2003 MARK MEETING

Sitka, Alaska: May 21-23, 2003

Agenda

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Final Minutes

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1. General Business Items

Ken Johnson (PSMFC) welcomed Mark Committee members and other meeting participants. A special thanks was extended to Ron Josephson and ADFG for hosting the Mark Meeting in Sitka. Ron did an exceptional job in taking care of logistics, assisting in hotel reservations and in organizing several field trips. A special thanks was also extended to Guy Thornburgh (CEO, Northwest Marine Technology Inc) for hosting a reception for the Mark Meeting participants and guests during an evening catamaran cruise in Sitka Sound.

Mark Committee members and other meeting participants were introduced at the start of the Mark Meeting **(Attachment 1)**. Mark Kimbel (WDFW) has replaced Geradine Vander Haegen.

Several Mark Committee members were not present. Tim Yesaki (BC Environment), as customary, was absent and represented by Marc Hamer (CDFO). Steve Leask (MIC) was not present. Robert Bayley (NMFS-Portland) could not get travel authorization and was represented by Adrian Celewycz (NMFS-AK). California was not represented as Bob Kano (CDFG) was unable to get out-of-state travel authorization. He had planned on taking personal leave to attend the meeting anyway, but had to cancel at the last moment because of illness in his family.

New Agenda Item: Christine Mallette(ODFW) requested and was granted approval to add an ODFW variance request for blank wire tagging in the Columbia River basin (Agenda item 9B).

Year 2004 Meeting Site and Date: The 2004 Mark Meeting will be hosted by the Idaho Department of Fish and Game. Rodney Duke presented the pros and cons of meeting in Lewiston, Boise, Coeur d'Alene, and Ketchum. Lewiston was chosen as the site, with the Idaho meeting scheduled for May 12-14, 2004**.**

2. Status of CWT Data Files and Reporting Backlogs (Dan Webb, PSMFC)

Dan Webb reviewed the data status tables for each reporting agency's CWT release, recovery, and catch/sample data files. Particular attention was focused on existing 'holes' and agency plans to report the missing data. The review was done 'on-line' by accessing a snap shot of the status tables on PSMFC's RMIS taken a few days before the meeting.

Release Data:

The CWT release data are largely current for all tagging agencies. There are a few minor holes that crop up from time to time. However, missing release records are typically submitted in a timely basis once their absence is known.

Recovery and Catch/Sample Data:

The Recovery and Catch/Sample data files are current for all years up through 2002, with a few holes. Idaho has the biggest backlog and is missing years 1999-2002. NWIFC and QDNR are both missing data for 2002. Explanations for these gaps in reporting are provided below.

Comments are also provided on the status of each agency's conversion to format 4.0

ADFG: No backlogged data sets. Conversion to format 4.0 completed.

CDFG: Current for reporting ocean recoveries and catch/sample data. Progress on the inland recovery data continues to be made but much work remains. Data sets are reported in format version 3.1 and converted to format 4.0 by the Mark Center.

CDFO: No backlogged data sets. Marc Hamer reported that his agency has not completed its conversion to format 4.0. Therefore, U.S. data files received in format 4.0 from the Mark Center are converted back into format 3.2 at the present time.

USFWS: No backlogged data sets. David Zajac commented that USFWS's recovery data are primarily rack returns and thus are typically late as is customary for such data.

IDFG: Missing 199-2002 data sets. Rodney Duke stated that Idaho is pushing hard to catch up. The Boise/Nampa office is now responsible for reporting the CWT data and Chris Harrington has been assigned this duty. Rodney projected that the data could be reported in 1-2 months. He also noted that Idaho had a backlog of 7,000 snouts from last year still to process. This should be done by mid summer. Data are reported in format 3.2.

NWIFC: Missing 2002 data set. Ron Olson reported that the NWIFC recovery data are all fall escapement data sets and thus typically one year out as is customary for such data. The data should be available in the fall. All fisheries recoveries are reported via WDFW in format 4.0.

NMFS: No backlogged data sets. The data are reported in format 4.0.

ODFW: Christine Mallette reported that ODFW was wrestling with debugging computer programs for reporting CWT data in format 4.0. As such, the final 2001 data were late but expect to be reported in the next few weeks. Preliminary 2002 ocean recoveries will also be updated shortly. The data will be reported in format 4.0.

QDNR: No information was available on QNDR's 2002 data status. Ron Olson noted that their data only involved terminal fisheries and escapement. Reporting is currently done in format 3.2.

WDFW: No backlogged data for the ocean fisheries. However, the 2002 data lacks escapement recoveries. Susan Markey projected that the 2002 escapement data would be available by this time next year. Reporting is done in format 4.0.

3. Status of Mark Center Operations

A. RMIS Data Exchange Application (RDE) (Dan Webb, PSMFC)

Dan Webb demonstrated an enhanced version of the RMIS Data Exchange Application (RDE) with the help of an Infocus projector. RDE is a MicroSoft Access application designed to manage subsets of CWT data compatible with the Regional Mark Information System (RMIS). The primary intended use of the RDE application is to aid smaller agencies with collecting, organizing, and reporting subsets of CWT data to the RMPC for inclusion in the RMIS database. In brief, RDE is designed to build CWT data files. RDE has a secondary intended use of helping researchers and other small agencies maintain, organize, and analyze data extracted from the RMIS system.

Dan emphasized that RDE can not automatically edit data stored in the RMIS tables and does not provide rigorous validation checks for all of the data fields. However, data collected, edited, and exported using RDE can be submitted to the Regional Mark Processing Center for RMPC's validation and subsequent inclusion in RMIS.

RDE has an import option and a link option which are particularly helpful features:. The import option is useful for smaller sets of data that do not need the added complexity of being organized by agency, year, or other criteria. When importing the data, it is contained inside the RDE application itself.

The link option is useful for larger sets of data. When linked data is used, the data is stored outside of the RDE application decreasing the chance of exceeding the overall application size limit, data sets can be organized by agency, year, or other criteria, and saved externally in RDE data containers with meaningful and descriptive names.

Note: July 18, 2003: A beta version of the RDE application and template RDE Data Container is now available. It can be downloaded from the 'RMIS Coded Wire Tag Database 4.0' web page at: **http://www.rmis.org/cwt/cwt_qbe.html**

B. New Computer System for the Mark Center (Jim Longwill, PSMFC)

Jim Longwill noted that the Mark Center has been undergoing a major upgrade in operations during the past several months to replace the aging Sun 1000e server and the Ingres relational database management system, both of which have been in use for the past nine years. As an example, the process used to insert new recovery data into RMIS now takes over five hours and must be done several times each week. Larger recovery reports also take several minutes to run now. In addition, SUN Corporation advised the Mark Center in March 2002 that their SUN 1000e computer's disk array was no longer under maintenance, and that this was the final year for maintenance of the rest of the computer's components. Lastly, Ingres has been eclipsed by other relational database management systems as Computer Associates has not updated it for several years now.

It was determined that an affordable computer package was available which would provide excellent performance levels. Several SUN computer models were evaluated, along with HP/Compaq, Dell, and IBM computers.

A Dell/Intel-based computer (model 6650) was selected with a Red Hat Linux based operating system and the Oracle DBMS. This system was ultimately chosen on the basis of price, performance and 'off the shelf' full integration with Red Hat Linux and Oracle DBMS. Key factors in the decision were:

1) Oracle 9I DBMS provides substantially higher performance than Ingres. It also offers more tools and robustness for dealing with data management needs;
2) Intel based computer systems have now advanced in performance levels to be comparable and often superior to SUN micro systems and at major cost savings;
3) Dell Computers are well known for reliability and high performance;
4) Dell Computers, Red Hat Linux and Oracle Corporation have formed a unique partnership with the specific purpose of optimizing joint performance.

The net result provides a system platform that has a solid performance history with much lower licensing and maintenance costs over the long term.

Work has also begun on developing an RMIS map based query system using ESRI ArcInfo for GIS applications on perhaps a region/basin approach. The necessary funding for the system upgrade came from approval to re-direct unused salary and benefits funds (i.e. Jim's extended leave without pay for 18 months).

4. Update on Mass Marking and Selective Fisheries on Hatchery Coho and Chinook

A. Alaska

Ron Josephson (ADFG) reported that Alaska is not involved in mass marking for the purpose of selective fisheries, and will continue to use visual sampling to recover CWTs in their various fisheries. All CWT marked fish (2.8 million) will be adipose clipped (**Attachment 2**). This includes 1.4 million chinook and 1.2 million coho.

He noted that they are now seeing a significant increase in the number of adipose clipped-no tag fish in their fisheries. With the help of graphs, he pointed out that historically about 7% of the fall chinook taken in the fisheries were ad clipped with no tag. This changed with the start of the winter fishery in October 2001 when they found 30% of the 1998 brood fish (just legal size) adipose clipped with no tag. This percentage dropped back significantly in the 2002 spring fishery, and then increased up to 60% in the winter fishery of 2002-2003. He added that the winter fishery last year wasn't huge with a harvest of 45,000 fall chinook. Even so, there was an impact on ADFG's sampling program. Based on tag recoveries, he estimated that most of the adipose only marked fish were from the Willamette River in the lower Columbia River basin.

B. British Columbia

Marc Hamer (CDFO) stated that Canada is not mass marking chinook at all. However there is some DIT tagging of their stocks at Chilliwack Hatchery and Shuswap Hatchery (Fraser River system). The DIT tagging is being done for two basic purposes. The first is to assess the

impacts of a potential southern US mark selective fishery that might see these chinook stocks. The second object is to have a look at DIT tagging results in general.

Mass marking of coho, however, continues at the same basic level and same objectives as in previous years. This is being done to support selective coho fisheries (primarily sport and some commercial) in Georgia Strait and on the West Coast of Vancouver Island. Commercial seiners must brail their catch onto deck in order to live release the chinook by-catch. Trollers are required to have 'live boxes' (survival tanks) on board to increase survival of landed chinook by-catch. Some of the fish don't survive the trauma of being caught. However overall survival of the chinook by-catch is consider good.

Doug Herriott commented that they found some surprises with mass marking and DIT tagging at Chilliwack Hatchery. There were no MSF fisheries on either side of the border. Therefore it was expected that the proportion of marked (Ad+CWT) to unmarked fish (CWT only) released should match when the fish returned and were electronically sampled. This did not happen. Instead, they recovered a significantly higher rate of tags in ad clipped fish. The sampling was quite rigorous and potential problems with electronic sampling (wanding) were largely ruled out.

These results are causing a lot of pondering with respect to the DIT tagging. One possible explanation is that there was *a sport fishery open only on hatchery coho (i.e. ad clipped)* and the sport fishers likely were illegally taking Ad+CWT marked chinook along with the Ad clipped coho that could be retained. The reasoning with respect to the Ad clip targeting is twofold:

1) Some anglers only retain Ad clipped fish because they are aware of the MSF rules only in a general sense. That is, they may not be able to tell species apart. Therefore, just to be safe, they retain only hatchery fish.
2) In addition, some anglers are very "environmentally aware and friends of the wild stocks". So on their own principles they will only retain hatchery fish regardless of whether retention of wild fish is permitted.

Both theories would have similar results. Data are currently being analyzed to try to explain the unexpected anomalies seen in the DIT marking.

C. Washington

WDFW: Mark Kimbel noted that WDFW's mass marking program has been about the same for the past two years. With respect to steelhead, most hatchery production has been adipose clipped since 1981. About 31 million coho throughout the state are also mass marked by WDFW. The chinook production is not quite there in terms of statewide mass marking. In Puget Sound, about 60% of the fall chinook production (circa 36 million) is now being mass marked. Work is continuing on reaching agreement with the Tribes in Hood Canal to mark an additional seven million chinook. In the Columbia River, approximately five million spring chinook are being marked each year.

Selective fisheries for coho are expected to be the same as in the previous several years. WDFW is also anticipating a selective chinook fishery in the Strait of Juan de Fuca for the first time (area 5/6). There will also be a selective fishery on spring chinook in the lower Columbia River.

USFWS: David Zajac stated that marking and sampling levels for coho and spring chinook were status quo for 2003. Nearly all coho production was either mass marked or given a CWT (with

or without the Ad clip), and 100% of the spring chinook were adipose clipped. Returns were 100% electronically sampled at all hatcheries. There were no selective fisheries.

Out of a total production of 5.8 million coho, 3,100,000 were mass marked with the Ad clip, 595,000 were Ad+CWT marked, and 1,635,000 were double index tagged (CWT only). Only two small groups of fish (Quilcene Hatchery: 110,000 and Willard Hatchery: 380,000) were released with no mark or tag. **(Attachment 3)**

USFWS spring chinook production (brood 2002) in the Snake River is projected at 1.7 million fish. All of the fish will be mass marked with the adipose clip. Of those, 1.38 million will be adipose only marked and 230,000 will receive the Ad+CWT mark (**Attachment 4**).

NWIFC: Ron Olson stated that tribal mass marking plans for 2003 are the same as in 2002 (**Attachment 5**). For chinook this amounts to approximately 8 million adipose-marked fish out of a production of 10.6 million. For coho this amounts to approximately 6.3 million adipose-marked fish out of a production of 8.6 million. There is no mass marking of chinook in the Strait of Juan de Fuca or on the coast. There are no selective sport fisheries planned.

D. Oregon

Christine Mallette discussed ODFW's marking program in 2003. Counting all species, 27.8 million fish were marked with various mark types (**Attachment 6**). Of these, 6.4 million were marked in coastal facilities and 21.4 million were marked in the Columbia River. This is similar to last year's marking program of 25 million fish.

With respect to coho, a total of 5.8 million were marked, with the lion's share (5.06 million) being done in the Columbia Basin. When combining coastal and Columbia Basin, 575,000 were Ad+CWT marked, 4.4 million were Ad only marked and 775,000 were given a CWT only. This latter group includes 650,000 fish that were marked by USFWS at the Cascade Hatchery.

A total of 12.5 million spring chinook were marked, of which 2.7 million were coastal fish and 9.8 million were primarily in the Willamette River system. Combining coastal and Columbia Basin marking, 2.4 million were Ad+CWT marked, 217,000 were given a CWT only, and 9.6 million were Ad only marked. An addition 308,000 fish received a secondary mark with the Ad clip (AdLM+CWT; AdRV+CWT; AdLV+CWT; or AdLM). Christine also noted that a small number of the Ad only fish came from above Bonneville Dam (Lostine River: 60,000; Umatilla River: 320,000).

A total of 1.874 million fall chinook were also marked with the Ad clip, most of which also received a CWT (Ad+CWT: 1.87 million; AdLV+CWT: 100,000; Ad: 300,000).

Oregon's selective fisheries are summarized in **Attachment 7**:

Willamette Spring Chinook: The 2003 forecast harvest is 109,800 fish with a 10% wild and 90% hatchery composition. The expected adipose clip mark rate is projected at 96% on hatchery fish and 86% on the aggregate run. Oregon is implementing the tangle net fishery to allow live capture and release of upriver listed spring chinook stocks. All sport fisheries in the Willamette Basin are restricted to marked fish only.

Upriver Spring Chinook:

A continued strong upriver spring chinook return (193,000) is forecast for 2003, with a run of 75% hatchery fish. The expected Ad clip rate is 55% for the total run. A selective sport fishery on marked fish will be held in both the mainstem and tributaries. A Treaty Indian non-selective commercial fishery was conducted in April 2003.

Summer Chinook: The 2003 forecast is 87,600 fish. Plans call for a limited sport selective fishery for adipose fin marked fish, as well as Treaty Indian ceremonial and subsistence fisheries.

Fall Chinook: There are no mark selective fisheries on fall run chinook. A total of 622,600 fall chinook were forecast to the Columbia River mouth in 2003. This represents the fourth largest return since 1948.

Coho: The 2003 ocean sport fishery will include a selective fishery on adipose marked hatchery coho. Hatchery coho quotas off the central Oregon coast is 88,000 fish, and 112,500 off the Columbia River mouth. In addition, the Buoy 10 fishery is expected to harvest about 35,000 marked coho. There will also be Columbia River mainstem and Select Area gill net fisheries focused on marked hatchery coho.

E. Idaho

Rodney Duke noted that IDFG's hatcheries are full for the first time in many years. He distributed a table **(Attachment 8)** outlining plans for mass marking virtually 100% of Idaho's 2002 brood hatchery chinook. Out of 10.5 million fish (expected production), 7.3 million will be adipose-only clipped., and 2 million will receive the Ad+CWT mark. In addition, 756,000 fish will receive a CWT with no fin mark. Another 483,000 will receive a LV or RV mark. Subsets of fish in these groupings will also be given a pit tag. Idaho uses 100% electronic sampling in the sport fisheries and returns at the hatcheries.

In recent years IDFG has used both blank wire and agency only wire. This year, however, IDFG's intent is to use fully coded CWTs for 100% of the tagging as there was a need to identify fish to the project level. However, Rodney cautioned that this could be modified in the future. He also explained that nearly all of the 100% CWT marked groups of fish are part of the Idaho Supplemental Studies (ISS) program.

In response to a question about which stocks were listed, Rodney referred the Committee to the first column in his handout (**Attachment 6**). The status 'U' refers to unlisted and 'L' refers to listed. Fish being reared at McCall, Sawtooth, and Pahsimeroi hatcheries are listed. In addition, the McCall and Rapid River stocks are designated as US/Canada indicator stocks.

F. California

Speaking on behalf of Bob Kano who could not attend the meeting, Ken Johnson reported that California has been mass marking its steelhead production for many years now. Only visual sampling is used at this point. With respect to salmon, California continues to slowly move

towards implementation of a constant fractional marking program in the Sacramento River system. It is still in the planning stages but significant progress has been achieved. In addition, two statisticians have been hired to develop a protocol for marking and recovery. There are no plans for a selective fishery on salmon yet.

Guy Thornburgh (NMT) added that NMT just completed a two year pilot marking program in California using the new marking trailers. At this point, there is no proposed mass marking program other than that introduced by Congressman Norm Dicks' legislation (Agenda item 6). He added that Stan Allen (StreamNet - PSMFC) has been regularly attending meetings of a committee that is working on significantly improving in-river sampling for CWTs. In addition, some WDFW/PSMFC and ODFW staff will be attending a California workshop in June to help them in developing the necessary protocols for sampling and tag recovery.

Guy further explained that the constant fractional marking plan under development does not include external fin clips. Rather, they are looking at tagging a significant fraction (20-30% or more) of their hatchery production as a better way of evaluating what is happening with their restoration projects.

Guy also noted that there is some tagging of wild chinook with half length tags in California. In addition, there is ongoing tagging to evaluate hatchery programs. Coleman NFH has had the most complete tagging program with the assistance of the NMT pilot program, with many fish receiving two tags. With end of the pilot program, they had to scale back their tagging level from 100%.

Note: Melodie Palmer-Zwahlen (CDFG) was contacted after the Mark Meeting and confirmed that per NMFS's ESA consultation standards, there continues to be no retention of coho in California's commercial and sport ocean fisheries. This is to protect the Oregon Coast Natural coho stocks (OCN) that are in trouble.

5. Agency Reports on Tagging and Marking Plans for 2004 Releases

Only a few agencies noted any changes of substance in their respective marking programs.

ADFG:	Stable; no mass marking
Metlakatla	Stable; no mass marking
CDFO:	Stable
NMFS:	Increase of 200,000 chinook tagged
WDFW:	Increase of 2.1 million CWT marked chinook
	Coho- no change
NWIFC:	Stable
ODFW	Marginal changes
USFWS	Stable
IDFG	Increases for both Ad clips and CWTs as all hatcheries
CDFG	Stable
CRITFC	Minor increases

6. Mass Marking Legislation in 2003 (Mark Kimbel, WDFW; David Zajac, USFWS; Ron Olson, NWIFC)

FY 2003 congressional appropriations language was passed by Congress that calls for the mass marking of salmonids produced at federally funded or operated hatcheries, including but not limited to chinook, coho, and steelhead. This legislation included $10 million to purchase seven of NMT's MATS trailers (Marking and Tagging System). The funds were allotted as follows: WDFW - 2 trailers, ODFW - 3 trailers, IDFG - 2 trailers.

The FY 2003 spending bill did not have new funds allocated to implement the actual tagging. Therefore, on March 17, 2003 Congressman Norm Dicks (Washington) convened a multi-agency meeting in Olympia to address how to move forward. He stressed that hatchery fish need to be marked so that they can be harvested while protecting the wild stocks. He also acknowledged that the implementation would have to be done on a stepwise basis since there wasn't funding appropriated in the initial legislation to do the mass marking and associated tagging.

Mark Kimbel (WDFW) attended this meeting and noted that Tribal representatives expressed serious concerns about the broad mass marking mandate of the legislation . Meeting participants acknowledged that Treaty rights can't be interfered with and that the involved parties will need to jointly determine which production should be marked or not marked.. It was therefore agreed that the directors of WDFW and NWIFC would assemble a team of co-managers to address implementation of the mass marking legislation.

Ron Olson noted that NWIFC also had concerns that the language of the legislation is very vague in terms of geographic area impacted, facilities affected, and stocks to be marked. In addition, NWIFC has concerns about legal agreements that now surround mass marking and selective fisheries on the international level through the Pacific Salmon Treaty, and between the Tribes and the State of Washington (one being filed in federal court). How does this new legislation fit with the existing legal agreements already in place?

Marc Hamer (CDFO) asked what was the compelling reason for this new federal legislation. David Zajac noted that Congressman Dicks is an avid sportfisher and a strong advocate of mass marking so that hatchery fish can be harvested in selective fisheries. Christine Mallette added that the original motivation was a multi-agency request (ODFW, WDFW, IDFG) to the U.S. Congress for federal funding to purchase the MATS trailers for use in the Columbia Basin.

A question arose as to the timing of the implementation, given that there were no funds to do so in the FY 2003 appropriations bill. Guy Thornburgh responded that Congressman Dicks obviously did not expect the impacted agencies to reprogram this year's funding away from other budgeted hatchery activities. He has already submitted a request for funding in FY 2004 appropriations under the Department of Interior, with the funding to be spread over three years. Full funding wasn't requested because the assembled team has not yet provided the requested comprehensive marking plan.

Guy also cautioned that Congressman Dicks is likely to get frustrated and move forward on his own if the region doesn't soon produce a comprehensive plan that identifies:

1) which hatcheries need to be marked,
2) which stocks need to be marked,

3) how much money is needed for the operational costs,
4) how much money is needed for equipment,
5) what are the needs of electronic sampling equipment in the future,
6) what the impacts are on Canada,
7) and what the impacts are on Alaska.

A question was asked if the mandated mass marking applied to federally funded hatcheries in Washington, or to the entire NW region (Washington, Oregon and Idaho), or also include California? Guy clarified that it included the NW region and California.

The question was then asked why California would be part of the mandated mass marking when they don't have any mass marking going on now nor have any plans for selective fisheries. Guy responded that the motivation is not just selective fisheries. NMFS has been charged for several years now to put together a comprehensive marking and tagging plan in the Columbia Basin, and this has not yet been accomplished. Similarly, California has federally funded facilities in the Sacramento River system with endangered and threatened stocks and no marking system in place to differentiate between wild and hatchery stocks. Consequently, this legislation also has the objective of motivating California to implement the much needed mass marking program.

Ron Olson again stressed that there are many complexities that need to be resolved in order to implement this legislation. It may not be rational to mass mark those stocks where the contribution was small. Christine Mallette concurred and said that if all fish meant for harvest had to be mass marked, it would mean a major impact on ODFW's marking program. In specific, she noted their sizable fall chinook harvest which is now unmarked and harvested in non-selective fisheries. These fish would have to be marked.

Note: the following is an update on FY 2004 appropriations language as reported by the Columbia Basin Bulletin (and provided by Gary Morishima 6/27/03):

> *"The House Interior Appropriations bill continues funds for another initiative begun by Dicks last year to require all Northwest hatchery salmon to be marked for easy identification by fishermen. The clipping of the adipose fin helps in conducting selective catches of salmon and preventing threatened and endangered species from being taken and harmed.*
>
> *The FY03 spending bill mandated the complete marking of hatchery-raised salmon stocks in the Northwest through the use of specially developed automated machinery for the purpose.*
>
> *The FY04 bill contains $2.5 million for the U.S. Fish and Wildlife Service and Bureau of Indian Affairs to purchase mass-marking machines and clip the fins of all salmon from federal hatcheries, as well as assistance and instructions to the states of Oregon and Washington for similar work at state hatcheries."*

7. Report on PSC Selective Fisheries Evaluation Committee (SFEC)

Ken Johnson prefaced the agenda item by noting that the Mark Committee had struggled for many years with marking issues that had political overtones. Certainly the desequestering of the adipose clip was the major stumbling block for the Committee. As a result, there were a number

of resolutions calling for the PSC to deal with some of those issues. That has come to pass with the creation of the Selective Fisheries Evaluation Committee (SFEC) in 1998. This past year, the SFEC has gotten very involved in issues of mass marking and mark selective fisheries by evaluating selective fishery and mass marking proposals.

A. Analytical Working Group (Ken Johnson)

Ken noted that he wasn't qualified to say much about the specific work of the Analytical Working Group (AWG) and therefore would be referring to information summarized in a draft report (03/24/03) entitled "2003 SFEC Final Report to PSC".
(*Interested readers should contact the PSC for a copy of the SFEC's final report*).

The CWT has long served the Pacific Salmon Commission (PSC) as the only method available for estimating and monitoring fishery impacts on individual stocks of chinook and coho. The basic assumption is that tagged hatchery fish have similar exploitation rates as wild fish and thus can be used to represent the unmarked fish in the harvest. However, this assumption was violated to some degree when several agencies opted to mass mark their hatchery production with the adipose clip for the eventual purpose of having mark selective fisheries. In a mark selective fishery, marked and unmarked fish are subjected to different fishing pressures. Therefore the basic premise of CWT random sampling is violated (i.e. equal exploitation rates on marked and unmarked fish).

SFEC was specifically created in 1998 to provide advice to the PSC regarding potential implications of mass marking and mark selective fisheries on the coastwide CWT program. More recently, in February 2002, the Commission tasked the SFEC to develop templates and protocols for agencies to use in submitting annual mass marking (MM) and mark selective fisheries (MSF) proposals.

SFEC's evaluation of MM and MSF proposals really got moving at the end of 2002, with successive meetings held in November 2002, January 2003, and February 2003. The Analytical Working Group (AWG) focused on the MSF proposals, while the Regional Coordination Working Group (RCWG) tackled the MM proposals. Copies of the templates used by the AWG (**Attachment 9**) and the RCWG (**Attachment 10**) are attached. Ken noted that the RCWG proposal template for mass marking was not that different from the one that the Mark Committee has been using for some time (**Attachment 11**).

The RCWG was successful in developing a qualitative rating system by which they rated the MM proposals received between November 2002 and January 2003. The work of the AWG proved much more complex and they were not able to develop a rating system for the MSF proposals. In brief, mark selective fisheries cannot be sampled for stock and age specific mortalities of unmarked fish. Instead, estimates of incidental mortalities must be made, adding uncertainty to the estimates of total fishery related mortalities. The AWG members all agreed that a MSF would cause an impact on the level of uncertainty. However, they were not able to determine how much of an impact would result in practical concerns.

The second problem faced by the AWG was the unanswered question of how much uncertainty the CWT system could absorb before becoming dysfunctional. Two analyses were done in an attempt to answer this question. However, the uncertainty introduced by a MSF are difficult to quantify, and also lead to different levels of concern that could not be statistically measured or compared. Neither analysis was able to address whether or not the magnitude of the impact was of practical concern.

Given the difficulties in quantifying uncertainty using statistical measures, the AWG concluded that they will need to explore alternative (i.e. non-statistical) approaches to describe uncertainties that are meaningful to the PSC and fish managers

Marianne McClure expressed concern that no one is looking at the cumulative impact of all of the MSF proposals. Ron Olson concurred and noted that the magnitude of the fisheries is likewise unknown to a large extent. Hence the cumulative impact could be very large. It is very hard to known where to draw the line on what is acceptable in terms of proposals.

B. Regional Coordination Working Group (Ron Olson, NWIFC)

Ron Olson began his remarks by noting the key role of the SFEC is to try to maintain the integrity of the CWT system. As such, there is a definite overlap with the role of the Mark Committee. Not surprisingly, a number of Mark Committee members also serve on the RCWG. Ron noted that he serves as the U.S. co-chair, and is joined by Mark Kimbel (WDFW), Ron Josephson (ADFG), Marianne McClure (CRITFC), Marc Hamer (CDFO), and Ken Johnson (PSMFC).

One of the RCWG tasks is to produce an annual report on mass marking for use by the PSC. Unfortunately, for a variety of reasons, it has proven very difficult to gather the necessary data and publish it annually. Instead, the latest report has gone through several iterations and is now a thick two year report of questionable usefulness. Ron also noted that the RCWG members in attendance would be meeting following the close of the Mark Meeting and would be addressing how to streamline the report and make it more useful.

In spite of the problems, Ron noted that there is a lot of valuable information in the report, none of which is captured in another document. This includes mass marking plans, the associated DIT groups, which fisheries are being sampled electronically versus visually, and the results of selective fishery monitoring. The 2000-2001 report will be sent to the PSC shortly.

The RCWG's major emphasis for the past year was to review the proposals for mass marking. There has actually been an obligation for several years now for agencies to report their MM and MSF plans to the PSC. However, it didn't happened consistently and therefore the PSC charged SFEC to develop templates for reporting MM and MSF proposals. This was accomplished last year with the understanding that the agencies would then submit their proposals to SFEC by the mandated November 1 deadline. At that point, the AWG and RCWG would then have two months to review the proposals based on standardized evaluation criteria.

This process didn't happen exactly as hoped in 2002. Many agencies did not submit complete proposals. Part of the problem was that the templates weren't distributed with much lead time to meet the requested deadline of November 1. In addition, Idaho didn't receive an official proposal request. Hence the recent review process ended up being incomplete in terms of coastwide MM and MSF plans. As such, these proposals will be requested again in 2003.

The RCWG's report (**Attachment 12**) didn't find any serious technical concerns for the MM proposals that were submitted and reviewed. However, there were some unresolved overarching issues involving mass marking in general. One concern was that CDFO's proposal was the only one of the eight reviewed that provided all of the requested information. In addition, most of the proposals were not submitted early enough to meet the necessary deadline for adequate review. As such, there is a major need for both complete and timely reporting. Only then can the impact of the proposals on the CWT system be reasonably assessed.

Another major concern is the issue of CWT sampling rates. CDFO data revealed a significant drop off of the sampling rates on coho once mass marked fish began to enter their fisheries. The reason for this was that CDFO could no longer maintain its voluntary electronic sampling program (*see expanded explanation for this directly below*). A concerted effort will be made by the RCWG next year to collect sampling rate information as there are other anecdotal data, not all related to mass marking, that also indicate a reduction in sampling effort for CWTs. Adequate CWT sampling rates are essential for carrying out any meaningful analyses on tagged fish.

Impact of Mass Marking on CDFO's Electronic Sampling Program for the Sport Coho Fishery (Marc Hamer: post meeting explanation)

Prior to mass marking, the CDFO sport recovery program was voluntary. We asked anglers to turn in heads from ad-clipped salmon. We visually sampled the catch for ad-clips in order to estimate total marks in the catch. The ratio of total estimated marks to number of heads turned in was the basis of the recovery estimation factor. The assumption was all marked fish carried a CWT. (This is indirect sampling).

When agencies began to mass mark, CDFO embarked on a direct sampling program. We feared a glut of no-pin heads and we also were concerned about finding DITs in non-selective fisheries. Samplers used wands and took heads from fish that "beeped". We observed two items.

1) An unacceptable rate of wanding errors. We mainly attributed these errors to two items. The "dockside" sampling environment is not conducive to wanding, and that wanding requires skills developed by handling a large number of fish, say as at a hatchery. The creel people do not see a huge volume.
2) Direct sampling is very time consuming. The result: smaller samples. Smaller samples result in fewer CWTs and also a less accurate estimate of catch. We do not have the resources to increase sampling effort. (Not to mention also that some anglers are not always in the mood for an extended interview on return to the wharf.)

Earlier this year, CDFO decided to revert back to the indirect program. Our analysts stated that DIT recoveries from sport fisheries are not important at this time. We have adjusted our estimation algorithms to accommodate no-pin heads from the anglers. We continue to operate and promote our voluntary head recovery program but we no longer electronically sample the sport fleet. The sampling is "passive", basically a visual examination for piece counts and mark counts.

Mouth wanding of chinook was also addressed by the RCWG. Past studies have shown that in order to get very high detection rates of tags (i.e. 99%+) in chinook, wanding must be done both on the surface of the snout and inside the mouth. Because of the abrasive affect of the fish teeth, mouth wanding requires the use of titanium shields on the tip of the wand. NMT now has this product available and the RCWG is hopeful that recovery agencies will now retrofit their wands with the shields. Once this is done, the technological challenges with electronic sampling equipment should be largely resolved.

Lastly, Ron brought up two data management issues that the Mark Committee needed to be advised of. One is the need to develop a new data set regarding MSFs. Things have been occurring now for a few years and there still isn't an easy way to look at the data and evaluate what has transpired . The other one is that there are tagged and untagged paired DIT groups out in the ocean to estimate the impacts of MSFs, and to allow estimates of recoveries of unclipped fish in areas where there is only visual sampling going on (i.e. Alaska, coast of Oregon, and California). Somehow, these estimates of "pseudo tag recoveries" need to get into the CWT database as a way of maintaining the CWT system.

For 2003, the RCWG will be working on revising the annual report format, assessing the CWT sampling rates, helping the AWG where possible, and get some basic DIT assessment done. That latter task is overdue as DIT groups have been released for several years now and there is no published report out yet that looks at the results of DIT tagging. A lot of money is being spent to tag these groups. In addition, there is concern whether or not the DIT coverage is adequate to meet the necessary information requirements for MSFs. There is also serious concern that the DIT groups won't even be usable for analyzing chinook survival rates. Given this, Ron stressed it would be good to learn sooner than later if DIT groups are worth the time and money now invested.

The coordination aspects are very important for the RCWG, Data Sharing, and the Mark Committee. Ron stressed that it is getting murkier as to who is doing what (e.g. who is responsible for the DIT analysis). As such, he suggested that the Mark Committee has an important role in helping resolve those questions (see next agenda item).

8. Blurred Roles of SFEC and Mark Committee in Mass Marking Issues

Ken Johnson noted that the SFEC review process for MM and MSF proposals has been very helpful. However, it also highlighted an overlap or blurring of roles for the Mark Committee and the RCWG in terms of reviewing mass marking proposals. As such, the role of the Mark Committee now needs to be more clearly delineated.

The ensuing discussion proved to be wide ranging and rambling at times, but it kept coming back to Idaho's situation as it typified the blurred roles. The basic question was whether or not IDFG needed to submit mass marking proposals to both the Mark Committee and SFEC, and if not, then which one of the two. At this point in time, IDFG has submitted mass marking proposals in the Mark Committee format for their fall chinook (brood years 2002-2003) (**Attachment 13**) and their spring/summer chinook (brood years 2003-2008) marking programs (**Attachment 14**). These proposals (see Agenda 9A) are a request for a second five year exemption to mass mark Snake River spring chinook and a three year exemption to mass mark fall chinook with the adipose only clip..

Marianne McClure stated that there shouldn't be any confusion of roles since the Mark Committee spent a lot of effort defining the boundaries as recorded in its "Charter": (*Regional Coordination and Agreements on Marking and Tagging Pacific Coast Salmonids*). She cited Specific Objectives 1.d and 1.f. (listed below) as evidence that the boundaries were well defined between SFEC (i.e. its working groups) and the Mark Committee.

d. The Pacific Salmon Commission has the lead role in evaluating proposals for adipose mass marking and selective fisheries when there are international impacts on CWT and/or mark sampling programs or the information they provide. (underlining added)

f. The Mark Committee will review all marking and tagging proposals that do not have international ramifications. The Mark Committee will recommend that the program is acceptable as presented if there is full consensus or agreement by majority vote. Otherwise, the Mark Committee will deny approval for the program or recommend to the applicant how the proposal should be modified so that it will be acceptable. Once the revised program is presented to, and approved by the Mark Committee, the program can proceed as modified.

Ken Johnson agreed that the Mark Committee's Charter went a long way towards resolving the boundaries but it is still very hard to define what represents 'international ramifications'. As an example, he noted that Idaho's salmon stocks have almost no presence in the ocean fisheries but IDFG still had been asked to submit a MM proposal. Ron Josephson replied that the request wasn't based on a consensus of the SFEC. Ron Olson agreed and said that it likely was more for completeness that Idaho was asked to submit a MM proposal. This issue will be addressed again next year to determine if Idaho's marking information really is needed by the PSC.

Marianne McClure also pointed out that the RCWG had established two criteria for determining whether or not a given chinook or coho marking program needs to be reported:

1) A minimum of 100,000 marked fish,
2) and if the marked fish are impacted by fisheries of concern to PSC.

Ron Josephson then commented that even though SFEC is now reviewing MM and MSF proposals, they are likewise struggling with their new role as there is no way to accurately quantify the impact of the various proposals. The basic problem is that there is no way to directly measure the mortalities of non-targeted fish, nor is there any agreement on what constitutes a 'show stopper' in terms of protecting the integrity of the CWT system. Said another way, the minimum acceptable level of precision can not be defined, nor can we define how much worse precision will become with mark selective fisheries.

Marc Hamer expressed concern about the apparent redundancy, given that SFEC was now very involved in the mass marking issues. As such, it doesn't make much sense for the Mark Committee to rehash the same work being done by SFEC. He also noted that many of the Mark Committee members also participate on the SFEC working groups and just put on a different hat.

Ron Olson concurred and pointed out that the Mark Committee certainly could be expanding its role and discussing new marking technologies, trailer logistics, otoliths, and a whole host of other things. Rodney Duke countered that he had concerns that the right players may not be at the table if the Mark Committee moves more into exchange of technical information. For example, tagging trailer technology requires individuals who spend a lot of time in the trailers.

Marianne McClure voiced strong support for the Mark Committee and emphasized that it continues to have a vital role in regional coordination. She noted that there are many regional issues related to marking and tagging that are not addressed by the SFEC. In addition, the Committee has a much broader regional representation of all marking entities on the entire west coast. Likewise, the Committee serves as an effective forum for exchanging key information on data management and data center advances. Ken Johnson added that he was in total agreement and wasn't suggesting in any way that the Mark Committee was about to become a dinosaur. Rather, the Mark Committee's role appears to have changed a bit and the boundaries simply need to be better defined.

There was some confusion as to whether or not Idaho needed to submit both its fall chinook MM proposal and its spring/summer MM proposal to SFEC. The general consensus was that Idaho should send everything to SFEC and let them decide if it is required in the future. In the interim, the Mark Committee will approve Idaho's mass marking plans for 2004.

Marianne McClure added a reality check by noting that SFEC's only objective in reviewing MM and MSF proposals is to maintain the viability of the CWT system. Ron Olson agreed and said that is the only thing the RCWG would be looking at. Coordination of marks (i.e. conflicts with marks) and all other types of marking issues will have to come to the Mark Committee.

Note: The following minutes are not in chronological order:
While dealing with Agenda item 17 (the "Charter"), the recommendation was made that a single mass marking proposal template should be developed to simplify matters. As such, marking agencies could use the same form to submit a mass marking variance request to either the RCWG or the Mark Committee, or both as the case may require.

This suggestion was initially accepted with enthusiasm. However, upon further discussion, it was recognized that the RCWG will only be dealing with mass marking requests involving the adipose only mark. The Mark Committee, in contrast, will continue to deal with all marks, including the adipose clip, other fin marks (single or in combinations: [e.g. LV, Ad-RV, etc]), and the use of blank wire (i.e. agency only wire). Consequently there will have to be some minor differences between the two formats. However, most of the information requested by both the RCWG and Mark Committee should be the same and thus common to both forms. Ron Olson agreed and promised that the RCWG would work with the Mark Committee to merge the two existing formats as much as possible.

Action: After further discussion, the following agreements were reached.

1) The Mark Committee will ask SFEC next year for a courtesy review to see if the marking agencies have come any closer to providing adequate information on their respective mass marking programs.
2) Mass marking proposals with 100,000 or more adipose clipped chinook or coho will automatically go to SFEC for review if the marked fish are caught in fisheries of PSC concern.
3) All other mass marking proposals will come to the Mark Committee for review, with the understanding that some mass marking programs will represent policy decisions and submitted only for courtesy review and the opportunity to make comments if there are technical concerns on the part of the Mark Committee.
4) Blank wire proposals and all technical marking issues will continue to come to the Mark Committee for review.
5) The Mark Committee approves Idaho's marking variance plans for 2004.
6) No action will be taken on Idaho's request for a three year marking variance for fall chinook and a five year variance request to mass mark their spring and summer chinook. These requests will be reviewed by the Mark Committee again in 2004 following a decision from SFEC on whether or not they will review Idaho's MM proposals annually.
7) RCWG will work with the Mark Committee to merge their respective marking variance request forms into as similar as possible templates to expedite the request process.

9. Marking Variance Requests for Adipose-Only Marking Studies

A. Five and Three Year Exemptions: Snake River Chinook (IDFG)

IDFG submitted two proposals to the Mark Committee to request a second five year exemption to mass mark Snake River spring chinook and a three year exemption to mass mark fall chinook with the adipose only clip. USFWS did not submit a formal proposal but it was understood that if IDFG's proposals were approved, it would apply to USFWS chinook hatchery production in the Snake River as during the past five years.
Action: None taken. IDFG and USFWS's requests were dealt with in Agenda 8 (action item 6).

B. Blank Wire (Agency only) Proposals

WDFW: Mark Kimbel submitted two marking variance requests to blank wire tag fish. Both are on-going projects of several years. The first request was to mark an estimated 300,000 wild stock coho smolts captured at the Mayfield Trap as they out-migrate in the Tilton River (Cowlitz River system). The agency only wire will be used to identify adults recovered at the Cowlitz Salmon Separator and then return them back into the Tilton River to increase the natural production in that area (**Attachment 15**).

The second request involves marking Klickitat River upriver bright fall chinook. In past years, about 50% of the production (1.8 million fish) were blank wire tagged. Following an analysis, it was determined that the blank wire tagging could be cut back to 800,000 fish.

Ron Josephson noted that Alaska had no concerns with the marking as none would be given an adipose clip and thus not seen in ADFG's visual sampling program.
Action: Approval granted.

ODFW: Christine Mallette noted that Oregon had drastically reduced its use of blank and agency only wire from several million tags a year to about 500,000 tags a year. The large blank wire marking program for Umatilla production (2.7 million annually) was ended and all fall chinook are now marked with CWTs.

ODFW's first request (**Attachment 16**) involves the use of true blank wire to mark 430,000 upriver bright fall chinook (brood 2002) at Bonneville Hatchery which are reared for the Umatilla River program. The true blank wire is being applied simply to use up the remaining stock of wire. Christine noted that this is an on-going marking program that is in its fourth year, with about 90% of the production blank wire tagged and the rest given a CWT. Umatilla fall chinook often stray into the Snake River. Therefore, the blank wire is used to separate and remove these fish at the Lower Granite Dam trap prior to straying into the Snake River fall chinook ESU. Projected recoveries are included in the request**.**

Adrian Celewycz asked how other CWT marked fish are able to pass up into the Snake River, given that electronic detection equipment is used to remove these Umatilla fall chinook at the Lower Granite Dam trap. Christine explained that it is largely done by timing of fish runs. Rodney Duke also noted that Idaho doesn't have any CWT tagged fall chinook going into the Snake River. He added that is why IDFG is marking 520,000 fall chinook (Lyons Ferry stock) with the adipose only mark for release in Hells Canyon.

ODFW's second request (**Attachment 17**) was to mark 50,000 summer run Imnaha River steelhead (brood year 2003). It is an on-going program in the in the lower Snake River.

Marianne McClure noted that the Columbia River Tribes continue to be against mass marking. However, since NMFS requires the marking as a prerequisite to producing fish, the Tribes have little choice because they want to restore production.
Action: ODFW's two blank wire requests were approved.

10. Alert to Reused Tag Codes in California

On behalf of Bob Kano who could not be present, Ken Johnson reported that three CDFG tagcodes were recently discovered to have been reused. The tagcodes were originated used on tags to mark fall chinook released in the Feather River in 1994 and American River in 2000. The second release of the tagcodes was in kokanee released in reservoirs of the Sacramento/San Joaquin River drainage. Some kokanee were expected to escape the reservoirs and eventually be taken in the fisheries.

The reused tagcodes weren't viewed as having created a problem for other agencies. Rather it was more as an informational alert that the mix up had happened, and that possibly some of the reused tags could be recovered.

Details of the first and second release groups are provided below:

First Release

Tag Code	Run/Species	Br Year	Release Date	Release Site
062555	Fall Chin	2000	May 2001	Folsom Lake, American River
063650	Fall Chin	1994	Nov 1995	Oroville Reservoir, Feather River
063718	Fall Chin	1994	Nov 1995	Oroville Reservoir, Feather River

Second Release

Tag Code	Run/Species	Br Year	Release Date	Release Site
062555	Kokanee	2001	May 2002	Bullards Bar Reservoir, Yuba River
063650	Kokanee	2000	May 2001	New Melones Reserv., Stanislaus R
063718	Kokanee	2000	May 2001	New Melones Reserv., Stanislaus R

Action: Per established CWT data specifications, the tag codes for the second releases will have an "*2" appended to the code. (e.g. 062555*2). The first release will remain as initially reported (i.e. *without* the *1" appended). This will keep the tag codes reported for any recoveries of the first release in synch with the release file, and thus not penalize the first release study.

11. Querying Problem for CWT Data as a Result of Unrequired Fields being Null

Ken Johnson reviewed the nasty possibility of obtaining erroneous CWT output from RMIS when querying by different but equally valid selection criteria. This was highlighted by a new data user's recent RMIS data retrieval exercise. In the given example, the individual was looking for release records for a given area and time period. Very different results were obtained when 'Brood Year' or 'Last Release Date Year' was used as the data selection criterion. In the first case, all four release records were retrieved. In the second case, only one release record was retrieved. As a new user, the individual didn't know the data well enough to recognize if either or neither result was correct.

The basic problem exists because many of the tag release data fields are not mandatory and hence often null when a tag release record is reported. Hence, when one uses a non-required field as a data retrieval criterion, there is a good possibility that the retrieval results will be incomplete and misleading.

The time of release of tagged fish is a particularly thorny problem because both the 'First Release Date' and the 'Last Release Date' are needed to specify the complete release period. *Only one of the two fields is required for reporting purposes.* Unfortunately, ***it can be either one*** because a large percentage of the historical releases had only one of the two dates reported. Hence users can't be certain if they are getting a complete data retrieval when querying the database by date.

Ken noted that this type of problem was obviously an issue that must be resolved through the PSC Data Standards Working Group. However, as CWT data users, the Mark Committee needs to understand that data retrieval runs using non-required fields as selection criteria can be fraught with danger in terms of potential erroneous output.

The 'Run' field is another non-required field that gives users a lot of grief as it is often null in the release table. Thus any data retrieval request that includes run as one of the selection criteria can result in bogus output in many (but not all!) cases.

In the ensuring discussion, Bill Johnson (ADFG) noted that many people are very aware that null fields are an inherent problem whenever directly querying any SQL database. If users don't understand the limitations of the data, there is no way to ensure that their queries will result in accurate output. He also estimated that at least a third of the data fields in the Release database are optional in terms of reporting. (*It is actually far worse: 30 out of the 41 fields are optional for various reasons*). User education was recommended as the best way to help users to understand the database limitations.

Ron Josephson suggested that the Mark Center simply use 'Release Year' as the selection field and automatically select the other field if the preferred release date field is null. Jim Longwill agreed that this could be a 'work around' solution that would circumvent the null date problem.

Marianne McClure suggested that RMIS use different colors to identify those fields that are required and those that are optional in terms of reporting. Dan Webb responded that the Mark Center had given that approach some serious consideration but hadn't made any decision yet.

Jim Longwill also noted that users are referred to the CWT Data File Definition, Specifications and Validation" document to determine which fields are required and which ones are optional. Marc Hamer then brought the meeting to a halt with good-humored laughter when he quipped, "Do they ever come back then?" The humor was not without merit as the data exchange specifications can be quite daunting.

Action: Ken Johnson noted that he would bring the issue of null release dates to the PSC Data Standards Working Group to see if there was consensus in requiring one of the fields to be reported at all times. His preference was the first date of release but it could just as well be the last date of release. In the interim, the Mark Center will try to do a better job of educating users to use caution when making data retrievals using non-required fields as selection criteria.

12. Northwest Marine Technology (Guy Thornburgh)

Guy Thornburgh addressed a wide range of topics in his comments to the Mark Committee.

1) Titanium shields: The titanium tips for the wands are now available. It requires that agencies send in their wands to NMT's Shaw Island facility to be fitted. Guy apologized for the long delay in getting this product to market but explained that it had been a nightmare getting the titanium shield produced for a variety of reasons.

2) Illuminator: The final version of the Illuminator was displayed for the Committee. It uses a long life LED for lighting and is specifically designed to aid in the reading of the decimal CWTs now being produced. It fits over the NMT brass reading jig and also fits under most microscopes.

3) Drive Roller Puller: Guy also announced the availability of a new Drive Roller Puller for removing drive rollers that are stuck on the shaft due to corrosion or stripped set screws. It is far safer than trying to use a buck knife or screw driver to do the job. All new Mark IV units will come with them.

4) New Staff Members:
   - Geraldine Vander Haegen has accepted a half time position at NMT's Olympia office and no longer works for WDFW.
   - John Ransier has also joined NMT's biological staff. He spent many years working for the Florida Department of Fish and Wildlife, and is the only one in the office who has broad experience in marking and tagging species other than salmon.
   - Don Souza has been hired as NMT's new production manager for the marking trailers and has been on the job for about two months.
   - Brian Toews recently hired as a technician and joins Danielle Abeyta and Joel LaHaie with responsibilities of servicing the tagging trailers. He is in the training mode at this time.

5) New Trailers: Five new MATS trailers are under production for delivery in the spring. Additional training is going to be provided to new operators. A series of minor problems have been resolved, including replacement of a brand of touch screens that didn't work well, and replacement of a bad batch of air cylinders for the sorters. The new eight port diverter on the sorter isn't working as well as hoped and work is continuing on that problem.

6) New Tube Detector Developments: Guy noted that NMT is now working on a new tube detector that will eliminate the problem of keeping moisture out of the current tube detectors. Guy stressed that the technology was much improved over that used for the R8000 and R9500 series. The prototype model is a four inch tube (cross section: 2.5 x 4.0 inches) that is about the size of the current QCD and is due out this coming spring. The new model is being developed to go on a machine to vaccinate fish. It will replace the current QCD and has the added advantage that it doesn't have to be tied to a MARK IV unit. As such, it will also be able to function as a stand alone sampling device. Most of the electronics are now pulled out of the tube and the tube is completely water proof. This also eliminates problems with shipment by air. Lastly, the new unit will have an optional diverter gate that can be attached.

   Once work on the four inch model is accomplished, NMT will begin work on a 14 or 15 inch tube detector for installation at hatcheries and dams. These units will weight up to 7-9 hundred pounds and will be installed with a fork lift.

7) Problem with Wrong Agency issued on Tag Codes: Last year, the Yakama Tribe was mistakenly sent a number of tag codes with agency 21 (NWIFC) instead of the assigned agency 61 (CRITFC). The mistake was not discovered until this year when the Tribe submitted the same order as for the prior year. That error was caught in time and new tags with agency 61 were furnished. However, last year's tags were used in Cle Elum spring chinook that are now released.

Ron Olson noted that the database is capable of handling this type of mistake. *There are separate fields for identifying the reporting agency and the releasing agency, and the agency code on the wire does not always match up with the actual releasing agency*. However, this does introduce confusion over which agency is responsible for reporting the releases. Based on other similar coop type of releases in the past, Ron expressed concern that the tag releases not 'fall through the cracks' and be unreported until after recoveries begin to occur.

8) Advanced Production of Tags: Guy also noted that there is a huge rush for tags each year in January, February and March that severely taxes NMT's ability to respond to special orders, etc. In order to smooth out the production during that period, NMT is going to make up major batches of tags during the summer months when the production machines are now idle. To do so, NMT will be approaching each of the major tagging agencies in order to forecast their expected needs for the coming year.

13. Update on MATS Trailer Use (Mark Kimbel, Christine Mallette)

WDFW: Mark Kimbel reported that WDFW has had two MATS trailers in use since last year and they have performed fairly well. There have been the expected problems seen with new technology, with the biggest challenge of getting the trailers to run flawless for a full eight hour shift. He also noted that NMT has been very supportive and has been addressing the problems.

With respect to the future, WDFW will be getting two more trailers under the 2003 funding arranges by Congressman Norm Dicks. Mark added that their challenge now is to get qualified staff to run the trailers. WDFW and NWIFC plan to work together on their joint staffing and training needs as NWIFC will also be getting a trailer under 2004 funding.

ODFW: Christine Mallette noted that ODFW has been using the MATS system since 2000. The first year, they utilized a full service contract (NMT employees and trailer) to tag fish at several of ODFW's hatcheries. That service was no longer available in 2001. Ever since then, ODFW has leased the trailers and worked with NMT to gradually establish their own staff for operating the trailers. She emphasized that she was overall pleased with the arrangement and progress. At this time, they have three employees who are able to run the trailers, and growing in proficiency.

Christine also reported that they have been operating a MATS trailer this spring at a southern coastal hatchery and had 39 days of production (April 8-May 15) to report on. Sixteen of the days resulted in marking more than 30,000 fish in a seven hour shift. The ten best shifts averaged 33,051 fish or 7,722 fish/hour. This rate exceeded their marking ability in manual operated trailers. She also noted that the majority of the marking was adipose only clips. Preliminary results also indicate that the adipose only and the CWT only marks were somewhat faster to do than applying the combined Ad+CWT marks.

She also noted that future plans call for shifting the use of manual trailers to those tagging programs which have 100,000 or fewer fish to mark. The automated trailers will be used to mark the large numbers of fish reared at the production hatcheries.

IDFG: Rodney Duke began his remarks by stating that Idaho had taken a very different approach in the basic design of the MATS trailer. They recently completed the remodeling work

and have tested the trailer at Hells Canyon and the Sawtooth Hatchery where it is presently operating. While 'bugs' are still being worked out, marking levels at Sawtooth Hatchery last week were averaging 60,000 fish per eight hour shift, and more than 100,000 fish per 16 hour shift. The goal is to average 180,000 to 200,000 fish per 24 hour shift.

The basic approach is to use a five line MATS system to mark every possible fish that can be done efficiently. Two staff members keep that operation running. Fish that can't be marked efficiently are shunted to the back of the trailer where four other staff members operate manual marking stations. Results to date average 32,000 fish per eight hour shift with the five line MATS system in the front, and 27,000 fish/hour with the four manual stations in the back of the trailer.

Rodney also had high praise for the precise placement of tags by the automated tagging lines. He noted that well over half of their tagged groups had no tag loss at all and the rest had very low levels of tag loss.

NMT: Guy Thornburgh added that NMT plans on incorporating Rodney's approach in building the new trailers for the federal production hatcheries where the issue is primarily adipose clipping fish rather than tagging. The design at this point calls for six automated clipping lines in the front of the trailer, and two manual clipping stations in the rear. Expectations are that one operator and two clippers can easily adipose only mark over 60,000 fish per shift. This will be very important in meeting clipping needs at large federal hatcheries such as Coleman NFH with 15 million fish to mark each year.

Guy also noted that by April 2004, there will be 12 MATS trailers in operation in the northwest (assuming Congressman Dicks' funding for additional five trailers is realized for 2004).

Washington:	5 trailers
Idaho	3 "
Oregon	3 "
Nez Perce	1 "

Guy also indicated that Congressman Dicks has voiced a willingness to support funding for 10 additional MATS trailers in the future.

14. Proposal to Consider Establishing Standards for Tag Detection and Survivals for Ad Clipped Fish (Ron Josephson, ADFG)

Ron Josephson began the discussion by noting that he needed to do some work and bring a proposal to the table next year that outlines Alaska's concerns regarding standards for tag detection and survival rates for adipose clipped fish. There have been a number of tag detection rate studies done by WDFW and NWIFC, with overall excellent results. Yet there is remains a sizeable variability in results. As such, it is important to be able to get a better understanding of what can be attributed to technique and how much is hardware related. Mark Kimbel asked what the basic purpose was for establishing the minimum standards. Ron explained that it would be very valuable for planning purposes in terms of what to expect in terms of detection levels and marking survival rates.

In particular, Ron noted that he remains skeptical that full length CWTs can be consistently detected at a high level of accuracy with wanding. As an aside, he noted that their biometricians

have established a minimum 98% tag retention rate for their wild stock tagging program as the standard error gets too large at 97% retention. Hence he wondered how they would deal with additional variability of less than 100% detection when using wanding for recoveries.

Ron Olson agreed that wanding could be a problem with chinook and cited the WDFW and NWIFC studies that demonstrated the importance of mouth wanding the larger chinook. Christine Mallette commented that ODFW actually found lower rates of detection in jacks.

Marc Hamer added that CDFO had experienced some problems with wanding in the field for sport fisheries. The general consensus is that wands generally perform well when in the hands of an experienced sampler in a controlled environment. However, in the field, they have noticed a lot of false positives are common with the wand. Likewise, another almost anecdotal experiment resulted in a lot of false positives and a few false negatives.

Action: Ron Josephson will bring a proposal to the Mark Committee based on experimental results to date that he feels are valid for adoption as standards of expected performance levels. As co-chair of the RCWG, Ron Olson also agreed that the working group would assist in collecting and compiling the results of the various studies on tag detection rates.

15. Recovery of USFWS Tags by ODFW in the Columbia Basin and Ocean
(David Zajac, USFWS; Christine Mallette, ODFW)

Christine Mallette noted that for many years, ODFW has had a cooperative agreement to levy a surcharge fee for processing USFWS tags that are recovered in Oregon's sampled commercial and recreational fisheries. This set fee per snout includes costs for sampling, extraction, reading, verification and data management.

This agreement worked well until last year when an unusually large number of tagged fish from USFWS facilities were recovered in the Oregon coastal and Columbia River fisheries because of the exceptional fish survival. This turn of events quickly exceeded USFWS's allocated budget for the surcharge. As a result, USFWS requested that ODFW no longer process any Columbia Basin or ocean recoveries of USFWS tags because of the serious funding shortfall.

David Zajac clarified that the cooperative surcharge agreement was based on a 10 year average of USFWS tag recoveries processed by ODFW. Based on that calculation, USFWS had obligated $7,800 for last year's recoveries and was then shocked to get a bill for $54,775. Given that magnitude of budget overrun, USFWS was forced to request ODFW to stop processing their tags for the time being.

Christine then explained that USFWS's request was honored and the USFWS tags have been "stock piling". What caused more concern, however, was that this stock piling seriously impacted ODFW's procedure for reporting tag recoveries. CWT recoveries are always reported in batches that represent a specific sampling period and area for a fishery. The batches are always reported as a complete whole (i.e. all recoveries represented) for the given fishery. If the recovery data were not complete for the fishery, the data were not reported. With USFWS's request to not process their tags, ODFW was faced with the decision to report incomplete recoveries to the Regional Mark Center or to simply wait until all of the recoveries could be provided.

David Zajac then broke the good news that USFWS had found the extra funds as of May 15th and that the remaining payment for last year's recoveries would be made within 30 days. Christine then pointed out that there was already another charge of $28,000 accumulated for this year's recoveries, and the sampling season had a long ways to go. In order to prevent repetition of last year's shocker billing, ODFW will be coordinating with USFWS on a much more frequent basis as to the number of tags being recovered. Billings also will be done on smaller cycles.

A question was asked why USFWS had to pay a surcharge for recovery of their tags when most other agencies don't do so. Christine explained that ODFW has a reciprocal exchange of tags without cost with the other major tag recovery agencies, including ADFG, CDFO, WDFW, IDFG, and CDFG. In USFWS's case, the agency has a major tagging program but is not a recovery agency. Thus, in fairness, USFWS has agreed to share the cost of recovery.

Marianne McClure also questioned if cost savings couldn't be made by subsampling the USFWS tags rather than process all of them. Christine replied that the tags can't be identified as belonging to USFWS until the tags are extracted and agency '09' is read as the leading part of the tag code. At that point, the lion's share of the work is already completed and only data management remains to be carried out. Marianne acknowledged that point, but again suggested that all recovered heads could be sub-sampled before extracting tags. Christine then stated that if this was done, they probably would not get enough recoveries of the smaller run components such as the Snake River falls.

Action: No action required as issue now resolved.

16. Review List of Addresses for Tag Returns

Ken Johnson noted that he typically receives several requests each year from the various tag recovery labs for an updated list of where to return other agencies' tags. In many cases, the tags are returned to the agency tag coordinator. However, in other cases, the tags go to someone else. Following a brief discussion, it was decided that the Mark Center should email the existing list and have the Mark Coordinators make corrections as necessary.

Ron Olson also asked for an update on which agencies reread tags that are returned: About half of the agencies reported that they do reread any tags returned to them: In a quick survey:

Rereads Tags	Does Not Reread Tags
ADFG	CDFO
CDFG	NMFS-AK
IDFG	NWIFC
ODFW	WDFW
	USFWS

Action: The Mark Center will email the exiting list of names and addresses for tag returns and have the Mark Coordinators make corrections as necessary.

17. Regional Agreements on Marking and Tagging Pacific Salmonids

Action: No changes were required.

May 22, 2003

18. Update on Basin-wide Coordinated Marking Plan in the Columbia River System

As discussed during last year's Mark Meeting, the 2000 Biological Opinion calls for the development and implementation of a comprehensive marking strategy for all salmon and steelhead artificial production programs in the Columbia River basin. The marking plan was to be implemented by the end of 2001 but this ambitious goal has not been achieved yet.

Ken Johnson reported that he had recently spoken with Larry Rutter and Bob Foster (NMFS) and learned that the policy level committee was still working but progress has been much slower than expected because of the unexpected complexity of the task of developing a basin wide coordinated marking plan. Members on the policy level committee include:

Larry Rutter (NMFS)	Christine Mallette (ODFW)
Bob Foster (NMFS)	Bill Tweite (WDFW)
Tim Roth (USFWS)	Sharon Kefer (IDFG)
Mike Matylewich (CRITFC)	
Steve Parker (Yakama Nation)	John Skidmore (BPA - Contract Monitor)

S.P. Cramer & Associates was hired to do the first phase of the regional plan. However their first product was deemed inadequate. The goal for a new draft was scheduled for July1. The firm, Mori-Ko, LLC (Gary Morishima, project lead), has also been involved in the project. Plans were underway to hire a statistician to do an in-depth analysis of tagging levels, sizes of release groups, and sampling rates. This is an area that has long needed a rigorous review.

It was also noted that the comprehensive basin wide marking plan has been further complicated by Congressman Norms Dicks' federal legislation requiring federal hatcheries to mass mark their salmonid production. The full impact of this new development has yet to be determined.

Christine Mallette stated that she was recently assigned to the policy committee and doesn't have a solid understanding of the dynamics of the basin wide marking program yet. However, she noted that there were three phases to the project and the current phase one should have been completed long ago. However, Cramer and Associates have been struggling with the unavailability of data. Thus they have had to go back and review everything from a biometrics perspective, and then come up with their own set of recommendations before identifying appropriate marks, who would be using them, and for what purpose. She also noted that the scope of the project was found to be beyond all expectations in terms of complexity.

ACTION: No action required. However, the Mark Committee still wants to be involved in reviewing the planning reports of the regional marking plan for the Columbia Basin.

19. High Seas Sampling (Adrian Celewycz, NMFS-AK)

A. Results for 2001

Adrian Celewycz (NMFS-Alaska) presented his annual review of the high seas sampling program for CWT marked fish, including fisheries sampled and new range extensions for North American salmonid species. His complete report is provided below:

High-seas coded-wire tag (CWT) recoveries in 2001
By Adrian Celewycz, NOAA Fisheries, Auke Bay Laboratory
Presented to Annual Meeting of the Regional Mark Committee,
Pacific States Marine Fisheries Commission, Sitka, AK, May 22, 2003

U.S. Domestic Groundfish Trawl Fisheries: In 2001, observers on US groundfish vessels in three domestic trawl fisheries on the high seas in the North Pacific Ocean, Gulf of Alaska, and Bering Sea recovered 185 CWTs from a total of over 40,000 salmonids examined for tags. As in previous years, chinook salmon comprised 99% of tagged fish recovered in these commercial trawl fisheries. All salmon are considered prohibited species in these three high seas trawl fisheries and are harvested only as bycatch.

1) North Pacific Ocean: In the 2001 trawl fishery targeting whiting in the North Pacific Ocean off Washington-Oregon-California, chinook salmon was the only species with CWT recoveries. Of the total of 1200 salmon examined for CWTs, 99% were chinook salmon, with coho salmon, pink salmon, and chum salmon comprising the other 1%. Of the 1081 chinook salmon examined, 129 CWTs were recovered, for a tag occurrence rate of 11.9%. The 129 CWT chinook salmon recovered in this fishery in 2001 represent a 40% decrease from the 215 CWT chinook recovered in this fishery in 2000. Because the total bycatch of chinook in this fishery was 3527, a rate of 3.3 can be applied to the 129 CWT recoveries to come up with an approximation of 421 CWT chinook salmon in the total bycatch of chinook salmon in the 2001 whiting fishery off Washington-Oregon-California. This approximation of 421 CWT chinook salmon is 27% of the approximate number of CWT chinook salmon in this fishery in 2000. This approximation should not be considered an "expansion", however, because a true expansion would be calculated on a vessel-by-vessel basis in this fishery and would take into account the ratio of marked-to-unmarked fish released for each tag code. This approximation is calculated simply by multiplying the number of CWT chinook recovered by the ratio of total chinook captured over the number of chinook examined for CWTs.

2) Gulf of Alaska: In the 2001 trawl fishery in the Gulf of Alaska, once again chinook salmon was the only species with CWT recoveries. Of the total of 2601 salmonids examined for CWTs, 90% were chinook salmon and 9% were chum salmon. Of the 2346 chinook salmon examined, 33 CWTs were recovered for a tag occurrence rate of 1.4% for chinook salmon. This tag occurrence rate was similar to the tag occurrence rate in 2000. Because the total bycatch of chinook in this fishery was 15,104, a rate of 6.4 can be applied to the 33 CWT recoveries to come up with an approximation of 212 CWT chinook salmon in the total bycatch of chinook salmon in the trawl fishery in the Gulf of Alaska in 2001. This approximation of 212 CWT chinook salmon is 63% of the approximate number of 336 CWT chinook salmon in this fishery in 2000.

3) Bering Sea-Aleutian Islands: In the 2001trawl fishery in the Bering Sea-Aleutian Islands, chinook salmon and chum salmon were the only species with CWT recoveries. Of the 36,610 salmon examined for tags, 60% were chum salmon, with chinook salmon comprising the remaining 40%. Of the 14,297 chinook salmon examined, 22 CWTs were recovered for a tag occurrence rate of 0.1%, similar to the tag occurrence rate in previous years. Because the total bycatch of chinook salmon in this fishery was 37,970, a rate of 2.7 can be applied to the 22 CWT recoveries to come up with an approximation of 58 CWT chinook salmon in the total bycatch of chinook salmon in the trawl fishery in the Bering Sea-Aleutian Islands in 2001, about 6x higher than the approximate number of 9 CWT chinook in 2000.

Abundance of ESA Listed Chinook Stocks: Information was presented on the historical (1981-2001) abundance of ESA (Endangered Species Act) listed chinook salmon in these 3 high seas trawl fisheries. Historically, most of the high seas bycatch of these current ESA-listed ESUs (Evolutionarily Significant Units) has occurred in the whiting fishery off Washington-Oregon-California, with the highest bycatch occurring mostly in the mid-1980s, when foreign vessels dominated this fishery. Bycatch of current ESA-listed ESUs has generally decreased since these fisheries became 100% domestic in the early 1990s. In 2000, however, bycatch of ESA-listed ESUs in the whiting fishery off Washington-Oregon-California

increased to the highest numbers yet. In 2001, bycatch of ESA-listed ESUs in the whiting fishery off Washington-Oregon-California decreased back to lower levels typically observed in the 1990s. Of the ESA-listed ESUs, only the Upper Willamette River chinook had a predominantly northward migration pattern that typically leads to the majority of bycatch being harvested in the Gulf of Alaska trawl fishery rather than the whiting fishery off Washington-Oregon-California. Other ESA-listed ESUs such as Snake River Fall and Spring/Summer Chinook, Lower Columbia River Chinook, Puget Sound Chinook, California Central Valley Spring Chinook, and California Coastal Chinook recovered on the high seas are captured predominantly in the whiting fishery off Washington-Oregon-California.

High Seas Research Programs: Recovery of CWTs in 2 high seas research programs was also described. First, juvenile salmon were captured in trawl surveys on the Bering Sea by the Ocean Carrying Capacity (OCC) program, cooperative research conducted by NMFS and the Fisheries Research Institute (FRI) of the University of Washington School of Aquatic and Fishery Science, and supported by the North Pacific Anadromous Fish Commission (NPAFC). Out of 400 chinook salmon, 2900 cum salmon, and 1425 coho salmon examined, 6 CWT chinook salmon and 3 CWT coho salmon were recovered. Second, in Fisheries Agency of Japan gillnet research on the high seas; 4CWT steelhead and 1 CWT coho salmon were recovered.

Range Extensions: Only one significant range extension was reported: a British Columbia chinook salmon recovered at 51°37'N, 177°48'W is a western range extension for British Columbia chinook salmon in the western Gulf of Alaska. For more information, see Myers et al. (2002).

History of Processing High Seas CWTs: A short history of the processing of high seas CWTs was also presented. In the late 1970s, the Auke Bay Laboratory (ABL) in Alaska began reporting recoveries of high seas CWTs. Initially all CWT recoveries were from International North Pacific Fisheries Commission (INPFC) research cruises. In 1980, ABL began processing CWTs collected by observers on foreign vessels in high seas trawl fisheries. The ABL, under the Alaska Fisheries Science Center (AFSC) of NMFS has never had a funding source dedicated to processing high seas CWTs. Beginning with catch year 2002, ABL was committed to processing CWTs collected by AFSC observers in the Gulf of Alaska and Bering Sea-Aleutian Islands trawl fisheries. The Northwest Region of NMFS was to begin managing the observer program and CWT processing from the whiting and the groundfish fisheries off Washington-Oregon-California and to begin to contribute CWT information from those fisheries to the coastwide database.

Literature cited

Myers, K.W., A.G. Celewycz, and E.V. Farley, Jr. 2002. High seas salmonid coded-wire tag recovery data, 2002. (NPAFC Doc. 610.) SAFS-UW–0203. School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. 42 p.

B. Breakdown in Reporting High Seas Recovery Data

Following his formal report, Adrian commented that he was disappointed that Robert Bailey, his NMFS counterpart from the Northwest Region, hadn't able to get travel clearance to come to the Mark Meeting. Had Robert been present, he would have been asked to report on how the Northwest Region is handling the processing and reporting of the high seas CWT recoveries off the coast of Washington, California, and Oregon. This information has a lot of important implications for ESA listed stocks as shown in his report. Adrian noted further that to his knowledge, there has been no progress on reporting these missing tag recoveries.

Action: The Mark Committee shared the concern that high seas recoveries off Washington, Oregon and California were not being reported to the Mark Center for addition to the regional CWT database. As such, a letter will be sent to NMFS Northwest

Region in Portland inquiring about the status of these recoveries in those fisheries that they manage.

20. Enhancement Program in Alaska (Steve Reifenstuhl, NSRAA)

Steve Reifenstuhl (NSRAA) gave a brief overview of aquaculture programs in Alaska, with emphasis on the Northern Southeast Regional Aquaculture Association's (NSRAA) program. He noted that this enhancement program has many similarities to those conducted in other parts of the state, including Prince William Sound, Kodiak, the Juneau area, and further south (the Southern Southeast Regional Aquaculture Association: SSRAA).

In 1978, a group of visionary fishermen and legislators got together and established the necessary legislative statues for the formation of private non-profit aquaculture corporations or associations. It was at a time when the landings were poor because of low wild stock production. There were no state or federal funds provided to the aquaculture associations for starting out. Instead, the fishermen agreed to tax themselves 3% of their landings profits.

NSRAA's board of directors consists of 25 elected fishermen, of which 15 represent seiners, trollers, and gillnetters. The remaining 10 members represent municipalities, sport fishing, conservation, native corporations, processors, and a few other miscellaneous categories.

NSRAA, headquartered in Sitka, has 24 employees to run the operation, and another 25 or so part time employees are hired during the summer months. The area represented is the northern portion of Southeast Alaska. Its southern boundary is roughly a line from Petersburg west to the southern tip of Baranof Island. The northern boundary extends to Haines, Skagway, and Icy Straits. Overall the area represents over eight billion acres, with most of that being in the Tongass National Forest. SSRAA covers the southern portion of Southeast Alaska with headquarters in Ketchikan.

There are several enhancement programs supported by NSRAA:

1) Medvejie Hatchery near Sitka,
2) Hidden Falls Hatchery (25 miles east on the east side of Baranof Island),
3) Deer Lake stocking coho program (southern part of Baranof Island),
4) Two remote release chum projects in Lynn Canal and Stephens Passage near Juneau for the gillnetters, and
5) Spawning channels and incubation boxes in the Haines area (Lynn Canal).

NSRAA's annual budget is approximately $3,5 million. About a third of the funding is generated by the self-imposed tax of 3% on landings. These tax-generated funds can range from $700,000 to $1.5 million per year, depending on the strength of the harvest. The remaining two thirds of the budget ($2.2-2.3 million) comes from 'cost recovery programs' where approximately 150,000 chum from Medvejie Hatchery and 275,000-300,000 chum from Hidden Falls Hatchery are harvested in terminal fisheries and sold to processors.

1) Medvejie Hatchery: This is primarily a chum production facility. It annually produces 50 million chum which are released as 2 gram fry each spring. Of these, seven million are reared at the hatchery. The other 43 million fry are transported by fishing vessel (5,000 gallon tanks in

the hold; 3 million fry per trip) to net pens in Deep Inlet (four miles from Sitka) and support a rotational fishery (gillnet, seine, or troll) plus the cost recovery program.

In addition, 2.5 million coho are also reared to 0.9 gram fry at Medvejie Hatchery, and then transported via airplane for release into the barriered Deer Lake. Here the fish spend a full year and then enter marine waters the following May. Another 260,000 coho are reared to 20 gram smolts, of which 10,000 are kept for brood stock purposes, and the other 250,000 are transported to Shamrock Bay to support a troll fishery.

Chinook production is also a significant component of production at Medvejie Hatchery. Two million chinook are released as age 1 and 40-50 grams. An additional 150,000-200,000 smolts (zero check,12-15 grams) are also raised. One million of the chinook are transported to net pens in Green Lake a few miles upstream of the hatchery and reared from June to October. They are then transported back to salt water net pens near the hatchery. These 'Green Lake' fish are found to be more aggressive, grow more rapidly, smolt more successfully, and have higher survival than those reared in the hatchery raceways. Overall, the Medvejie Hatchery program has the highest chinook survival in Alaska at 3%. However, it not as good as the 4% seen in wild fish monitored in the Taku River and the Stikine River.

2) Hidden Falls Hatchery: This NSRAA hatchery also rears chum, coho and chinook. The chum production is much larger than that at Medvejie Hatchery, with 114 million eggs taken annually. Of those, 90 million are reared to fry (2 grams) and released into a local bay. The chum primarily support a terminal seine fishery at Hidden Falls, with the trollers also harvesting some of the chum.

Five million eggs are also taken for coho production at Hidden Falls Hatchery. Chinook production is similar to that at Medvejie Hatchery.

3) Lake Stocking Coho Program: Annually 2.5 million coho fry are planted in Deer Lake, located near the southern end of Baranof Island. The lake is also fertilized to boost production, with the fish primarily feeding on the naturally occurring zooplankton *Bosminia*. Survival is excellent at approximately 60%. The fish rear there for about one year (one check) and attain the threshold size for smoltification. This is abnormal as most streams and lakes in Alaska produce two or three check and even some four check fish. The fertilization of the lake and proper rearing density of the fish in the lake are the major reasons why this program is so successful.

Deer Lake has a 350 foot waterfall as an outlet. Therefore the outmigrant smolts are collected in a trapping device and then shunted across the gorge to saltwater net pens via a pipeline. Following acclimation to salt water, the fish are released at night.

4) Remote Release Chum Projects: Chum fry also are transported to remote site net pens by fishing boats, using the same technique as that for moving chum fry to net pens in Deep Inlet (i.e. 5,000 gallon tanks in the hold, with three million fish/trip). Three million fry are placed in each net pen and raised to 1.5-1.7 grams in size before release. These fish are destined exclusively for gillnet fisheries in the area.

NSSRA also does some fry monitoring and research in Sitka Sound. In addition, they do some wild stock coho monitoring and escapements on Salmon Lake, which is at the head end of Silver

Bay near Sitka. The wild stock coho have to come through a literal gauntlet of gillnetters, trollers, and seiners. As such, the monitoring is done to make certain that the fisheries aren't impacting the wild coho.

5) Remote Sites in Upper Lynn Canal: The Haines projects involve two chum spawning channels of about 1500 ft in length and are designed to handle about 5,000 adults . These channels are constructed off naturally occurring wild stock streams using an excavator. Heavy rocks were used to stabilize the banks and existing gravel in the flood plain used to line the channels. Chum adults returning to the stream just came 'storming in' to the channels the next year. Some coho also use the channels.

Spawning incubation boxes have been put in at the head of one of the channels (Herman Creek) to further increase chum production. Eggs are taken from some of the excess fish that come in and placed in these stream side incubation boxes where survival is 90%.

Steve noted that they also have some low tech incubation boxes in three other sites. Sites are selected that have quality water and about a three foot head of water pressure that delivers around 30 gallons/minute. The incubation boxes can handle about 250,000 eggs. Once the eggs are put in the boxes, the top is put on and left until the following spring. No chemicals are used to control fungus as the eggs do fine in the high quality water.

NSRAA also maintains a sockeye program at Chilkat Lake. Eggs are taken from wild fish at the lake, and then taken to be incubated at Snettisham Hatchery. The fry are then taken back to Chilkat Lake. NSRAA staff also assist ADFG in monitoring a weir to count the numbers of smolts and adults coming out of Chilkat Lake.

Summary Comments: Steve emphasized that NSRAA's goal is to produce fish for the fishing industry, and they have been successful in doing so. A total of 159 million fish are released each year, and returns range from 3.0 to 7.5 million adults. Of those harvested, 85% are taken by the commercial fishermen. The remaining 15% of the harvest are used for cost recovery to continue NSRAA's operations. Analyses have shown a highly positive benefit/cost ratio of approximately five to one.

21. Alaska Troll Fishery (Debra Lyons)

Debra Lyons introduced her presentation as "**Where the Rubber Meets the Road or How the CWT Program Changed My Life**". She noted that she had long term experience with CWTs in three very different ways and would be talking about each of these different phases in her life:

1) View from Trollers' Perspective: Debra is the wife of Dave Lyons, a very experienced and successful troller, and worked for many years with him on their boat.
2) View from PSC Northern Panel: She served as a member of the Northern Panel of the PSC from 1995 to 1999 when the new annexes of the treaty were signed.
3) View from NSRAA Perspective: Currently Debra is serving as the Secretary Treasurer for NSRAA's Board of Directors.

Questions about the CWT program that she addressed included:

- Do the data serve the needs of the fishermen?

- Do the data contribute to management of healthy and sustainable stocks of enhanced and wild salmon?
- Are the data used for the correct or intended purpose?
- Is the purpose of the data perceived as rewarding or punitive to the fishermen? Said another way, do the data foster cooperation between fishermen and managers or does it create contention?

View from Trollers' Perspective:

Debra noted that her husband has been a member of the Seafood Producers Cooperative (SPC) for some 30 years. The current plant cost $3 million to build and markets $12 million in premium quality fish each year. She added that there are about 900 troll permits in the state, with some 600 fished each year. Of those, about 400 permit holders belong to the SPC. And of those, about 300 are local residents in the general Sitka area (the other 100 are from Oregon and Washington). Hence SPC plays a major role in Sitka's economy as well as community fabric.

When she began fishing with her husband in 1984, they regularly encountered adipose clipped fish in their harvest. They understood that the fish were tagged for management purposes but really didn't give much thought to the matter. Later when the Pacific Salmon Treaty came into effect in 1985, Alaska's salmon catches were reduced to meet treaty quotas. However, the Treaty also had the provision that Alaska's hatchery catch component could be increased if it was shown that a larger component of the harvest came from Alaska enhancement programs. Thus trollers soon realized that it was very important to return those marked fish and get them counted.

The biggest CWT impact on the Alaskan troll fishery occurred soon after the Snake River fall chinook (Lyons Ferry stock) were ESA listed in 1994. When these listed fish were taken in the Alaskan fishery that year, there was an injunction filed and the Alaskan troll fishery was soon shut down to prevent further harm to the Snake River stocks. The State of Alaska fought the federal injunction and lost. The shortening of seasons and loss of income dealt a serious blow to individual lives and to the small fishing communities as the trollers tend to be year round residents. The seiners and gillnetters, in contrast, usually live in the larger communities.

The curtailing of the Alaska troll fishery overlapped with the successful development of the Atlantic salmon industry (net pen production) in Europe. This had a profound effect as time went on, and SPC eventually lost its European markets to Atlantic salmon. Debra added that a similar thing happened in Bristol Bay where weak sockeye returns created an opening for Chilean farmed coho. She said that it is likely that the Bristol Bay sockeye industry will never regain the markets being lost to Chile. On the positive side, she emphasized that local progress is now being realized some nine years later and SPC is again receiving interest from the European market.

She concluded by noting that in spite of the dramatic ruling against the Alaskan troll fishery, the trollers still return adipose marked fish for CWT sampling. The reason is they get credit (i.e. an add-on to their quota) under the Pacific Salmon Treaty for all Alaskan produced hatchery fish. Hence they have a powerful incentive to cooperate with the CWT program.

View from PSC Northern Panel: Debra cited the first two Principles of Article 3 of the Pacific Salmon Treaty:

1. *With respect to stocks subject to this Treaty, each Party shall conduct its fisheries and its salmon enhancement programs so as to:*
   (a) prevent overfishing and provide for optimum production; and
   (b) provide each Party to receive benefits equivalent to the production of salmon originating in its waters.

2. *In fulfilling their obligations pursuant to paragraph 1, the Parties shall cooperate in management, research and enhancement.*

She emphasized that this was the language that really authorized and supported the CWT program as a function of the PSC Chinook Technical Committee. It was really important to the people signing the Treaty that they be able to determine where salmon were going, build up the database year after year, and to make sure the fisheries being conducted weren't impacting any of the Treaty stocks in ways that weren't allowed under the Treaty. She also stressed that this was "lawyer language" and a lot of time was spent trying to reach agreement on what the words really mean.

The CWT data revealed that the salmon had three migratory paths in Alaskan waters: the Far North route, the North Outside route, and the North Inside Route. It also revealed to many agencies that their respective fish were being harvested in many fisheries, including those in Alaska. This is turn led to a lot of disagreements and efforts to through the PSC forum to receive their just benefits under the Treaty (i.e.:"*...receive benefits equivalent to the production of salmon originating in its waters.).*

To demonstrate how tense it became over who was harvesting whose fish, Debra read an old Alaskan newspaper column by Mike Dugan entitled "Canadians see Appeasement as License for More Aggression". The 'smoking' column dealt with the boarding of an Alaskan black cod fishing boat in Alaskan waters by a vessel of the Canada Department of Fisheries and Oceans. Tensions ran very high with that capture and the subsequent failure of a U.S. Coast Guard cutter on the scene to stop the seizing of the vessel.

The Alaskan trollers had serious misgivings about the required reduction of harvest required by the Treaty for the purpose of rebuilding stocks originating from areas outside of Alaska. No one wanted to catch the last salmon of listed stocks, but there was likewise little trust in the entire process of harvest reduction. They questioned if they would really get to resume fishing again once the stocks were rebuilt,. The trollers also questioned whether or not they could trust the ADFG as to what they were telling them. This was true for the seiners and gillnetters as well. It was a very difficult time for the Alaskan fishermen.

Debra emphasized, however, that the Treaty could not have been signed without the support of the Alaskan fishermen. They bought into the Treaty on ADFG's promise by that by 1994 they would be again catching 400,000 king salmon again. The Board of Fisheries also reassured the trollers that the rebuilding program (i.e. Alaska's enhancement efforts) was to restore their troll fishery as well as rebuild the stocks. There was the expectation that as Alaska's enhancement programs came on line, the fishermen would catch more Alaskan fish. These fish would then be

added to the trollers' Treaty quota in order to help the fishermen get back to some parity with former levels of harvest.

This is not what happened in the years that have followed. Debra noted that the average catch of Alaska trollers in years prior to 1985 was approximately 333,000 fish per season. The original 1985 Treaty imposed a cap of 263,000 fish on Alaska trollers. She then presented a slide showing actual harvest levels since 1985. The goal of the enhancement program for chinook was to increase the levels of returning chinook and to provide harvest opportunities for trollers that would result in an increase of approximately 100,000 chinook in the actual troll harvest on an annual basis. The actual values weren't captured for the minutes. While there have been some improvements in harvest levels, the added impact of Alaska's enhancement programs has not been as great as hoped. One particularly positive change, however, was that the 1995 Treaty changed the Alaska troll fishery from a ceiling based management system to one now based on abundance levels. This now seems to be working much better.

View from NSRAA Perspective: Debra noted that CWT data is invaluable to NSRAA in several ways. In specific, CWT data are used to identify NSRAA fish in the local landings. That information is then used to levy the 3% enhancement tax that NSRAA member fishermen pay each year. The CWT data are also used to determine the percentage of NSRAA produced hatchery fish in the commercial catch, and thus how many fish can be added on to the PSC Treaty all-gear chinook quota. Lastly, the CWT data are essential to NSRAA for determining survival rates of their enhancement programs.

Debra concluded by stating that NSRAA is very committed to ensuring that their enhancement stock programs do not adversely affect the wild stocks. In addition, they are strongly committed to the principle that enhancement programs never become a rationalization for habitat destruction.

22. Alaskan Troll Fishery and CWT Sampling (Patti Skannes and Grant Hagerman)

By way of introduction, Patti Skannes (ADFG) briefly outlined her extensive years of experience with the CWT sampling program in SE Alaska. In addition to her years as a port sampler in Sitka and Ketchikan, she also was very involved in tag extraction, tag decoding, and data reporting work. At the present time, she is the Assistant Troll Biologist and uses CWT data on a daily basis to help manage the Alaska troll fishery. And in that capacity, she presented a brief overview of the several components of the SE. Alaska troll fishery

Spring Troll Fishery: This fishery began this year shortly after the end of the winter troll fishery. The 2003 season began on April 20 and ran until June 30. There were 24 areas selected to target Alaska hatchery chinook. Of those, 10 areas were opened until further notice (i.e. closed only if a problem developed). The remaining 14 areas were managed in season on the basis of daily information gleaned from recovered CWTs in the respective landings. Fishing time was adjusted on the basis of total catch and the component of Alaska hatchery contribution.

The Treaty chinook limits depend on Alaska's hatchery contribution to the catch. Once the new regulations go into effect, the Treaty limits will be increased when Alaska's hatchery contribution is 33% or greater. As a result, the CWT sampling information is critical to both the troller fleet and fishery managers to extend the fishery as long as possible.

Terminal Area Fishery: This fishery target Alaska hatchery fish. Four areas have been established to target chinook salmon. There are other areas that also target chum and coho salmon. The fishing time is continuous unless there is a rotational schedule in place for gillnetters, seiners, and trollers. The contribution of the Alaska hatchery fish is very high in these terminal areas, reaching as high as 100% in some cases

Summer Troll Fishery: The fishery has two openings for chinook. The first opening is always on July 1 and has a variable length that is determined by when the harvest quota of 70% is reached. There is then a closure for 2-10 days in mid August. The second chinook opening follows the end of this closure, and remains open until the remainder of the quota is harvested. Coho can be harvested as of June 15th in the spring fishery, and later becomes the targeted species in the summer fishery. The overall season closes on September 20th or 30th, depending on how strong the coho run is.

Winter Troll Fishery: The chinook accounting year begins with the winter troll fishery which opens October 11th through April 30th or until the 45,000 quota is harvested. Fishing is restricted to waters inside the surf line. Inseason management is necessary only if the catch begins to approach the harvest cap.

Grant Hagerman (ADFG) then described the sampling procedures used to recover CWTs in the various fisheries. As the trollers head for port, they call in by VFH radio and arrange a time for unloading their fish. In the spring fishery, the trollers are asked to keep their harvest separated by catch area. Once the fish are offloaded at the dock side processing plant, the fish are graded according to size (<11 lbs, 11-18 lbs, > 18 lbs), flesh color, and tissue quality. The premium quality fish (grade #1) are about twice the value of the grade #2 fish.

During the sorting and grading, the adipose clipped fish (**visual sampling only**) are set aside for weighing and removal of the heads. The heads are then bagged and boxed for storage in the freezer. If it is a spring fishery with areas open only 1-2 days a week, the heads are shipped to Juneau 2-3 times a week. And if the fishery is open until further notice, the heads are shipped to Juneau weekly. Shipment must be done by air and thus is quite expensive.

Grant noted that in the past, his port samplers typically spent about 75% of their time involved in CWT sampling and processing. However, this has gradually increased to 90-95% of their time with the increasing numbers of adipose clipped fish now seen in the catch over the last few years. This has substantially increased the cost of sampling because of the extra supplies being used, the high cost of air transportation, and the extra labor demands on the Juneau tag lab to process heads from adipose only (no CWT) marked fish.

There is also a cost borne by the fish processors as heads are removed from all adipose clipped chinook and coho. This isn't a problem in the summer fisheries as the fish are typically marketed with head off or as fillets. However, in the spring and winter fisheries, the majority of the fish harvested are sold as 'head on' fish. Thus the processors are beginning to protest the unnecessary loss of revenue due to the removal of heads that don't provide any CWT information back. This has added a lot of stress to the sampling crews as they deal with unhappy processors.

Grant also noted that the samplers are involved in a number of other data gathering efforts. This includes some winter fishery sampling, some scale sampling, a log book program, and a sub-legal chinook retention program to collect tissues for genetic stock identification purposes. His staff also samples shellfish fisheries (Tanner crab, Dungeness crab, and King crab). With the increasing processing demands caused by the growing numbers of adipose clipped fish, it is getting harder and harder to sample these other important fisheries.

Marc Hamer asked if ADFG was considering electronic sampling to deal with the increased number of adipose clipped salmon that don't have tags in their snouts. Grant responded that the subject had come up but there were no formal plans to do so at this time. This led to a general question/answer discussion in which Doug Herriott (CDFO) and Christine Mallette (ODFW described for ADFG staff how their respective programs dealt with electronic sampling using tube detectors at the processing plants. In addition, there was considerable discussion about CDFO's grading tables that they developed for assisting their dock samplers to electronically sample the landings prior to the plant personnel grading the fish.

Mark Meeting Adjourned: 12:00 Noon

May 23, 2003

1) Morning tour of NSRAA's Medvejie Hatchery
2) 11:00 AM: Special tour of Sitka's renown Raptor Center
3) Afternoon: Tour the Seafood Producers Cooperative (SPC) plant

Attachment 1

Mark Committee Meeting Attendees -- April 21-23, 2003

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