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1993 MARK MEETING

FINAL MINUTES

Portland, Oregon February 16, 1993

1. Preliminary Business

A. Welcome/Introductions

The annual 1993 Mark Meeting was convened at 8:00 AM, February 16th, at the Best Western Inn at the Coliseum in Portland, Oregon. Mark Committee members and other meeting participants were introduced at the start of the meeting (see **Attachment 1**). Frank Fisher replaced Rich Dixon as the new tag coordinator for California Department of Fish and Game. Frank Thrower (NMFS-Alaska) attended in behalf of Ron Heintz. Charles Morrill (WDW) was not able to attend the meeting. John Clark (ADFG), co-chair of the Pacific Salmon Commission Data Sharing Committee, was also in attendance and welcomed.

B. Agenda

Agenda items 5 and 16 had been added to the agenda since the distribution of the preliminary agenda. No new items were added at the start of the meeting.

C. New Annual Meeting Date

Karen Crandall (ADFG) proposed that the annual Mark Meeting be shifted from the third Tuesday in February to the third Thursday in February in order to avoid having to travel on the preceding Monday which is a holiday (Presidents' Day). This proposal was readily agreed to. Accordingly, the **annual Mark Meeting will be held on the 3rd Thursday of February.** This will fall on **February 17th in 1994.**

A back to back meeting with the PSC Data Sharing Committee will be encouraged next year in order to maintain communication and coordination between the two committees. This objective was not possible this year as Data Sharing had to meet earlier in January.

2. Status of CWT Data Files and Reporting Problems

Another year has past without achieving a complete conversion of all historical CWT data files (release, recovery, catch/sample) to the PSC format. However, the prospects for completing this task in 1993 are excellent! The current status of each agency is summarized in **Tables 1-4** (*updated 03/10/93*).

a) CWT Release Data

All of the release data (**Table 1**) are now available in PSC format. The 1991 CWT Release Report (published in July, 1991) provided a cumulative report of all releases through 1990. The 1992 Release Report was published in October, 1991, and lists all releases for 1985 through 1991. Subsequent release reports will follow this latter pattern and only report releases for the last seven years. Users who need older release data will need to either retrieve it from the on-line data base or from the cumulative 1991 CWT Release Report.

The 1992 release data are available only in "mid-year" form at this time. Therefore, the release agencies were asked to finalize their respective 1992 data as quickly as possible. The Mark Center's goal is to be able to return to the former pattern of publishing the release reports in March-April rather than at the end of the next year.

b) Recovery and Catch/Sample Data

Nearly all recovery and catch/sample data are now in PSC format (**Tables 2-3**). IDFG's efforts are noteworthy as all recoveries are now reported and validated. This had not been accomplished in the old format.

Recovery data sets still remaining in old format include CDFG's 1977 data, ADFG's 1977-79 data, and NMFS-AK's data (all years)(**Table 2**). Karen Crandall (ADFG) reported that no significant progress had been made on ADFG's 1977-79 files because of the lack of both time and funding. With respect to NMFS-AK's data, Frank Thrower reported that funding had been found and that the conversion work is essentially done for all years (this includes the high seas recoveries). Work is now focusing on error checks.

The Mark Center is also in the final stage of migrating the CWT data from the PICK based files onto Ingres, a relational database. This process has required a much more rigorous check for errors. Consequently, the migration has not been a simple process of copying files into Ingres tables. Instead, many of the agency/year files failed the initial validation tests and had to be resubmitted by the respective agencies for revalidation. In some cases, this process had to be repeated several times for given data sets.

Recovery files still in PICK include WDF (1974-1982), CDFO (1975, 1982-83, 1985), and QDNR (1980-1990). These files are denoted in **Table 2** by brackets. Both WDF and CDFO expect to have their remaining files resubmitted by mid-March. Recovery data for the Quinault gillnet fisheries, reportedly, are very close to being resubmitted as well.

The catch/sample data sets (**Table 3**) show a somewhat similar agency pattern to that of the recovery data sets. Missing data sets include WDF (1973-1982), IDFG (1977-1992), ADFG (1977-1979), NMFS-AK (1977-1992), and QDNR (1983-1992). It is expected that all of these files will be reported during 1993. In addition, of those files available, only three are not validated in Ingres. These three (ODFW: 1989-90; CDFO: 1985) data sets have only minor problems and will be updated in March.

c) Unmarked Hatchery Production Releases

Additional progress was seen in reporting unmarked hatchery production releases during 1992 (**Table 4**). WDF has now reported all unmarked release data for all years. There are still seven agencies that have not completed this task. However, QDNR and NWIFC have both reported data for the 1988-1991 period.

2. Status of RMPC Operations

A. Software Development

Ken Johnson (PSMFC) reported that software development work was nearly complete on the new CWT data retrieval applications using Ingres, a relational database management system. In addition, nearly all of the various CWT data files are now validated and available in Ingres tables (see discussion above in Item 2 and Tables 1-4). The new system is expected to be on-line on March 15th. Users should expect to find a much greater range in data retrieval capabilities. The new system's acronym is "RMIS" (Regional Mark Information System).

B. New Look for Data Retrieval

Jim Longwill (PSMFC) noted that data users will find new screens when RMIS is on-line in mid March. One major difference is that PSMFC's data center will now have a common login interface for all data bases resident on the Sequent computer. This will include RMIS (CWT data), PTAGIS (Pit tag data), PacFIN (groundfish and salmon landings; summary tables only), and in the future, PSC Catch data. Hence users will be able to dial a single number and have access these various data bases.

The communications software, "Procomm Plus", is highly recommended for users wishing to connect to the Sequent computer. It should be set to emulate VT100 mode. Other communication software will work but the results are less predictable.

TABLE 1. Status of Conversion to PSC Format and INGRES

04/01/93

CWT Release Data

Reporting Agency

Year	CDFG	ODFW	WDF	WDW	IDFG	CDFO	ADFG	FWS	NMFS (AK)	NMFS (CR)	NWIFC	QDNR	MIC
PRE-1975	V	V	V			V	V	V	V				
1975	V	V	V			V	V	V	V	V			
1976	V	V	V		V	V	V	V	V	V	V	V	
1977	V	V	V	V	V	V	V	V	V	V	V	V	
1978	V	V	V	V	V	V	V	V	V	V	V	V	
1979	V	V	V	V	V	V	V	V	V	V	V	V	
1980	V	V	V	V	V	V	V	V	V	V	V	V	V
1981	V	V	V	V	V	V	V	V	V	V	V	V	V
1982	V	V	V	V	V	V	V	V	V	V	V	V	V
1983	V	V	V	V	V	V	V	V	V	V	V	V	V
1984	V	V	V	V	V	V	V	V	V	V	V	V	V
1985	V	V	V	V	V	V	V	V	V	V	V	V	V
1986	V	V	V	V	V	V	V	V	V	V	V	V	V
1987	V	V	V	V	V	V	V	V	V	V	V	V	V
1988	V	V	V	V	V	V	V	V	V	V	V	V	V
1989	V	V	V	V	V	V	V	V	V	V	V	V	V
1990	V	V	V	V	V	V	V	V	V	V	V	V	V
1991	V	V	V	V	V	V	V	V	V	V	V	V	V
1992	I	V	V	I	V	I	I	I	V	V	I	I	V

(S = Submitted; I = Mid Year Only; V = Validated)

CDFG	=	California Department of Fish and Game
ODFW	=	Oregon Department of Fish and Wildlife
WDF	=	Washington Department of Fisheries
WDW	=	Washington Department of Wildlife
IDFG	=	Idaho Department of Fish and Game
CDFO	=	Canada Department of Fisheries and Oceans
ADFG	=	Alaska Department of Fish and Game
FWS	=	U.S. Fish and Wildlife Service
NMFS(AK)	=	National Marine Fisheries Service - Alaska
NMFS(CR)	=	National Marine Fisheries Service - Columbia River
NWIFC	=	Northwest Indian Fisheries Commission
QDNR	=	Quinault Department of Natural Resources
MIC	=	Metlakata Indian Community - Alaska

TABLE 2. Status of Conversion to PSC Format and INGRES 04/01/93

CWT Recovery Data

Reporting Agency

Year	CDFG	ODFW	WDF	WDW	IDFG	CDFO	ADFG	FWS	NMFS (AK)	NWIFC	QDNR	MIC
1973			V									
1974			[V]									
1975			[V]			[V]				V		
1976			[V]			V				V		
1977	-	V	[V]		V	V	-		-	V	V	
1978	V	V	[V]		V	V	-		-	V		
1979	V	V	[V]		V	V	-	V		V	V	
1980	V	V	[V]		V	V	V	V	-	V	V	
1981	V	V	[V]		V	V	V	V	-	V	[V]	I
1982	V	V	[V]	I	V	[V]	V	V	-	V	[V]	I
1983	V	V	V	I	V	[V]	V	V	-	V	V	I
1984	V	V	V	I	V	V	V	V	-	V	V	I
1985	V	V	V	I	V	[V]	V	V	-	V	V	I
1986	V	V	V	I	V	V	V	V	-	V	[V]	I
1987	V	V	V	I	V	V	V	V	S	V	V	I
1988	V	V	V	I	V	V	V	V	-	V	[V]	I
1989	V	V	V	I	V	V	V	V	-	V	[V]	I
1990	V	V	V	I	V	V	V	V	-	V	[V]	I
1991	V	V	V	I	V	V	V	I/S	-	V	-	I
1992	E	V	I	I	-	-	E	-	-	-	-	I

(I = Incomplete but Valid Data Sets; V = Validated)
(S = Submitted but Not Yet Processed; E = Submitted but Unresolved Errors; Dash = Not Yet Reported)
(BRACKETS = Not Validated on INGRES yet)

Incomplete Data Sets:

1) WDW's recoveries in the main stem Columbia River have been reported through ODFW. However, recoveries in Columbia River basin tributaries and Puget Sound are unreported.

2) Metlakatla (MIC) has reported recoveries for its fisheries through ADFG. However, hatchery returns are unreported at this time.

TABLE 3. Status of Conversion to PSC Format and INGRES

04/01/93

CWT Catch/Sample Data

Reporting Agency

Year	CDFG	ODFW	WDF	WDW	IDFG	CDFO	ADFG	FWS	NMFS (AK)	NWIFC	QDNR	MIC
1973			-									
1974			-									
1975			-			V				V		
1976			-			V				V		
1977	-	V	-		-	V	-		-	V		
1978	V	V	-		-	V	-		-	V		
1979	V	V	-		-	V	-	V	-	S		
1980	V	V	-		-	V	V	V	-	S		
1981	V	V	-	I	-	V	V	V	-	S		
1982	V	V	-	I	-	V	V	V	-	S		I
1983	V	V	V	I	-	V	V	V	-	S	-	I
1984	V	V	V	I	-	V	V	V	-	S	-	I
1985	V	V	V	I	-	[V]	V	V	-	S	-	I
1986	V	V	V	I	-	V	V	V	-	S	-	I
1987	V	V	V	I	-	V	V	V	S	S	-	I
1988	V	V	V	I	-	V	V	V	-	S	-	I
1989	V	[V]	V	I	-	V	V	V	-	S	-	I
1990	V	[V]	V	I	-	V	V	V	-	S	-	I
1991	S	S	V	S	-	V	V	V	-	S	-	S
1992	S	S	I	S	-	S	S	-	-	-	-	S

(I = Incomplete but Valid Data Sets; V = Validated)
(S = Submitted; Dash = Not Yet Reported)

(BRACKETS = Not Validated on INGRES yet)

TABLE 4. Status of Conversion to PSC Format and INGRES

04/01/93

Unmarked Hatchery Production Releases

Reporting Agency

Year	CDFG	ODFW	WDF	WDW	IDFG	CDFO	ADFG	FWS	NMFS [1](AK)	NWIFC	QDNR	MIC
1965 - 72			V			V		V				
1973			V			V		V				
1974			V			V		V				
1975	-	U	V	-		V	-	V	NA			
1976	-	U	V	-	V	V	-	V	NA	-	-	
1977	-	U	V	-	V	V	-	V	NA	-	-	
1978	-	U	V	-	V	V	-	V	NA	-	-	
1979	-	U	V	-	V	V	-	V	NA	-	-	
1980	-	U	V	-	V	V	-	V	NA	-	-	-
1981	-	U	V	-	V	V	-	V	NA	-	-	V
1982	-	V	V	-	V	V	-	V	NA	-	-	V
1983	-	V	V	-	V	V	-	V	NA	-	-	V
1984	-	V	V	-	V	V	-	V	NA	-	-	V
1985	-	V	V	-	V	V	-	V	NA	-	-	V
1986	-	V	V	-	V	V	-	V	NA	-	-	V
1987	-	V	V	-	V	V	-	V	NA	-	-	V
1988	-	V	V	-	V	V	-	V	NA	I	-	V
1989	-	V	V	-	V	V	-	V	V	V	V	V
1990	-	V	V	-	V	V	-	V	-	V	V	V
1991	-	I	V	-	V	V	-	V	-	V	V	V
1992	-	I	I	-	V	-	-	-	S	-	-	-

(U = Unavailable; I = Incomplete but Valididated Data Sets; V = Validated)
(NA = Not Applicable; S = Submitted; Dash = Not Yet Reported)

[1]Note: Except for 1989, all NMFS-AK's hatchery production has been represented by CWT studies.

B. New Look for Data Retrieval (Continued)

Two 9600 bps only modems (V.32) will be installed in order that users who have 9600 bps modems can operate for the maximum rate possible. At the present time, off site 9600 bps modems are forced to connect at 2400 bps because the Data Center's 19,200 bps Trail Blazer modems require a proprietary protocol for high speed transmission. The 9,600 bps only modems will alleviate this problem. *(Note: March 10, 1993; Two 9600 bps only modems are now operational. Telephone No.: 503-326-5659)*

Jim Longwill also reported that the PSMFC data center is exploring the option of obtaining Internet access during the next few months. Those familiar with Internet will recognize the advantages for exchanging electronic mail and small files.

C. RMPC Funding Review

The Mark Center's funding for FY1992 did not materialize as hoped in 1991. The U.S. Section Budget Committee (PSC) approved $200,000 for the Mark Center in FY1992. However, for various reasons, the monies were not added to USFWS's budget by Congressional action. This critical shortfall was made up by assistance from Bonneville Power Administration ($180,000) and USFWS ($20,000). BPA added an additional $54,000 of data processing costs for FY1992. Other sources of funding for FY 1992 included Anadromous Grant (NMFS pass through: $67,750) and PSMFC's 2:1 matching funds ($33,500) for a total budget of $355,000.

The 1993 budget has also experienced some major hits. Congress did reference the $200,000 for FY1993 from the USFWS budget. However, because of other severe cutbacks in the USFWS program, only $140,000 will be made available. A cut of $11,250 in the Anadromous Grant funds has also been proposed but no final decision has been made yet. If carried out, this would reduce the 2:1 matching funds total from $101,250 to $90,000. Bonneville Power Administration will provide $57,000 for data processing costs in FY1993.

An additional $40,000 was carried forward from FY1992. It had been earmarked for software development on the PSC catch data base, but the work could not be started last year because the Working Group had not finalized the data specifications. The total budget available for FY1993 is $327,000. This is a shortfall of $30,000 to meet actual needs. As a result, reduced funding will be available for work on the PSC catch data system and other related software upgrades.

4. Proposal to Implement CRAS for Coastwide CWT Data

NWIFC has implemented an exceptional "CWT Retrieval and Analysis System" (CRAS) on their Sun workstation that also uses Ingres as the relational database management system. In addition to typical CWT recovery reports, CRAS has the capability to provide enhancement evaluation, survival and contribution summaries, and cluster analysis reports (SPSS statistical package). In addition, CRAS provides various reports on regression of survival vs. brood year, weight at release, or release date.

The CWT data currently captured in the system are for releases in western Washington. Because of its excellent analytical tools, NWIFC has proposed to share the "CRAS" software with the Mark Center in order to expand the system for coastwide CWT data analysis. PSMFC and NWIFC staff recently ported a version of CRAS onto the Mark Center's computer for test purposes.

Ken Johnson noted that this appeared to be an excellent opportunity to dovetail somewhat parallel programming efforts of RMIS and CRAS into a more robust and standardized system for data retrieval. However, if implemented, this would the first time that the Mark Center would be providing analytical reports that conceivably could have political overtones. He emphasized, however, that the reports would be generated using the separate chinook and coho cohort analysis models developed by the PSC Chinook and Coho Technical Committees. As such, there would be a solid basis for the types of information generated. One area of potential disagreement, however, is that the input data must first be significantly summarized into pre-defined fishery, area (region and basin), and time strata.

During the ensuring discussion, a number of excellent questions were raised. How much work, for example, would be required to maintain CRAS by both the Mark Center and the various agencies? Would this work be at the expense of the current efforts of the Mark Center in developing RMIS and the new Ingres data management platform. John Clark (ADFG) also noted that some parameters in the models change on a yearly basis (e.g.; exploitation rates, incidental mortality, interdam mortality, etc), and therefore wondered how such changes would be incorporated in the algorithms for the models. Would the changes be made bilaterally to reflect the position of the PSC Chinook and Coho Technical Committees?

To all of these questions, the basic answer was that there simply was not enough information or experience at this point to project the impact of CRAS in terms of work load on the Mark Center and the agencies. Both NWIFC and PSMFC staff were confident that the task could be accomplished without too much difficulty. Ken Johnson noted, however, that the Mark Center had a great deal of work yet to do with RMIS before serious attention could be given to implementing CRAS on a full scale. He also noted that the front end software of CRAS for CWT data retrieval was superior to that currently used by RMIS, and that much of that software would be incorporated into RMIS as quickly as possible since it did not depend on any analytical models.

Earl Prentice (NMFS) raised the issue of neutrality of data. He emphasized that one of PSMFC's major values is that the Commission is viewed as a neutral curator of data. As such, he expressed grave concern for the Mark Center getting involved in analysis of data. Ken Johnson agreed with his concern and noted that that is precisely why the Mark Center has never taken on this role in the past. However, he countered that there was good justification for producing analytical reports that are based on the chinook and coho models that are bilaterally supported by the PSC Chinook and Coho Technical Committees. As such, the reports would be a "view" of the data based on parameters established by these bilateral committees.

ACTION:

In recognition of the many unknowns and the current work load of the Mark Center, the Mark Committee did not support the full implementation of CRAS. There was, however, strong encouragement to adopt the front end tools provided by CRAS. It was agreed that there was merit in exploring the option of implementing CRAS or other possible analytical applications at a future date when RMIS was stable on the Ingres platform. A subcommittee should then be convened to look at the entire concept of adopting analytical software such as CRAS. If deemed feasible, the subcommittee would assist in working out the details of implementation.

5. Upcoming Hatchery Practices Workshop

Richard Comstock (USFWS) announced that PSC's Standing Committee on Research and Statistics recently directed the Data Sharing Committee to proceed with the organization of a workshop on hatchery methodologies. The proposed time frame is either late February or June, 1994. He noted that he and Margaret Birch (CDFO) had been given the assignment to work out the logistics and develop the agenda. As such, any and all input was welcomed.

The goal of the workshop is to focus on the standardization of hatchery methods that affect the statistical properties of CWT data. Examples include procedures for counting and sampling the numbers of fish tagged or perhaps released from a hatchery pond. At a minimum, the workshop will focus on the questions raised in the hatchery methods questionnaire that Richard Comstock spearheaded in 1991. An effort will be made to coordinate with efforts underway in the Columbia Basin by the Integrated Hatchery Operations Team (IHOT) in order to minimize duplication.

6. Report by the Subcommittee on Mass Marking

Lee Blankenship (WDF), chair of the Subcommittee on Mass Marking, acknowledged the hard work of the Subcommittee in producing the report entitled "Mass Marking Anadromous Salmonids: Techniques, Options, and Compatibility with the Coded Wire Tag System". He emphasized that it was a well balanced document that attempted to

fairly present both sides of the adipose clip issue. He noted that the paramount recommendations of the report are that the integrity of the coastwide CWT system must be maintained. From the report, these recommendations state:

1) **"...the Subcommittee strongly discourages the use of the adipose clip without the CWT until research can reasonably suggest another appropriate mass mark, or a reliable alternative for identifying CWT marked fish can be demonstrated that does not jeopardize analysis of and comparisons with existing CWT data."**

2) **"...consideration of any alternative flag for the CWT would first require coast-wide consensus that the extent and importance of the proposed new use of the adipose clip as a mass mark would outweigh its usefulness as a CWT indicator."**

He also noted that the Subcommittee readily acknowledged that the adipose clip is likely viewed by most as the best possible mass mark for identifying large numbers of hatchery fish. Therefore, rather than ignoring the issue, the Subcommittee also looked at the best alternative options for identifying CWT marked fish in the event that the adipose clip was taken away. The only two options identified were: 1) use of the ventral clip; or 2) no external mark and use of electronic detection. Again, however, the Subcommittee strongly stated that **"a decision to desequester the adipose clip should, under no circumstance, be made until there is conclusive evidence that either the ventral clip or electronic detection (or some other means) can maintain the integrity of the CWT system."**

Karen Crandall (ADFG) commended the Subcommittee for the excellent report and acknowledged that it obviously was a very difficult document to produce because of the competition for the use of the adipose clip. She noted, however, that the final document tended to suggest that if the ventral clip proved suitable as a mass mark, it could then replace the adipose clip as the flag for the CWT system. She disagreed with this implication and argued that it should be the other way around. Rather than disrupt the current successful CWT system, the ventral clip would become the mass mark for hatchery fish.

Dick O'Connor (WDF) commented that mass marking also raises technical questions about data management issues and wondered if the Subcommittee was planning to pursue those questions, particularly with respect to the impact of selective fisheries. Blankenship answered that the Subcommittee did not address those issues as they seemed to be more appropriate for another group to handle (e.g.; PSC Working Group on Data Standards).

As a second question, Dick O'Connor asked if the Subcommittee had developed a "Plan B" in the event that there was a sudden desequestering of the adipose clip through the political process. Again, the answer was no. Blankenship explained that no one on the

Subcommittee believed that it was likely since agencies that have a need for mass marking also have need for the data provided by the CWT system for harvest management. As such, it was viewed as unlikely that there would be major support of a sudden desequestering of the adipose without first having an alternative system available.

Several questions also were raised about the impact of selective fisheries on the CWT system, including representative sampling of tagged fish. These questions were deferred for discussion in agenda item 9.

7. Update on Oregon's March Towards Mass Marking of Hatchery Stocks

Charlie Corrarino (ODFW) made a brief presentation to the Mark Committee on the status of the mass marking movement in Oregon. He noted that the governor of Oregon convened a broad based Salmon Summit in December, 1992, to launch a major restoration effort for Oregon's sharply declining wild stocks. The 170 meeting participants included key Oregon state and federal agency heads, and representatives from the various fishing, timber, grazing, farming, environmental, and scientific communities.

Key recommendations from the conference included a call to convene a three state salmon summit (Oregon, Washington, California) to develop an immediate action plan to reverse the serious decline of Oregon wild stocks within the next three years. In addition, there was consensus that all hatchery stocks should be marked in order to protect the wild stocks.

In responding to this broad based movement, Corrarino noted that one of ODFW's goals for 1993 is to "Reach coastwide agreement (including British Columbia) to mark all hatchery salmon." He further noted that the Oregon legislature is considering a resolution that calls for **all hatchery produced salmon, trout, and steelhead to be marked by removal of the adipose fin by July, 1997.** Specific directives to ODFW include:

1) Move rapidly as possible to mark all hatchery salmon,
2) Manage fisheries selectively to harvest hatchery fish, and
3) Work with other northwest fish management agencies to develop and implement a plan to adipose clip all hatchery salmon.

When asked what ODFW's view was on the specific use of the adipose clip as the mass mark in the language of the resolution, Corrarino indicated that the department did not oppose the resolution as it was written. He noted, however, that this was still a working resolution and not a bill; as such, there was still a lot of flexibility. He also emphasized that the resolution includes language stating that the CWT program is important and must not be destroyed. *(March 10, 1993 update: This resolution has now progressed to a proposed bill in the Oregon legislature, with the language intact regarding the adipose clip as the mass mark by July, 1997).*

Charlie Corrarino concluded his presentation by re-emphasizing that Oregon is committed to mass marking and selective fisheries, and is moving towards that goal as quickly as possible. Other agencies are also moving in this direction. As a result, he emphasized that rather than continue to fight against this inevitable change, the northwest fisheries agencies need to rechannel their energies into finding ways to deal with the coming changes. Pertinent questions that must be dealt with include the impact of selective fisheries on the CWT database. Presumably there will be some impact that is unavoidable. As such, he urged prompt action rather than be flattened by the proverbial "big rock" cited last year by Jim Martin (ODFW).

Before yielding the floor to questions, Charlie Corrarino also made a strong plea for increased research to find a suitable mass mark that could be used either for hatchery fish or as an alternative means of identifying CWT marked fish. He noted that the west coast is literally a "high tech heaven" from San Francisco to Seattle. As such, there ought to be some fresh ideas on how to apply newly developed technology to mass mark fish. He suggested a nationwide or even international call for proposals, perhaps through BPA, in order to breathe new life into the stalemate we now seem to find ourselves. Jerry Bauer (BPA) responded later to this point and noted that BPA is actively looking at 2-3 different arenas. However, he stressed that any answers are at least 3-5 years away because of the necessary time required for research and testing. As such, it is likely that some mass marking will be required before any new mass marking technology is available.

Discussion:

As expected, the Oregon presentation generated considerable discussion! Marianne Johnson (CRITFC) commented that, in her view, the growing political pressure to mass mark Oregon's hatchery fish was based on the "warm fuzzy" assumption that selective fisheries will protect the wild stocks (i.e. unmarked fish) from harvest mortality seen in non-selective fisheries. She argued that this really needs to be proven before embracing mass marking as the new cure-all for stock management. Rich Comstock also commented that there was at least some probability from PSC meetings in Vancouver that the Canadians might handle the problem by ceiling restrictions rather than selective fisheries. As such, he felt ODFW's position was extreme and might not gain the regional support that is wanted.

Lee Blankenship (WDF) noted that an over-riding issue that is often overlooked in the heat of the battle is that the public is now telling fishery managers that status quo management in many cases is driving stocks into extinction, and that is no longer acceptable. He therefore cautioned against fighting too hard to maintain the status quo when the need is to find new ways of managing fish. Selective fisheries by using mass marking is one option that needs serious consideration. Therefore, the agencies need to be evaluating encounter rates, mortality rates, etc, and developing models to see if selective fisheries will work as hoped by the public. He noted further that this recommendation had been developed over a year ago but little progress has been made until recently because of the strong instinct to protect the status quo.

Karen Crandall (ADFG) expressed great disappointment that although the Oregon legislation was just a resolution at that point, ODFW took the stance of not opposing the inclusion of the adipose clip in the language. She noted that ODFW was represented on the Subcommittee on Mass Marking and helped develop the recommendation that the adipose clip not be used without the CWT until research can reasonably suggest another means of flagging the CWT. As such, ODFW's failure to object to the resolution's language was a total disregard for the professed commitment to maintaining the integrity of the CWT system. Even worse, she emphasized, the resolution gives public momentum to the misconception that the adipose clip is readily available as a mass mark.

Bryan Ludwig (BC Environment) questioned why the Oregon legislature would be willing to accept this type of proposal and spend vast sums of money for mass marking in these times of tight fiscal budgets, and particularly when they don't know if it will work. He continued by asking what happens if they go ahead and spend the projected two million dollars per year for several years, and then find out that there are no more wild fish anyway. Jerry Bauer (BPA) responded to the question and answered that if things don't get better, the next step will be to legislate hatcheries out of operation! He emphasized that there is a growing movement to eliminate hatcheries because of the conviction of some that they are the ruination of all native populations. Without mass marking, he argued that the next logical step will be to close the hatcheries in order to protect the seriously declining wild stocks.

Lee Blankenship (WDF) concurred with Jerry Bauer's assessment and added that there has been little progress in restoring wild stocks since 1991 when the American Fisheries Society Endangered Species Committee identified 214 salmon stocks on the west coast as depleted and facing a high or moderate risk of extinction. He stressed that he had initially questioned their assessment, but is now convinced that it has merit based on additional evidences seen in Puget Sound. As such, it is a fair warning that past and current hatchery production and fishery management methods are not succeeding, and that some tough changes are going to be needed to turn things around.

Continuing on, Blankenship argued that current fisheries eventually will not exist unless they are selective. Public support for hatcheries is not realistic if the public can't go out and harvest the surplus hatchery fish. Tax payers simply can not be expected to continue to fund hatcheries when the fisheries are mixed stock and based on "weak stock management". He added that the public has seen the adipose only mark work for selective fisheries for steelhead and thus sees little reason why it shouldn't work as well with chinook and coho. He concluded that the issues with chinook and coho are far more complicated than that with steelhead, but the growing pressures for positive change are there, easily seen, and can not continue to be ignored.

Marianne Johnson (CRITFC) acknowledged that there was a major movement towards selective fisheries, but wondered if this wasn't possibly another delay tactic to avoid dealing with the real issue of habitat restoration. Lee Blankenship disagreed and noted that any time that WDF has addressed selective fisheries, habitat was always kept up front as the number one priority.

Pete Hassemer (IDFG) concluded the discussion and noted that most people tend to think that the issue is whether ocean fisheries will continue to be managed by CWT driven models and information, or by selective fisheries that may impact the CWT data system. In reality, however, he noted that it has reached the point in California and the southern PFMC area where the issue is management by selective fisheries versus no fisheries at all. Last year, for example, fishermen were kept on shore in some areas. Selective fisheries are favored because they can provide fishing opportunity in areas of depressed stocks. He further emphasized that this problem was progressing up the coast, thus adding increasing evidence that the "status quo" will be changing regardless of how disagreeable it might be to some.

8. Idaho and Oregon Request for Variance to Mark Snake River Chinook with Adipose Clip

A. Letter from Agency Directors

Prior to addressing the Idaho/Oregon request, Ken Johnson (PSMFC) introduced a letter **(Attachment 2)** that had been faxed to him at 4:30 PM the previous day. The letter was co-signed by five agency directors: Curt Smitch (WDW), Robert Turner (WDF), Randy Fisher (ODFW), Bill Frank (NWIFC), and Rolland A. Schmitten (NMFS). In brief, the letter responded to a prior letter written by Ken Johnson **(also Attachment 2)** that called for the Mark Committee to take action to resolve the dilemma that Idaho finds itself in now with respect to mass marking. The directors emphasized that the role of the Mark Committee was not to negotiate policy on regional marking issues subsequent to the Endangered Species Act actions on the Snake and Columbia Rivers; rather this responsibility lies with the various agency directors. Instead the Mark Committee was asked to limit itself to framing the technical issues that would then be used by the directors to develop policy.

The lateness of the letter introduced some confusion as to how to proceed on the Idaho/Oregon request as it turned out none of the tag coordinators had seen the letter either. Ken Johnson commented, however, that he fortunately had been able to discuss the letter the prior evening with both Jim Anderson (NWIFC) and Jim Martin (ODFW). Both men confirmed that the problem was the use of the terms "policy" and "negotiate" in the letter to the Mark Committee as it suggested an attempt to usurp the responsibilities of the agency directors. The unfortunate misunderstanding was quickly cleared up when it was explained that the intent of the language was for the Mark Committee members to come to the Mark Meeting with an open mind and be willing to process new information as it was given, rather than have a fixed position at the start of the meeting.

Ken Johnson also noted that he felt that there was some misunderstanding about the concept of the Mark Committee setting "policy". In most cases, the issues are technical and do not require a vote. However, when issues have a political tone, the tag coordinators are asked to come to the Mark Meeting empowered to represent their agency director. If necessary, voting is carried out and regional marking policy is established by

consensus of 75% or greater yes votes. He further reminded the Mark Committee that there was a 30 day review period for agencies to review the vote and reverse their position if deemed necessary. As such, the power to control policy remains securely vested in the various agency directors.

ACTION:

During the ensuring discussion, it was agreed that the letter from the directors was based on some unfortunate misunderstandings created by the misuse of the terms "policy" and "negotiate". Therefore, it was decided that the Mark Committee would continue on in its normal activities since the 30 day review period provided ample time for an agency to review any actions and reverse a vote if necessary. Similarly, agencies with a proposal that is voted on have the right to appeal the outcome if it is rejected.

B. Idaho/Oregon Request for Adipose Variance

Idaho again requested permission to use the adipose only clip to mass mark 3.15 million 1993 brood hatchery chinook. Oregon presented a similar request to mark 670,000 spring chinook from Lookingglass Hatchery in the Grande Ronde basin with the adipose only mark.

Pete Hassemer (IDFG) explained that Idaho's immediate need was for broodstock separation. However, Idaho also has some hatchery stocks that return in harvestable numbers. With the ESA listings, there is no alternative to harvest surplus hatchery fish unless there is some way to distinguish them from the wild/natural stocks. For example, there are both ocean fisheries and lower Columbia River fisheries that harvest Idaho fish. Yet Idaho is precluded from exercising any fishery on harvestable hatchery stocks if the stocks are listed and the hatchery fish can't be identified.

He emphasized that IDFG had accepted the Mark Committee's rejection of a similar request last year. At considerable labor and expense, IDFG had gone ahead and applied CWT's to all adipose clipped fish. He stressed, however, that production for 1993 was significantly up and they are faced with marking approximately 3.15 million spring and summer hatchery chinook. Based on last year's experience, tagging this many fish in the available time window is a physical impossibility. In addition, the adipose clip remains the mark of choice for IDFG because of its high visibility, low associated mortality, reduced marking cost, and minimal impact on CWT recovery programs in the ocean fisheries.

Pete Hassemer also stressed that Idaho is not looking at the adipose only marking program as a long term ad infinitum solution for marking stocks and rebuilding programs. IDFG views this as a short term program. In the future, assuming wild stocks rebound, IDFG does not want to be in a position of having to maintain an expensive large scale marking program for all its hatchery fish.

Discussion:

A large number of questions were raised prior to taking a vote on the proposals. Only the key issues are covered here in the minutes.

Bob Smith (NMFS) asked if all adipose only groups would be released with at least one representative CWT group. He noted that as few fish were being picked up in the ocean, it was important to mark all groups in order to avoid losing key information. Pete Hassemer agreed and said that all adipose only groups will have representative tagged groups, and that there were plans to increase the tagging level of some groups as well. A total of 1.3 million fish will be tagged (up 300,000 from the historical level of 1 million).

Marianne Johnson (CRITFC) asked why IDFG wanted to mark all hatchery fish at this time. She was answered that while there was no formal requirement at this time, Idaho had a need to separate the hatchery and wild fish in order to get better information on the stocks. Bob Smith (NMFS) also noted that Idaho was taking a pro-active approach to do that which may be required by the ESA recovery team in the near future.

Karen Crandall (ADFG) noted that even though IDFG tagged all of the adipose marked fish last year, the Mark Committee learned after the fact that the tags were non-magnetized. She acknowledged that this was a good option for NMFS in order to reduce unnecessary handling of returning tagged adults at the Lower Granite adult trap. However, she also emphasized that this action had been taken without consultation with the rest of the Mark Committee, and that it had an negative impact on the other recovery agencies. Pete Hassemer noted that it was a problem for Idaho as well since they lost the ability for quality control, and will now have to re-magnetize all recoveries in order to find the tags. He also stated that all tags for 1993 will be magnetized.

Marianne Johnson (CRITFC) also questioned why IDFG was unwilling to use the ventral clip for the mass mark. In response, Pete Hassemer noted that Idaho was already involved in a large scale ventral fin clip study, with fish going out this year. As such, the mark isn't available until the experiment is completed. He also re-emphasized that some stocks are already listed (Clearwater fall chinook), and as such, IDFG is not able to increase mortality on these fish. He also stressed that the issue of increased mortality was the principal reason why the ventral mark was unacceptable.

Questions were also raised concerning how ESA applied to the hatchery stocks. Pete Hassemer responded that the ground rules are not clear at this time, but to the best of his understanding, only natural stocks are protected under ESA. Yet, some hatchery stocks are derived from the natural stocks, and in all likelihood, will be used to rebuild the natural stocks. As a result, there is a need to minimize the mortality on those particular hatchery stocks. Lee Blankenship added that Washington has the same problem in that some hatchery stocks are considered part of an ESA unit while others are not. For these hatcheries included within the ESA umbrella, permits are required even to handle the fish. He further noted that decisions are now being made to sort out these issues.

The issue of setting a precedent was raised just prior to the vote. Karen Crandall (ADFG) noted that Alaska was willing to approve the Idaho/Oregon request for the adipose only variance provided that they were willing to commit in writing to reasonable restrictions. Bob Smith (NMFS) concurred that while approval would unavoidably set a precedent, the impact could be controlled by establishing firm "sideboards" on the variance. After some discussion, it was agreed that these restrictions should include:

1) Four Idaho hatcheries: Rapid River, Sawtooth, McCall, Clearwater Anadromous
   One Oregon hatchery: Lookingglass
2) Spring and summer chinook only
3) One year approval (renewable by annual review of the Mark Committee)
4) Commitment to continue the investigation of the ventral clip as:
   a) a potential flag for the CWT,
   b) and as a flag to identify hatchery fish.
5) Commitment to support other studies on mass marking.

These restrictions were readily agreed to by Idaho and Oregon. Pete Hassemer also noted that most of the limitations were already spelled out in the mass marking proposals.

Voting Results:		Agency	Vote
Canada:	Federal	CDFO	No
	Province	BC-Environment	Yes
States:	Alaska	ADFG	Yes
	Washington	WDF, WDW	Yes
	Oregon	ODFW	Yes
	Idaho	IDFG	Yes
	California	CDFG	No
Federal:	NMFS	Alaska Region	
		Northwest Region	Yes
		NWAFC (Seattle)	
	USFWS	Region wide	Yes
Tribal:	S.E. Alaska	MIC	Yes
	Western Washington	NWIFC	No
	Columbia River	CRITFC	No
		Total Yes Votes	8
		Total No Votes	4
		% Yes	67%

ACTION: **Proposals Not Approved**
(75% Yes vote required for approval)

9. Notification of Potential Mass Marking Programs

A. Washington

Lee Blankenship (WDF) reported to the Mark Committee that WDF is seriously evaluating a proposal to mass mark 12 million Puget Sound hatchery coho (1992 brood) during the next few months. He provided each Mark Coordinator with a copy of an 85 page working draft evaluation, entitled "Assessment of Mass-Marking 1992 Brood Puget Sound Coho". The report was just finished and is being widely circulated for review. Major sections deal with:

1) Marking Effects and Logistics
2) Impact of Mass Marking and Selective Fisheries on the Coded Wire Tag Program and Implications for Management Tools
3) Mass-Marking Related Management Applications.

He reported that WDF based the analysis on an assumption of 10% induced mortality from the ventral clip. In addition, he noted that the study highlighted the fact that double marking was needed in order to have selective fisheries and also maintain the integrity of the CWT system. As a result, WDF is proposing to release parallel index groups marked with either the Ad+CWT or the Ad+CWT+Ventral Clip. The double marking is required for management models to be able to differentiate between those that were caught and removed, and those that were not.

Comments on WDF's proposed mass marking project are being sought until March 15th. WDF will then make a final decision by April 1 on whether or not to proceed.

B. British Columbia

Margaret Birch (CDFO) announced that British Columbia also is reviewing the possibility of mass marking 7-8 million hatchery coho in the lower Fraser River area and the Georgia Straits with a ventral clip (opposite that used by Washington) at an approximate cost of one million dollars. The intent is to implement a mark only fishery because the wild stocks are not faring well. She noted that CDFO had established a coho workgroup to study the proposal. She also stressed that there wasn't full consensus within CDFO on the soundness of the proposal. However, at this time, the decision is in the hands of the Ministry. If approval isn't granted by May 1st, nothing will be done this year.

10. Review of Protocol for Reporting Mass Marks

The Subcommittee on Mass Marking developed a standard format for mass marking proposals (**Attachment 3**), but it had not been presented to the full Mark Committee for review and approval. The discussion was favorable and approval was given without requiring additional changes in the format. It was also agreed that mass marking proposals need to be submitted **a minimum of 30 days in advance of any marking** in order to give other agencies adequate time for review.

The question was then posed whether or not all mass marking proposals had to be approved by the Mark Committee. Lee Blankenship (WDF) and Margaret Birch (CDFO) expressed the opinion that there were no regional agreements requiring approval of proposed mass marks other than for the use of the adipose only mark. This view appeared to be supported by most Tag Coordinators.

Ron Olson (NWIFC), however, took issue with this view and argued that the Format for Mass Marking Proposals (**Attachment 3**) was developed to assess the impact to the coastwide CWT program (see header paragraph). He continued by noting that the purpose of WDF's and CDFO's mass marking projects is to have a selective fishery on their hatchery stocks. There is a high potential that selective fisheries will have a negative impact on the integrity of the CWT system because of the non-random removal of fish. As such, he argued that the Mark Committee should have input.

Lee Blankenship acknowledged Ron Olson's concern but was adamant that the Mark Committee did not have any regional agreement in place that required approval of the use of single fin marks for mass marking. He further argued that if the Mark Committee wished to establish this rule, he was willing to submit it to a vote. No one seconded his call for a vote and the issue was dropped.

Before leaving the subject, however, Ron Olson again voiced what he viewed as the key question facing the entire tagging community: **"Are selective fisheries compatible with current CWT based fishery management models and programs!?!"** He expressed concern that basic assumptions may be violated and called for an independent technical review of the entire issue.

There was considerable support for this suggestion. It was acknowledged that WDF's analysis of the impact of selective fisheries on the CWT system was being widely distributed for review and comments. However, it was felt that an independent multi-agency analysis was still desirable. It was decided that a letter should be addressed to the Pacific Salmon Commission's Data Sharing Committee to require the assistance of one of the technical committees for this review.

ACTION: It was agreed that

1) Agencies need to submit notification of mass marking proposals to the Mark Committee based on the approved "Format for Mass Marking Proposals"
2) Notification is required at least 30 days before marking any fish.
3) Approval of the Mark Committee is required only for the use of the adipose only clip as a mass mark.
4) A letter is to be sent to the PSC Data Sharing Committee asking for their assistance in reviewing the impact of selective fisheries on the CWT system. This assignment was given to Ken Johnson as chair of the Mark Committee.

11. Agency Reports on Tagging Plans for 1993

As requested, each tag coordinator provided a summary table of projected tagging plans for 1993, and actual tags released in 1992 for comparison. These tagging summaries were exchanged during the meeting and are not provided herein. However, Table 5 below provides an overview of all tagging projected for 1993.

Overall tagging levels projected for 1993 total 50.4 million fish. This represents a 6% increase over 1992 when 47.6 million fish were tagged. Most agencies projected minor decreases from 1992 tagging levels. However, USFWS is a notable exception with the 1993 tagging level increasing by approximately 2.3 million fish in the upper Columbia Basin. The increased tagging reflects the growing concern over the status of the stocks in the upper Columbia.

Margaret Birch (CDFO) also reported that the native tribes in British Columbia were going to assume some responsibility for tagging fish. Therefore, **a new agency code, 28, has been assigned to British Columbia tribal tagging programs.**

12. Update on Pending Experiments to Evaluate Potential Mass Marks

Lee Blankenship (WDF) briefly reported on a number of research projects that are currently underway to evaluate various marks (other than the adipose clip) as potential mass marks.

a) Ventral clips

A number of studies are being carried out by ODFW, USFWS, WDF, and IDFG on the suitability of the ventral marks as a possible mass mark. However, return data are very preliminary or not available yet.

b) Visual implant fluorescent tags

Visual implant tags are promising but require yearling fish (100 mm minimum).

Early returns of production fish tagged with the V.I. filament tag have been found to have a high tag loss rate. There were also machine related problems that are now believed to have been solved. Additional test groups are being marked and released by WDF.

The V.I. elastomer tag appears to be the best option, in part because it allows a smaller target area. WDF has both chinook and coho test groups going out this year to evaluate long term tag retention and differential survival. Preliminary results with returned coho suggest no differential survival.

Table 5. Comparison of Agency Tagging Levels (X 1000)

State/Region	Reporting Agency	1992	1993
Alaska	ADFG (+PNP)	4,710	5,720
	Metlakatla	800	415
	NMFS-AK	312	210
British Columbia	CDFO + CDFG	9,055	8,200
	Tribal	0	1,000
	BCFW	0	0
Washington	WDF	9,400	10,800
	WDW	260	339
	NWIFC	3,000	2,610
Idaho	IDFG	2,537	1,300
Oregon	ODFW	7,510	7,710
California	CDFG	2,100	2,400
Regional			
NMFS	Columbia Basin	2,130	1,652
USFWS	Columbia River	4,110	6,380
	Puget Sound + Washington Coast	850	870
	California	900	820
TOTAL:		47,674	50,426

c) **Laser marking**

BPA has provided $250,000 to WDF to commence work on use of the laser for mass marking. Funding is renewable for four more years if the initial research proves promising.

Lee Blankenship reported that WDF's initial efforts were done using a laser machine from a local hospital in the Portland area. They found that beautiful marks (lacking pigmentation) were produced on the dorsal region of the fish. Unfortunately, the marks faded and became dark again within six weeks.

Additional research has been delayed pending the purchase of a new laser machine and outfitting of a marking trailer. Work is expected to begin again in mid-March, 1993. At that time, a "shot gun" approach will be used to test different areas of the body and different laser intensities. Lee Blankenship concluded that while the initial results weren't too promising, it was definitely worth every effort if a way can be found to use the laser.

d) **Electronic detection**

WDF recently conducted a field test with the hand detector on returned adult coho at Cowlitz Hatchery. A total of 100 fish were sampled by both the hand detector and a new enlarged model of the tube detector. The tests were repeated three times. In each case, the tube detector found 100% of the tagged fish, while the hand wand found 11 out of the 13 for a success rate of 85%. Both of the missed fish were large females. These preliminary results suggest that the number of missed tags would be significantly greater in the larger chinook.

Lee Blankenship also reported that **the tube detector identified a few additional fish (10% range) that had a CWT but had the adipose fin intact!** These fish had been missed by both the wand and the eye, yet had tags. Because of the surprising results, **he repeated the experiment two other times at Cowlitz Hatchery and found comparable rates of tagged fish with the adipose fin intact.** He concluded that it was obviously an issue of poor fin clips. In addition, **he stressed that it clearly demonstrates that the current CWT system isn't as perfect as it is often assumed, and that there is a need to look closely at biases such as this.**

In concluding his report, Lee Blankenship gave much credit to BPA for playing a major role in funding a number of mass marking studies. However, he stressed that the States should not automatically assume that BPA is the only agency that has responsibility for these projects. He added that WDF also has gotten involved in funding a number of mass marking studies, simply because they saw the need and wanted to see progress. With the exception of USFWS and IDFG, other agencies have not shown much support for carrying out mass marking studies. He therefore urged greater participation by all agencies in seeking solutions for mass marking needs.

13. Mass Marking Research with Fluorescent Pigments

At the invitation of Bryan Ludwig (BC Environment), Dr. Clarence de Silva and Dr. Raymond Gosine (University of British Columbia) presented their work to the Mark Committee. Dr. de Silva spoke first and briefly outlined the organization, resources, and research and development activities of the newly established "Industrial Automation Laboratory" in the Department of Mechanical Engineering at the University of British Columbia. He explained that the laboratory has three main objectives:

a) Establish an adequate infrastructure of industrial automation within Canada's universities, and develop advanced technologies that are appropriate for local industries.

b) Rapidly transfer low-cost techniques of advanced automation to local industries.

c) Locally train engineers specializing in control and automation for local industries through university/industry collaboration.

The cost of conducting research at the Industrial Automation Lab was of particular interest to the Mark Committee members. Dr. de Silva noted that staff salaries are covered through the university, and that there is no overhead charged against research grants. As a result, 100% of a research grant is directed into research! Needless to say, this sounded like paradise for many in the audience who must deal with high overhead costs in running any project.

Dr. Raymond Gosine then addressed some of the specific projects that their lab has been involved in. As time was running short, he limited himself to just a few remarks about their work to improve automation in the area of fish processing. In addition, he commented on recent work on the use of fluorescent grit spray to mark kokanee fry. The research is being done in collaboration with BC Environment staff. An amazing amount of work was accomplished under a grant of $35,000 because of no overhead charges.

Following the presentation, Charlie Corrarino (ODFW) expressed great enthusiasm for this type of innovative thinking. He argued that current thinking isn't solving the problem of mass marking, and that new ideas are desperately needed. Dennis Isaac (ODFW) also stated that he was very stimulated by the presentation because he could see direct applications for tagging fish. He emphasized that tagging fish was very labor intensive and thus expensive. Thus if even a portion of the tagging process could be automated, it would result in significant savings to the agencies.

14. Standardized Protocol Needed for Reading Sequential Tags

A. Error in Regional Agreements Regarding Decoding Sequential Tags

Karen Crandall (ADFG) noted an apparent error in the Regional Agreements (listed in the 1992 Release Report) with respect to recovery agencies decoding sequential tags (see **Attachment 4**). The current version indicates that the recovery agency need only decode the primary code (AGENCY, DATA 1, DATA 2) and that the tags can then be returned to the releasing agency for final decoding of DATA 3 and DATA 4. She noted that the PSC format for exchanging recovery data included fields for reporting DATA 3 and DATA 4 (i.e., sequential table column and row numbers).

ACTION:

It was quickly determined that the current version of the Regional Agreements are in error in this regard. A correction will be made to state that:

> **Recovery agencies agree to decode all sequentially marked coded wire tags recovered to the primary tag code (i.e. AGENCY, DATA 1 and DATA 2) and will report DATA 3 and DATA 4 as their decoded binary values. Tags will then be forwarded to the respective releasing agencies for translation of DATA 3 and DATA 4 values to their sequence number.**

B. Standardization Required to Decode Binary Values for DATA 3 and DATA 4

Karen Crandall also commented that the current decoding instructions for sequential tags provided by Northwest Marine Technology (**Attachment 4**) allow separate readers to make different choices and thus record different values (although both are correct). Therefore, in order to avoid this reading conflict, ADFG suggested a coastwide convention of reading the tag on the right side.

ACTION: Alaska's recommendation was approved for reading sequential tags:

> **When the same mark position visible at both ends of a tag is marked differently, as can only occur in DATA 3 and DATA 4 rows of sequentially marked coded wire tags, always choose to read the position on the right edge of the tag as it appears in the normal "right to left" orientation of the tag.**

15. New "Type of Release" Code Recommended

Karen Crandall (ADFG) noted that she has run into the problem of having to determine the number of Alaskan tag recoveries for ESA stocks from the Columbia Basin. Unfortunately, this type of information is not provided in the PSC release data format. Therefore, she suggested that "ESA" be added as an additional option under the data field "Type of Release". The six current options include Experimental, Production, Both Experimental and Production, Other, PSC Key Indicator Stock, and Other Index Streams.

The recommendation was not endorsed by the Mark Committee. Marianne Johnson (CRITFC) noted that the designation of ESA stocks, for example, was still very subjective and would likely remain so for some time. Classification could also be fairly complicated. Releases of ESA chinook from Lyons Ferry Hatchery on the lower Snake River, for example, could be classified into three different types of releases, based on transportation, non-transportation, etc.

Ken Johnson (PSMFC) also noted that "ESA" didn't fit well into the existing "Type of Release" because it could overlap with several of the other categories such as Production, Experimental, Both, or PSC Key Indicator Stock. He suggested that it may need to be an entirely new data field. As such, he recommended that the issue be given to the PSC Working Group on Data Standards because of the logical fit of the problem with their area of expertise. This recommendation was agreed to.

ACTION:

The problem of identifying ESA release groups was referred to the PSC Working Group on Data Standards for resolution.

16. Potential Problem with Sequential Tag Code 110101

Susan Markey (WDF) reported a potential problem with tag code 110101. This code had been originally released in a 1973 fall chinook release by UW from Portage Bay Hatchery. This same code was provided by NWT to a University of Washington researcher as a sequential tag code prior to the Mark Committee's decision that sequential tag codes would not duplicate any standard tag codes already released. The researcher tagged 360 coho (Big Beef Creek stock) in 1990 with the intention that the fish would not be released to the marine environment. Unfortunately, the fish were released somehow.

More recently, one recovery was observed by WDF for this group of fish. However, WDF has decided to ignore the recovery rather than introduce a re-used code to the release data base (i.e. *1,*2 versions), thus avoiding all the attendant problems for converting any original recoveries to the *1 version. She also recommended that other agencies ignore any other recoveries (not expected, but....) of this code.

This recommendation was supported by the Mark Committee.

17. Advances in Coded Wire Tag Technology

Dr. Keith Jefferts (NMT) updated the Mark Committee on a number of new developments during the past year.

a) Quality of Tagging Wire

Tag readers will notice that the new wire being shipped is of higher quality. This improvement is the result of increased knowledge about the stainless steel that is used to make the wire. The two areas of improved quality are:

- 30-40% increase in magnetic moment.
  (This should translate to 10% increase in tag detection range)
- Better mechanical detail (i.e. shinier, better notches)

b) Improved MARK IV Tag Injectors

The newest model of the MARK IV injector has an automatic "anti-stick" feature at the time of tag injection. This causes the tag to not stick to the push rod and also results in better magnetization. The intent is to incorporate this modification into all units returned for service that have firmware version 3.2. The upgrade cost is modest.

c) Six Inch Tube Detectors

These are not a new product but simply a new dimension offered. The tubes are believed to be essentially 100% reliable for detecting tags.

d) Hand Wand Detectors

The wand detectors are excellent for body tagging studies. A total of 21 possible code combinations are possible if the two cheeks, two pectorals, two pelvics and the dorsal fin are used with in combination with two tags.

Dr. Jefferts indicated that there is a good technical possibility to improve the detectibility of the hand wand approximately 50%. Some of this improvement would come from the new wire now being used (i.e. 30-40% higher magnetic moment, and 10% increase in detectibility). However, he also noted that it would also require a significant redesign of the wand by rescaling its size. The resultant range, he predicted, would be approximately 1.5 inches when using standard length wire. The current model detects tags up to one inch.

When asked if any research and development was underway on the wand, Dr. Jefferts advised that he only making a statement on the technical feasibility of improving the wand. He further added that upgrading the wand was a very low priority at this time for NWT because of other research now underway. However, he stressed that he was willing to revise his priorities if he could be convinced that the wand was the solution to a whole bunch of problems.

e) Visual Implant Tags

Dr. Jefferts noted that excellent progress is continuing with the V.I. tags. He agreed with Lee Blankenship's earlier assessment that the elastomer tags probably were the most promising. In addition, he noted that they had successfully tagged 70mm fish with elastomer tags. This is considerably smaller than the 100mm length advised for use of the filament tags.

The fluorescent tags offer up to 15 (+/- 5) useful codes based on color. These colors can't be distinguished by the eye but a simple three channel portable spectrometer.

f) Proposal for Automated Mass Marking

NWT has submitted a unsolicited proposal to BPA for automating fin removal or fish handling with respect to Columbia River problems. He noted that there appeared to be little question that some type of mass mark(s) will be used in the Columbia River system. The intent is to develop an automated mass marking machine with as much flexibility as possible in order to allow multiple types of mass marks to be applied if desirable. Possible options include fin removal, CWT tagging, and injection of elastomer tags. BPA has shown considerable interest in funding the project in FY1994.

Attachment 1

1993 Mark Meeting Attendees

February 16, 1993

	Lynn Anderson	WDF - Olympia, WA
	Jerry Bauer	BPA - Portland, OR
*	Margaret Birch	CDFO - Vancouver, BC
*	Lee Blankenship	WDF - Olympia, WA
	Bill Bosch	Yakima Nation, Toppenish, WA
**	John Clark	ADFG - Juneau, AK
	Rich Comstock	USFWS - Olympia, WA
*	Charlie Corrarino	ODFW - Portland, OR
*	Karen Crandall	ADFG - Juneau, AK
	Jay DeLong	NWIFC - Olympia, WA
	Greg Evans	USFWS - Vancouver, WA
*	Frank Fisher	CDFG - Red Bluff, CA
*	Jerry Harmon	NMFS - Pomeroy, WA
*	Pete Hassemer	IDFG - Boise, ID
	Doug Herriott	CDFO - Vancouver, BC
*	Dennis Isaac	ODFW - Clackamas, OR
	Keith Jefferts	NMT - Shaw Island, WA
*	Ken Johnson	PSMFC - Portland, OR
*	Marianne Johnson	CRITFC - Portland, OR
	Tom Kane	USFWS - Olympia, WA
	Bill Kinney	WDF - Olympia, WA
*	Steve Leash	MIC - Metlakatla, AK
	James Longwill	PSMFC - Portland, OR
*	Bryan Ludwig	BC Environment - Victoria, BC
	Susan Markey	WDF - Olympia, WA
	Dick O'Connor	WDF - Olympia, WA
	Steven Olhausen	USFWS - Vancouver, WA
*	Ron Olson	NWIFC - Olympia, WA
	Steve Pastor	USFWS - Vancouver, WA
	Ken Phillipson	NWIFC - Olympia, WA
	Ralph B. Roseberg	USFWS - Orofino, ID
*	Robert Z. Smith	NMFS - Portland, OR
	Guy Thornburgh	PSMFC - Portland, OR
*	Frank Thrower	NMFS - Auke Bay, AK
	Richard Turner	PNUCC - Portland, OR
	Neil Williscroft	CDFO - Vancouver, BC
*	David Zajac	USFWS - Olympia, WA

* Mark Committee Member

** PSC Data Sharing Committee Member

ATTACHMENT 2

February 10, 1993

Mr. Ken Johnson, Regional Mark Coordinator
Pacific States Marine Fisheries Commission
2501 SW First Avenue, Suite 200
Portland, Oregon 97201

Dear Mr. Johnson:

We are in receipt of your memo dated January 29, 1993, regarding the role of the Mark Committee in "making policy on regionally important marking issues" (enclosed). We completely agree with your concerns about regional fish marking issues subsequent to the Endangered Species Act actions on the Snake and Columbia Rivers. However, it is simply not the responsibility of the Mark Committee to "negotiate" policy on this matter. This responsibility lies with the directors of the various federal/state agencies and tribal fisheries managers.

Therefore, with this letter we are asking that you use the meeting of the Mark Committee on February 16, 1993 at the Best Western Aladdin Inn in Portland, to frame the technical issues you believe should be used by the directors and tribal managers to develop the policies necessary to deal with this important matter.

Thank you.

Sincerely,

Curt Smitch
Director
Washington Dept. of Wildlife

Robert Turner
Director
Washington Dept. of Fisheries

Randy Fisher
Director
Oregon Dept. of Fish and Wildlife

Bill Frank,
Chairman
NW Indian Fisheries Commission

Rolland A. Schmitten
Regional Director
Regional Director National Marine Fisheries Service

PACIFIC STATES MARINE FISHERIES COMMISSION
2501 S.W. FIRST AVENUE, SUITE 200, PORTLAND, OREGON 97201
PHONE (503) 326-7025 FAX (503) 326-7033

EXECUTIVE DIRECTOR
GUY N. THORNBURGH

DATE: January 29, 1993

TO: Mark Committee Members

FROM: Ken Johnson, Regional Mark Coordinator

SUBJECT: Call for Leadership and Coastwide Cooperation

As noted in the attached agenda, Idaho is again repeating its request for a special one-year variance (to be reviewed each year as needed) to adipose-only mark their hatchery spring and summer chinook. As you will recall, they were denied this request last year, and in good faith, then went ahead and placed CWTs in all the adipose marked hatchery fish prior to release. This was done at great expense and stress to their marking program during a very narrow period when the marking could be done. However, because of substantially greater production this year, IDFG does not believe it is physically possible for them to comply with the requirement to add a CWT to all Ad-clipped hatchery fish.

I have given this situation a great deal of thought over the past months and recent weeks, and have reached the firm conclusion that the Mark Committee is at a critical crossroads with respect to its regional influence and ability to effect coastwide coordination and cooperation. On the one hand, the Committee is rightly committed to preserving the integrity of the CWT program at all costs. On the other hand, though, we have required Idaho to tag all of their hatchery fish marked with an adipose clip even though no one has challenged their argument that the Snake River fish would have virtually no impact on the ocean CWT recovery programs and only modest impact, at best, in the lower Columbia River fisheries.

Furthermore, the NMFS has insisted that Idaho not magnetize the CWTs in order that their sampling program at Lower Granite Dam isn't swamped by returning tagged adults. One can then logically ask why the Committee is insisting on Idaho tagging their fish when the tags aren't even magnetized. The effect on the head labs, of course, is no different than if the fish had an adipose-only mark. In either case, the labs will have to provide extra handling to verify whether or not a tag is present.

I recognize, of course, that the key issue in denying Idaho this variance in the past is the fear of setting a precedent for future requests that could potentially lead to the eventual coastwide desequestering of the adipose clip. **In reality, however, the real threat to the adipose clip is not from granting Idaho a variance but rather from the political processes that are continually gaining strength.** As an example, both Oregon and Washington legislatures

now have bills introduced or in the draft stage that call for mass marking of all hatchery stocks (see Agenda, Attachment 4 for the Washington bill). The Oregon bill even identifies the adipose clip as the mark of choice! In addition, both Washington and British Columbia are considering programs to mass mark coho in Puget Sound and the Straits of Georgia, respectively. The ventral mark is the current mark of choice, but there will undoubtedly be great pressure from the public sector to eventually use the adipose mark because of its higher visibility, lower associated mortality, etc.

Given these realities, I return to my overriding concern that the Mark Committee is now at a critical crossroads. We can continue to hold the line (i.e. no precedent setting) with Idaho and insist on tags with the adipose clip (.....which then won't be magnetized!). The real risk, however, is that Idaho may feel that it has been forced into a box, so to speak, and has no other alternative than to go ahead and disregard the Committee's decision. If that happens, it will be a lose-lose situation for both Idaho and the Mark Committee. It could also serve as the beginning of the end of the ability of the Mark Committee for effecting compromises and regional cooperation. **I strongly feel that this latter type of precedent is to be feared much more than granting Idaho a special variance to adipose-only mark Snake River chinook.**

It is true that the Mark Committee typically functions as a technical body, making decisions and exchanging information on technical issues and marking procedures. However, it is equally true that the Mark Committee also serves as a regional forum for making policy on regionally important marking issues. There simply is not another forum at the present time, nor need there be, where agencies can come together on marking issues and establish consensus on new policies. As such, I urge each of you as the tag coordinator for your agency to come to the Mark Meeting fully prepared to negotiate as a policy maker for your agency. And if for any reason this is not practical for you to fulfill this function, then some qualified policy maker from your agency should be in attendance with you to help in the decision process.

Simply put, we need to both preserve and strengthen the Mark Committee in its role as a regional forum for resolving marking problems, and also find a way to work with Idaho and find a satisfactory solution that meets their needs as well. Failure to do this, in my opinion, is totally unacceptable and unproductive for everyone involved. The issues aren't going to go away. We need to meet them head on and find workable solutions!

cc: Don Bevan, Univ. Washington
Pete F. Bontadelli, CDFG
Patrick S. Chamut, CDFO
Jerry Conley, IDFG
Randy Fisher, ODFW
Carl L. Rosier, ADFG
Rolland A. Schmitten, NMFS
William Shake, USFWS
Curt Smitch, WDW
Guy Thornburgh, PSMFC
Robert Turner, WDF

PACIFIC STATES MARINE FISHERIES COMMISSION
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EXECUTIVE DIRECTOR
GUY N. THORNBURGH

FORMAT FOR MASS MARKING PROPOSALS

Outlined below is the proposal format to be followed when requesting a mass mark. The purpose of this standard format is to gather the information necessary to assess impacts to the coastwide CWT program and to inform other agencies of possible mass marks in the fisheries. Proposals for adipose-clip-only marks will be considered on a year to year basis.

Please address all of the following items 1-5 in adequate detail on a separate page.

==========

Agency: Date:

Coordinator:

1. Mark Requested:

2. Details of Marking

   a) Number of fish:
   b) Species/Run:
   c) Brood year:
   d) Stock(s):
   e) Hatchery(ies):
   f) Geographic area(s):
   g) Release date:

3. Specific Management and/or Research Objectives: (give examples)

4. Impact on Coastwide CWT Programs:

   a) Predicted number observed recoveries by state/province and by year)
   b) Changes to current CWT sampling program
   c) Other

5. Specify Expected Benefits:

ATTACHMENT 4

MEMORANDUM

State of Alaska

TO: Tag Coordinators

DATE: February 13, 1993

FILENAME: F:\USERS\KARENC\WORD\coord213.doc
FAX NO: 465-2765
TELEPHONE NO: 465-3483

FROM: Karen Crandall
Tag Coordinator
Coded Wire Tag Processing Laboratory
Division of FRED
Department of Fish and Game

SUBJECT: Clarification of reporting requirements and need for standardization of reading sequential wire

Clarification of reporting requirements

It was my understanding that recovery agencies agreed to read and report the decoded binary value of Data 3 (Sequence 1) and Data 4 (Sequence 2) for sequentially marked coded wire tags. These values correspond to the column and row numbers in the Sequential Numbers Table. However, we did not agree to translate these values to the sequence number. If I am correct than item 10.d on page 22 of the Regional Agreements on Marking in the Pacific Salmonid Coded Wire Tag Releases, 1985 -1991 book is incorrect. That section should read:

> **Recovery agencies agree to decode all sequentially marked coded wire tags recovered to the primary tag code (i.e. AGENCY, DATA 1 and DATA 2) and will report DATA 3 and DATA 4 as their decoded binary values. Tags will then be forwarded to the respective releasing agencies for translation of DATA 3 and DATA 4 values to their sequence number.**

Standardization required to decode binary values for DATA 3 and DATA 4 for Sequentially Marked Coded Wire Tags

Decoding instructions for Sequentially Marked Coded Wire Tags provided by Northwest Marine Technology state that:

> .....When reading tags there is usually at least one mark position in each data row which is visible at both ends of the tag. When reading sequentially coded tags, it will sometimes occur that such a position will be marked differently at opposite ends of the Data 3 or Data 4 row, offering two choices of how to read the tag. You may make wither choice when reading the tag.....

This choice allows separate readers to make different choices and record different correct values for the same tag. In order avoid this reading conflict, we have instructed our staff to:

> **When the same mark position visible at both ends of a tag is marked differently, as can only occur in DATA 3 and DATA 4 rows of sequentially marked coded wire tags, always choose to read the position on the right edge of the tag as it appears in the normal "right to left" orientation of the tag.**

We suggest that this convention be adopted coastwide so that a recovery agency's reading of a sequentially marked coded wire tag will not differ from the releasing agency's subsequent reading of that same tag.