

2007 REGIONAL MARK COMMITTEE MEETING

Hosted by CRITFC (Marianne McClure) and ODFW (Christine Mallette)

April 25-26, 2007

Kah-Nee-Ta Lodge, Warm Springs, Oregon

APRIL 25: WEDNESDAY: 8:00 AM; Meeting Rm: "Jefferson"

1. General business items (George Nandor, PSMFC) /DM-10051 (audio file referenced in <..\..\..\..\RMPC\2007 Mark Meeting\Olympus - Audio Recordings\20070425\DM-10051.wav>)

- Welcome and introductions
- Introduction of George Nandor, RMPC Program Manager, PSMFC
- 2008 meeting to be in California:
Lighthouse Lodge and Suites, Pacific Grove, CA
Tel: 800-858-1249 for Reservations
<http://www.lhls.com/index.htm>
April 2 and April 3, 2008
\$84/ night for rooms in the Lodge

2. Regional Mark Processing Center operations and announcements

A. Discussion of new RMPC Strategic Plan for 2006-2009 (George Nandor) /DM-10052

There will be presented for open review and discussion the RMPC Strategic Plan that was developed last year as the principal guiding documentation for RMPC projects, activities, and related work statements. This document will be handed out at the meeting and is also readily available on the RMPC web site.

George went over some highlights of main points from the RMPC Strategic Plan. The Plan was developed to provide some direction for where we're going. Comments are welcome. The Plan's purpose is to describe what we currently do and what we plan to do, to identify the goals and strategies of the RMPC, and is focused on the short term (3 years). The RMPC Strategic Plan highlights the RMPC's commitment to provide regional coordination and management of databases, and to support the needs of member states, committees, and commissions. The RMPC vision for the future includes improved communication and improved effectiveness of the CWT program.

- RMPC Operating philosophy- maintain good relationships with cooperators
- RMPC Principles- apply best management practices in operating RMPC, QA/QC, promote sharing of expertise and resources, timeliness of data reporting
- RMPC Goals/ Strategies- improve and maintain integrity of data elements, deal with data issues and discrepancies, support ongoing revision of CWT data exchange formats, assist agencies in reporting data, utilize new technologies

B. Status of CWT data files and RMIS web site (Dan Webb, PSMFC) /DM-10053

- California now has submitted near-to or all untagged/unassociated Releases;
- Others...

Dan Webb gave a PowerPoint presentation

The Yakama Nation is now a reporting agency. The Yurok tribe is also working with RMPC to report their recoveries. There are 2 datasets awaiting validation from CDFO and CRFC. Some questions were raised about Yakama/ CRFC data submissions (releases). Dan and Marianne will resolve these issues.

WDFW is currently the only catch/effort submitting agency. RMIS would appreciate other agencies contributing their catch/effort data when they can.

A request was made to change the cursor on the website to a hand rollover cursor so people can identify that they can click on the data boxes to drill down for more information. It's not intuitive to users that the boxes are clickable.

C. Improvements needed in processing Release datasets (Jim Longwill, PSMFC; Bill Johnson, ADFG)
[/DM-10054](#)

The RMPC is working on incorporating the ability to identify a full data submission vs. a partial submission and thereby allow for automatically identifying and purging an agency's invalid release records;

Jim discussed RMPC Enhancements to Release data processing. Points made:

- There is an increasing need to keep a cleaner Releases file... in which release groups can be identified as 'bogus' or 'obsolete' and removed permanently from the file.
- We have always done this manually because
 - we have never known whether a reporting agency will send their entire set of releases in a given upload
 - to ensure referential integrity w/ tagged release groups there is the need to check for possible recoveries when a release group is flagged for removal
 - requests to remove release records have been infrequent
- Now.. we have found that this is inadequate. It does not serve the needs of agencies. Some agencies such as ADFG now rely on a higher level of automation in their management practices and need to have a less cumbersome way of keeping out bogus release records... etc.
- So, we are working on modifying the Releases data file processing in order to identify a so-called "full-set" submission.. allow that option for reporting agencies..
- For Releases.. we will designate a certain string that when used in the file name of the uploaded file (say "FULL-SET") it will flag our load/validation process to
 - disallow any records to pass validation as loadable unless all records validate
 - compare to releases table and identify by submission date-stamp the not-included rows
 - if a row is not included and if RECORD_CODE is "T" then scan the recoveries table to see if there are any status-1 recoveries linked to the given release group
 - if OK, remove the release group permanently from the releases table

It was also suggested to have a designation for all other (non-full-set) uploads.. e.g. labeling them as "PARTIAL-SET".

D. Discussion of RMIS GIS project and related map projects for CWT data (Jim Longwill, Bill Johnson)
[/DM-10055](#)

The RMPC has new maps for RMIS Region/Basin codes – w/ proposed revisions to the coding system. This will be presented along with a request for agencies to review the Region & Basin definitions in their location codes and work with Jim Longwill to make any corrections needed to ensure that the codes correspond to the maps. The new availability of PSC Format Location and Release data files on the RMPC FTP site will be mentioned. Bill Johnson may also be able to illustrate a Google maps feature now developed at the ADFG CWT Laboratory.

Using screen shots in a Powerpoint presentation, Bill Johnson demonstrated a new mapping application developed at ADFG Tag Lab & based on GoogleMaps. This app is a powerful tool for interactively tracking information regarding Alaska CWT release data.

- visit site: <http://www.taglab.org/CWT/reports/map-facility.asp>
- The user can choose “Run Report to Screen.” The resulting table has a column labeled “Facility” for which blue entries are hyperlinks. When each link is clicked it gives users the map of localized areas in Alaska and provides an interactive experience w/ release data summarized for each release site, facility, etc.

Jim provided a handout with a chart of location codes. The Location Codes are now tied to a regional hydrography. Jim also provided a booklet of draft pdf map series. These maps are also available online with a comments feature. We are currently looking for input and comments on how to revise the maps. Points were presented as follows:

- Now, we have for the first time ever created a geographic representation of the Region / Basin codes in the Locations table.. codes that have now been in use for many years to select datasets from RMIS..
- We have for a long time seen the need to enhance the geographic elements of CWT data. The ultimate goal is to get as many locations as possible referenced by lat/long coordinates, or at least represented in some way geographically, especially for Hatchery/facility, Release Site, and Recovery Site. In the meantime, however, we have found that enhancing the Region / Basin system is a much more feasible immediate - term goal. We have now gone some distance toward that goal.
- Many thanks (in absentia) to our GIS expert Brett Holycross at PSMFC who has produced this map series representing PSC Domain/Region/Basin in a GIS-based regional hydrography.
- Hence, we have this draft map series -- a set of interlinked, PDF formatted documents which will form the basis of a "phase I" map based data retrieval mechanism for RMIS. See the booklets & copies of CWT data specification, chapter 13, codes.
- This map series is available in four incarnations as follows:
 - 1) booklets that you have now. Do hand this off to CWT location coding folks at your office
 - 2) wall posters (also available in electronic form by request)
 - 3) in digital form online at the RMIS website in PDF interlinked document set
 - 4) in digital form-- same document set but with PDF annotations "Comments" added to the maps -- this is the version shown in the demo by Jim.

- There are numerous cases where the definitions of Region, Basin are not geographically consistent and comprehensive. It will take some time to finalize these.. We are seeking input on how to revise and enhance these maps and the coding system. Using the electronic version- "WITH comments", Jim will be contacting each reporting agency that creates and manages location codes to help clean up the boundary issues with this draft and take in any comments and proposed changes.
- Jim also noted that the RMPC is now providing a regularly updated copy of the PSC format location codes and releases files on the public FTP Internet site (<ftp.rmmpc.org>). This is now being done weekly -- run Sunday mornings.

E. RMPC announces: Symposium on Anadromous Salmonid Tagging and Identification Techniques in the Greater Pacific Region (George Nandor) /[DM-10057](#)

This symposium will identify the key tagging, marking and other identification technologies and illustrate the strengths of each. It will also explore ways in which these technologies are being used to meet diverse needs including harvest management, stock identification, hatchery evaluation, hatchery contribution, fish passage within river systems, and assessment of stock restoration efforts.

- Dates: **October 9 & 10, 2007**
- Location: **Governor Hotel - Portland, Oregon**

A handout was provided to the group of the symposium announcement and the draft agenda. George asked everybody to help in providing names of possible speakers for the various topics on the agenda. More information will be available soon on the RMPC website.

3. Status of 2008 funding for the Regional Mark Processing Center (George Nandor) /[DM-10058](#)

The RMPC continues to receive only level funding from the three funding agencies, USFWS, NMFS and BPA. Future BPA funding could decline because of their "in lieu" analyses calling for more funding from other responsible agencies. USFWS funding is delayed this year due to delays in the federal budget process. In order to maintain a robust program, it will be necessary to look for other funding sources in the long term.

4. Update on mass marking & changes in agency tagging levels for 2007 (George Nandor) /[DM-10059](#)

- California: Greatly increased tagging levels: (now to tag 25% of all releases, etc.);
- Columbia River Chinook releases: now set to be 100% mass marked;
- Update sought regarding status of intended joint memorandum to program managers regarding desequestering of the LV clip on steelhead (see MM Minutes 2006, Appendix P, #5).

Mark Kimbel pointed out that some of the mid-Columbia River Chinook releases in Washington are not mass marked yet due to funding shortages, but should be all mass marked next year. **See handout 4-D.**

Paul Kline of IDFG gave a brief update of marked releases in Idaho. He also stated that IDFG will no longer be using the LV clip as a flag for coded wire tagged steelhead, beginning with brood year 2007. Paul expressed IDFG's concern about the apparent lack of using electronic detection efforts to look for wire tagged steelhead in the Deschutes River during the sport fishery creel survey.

See handouts 4-C(1-3)

Stan Allen discussed the progress of the new marking programs in California and their successful use of the AutoFish trailers. **See handout 4-A.**

Dave Zajac reported that all USFWS releases are mass marked as per federal law. Dave also reported that in USFWS Region 1, about 8 million coded wire tagged fish are scheduled for release this year, 5 million in the Pacific NW and an additional 3 million in California.

Christine Mallette reviewed ODFW's marked releases and provided a handout. **See handouts 4-B(1,2)**

Ron Olson reviewed NWIFC marked releases and provided a summary handout.

- Columbia River Chinook releases: now set to be 100% mass marked; 'Mitchell Act' marking.. now increased from 1/2 to all [-- now up nearly to 12 million].
- CDFO/Doug ..Chinook tag levels slightly higher for this year, DIT program to continue at same levels... Coho.. also a slight increase
- CRITFC/Marianne.. note change in Yakama Nation (see next agenda item)
- ADFG/Bill.. indicated no significant changes in tagging levels

Update sought regarding status of intended joint memorandum to program managers regarding deaccessing of the LV clip on steelhead (see MM Minutes 2006, Appendix P, #5). Noted that memo is not out yet but exists in draft form. Oregon continues to use LV clip .. local usage only. Idaho.. refer to steelhead sheet (4-C-2) for LV clip status. Scott M. mentioned the ongoing confusion regarding usage of LV clip & how affects strategy for adult run reconstruction. Clarification is sought regarding this issue.

5. Yakama Nation's need for new tag coordinator code & new agency code(s) (Marianne McClure; Bill Bosch, YAKA) /DM-10060

Discuss Yakama's production program and Bill Bosch's role as Yakama Nation's tag coordinator.

After brief discussion, the consensus was that Bill Bosch would be the tag and data coordinator for the Yakama Nation, since he is working very closely with the data. This eliminates having the data pass from Bill to Marianne McClure at CRITFC, before being reported to the RMPC database.

6. Update of the coded wire tag system along the Pacific coast and worldwide (Geraldine Vander Haegen, NMT) /DM-10061

PowerPoint presentation from NMT for informational purposes and historical context provided us with a look at some of the other projects they are working on. They can now tag just about anything except for a sea cucumber!

- Great Lakes program- beginning at tagging 2 million fish, eventually moving up to 30 million; also tagging a lot of lamprey in the Great Lakes- tagged as larvae in the streams, recovered when they come back to spawn
- Ohrid Trout Tagging in Macedonia and Albania
- Eel Tagging in Norway
- Blue Crab Tagging in Chesapeake Bay

- Naked Carp Tagging in China
- Clam Tagging in WA- law enforcement sting operation
- Mealworms: Tag Retention through Metamorphosis

7. Discussion of sequential coded wire tags (Geraldine Vander Haegen) /DM-10062 (SEE ALSO /DM-10068)

Geraldine will lead a discussion of what sequential coded wire tags are, how they work, and the reporting issues associated with them.

A PowerPoint Presentation from NMT

Redundant formatting of sequential CWT means that you get one or more of the individual numbers, so you have to cut a tag and save it, and cut a tag and use it.

Sequential CWT are useful for identifying small batches that aren't known in advance.

There is a place to put the individual numbers in the recoveries database. However, is it useful if you can't put the information into releases? It's useful to the researcher to have access to the information.

Is it asking too much for recovery agencies to change everything they do in order to process these little used tags?

It's all rolled up into one release record- if someone is recovering, you're going to want to know what they have, but not all recovery agencies are going to read the seqCWT.

Are they being read inconsistently? This is a data quality issue. Should they be in the database? We need to make sure they are being consistently reported as sequential, not binary.

For the reading of the recoveries, it is not required to read the additional code, but most recovery agencies are doing it anyway. The Mark Committee can leave it as optional, encourage people to do it, or require people to do it.

What do you do if you can't read a sequence number? It would be nice to be able to report whatever digits are readable; or say the whole sequence number is readable or unreadable (would require a new \column in the recovery database). They would like to see as much information that is available from the tag as possible.

The Data Standards Committee needs to review these issues and provide recommendations regarding the use of tag codes and/or sequence numbers for recoveries.

This should also be an Agenda item for Symposium- explain seqCWT and their uses/ limitations.

8. Northwest Marine Technology (Guy Thornburgh, Geraldine Vander Haegen, Ken Molitor) /DM-10063

- Product update: NMT will update the Committee on products (e.g., progress with the T13 Tunnel Detector, the improved V Detector, the new Individual Fish Counter, AutoFish System enhancements).
- Strengthening the CWT system
- Question and Answer session

A Tagging and Marking Symposium to be held in Auckland, New Zealand in February 2008.

NMT provided stickers to put on the doors of the MK 4's and they can send them out by request.

New improvements have been made to the tag detection wands. The detection range has been increased to 3.2 cm, and they can rebuild an old wand for free any time (as long as the upgrade doesn't require a new nose). If they can't rebuild it, they'll tell you what it will cost to upgrade. It cannot be determined by the serial number if the wand will pass or fail the free upgrade test.

A request was made to have this information quantified in a memo from NMT. George will get the information from Geraldine to post on the PSMFC website as well.

They have previously discouraged the use of half-length tags in programs with electronic detection, but are now working on a new type of tag that will improve the detection rate up to the level of a standard tag. Is there an interest in developing a platinum-cobalt wire half-length tag? They have potential for use in tagging steelhead.

T-13 detectors are finished and working. They can handle live fish, and will detect any tag of any size in the tunnel.

NMT is proposing to change the flag format on the tags and they provided a handout for committee review. **See handout 8-A /also as Appendix E.** No objections were made. It is OK to proceed, but NMT needs to send out notice of their decision to everyone who uses tags.

There are 22 automated trailers out there currently. NMT has worked a lot on small fish testing this year, but they need another year before they are ready. The trailers should be able to handle fish down to 53mm in length by 2009. There is an Autofish workshop scheduled for September 5 and 6, 2007 in Oregon. They also have a new individual fish counter that can be mounted on the marking table that tracks each person's count and the trailer's count as a whole. It can be programmed to a target number.

9. Test of new NMT fish counter (Ken Phillipson, NWIFC) [/DM-10064](#)

PowerPoint presentation. **See handout 9-A.**

Results of test were written up and available at the meeting as a handout. **See handout 9A/ Appendix F.**

There were no problems with taggers sharing a counter. They tested the counters each morning with 50 fish run through counter. The counters can be recalibrated as needed.

The method of counting before was weight counts, which they found over estimated counts by up to 20%.

A complete set of 12 station counters is \$11,600.

In future modifications, it would be good if the alarm system could be set up to be more visible / audible.

10. Update on PSC Selective Fishery Evaluation Committee activities (Ron Olson and Marianna Alexandersdottir, NWIFC)

PowerPoint presentation- “Review of PSC Activities” /[DM-10065](#)

Primary Regional Coordination Work Group (RCWG) tasks include the annual coordination report, annual review of MM proposals to evaluate impacts on the CWT system, and miscellaneous assignments from PSC (none this year).

The total percentage of fish that are mass marked is continuing to expand coast-wide.

Sampling methods- WA, OR, ID electronic; AK, OR coast, CA visual; Canada mixed

Need to bring up the definitions of electronic and visual detection at the data standards meeting; Potential for misinterpretation if electronic detection equipment is used as a pre-screening tool where only adclipped beep-positive heads are processed. This should be coded as a 'visual' sample since only the cwts from adclipped fish would be recovered. There needs to be an education process in place to ensure data are coded appropriately as there may not be a clear distinction for field personnel.

For example, Canada introduced pre-screening on Chinook where all chinook were tubed (due to mass marking) but only adclipped heads were processed. This is considered 'visual' even though tubes are used in the field. Likewise, if Alaska introduces electronic detection equipment due to mass marking of northern migrating chinook, if they only process adclipped fish, it would still be considered 'visual' sampling.

Total proposed mass marking is for 38 million coho and 87 million Chinook.

No significant increases in coho mass marking.
16.3 million (23%) increase in Chinook mass marking.

Adequate sampling and reporting of CWT recoveries of unmarked DIT releases is only occurring in WA; CWT still remains functional for ad-marked fish.

Recommendations: the sampling programs are not sufficiently coordinated to support analysis by PSC technical committees. PSC should continue to support technical and policy processes to develop agreements to clarify responsibilities for maintaining a functional CWT system.

PowerPoint Presentation- “Evaluation of Mark Selective Fisheries” /[DM-10066](#)

Analytical Workgroup of Selective Fishery Committee works on tasks as they come up with regard to coho and MSFs; does DIT work? She says yes, it does.

Use DIT to monitor return rate to hatchery and test the difference between marked and unmarked component of DIT (a double mark system is necessary to evaluate MSFs). It needs to be a double mark on a group of fish that can be sampled with high precision at escapement, e.g., hatchery returns sampled at 100%.

The monitoring function evaluates the overall impact of the MSF, comparing the return rates of the marked and unmarked fish.

Estimation of exploitation rates function: total difference between marked and unmarked components of a DIT provides for a total MSF exploitation rate estimate.

Can make estimates for individual fishery exploitation rates, but there is the potential for bias.

So far:

Have analyzed coho data brood years 1995-1997, MSFs that have been prosecuted for coho have not shown a significant impact for individual stocks, but when averaged over regions and years there are significant impacts for the coastal stocks.

Chinook MSFs expanding in WA; no significant difference between marked and unmarked components of DIT.

Columbia River- no evaluation is possible because no DIT, and where they have DIT escapement was not sampled appropriately.

As we are exploring our way forward with MSF, there's no way to evaluate what is happening without DIT and no way to make an unbiased estimate of total MSF exploitation rates.

If your fish are going to pass through an MSF jurisdiction, you won't be able to evaluate the impact of the fisheries on your stocks without DIT.

Mortality rates are a big question that no one is currently working on.

11. Update on PSC CWT Workgroup: Implementation of Expert Panel Recommendations (Marianna Alexandersdottir) [/DM-10067](#)

It was decided in the 2006 meeting to await the final recommendations of the CWT Workgroup in order to update the "Regional Coordination and Agreements on Marking & Tagging Pacific Coast Salmonids." as well as re-visit this issue in 2007 (see MM Minutes 2006, Appendix P, #4).

PowerPoint presentation: "CWT Workgroup Action Plan"

They have been tasked by PSC Commissioners to come up with an Action Plan to implement recommendations of the expert panel. The initial emphasis of the Action Plan will be identifying deficiencies in the CWT system.

Finding #1- CWT system is the only technology that is currently capable of providing the data required by the PSC's Chinook and Coho technical committees.

Basis: Current management system based on stock, age, and fishery specific exploitation rates.
Recommendation #1: Correct current deficiencies in CWT system by improving precision and minimizing bias and error through sample design, QA/QC.

Variance is a function of precision and can be measured and controlled by sample size; Bias is a function of accuracy and cannot be measured but can be controlled by sample design.

Categories of issues identified:

Tagging issues (important production regions are not represented by indicator stocks, determination of appropriate tagging numbers) .

Sampling programs (low sample rates, non-representative sampling, incomplete sampling coverage in a fishery or of an escapement on spawning grounds, sampling methods).

Estimation of total harvest and escapement being sampled (uncertainty in estimates, bias in estimates)

Data validation and reporting (timeliness of reporting, completeness, data collection, reporting and validation).

They are currently working on regional reviews to identify specific problems within regions and identifying and prioritizing solutions- including cost estimates. They hope to figure out where things are not happening the way we know they should be happening.

Recommendation #2- develop criteria for the precision of statistics to be estimated from CWT recovery Data.

Recommendation #3- develop a decision-theoretic model.

Hope to have their report done by end of May, 2007.

Adjourn: 5:00 PM

5:30 – 9:00 PM – Dinner and evening event at Kah-Nee-Ta Lodge: Tribute to Dr. Ken Johnson:

- 5:30-6:30 PM cocktails/social hour
- 6:30 to 9:00 PM salmon dinner in the Salmon Bake area, prepared by Kah-Nee-Ta

APRIL 26: THURSDAY: Reconvene at 8:00 AM; Meeting Rm: "Jefferson"

12. Discuss status of proposed "PSC Data Exchange Format V4.1" (Mark Kimbel, WDFW) /[DM-10079](#)

This was a request from WDFW's data folks- Susan Markey led discussion

Changes were made to the database in 2004, but some of those changes have since disappeared, while other changes were discussed but have yet to be implemented. Her hope is to move this process along and make the previously discussed changes happen.

The already agreed upon changes include: a way to accommodate enumeration of Canadian fishery snouts, be more clear about selective fishery descriptions, a way to report pass-through fishery recoveries.

Susan encourages the Mark Committee to encourage the PSC Committee to move forward with these changes. Kathy Fraser and George will discuss these issues and work through the Data Standards group to facilitate the changes in a timely manner.

The pass-through fishery recoveries change can be implemented via an email to the PSC Committee from the Data Standards group- Kathy Fraser will write the email to start the process and she requests that Susan send an email to the Chinook co-chairs that will describe the change and its impact over time.

13. Data reporting situation in California (George Nandor) [/DM-10080](#)

Klamath/Trinity R system: A process is underway to coordinate reporting of in-river and hatchery returns. However, in response to a need for these data, the RMPC is now undertaking the task of obtaining raw recovery, catch/sample information from each tribe and agency separately until a coordination process is put in place.

The RMPC is obtaining freshwater recovery data from CDFG and tribes with terminal fisheries in the Klamath system. Until recently, there have been no Klamath River Basin freshwater recoveries reported. The RMPC has received data from the Yurok tribe, and is working to get the data formatted properly. CDFG is still looking how to best organize themselves in the area, and we hope to begin receiving data from them within the next year.

14. Any special marking requests? (George Nandor) [/DM-10081](#)

- Marking variance requests for adipose-only marking studies
- Marking requests involving use of blank wire

Christine had a special request for agency-only tagging of fall run Chinook, to be released in the Umatilla River. This is a continuation of a program they've been implementing for many years. She provided the completed request form and provided it as a handout at the meeting. **See handout 14-A /Appendix G.** There were no objections to the request.

Kathy has two stocks of sockeye that will be tagged. None will be ad clipped. They will tag two groups of 55,000 each with agency-only tags, and use blank wire for an additional 10,000 smolts. She needs to look at charter and complete needed variance request paperwork through PSMFC. No objections were raised to the request.

Follow up- Stocks using blank wire go to Alaska, which doesn't do electronic sampling, so that should be ok. Can they still use blank wire in a species that has no coast-wide sampling? They are phasing out any existing stocks of blank wire currently held by agencies. CDFO is the only agency using blank wire (and they won't be recovered) so it's ok. No objections.

15. High-seas sampling program (Adrian Celewycz, NMFS-AK) [/DM-10082](#)

A. Annual presentation of high-seas fisheries and interceptions of CWTs;

PowerPoint presentation- "High seas CWT recoveries in 2005 and 2006"

Covers the by-catch in the Pollack, Whiting/ Hake trawl fisheries; historic harvesting of ESU Chinook, juvenile salmonid research.

Chinook by-catch trending upwards since 2002. They are unsure as to why 2000 was such a peak year.

Some people were interested in where the CWT chum were from. Adrian will send follow-up information on that, and also on the Oregon anomaly.

- B.** Proposal to have the database of CWT releases of ESA-listed ESUs managed by the RMPC and hosted on RMIS.

Adrian proposes that RMPC maintain a copy of the existing ESA database as a self-contained release table, which would be a static and informational tool. This would include the entire historical database (including time prior to listing).

He is unsure if it has undergone any sort of review. Perhaps technical review team should look at it as well, or have a disclaimer on RMIS. Adrian's office would be the reporting agency.

An idea was raised to link to the data externally through StreamNet, and provide a static file only, with a link to the data and a link to the report.

There was consensus on posting the data on StreamNet with a link from RMIS. Adrian will send the data to Jim.

16. Presentation: "Overview of Deschutes fall Chinook stock assessment and restoration programs" (Chris Brun, CRITFC) [/DM-10083](#)

PowerPoint Presentation: **"Deschutes River fall Chinook salmon stock assessment and restoration"**

The Deschutes River is also important for lamprey, bull trout, and steelhead.

Program objectives: improve adult escapement estimates, provide information on ocean distribution and Columbia River exploitation rates through CWT program, restore juvenile rearing habitat.

Mark-Recapture Escapement Estimate- one of three naturally spawning runs, an "escapement indicator stock", through trapping and redd counts (problems with poor water visibility may result in inaccurate counts- a consistent problem). Also radio tagging- 20% of marked fish are strays, also collecting fin clips to perform genetic analysis. When redd counting conditions are poor, existing methodology may over-estimate escapement rates.

CWT tagging of juveniles- determine if hatchery fish can be used as surrogates for Deschutes River fish for determining ocean distribution and exploitation, determine if above Sherar's falls run component is unique by spawning fidelity; use seines & net pens, labor intensive, tagged and ad clipped, tagging 40,000 fish.

Habitat Restoration- issues on the reservation (40 mile border along river) due to livestock, roads; methods include road removal, riparian fencing, and riparian planting.

Seeing more coho, some sockeye as well- don't tag them, but keep a record of what they find.

17. Additional Agenda Item- Review of RMPC website, recent changes to the website /DM-10084

What is appropriate for inclusion on the RMPC website?

We could begin a forum discussion to solicit input from people as to what they'd like to see on the website, outside of the structure of the database.

RMPC is currently updating the content and images. They have recently completed two parts of the Overview section, added navigation arrows, eliminated links to data types, and added links to lists of releasing agencies, sampling agencies, location agencies.

The CWT Overview section would be a good place to link to the PSC Expert Panel report.

Would like to have the Locations Schema document updated (most recent version is 1989!)

Can use Internet Explorer to ftp files directly to a directory- anyone is welcome to send an email to Dan with a request for instructions on how to do this

Does RMIS want to consider a subcommittee for ideas on web content, layout, publications, links, etc?
RMIS currently doesn't have a good feedback process. People like having an annual update on the agenda at these meetings to review ideas, address concerns, get feedback.

Add GIS as a forum topic to centralize the conversation.

Adjourn: 12:00 Noon

Afternoon: 1:00+ PM – Site visit to the Warm Springs National Fish Hatchery

Tour the adult Chinook salmon sorting device that separates live tagged and untagged adults to support their "integrated" hatchery program approach. An explanation of the program will be included.

We could tour the rest of the facility as well if there is interest.

The hatchery is about a 10 minute drive from Kah-Nee-Ta Lodge.

Mike Paiya, Warm Springs NFH Manager, gave a tour of the facility to Mark Meeting group. Highlights were the adult handling and spawning facility, the automated fish sorter to separate tagged fish from untagged fish and the AutoFish trailer operations. Mike also explained the effects of water born fish pathogens on hatchery operations and hatchery broodstock selection techniques to minimize genetic divergence from the natural fish.

Appendices

Appendix A- RMPC Strategic Plan

Appendix B- Location Code Charts

Appendix C- Draft Map Series

Appendix D- Symposium Announcement flyer

Appendix E- NMT Design Change Proposal, handout 8A

Appendix F- NMT Fish Counter Evaluation, handout 9A

Appendix G- ODFW Marking Variance Request form, handout 14-A

Appendix H- Mass Marking Updates, handouts 4A-4D

Appendix I- 2007 Mark Meeting Attendees/Roster

Appendix A:

RMPC Strategic Plan



REGIONAL MARK PROCESSING CENTER

Strategic Plan 2006 - 2009

Purpose:

The purpose of this strategic plan is to describe the identity, goals, strategies, and activities of the Pacific States Marine Fisheries Commission (PSMFC) Regional Mark Processing Center (RMPC). This plan is focused on the near term (~3 years) and will be revised as technology, agency needs, or other external factors change.

Comments or suggestions may be submitted to any RMPC staff member and will be evaluated by Project Manager George Nandor (503 595-3100 george_nandor@psmfc.org).

Mission Statement:

The RMPC uniquely exists to provide essential services to international, state, federal, tribal and other fisheries organizations. These services include:

- Regional coordination of salmonid tagging and fin marking programs.
- Direction and management of region wide databases of information relating to the marking and coded-wire tagging of salmonids.
- Development and maintenance of online computer applications for querying and reporting from the databases known collectively as the Regional Mark Information System (RMIS).
- Supporting and facilitating the ongoing needs of:
 - the member states of Pacific States Marine Fisheries Commission
 - the Regional Committee on Marking and Tagging (Mark Committee)
 - the Pacific Salmon Commission (PSC)

Vision Statement:

Our vision of who we are:

- The RMPC is the central repository for all coded-wire tagged and otherwise associated release, catch, sample, and recovery data regarding anadromous salmonids in the greater Pacific Coast Region of the United States of America.
- We recognize this strategic role as established by international coast wide agreement.
- We also recognize that new opportunities arise that will enable us to better serve resource management entities.

Our vision of our future:

- The RMPC personnel will strive to more effectively communicate and cooperate at all levels utilizing technologies to support various agencies in their efforts to make timely and adaptive decisions.
- We seek to continually improve the effectiveness of coded-wire tags and related data management and data exchange.
- We seek to expand our services to include new marking technologies as they emerge and become adopted.

Operating Philosophy:

RMPC staff strives to maintain logical, open, harmonious, and proactive relationships with all projects, agencies, and the general public in order to best serve our mission.

RMPC is committed to assisting the fish management agencies in developing local data systems to expedite and simplify entry and flow of all fisheries data relevant to coast wide needs.

RMPC places high value on maintaining and reporting objective scientific information suitable for guiding, planning, researching, monitoring, managing, evaluating and policy making related to anadromous salmonids. The project believes that the data should be maintained independently from analysis and interpretation, and the project does not attempt to draw conclusions or make recommendations.

RMPC values a regional approach to data sharing and research and is committed to applying its existing database systems and expertise to collectively warehouse agency datasets and render them publicly available.

RMPC personnel are committed to serving our constituents and the public in a responsive, timely, and ethical manner.

Principles:

The RMPC follows a number of best practices data management principles. The RMPC also wishes to develop a consistent policy related to data collected or developed within the framework of the Pacific States Marine Fisheries Commission, Pacific Salmon Commission (US-Canada), and other agencies involved in data exchange. Furthermore, the RMPC encourages other resource and data management entities to consider similar principles.

- Fisheries data collected with public funds and provided to the RMPC are considered publicly owned and will be made available.
- A regionally agreed upon core set of quality assurance and quality control principles is necessary to assure data accuracy.
- Data collected for management purposes are important. Agencies should strive to make them available well before the next cycle of management decisions or actions.

- Timeliness of processing and exchange of agency datasets is of great importance.
- Costs should be conserved by facilitating sharing of staff expertise, time and system resources among programs both internal and external to the Pacific States Marine Fisheries Commission.

Key External Factors:

Return rate and source stock data provided by coded-wire tags are used in a wide variety of fishery stock assessment, fishery management, and research applications that address hatchery practices, distribution, fishery contribution, fishery impact rates, hatchery/wild interactions, straying, and natural population status.

Coded-wire tag information is a crucial component of the Pacific Salmon Commission, Pacific Fishery Management Council, Columbia River Fish Management Plan, Federal Endangered Species Act, Northwest Power and Conservation Council, and Bonneville Power Administration programs and processes.

The introduction of mass marking and mark selective fisheries (beginning 1996) has reduced the viability of the coast wide CWT system and thus caused resource agencies to evaluate other marking technologies, including genetic and Radio Frequency Identification (RFID) technologies for fish identification purposes.

Efforts to protect threatened and endangered stocks has resulted in “weak stock” harvest management in mixed stock fisheries, resulting in the need for greater stock assessment information in continually shorter time frames.

Ongoing changes in resource management policies and stock marking practices demand continual changes in data reporting requirements.

External constituents and Pacific States Marine Fisheries Commission’s expectations for RMPC accountability increase existing emphasis on responsive, efficient, cost-effective operations. Partner agencies and private groups rely increasingly on RMPC staff to provide organization and leadership, and to address data management and regional coordination issues in a timely, professional, and effective manner.

Following the 1985 Pacific Salmon Treaty, the Pacific Salmon Commission designated the RMPC as the single U.S. site to exchange all coded-wire tag information with Canada in a standardized PSC format on a regular and timely basis. Canada likewise forwards all of its CWT data to the RMPC where it is validated and then merged into the regional database.

Goals and Strategies:

The following goals and strategies for the RMPC project are intended to guide the project over the three years. As information technology improves, and as data collection agencies adopt and implement newer technology, these goals will be adjusted to take advantage of the increased capabilities.

Data Management

Goals:

- Maintain and improve the integrity of all data elements within the RMPC databases.
 - Identify data issues in a timely manner and provide measures for correcting the discrepancies
 - Create data integrity reports when issues are identified and make reports available for data providing agencies and members of the Pacific Salmon Commission's Data Standards Working Group (DSWG) to review.
 - Identify consistent offenders of the Pacific Salmon Commission data standards to the Data Standards Working Group for assistance in correcting chronic data issues.
 - Assist the "PSC CWT Working Group" on addressing and resolving data inconsistencies and reporting problems identified in the Report of the Expert Panel on the Future of the Coded Wire Tag Recovery Program for Pacific Salmon.
- Maintain and upgrade the international database for all CWT releases, recoveries, and related datasets.
 - Assign highest priority to rigorous error checking and loading datasets into the permanent online database as data are made available from the States and other agencies.
 - Ensure timeliness of data processing.
 - Support the Data Standards Working Group in the development and ongoing revision of CWT data exchange formats.
- Serve as the official United States of America site for Pacific Coast CWT data exchange with Canada, using the standardized PSC format.
 - Post U.S. datasets to Canada Department of Fisheries and Oceans (CDFO) as they are validated.
 - Provide Canadian data sets to U.S. agencies on a request basis.
 - Host an Internet based forum for discussions and decisions directed to the maintenance and upgrade of the Pacific Salmon Commission data exchange specifications.
 - Maintain and upgrade the Pacific Salmon Commission data exchange specifications documentation.

- Assist agencies in the collection and reporting of fish identification data pertinent to the RMPC mission.
 - Provide data reporting applications for agencies with limited resource capabilities.
 - Provide onsite assistance as needed for agencies struggling with data reporting issues, some of which have become critical to resource management.
 - Accommodate new data management needs as new fish marking technologies become regionally adopted.
- Embrace and utilize geographic representation of data.
 - Acquire the necessary spatial data elements to enable development of geographical query systems.
- Maintain and enhance the RMPC system environment by utilizing the best available hardware and software technologies.
 - Regularly monitor system database activities, and maintain a backup and recovery procedure for the RMPC computer systems and databases.
 - Periodically undertake evaluation and capacity planning of system hardware needs, backup and recovery requirements, and database management software needs.
 - Implement new information and technologies found most beneficial for enhancement.
 - Acquire, install, and configure new equipment as required for RMPC database operation needs.

Regional Coordination

Goals:

- Provide Pacific Coast-wide coordination and serve on regional committees that include involvement with both fin marking and coded-wire tags.
 - Participate in the Pacific Salmon Commission's Data Sharing Committee in the ongoing evaluation of the international data exchange requirements.
 - Organize and chair the annual "Mark Meeting" to address current issues on new or revised regional marking agreements.
- Increase communication and assistance to the various agencies providing data to the coded-wire tag system through proactive interaction.
 - Contact each reporting agency at least twice a year to offer assistance regarding any data reporting problems that may arise.
 - Continually assess new needs for reporting based on current information management and usage.

- Increase communication and proactively assist various data users relying on coded-wire tag data for making informed decisions.
 - Work directly with data managers, researchers, and other various data users as needed to identify their data requirement needs.
 - Facilitate improved coordination and quality of salmonid marking studies by distributing new information on experimental and sampling design, estimation and statistical procedures, and stock identification procedures.
- Enhance awareness of new and existing marking technologies and maintain engagement with the regional forums in which they are researched, evaluated and made available.
 - Identify new marking technologies as they become known and available.
 - Attend meetings region wide regarding new and existing marking technologies pertinent to the RMPC mission at all levels and assertively present RMPC services and capabilities as opportunities arise.
 - Organize and convene symposiums and workshops on various aspects of fish marking technologies and data management issues.

Application Development and Enhancement

Goals:

- Maintain and enhance the online query applications targeted toward meeting the needs of data users. These tools comprise the Regional Mark Information System (RMIS) suite of user applications.
 - Continually seek input from region wide fishery data users as well as the general public in order to improve the application to meet their data needs.
 - Provide quality help documentation and in-person training (off site instruction when necessary) for RMIS users as needed to facilitate optimal use of RMIS.
- Maintain and enhance the RMIS Data Exchange (RDE) application to assist data reporting agencies to prepare and submit relevant data sets to the RMPC in standardized formats on a regular basis.
 - Continually seek input from region-wide data reporting agencies to improve the application to meet their data reporting needs.
 - Provide quality help documentation and in-person training (off site instruction when necessary) for RDE users as needed to facilitate optimal use of RDE.
- Maintain an up-to-date Web presence for the RMPC project.
 - Update Web site content on a regular basis as information changes pertinent to the RMPC.
 - Conduct yearly review of the overall RMPC Web site for consistency of information, content, and layout as it relates to the Pacific States Marine Fisheries Commission and other commission project Web sites.
- Introduce a multi-resolution Geographical Information System (GIS) mapping application to query the CWT database of all release and recovery data sets and retrieve subsets of these data from RMIS.

- Survey RMIS users to ascertain their view of the value of a mapping query application.
- Acquire and develop data elements necessary for geo-referencing coast wide datasets pertinent to the RMPC mission.
- Obtain core GIS components including maps and layers that are consistent in scale and attributes coast wide and in Canada.
- Work with StreamNet staff in a collaborative effort to achieve project tasks.

Employee Development

Goals:

- Increase employee awareness of current issues and technologies.
 - Identify new marking technologies as they become known and available.
 - Study fisheries research literature and periodically query peers for information on fisheries issues and upcoming events.
 - Monitor key trade journals and agency press releases pertaining to fisheries issues and events. These publications include (but are not limited to):

PSMFC Website – Upcoming meetings;

National Oceanic and Atmospheric Administration
(NOAA) Fisheries “FishNews” wire;

NOAA: Northwest Regional Office;

NOAA: Northwest Fisheries Science Center;

American Fisheries Society (AFS) journal: “Transactions of
the American Fisheries Society”;

AFS journal: “North American Journal of Fisheries Management”;

PSC – Events and Conferences;

California Department of Fish and Game – Events.

- Attend meetings region wide regarding new marking technologies pertinent to the RMPC mission at the federal, state, and local levels. These may include:

American Fisheries Society meetings and symposiums;

The Northwest Fish Culture Conference;

World Aquaculture Society meetings;

Other regional conferences, meetings and symposiums.

- Provide and encourage personal and professional training opportunities.
 - Assess employee strengths and weaknesses relative to computer programming languages and tools currently used by the RMPC project and provide training as required.
 - Provide advanced training to staff as appropriate for their technical areas of responsibility.
 - Identify and attend computing technology related classes, seminars, or trade shows as deemed relevant to RMPC needs.
 - Divide tasks among staff to optimize RMPC productivity and relative use of skill sets.
 - Provide cross training as necessary to ensure consistent back-up support of all areas of technical responsibility.

- Promote a customer focused environment both internal and external to the RMPC.
 - Maintain staff participation in Pacific States Marine Fisheries Commission's Information Technology meetings.
 - Regularly hold focused RMPC internal staff meetings pertinent to all active projects and tasks, including incidental user requests.
 - Commit staff efforts to timely response of user requests.

Budget Development and Monitoring

Goals:

- Seek new funding sources for the RMPC project.
 - Partner with other project managers to develop a strategy for identifying and obtaining new funding.
 - Identify potential federal and other available grants.
 - Develop proposals to seek potential funds through identified fund sources.

- Review and analyze the RMPC budget monthly to maintain an awareness of budget surpluses or shortfalls, and the need to modify operating practices accordingly.
 - RMPC manager will adequately review the "Monthly Budget Status Reports of Expenditures."
 - RMPC manager will seek Pacific States Marine Fisheries Commission fiscal department assistance and training toward understanding and evaluating the budget statements.
 - Maintain an awareness of the RMPC computer system resource needs and requirements in order to plan for future growth.

These goals and strategies will be used and referred to on an ongoing basis by the RMPC staff to direct projects and activities, and guide related statements of work and other documentation.

Appendix B:

Location Code Charts

Link to document:

http://www.rmpec.org/files/PSC_V40_Specification.pdf

and see: Chapter 13, p. 70.

Appendix C:

Draft pdf Map Booklet

Link to maps online:

ftp://ftp.rmhc.org/pub/maps/PSC_All_Vers1_2_070417.pdf

Appendix D:

Symposium Announcement

Symposium on Anadromous Salmonid Tagging and Identification Techniques in the Greater Pacific Region

When: October 9 & 10, 2007 **Where:** The Governor Hotel - Portland, Oregon

Purpose: The ongoing challenges of salmonid identification and fisheries management now exist in a world of multiple identification technologies. This symposium will identify the key tagging, marking and other identification technologies and illustrate the strengths of each. It will also explore ways in which these technologies are being used to meet diverse needs including harvest management, stock identification, hatchery evaluation, hatchery contribution, fish passage within river systems, and assessment of stock restoration efforts.

This event is intended to provide a rare opportunity for interaction among research peers, hatchery managers, and various fisheries professionals. It seeks to facilitate a better understanding of tagging and identification technologies and their optimal utilization throughout the Pacific Region.

Who Should Attend: Fishery resource managers, researchers, hatchery program managers, fisheries managers, and other professionals who make decisions based upon the usage of salmonid tagging and identification technologies.

Organizer: Pacific States Marine Fisheries Commission and the Regional Mark Processing Center staff

Sponsors: Pacific States Marine Fisheries Commission

Goals: The symposium expects to accomplish the following:

Provide a forum to discuss regional marking and tagging issues exchange
Highlight relative strengths of different identification technologies in the context of different needs;
Identify key issues of stock identification facing resource managers;
Explain the practical need for use of multiple marking and tagging technologies;
Identify how salmonid identification tools are used by state, federal, tribal, and private entities region wide;
Identify future direction and needs for tagging and identifying salmonids.
Proceedings of the symposium will be compiled and made available.

Agenda:

Day 1

9:00 am: Welcome – Randy Fisher, Executive Director PSMFC

Key Note Address - ?

9:30 am Panel Discussion – Current marking and tagging issues

How do the current marking and tagging programs meet fisheries management needs and how do they not?

Managing ocean fisheries.

Managing inland fisheries.

Managing Tribal fisheries.

Managing hatchery broodstocks.

Managing ESA listed stocks for recovery.

10:30 – 10:50 am Break

10:50 – 12:00 Panel Discussion (continued) – Current marking and tagging issues

12:00 – 1:00 pm Lunch

1:00 pm – 2:45 pm Expert presentations by type of mark.

Coded Wire Tags

PIT Tags

2:45 – 3:10 pm Break

3:10 – 5:00 pm Expert presentations continued

RFID Tags

Other (Thermal marks (otoliths), Surface marks (Brands, Floy tags, etc.)

5:00 – 7:00 pm Evening Social and exhibits of marking and tagging techniques and projects

Agenda (continued):

Day 2

8:00 – 10:00 am Expert Presentations by type of mark

Mass Marking
Genetic Stock Identification

10:00 – 10:20 am Break

10:20 – 12:00 Expert presentations continued

Genetic Stock Identification
Acoustic Tags
Other?

12:00 – 1:00 pm Lunch

1:00 – 4:00 pm Panel Discussion – What do we need to do to improve tagging programs?

Issues for Panel Consideration:

1. Data management, sharing
2. Geographic location coding
3. Sampling size, design
4. Recovery techniques
5. Query & reporting systems

4:00 pm – 5:00 pm Wrap-up Discussion – Where do we go from here? What is in the future?

Other possible agenda items:

- . Double Index Tagging (DIT) – Is it working or not?
- . Coded wire tagged release sub-groups – Do they adequately represent the whole group?
How many fish should be tagged to represent the group?

Appendix E:

**Design Change Proposal from
NMT**

Decimal Coded Wire Tag™

2007 Design Change Proposal

Request for Comments

Introduction

Northwest Marine Technology, Inc. (NMT) is investigating the possibility and desirability of a minor design change to the Decimal Coded Wire Tag.

NMT is soliciting comments about the desirability and details of the proposed change via this request for comments.

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History

Original design

At the April 1998 meeting, the Mark Committee approved the addition of five new formats for the coded wire tag. The primary difference of the new formats is that data is written in decimal rather than binary.

As development progressed, NMT made minor changes to the format presented in the 1998 proposal. Those changes were presented at the 1999 meeting. Minor cosmetic changes were made after that presentation, but before full scale production. The current design document is available on the NMT website.

Master word replaced

The binary tag used a master word to mark the beginning of the data and the direction in which the bits were to be read. The decimal tag replaced the master word with a flag character to orient the reader. The flag character is placed to the left of the first digit of the agency code.

The master word also encoded the format of the tag. That feature of the master word was not implemented in the original design for the flag character.

Proposed change

Design goals

The design goals for this product have not changed. The primary goal is data reliability, achieved mainly by data replication. The second goal, ease of readability, is the focus of the current proposal. Finally, NMT intends to maintain compatibility with current data management.

Format identification

Currently, tag format is identified by the layout of the characters on the tag. While the tag layout is unambiguous, NMT has received occasional requests for code assistance where the tag format was not correctly identified. Thus we propose to change the appearance of the flag character so that it is different for each format, giving an additional visual cue to the reader.

NMT has not determined the exact appearance of the new flag patterns. We invite your comments and suggestions.

NMT believes that the proposed change can be made with existing manufacturing equipment, but has not yet proven the ability to do so. Thus, we cannot commit to implementing this proposal.

Sample flag design

The sample design shown below uses a subscript to differentiate the tag formats. This design is for purposes of illustration. Other designs are possible and may prove superior when seen on an actual tag.



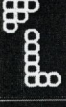
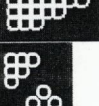
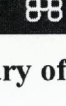
Format	Flag	Notes
Standard		No change proposed
Half-length		Subscript h for "half"
One-and-a-half-length		Subscript L for "long"
Sequential		No change proposed
Agency only		Subscript A for "agency"

Table 1: Summary of proposed flag characters

Sample tag formats

Standard tag

The standard tag is the most common tag in use. We propose no change to the format. Figure 1 shows the existing and proposed format for the code 16-58-09.

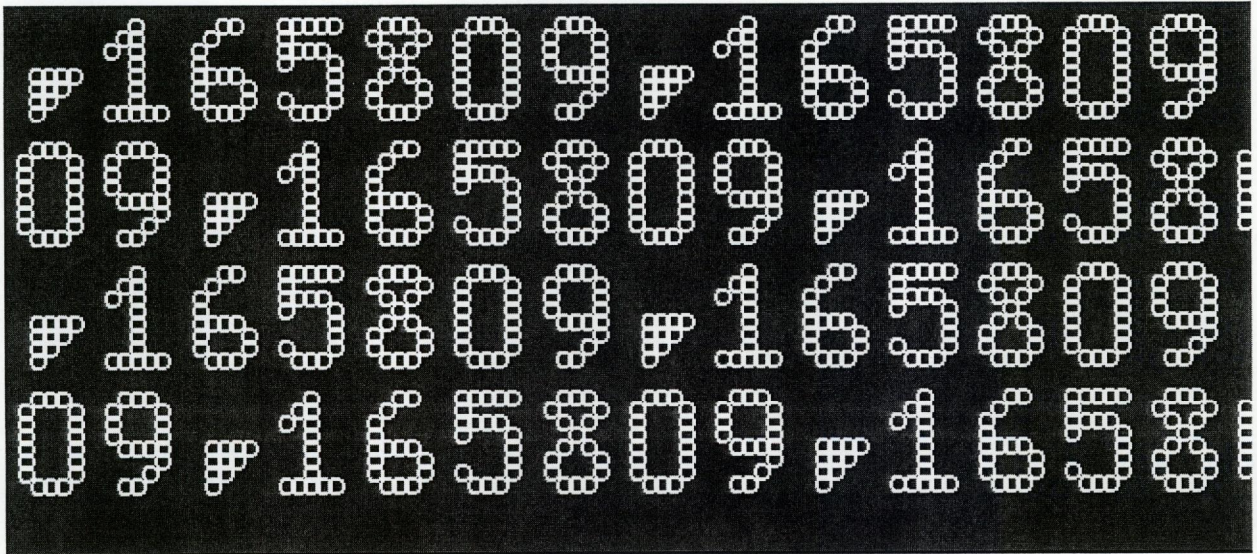


Figure 1: Standard tag format

Half-length tag

Figure 2 shows the existing Half-length format for tag code 16-05-08-00-09. Figure 3 shows the same tag with the proposed design change.

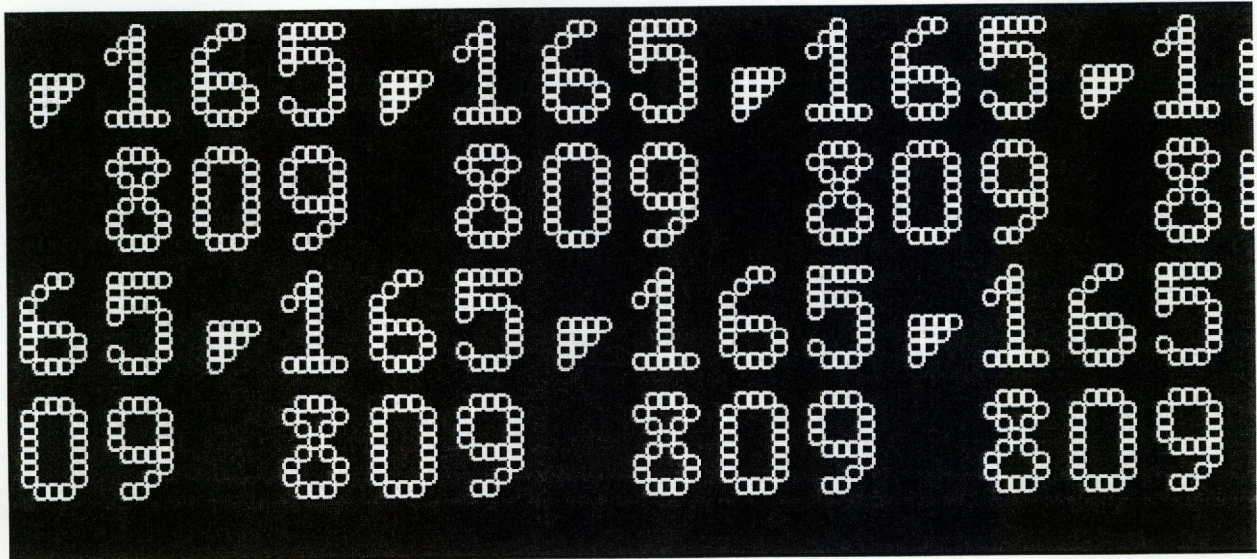


Figure 2: Current Half-length tag format

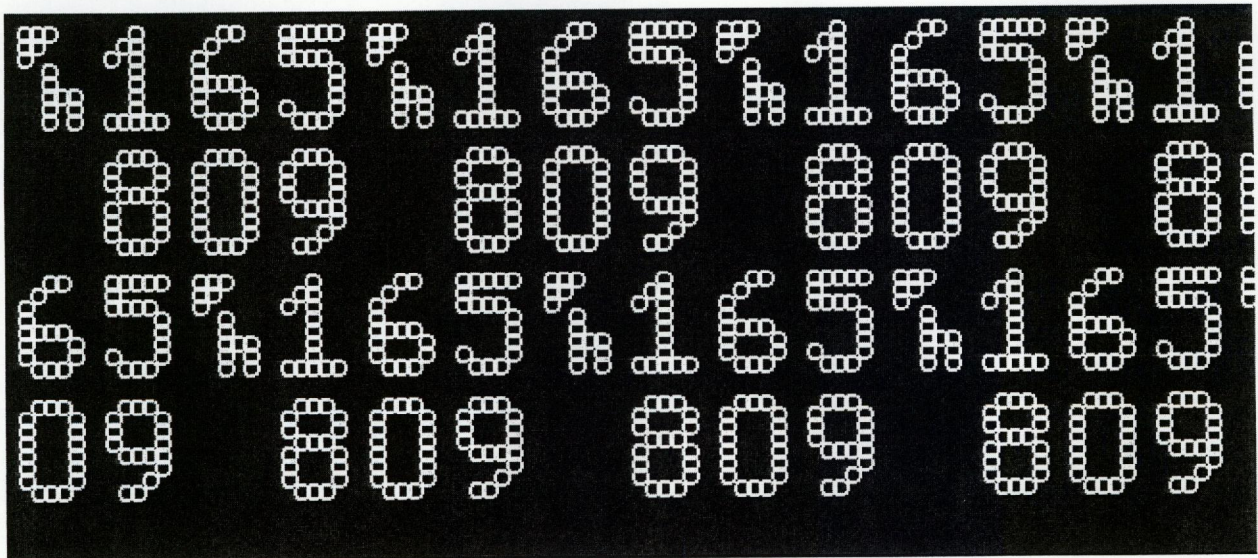


Figure 3: Proposed Half-length tag format

One-and-a-half-length tag

Figure 4 shows the existing One-and-a-half-length format for tag code 16-58-09. Figure 5 shows the same tag code in the proposed format. Flag subscript “L” is a mnemonic for “long”.

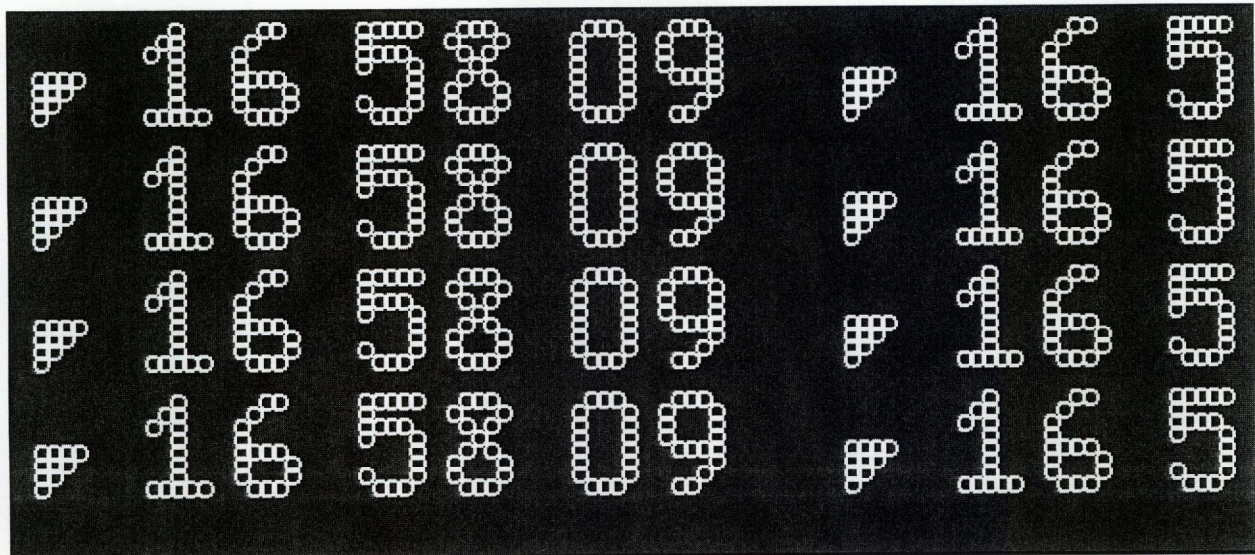


Figure 4: Current One-and-a-half-length tag format

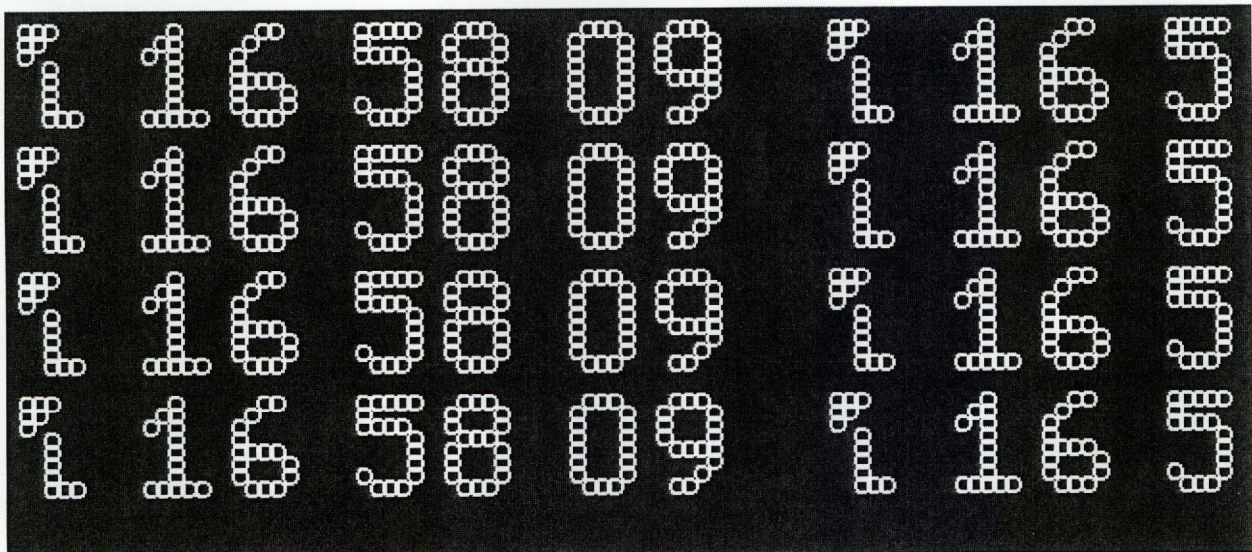


Figure 5: Proposed One-and-a-half-length tag format

Sequential tag

Since the sequential format is the only format with a circumferential band of characters, it is readily identifiable without a subscripted flag character. Thus we propose no change to this format. Figure 6 shows the sequential tag format for tag code 16-58-09-09725 through 16-58-09-09727.

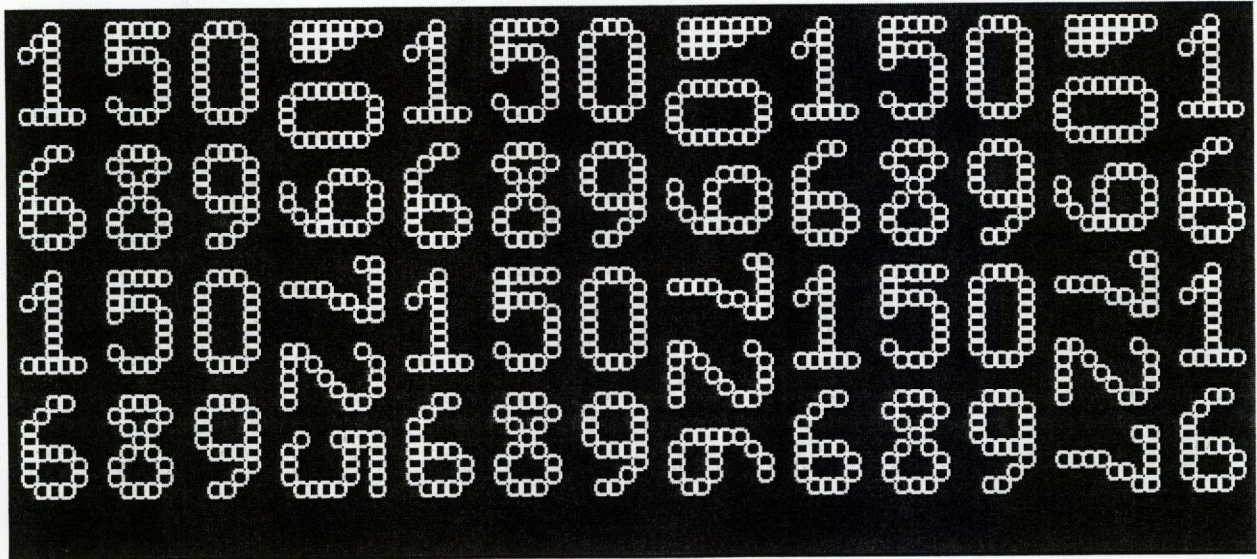


Figure 6: Sequential tag format

Agency-only Tag

Figure 7 shows the existing Agency-only format for tag code 16. Figure 8 shows the same tag code in the proposed format.

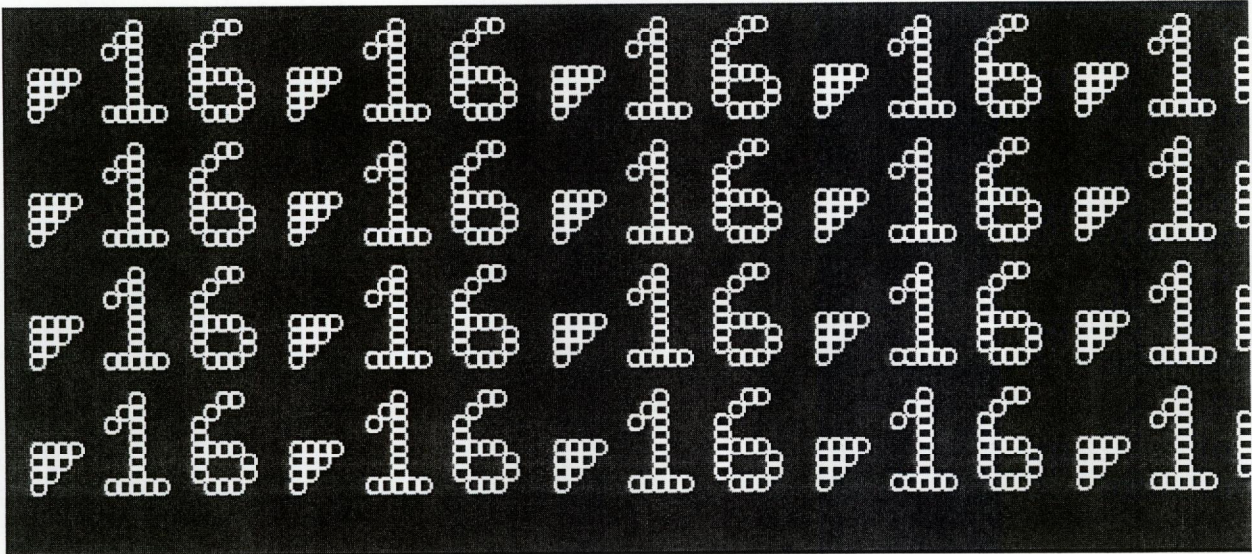


Figure 7: Current Agency-only tag format

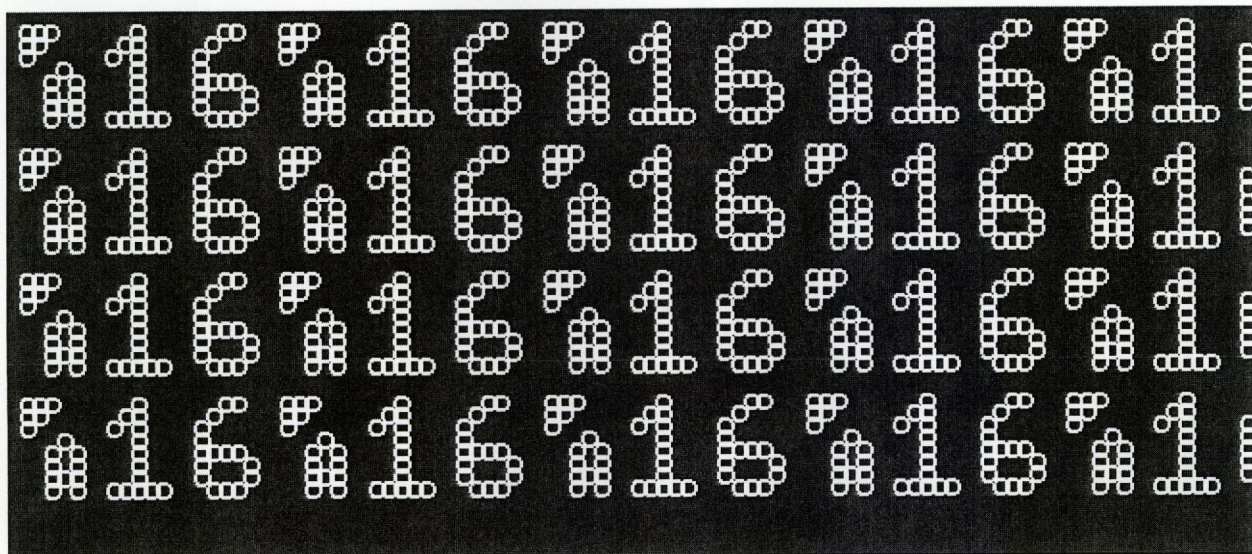


Figure 8: Proposed Agency-only format

Public Comment

Comments and questions are welcome. Correspondence may be addressed to:

Northwest Marine Technology, Inc.

Attn.: Ray Glaze

P.O. Box 427

Shaw Island, WA 98286

(360) 468 - 3375

ray.glaze@nmt.us

Appendix F:

Evaluation of the Northwest Marine Technology Individual Fish Counter

Evaluation of the Northwest Marine Technology Individual Fish Counter

by
Ken Phillipson
and
Robert Conrad

Introduction

With the advent of mass marking of salmonids, hatchery managers have the opportunity to obtain an accurate inventory of their fish during the marking process. This process often involves passing large numbers of fish through a marking trailer where they are manually fin clipped. The current standard practice of enumeration in manual fin clipping operations has been the "sample count" method. This is a method of estimating fish population from total weight based on individual weights of a small portion of the population. Studies have shown that even with care, these counts can be as much as $\pm 20\%$ inaccurate (Piper 1982). In addition, weighing fish can cause undue stress and mortality. A device has been needed that would accurately count individual fish at the time of fin clipping. This technology would provide managers with a more accurate total count of the population at the time of marking, and later release. Northwest Marine Technology (NMT) has developed a new counting device called the Individual Fish Counter (IFC), and we tested the first prototype of this device.

Methods

The study was conducted on November 7th and 8th 2006, at the Puyallup Tribal Hatchery located on Diru Creek. The fish used were brood year 2005 winter run steelhead (*Oncorhynchus mykiss*). The fish had an average size of 65 fpp or 6.9g. The size range of these fish was highly variable as approximately 10% of the population was > 30 fpp or < 150 fpp. This was considered an excellent example of a difficult counting situation utilizing a rearing group with highly variable fish sizes.

Two IFC counting sensors were mounted in the clipping table of a CWT (coded-wire tag) trailer. The plumbing from each sensor went directly to a trough area where the fish were collected and CWT using NMT Mark IV injectors. Prior to counting each group, five marbles were passed through the sensor to insure sensitivity settings were counting objects correctly. Taggers were instructed to apply CWTs in a standard prescribed method in an attempt to obtain an accurate machine count of the group previously counted by the sensor. Each test of the sensors consisted of a paired count with a CWT tagging machine. Fish were passed through the sensor until a total count of 500 was obtained on the IFC counting sensor. These same fish were then passed through a CWT process where they were tagged and counted by the CWT injector.

The two counts were compared using two different metrics:

1. The difference in counts between the two counters calculated as: (IFC sensor count – CWT count) and labeled DIFF.
2. The ratio of the counts calculated as: (sensor count / CWT count) and labeled RATIO.

DIFF measures the difference between the two counters in the number of fish counted over 500 sensor-counted fish. If DIFF is negative it indicates that the CWT count was larger than the sensor count.

RATIO compares the relative difference between the two total counts over 500 sensor-counted fish. If RATIO is less than 1.0 it indicates that the CWT count was greater than the sensor count.

If there are no differences between the two counts $\text{DIFF} = 0$ and $\text{RATIO} = 1.00$. Ten trials (replicates) were conducted for each sensor. If there are random differences between the two counts and no bias¹ we expect the average (mean) DIFF to be 0 and average RATIO to be 1.00. A one sample t-test of the hypothesis $\text{DIFF} = 0$ or $\text{RATIO} = 1.0$ was used to test these hypotheses (two-tailed tests conducted).

If there is no bias between the two counts and the differences between the two counts are random, we expect that over a series of replicates one method would be greater than the other half the time (excluding ties where they are the same). A sign test was used to test the hypothesis that the frequencies of the signs of the differences between the two counts (positive or negative) were equal (i.e., the proportion of positives = proportion of negatives).

There was one replicate conducted for sensor #1 in which the sensor was recalibrated after the count had begun. This replicate (#8) was omitted from the data analysis.

In an additional test, three replicates of 1,600 fish total were hand counted through the sensors. These counts were conducted blindly in that the sensor count was unknown to the sampler conducting the physical count.

Results

Table 1 presents the results for the 10 replicate trials for each sensor. Figure 1 graphically compares the counts.

Summary statistics for DIFF and RATIO are presented in Tables 2 and 3, respectively. There is no indication of bias between the two counts. For sensor #1, the hypothesis that the mean $\text{DIFF} = 0$ cannot be rejected ($P = 0.813$) as well as the hypothesis that the mean $\text{RATIO} = 1.00$ ($P = 0.819$). Similarly for sensor #2, the hypothesis that the mean $\text{DIFF} = 0$ cannot be rejected ($P = 0.496$) as well as the hypothesis that the mean $\text{RATIO} = 1.00$ ($P = 0.493$).

For sensor #1, there were 5 negative differences, 2 positive differences, and 2 ties. The hypothesis of equal frequencies of positive and negative differences (indicating no bias) could not be rejected by the sign test ($P = 0.453$). For sensor #2, there were 3 negative differences, 3 positive differences, and 4 ties. The hypothesis of equal frequencies of positive and negative differences (indicating no bias) could not be rejected by the sign test ($P = 1.000$).

¹ No bias means that one count is not consistently less than, or consistently greater than, the other.

Table 1. Results of the trials for the two counting methods.

Replicate Number	Sensor Station	Sensor Count	CWT Station	Count	Difference Sensor-CWT	Ratio Sensor/CWT
1	1	500	2	500	0	1.0000
2	1	500	2	501	-1	0.9980
3	1	500	2	501	-1	0.9980
4	1	500	2	501	-1	0.9980
5	1	500	2	497	3	1.0060
6	1	500	2	500	0	1.0000
7	1	500	2	499	1	1.0020
8 ^a	1	500	2	494	6	1.0121
9	1	500	2	501	-1	0.9980
10	1	500	2	501	-1	0.9980
1	2	500	1	500	0	1.0000
2	2	500	1	501	-1	0.9980
3	2	500	1	499	1	1.0020
4	2	500	1	500	0	1.0000
5	2	500	1	501	-1	0.9980
6	2	500	1	497	3	1.0060
7	2	500	1	501	-1	0.9980
8	2	500	1	498	2	1.0040
9	2	500	1	500	0	1.0000
10	2	500	1	500	0	1.0000
All Trials	1	5,000		4,995	5	1.0010
	2	5,000		4,997	3	1.0006
	Total	10,000		9,992	8	1.0008
Without Trial 8-1	1	4,500		4,501	-1	0.9998
	2	5,000		4,997	3	1.0006
	Total	9,500		9,498	2	1.0002

^a Possible sensor problem, sensor recalibrated after start of counting session.

There is no evidence that there is a significant difference between the sensors in mean DIFF or mean RATIO. Using a two sample t-test to compare the means for each sensor, the significance of the tests was 0.516 for DIFF and 0.518 for RATIO². Combining the results from both sensors, the mean difference in the counts was 0.1053 fish per 500 sensor-counted fish with a mean RATIO of 1.0002 (a 0.02% difference). Over the 19 trials, the sensor count was greater than the CWT count 5 times (26.3%), the CWT count was greater than the sensor count 8 times (42.1%), and the counts were identical 6 times (31.6%).

Statistically, both methods give the same count for repeated trials of 500 fish. That is, we cannot reject the hypotheses that the mean DIFF is 0 and the mean RATIO is 1.0. In addition, there is no statistical evidence of a consistent difference (bias) between the two methods. Based on the

² Two-tailed test with equal variances assumed.

combined results for the two sensors, one might expect a difference of 1 fish between the two methods for every 5,000 fish that are counted by sensor.

For the three replicates counts of 1,600 hand-counted fish through the sensors there were no variance noted for the three replicates. The hand counts and sensor counts were exactly the same.

Discussion

Scenarios were identified that could lead to inaccurate CWT machine counts of the groups. These potential errors would make the CWT count higher or lower than the actual count. Some possible miscount examples include: fish reluctant to leave plumbing connecting counter to the trough, fish leaving or entering the trough compartment, tagger not clearing trough of all of the fish, faulty CWT button pressing, machine activation, or fish being dropped without knowledge of tagger. These errors could account for the differences between the CWT counts and the sensor counts.

Based on the statistical results, and the complete agreement with hand counts, the IFC technology appears to be highly accurate means of counting individual fish.

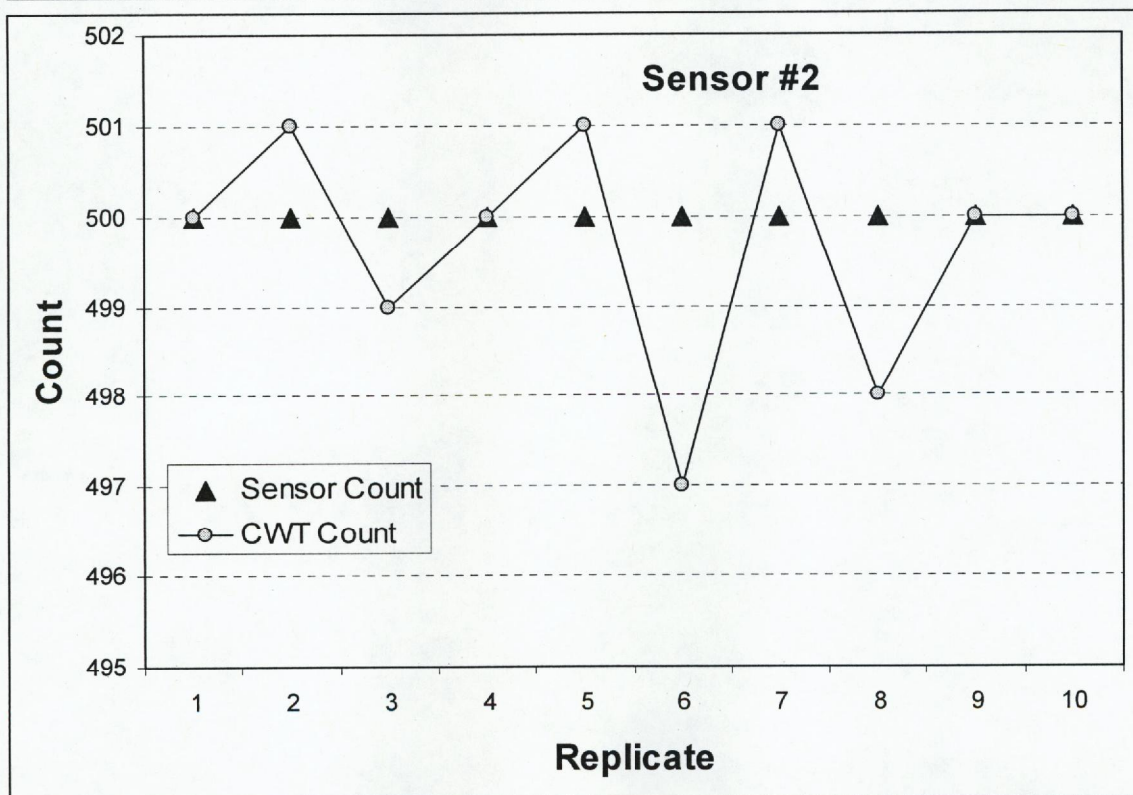
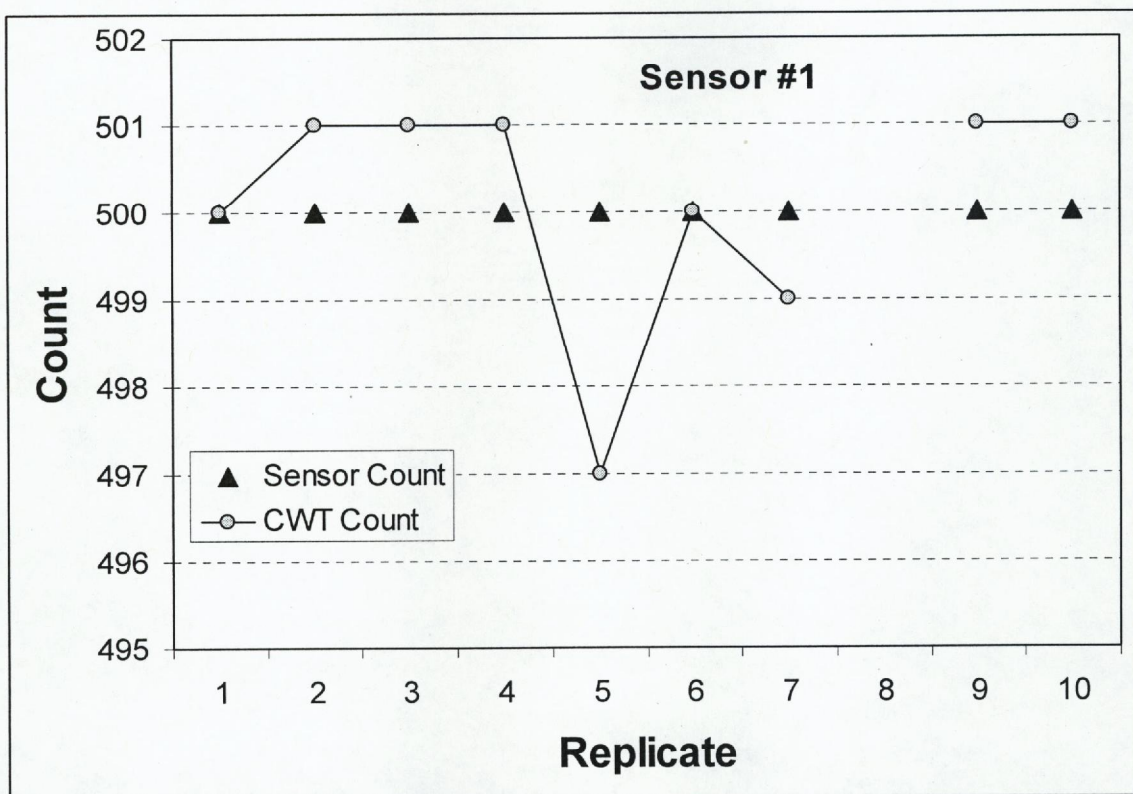


Figure 1. Comparison of sensor to CWT counts over 500 sensor-counted fish, by sensor.

Table 2. Summary statistics for DIFF, the sensor count – CWT count.

Sensor Number	Sample Size	Mean	Standard Error	Median	Minimum	Maximum	95% Confidence Interval
1	9	-0.1111	0.4547	-1.000	-1.000	3.000	-1.1598 - 0.9375
2	10	0.3000	0.4230	0.000	-1.000	3.000	-0.6568 - 1.2568

Table 3. Summary statistics for RATIO, the sensor count / CWT count.

Sensor Number	Sample Size	Mean	Standard Error	Median	Minimum	Maximum	95% Confidence Interval
1	9	0.9998	0.0009	0.9980	0.9980	1.0060	0.9977 - 1.0019
2	10	1.0006	0.0008	1.0000	0.9980	1.0060	0.9987 - 1.0025

Appendix G:

**ODFW Request for Marking
Variance**

14-A

Request for Marking Variances

Regional Mark Committee

Please provide the following information when requesting marking variances from the standard tagging and marking established in the "Regional Coordination and Agreements on Marking and Tagging Pacific Coast Salmonids." The information is necessary to assess impacts of the marking variance to the coastwide CWT program.

Please address all of the following items 1-6 in adequate detail (use a separate page(s)).

Agency: Oregon Department of Fish and Wildlife

Date: April 25, 2007

Marking Coordinator: a) Name: Christine Mallette

b) Email: christine.mallette@state.or.us

1. Mark Requested: Agency only Wire Tag (09BLANK)

2. Details of Marking

- 430,000
- a) Number of fish: 470,000
 - b) Species and Run: Fall Run Chinook
 - c) Brood year: 2006
 - d) Stock(s): Columbia River Upriver Brights
 - e) Hatchery(ies): Bonneville
 - f) Geographic area(s): Lower Columbia River
 - g) Release date: February 18 and April 19, 2008
 - h) Duration of this marking program:
Program was established in 1994 and drastically reduced in 2001.
Proposed marking dates are July 31 through August 18, 2007

3. Specific Management and/or Research Objectives:

- Blank and coded-wire tagged fall chinook salmon are detected at the Lower Granite Dam trap and sampled prior to straying into the Snake River fall chinook ESU. Bonneville Hatchery rears the yearling fall chinook for the Umatilla River program. In recent years, approximately 90% of yearling production is blank wire tagged, the remaining production is CWT (Table 1).

4. Impact on Coastwide CWT Programs:

- Coded-wire-tagged yearling fall chinook from the Umatilla program are consistently recovered in ocean fisheries along the Pacific coast (Table 2.).

5. Specify Expected Benefits:

- Blank wire tagging yearling fall chinook will assist in the estimation of number of Umatilla-origin strays that enter the Snake River fall chinook ESU.
- Comply with NMFS mandate to wire tag all Umatilla program fall chinook.

6. Alternatives Considered (specify reason(s) for rejection)

Please forward request to:

Ken Johnson George Nandor

Table 1 Total release size and number of coded-wire tagged (CWT) yearling fall chinook salmon, reared at Bonneville, Umatilla and Willard Fish Hatcheries and released in the Umatilla River, Oregon, brood years 1999-2005.

Brood year	Hatchery	Tag code	Number CWT	Number released
1999	Bonneville	093206	27,746	213,499
		093207	27,241	187,262
2000	Bonneville	093346	26,951	259,607
		093347	28,357	260,957
2001	Bonneville	093627	27,105	261,065
		093628	28,175	248,070
2002	Bonneville	093910	25,942	240,619
		093909	26,595	236,446
2003	Bonneville	094054	26,766	226,150
		094053	24,597	211,315
2004	Bonneville	092038	27,548	225,596
		092039	26,133	244,128
2005	Bonneville	094450	27,132	236,781
		094451	26,762	191,554

Table 2. Observed numbers of coded-wire tags (Obs CWT) originating from yearling fall Chinook smolt releases in the Umatilla River that were collected in coastwide fishery sampling programs and estimated numbers of Umatilla-origin fish with blank-wire tags (Est BWT) that would have been encountered by these sampling programs assuming release sizes of 480,000 smolts and 90% blank-wire tagging, 1994-2006. Fishery monitoring agencies include Alaska Department of Fish and Game (ADFG), Canadian Department of Fisheries and Oceans (CDFO), Washington Department of Fish and Wildlife (WDFW), and National Marine Fisheries Service (NMFS).

Year	ADFG		CDFO		WDFW		ODFW		NMFS		Total	
	Obs CWT	Est BWT	Obs CWT	Est BWT	Obs CWT	Est BWT	Obs CWT	Est BWT	Obs CWT	Est BWT	Obs CWT	Est BWT
1994	0	0	3	84	0	0	0	0	0	0	3	84
1995	0	0	3	47	0	0	0	0	0	0	3	47
1996	0	0	0	0	0	0	0	0	0	0	0	0
1997	1	19	2	17	0	0	1	15	0	0	4	51
1998	4	54	3	25	4	33	0	0	0	0	11	112
1999	26	215	13	111	11	91	2	17	1	8	53	442
2000	37	309	4	33	2	17	0	0	0	0	43	359
2001	4	37	6	57	6	57	3	28	1	9	20	188
2002	32	295	24	222	22	204	6	55	0	0	84	776
2003	48	452	19	194	12	126	8	82	0	0	87	854
2004	13	128	21	201	15	128	3	27	1	8	54	500
2005	28	241	28	239	19	163	7	59	0	0	82	702
2006	11	97	27	236	10	91	1	9	0	0	49	433
Mean	17	154	13	122	9	77	3	24	0	2	41	379

Appendix H:

**Mass Marking Updates,
handouts 4A-4D**

Handout 4A: Update on Constant Fractional Marking Program in California's Central Valley, as of 4/23/07
Stan Allen, PSMFC
Alice Low, CDFG
Kevin Niemela, USFWS
Dave Knutzen, NMT
Braden Buttars, PSMFC Tagging Coordinator (4 Autofish Trailers)

	Est. Total	# Fish Processed	# Fish Left to Complete	Notes
Coleman	12,225,000	11,950,000	275,000	Completed 4/24/07
Mokelumne	6,000,000	4,450,000	1,550,000	
Feather River	6,500,000	1,800,000	4,700,000	Delayed start
Feather River Annex	2,400,000	2,400,000	0	Completed
Nimbus	4,500,000	0	4,500,000	Start 4/30/07
TOTALS	31,625,000	20,600,000	11,025,000	
% Total	100%	65%	35%	

Tag Retention has been 99-100% on all tagging.

Ad-clipped/CWT 25% of all fish. Estimate they will release 7,906,250 ad/CWT fish (5,150,000 processed/ 2,765,000 left to complete)

Have 4 Autofish trailers.

Handout 4B-1: Oregon Proposed Marking Summary

2007 OREGON PROPOSED MARKING SUMMARY

4-B-1

	Mark	Coastal	Columbia	Total
COHO	AdCWT	150,000	325,000	475,000
	Ad	552,500	452,000	1,004,500
	CWT	0	725,000 (a)	725,000
	AdRMCWT	50,000	0	50,000
	AdRM	50,000	0	50,000
	Subtotal	802,500	1,502,000	2,304,500
SPRING CHINOOK	AdCWT	295,000	1,662,000	1,957,000
	AdLMCWT	0	80,000	80,000
	AdRVCWT	0	60,000	60,000
	Ad	2,262,000	6,518,000	8,780,000
	CWT	0	248,000	248,000
	Subtotal	2,557,000	8,568,000	11,125,000
FALL CHINOOK (c)	AdCWT	585,000	1,150,000	1,735,000
	AdLVCWT	0	50,000	50,000
	CWT	0	200,000	200,000
	Ad	325,000	5,300,000	5,625,000
	RV	35,000	0	35,000
	LM	25,000	0	25,000
	LV	200,000	1,440,000	1,640,000
	TB	0	430,000 (b)	430,000
	Subtotal	1,170,000	8,570,000	9,740,000
SOCKEY	AdRVCWT	0	75,000	75,000
	Subtotal	0	75,000	75,000
SUMMER STEELHEAD	AdLVCWT	0	235,000	235,000
	AdRVCWT	0	100,000	100,000
	Ad	390,000	651,500	1,041,500
	AdRV	120,000	0	120,000
	AdRM	0	255,000	255,000
	AdRP	0	25,000	25,000
	AdLPLM	20,000	0	20,000
	Subtotal	530,000	1,266,500	1,796,500
WINTER STEELHEAD	Ad	930,000	665,000	1,595,000
	AdLP	20,000	0	20,000
	AdRP	20,000	0	20,000
	AdRM	155,000	0	155,000
		0	50,000	50,000
	AdLM	250,000	50,000	300,000
	Subtotal	1,375,000	765,000	2,140,000
TOTAL		6,434,500	20,746,500	27,181,000

- (a) 700,000 CWT only by USFWS for YIN
 (b) Agency BLANK wire tags at Bonneville hatchery
 (c) 9,901,600 production released unmarked
 7,694,000 Columbia River
 2,207,600 Coastal

(4-B-2)

2006 Adult Returns and 2007 Expectations Columbia River

Preliminary – December 8, 2006 (updated 1/11/07)

2006 Results		2007 Expectations
Adult Returns		
Willamette Spring Chinook	46,500 predicted adult return to Columbia 59,700 actual return to Columbia -(lowest since 2000) (10% wild) -jack return (190) lowest since 1972 (440) 54,900 actual run into Willamette -36,851 adult count at falls -3,170 to Leaburg (McKenzie)(2,225 wild) Clackamas predicted return 7,200 (15% wild) -12,000 actual return to Willamette -North Fork Dam count 2,170 -Clackamas Hatchery return – 7,300	52,000 predicted Heavily weighted to 5-year olds 90% mark rate to CR mouth
Upriver Spring Chinook	88,400 predicted adult return 132,300 actual return Mark rate 65% Jack count lowest since 1998	<78,500 predicted (1.5% impact) Mostly 4-yr-olds Mark rate similar to 2006
Upriver Summer Chinook	49,000 predicted adult return 77,600 actual return Good jack count (similar to 2005; 3,400)	45,600 predicted
Sockeye	31,100 predicted return 37,000 actual return	27,300 predicted
Upriver Summer Steelhead	297,500 predicted return at Bonneville 340,200 actual return	Similar to recent years
Bright Fall Chinook	364,600 predicted adult return 337,500 preliminary actual return 225,900 preliminary URB return	Similar/less than 2006 URB return could be less than 200,000
Tule Fall Chinook	109,300 predicted adult return 93,100 preliminary projected return Below average to poor return of jacks	Similar to 2006 actual return
Coho	256,600 predicted adult return 350,000 preliminary actual return Columbia River jack count 40% >2005	Similar to past 3 years
Shad	4.6 million run (strong return)	Likely strong return
Smelt	Poor return	Poor return
Sturgeon	Legal population increasing slowly since 2002	No significant change

Recreational Fisheries

	2006 Results	2007 Expectations
Willamette River Spring Chinook - Recreational		
Lower Willamette	6 th full selective fishery 75,600 angler trips 7,050 kept catch 1,650 released 81% mark rate (vs ~80% expected)	Open 7 days/week under permanent selective fishery regulations Mark rate ~80% in Willamette
Clackamas River	6 th full selective fishery 3,732 angler trips 371 kept catch 122 released 75% mark rate (vs ~75% predicted)	Open 7 days/week under permanent selective fishery regulations Mark rate ~75%
Washington Tributary Spring Chinook - Recreational		
Cowlitz River	7,000 actual adult return vs 8,700 predicted 7 day/week fishery 2 fish bag limit	6,400 predicted adult return Harvestable fish available
Kalama River	5,600 actual return vs 2,100 predicted 7 day/week fishery 2 fish bag limit	4,000 predicted adult return Harvestable fish available
Lewis River	3,400 actual return vs 4,400 predicted 7 day/week fishery 2 fish bag limit	5,900 predicted adult return Harvestable fish available
Columbia River Fisheries - Recreational		
Lower Columbia Spring Season	Spring Chinook open: 1) Tongue Pt. to I-5 Br. (1/1-4/13) 2) Tongue Pt. to Bonn. Dam (5/15-6/15) 2 Chinook 6 th year selective fishery regs. 3 rd year unmarked fish must remain in water 87,000 angler trips 7,000 fin-clipped Chinook kept 2,500 Chinook released 2,400 hatchery steelhead kept (350 released) 74% mark rate (77% upriver mark rate)	Season TBD Selective fishery regulations Upriver mark rate ~65-70%
Mid Columbia Spring Season (not including Washington terminal fisheries)	Spring Chinook open: 3/16-4/30 and 5/13-6/15 Two Chinook bag limit; selective fishery regs. 475 fin-clipped Chinook kept 291 Chinook released	Spring Chinook open: 3/16-4/30 7 days/week 2 fish bag limit selective fishery regulations

Columbia River Fisheries - Recreational (continued)

Columbia Summer Season	<p>Summer Chinook open: 6/16-7/31 (5th fishery since 1973) Two Chinook bag limit and non-selective regs. 44,300 angler trips 4,950 Chinook kept (record high) <20 Chinook released 4,000 hatchery steelhead kept 1,600 released <200 kept Chinook above Bonneville Dam</p>	<p>Return down from 2006 Open June 16-July 31 likely</p>												
Buoy 10	<p>Two fish limit 8/1-12/31; only one Chinook 8,500 guideline Below average fishery 39,500 angler trips 1,725 Chinook and 3,900 fin-clipped coho</p>	<p>Potential for improved coho return in 2006 Fall Chinook strong but likely reduced from 2006 Manage for stability</p>												
Lower Columbia Fall Season	<p>Chinook open 8/1-9/14 and 10/13-12/31 two fish limit, only one Chinook 13,800 Chinook guideline 89,300 angler trips 13,700 fall Chinook 1,200 fin-clipped coho 4,200 fin-clipped steelhead</p>	<p>Fall Chinook strong but likely reduced from 2006</p>												
Mid Columbia Fall Season	<p>Chinook open 8/1-9/15 and 9/30-12/31 Two fish limit 700 Chinook guideline 600 kept Chinook</p>	<p>Likely similar to 2006 season</p>												
Sturgeon	<p>Managed for 27,000 annual catch split 15,000 estuary and 12,000 non-estuary with 1,800 fish buffer (corrected for 45" estuary reg)</p> <table> <tr> <td></td><td><u>Trips</u></td><td><u>Catch</u></td></tr> <tr> <td>Estuary</td><td>45,200</td><td>15,700</td></tr> <tr> <td>Non-estuary</td><td><u>62,000</u></td><td><u>8,600</u> (projected)</td></tr> <tr> <td></td><td>107,200</td><td>24,300</td></tr> </table>		<u>Trips</u>	<u>Catch</u>	Estuary	45,200	15,700	Non-estuary	<u>62,000</u>	<u>8,600</u> (projected)		107,200	24,300	<p>Seasons may be similar to 2006 except potential for 4,000 fish rollover for above-Wauna fishery in 2007-2008</p>
	<u>Trips</u>	<u>Catch</u>												
Estuary	45,200	15,700												
Non-estuary	<u>62,000</u>	<u>8,600</u> (projected)												
	107,200	24,300												
Shad	<p>19,600 trips in Columbia; more in Willamette 169,400 sport catch kept in Columbia</p>	<p>Huge population-no limits</p>												

Ocean Fisheries - Recreational		
Cape Falcon, OR to Leadbetter Pt, WA	Coho and Chinook open: 7/3-8/10, 5 days/week, and 8/11-9/30 7 days /week Coho quota 36,600; Chinook 8,300 31,300 trips +WA thru 9/17) 24,800 fin-clipped coho 2,300 Chinook	Similar to 2006
Cape Falcon to Humbug Mtn.	Coho and Chinook open: 6/17-7/31 and 9/1-9/6 (7days/week) Coho quota 20,000 (Cape Falcon-OR/CA Border) 43,600 trips 9,500 fin-clipped coho 7,700 Chinook	Similar to 2006
Humbug Mtn. to OR/CA Border (OR KMZ)	Coho and Chinook open: Coho 6/17-7/4 and 9/1-9/6 (7days/week) Chinook 5/15-7/4 and 9/1-9/6 10,600 trips 1,800 Chinook 700 Coho	Possibly similar to 2006
Chetco Terminal	Chinook-only open 10/1-10/12 3,700 trips 400 Chinook	Similar to 2006
Tillamook Terminal	Chinook-only open 8/1-11/15 5,100 trips 1,600 Chinook	Similar to 2006, but depends on ocean boating conditions
Oregon Coastal Rivers - Recreational		
North Coast Spring Chinook	Fair hatchery return 5 th year selective fishery	Similar to 2006
North Coast Fall Chinook	Continued good returns Good fishery	Similar to 2006
Central and South Coast Fall Chinook	Fair returns/fishery	Similar to 2006
Rogue River Spring Chinook	Poor fishery Gold Ray Dam count 11,700 (adults and jacks) Wild number currently not available	Similar to 2006 (fair?) Modified selective fishery 1 wild per day; 3 per year

Columbia River Commercial Fisheries

	2006 Results	2007 Expectations
Columbia River Fisheries - Commercial		
Winter Sturgeon	Seven 24-h and three 12-h periods (Jan. 10-Feb. 22; Z 1-5) 288 white sturgeon lowest harvest since 1995	Similar season to recent years
Winter Salmon	Late return resulted in split season Eleven periods from Feb. 23-Jun. 2 5 periods Feb. 23-Mar. 15 (12-24 h) 6 periods May 16-Jun. 2 (10-12 h) All large mesh fisheries 4,350 spring Chinook (\$5.51/lb ex-vessel) ~1,650 white sturgeon	Season structure similar to recent years Reduced upriver run likely
Summer Salmon	Good fishery Thirteen periods (10-12h each; 8-9.75"; Z 1-5) ~4,800 Chinook; ~540 white sturgeon 5 green sturgeon (sale prohibited >July 7)	Potential for fishery similar to 2006
August	Eight periods (6-12 hours each) ~10,700 Chinook; 830 coho ~1,900 white sturgeon	Similar to recent years
Late Fall	Reduced fishery due to ESA listing 10 fishing periods (Sept. 19-Oct. 25) Various mesh/zone restrictions ~15,270 Chinook; ~27,500 coho; 3 chum ~3,500 white sturgeon	Coho return may be similar to 2006 actual return Dependent on Chinook forecast
Shad	Area 2S (27 days; May 15-June 23) No Washougal Reef fishery ~21,000 shad in 2S (50% of 2004 and 2005)	Similar to 2006 Washougal in 2007?
Smelt	Poor season (13,100 #'s in CR; 0 in Tribs)	Poor; Level 1
Select Area Fisheries - Commercial		
Winter (YB/BS/DR)	Expanded YB season (16 periods 2/15-4/13) 759 spring Chinook (2 nd highest); 8 sturgeon No Deep River effort (1 st year)	2 nd year of SFK returns in YB Season structure similar to 2006 Combined SAFE spring Chinook prediction 9,700
Spring (YB/BS/DR)	Below average harvest (83% of 2000-05 ave.) High ex-vessel price 6,010 spring Chinook; 276 white sturgeon	2 nd year of SFK returns in YB Limited fishery in TP possible Impact dependent
Summer (YB)	Decent season (3 rd highest catch since 1999) 476 Chinook; 32 white sturgeon	Similar approach to 2006
Fall (YB/BS/TP/DR)	Below average season; fewer smolts released 37,653 coho; 4,557 Chinook; 0 chum 114 white sturgeon	Same season approach Smolt releases still reduced

2007 Columbia River Fishery Process Schedule (Preliminary Draft)

Dec. 6, 2006 11 a.m.	Col. R. Commercial Advisory Group <ul style="list-style-type: none"> • Sturgeon fishing plan • Spring Chinook fishing plan 	Clatskanie, OR City Hall 95 N Nehalem St.
Dec. 14, 2006 10 a.m.	Columbia River Compact <ul style="list-style-type: none"> • Commercial sturgeon and smelt • Recreational sturgeon 	Kelso, WA City Hall-Council Room 203 S. Pacific Ave
Jan. 4, 2007 8 a.m.	Oregon Fish and Wildlife Commission	Salem, OR ODFW Headquarters
Jan. 18, 2007 10 a.m.	Sturgeon Management Task Force <ul style="list-style-type: none"> • Zone 6 fishery quotas and regulations 	Vancouver, WA WDFW Regional Office
Jan. 18, 2007 4 p.m.	Col. R. Sport Advisory Group <ul style="list-style-type: none"> • Spring Chinook management • Sturgeon management 	Vancouver, WA WDFW Regional Office
Jan. 25, 2007 10 a.m.	Columbia River Compact <ul style="list-style-type: none"> • Commercial salmon (mainstem and SAFE) • Recreational salmon and sturgeon 	Vancouver, WA Water Resources Education Center 4600 SE Columbia Way
Feb. 9, 2007	Oregon Fish and Wildlife Commission <ul style="list-style-type: none"> • Adopt permanent regulations for spring Chinook 	Seaside, OR
Mar. 16, 2007	Oregon Fish and Wildlife Commission <ul style="list-style-type: none"> • Ocean and state waters salmon fishery options 	Salem, OR ODFW Headquarters
Apr. 13, 2007	Oregon Fish and Wildlife Commission <ul style="list-style-type: none"> • Adopt ocean and state waters salmon regulations, Col. R. fall regs 	Salem, OR ODFW Headquarters
<i>See Ocean Process for North of Falcon schedule</i>		

2007 Ocean Fishery Process Schedule (Preliminary Draft)

Feb. 2007	CDFG Public Meeting <ul style="list-style-type: none"> • 2007 forecasts • 2007 salmon season discussions 	Sacramento, CA
Feb 27, 2007	WDFW Public Meeting <ul style="list-style-type: none"> • 2007 forecasts 	WDFW – Olympia area
Mar. ?, 2007	Ocean Salmon Industry Group <ul style="list-style-type: none"> • 2007 forecasts • Initial discussions of 2007 season options 	Newport, OR
Mar. 4-9, 2007	Pacific Fishery Management Council <ul style="list-style-type: none"> • Adopt 2007 ocean salmon options for public review 	Sacramento, CA Doubletree Hotel
Mar. 12, 2007	Columbia River North of Falcon meeting	TBD – Vancouver area
Mar. 13-14, 2007	North of Falcon I (Public Meetings) <ul style="list-style-type: none"> • Salmon season negotiations for Columbia River, Puget Sound, Willapa Bay, Grays Harbor, and ocean areas north of Cape Falcon, OR 	TBD
Mar. 16, 2007	Oregon Fish and Wildlife Commission <ul style="list-style-type: none"> • Ocean and state waters salmon fishery options 	Salem, OR ODFW Headquarters
Mar. 27, 2007	PFMC Public Options Hearing <ul style="list-style-type: none"> • Public input on 2007 season options 	TBD
Mar. 27-29, 2007	North of Falcon II (Public Meeting) <ul style="list-style-type: none"> • Continued negotiations 	TBD
Apr. 1-6, 2007	PFMC <ul style="list-style-type: none"> • Adopt 2007 ocean salmon fishery regulations 	Seattle, WA Seattle Marriott Hotel Sea Tac
Apr. 13, 2007	Oregon Fish and Wildlife Commission <ul style="list-style-type: none"> • Adopt state water ocean salmon fishery regulations • Adopt certain coastal and inland salmon fishery regulations 	Salem, OR ODFW Headquarters

Handout 4C: IDFG Mass Marking Updates

May, 2007 Mark Meeting

Idaho Department of Fish and Game **Brood year 2006** DRAFT Chinook Mark Plan (Includes Sockeye)

Sum of Number Released Fish Hatchery	Release Site	Marks & Tags				VIE/CWT	Grand Total
		AD	AD/CWT	CWT only	OTC		
Clearwater	Crooked River Pond	140,000					140,000
	Crooked River Trap Site	530,000	40,000				570,000
	Lower Selway R.		200,000	100,000			300,000
	Powell Pond	335,000	80,000				415,000
	Powell Pond (presmolts)	378,000					378,000
	Red River Pond	373,000	40,000				413,000
	Upper Selway R. (parr)				300,000		300,000
Dworshak	Dworshak Hatchery N.F. Clearwater R.	930,000	120,000				1,050,000
Eagle/Sawtooth (Sockeye)	Upper Salmon R. & Lakes	100,000	40,000				140,000
Kooskia	Clear Creek	550,000	100,000				650,000
McCall	Johnson Creek					85,000	85,000
	Knox Bridge S.F. Salmon R.	800,000	250,000				1,050,000
Oxbow (Fall Chinook)	IPC Hells Canyon Dam/Pittsburg Landing		125,000				125,000
Pahsimeroi	Pahsimeroi R.	950,000	50,000				1,000,000
Rapid River	Hells Canyon	0					0
	Rapid River	2,900,000	100,000				3,000,000
Sawtooth	Sawtooth weir		175,000				175,000
Grand Total		7,986,000	1,320,000	100,000	300,000	85,000	9,791,000

Total Chinook and Sockeye Release (Draft) 9,791,000
Total Proposed CWT 1,505,000

4-C-1

4-C-2

May, 2007 Mark Meeting

Idaho Department of Fish and Game Brood Year 2006 Summer Steelhead Mark Plan

Sum of Number Released					Marks & Tags				
Fish Hatchery	Release Site	Marking Purpose	AD	AD/CWT	AD/CWT/LV	CWT Only	No Clip	No Clip/CWT	Grand Total
Cleanwater	Crooked River (S.F. Cleanwater)	US v OR	90,000		60,000		63,000	20,000	233,000
	Lolo Cr.	US v OR					50,000		50,000
	Meadow Cr. (S.F. Cleanwater)	US v OR					25,000		25,000
	Mill Cr. (S.F. Cleanwater)	US v OR					25,000		25,000
	Red River (S.F. Cleanwater)	US v OR	100,000		60,000		150,000		250,000
	S.F. Cleanwater (Red House Hole)	Production	200,000						260,000
Cleanwater Total			390,000		120,000		313,000	20,000	843,000
Hagerman National	Little Salmon R. Hazard Cr.	US v OR					40,000		40,000
	Little Salmon R. Stinky Springs	Production US v OR	70,000	30,000			160,000		100,000
	Lower East Fk. Salmon R.	Production	70,000	30,000					160,000
	Sawtooth Weir	Production	670,000	80,000					100,000
	Yankee Fk.	Production	160,000						750,000
		US v OR					140,000		160,000
Hagerman National Total			970,000	140,000			340,000		140,000
Niagara Springs	Hells Canyon Dam	Production	495,000	30,000					1,450,000
	Little Salmon R. Stinky Springs	Production	385,000	60,000					525,000
	Pahsimeroi Trap	Production	770,000	60,000					445,000
Niagara Springs Total			1,650,000	150,000					830,000
Magic Valley	East Fk. Salmon R. Weir	US v OR				50,000			1,800,000
	Little Salmon R. Stinky Springs	Production	185,000	30,000					50,000
	Lower East Fk. Salmon R.	Production	195,000	30,000					215,000
	Salmon R. Sec. 16 Red Rock	Production	100,000	30,000					225,000
	Salmon R. Sec. 16/17 Lemhi Hole	Production	80,000						130,000
	Salmon R. Sec. 17 Colston Corner	Production	110,000	30,000					80,000
	Salmon R. Sec. 18 McNabb Point	Production	90,000	30,000					140,000
	Salmon R. Sec. 18 Tunnel Rock	Production	60,000						120,000
	Slate Cr.	Production	10,000	30,000					60,000
		Supplementation					60,000		40,000
	Squaw Creek	Production - HES	130,000	60,000					60,000
	Squaw Creek Pond	Production - HES		120,000					190,000
	Valley Creek	US v OR					50,000		120,000
	Yankee Fk.	US v OR	30,000	30,000			30,000		50,000
	Pahsimeroi Trap	Production						30,000	90,000
Magic Valley Total			990,000	420,000		50,000	140,000		1,600,000
Grand Total			4,000,000	710,000	120,000	50,000	793,000	20,000	5,693,000

Total Steelhead smolts released = 5,693,000
 Total CWT 900,000

IDFG CHINOOK and STEELHEAD CWT Information 2000 – 2006 (May, 2007 Mark Meeting)

CHINOOK AND STEELHEAD OVERALL SUMMARY

1. 30,596 CWTs - - processed by IDFG between 2000 and 2006 (includes out-of-state recoveries sent to IDFG)
2. 25,228 CWTs - - IDFG snouts recovered in Idaho.
3. 4 CWTs - - IDFG snouts recovered in Alaska and tags sent to IDFG.
4. 15 CWTs - - IDFG snouts recovered in Canada and tags sent to IDFG.
5. 3,758 CWTs - - IDFG snouts recovered in Oregon and tags sent to IDFG.
6. 344 CWTs - - IDFG snouts recovered in Washington and tags sent to IDFG.
7. 691 CWTs - - USFWS snouts recovered by IDFG and tags sent back to USFWS.
8. 333 CWTs - - ODFW snouts recovered by IDFG and tags sent back to ODFW.
9. 165 CWTs - - WDFW snouts recovered by IDFG and tags sent back to WDFW.
10. 58 CWTs - - NPT snouts recovered by IDFG and tags sent back to NPT.

CHINOOK

1. 19,160 CWTs - - Chinook processed by IDFG between 2000 and 2006 (includes out-of-state recoveries sent to IDFG).
2. 15,925 CWTs - - IDFG Chinook snouts recovered in Idaho.
3. 4 CWTs - - IDFG Chinook snouts recovered in Alaska and tags sent to IDFG.
4. 15 CWTs - - IDFG Chinook snouts recovered in Canada and tags sent to IDFG.
5. 2,606 CWTs - - IDFG Chinook snouts recovered in Oregon and tags sent to IDFG.
6. 88 CWTs - - IDFG Chinook snouts recovered in Washington and tags sent to IDFG.
7. 436 CWTs - - USFWS Chinook snouts recovered by IDFG and tags sent back to USFWS.
8. 24 CWTs - - ODFW Chinook snouts recovered by IDFG and tags sent back to ODFW.
9. 58 CWTs - - NPT Chinook snouts recovered by IDFG and tags sent back to NPT.
10. 4 CWTs - - WDFW Chinook snouts recovered by IDFG and tags sent back to WDFW.

STEELHEAD

1. 11,436 CWTs - - Steelhead processed by IDFG between 2000 and 2006 (includes out-of-state recoveries sent to IDFG).
2. 9,303 CWTs - - Steelhead snouts recovered in Idaho.
3. 1,152 CWTs - - Steelhead snouts recovered in Oregon and tags sent to IDFG.
4. 256 CWTs - - Steelhead snouts recovered in Washington and tags sent to IDFG.
5. 255 CWTs - - USFWS Steelhead snouts recovered by IDFG and tags sent back to USFWS.
6. 309 CWTs - - ODFW Steelhead snouts recovered by IDFG and tags sent back to ODFW.
7. 161 CWTs - - WDFW Steelhead snouts recovered by IDFG and tags sent back to WDFW.

Table 1. Number of snouts recovered by IDFG between 2000-2006.

YEAR	SPECIES		Grand Total
	Spring Chinook	Steelhead	
2000	2,997	1,070	4,067
2001	3,608	1,676	5,284
2002	2,916	2,875	5,791
2003	2,773	1,051	3,824
2004	2,268	807	3,075
2005	921	897	1,818
2006	964	1,652	2,616
Grand Total	16,447	10,028	26,475

Table 2. Number of CWTs released by IDFG 2000-2006.

Release Year	Species			Grand Total
	Chinook	Sockeye	Steelhead	
2000	1,390,512		931,654	2,322,166
2001	1,339,963	13,915	906,237	2,260,115
2002	1,978,101	48,659	330,735	2,357,495
2003	1,648,633		803,741	2,452,374
2004	1,654,434		771,151	2,425,585
2005	1,044,050	78,814	612,751	1,735,615
2006	1,370,582	39,622	679,349	2,089,553
Grand Total	10,426,275	181,010	5,035,618	15,642,903

WDFW and TRIBAL PUGET SOUND CHINOOK MASS MARKING and CODED-WIRE TAGGING 2007 11/15/2006

Species: Chinook
Area: Puget Sound
Brood: 2006
Releases 2007 and 2008

Agency	Hatchery	Stock	Number of fish to be released with a CWT		Number of fish to be released without a CWT		Total Production	Proposed to be marked this year (Y/N)	Marked in previous year (Y/N)
			Ad Clipped	Unclipped	Ad Clipped	Unclipped			
WDFW	Kendall Creek*	NF Nooksack springs	200,000	200,000	350,000	0	750,000	Y	Y
WDFW	Marblemount	Skagit River springs	250,000	0	0	0	250,000	Y	Y
WDFW	Marblemount*	Skagit River springs 1+	75,000	75,000	0	0	150,000	Y	Y
WDFW	Hupp Springs	White River springs	0	250,000	0	0	250,000	NA	NA
WDFW	Hupp Springs	White River springs	0	85,000	0	0	85,000	NA	NA
WDFW	White River	White River springs	0	260,000	0	0	260,000	NA	NA
Tribal	White River	White River springs 1+	0	90,000	0	0	90,000	NA	NA
Tribal	White River	White River springs	0	0	0	0	840,000	NA	NA
Tribal	White River Acclimation	White River springs	0	50,000	0	0	50,000	NA	NA
WDFW	Dungeness	Dungeness River springs	0	0	0	0	150,000	NA	NA
WDFW	Greywolf Acclimation	Dungeness River springs	0	0	0	0	150,000	NA	NA
Total spring chinook			525,000	1,010,000	350,000	990,000	2,875,000		
WDFW	Marblemount	Skagit River summers	200,000	0	0	0	200,000	Y	Y
Tribal	Stillaguamish	NF Stillaguamish River summers	220,000	0	0	0	220,000	Y	Y
Tribal	Bernie Gobin **	Skykomish River summers	100,000	0	1,260,000	340,000	1,700,000	80%	70%
WDFW	Wallace River*	Skykomish River summers	200,000	200,000	600,000	0	1,000,000	Y	Y
WDFW	Wallace River	Skykomish River summers 1+	100,000	0	150,000	0	250,000	Y	Y
Total summer chinook			820,000	200,000	2,010,000	340,000	3,370,000		
WDFW	Glenwood Springs	Glenwood Springs falls	0	0	300,000	0	300,000	Y	Y
WDFW	Glenwood Springs	Glenwood Springs falls 1+	0	0	250,000	0	250,000	Y	Y
Tribal	Lummi Bay Sea Ponds	Samish River (Friday Creek) falls	0	0	1,000,000	0	1,000,000	Y	Y
WDFW	Samish*	Samish River falls	200,000	200,000	3,600,000	0	4,000,000	Y	Y
WDFW	Samish	Samish River falls 1+	100,000	0	0	0	100,000	Y	Y
WDFW	Marblemount	Skagit River falls	222,000	0	0	0	222,000	Y	Y
WDFW	Soos Creek*	Big Soos Creek falls	200,000	200,000	2,800,000	0	3,200,000	Y	Y
Tribal	Keta Creek	Big Soos Creek falls	0	0	300,000	0	300,000	Y	Y
WDFW	Icy Creek	Big Soos Creek falls 1+	100,000	0	200,000	0	300,000	Y	Y
WDFW	Issaquah	Issaquah Creek falls	200,000	0	1,800,000	0	2,000,000	Y	Y

4-D

WDFW	Portage Bay (UW)	Portage Bay falls	0	0	306,000	0	306,000	Y	Y
WDFW	Winter Creek	Winter Creek falls	200,000	0	1,600,000	0	1,800,000	Y	Y
Tribal	Gorst Creek	Grovers Creek falls	0	0	2,050,000	0	2,050,000	Y	Y
Tribal	Gorst Creek	Grovers Creek falls 1+	150,000	0	0	0	150,000	Y	Y
Tribal	Grovers Creek *	Grovers Creek falls	200,000	200,000	350,000	0	750,000	Y	Y
Tribal	Clarks Creek	Puyallup River falls	0	0	200,000	0	200,000	Y	Y
Tribal	Electron Ponds	Puyallup (Voights Creek) falls	200,000	0	0	0	200,000	Y	Y
WDFW	Voights Creek	Voights Creek falls	200,000	0	1,400,000	0	1,600,000	Y	Y
WDFW	Garrison Springs	Garrison Springs falls	400,000	0	750,000	0	1,150,000	Y	Y
WDFW	Chambers Creek	Garrison Springs falls	70,000	0	0	0	70,000	Y	Y
WDFW	Lakewood	Garrison Springs falls	200,000	0	0	0	200,000	Y	Y
WDFW	Lakewood	Garrison Springs falls 1+	100,000	0	30,000	0	130,000	Y	Y
WDFW	Lakewood	Garrison Springs falls 1+	200,000	200,000	3,100,000	0	3,500,000	Y	Y
Tribal	Clear Creek *	Clear Creek falls	200,000	0	500,000	0	600,000	Y	Y
Tribal	Kalama Creek	Kalama Creek falls	100,000	0	3,600,000	0	3,800,000	Y	Y
WDFW	Tumwater Falls	Deschutes River falls	200,000	0	125,000	0	200,000	Y	Y
WDFW	Percival Cove Net Pens	Deschutes River falls	75,000	0	0	0	0	Partial	Partial
WDFW	George Adams *	George Adams falls	225,000	225,000	2,512,500	837,500	3,800,000	Y	Y
WDFW	Hamma Hamma	George Adams falls	70,000	0	0	0	70,000	Y	Y
WDFW	Hoodsport	Hoodsport falls	200,000	0	2,600,000	0	2,800,000	Y	Y
WDFW	Hoodsport	Hoodsport falls 1+	100,000	0	20,000	0	120,000	Y	Y
WDFW	Rick's Pond (LLTK)	George Adams falls	100,000	0	20,000	0	120,000	Y	Y
WDFW	Elwha	Elwha River falls 1+	0	200,000	0	0	200,000	NA	NA
WDFW	Elwha	Elwha River falls	0	400,000	0	2,100,000	2,500,000	NA	NA
WDFW	Bear Springs	Elwha River falls 1+	0	200,000	0	0	200,000	NA	NA
WDFW	Hoko Falls *	Hoko River falls	200,000	200,000	0	0	400,000	Y	Y
Total fall chinook			4,212,000	2,025,000	29,413,500	2,937,500	38,588,000		

Total

5,557,000

3,235,000

31,773,500

4,267,500

44,833,000

Total Chinook Production
Percent Marked

44,833,000

83%

* DIT group

WDFW and TRIBAL PUGET SOUND COHO MASS MARKING and CODED-WIRE TAGGING 2007

11/15/2006

Species: Coho
Area: Puget Sound
Brood: 2006
Release Year 2008

Agency		Stock	Number of fish to be released with a CWT		Number of fish to be released without a CWT		Total Production	Proposed to be marked this year (Y/N)	Marked in previous year (Y/N)
			Ad Clipped	Unclipped	Ad Clipped	Unclipped			
WDFW	Hatchery	Kendall Creek*	45,000	45,000	210,000	0	300,000	Y	Y
WDFW		Squalicum Net Pens	0	0	5,000	0	5,000	Y	Y
WDFW		Glenwood Springs	0	0	100,000	0	100,000	Y	Y
WDFW		Lummi Bay Sea Pens	50,000	0	950,000	0	1,000,000	Y	Y
Tribal		Skookum Creek	50,000	0	700,000	0	750,000	Y	Y
WDFW		Marblemount*	45,000	45,000	160,000	0	250,000	Y	Y
WDFW		Lake Shannon Net Pens	0	0	25,000	0	25,000	Y	Y
WDFW		Roche Harbor Net Pen	0	0	15,000	0	15,000	Y	Y
WDFW		Indian Slough (For SSC)	0	0	100,000	0	100,000	Y	Y
WDFW		Oak Harbor Net Pens	0	0	30,000	0	30,000	Y	Y
Tribal		Stillaguamish River	0	0	50,000	0	50,000	Y	Y
WDFW		Wallace River*	45,000	45,000	60,000	0	150,000	Y	Y
Tribal		Bernie Gobin	50,000	0	750,000	200,000	1,000,000	80%	70%
WDFW		NWSSC Everett Net Pens	0	0	25,000	0	25,000	Y	Y
WDFW		Possession Point Net Pens	0	0	50,000	0	50,000	Y	Y
WDFW		Seattle Poggie Club	0	0	54,000	0	54,000	Y	Y
WDFW		Laebugten Net Pens	0	0	25,000	0	25,000	Y	Y
WDFW		Issaquah	0	0	450,000	0	450,000	Y	Y
WDFW		Ballard Salmon Net Pens	0	0	30,000	0	30,000	Y	Y
WDFW		Soos Creek*	45,000	45,000	510,000	0	600,000	Y	Y
Tribal		Crisp Creek	0	0	200,000	0	200,000	Y	Y
Tribal		Elliott Bay Net Pens	0	0	400,000	0	400,000	Y	Y
WDFW		NWSSC Des Moines	0	0	30,000	0	30,000	Y	Y
WDFW		Seattle Aquarium	0	0	2,000	0	2,000	Y	Y
WDFW		Portage Bay (UW)	0	0	90,000	0	90,000	Y	Y
WDFW		Marine Tech Center	0	0	10,000	0	10,000	Y	Y
WDFW		Voight's Creek*	45,000	45,000	690,000	0	780,000	Y	Y
Tribal		Rushingwater Acclimation	100,000	0	100,000	0	200,000	Y	Y

WDFW	Minter Creek	Minter Creek	0	0	1,044,000	0	1,044,000	Y	Y
WDFW/Tribal	South Sound Net Pens	Skykomish (May Creek)	270,000	0	1,530,000	0	1,800,000	Y	Y
Tribal	Kalama Creek	Kalama Creek	45,000	0	555,000	0	600,000	Y	Y
WDFW	George Adams*	George Adams (Purdy Creek)	45,000	45,000	210,000	0	300,000	Y	Y
WDFW-Tribal	Port Gamble Net Pens	Big Quilcene River	45,000	0	355,000	0	400,000	Y	Y
Tribal	Quilcene Bay Net Pens	George Adams (Purdy Creek)	45,000	0	155,000	0	200,000	Y	Y
WDFW	Dungeness	Dungeness	40,000	0	460,000	0	500,000	Y	Y
Tribal	Lower Elwha*	Elwha River	75,000	75,000	600,000	0	750,000	NA	NA

Total	1,040,000	345,000	10,730,000	200,000	12,315,000				
Total Coho Production	12,315,000								
Percent marked	96%								

* = DIT Group

WDFW and TRIBAL COASTAL CHINOOK MASS MARKING and CODED-WIRE TAGGING 2007

12/19/2006

Species: Chinook
Area: Coastal Washington
Brood: 2006
Releases: 2007 and 2008

Agency	Hatchery	Stock	Number of fish to be released with a CWT		Number of fish to be released without a CWT		Total Production	Proposed to be marked this year (Y/N)	Marked in previous year (Y/N)
			Ad Clipped	Unclipped	Ad Clipped	Unclipped			
Tribal	Educket Creek	Sooes River falls	0	0	100,000	0	100,000	Y	Y
WDFW	Solduc **	Solduc springs	0	0	200,000	0	200,000	Y	Y
Tribal	Solduc (Lonesome Cr)	Solduc summers	0	0	0	250,000	250,000	N	N
Tribal	Salmon River	Queets River falls	200,000	0	0	0	200,000	Y	Y
Tribal	Quinault River*	Quinault River falls	200,000	200,000	0	0	400,000	Y	Y
WDFW	Humptulips	Humptulips River falls	200,000	0	0	300,000	500,000	N	N
WDFW	Lake Aberdeen	Van Winkle Creek falls	0	0	0	50,000	50,000	N	NA
WDFW	Mayr Brothers	Wishkah River falls	0	0	0	200,000	200,000	N	N
WDFW	Bingham Creek	Satsop River falls	0	0	0	350,000	350,000	N	NA
WDFW	Satsop Springs	Satsop River falls	200,000	300,000	0	0	500,000	N	N
WDFW	Forks Creek	Willapa River falls	200,000	0	2,000,000	0	2,200,000	Y	Y
WDFW	Nemah	Nemah River falls	200,000	0	1,800,000	0	2,000,000	Y	N
WDFW	Naselle	Naselle River falls	200,000	0	4,800,000	0	5,000,000	Y	N
Total			1,400,000	500,000	8,900,000	1,150,000	11,950,000		

Total Chinook Production
Percent Marked

11,950,000
86%

* DIT
** These fish are marked under an agreement with the Quileute Tribe

WDFW and TRIBAL COASTAL COHO MASS MARKING and CODED-WIRE TAGGING 2007

11/15/2006

Species: Coho
 Area: Coastal Washington
 Brood: 2006
 Release Ye 2008

Agency	Hatchery	Stock	Number of fish to be released with a CWT		Number of fish to be released without a CWT		Total Production	Proposed to be marked this year (Y/N)	Marked in previous year (Y/N)
			Ad Clipped	Unclipped	Ad Clipped	Unclipped			
Tribal	Educket Creek	Sooes River	0	0	50,000	0	50,000	Y	N
WDFW	Solduc	Solduc summers	50,000	0	150,000	0	200,000	Y	Y
WDFW	Solduc *	Solduc falls	75,000	75,000	450,000	0	600,000	Y	Y
Tribal	Salmon River *	Salmon River	75,000	75,000	500,000	0	650,000	Y	Y
Tribal	Salmon River	Salmon River (native)	50,000	0	70,000	0	120,000	Y	Y
WDFW	Humtulpis	Humtulpis	50,000	0	700,000	0	750,000	Y	Y
WDFW	Humtulpis	Humtulpis lates	50,000	0	400,000	0	450,000	Y	Y
WDFW	Friends Landing	Satsop River	50,000	0	0	0	50,000	Y	Y
WDFW	Mayr Brothers	Wishkah River	0	0	150,000	0	150,000	Y	Y
WDFW	Buzzard Creek	Wishkah River	0	0	25,000	0	25,000	Y	Y
WDFW	Lake Aberdeen	Van Winkle	0	0	30,000	0	30,000	Y	Y
WDFW	Bingham Creek *	Satsop River	75,000	75,000	150,000	0	300,000	Y	Y
WDFW	Helmbigner Project	Satsop Lates	50,000	0	250,000	0	300,000	Y	Y
WDFW	Satsop Springs	Satsop River	0	0	30,000	0	30,000	Y	Y
WDFW	Skookumchuck	Satsop River	40,000	0	410,000	0	450,000	Y	Y
WDFW	Skookumchuck	Satsop River	50,000	0	0	0	50,000	Y	Y
WDFW	Carlsle Lake	Satsop lates	50,000	0	0	0	50,000	Y	Y
WDFW	Carlsle Lake	Satsop lates	0	0	50,000	0	50,000	Y	Y
WDFW	Eight Creek	Satsop lates	0	0	100,000	0	100,000	Y	Y
WDFW	Forks Creek *	Willapa River	75,000	75,000	350,000	0	500,000	Y	Y
WDFW	Forks Creek	Willapa lates	45,000	0	55,000	0	100,000	Y	Y
WDFW	Nemah	Nemah River	0	0	500,000	0	500,000	Y	Y
WDFW	Naselle	Naselle River	45,000	0	455,000	0	500,000	Y	Y
WDFW	Nahcotta Net Pens	Naselle River	45,000	0	0	0	45,000	Y	Y
WDFW	Aberdeen Net Pens	Wishkah River	0	0	150,000	0	150,000	Y	Y
WDFW	Westport Net Pens	Humtulpis River	0	0	200,000	0	200,000	Y	Y
Total			875,000	300,000	5,275,000	0	6,450,000		

Total Coho Production
 Percent Marked

6,450,000
 95%

* DIT groups

WDFW and CRITFC COLUMBIA RIVER CHINOOK MASS MARKING and CODED-WIRE TAGGING 2007

11/15/2006

Species: Chinook
Area: Columbia River
Brood: 2006
Release Year: 2007 and 2008

Agency	Hatchery	Stock	Number of fish to be released with a CWT		Number of fish to be released without a CWT		Total Production	Proposed to be marked this year (Y/N)	Marked in previous year (Y/N)
			Ad Clipped	Unclipped	Ad Clipped	Unclipped			
WDFW	Sea Resources	Sea Resources - Falls	107,500	0	0	0	107,500	NA	NA
WDFW	Elochoman	Elochoman - Falls	90,000	0	1,910,000	0	2,000,000	Y	Y
WDFW	Cowlitz	Cowlitz - Falls	200,000	0	4,800,000	0	5,000,000	Y	N
WDFW	N Toutle	Toutle - Falls	90,000	0	2,410,000	0	2,500,000	Y	N
WDFW	Kalama Falls	Kalama - Falls	90,000	0	2,410,000	0	2,500,000	Y	Y
WDFW	Fallert Creek	Kalama - Falls	90,000	0	2,410,000	0	2,500,000	Y	Y
WDFW	Lewis River	Lewis River - Falls (wild)	100,000	0	0	0	100,000	NA	NA
WDFW	Washougal	Washougal - Falls	90,000	0	3,910,000	0	4,000,000	Y	N
CRITFC	Klickitat	Klickitat - falls	650,000	0	0	3,350,000	4,000,000	N	N
WDFW	Lyons Ferry	Lyons Ferry - Falls	1,100,000	300,000	0	1,200,000	2,600,000	NA	NA
WDFW	Lyons Ferry	Lyons Ferry - Falls 1+	435,000	465,000	0	0	900,000	NA	NA
WDFW	Ringold **	URBs	200,000	0	0	3,250,000	3,450,000	N	N
WDFW	Priest Rapids ***	Priest Rapids - URBs	220,000	0	0	4,780,000	5,000,000	N	N
Total Fall Chinook			3,462,500	765,000	17,850,000	12,580,000	34,657,500		
Total Percent Marked			61%						
WDFW	Turtle Rock	Wells - summers	400,000	0	0	700,000	1,100,000	N	N
WDFW	Turtle Rock	Wells - summers 1+	200,000	0	0	0	200,000	Y	Y
WDFW	Dryden Pond	Wenatchee - summers 1+	864,000	0	0	0	864,000	Y	Y
WDFW	Wells	Wells - summers	484,000	0	0	0	484,000	Y	Y
WDFW	Wells	Wells - summers 1+	320,000	0	0	0	320,000	Y	Y
WDFW	Carlton Pond	Methow / Okanogan - summers 1+	400,000	0	0	0	400,000	Y	Y
WDFW	Similkameen Pond	Methow / Okanogan - summers 1+	576,000	0	0	0	576,000	Y	Y
Total Summer Chinook			3,244,000	0	0	700,000	3,944,000		
Total Percent Marked			82%						
WDFW	Deep River Net Pens	Cowlitz - springs 1+	100,000	0	230,000	0	330,000	Y	Y
WDFW	Cowlitz	Cowlitz - springs	100,000	0	812,000	0	912,000	Y	Y
WDFW	Cowlitz - upper river	Cowlitz - springs	0	0	0	300,000	300,000	NA	NA
WDFW	Friends of the Cowlitz	Cowlitz - springs 1+	25,000	0	30,000	0	55,000	Y	Y

WDFW	Fallert Creek	Kalama - springs 1+	125,000	0	125,000	0	250,000	Y	Y
WDFW	Gobar Pond	Kalama - springs 1+	125,000	0	125,000	0	250,000	Y	Y
WDFW	Lewis River*	Lewis River - springs 1+	150,000	150,000	600,000	0	900,000	Y	Y
WDFW	Fish First	Lewis River - springs 1+	0	0	150,000	0	150,000	Y	Y
CRITFC	Klickitat	Klickitat - springs 1+	200,000	0	400,000	0	600,000	Y	Y
CRITFC	Klickitat	Klickitat - springs	TBD	TBD	TBD	TBD	300,000	Y	Y
WDFW	Ringold	Carson - springs 1+	0	0	500,000	0	500,000	NA	NA
WDFW	Tucannon	Tucannon - springs 1+	0	282,000	0	0	282,000	NA	NA
WDFW	Chiwawa Pond	Chiwawa - springs 1+	672,000	0	0	0	672,000	Y	Y
WDFW	Methow	Methow - springs 1+	0	183,000	0	0	183,000	NA	NA
WDFW	Twisp	Twisp - springs 1+	0	183,000	0	0	183,000	NA	NA
WDFW	Chewuch	Chewuch - springs 1+	0	184,000	0	0	184,000	NA	NA

Total Spring Chinook 1,497,000 982,000 2,972,000 300,000 6,051,000

Total Chinook 8,203,500 1,747,000 20,822,000 13,580,000 44,652,500

65%

Total Percent Marked

74%

* DIT group

WDFW and CRITFC COLUMBIA RIVER COHO MASS MARKING and CODED-WIRE TAGGING 2007

11/15/2006

Species: Coho
Area: Columbia River
Brood: 2006
Release Year: 2008

Agency	Hatchery	Stock	Number of fish to be released with a CWT		Number of fish to be released without a CWT		Total Production	Proposed to be marked this year (Y/N)	Marked in previous year (Y/N)
			Ad Clipped	Unclipped	Ad Clipped	Unclipped			
WDFW	Sea Resources	Sea Resources	0	0	52,500	0	52,500	Y	Y
WDFW	Deep River Net Pens	Grays River - Type S	50,000	0	350,000	0	400,000	Y	Y
WDFW	Grays River	Grays River - Type S	30,000	0	120,000	0	150,000	Y	Y
WDFW	Elochoman	Elochoman - Type N	30,000	0	467,000	0	497,000	Y	Y
WDFW	Elochoman	Elochoman - Type S	30,000	0	388,000	0	418,000	Y	Y
WDFW	Cathlamet FFA	Elochoman - Type N	0	0	15,000	0	15,000	Y	Y
WDFW	Cowlitz	Cowlitz - Type N	90,000	0	3,110,000	0	3,200,000	Y	Y
WDFW	N Toutle	Toutle - Type S	30,000	0	770,000	0	800,000	Y	Y
WDFW	Kalama Falls	Kalama Falls - Type N	30,000	0	320,000	0	350,000	Y	Y
WDFW	Fallert Creek	Kalama Falls - Type S	30,000	0	320,000	0	350,000	Y	Y
WDFW	Lewis River*	Lewis River - Type N	75,000	75,000	730,000	0	880,000	Y	Y
WDFW	Lewis River*	Lewis River - Type S	75,000	75,000	665,000	0	815,000	Y	Y
WDFW	Washougal (Klickitat release)	Washougal - Type S	60,000	0	0	2,440,000	2,500,000	N	N
WDFW	Washougal	Washougal - Type N	30,000	0	470,000	0	500,000	Y	Y
WDFW	Klickitat	Klickitat - Type N	45,000	0	955,000	0	1,000,000	Y	Y
CRITFC									
Total			605,000	150,000	8,732,500	2,440,000	11,927,500		
Total Coho Production			11,927,500						
Percent Marked			78%						

* DIT group
1 Harvest allocation agreement with tribes

Appendix I:

**2007 Mark Meeting
Attendees**

2007 Mark Meeting Attendees

Name	Agency/ Org.	E-mail	Phone
George Nandor	PSMFC	George_Nandor@psmfc.org	503-595-3144
Bill Bosch	Yakama Nation	bbosch@yakama.com	509-972-8847
Christine Mallette	ODFW	Christine.Mallette@state.or.us	503-947-6218
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Ron Olson	NWIFC	rolson@nwifc.org	360-528-4335
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Ken Phillipson	NWIFC	kenp@nwifc.org	360-438-1180
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Doug Herriott	CDFO	herriottd@pac.dfo-mpo.gc.ca	250-756-7383
Brian Leth	IDFG	bleth@idfg.idaho.gov	208-465-8404
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Brodie Cox	WDFW	coxpbcc@dfw.wa.gov	360-902-2776
Susan Markey	WDFW	markeslm@dfw.wa.gov	360-902-2777
Dan Webb	PSMFC	dan@psmfc.org	503-595-3147
Cathy Robinson	ADFG	Cathy_Robinson@fishgame.state.ak.us	907-465-4089
Scott Marshall	USFWS	Scott_Marshall@fws.gov	208-378-5298
Chuck Bronte	USFWS	Charles_Bronte@fws.gov	920-866-1761
David Knutzen	NMT	Dave.Knutzen@nmt.us	360-596-9400
Norma Jean Sands	NMFS, NWFSC	Norma.Sands@noaa.gov	206-860-5607
Guy Thornburgh	NMT	Guy.Thornburgh@nmt.us	360-299-9100
Geraldine Vander-Haegen	NMT	Geraldine.Vanderhaegen@nmt.us	360-596-9400
Yvonne Dettlaff	USFWS	Yvonne_Dettlaff@fws.gov	360-753-9582
Stan Allen	PSMFC	Stan_Allen@psmfc.org	503-595-3114
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Jim Longwill	PSMFC	Longwill@psmfc.org	503-595-3146
Chris Brun	Warm Springs	cbrun@wstribes.org	541-553-2416