2001 MARK MEETING

Newport, Oregon
April 18-20, 2001

Agenda

April 18: (1:00-5:00 pm)
April 19: (8:30 am- 5:00 pm)
April 20: (Field Trip - Morning)

April 18 (afternoon)

1. General Business Items
2. Status of Mark Center Operations
3. Status of CWT Data Files and Reporting Backlogs
4. On-going Problems in Reporting CWT Releases
5. Demo of 'Hatchery Release' Application for Data Reporting
6. PSC Version 4.0 Formats for Data Exchange
7. Electronic Detection of CWTs in Adult Salmon and Steelhead
8. Northwest Marine Technology – Research and Development

April 19

9. CWT Alerts
10. High Seas Sampling Program (Adrian Celewycz, NMFS)
11. Agency Reports on Tagging and Marking Plans for 2001
12. Report on PSC Selective Fisheries Evaluation Committee (SFEC)
13. Regional Agreements on Marking and Tagging Pacific Salmonids
14. Use of Blank Wire in Columbia River Upriver Brights (Chinook)
15. Review of Format for Mass Marking Proposals
16. Update on Mass Marking and Selective Fisheries
17. Update on Five Year Approved Exemption for Adipose Only Marking Studies
18. New Requests to use the Adipose Only Clip (No CWT) for Mass Marking
19. 'Soft VI Alpha Tags': Standards Needed for Numbers of Tags to Release
20. Are Current Tagging Levels of CWTs Adequate?
21. Development of Basin-wide Marking Plan in the Columbia River System
22. Update on Trends seen in Double Index Tagging Studies
23. Review of Facilitation Services

April 20, 2001 (Friday morning)

Field Trip: Hatfield Marine Science Center
Oregon Dept. Fish and Wildlife Research Facility

2001 MARK MEETING

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April 18-20, 2001

Final Minutes

April 18, 2001
Convened at 1:00 P.M.

1. General Business Items

A. Welcome/Introductions

Oregon Department of Fish and Wildlife (ODFW) was extended a special thanks for hosting the 2001 Mark Meeting. Christine Mallette was thanked for her exceptional efforts in arranging a reception and tour at the Coast Aquarium and organizing a field trip to the Hatfield Marine Science Center, in addition to the normal logistics for hotel reservations and meeting room arrangements. A special thanks was also extended to Dr. Keith Jefferts and Guy Thornburgh (Northwest Marine Technology, Inc) for hosting the special reception at the Coast Aquarium.

Mark Committee members and other meeting participants were introduced at the start of the Mark Meeting **(Attachment 1)**. There were no changes in the committee membership. However, Lee Blankenship confirmed the rumors that this would be his last year as WDFW's tag coordinator. Geraldine Vander Hagen will assume this assignment when Lee retires.

> (Ken Johnson later paid special tribute to Lee for his many years of service as Washington's tag coordinator, starting well before the first CWT conference that was held in Asilomar, CA in 1977. In particular, Lee was praised for his tireless efforts to bring new marking technologies forward. Under his direction, WDFW consistently carried on research efforts every year to evaluate various aspects of CWT technology. Ken concluded that he could not think of anyone who had done more to advance the CWT program over the years. As such, Lee will leave a tremendous legacy as he moves on to new challenges.)

Doug Zimmer (USFWS) was introduced by David Zajac. Doug serves as the public affairs lead for the USFWS in western Washington and is stationed in Lacey. In addition, he often serves as a meeting facilitator. Through the efforts of David Zajac, Doug's supervisors granted him travel authorization to facilitate the Mark Meeting this year.

Two Mark Committee members were not present. Tim Yesaki (BC Environment) was represented by Marc Hamer (CDFO). Jerry Harmon (NMFS-Columbia River) was not present but was represented by Adrian Celewycz (NMFS-AK) and Robert Bayley (NMFS-Portland).

Ken Johnson introduced Dan Webb as a new employee for the Mark Center. Dan has a prior background with the U.S. Forest Service and as a contract programmer. He is tasked with both data management and programming. Ken also noted that Jim Longwill (PSMFC), a long time Mark Center employee, was not in attendance as he was in Europe. He is on extended leave of absence to pursue his dream of traveling the world for up to a year or more.

B. Year 2002 Meeting Site and Date

The year 2002 Mark Meeting will be hosted by the California Department of Fish and Game. Bob Kano noted that he would explore the possibility of holding the meeting in the Monterrey area. The meeting is scheduled for **April 17-19, 2002**.

Note: Following the meeting, Christine Mallette recommended that next year's Mark Meeting include a discussion about expanding the rotation for hosting the Mark Meeting. At the present time, the meeting rotates between the five state agencies (ADFG, WDFW, IDFG, ODFW, CDFG) and Canada (CDFO). She proposed that NMFS, USFWS, NWIFC, CRITFC, and Metlakatla be included in the rotation. One possibility would be to have 'joint hosting' by a federal agency with a tribal agency (e.g. USFWS and NWIFC) in a given state. This will be placed on next year's agenda.

2. Status of Mark Center Operations

With the help of Dan Webb, Ken Johnson briefly reviewed the newer features of PSMFC's Regional Mark Information System (RMIS) website. Much of the work during the past year has been in preparation for moving to the new PSC format version 4.0.

Planned developments for the near future include providing users with the ability to obtain estimates of the numbers of hatchery fish released with the adipose mark and those with the adipose present. In addition, work will continue on expanding the functionality and general utility of RMIS.

He also noted that there have been no further submissions of test catch and effort data. As such, the catch and effort database remains unpopulated. In addition, it appears that the Mark Center's prototype otolith database may not be needed. The North Pacific Anadromous Fish Commission may develop its own database because of the international scope of the otolith marking effort.

3. Status of CWT Data Files and Reporting Backlogs

As is done each year, the data status tables were reviewed 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 the status tables on the RMIS web-site.

A. Missing Data Sets

Release Data:

Ken Johnson reported that the CWT release data are largely current for all tagging agencies. However, there is room for improvement. One area involves the reporting of tagged releases by the Nez Perce and Yakama tribes. This problem was viewed as short term. Marianne McClure (CRITFC) is serving as the tag coordinator and actively working on converting their respective release data into Pacific Salmon Commission format for exchange. *(Note: the Yakama and Nez Perce release data is now submitted and current for all years: July, 2001)*

A more serious problem involves a troubling number of tag codes that continue to be recovered with no release information available yet. As such, the recovery data can't pass validation and be made available to users until the tags are reported in the release file. This entire problem was discussed further in Agenda #4.

Recovery and Catch/Sample Data:

The Recovery and Catch/Sample data files are comparable in terms of missing data sets as might be expected. There are a number of 'holes' at the present time:

IDFG: Rodney Duke reported that Chris Harrington had recently reported Idaho's 1999 and 2000 data but it hadn't passed validation because of an error in one or two fields. He also noted that data processing was a major challenge as Chris is also required to spend much of his time in the field to manage the tagging and fin clipping trailers.

NWIFC: Ron Olson reported that the 2000 recovery data were from escapement sampling and are still being processed. The data should be available in the fall.

QDNR: Ron Olson also noted that QDNR had fallen behind in reporting their 1998, 1999 and 2000 recoveries (rack and terminal fisheries) because of challenges with employee turnover. Corrective measures were being taken to resolve the problem.

NMFS: Adrian Celewycz noted that the 1998, 1999, and 2000 recovery data from the observer program were nearly finalized and expected to pass validation within a month. (*Note: this was fully achieved in May, 2001*)

USFWS: David Zajac reported that USFWS's missing 2000 recovery data are primarily rack returns and thus will be late as is customary for such data.

CDFG: California is current for reporting ocean recoveries and catch/sample data. For the past three years, the Ocean Salmon Project staff have been working on reporting the inland recoveries. The problem has been in integrating the creel survey. He also noted that the Ocean Salmon Project staff's first priority is to process the ocean recoveries. Progress on the inland recovery data continues to be made but much work remains.

B. Status of Reported Data Following Validation

A new category '**Validated and Available**' has been added to the existing 'Unvalidated' and 'Validated' categories of submitted data sets. This distinction is necessary as recovery data can be listed as validated but often are not yet available to the data user.

By way of explanation, the Mark Center processes recovery data as unique agency/year data sets. Once the data are validated, they then must be merged into the large table of all recoveries. This requires that the existing recovery table be completely 'flushed' and then rebuilt with new indices. Because of the size of the recovery table (over three million records), the merge process and index rebuilding takes over five hours and is always scheduled in the late evening. Consequently, the user is now told when the data pass validation, and then when the data are subsequently merged into the large recovery table and available for report generation.

4. On-going Problems in Reporting CWT Releases

As noted above (agenda 3.A), a troubling and growing number of tag codes continue to be recovered with no release information available yet. As such, the recovery data can't pass validation and be made available to users until the tags are reported in the release file.

The problem is exacerbated by the fact that recovery data are submitted as an entire file (i.e. all recoveries by the agency in a given year), while release records can be reported in batch or as a single record. Absence of a single release record can delay validation of hundreds of valid recoveries until the missing release record is provided. Ken Johnson identified several recovery data sets that were pending validation because of missing release data.

A. Early Recoveries in Juvenile Stages Now Common

It was noted that some unreported tags are recovered in outmigrant smolts. As such, they would not be expected to be reported yet. One such situation involves sampling outmigrants in the lower Columbia River. In other cases, unreported tags have been recovered from tern droppings on nesting sites in the lower Columbia and represent predation on outmigrant juveniles.

Most often, the unreported tags are recovered in the various ocean and freshwater fisheries. While some are found to be "miss-reads", most are valid tags that simply haven't been reported as required and occur in 1-2 year old fish, and in some cases, even three year old fish.

B. Reasons for Delayed Reporting and General Solutions

Release Data:

Ken Johnson noted that the past year was the worse ever experienced by the Mark Center in encountering unreported tag releases. Part of the problem had to do with changes in

agency personnel and/or increased work loads. As an example, he pointed out that WDFW was backlogged for the first time ever because of a change in personnel (Brodie Cox replaced Bill Kinney). As such, Brodie required considerable time to become familiar with all of Bill's reporting procedures as well as the historical data.

John Leppink (ODFW) agreed that 2000 was a rough year for timely reporting of release data. Part of ODFW's problem related to a major reorganization from a regional structure to one based on watersheds. This created confusion as to who was reporting given releases. Coupled with this was a software upgrade from PSC version 3.1 to 3.2. He noted this is now resolved. In addition, ODFW is now building an internal pre-release database to track hatchery releases and thus will be able to provide preliminary data on a timely basis.

Ron Olson noted that NWIFC also had problems in 2000, in part because of confusion in trying to report preliminary release data in PSC format. One of the problems was that the Mark Center's RMIS database reported NWIFC's preliminary releases with zeros in the field for the number of fish tagged. Ken Johnson agreed that the field should have been blank and that it might have been a problem introduced by the Mark Center.

Ron Olson also asked how effective the mid year reporting was last year in resolving the problem with late reporting. Ken Johnson responded that the Mark Center had not followed through on enforcing last year's decision to require mid year reporting. Part of the reason was that many of the agencies had gotten into the pattern of updating their release data several times a year as the data were ready. The assumption was that this pattern of reporting was actually more beneficial than the mid year report. However, as the year progressed, it was obvious that this was not true.

Steve Pastor (USFWS) argued that instead of insisting on the exchange of preliminary data, agencies should just exchange the basics, such as the mark on the fish, where released, and the numbers marked. Rodney Duke (IDFG) countered that Idaho was supportive of exchanging basic information with the exception of the numbers. He noted that Idaho no longer provides any preliminary release numbers. The reason is that past experiences have shown that the preliminary data become accepted as final data, resulting in confusion when the final data are available. Marc Hamer (CDFO) also noted that Canada was willing to report basic information but not preliminary numbers.

Ken Johnson added that the Mid-Year Report actually was designed to do what Steve Pastor had described. It only captures the very basic information (tag code, species, brood year, release agency, hatchery or wild, and tag coordinator) and did not require any numbers on the fish tagged, number untagged, length, etc. He added that the Mark Center's preference was to receive the data in electronic format (i.e. PSC format). As such, there are two additional fields that need to be reported to pass validation. These fields are rearing type and reporting agency.

ACTION:

1. The Mark Committee agreed to recommit ***to report mid-year release information in PSC format each August.*** *In addition, agencies may use the comment field to indicate that the information is preliminary, whether or not most of the fields are reported.*

2. The Mark Center will forward a reminder in July that mid-year release data (January to July) are due in August in PSC format. The memo will note that agencies can report all information if available. The 11 required release fields (some needed to pass the validation checks!) are listed below with their field numbers in Format Version 3.2:

Field #	Field Name
1	Tag code
3	Tag type
4	Species
5	Brood year
7	Release agency
9b	Release date last (*year only required*)
11	Rearing type
20	Tag coordinator code
22	Hatchery code
24	Format version number
29	Reporting agency

Recovery Data:

Adrian Celewycz (NMFS) offered one solution to breaking the log jam of a few missing tag codes in the release file holding thousands of valid recoveries hostage from passing validation. He recommended changing the tag status to 7 (i.e. unresolved discrepancy) and then submitting the data. As such, the problem recovery records will pass validation.

Ken Johnson agreed that this was a valid solution. However, he argued that if status 7s were to be used, it would be better for the Mark Center to make the change. His reasoning was that the reporting agency likely would be resubmitting the data in the future. As such, it would be safer for the reporting agency to keep their data as status 1 (tag read ok) as it would then pass validation and wouldn't require any editing by either the Mark Center or the reporting agency. In the other scenario, there is a high possibility that the reporting agency could forget to reverse the temporarily assigned status 7s and thus the data would fall through the cracks and essentially disappear.

Action: *No action was taken. Agencies will work with the Mark Center if the need exists to temporarily change tag recoveries to status 7s in order to get the rest of their recoveries for a given year to pass validation.*

Concurrently, the Mark Center will work with the respective release agency(ies) to get the missing tag releases reported so that the temporarily changed status 7 recoveries can then be added to the recovery table.

5. Demo of 'Hatchery Release' for Data Reporting (Dan Webb)

Dan Webb (PSMFC) connected with the Mark Center's website for RMIS and provided a demonstration of the 'Hatchery Release' application that he had been working on for the past few months. It is an MS Access application for processing hatchery release information. The target users are the smaller agencies that have limited resources for processing hatchery release data, including CWT release information.

Functions of 'Hatchery Release' include data collection, validation, and preparation for export in PSC version 3.2. Some of the potential uses of the application include: 1) importing data retrieved through the Mark Center's RMIS Limited Query System; 2) use as a stand-alone or linked database; 3) a temporary database for evaluating a subset of data: or 4) a pre-validation tool for exporting data in PSC version 3.2. Future plans include porting it to version 4.0 once those new specifications are finalized. In addition, similar applications are being considered for recovery and catch/sample data.

'Hatchery Release' can be downloaded from the RMIS web site at www.rmis.org under the Coded-Wire Tag circle.

6. PSC Version 4.0 Formats for Data Exchange

Ken Johnson reported on the activities of the PSC Data Standards Working Group (DSWG) which met in Gladstone, OR on 12-13 December 2000. The sole purpose of the meeting was to "re-finalize" the new data specifications for Format Version 4.0. This follow-up meeting was held to handle new data requirements associated with mass marking and selective fisheries

A. Key Features, including New and Revised Fields

Fishery Regulations File for Mark Selective Fisheries

Requests from the Chinook Technical Committee (CTC) and the Selective Fishery Evaluation Committee (SFEC) called for the development of a fishery regulations file. Unfortunately, the exact requirements from an analytical perspective were not clear. Data Standards therefore concluded that it was not feasible to proceed with development of a structured regulations file at this time.

Data Standards did agree to add a new field, '**Adipose mark selective**', to the Catch-Sample and Recovery files to flag data originating from mark selective fisheries. This field will apply only to the visual Adipose clip mark used for selective fisheries (commercial, sport and tribal). Any regulatory information on these fisheries will be reported in an agency supplied text file.

Use of Blank Wire and Pacific Salmon Treaty Data Exchange

The impact of blank wire on the coastwide CWT system was discussed at length by Data Standards. It was agreed that blank and agency only wire were not codes and thus need

to be reported as bang ("!") releases of untagged production. Sampling agencies likewise should be able to report recoveries of blank wire to document its use and impacts on sampling programs and Pacific Salmon Treaty objectives.

A number of standards were established at the December 12-13, 2000 meeting to accomplish both objectives. However, subsequent work by Data Standards (and following the April 2001 Mark Meeting) resulted in several revisions to those standards. **Only the current standards are reported below**:

1) Standards for Reporting Releases with Blank or Agency Only Wire

    a) Blank and agency only wire releases are to be reported as “bang” (!) records.
    b) No CWT fields will be used in reporting the number of released fish.
    c) Tag type 16 (pseudo tag, blank wire) will identify blank and agency only wire placed in the head or snout.

2) Standards for Reporting Recoveries with Blank or Agency Only Wire

    a) Recoveries of blank wire and agency only wire are to be reported as Tag Status 9 (pseudo tag, blank wire).
    b) In the tag code field, the text 'BLANK' will be used for true blank wire. Agency only wire will be reported using the numeric agency code as a prefix to the text 'BLANK' (e.g. '04BLANK' for ADFG agency only wire).
    c) Tag type 16 (pseudo tag, blank wire) will be used for the recovery.

(Note: Guy Thornburgh informed the Mark Committee at this point that NMT is no longer making blank wire. All 'blank' wire sold in the future will be agency only wire.)

Overall Shift from CWT to Mark Oriented Database for Version 4.0

Marc Hamer noted that Format Version 4.0 reflects a shift from the traditional CWT focus to one where marks on fish are the focus. This shift reflects the advent of mass marking and selective fisheries. In the "old days", visual sampling was adequate to recover CWTs from adipose marked fish. Today, samplers are not looking for marks but are using electronic sampling to recover CWTs. Managers are still interested in marks as they need mark rates to evaluate selective fisheries. The experiments may still look the same to the casual eye, but now the various mark rates are of prime importance.

To accomplish this, Data Standards added eight new fields to the Release File. The first four fields capture the mark (CWT + Ad ; CWT only; No CWT with Ad clip; and No CWT and No Ad clip). The second four new fields capture the number of fish released with the respective marks. In addition, the old field 'No. Shed CWT' was dropped and replaced by the 'Percent CWT Shed'.

In order to capture the required mark information at the time of recovery, new fields also were added to the Recovery File ('Recorded Mark Code'; 'Sampled Mark Code').

Similarly, four new fields were added to the Catch/Sample File ('Number sampled with Adclip and CWT'; 'Number with No Signal (*no beep!*) sampled for Adclip'; 'Number sampled with Adclip and No Signal'; and 'Number sampled with Adclip and No Signal'). In short, the sampling design has become quite complex with the shift to marks.

B. Goal for Implementation

It was the hope of Data Standards that Version 4.0 would be implemented by mid 2001. However, additional concerns arose in March, 2001, putting Version 4.0 back into a state of flux. Ken Johnson emphasized that there was strong support to simplify the naming conventions used for Version 4.0. In addition, there is a new proposal to redefine the new fields used in the Release File to capture marks. The new fields differentiate only between CWT tagged and untagged fish; with the adipose clip now captured as one of two possible marks under each category (e.g. CWT 1st Mark; CWT 2nd Mark; Non CWT 1st Mark; Non CWT 2nd Mark). The adipose clip is easily tracked as a '5000' series mark code.

Marc Hamer expressed support for the new changes and noted that Canada was not ready to finalize the specifications for Version 4 until the new concerns were adequately resolved. The consensus of Data Standards members at this point is that another meeting will not be required to resolve the latest concerns. As such, it is hoped that Version 4.0 can still be ready by fall, 2001.

7. Electronic Detection of CWTs in Adult Salmon and Steelhead

A. Status of Agency Sampling Plans for 2001

ADFG: Ron Josephson reported that Alaska will continue to use visual sampling only to recover CWTs in their various fisheries.

CDFO: Canada will use a mixture of electronic and visual sampling in 2001. Marc Hamer noted that sampling in the north (above Cape Caution) will be mainly visual. In the southern section, the sport fisheries on chinook and coho will be electronically sampled for double index tags (DITs). In addition, commercial fisheries on the west coast of Vancouver Island will be sampled electronically. Current plans call for the trollers to keep all heads for subsequent sampling via a tube detector. Some of the boats may have observers at sea to hand wand the catch as it comes on board.

Doug Herriott added that this is the first year that double index tagged chinook will be returning. Electronic sampling will be required for Chilliwack, Cowichan River, and the upper Thompson River as CDFO did DIT tagging in these drainages to facilitate Washington's marking program. He also noted that CDFO was going to retain its voluntary recoveries program (visual sampling by sport fishers) as they felt they could deal with the number of 'no tag' heads that will also have to be processed.

Doug also stressed that in spite of substantial experience now with electronic detection, CDFO sampling staff need additional training in proper wanding techniques.

WDFW: Geraldine Vander Haegen stated that Washington no longer has a voluntary sampling program. All coho are now electronically sampled in both the fisheries and at the hatcheries. All hatcheries with DIT tagged chinook returning are also electronically sampled. It is also expected that most chinook fisheries will be electronically sampled in 2001.

Geraldine also commented that the electronic equipment performed quite well. Out of 400 wands, lest than 30 had to be returned to NMT for minor servicing. Training of samplers was a concern, however. As expected, new staff had problems in properly using the electronic detection equipment. However, even trained samplers required additional training.

NWIFC:Ron Olson reported that the Tribes switched to total electronic sampling for coho two years ago and would be continuing to do so in 2001. Likewise, all chinook will be electronically sampled with the minor exception of a few coastal freshwater rivers where the fish were not mass-marked. A number of tribes are also using electronic detection to sample steelhead landed in the various fisheries.

ODFW: Christine Mallette noted that Oregon has been using electronic detection equipment for three years now. She too stressed that ODFW had found that additional training was required for samplers using electronic detection equipment.

All coho fisheries on the Oregon coast and in the lower Columbia River are sampled with a wand. Coho returns at the hatcheries are sampled with a mix of tube detectors and/or wands, depending on the numbers of returning fish. Spring chinook in the lower Columbia and the Willamette sport fisheries are sampled with a wand. Fall chinook are primarily sampled visually (especially above Bonneville Dam), except in cases where samplers have access to a wand. Coastal chinook landings will continue to be visually sampled as the percent of adipose-only marked hatchery fish is too low to justify electronic sampling.

IDFG: Rodney Duke reported that Idaho uses 100% electronic sampling in the sport fisheries and at the hatcheries. There aren't enough wands (statewide about 12-15 wands estimated) for also sampling the spawning grounds. Therefore, the heads of all sampled carcasses are removed for later processing in IDFG's head lab in Lewiston.

USFWS: David Zajac stated that the Service uses electronic sampling wherever returns are expected from mass-marked fish.

CDFG: Bob Kano commented that California uses visual sampling only at this point. However, a project is currently underway to mark approximately 15% of the production of Coleman, Nimbus, and Feather River hatcheries with the assistance of World Mark's automated tagging and marking system. The goal is to identify the challenges and logistic problems of mass marking large numbers of hatchery fish in California.

Additional Discussion:

1) <u>Adipose clip as flag for CWT marked steelhead in the Columbia Basin</u>

Geraldine Vander Haegen noted to Rodney Duke that there was growing interest in switching from the use of the LV as the flag for CWT marked steelhead in the Columbia Basin to electronic detection. Rod Duke replied that Idaho is already using electronic detection in most cases as the LV mark is not a reliable mark because of regeneration. As such, Idaho wanted to give up the LV mark as the CWT flag in the Columbia River.

He felt that the electronic wands were stable and reliable, and that he didn't feel that there was any difference between species in terms of detection. He further stressed that problems in detection were typically not an issue of equipment but rather one of adequate training.

Christine Mallette concurred with Rodney and noted that Oregon was supportive of the switch to electronic sampling for tagged steelhead. Geraldine Vander Haegen also reported that Washington was willing to do so. The Mark Committee endorsed the recommendation, with the stipulation that it would be part of the new Regional Agreements (see agenda 13).

2) California's half-length tags and electronic detection

Ron Olson noted that California has used half-length tags in chinook for many years. Given the regional move to electronic sampling, he questioned if there were any concerns about adequate recovery of these tags in Oregon and Washington's coastal fisheries. David Zajac responded that most chinook in California are too small to take the standard length tag. However, the smaller tags aren't seen as a serious concern to either CDFG or USFWS because most of the fish are not harvested in Oregon's waters or further north. In addition, some chinook are large enough to take a standard length tag (e.g. Coleman NFH). These fish will be released along with fish marked with half-length tags, and the resultant ratios will be used to extrapolate to other half-length chinook tagging studies.

B. Further Evaluation of 'Mouth' Wanding Technique (WDFW and NWIFC)

Geraldine Vander Haegen noted that WDFW did a pilot study last year using the wand inside the mouth of chinook and found that tag detection rates improved. This past fall, NWIFC and WDFW each carried out an expanded evaluation of the mouth wanding technique for chinook to see if it was more reliable than the standard method of rubbing the wand over the exterior surface of the snout.

Previous tests using the standard wanding method typically found tag detection rates well over the 90% range, and often in the 98-99% range for chinook. There is a lot of variability that likely is related to different samplers, different sizes of fish, and different detection ranges of the individual wands. In most cases, however, the detection rate was lower in the larger fish, presumably because the depth of the tag was outside the detection range of the wand. Thus, the reasoning was that wanding in the mouth cavity could decrease the distance to the tag and result in higher tag detection rates in large chinook salmon.

1) WDFW's study

The experimental methods and results of WDFW's study of mouth wanding versus standard wanding procedure are provided in **Attachment 2**. Detection rates using the standard wanding procedure were 90.6% and 90.2% for male and female chinook, respectively. Wanding in the mouth resulted in approximately 8% improvement (97.0% - males; 99.4% females). When the two methods were combined, essentially 100% of the tags were detected.

In coho, unexpectedly, the detection rates were lower than that found in the larger chinook. The standard and mouth wanding techniques produced virtually identical results (95.5% versus 95.7%). A few tags were found either by the standard method or by the mouth method. Combining results improved the detection rate to about 98.9% of the CWTs in the sample. Geraldine Vander Haegen did not have a good explanation for why the sampling rate was at the 95.6% level when past research demonstrated retrieval rates in the 99% detection rate for coho. However, she expressed her opinion that sampling procedures had to be a key factor.

Geraldine also noted that during their study, they found that the smooth plastic surfaces of the wands became badly abraded and scratched from contact with the fish's teeth. While this accelerated wear from approximately 800 fish did not affect the wand's sensitivity, there was concern that the rate of wear would soon expose the inner electronic parts.

> Note: Dan Yule (NMT) later demonstrated a solution to the wearing problem encountered from mouth wanding. A titanium sheath (18/1000 thickness) has been designed that will slip over the end of the wand to protect the plastic from abrasion. The detection sensitivity of the wand will not be compromised by the presence of the external sheath. Cost for the sheath had not yet been determined.

2) NWIFC's study

Ron Olson began his comments by stressing that reliable tag detection in chinook with wands is a very important issue for maintaining a CWT system. The wand will be the primary sampling tool used in a lot of situations such as spawning grounds and in recreational fisheries, small hatcheries, etc, where the numbers of fish are low.

The NWIFC wand testing was carried out at the Nisqually Hatchery at Clear Creek, Grovers Creek Hatchery, and the Makah National Fish Hatchery. Experimental procedures and results varied somewhat between hatcheries and are provided in **Attachment 3**.

Results of the study contrasted with those found in the WDFW study. With the standard wanding technique, 99.7% of the tags were found (one fish missed), while the mouth wanding technique resulted in 95.9% (15 fish missed). Ron Olson also noted that the high rate for the standard procedure was nearly identical to a study done two years ago when 268 chinook were sampled and only two fish were missed.

Possible explanations for the opposing results between the two studies include differences in wand sensitivity; samplers; and tag placement. Ron Olson added that only two of the missed tags using the mouth procedure were measured for placement. However, both of these tags were shallow and located within one cm of the external surface. He also stressed that the study fish were tagged at small sizes (< 200/lb) and would expect significant variation in placement.

3) Recommendations on wanding techniques

Geraldine Vander Haegen and Ron Olson provided the Mark Committee with a number of recommendations on wanding procedures for detecting CWTs in coho and chinook salmon (**Attachment 4**). The key recommendations are:

- Coho: continue to use the standard wanding technique.
- Chinook: use both techniques, doing first the mouth. If no tag is detected, then wand the external surface of the fish.
- Use the tube detector where practical because of the higher tag recovery rate and the lack of bias in missed tags.

ACTION:
The Mark Committee reached consensus on endorsing the recommendation to wand both the mouth and then the external surface of the fish. However, agencies wanted to delay its application until the abrasion problem was resolved.

8. Northwest Marine Technology

A. NMT Research and Development

1) New offices for NMT's staff in Olympia

NMT's Biological Services staff in Olympia, WA have moved from their long term office at Bristol Court to a new site at the Olympia airport. The address is 955 Malin Lane, Suite B, Tumwater, WA 98501 (tel: 360-596-9400). World Mark will be sharing this office (tel: 360-596-9500).

2) Flashlight recall program

Dan Yule announced that NMT had discovered a limitation with their visual implant tag system and now have a solution in place with a flashlight recall program.

For the past three years, NMT has provided various models of flashlights used to detect elastomer tagged fish, the latest model being the Sunlight SL 6 model. All models have shared the common features of a blue filter and a halogen bulb. With new batteries, the flashlights do an excellent job of causing elastomer tags to fluoresce. Recently, however, it was discovered that after 2-3 hours of battery use, the ability of the flashlight begins to degrade. Further complicating this, the point of degradation of the flashlight is undetectable to the human eye, with the consequence that deep or pigment covered elastomer tags are undetected.

After a thorough review of available technology, a deep blue LED flashlight was found that will resolve the detection problems. The blue filter is no longer needed as the LED diodes are blue.

LED bulbs also have ten times the life of halogen bulbs, are advertised as 'unbreakable', and waterproof to 160 feet depth. Best of all, the human eye can detect changes as the flashlight begins to lose its ability to fluoresce elastomer tags.

A recent sampling experience with Atlantic salmon demonstrated that many samplers are missing elastomer tags because of the problems with the halogen model flashlights. NMT therefore has announced a recall program with exchange at no charge.

3) MagniViewer

Dan Yule also reported that NMT has replaced the halogen bulbs in its MagniViewer with LEDs to resolve the problem of prematurely failing batteries. The MagniViewer is a small hand held tool for reading CWTs in the field. It incorporates a small microscope with a LED illuminating light (one candle unit).

B. World Mark, Inc.

David Knutzen reported that World Mark's mission is to support fisheries resources through automated technology. The company was established in March, 2000 and now has a little over one year of experience in automated fish marking and tagging. During this past year, 7.5 million fish in Washington and two million in Oregon were marked and/or tagged. In the process, many things were learned and a number of major changes were implemented in the trailers.

The first change was replacement of the DOS software with Windows based software. This now allows each of the four marking and tagging units in the trailers to operate independent of each other. This in turn allows for individual unit adjustments without shutting down the entire trailer each time as was the case with the DOS system. Unit adjustments can now be made in seconds with just a few keystrokes rather than minutes or hours and resulting in higher quality adipose clips and tagging.

The second major change was a substantial redesign of the clipping mechanism to improve the quality of the adipose clip. In addition to closer tolerances, the clipper mechanism uses less force to cut the fin, and thus lasts much longer.

Overall efficiency has improved with experience and changes. Last year at Umatilla Hatchery, they achieved a tagging rate of 16,000 fish per shift (set up time included). This year at Bonneville Hatchery and doing the same type of tagging operation, the tag rate averaged 24,000 fish per shift. Overall, the average rate in 2001 has been 22,000 fish per shift.

World Mark now has six trailers in production. Four are 26-foot trailers; each with four marking and tagging units, and two are 32-foot trailers with five units each. Plans for 2001 call for marking 10 million fish in Washington, 3-4 million in Oregon, and 2 million in California.

Future goals include improving the overall speed of the marking and tagging cycle, expanding the size range of fish marked (currently 62-142 mm), and incorporating an automated vaccination system. Dr. Keith Jefferts (NMT) also noted that the increased precision of the

automated marking and tagging system leads to the likelihood that standard CWTs can be put in smaller fish than now possible.

C. NMT's 30th Anniversary

Guy Thornburgh gave an overview of NMT's history for the past 30 years. In 1963, Dr. Keith Jefferts was working as a physicist for Bell Laboratories in New Jersey and shared a common concern with his life long friend, Dr. Pete Bergman about the salmon in the Pacific Ocean. That year, they jointly published a paper in Nature on the invention of the coded wire tag and its utility for marking and tracking salmon.

For the next several years, Dr. Jefferts traveled back to the northwest on short trips and tried to develop a system for using the CWTs on salmon. However, progress was limited at best. Then in 1971, Dr. Jefferts made a career change by leaving Bell Laboratories and moved his family to Shaw Island where he founded Northwest Marine Technology, Inc. That same year, he took the work that he had done to date and invented the machine that made binary coded wire tags. In addition, that same year, he developed the MARK-I tag injector, and the technology to detect those tags. CDFO was the first customer for coded wire tags, followed by WDFW and ODFW.

In the past 30 years, CWTs have been placed in over one billion living organisms. Today, there are over 625 MARK-IV tag injectors and 1,100 hand wands in use throughout the world to find the tags. However, the dominant use remains in salmon in the Northwest. The automated mass marking and tagging machine is now a reality and proving highly successful. Likewise, the use of elastomers is increasing worldwide.

NMT also has committed a great amount of energy in the past decade to helping prepare salmon recovery plans in the Columbia River. Dr. Bergman has spent several years in this effort. In addition, NMT staff has been instrumental in working with the Tribes and other agencies in putting together a hatchery reform program. Even today, NMT is working on the problem of escaped Atlantic pen-reared salmon and the impact it has on the wild fish in the Northwest, in New England and all throughout Europe.

D. NMT - General Items

Guy Thornburgh also offered general comments:

1) NMT is not making decimal tags in replicate format.
2) Blank tags will no longer be made. Agency only wire will be provided at the same cost.
3) Decimal sequential tags have the sequential number on the tag as a decimal code. The old Data 3 and Data 4 scheme used for binary sequential tags does not apply.
4) NMT will block out formerly used MicroMark tag codes if agency tag coordinators forward the MicroMark codes to NMT.
5) Use of 1/2 length tags in chinook has increased during the past two years. This has an impact on tag detection. Dr. Jefferts added that half length tags produce a magnetic moment that is approximately 1/3 of that produced by a standard length tag, and that

translates into a much shorter tag detection range. This is not a problem in small sized fish but many 1/2 length tags will be missed in large fish if sampled by electronic detection.

6) NMT wishes to know if there is any objection to issuing tag codes with zero(s) in them.
7) Decimal codes can not be cut shorter without partial loss of the code. Said another way, standard length decimal tags can not be cut into two half length tags; and 1.5 length tags can not be cut into standard length without destroying the codes.

5:30 pm. Meeting adjourned

Reception at the Coast Aquarium (6:00-9:00 pm)
(hosted by NW Marine Technology, Inc.)

April 19: (8:30 am- 5:00 pm)

9. CWT Alerts

A. Problem of Re-Issued Tag Codes

David Zajac (USFWS) reported that tag code 051604 was recently released as a standard length tag in 1998 fall chinook from the Makah NFH by the USFWS. Subsequently, it was discovered that the code had been re-issued by NMT as it was first used as a standard tag by the USFWS in 1976 brood chinook from Abernathy Hatchery. Adrian Celewycz (NMFS-AK) reported that he had a similar problem with tag code 030111 (sequential tag in 1998 brood coho, Auke Creek Hatchery) that subsequently proved to have been re-issued by NMT. The first release of 030111 was a standard tag in 1974 brood coho from Little Port Walter Hatchery.

The existing data management agreement requires a second release to become a "*2" in the release file. As such, the re-issued codes jeopardized significant studies for both NMFS and USFWS as a number of recovery agencies have chosen to treat "recoveries of all *2" releases as status '7s' (unresolved discrepancy).

Ken Johnson noted that the problem of re-issued codes appeared to be larger that just tag code 030111 and 051604. A cursory check of NMT's formerly produced 'Tag Code Assignment' report revealed that 051604 was an unused code, even though the Mark Center maintained release data for that code. In addition, tag codes 051704, 051804, and 051904 suggested that "holes" in the old codes apparently were now being filled in by NMT.

These latter codes were later confirmed as also having been re-issued by NMT as sequential tags. The re-issued codes were not detected by the Mark Center as release data are loaded electronically, and the new release information had over-written the original release records.

Action: *NMT was asked to provide an explanation why these codes were re-issued, and what measures were going to be taken to prevent further problems.*

Note: Subsequent work by Ray Glaze (NMT) revealed that additional codes had been re-issued. Two problems were found. The first was that errors were found in NMT's tag code assignment sheets. Some issued tag codes had not been blocked out as used, subsequently leading to some of the re-issued tag code problem in the past year.

The second problem was found to be the difference in the databases maintained by the tagging community and NMT. ***The Mark Committee has always insisted on tag codes being unique, regardless of tag type****. In contrast,* ***NMT required tag codes to be unique by tag type****. As an example, NMT has overlapping tag codes for format A and format B half length tags, while the regional database replaces the first character of the code with an 'H' or a 'B' to distinguish between the two types of half length tags. This has resulted in miscommunications between NMT staff and CWT users, with the result of occasional re-issued tag codes.*

Given the differences in tag code management, it is surprising that the problem of re-issued tags hasn't been a larger problem over the years. Ray Glaze has since worked with the Mark Center and blocked out all codes now maintained on the Mark Center's database. NMT does not expect that re-issued codes will be a problem in the future.

B. Decimal 1.5 length tags applied as standard length

This item was discussed earlier by Guy Thornburgh (agenda 8.D, point 7). Several agencies had the misfortune last year of unintentionally cutting the new decimal tags shorter than the intended use (e.g. 1.5 length tags cut into standard length). This resulted in the lost of code information, rendering the majority of the tags "unreadable" when they are recovered in the future.

10. High Seas Sampling Program (Adrian Celewycz, NMFS)

A. High Seas Sampling Results for 1999

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 1999
by Adrian Celewycz, NMFS, Auke Bay Laboratory
Presented to Annual Meeting of the Regional Mark Committee,
Pacific States Marine Fisheries Commission, Newport, OR, April 19, 2001

In 1999, observers on US domestic groundfish vessels in three trawl fisheries on the high seas in the North Pacific Ocean, Gulf of Alaska, and Bering Sea recovered a total of 187 cwts from over 36,000 salmonids examined for tags. 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.

In the 1999 trawl fishery targeting whiting in the North Pacific Ocean off Washington, Oregon, and California, chinook salmon and coho salmon were the only species with cwt recoveries. Of the total of 2326 salmon examined for cwts, 92% were chinook salmon, with coho salmon, pink salmon, and chum salmon comprising the other 8%. Of the 2149 chinook salmon examined, 55 cwts were recovered, for a tag occurrence rate of 2.6% for chinook. Of the 27 coho salmon examined, 1 cwt was recovered, for a tag

occurrence rate of 3.7% for coho. The 55 cwt chinook salmon recovered in this fishery in 1999 represented a 49% increase from the 37 cwt chinook recovered in this fishery in 1998. Because the total bycatch of chinook in this fishery was 8882, a rate of 4.1 can be applied to the 55 cwt recoveries to come up with an approximation of 227 cwt chinook salmon in the total bycatch of chinook salmon in the 1999 whiting fishery off Washington, Oregon, and California. This approximation of 227 cwt chinook salmon is 1.8 times the approximate number of CWT chinook salmon in this fishery in 1998. 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.

In the 1999 trawl fishery in the Gulf of Alaska, chinook salmon was the only species with cwt recoveries. Of the total of 8202 salmonids examined for cwts, 75% were chinook salmon and 20% were unidentified salmon. Of the 6175 chinook salmon examined, 122 cwts were recovered for a tag occurrence rate of 2.0% for chinook salmon. This tag occurrence rate was similar to the tag occurrence rate of 2.2% in 1998. Because the total bycatch of chinook in this fishery was 30,600, a rate of 4.96 can be applied to the 122 cwt recoveries to come up with an approximation of 605 cwt chinook salmon in the total bycatch of chinook salmon in the trawl fishery in the Gulf of Alaska in 1999. This approximation of 605 cwt chinook salmon is 1.6 times the approximate number of CWT chinook salmon in this fishery in 1998.

In the 1999 trawl fishery in the Bering Sea-Aleutian Islands, chinook salmon and chum salmon were the only species with cwt recoveries. Of the 27,947 salmon examined for tags, 78% were chum salmon, 21% were chinook salmon, with pink, coho, and sockeye salmon comprising the remaining 1%. Of the 6002 chinook salmon examined, 8 cwts were recovered for a tag occurrence rate of 0.1%, half the tag occurrence rate of 0.2% in 1998. Because the total bycatch of chinook salmon in this fishery was 12,924, a rate of 2.1 can be applied to the 8 cwt recoveries to come up with an approximation of 17 cwt chinook salmon in the total bycatch of chinook salmon in the trawl fishery in the Bering Sea-Aleutian Islands in 1999, a sharp decrease from the approximate number of 114 cwt chinook salmon in this fishery in 1998.

In the recent past, numerous chinook salmon stocks have been listed as endangered or threatened under the ESA (Endangered Species Act). Listed ESUs (Evolutionarily Significant Units) include Snake River Fall and Spring/Summer Chinook, Upper Willamette River Chinook, Lower Columbia River Chinook, Puget Sound Chinook, Upper Columbia River Spring Chinook, California Central Valley Spring Chinook, and California Coastal Chinook. These ESUs are comprised of not only endangered wild stocks, but also hatchery stocks considered representative as surrogates or indicators of endangered wild stocks. In published Biological Opinions, the NMFS (National Marine Fisheries Service) has concluded that neither the whiting trawl fishery off Washington-Oregon-California, nor the Gulf of Alaska trawl fishery, nor the Bering Sea-Aleutian Islands trawl fishery could be considered likely to jeopardize continued existence of threatened or endangered species.
Information was presented on the historical (1981-1999) abundance of these recently-listed chinook salmon ESUs in these 3 high seas trawl fisheries. Historically, most of the bycatch of most of these currently ESA-listed stocks occurred in the whiting fishery off Washington-Oregon-California, and mostly in the mid-1980s, when foreign vessels dominated this fishery. Bycatch of currently ESA-listed stocks has decreased since these fisheries became 100% domestic in the early 1990s. Of these ESA-listed stocks, only the Upper Willamette River chinook had a predominantly northward migration pattern that led to the majority of bycatch being harvested in the Gulf of Alaska trawl fishery rather than the whiting fishery off Washington-Oregon-California.

Recently, another threat to the continued existence of the Gulf of Alaska and Bering Sea-Aleutian Islands trawl fisheries appeared. In 1999, a federal judge ordered the NMFS to re-examine the impacts of these high seas groundfish trawl fisheries on the endangered Stellar Sea Lions. The NMFS released a Draft Supplemental Environmental Impact Statement (SEIS) that considers different management options for these fisheries. The NMFS will choose a preferred alternative after the public comment period ends on 7/25/01. Which alternative is eventually chosen has potential for drastically affecting salmon bycatch of

ESA-listed and other stocks of salmon harvested as bycatch in the Gulf of Alaska and Bering Sea-Aleutian Islands groundfish fisheries.

Lastly, several range extensions were reported. First, a Cook Inlet (Alaska) hatchery chinook salmon recovered at 54°N, 145°W is a southern range extension for central Alaska chinook salmon in the offshore waters of the Gulf of Alaska. In coastal waters, the known southern range of central Alaska chinook salmon extends to 43°N, 124°W, off south central Oregon. Second, the recovery of a Ketchikan (Alaska) hatchery chinook salmon at 53°N, 166°W is a western range extension for southeast Alaska chinook salmon. Third, a recovery at 56°N, 155°W is a western range extension for Snake River Basin juvenile (ocean age 0) chinook salmon. Tagging studies in the 1950s established the western range of immature (ocean age 1 and older) Snake river Basin chinook salmon at 51°N, 176°W. For more information, see Myers et al. (2000).

Literature cited

Myers, K.W., A.G. Celewycz, and E.V. Farley, Jr. 2000. High seas salmonid coded-wire tag recovery data, 2000. (NPAFC Doc. 476.) AFS-UW-2007. School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. 16 p.

B. Electronic Sampling of Chinook and Coho on the High Seas

Ken Johnson asked Adrian Celewycz if he had heard any response to a letter that he had written to James Coe and Rich Marasco (NMFS directors) recommending electronic wand sampling on the high seas because of the growing numbers of adipose-only marked chinook and coho (**Attachment 5**). Adrian reported that the letter had taken the NMFS directors somewhat by surprise as the scale of mass marking with the adipose clip hadn't been understood. The situation presents a difficult dilemma for NMFS as there are over 200 observers out at sea at any given time. Given the cost of the wands (approximately $6,500 each), this represents a huge cost that hasn't been budgeted. At this point, NMFS is wrestling with the decision to scan at sea or take all heads of adipose clipped chinook and coho and ship them to the NMFS Auke Bay research center for processing.

11. Agency Reports on Tagging and Marking Plans for 2001

Only a few agencies noted major changes in marking programs.

ADFG:	Stable; no mass marking
Metlakatla	Stable
CDFO:	Stable
NMFS:	Stable
WDFW:	Stable at 30 million coho mass-marked
	Small increase to 30 million chinook mass-marked
	Stable at 15 million CWT marked salmonids
NWIFC:	Stable at 4.0 million CWT marked salmonids
ODFW	Increase of 3 million to 28 million total fish tagged and/or clipped
	(2 million fewer CWTs and 4 million more adipose-only marks)
USFWS	20% increase in CWT tagging (up 1.5 million tagged fish)
	(half in Col. Basin coho programs; half in California chinook)
IDFG	Slight increase in CWTs released; however majority difference in

	that most supplementation studies (approx. one million fish)will be CWT'ed with no adipose fin clip
CDFG	Stable with two exceptions: 1) two million Ad+CWT in mass marking demo(Sacramento R) 2) one million Ad+CWT in the Trinity (25% fractional marking)

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

A. Analytical Working Group

A status report on last year's activities of the Analytical Working Group (**Attachment 6**) was faxed by Marianna Alexandersdottir (NWIFC) as she could not attend the meeting. As last minute changes were required, the report arrived too late to allow committee members time to read it. Therefore, the contents of the report were not discussed in the interest of limited time for the remaining agenda items. However her conclusions in the final paragraph of the report are provided below as there are still some major challenges to resolve for chinook because of their multiple age classes in the fisheries:

> "The multiple age-structure of chinook salmon results in a fundamental confounding of incidental mortality due to selective fisheries and natural mortality between age classes. Our assessments to date indicate that selective fisheries in mixed-stock fishing areas will effect the viability of the CWT program and associated estimations. The impact is, however, a matter of degree based on the location, duration and magnitude of the selective fisheries relative to fish migration patterns. The bottom line is that it will not be possible to give a generic yes or no answer in relation to maintaining the viability of the CWT program under selective fisheries; each proposal will have to be evaluated individually" (see Attachment 6; final paragraph)

B. Regional Coordination Working Group

Lee Blankenship noted that the Regional Coordination Working Group (RCWG) has completed its annual report summarizing mass marking statistics, index tag groups (DITs), and sampling programs for marks and CWTs. The RCWG report will be delayed until the Analytical Working Group completes its overdue report (projected for June, 2001).

13. Regional Agreements on Marking and Tagging Pacific Salmonids

Background:
Ken Johnson provided a background review of the Mark Committee's regional agreements on marking. Historically, the regional agreements were listed in the front of the CWT Release Report, with updates provided each year following the annual Mark Meeting. This effort broke down with the decision to end distribution of the CWT Release Report in hard copy. In addition, the shift over to mass marking in the past few years (and the parallel desequestering of the adipose clip by political decisions) rendered many of the existing agreements obsolete.

In addition, the Mark Committee has attempted for the past three years to develop a charter, with special attention given to resolving its role with respect of mass marking issues that often can have political overtones. During the last Mark Meeting, it was decided that the charter and the regional agreements could be blended into a single document. A working group was assigned this task. They met in Olympia in March, 2001. Participating members were Geraldine Vander Haegen, Ron Olson, Robert Bayley, Marianne McClure, David Zajac and Ken Johnson.

Their draft product, entitled "Regional Coordination of Marking and Tagging Pacific Coast Salmonids" was presented to the full committee for review and discussion. To facilitate review, the blended document included strikeouts for deletions and underlined new information.

Facilitated Discussion:

Doug Zimmer (USFWS) served as a facilitator for the challenging task of reaching consensus on regional marking agreements. At the onset, he established a few basic 'rules' for discussion in order to think and work cooperatively. A key rule was that comments were to be directed to him and he would then bounce them back to others as necessary. This was done to avoid cross discussions that undermined progress. Respect for others was requested

It was agreed that the review would go through the draft document paragraph by paragraph, and page by page, with the understanding that little time would be allowed for 'word smithing'. It was agreed that word smithing comments would be forwarded to Ken Johnson by June 1st.

Marc Hamer added an overall comment on Canada's position on the regional agreements. Because of the voting structure of the Pacific Salmon Treaty (1 vote out of 2) versus that of the Mark Committee (2 votes out of 12), Canada had declined to be on the Working Group. However, Canada views the Mark Committee as a very valuable forum and is very interested in the product that comes out of this process. Subsequently, Canada will review this document with its internal marking group. He added that if he was silent much of the time, it was only because he was still operating under the Canadian position. Doug Zimmer asked if the comments of the Canadian review would be forwarded to Ken Johnson to process. Marc Hamer said yes, but stressed that he could not guarantee that Canada would sign off on the document.

Recognizing the Canadian need for further review, the U.S. members of the Mark Committee agreed that the meeting goal was to establish regional marking agreements for U.S. agencies. At that point, Canada will review the document and their concerns can then be addressed. Robert Bayley also noted that he did not feel that he could speak for the federal government without some subsequent review process. Accordingly, any NMFS comments will be dealt with the same as those of Canada.

Many of the Mark Committee's actions are based upon consensus. Accordingly, time was taken to define just what consensus meant. The agreed upon definition is: "**Consensus: a decision reached unanimously with no formally stated objections**". As such, it represents a full agreement. If full consensus is not reached, an issue is then resolved by majority vote.

ACTION: After some discussion, it was agreed that the LV fin mark on Columbia Basin steelhead no longer requires a CWT. Agencies are encouraged to use electronic tag detection.

Several hours were required to complete the review and reach consensus on wording in the "**Regional Coordination and Agreements**" document (**Attachment 7**). The give and take of the discussion was not captured for the minutes. Suffice to say, it was a difficult discussion at times and the facilitating skills of Doug Zimmer were tested many times. However, there was great satisfaction by all when the task had been successfully completed.

14. Use of Blank Wire in Columbia River Upriver Brights (Chinook)

The continued use of blank wire in Columbia River spring chinook was not an issue of immediate concern to anyone. However, Marc Hamer did note that Canada was in a 'wait and see' mode after doing preliminary estimates of expected impact on their recovery program.

Reference was made to agreements reached in last year's Mark Meeting:

1) A mass marking proposal was requested for WDFW's blank wire tagging program of Columbia River fall chinook (Upriver Brights), and CRITFC was tasked with preparing it using the mass mark proposal format. Marianne McClure said that now that the Regional Agreements requires such a proposal for BWTing, she would determine the tribes willingness to submit such a proposal. (*Note: Marianne McClure consulted with Yakama tribal staff regarding the Columbia River fall chinook BWTing program and has been informed that there is tribal opposition to it. Therefore, CRITFC will not be preparing a proposal for the WDFW BWTing of Columbia River fall chinook.*)

2) Blank wire was recognized as a new mark, and PSC Data Standards was asked to handle the data management issues.
3) Blank wire tagging guidelines needed to be incorporated into the Regional Agreements.

The newly crafted Regional Coordination and Agreements document(Agenda item 13) establish the requirement that use of blank wire will now require a marking proposal and contain the necessary marking guidelines. As such, it was realized that this agenda item had been completed and required no additional discussion or action.

15. Review of Format for Mass Marking Proposals

The format for mass marking proposals, developed in 1991, was reviewed in light of the new regional agreements and the changed role of the Mark Committee.

Several suggestions were received. Marc Hamer commented that the term 'mass marking' in the title should be changed to 'exceptional marking', with the emphasis being on exceptions to the standard marking and tagging programs in place. Robert Bayley agreed and noted the Subcommittee on Regional Agreements had changed the title to 'Marking Variance Requests'. Ron Olson added that the intent of the subcommittee was to change this form from a generic

mass marking proposal to a request for exemptions in marking or tagging. In addition, the new focus is limited to the impact of the marking or tagging on the CWT program.

ACTION: Ken Johnson will update the form and submit it to the Subcommittee on Regional Agreements for review. Following that review, the form will be forwarded to the full Mark Committee for approval or final edits. *Note: See **Attachment 8** for the updated format for requesting marking variances.*

16. Update on Mass Marking and Selective Fisheries

Updates were provided on the status of mass marking hatchery coho and chinook, and plans for selective fisheries (where applicable) in Oregon, Washington and British Columbia.

A. Hatchery Coho and Chinook in Washington

WDFW: Lee Blankenship reported that approximately 30 million chinook (**Attachment 9**) were mass-marked in Puget Sound, with another four million spring chinook in the lower Columbia with the adipose-only mark. In addition, 30 million coho were mass-marked (**Attachment 10**).

Selective fisheries for coho in 2001 will include ocean recreational fisheries on the Washington coast (Willapa Bay, Grays Harbor, Area 1 and Buoy 10) plus the Strait of Juan de Fuca and Puget Sound (**Attachment 11**). Seasons are expected to be longer, with higher bag limits because of the increased ocean survival.

In the Columbia River, a commercial test selective fishery and a main stem recreational selective fishery were held on spring chinook in April. This is the first time that the spring chinook fishery opened in April since 1977. The fisheries wouldn't have existed without being selective because of the co-mingling of threatened and endangered stocks in the harvest. This fall, a selective fishery on coho also will be held in the Columbia River.

Commercial Selective Fishing Gear**:** Geraldine Vander Haegen reported that Washington is continuing to support field research to test experimental selective fishing gear that fits into the gill net sector. The basic goal is to allow catch of harvestable fish while allowing for the release on non-target species with low post-encounter mortality. She noted that the modified gear currently being tested show great promise. However the progress has been slow. She also encouraged anyone interested in more information to contact her (see **Attachment 12**)

Tribes: Ron Olson (NWIFC) commented that he was somewhat surprised to see the Tribal hatcheries listed in WDFW's summary of proposed mass marking of chinook in Washington (**Attachment 9**). He added that many of the totals were not correct and promised to provide corrected values for the minutes. (*See 3rd page of Attachment 9 for revised Tribal totals*)

USFWS: David Zajac distributed a summary table which summarized USFWS's proposed mass marking of 2000 brood coho at six hatcheries (**Attachment 13**). A total of 3.1 million fish will

be adipose-only marked and 595,000 will be Ad+CWT marked at the Makah, Quinault, Quilcene, Eagle Creek and Willard hatcheries.

B. Hatchery Coho and Chinook in Oregon

Christine Mallette (ODFW) reported that hatchery mass marking plans for 2001 for coho were similar to the prior year while increasing for spring chinook (**Attachment 14**).

Coho: For coho, this includes mass marking all coastal hatchery production and all hatchery production in the Columbia Basin below Bonneville Dam. Over five million coho will be marked in 2001 with the adipose-only mark. Of those, 4.6 million juveniles will be marked in the Columbia Basin below Bonneville Dam, and 767,000 will be marked at coastal facilities.

Chinook: Approximately 5.6 million spring chinook will be marked in the Willamette basin and 650,000 in the Columbia River with the adipose-only mark. An additional 2.5 million fish on Oregon's coast will be marked with the adipose-only clip, for a state-wide total of 8.8 million.

Selective Fisheries: ODFW plans to expand selective fisheries in freshwater where mass-marked hatchery coho and spring chinook are present in adequate numbers. Season lengths and opportunities are being extended for both commercial and recreational fisheries because of increased ocean survival. Christine Mallette did not have a handout summarizing the fisheries but can be contacted for additional details.

C. Hatchery Chinook in Idaho

Rodney Duke shared a table (**Attachment 15**) outlining IDFG's plans for mass marking nearly all of the 2000 brood hatchery chinook. Out of 10.2 million fish (expected production), seven million will be adipose-only clipped. In addition, 1.1 million will receive a CWT with no fin mark. Another 600,000 will receive a LV or RV mark, and most of this group will be pit tagged.

David Zajac reported that the USFWS will be marking 100% of the 2000 brood chinook production at Kooskia (600,000 fish) and Dworshak (1 million fish), with either the adipose -or adipose + CWT mark (**Attachment 16**).

D. Hatchery Coho in British Columbia

Marc Hamer (CDFO) reported that Canada's mass marking of hatchery coho in 2001 will be approximately nine million fish marked with the adipose-only mark, about the same as that seen for 2000 (**Attachment 17**). Canada has also marked some chinook groups with double index tagging to accommodate U.S. marking programs.

Plans call for some directed selective fisheries on marked coho in Georgia Strait. In addition, there is some potential for minor selective fisheries on the west coast of Vancouver Island.

17. Update on Five Year Approved Exemption for Adipose-Only Marking Studies

Last year, per request of David Zajac, the Mark Committee approved a five year exemption for on-going long term marking programs. The first two approved to use the adipose-only mark were the Snake River chinook and the Quilcene summer chum programs. One of the requirements of this exemption was an annual update on the programs.

David Zajac reported that marking and numbers of fish were status quo for the Kooskia and Dworshak spring chinook release groups in Idaho, and the Quilcene summer chum program in Hood Canal.

Rodney Duke reported that this year will be Idaho's largest marking program to date. All of the 2000 brood fish will be given some mark. For the first time, many of these fish will be marked with a CWT only (no fin clip). The majority will be marked with an Adipose-only mark.

Idaho is very concerned, however, that the 1999 brood fish going out this year will be severely impacted by the drought because of the way the hydro system is being managed. Rodney Duke pointed out that the 1999 brood fish are progeny of the lowest returning year class in Idaho's history. If the outgoing fish are hit particularly hard, it could lead to the loss of a year class.

Ron Olson questioned if any of the Idaho chinook stocks receiving the adipose clip were listed. Rodney replied that none were. Listed stocks were being marked with a ventral clip.

18. New Requests to use the Adipose -Clip (No CWT) for Mass Marking

Items A-D below were earlier reviewed and approved following email distribution to committee members. They are included here for documentation only. Spring chinook in the upper Columbia River (items E-F) were discussed as a single item.

A. Kokanee from Lake Billy Chinook (ODFW)
B. Solduc Hatchery spring chinook (WDFW/QUIL)
C. Kitoi Lake (Kodiak Island) sockeye (Kodiak Regional Aquaculture Assoc.)
D. Fort Richardson Hatchery coho (USGS, Alaska)
E. Spring chinook in the upper Col. River (FWS)
F. Umatilla spring chinook (ODFW)

The USFWS proposal (**Attachment 18**) to mass mark 100% of the spring chinook production at Leavenworth, Little White Salmon, and Carson national fish hatcheries resulted from the 2000 Biological Opinion. Action Item 174 requires that agencies "Develop a comprehensive marking strategy for all salmon and steelhead artificial production programs in the Columbia River basin by the end of 2001." and requires BPA to "Provide funding by March 1, 2001, to begin marking all spring chinook salmon that are currently released unmarked from Federal or Federally funded hatcheries." (see agenda item 21).

Parallel to the USFWS proposal, WDFW began mass marking spring chinook production at Klickitat Hatchery with the adipose-only mark. Marianne McClure noted that this unilateral action raised the concern of the Columbia River Tribes. A letter was written to WDFW on April

3, 2001 (**Attachment 19**) seeking an end to the unilateral implementation of such a program without having consulted with the Tribes as co-managers.

Lee Blankenship agreed that there had been some problems in interpreting the intent of the Biological Opinion and that WDFW had assumed the instructions would be viewed the same by all entities. However, WDFW immediately terminated the marking program at Klickitat Hatchery upon receipt of the letter from the Columbia River Tribes. He added that WDFW was committed to working with the Tribes and other agencies to develop a basin-wide marking plan, as called for by Action Item 174. The goal is to have all marking programs using the same marks where practical to achieve the same basic marking objectives.

Marianne McClure asked if ODFW's proposal to mass mark the Umatilla spring chinook with the adipose-only mark (**Attachment 20**) had been developed in consultation with the Tribes. She responded that they had to the best of her knowledge.

The point was made by Lee Blankenship that this issue has already moved to the policy level. Ken Johnson agreed and noted that the Mark Committee could still provide a technical opinion on the issue, if they feel that it would be helpful for policy managers.

There was no opposition to the marking on a technical level. However, it was recommended that the Leavenworth NFH fish be double index tagged if they were an exploitation indicator stock. Marianne McClure indicated that the stock was no long used as a PSC indicator stock.

ACTION: After additional discussion, it was agreed that the Mark Committee would take no position on the spring chinook request. The rationale was that it had moved to the policy level and there were no compelling technical issues to bring forward for policy managers to consider.

19. 'Soft VI Alpha Tags': Standards Needed for Numbers of Tags to Release

Christine Mallette withdrew this agenda item based on the discussion for agenda item 18. She noted that it is an issue of concern to ODFW since they have experienced an increase in the number of requests for VI tags. As such, standards are needed for the number of fish to tag.

20. Are Current Tagging Levels of CWTs Adequate?

This agenda item was dropped in the interest of limited time for discussion. It is being addressed by the Analytical Working Group of the Selective Fisheries Evaluation Committee. At this point, they are looking at the level of precision achieved by CWTs. However, the analysis could be expanded to include numbers of releases and recoveries necessary to provide reliable data.

21. Development of Basin-wide Marking Plan in the Columbia River System

In opening comments, Robert Bayley noted that the 2000 Biological Opinion determined that sufficient changes could not be made to the operations of the federal Columbia River hydro system to avoid jeopardizing the continued existence of some listed species. He also noted that the broad scale desire to keep the hydro system intact led to the concept of offsite mitigation.

There are quite a number of things associated with the hydro system in one way or another that affects survival of listed species but not directly in the main stem. The idea of a basin-wide comprehensive plan was conceived to mitigate for the effects of the hydro system. The onus to develop this plan is on the action agencies (BPA, Corps of Engineers, Bureau of Reclamation.

As part of this comprehensive plan, Action Item 174 of the Biological Opinion calls for the development and implementation of a comprehensive marking plan in the Columbia Basin by the end of 2001. The complete action item is listed below:

> *"**Action 174**: Working through regional prioritization processes to the extent feasible, and in coordination with NMFS, BPA shall collaborate with the regional, state, Tribal, and Federal fish managers and the Pacific States Marine Fisheries Commission to enable the development and implementation of a comprehensive marking plan. Included in this action are the following four steps:*
>
> 1. *Develop a comprehensive marking strategy for all salmon and steelhead artificial production programs in the Columbia River basin by the end of 2001.*
> 2. *Provide funding by March 1, 2001, to begin marking all spring chinook salmon that are currently released from Federal or Federally funded hatcheries.*
> 3. *Provide funding, beginning in FY 2002, to implement the Action Agencies' share of the comprehensive marking plan for production not addressed in (2) above.*
> 4. *Obtain funding contributions as appropriate for additional sampling efforts and specific experiments to determine relative distribution and timing of hatchery and natural spawners."*

Robert Bayley stressed that the Mark Committee was the logical entity to provide the guidance and help in developing the required comprehensive marking strategy in the Columbia Basin. He did not know if the plan could be ready by the end of 2001. However, he was certain that the plan would be developed with or without the Mark Committee's help. As such, the Mark Committee could play a pivotal role in sharing its collective expertise in fish marking programs.

Lee Blankenship concurred fully and emphasized that it was imperative that the Mark Committee provide the necessary experience and technical input. If not, the plan would be decided at the policy level, and is already headed there. He also emphasized that a comprehensive plan for the Columbia Basin would benefit other regions (i.e. Puget Sound, etc) which will be facing the same basic challenges in the future because of ESA listings.

Robert Bayley noted that Larry Rutter (Senior Policy Analyst, NMFS) had come before the subcommittee working on the Regional Agreements in March, 2001 and asked for input on how or if the Mark Committee could be of help. He added that the subcommittee members were somewhat skeptical that this was an area for the Mark Committee because of political overtones.

Ron Olson and David Zajac both responded that they had been at Larry Rutter's presentation and had asked him three basic questions necessary for drafting any regional marking plan: 1) Is there a comprehensive hatchery production plan for the basin? 2) Is there a comprehensive marking plan for the hatchery production in the basin? And 3) Have priorities been developed for

production and marking? The answers to each question was no. Therefore, they felt that the Mark Committee was being asked to solve many co-management type issues that were highly political. As such, they did not feel that the Mark Committee should be taking the lead. They were, however, supportive of Mark Committee members associated with the Columbia Basin sitting on the committee that carries out this assignment.

Robert Bayley replied that he felt that there had been some misunderstanding during the meeting of Larry Rutter with the subcommittee as to how far this plan is being taken. There are a number of objectives for marking, and a wide variety of marks that can be used. A 'framework guidance plan' needs to be developed that resolves how marks can be used. Lee Blankenship agreed and stressed that one didn't need to know what the purpose of production is at the various hatcheries (rebuilding a run, fishery supplementation, etc). That was more of a policy matter. However, it is possible to establish a framework that establishes what marks can be used for each specific purpose such as supplementation or stock identification at the spawning grounds.

It was further noted by Robert Bayley that the Mark Committee did not necessarily have to develop the plan. Consultants could be hired for that purpose. However, the Mark Committee was the logical forum to provide technical oversight to ensure that the final plan is well designed. He argued that the work on the Regional Agreements would compliment this effort.

After additional discussion, consensus was reached that the Mark Committee would assist in the development of a comprehensive marking plan for the Columbia Basin. Marc Hamer noted that Canada abstained from taking any position on this action.

ACTION:

1. A technical subcommittee will be formed to assist BPA in the development of a comprehensive marking plan for the Columbia Basin.
2. Lee Blankenship accepted the assignment of serving as chair and building the subcommittee. All Mark Committee members involved in the Columbia Basin will be offered the opportunity to join the group.
3. The first action will be to investigate the issues further. This will include contact with Larry Rutter to get additional guidance.
4. Work by the subcommittee will begin by early May, 2001.

22. Update on Trends seen in Double Index Tagging Studies

Agenda item tabled as there are no trend data available yet.

23. Review of Facilitation Services

This was the first time that the Mark Committee has used the services of a facilitator. Therefore, Doug Zimmer was excused for a few minutes so that committee members could speak freely.

Robert Bayley noted that it allowed Ken Johnson as chairman to be more involved in the dynamics of the discussions. Ken Johnson agreed fully that it was a great personal benefit. However, he emphasized that he was particularly pleased to see Doug Zimmer's neutrality on

any issue, and that he had been able to bring the committee back to task each time that discussion strayed.

Geraldine Vander Haegen was very supportive as well, and asked if there had been any negative drawbacks to having the Mark Meeting facilitated. The only comment in response was that at times, the facilitator's lack of familiarity with the issues slowed things down a bit. However, this was not seen as a significant drawback and was more than compensated by the fact that the overall discussion moved forward more effectively and faster. Marc Hamer also commented that there weren't six or seven mini-meetings breaking out at times.

Upon Doug Zimmer's return, David Zajac informed him that the Mark Committee was very pleased with his facilitation services, and that he was invited to join them for next year's meeting in California. He, in turn, gave the Mark Committee high marks (no pun intended!) for their cooperation and the amount of difficult work achieved in the meeting.

ACTION: The Mark Committee agreed that future Mark Meetings will be facilitated. Ken Johnson was instructed to contract the USFWS and request the services of Doug Zimmer again for next year's meeting in California.

Note: This task was done. Mr. Ken Berg (Manager, USFWS Western Washington Office) replied on May 25, 2001 that he was pleased with Doug Zimmer's contribution to the work of the Mark Committee during the April18-20, 2001 meeting. He was also pleased to offer Doug's facilitation services for next year's meeting in California, and that he did not foresee any immediate problems with Doug being available for the annual meetings on an ongoing basis.

April 21, 2000 (Friday)

Field Trip: Hatfield Marine Science Center
Oregon Dept. Fish and Wildlife Research Facility

Attachment 1

Mark Committee Meeting -- April 18-20, 2001

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