to the extensive supplementation program in Snake River, U.S. v OR TAC should probably re-evaluate fall Chinook run timing information since it's based on older information.

Tony – Why aren't CWTs used more on steelhead? Response: Because there's no commercial fishery on steelhead, and in-river fisheries are based on hatchery steelhead.

Pete – Only about 1.6 million SR steelhead are CW tagged (about 20 percent).

Larry R. – Spring/summer Chinook from the Snake River Basin in Idaho don't typically get caught in the coastal fishery and are therefore not subject to fishery management decisions.

The CWT Program: A Conservation Perspective for SR Fall Chinook – Micki Varney (ODFW)

A strength of the CWT Program is to measure stock trends over time.

Run reconstruction at Lower Granite Dam (LWG) is important to determine the hatchery/natural percentages.

Tony – what's the CWT mortality and rejection rates?

George -- The tag mortality rate is very low and tag rejection rate is measured after 30 days. It's typically 99 percent on those fish tagged by machine.

Dave M. – How do you get a lower stray rate at LWG compared to collections at the rack at Lyons Ferry Hatchery?

Micki – There is a higher stray rate at Lyons Ferry Hatchery from other Columbia River stocks, which is why we're trapping upstream at Lower Granite Dam instead of at Ice Harbor Dam.

Micki – It is important to integrate all the tagging data sources for SR fall Chinook.

Improving the CWT System: PSC CWT Implementation Team – Kris Ryding (WDFW)

The 2008 PST dictated that each country (U.S. and Canada) provide \$1.5M annually over five years to improve the CWT Program. Improvements are Chinook-centric, but also relate to coho.

CWTIT has identified high, medium and low priority CWT improvement projects.

Kevin – how do these data base improvements relate to PSMFC’s data base? Response: These are improvements to each state/tribe’s data base system that feeds information into PSMFC’s RMIS.

Tony – How is BPA funding broken out for the CWT Program? Can that information be provided? The FTF will need similar cost information for all the tagging methodologies.

Rick G. – I’m still working on the master BPA funded tagging projects spreadsheet. Let me consider how best to present the cost break-down information for each tagging technology.

George – You should review the two CWT cost hand-outs I provided earlier today to see if it meets your needs. [The two cost hand-outs provided by PSMFC will be posted on FTF web site.]

Dan – Here’s just one example from the Skamania process. BPA is funding two components: 1) PIT sampling of fisheries; and 2) new data loggers and equipment to improve the CWT program.

Larry – The FTF should understand the CWTIT program funding is for incremental improvements to the overall CWT Program. Some folks are worried what will happen in the CWT Program when the funding for improvements runs out after five years.

Kevin – what technological advancements or innovations are being made in CWT Program?

Marianne/George – there have been improvements made in the detection of CWTs, e.g., digital wands, and in the composition of the tags themselves. We have also developed the automated marking trailers. [See Northwest Marine Technologies web site for examples.]

#### Coordination of Tag and Mark Recovery Programs – Dan Rawding (WDFW)

Dan -- Even if we were to move to a new tagging technology, we would still need to have the CWT recovery platform, which works for genetic markers and PIT tags as well.

Dan -- Management coordination occurs through PST, U.S. v OR, and PMFC, as well as ESA (incidental harvest rates).

Dan -- PIT tags are now starting to be used for run forecasts and in-season management, but it is a complementary tool for the CWT Program.

Dan – Relative to PIT tags, CWT are less likely to be expelled. PIT tags are often expelled from female spawners, and are not likely to be present in gutted fish. Because of the expulsion rate, PIT tags are not scanned for during spawning ground surveys. Additionally, the shed tags can be detected in the “bed load” of the system in dead fish, free floating, or in predators.

### Meeting Wrap-Up and action items

- Management question subcommittee needs to continue work to finish the spreadsheet; add Fisheries Conservation Management Act column to list of Forums in Harvest tab.
- Management question subcommittee will document the basis for their recommended categorization of forums/drivers as DR, I, or N.
- Council staff will post the CWT cost handouts and BPA AFS paper on our FTF web site.
- Rick Golden will compile cost information for that part of CWT Program funded by BPA in a manner similar to what was presented for by Kris Ryding for CWTIT.

### Next meeting agenda items:

- Re-visit FTF scope and objectives.
- Get a status report from Management Question Subcommittee on completing work on the spreadsheet.
- Decide how best to cover the remaining tagging technologies.
- Identify specific information needs for a second pass at each of the specific tagging technologies presented to date.
- Begin defining cost and program effectiveness

**Next FTF meeting date will be on June 5<sup>th</sup>, 2012, in the Council's large conference room in Portland.**