PACIFIC SALMON COMMISSION
TECHNICAL COMMITTEE ON DATA SHARING

REPORT TCDS (91)-1

1990 ANNUAL REPORT OF THE DATA SHARING COMMITTEE AND ITS WORK GROUPS

July 1991

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I. INTRODUCTION

This is the second annual report of the Data Sharing Committee. The Committee was formed in 1985 and reports to the Standing Committee on Research and Statistics. The initial goals and concerns of this committee were to review equipment needs of the Pacific Salmon Commission (PSC), to facilitate data exchange between the two Parties, and to develop standard methods of reporting and analyzing coded-wire-tag data. The Committee continues to facilitate data exchange between the two Parties, is working on a program to standardize and exchange catch and effort data, deals with clarification of problems between Parties and agencies about sampling programs or interpretation of data, and works closely with the coast wide Mark Committee on shared concerns over tagging and tag recovery standards. Once a year, in February, the two Committees meet back-to-back in order to be able to attend each others meetings and share concerns.

The Data Sharing Committee currently has three work groups: Mark-Recovery Statistics Work Group which works on standardizing statistical techniques for using code-wire-tag data, the Data Standards Work Group which provides continual maintenance of data standards and formats for coded-wire-tag data exchange between the two Parties, and the Catch Data Exchange Work Group which is developing standard formats for catch and effort data for exchange between the two Parties. An earlier work group, the Work Group on Mark-Recovery Databases, completed its task in 1989 of designing the standards and formats for the exchange coded-wire-tag data.

The Data Sharing Committee provides oversight and guidance to its work groups and coordinates activities between them when needed. To facilitate communications between the parent committee and the work groups, at least one member of the Data Sharing Committee from each Party is placed on each Work Group.

Members of the Data Sharing Committee and its various work groups for 1989 are listed in Appendix I. A list of reports produced by the Data Sharing Committee and its Work Groups is given in Appendix II.

II. DATA SHARING

The Data Sharing Committee held two meetings in 1990: one in February in conjunction with the Mark Committee and one in October. The Canadian co-chair, Louis Lapi, presided over the meetings in 1990. Norma Jean Sands was the U.S. co-chair.

Accomplishments

The February 1990 meeting was held in Portland in conjunction with the Mark Committee meeting. The was the first year the two meetings were held back-to-back and was done to improve communication between the two committees. Both Committees decided this was beneficial and would be the start of an annual tradition. At both meetings, members of the two committees discussed implications and problems in certain standardizations required for coastwide marking of salmon.

At the request of the Research and Statistics Committee (R&S), Data Sharing is working on development of a workshop on escapement methodologies. At the February meeting it was decided that early 1991 would be a good time; however, it later became apparent that there were too many other PSC workshops planned for 1991 and that perhaps 1992 would be a better goal. In the meantime, the committee will work on expanding and distributing a summary report of escapement methodologies that was drafted earlier by the committee.

Data Sharing agreed to recommended to R&S that embedded replicate tags not be used for estimating variance in estimates of fishery contributions and survival, but did not recommend yet that they be discontinued, giving users a chance to justify how they are currently being used.

The Data Sharing Committee expressed willingness to help prioritize problems to be tackled by the Mark-Recovery Statistics Work Group and, at the February meeting, recommended that the Work Group place highest priority on developing bilaterally agreed-upon estimates of variance regarding fishery contributions and survival.

The Data Sharing Committee approved a questionnaire about hatchery practices involving the use and recovery of coded-wire tags for reporting salmon production (Appendix III). Mr. Comstock will distribute the questionnaire to U.S. agencies and Ms. Birch to appropriate DFO personnel.

The October meeting of the Data Sharing Committee was held in Vancouver, B.C., on the 30th of the month and was preceded on October 29th by meetings of the Statistics, Catch Exchange, and Data Standards Work Groups.

Data Sharing received and approved Version 2.0 of specifications and coding for the PSC coded-wire-tag data (Appendix IV & V).

A letter was sent out to the PSC Commissioners about the problem of prioritizing time within agencies to convert code-wire-tag data into the new PSC format in order to facilitate exchange and access to the data (Appendix VI).

Future Tasks

The Committee is working on a summary report of escapement methodologies to be submitted to R&S at their next meeting in the fall of 1991 and is planning a workshop on the subject for sometime in 1992.

A summary of hatchery practices will be put together from responses from the questionnaire and sent out (Appendix III).

III. MARK-RECOVERY STATISTICS

The Work Group for Mark-Recovery Statistics has been in existence since the beginnings of the Data Sharing Committee. A history of the Work Group through 1988 was put out as a PSC report by the Data Sharing Committee (TCDS 88-2). This Work Group met twice in 1990: in January and in October. Detailed minutes of both meetings, complete with related technical documents, are on file at the PSC. See also Appendix VII.

The January meeting was held in Seattle, WA, and was chaired by the U.S. co-chair, Ray Hilborn. The October meeting was held in Vancouver, B.C., and the Canadian co-chair, Jon Schnute, chaired the meeting. The meetings alternate between Canada and the United States and are chaired by the co-chair of the host country.

Accomplishments

At the January meeting, the Work Group developed the following recommendation:

"The Working Group on Mark-Recovery Statistics recommends that the use of embedded replicate tag codes be discontinued. We conclude that embedded replicates are not true statistical replicates and provide no useful extra information".

At the October meeting, members of the Work Group presented progress reports on CWT-related studies. The subject of embedded replicates was discussed, and the recommendation to discontinue their use was reiterated. It was realize that often discussion of a study is confusing because terms are defined differently by the participants. A common data set will be compiled and distributed to the members of the Working Group. Parameters will be well defined, and estimated using techniques developed by members of the Working Group. Results will be presented at the next meeting.

Future Tasks

Work is continuing on statistical methods pertaining to CWT studies (Appendix VII).

IV. DATA STANDARDS

The Work Group on Data Standards was formulated in April 1989 and was given, among other responsibilities, the task of updating and revising the Mark-recovery Database Format (Version 1.2). Two meetings were held in 1989 in which areas needing change were identified and solutions explored. Those efforts led to the decision to make a major upgrade, Version 2.0, of the Mark-Recovery Database Format. Work was done on the upgrade outside of formal meetings and one meeting was held in 1990, in October, to finalize the upgrade.

Accomplishments

Work on Version 2.0 continued during the early months of 1990. Upon invitation, nearly all members of the Work Group attended the annual Mark Meeting on February 23, 1990. At that meeting, the Mark Committee reviewed and then approved the use of binary "sequential tags" with the adipose finclip.

Given that development, members of the Work Group then caucused and agreed to add several additional data fields to Version 2.0 in order to accommodate data for sequential tags. The new fields were approved by the Data Sharing Committee the next day in their back-to-back meeting with the Mark Committee. Specifications for Format Version 2.0 were subsequently prepared and distributed for review and comments.

The Work Group met on October 29, 1990, to address a number of data processing concerns that were not fully resolved by Version 2.0. However, after considerable discussion, the consensus was that alternative solutions could be applied without having to undergo another format revision. Accordingly, it was decided that Format Version 2.0 will remain unchanged for at least one year and, hopefully, much longer than that. In order to minimize the conversion impact of the upgrade, all new fields were added at the end of the existing fields in Version 1.2. The new data fields added to Version 2.0 are summarized below in Table 1.

Table 1. Summary of new fields added to PSC Format, Version 2.0

Number and Field	Bytes	Justification	Format	Explanation
Release Format:				
26. Sample Size Tag Loss (Cols. 221-225)	5	Right	Numeric	Number of fish sampled to calculate tag loss (field 14); May be blank
27. Lower Range of Sequential Series (Cols. 226-230)	5	Right	Numeric	Smallest value in sequential number series; Blank filled. Field used for Sequential Tags only.
28. Upper Range of Sequential Series (Cols. 231-235)	5	Right	Numeric	Largest value in sequential number series; Blank filled. Field used for Sequential Tags only.
CWT Recovery Data Format				
29. Run (Col 92)	1		1 = Spring 2 = Summer 3 = Fall 4 = Winter 5 = Hybrid 6 = Landlocked 7 = Late Fall	Used when sample is stratified by entry run timing (e.g. freshwater sport fisheries where runs can be identified by morphological differences).
30. Sample Length Class (Cols. 93-100)	8	Numeric		Length interval range(mm); Zero filled; (i.e. 800-900mm. length interval coded as 08000900); Blank filled if not used.

Table 1. Summary of new fields added to PSC Format, Version 2.0. (Cont.)

Number and Field	Bytes	Justification	Format	Explanation
31. Sample Sex Class (Col. 101)	1		F = Female M = Male	Blank filled if sex unknown
32. Sampling Agency (Cols. 102-105)	4	Left	Alpha	Agency responsible for sampling and tag recovery; May differ from Reporting Agency (field 1).
33. Sequential Table Column No. "Data 3" (Cols. 106-108)	3	Right	Numeric	Value in "Data 3"; Corresponds to column number in Sequential Numbers Table; Zero filled. Field used for Sequential Tags only.
34. Sequential Table Row No. "Data 4" (Cols. 109-111)	3	Right	Numeric	Value in "Data 4"; Corresponds to row number in Sequential Numbers Table; Zero filled. Field used for Sequential Tags only.
<u>Catch and Sample Data</u>				
28. Run (Col 92)	1		1 = Spring 2 = Summer 3 = Fall 4 = Winter 5 = Hybrid 6 = Landlocked 7 = Late Fall	Used when sample is stratified by entry run timing (e.g. freshwater sport fisheries where runs can be identified by morphological differences).
29. Sample Length Class (Cols. 93-100)	8	Numeric		Length interval range(mm); Zero filled; (i.e. 800-900mm. length interval coded as 08000900); Blank filled if not used.
30. Sample Sex Class (Col. 101)	1		F = Female M = Male	Blank filled if sex unknown

Table 1. Summary of new fields added to PSC Format, Version 2.0. (Cont.)

Number and Field	Bytes	Justification	Format	Explanation
31. Sampling Agency (Cols. 102-105)	4	Left	Alpha	Agency responsible for samplng and tag recovery; May differ from Reporting Agency (field 1).
Location Codes File				
6. Short Description (Cols. 133-152)	20	Left	Alpha-Numeric	Concise description of the location

The Data Sharing Committee met the following day, October 30, 1990, and approved Format Version 2.0 for use in data exchange between Canada and the United States. Copies of Version 2.0 for fisheries codes and format specifications are provided in Appendices IV and V, respectively.

The Data Standards Work Group has also kept records of the conversion process to the PSC format for coded-wire-tag data. Most agencies made considerable progress in 1990 in their efforts to convert their historical data sets (release, catch/sample, and recovery) into PSC format (Version 1.2 or 2.0). Unfortunately, considerable work remains to be done yet for some data sets. The status of each agency's conversion efforts was summarized in Tables sent to the PSC Commissioners (see Appendix VI).

1) Release Data

The CWT release data have nearly all been converted to PSC format. Only Idaho's tag codes remain to be reported in the PSC format.

2) Recovery and Catch/Sample Data

A significant number of recovery and catch/sample data sets (by agency/year) remain to be converted yet., However, the actual amount of data still in old format is quite small. With the exception of Washington's 1975 to 1983 data, all of the major recovery agencies have converted all or most of their recovery and catch/sample data. Most of the other missing data sets (IDFG, NMFS-AK, QDNR, etc.) are all small and mainly represent terminal or escapement data.

3) Unmarked Hatchery Production

Very little progress has been made by U.S. fisheries agencies in reporting unmarked hatchery production in PSC format. ODFW has provided its data back to 1982, but earlier years' data are unavailable to the agency. The USFWS and Metlakatla Indian Community are the only other U.S> agencies to have reported their data. In contrast, the Canadian data have been reported for all years in the PSC format.

Future Tasks

The Work Group on Data Standards will continue to focus on the conversion of historical data into PSC format. Once that is completed, some attention will be given to standardizing location codes on a regional basis. The EPA river reach coding scheme, for example, will be looked at as an alternative for sites in the Columbia River Basin and, possibly, for all of Washington, Oregon, Idaho, and California.

The Work Group will work with the Catch Exchange Work Group to provide experience and guidelines linking the catch database format with the coded-wire-tag database format where ever practicable.

V. CATCH DATA EXCHANGE

This Work Group for a Catch Data Exchange was formulated at the October 5, 1989, meeting of the Data Sharing Committee. The major task of this group is to develop a catch database format that may be used by both Parties in exchanging catch and effort data. The Work Group held its first bilateral meeting on October 29, 1990.

Accomplishments

At its October meeting, held in Vancouver, B.C., the Work Group decided to define a single structure to encompass commercial, recreational, and subsistence data; however, separate record types were needed for catch and effort data. The Work Group identified fields to include in each of the two record types, what values to have for most of the fields, and what codes to use for the various values.

Future Tasks

The Work Group will confer with the Work Group on Data Standards to maintain standards between catch and effort formats and coded-wire-tag formats where feasible. It is hoped that a complete draft of the catch and effort format will be ready by the end of 1991.

APPENDIX I. LIST OF MEMBERS

CANADA	UNITED STATES
Technical Committee on Data Sharing (12-90) (limit 7 @ Party)	
Mr. Louis Lapi (Co-chair)	Dr. Norma Jean Sands (Co-chair)
Ms. Margaret Birch	Dr. Don Bevan
Mr. James H. Bjerring	Dr. Kenneth A. Henry
Mr. Marc Hamer	Dr. Ken Johnson
	Dr. Gary S. Morishima
	Mr. Mike Matylewich
	Mr. Joseph Pavel
Work Group on Mark-Recovery Statistics (12-90) (unlimited)	
Dr. J. Schnute (Co-chair)	Dr. Ray Hilborn (Co-chair)
Ms. Carol Cross	Dr. John E. Clark
Mr. Rob Kronlund	Mr. Rich Comstock
Mr. Louis Lapi	Mr. Bob Conrad
Dr. Tim Mulligan	Dr. Ken Henry
	Mr. Peter Lawson
	Dr. John Skalski
Work Group on Data Standards (12-90) (limit 5 @ Party)	
Mr. Marc Hamer (Co-chair)	Dr. Ken Johnson (Co-chair)
Mr. Louis Lapi	Mr. Charles Corrarino
	Mr. Bill Johnson
	Mr. Dick O'Connor
	Mr. Ron Olson
Work Group for a Catch Data Exchange (12-90) (limit 5 @ Party)	
Mr. James H. Bjerring (Co-chair)	Mr. Joseph Pavel (Co-chair)
Ms. Maureen Holmes	Mr. Will Daspit
Mr. Brian Kuhn	Mr. Scott Johnson
Mr. Vic Palermo	Ms. Susan Markey
Ms. Lia Bijsterveld	Mr. Gerald Lukas

APPENDIX II. LIST OF REPORTS

TCDS (88)-1. Report of the Data Sharing Committee to the Standing Committee on Research and Statistics. February 12, 1988.

TCDS (88)-2. Report of the Data Sharing Committee to the Standing Committee on Research and Statistics concerning the Technical Feasibility of Establishing Coastwide Salmon Catch and Escapement Databases. June 1988.

TCDS (89)-1. Information Content and Data Standards for a Coastwide Coded-Wire Tag Database. July 12, 1989.

TCDS (89)-2. Activities of the Working Group on Mark-Recovery Statistics, 1986-1988. July 26, 1989.

TCDS (90)-1. 1989 Annual Report of the Data Sharing Committee and its work groups. May 1990.

APPENDIX III. HATCHERY QUESTIONNAIRE.

Coded Wire Tag Methods Questionnaire

Instructions

Most of the following questions are multiple choice. Please list the percent of fish groups for which each option applies. Here a fish group is defined as either a production group or a subset of a production group that is used for a specific study. We would also appreciate any comments concerning which methods are being phased out or which are being adopted as standards. If an "Other" option is applicable please list the method in the area provided. Some questions ask you to describe methods. If the description is long, feel free to list a reference or include papers along with the returned questionnaire.

An Example Question

If you count your fish at release as follows; 75 percent of the unmarked fish groups are counted with an electronic counter, 25 percent of the unmarked groups are counted using the displacement method, and 100 percent of the marked groups are counted using electronic counter, then you would complete question 1 as follows:

1. How do you estimate the number of fish released from a hatchery pond?

Marked[1] Groups		Unmarked Groups	
Prod.[2]	Exp.[3]		
100%	100%	75%	Electronic Counting Tubes/Tunnels
____%	____%	25%	Displacement Method

Number Released =
Total weight of water displaced X
Water to fish conversion factor X
Number of fish per unit weight

____%	____%	____%	Weight Method

Number Released =
Total weight of all fish X
Number of fish per unit weight

____%	____%	____%	Enumeration of Mortalities (Book method)

Number Released = Number Good Eyed Eggs -
Observed Mortalities

How are the eggs counted? _____

____%	____%	____%	Peterson estimate
____%	____%	____%	Hand Count
____%	____%	____%	QCD Count minus enumeration of mortalities
____%	____%	____%	Other _____

1 Here "marked groups" are fish groups within which some of the fish are marked. Question 4.H addresses the number of marked fish released.
2 Marked groups that are considered production.
3 Marked groups that are considered experimental.

Respondent Information

Respondent Name: _____ Date: _____

Respondent Agency: _____ Phone: _____

Respondent Position: _____

Facility Name: _____

QUESTIONS

1. How do you estimate the number of fish released from a hatchery pond?

Marked[1] Groups		Unmarked Groups	
Prod.[2]	Exp.[3]		
____%	____%	____%	Electronic Counting Tubes/Tunnels
____%	____%	____%	Displacement Method

Number Released =
Total weight of water displaced X
Water to fish conversion factor X
Number of fish per unit weight

____%	____%	____%	Weight Method

Number Released =
Total weight of all fish X
Number of fish per unit weight

____%	____%	____%	Enumeration of Mortalities (Book method)

Number Released = Number Eyed Eggs -
Observed Mortalities

How are the eggs counted? _____

____%	____%	____%	Peterson estimate
____%	____%	____%	Hand Count
____%	____%	____%	QCD Count minus enumeration of mortalities
____%	____%	____%	Other _____

1 Here "marked groups" are fish groups within which some of the fish are marked. Question 4.H addresses the number of marked fish released.
2 Marked groups that are considered production.
3 Marked groups that are considered experimental.

2. If the number of fish per unit weight is required for calculation of 1. above.

A) How do you obtain the weight sample?

____% Crowd and net

____% Remove by net without crowding

____% Other _____

B) How many samples do you take per pond? _____

3. If the fish are in more than one pond, how do you estimate total number released?

Marked Groups		Unmarked Groups	
Prod.	Exp.		
____%	____%	____%	Estimate the number in each pond and sum over all ponds.
____%	____%	____%	Estimate an average number per pond by sampling a subset of ponds, then multiply this average times the number of ponds. If you use this method, what percentage of ponds do you sample? _____

4. If fish are to be marked with Coded Wire Tags.

A) How do you decide how many fish are to be marked? (If you use an equation, please list it or include a reference)

B) If the fish group is reared in several ponds, how are the fish selected for marking?

Prod. groups	Exp. groups	
____%	____%	fish are selected from one pond only

Prod. groups	Exp. groups	
____%	____%	Do you report the unmarked ponds as associated unmarked?

____%	____%	fish are selected from several ponds, If so how are the ponds chosen?

Prod. groups	Exp. groups	
____%	____%	some fish from each pond are marked
____%	____%	random selection of ponds
____%	____%	select. If so please explain how ponds are selected.

_____

_____

____%	____%	Do you report the unmarked ponds as associated unmarked?

____% ____% Other _____

C) If the fish group is reared in several ponds, are different ponds typically marked with different tag codes?

Prod. groups	Exp. groups	
____%	____%	YES
____%	____%	NO

D) How are fish removed for marking?

Prod. groups	Exp. groups	
____%	____%	Crowd and Net
____%	____%	Removed by net without crowding
____%	____%	Table Sampler
____%	____%	Five Percent Sampler
____%	____%	Pie Sampler
____%	____%	Other _____

E) Do you exclude certain fish from marking?

Prod. groups	Exp. groups	
____%	____%	mark all removed fish
____%	____%	exclude some fish

What types of fish are excluded?

Prod. groups	Exp. groups	
____%	____%	exclude the very small fish (e.g. pinheads)
____%	____%	exclude deformed or sick fish
____%	____%	other _____

F) What are your minimum environmental standards for marking? (e.g. minimum fish size, maximum water temperature, fish health, etc.)
If standards differ among species, please list by species.

_____

_____

_____

_____

_____

G) Tag loss estimation.

a) How is the tag retention sample obtained?

_____% Some fish are removed during tagging and held separately.

_____% All fish are returned to the initial population and the retention sample is obtained from this group. If you use this method, are fish with naturally missing adipose accounted for in the estimate of retention?

_____% YES

_____% NO

How are fish removed for the retention sample?

Prod. groups	Exp. groups	
_____%	_____%	Crowd and Net
_____%	_____%	Removed by net without crowding
_____%	_____%	Table Sampler
_____%	_____%	Five Percent Sampler
_____%	_____%	Pie Sampler
_____%	_____%	Other _____

_____% Other _____

_____

_____

_____

b) Do you reduce the retention rate by the rate of missed adipose clips (or regenerated adipose fins)?

_____% YES

_____% NO

c) How many marked fish are sampled for tag retention?

_____

d) How many days do you allow before measuring tag retention for the following species?

	Minimum # Days	Typical # Days
Coho	_____	_____
Chinook	_____	_____
Steelhead	_____	_____
Chum	_____	_____
Pink	_____	_____
Sockeye	_____	_____

H) How do you estimate the number of tagged fish released?

____% Number marked (tagging trailer count) times retention rate

____% (Number marked minus observed marked mortalities) times retention rate

____% (Number marked minus estimated marked mortalities) times retention rate. Please explain the mortality estimation process.

_____

_____

_____

____% Other _____

5. What types of data are available for marked <u>production</u> groups? Please list % of groups, by species, for which this information is available. Please include example reports or data forms.

Chin	Coho	Stlh	Chum	Pink	Sock	
____%	____%	____%	____%	____%	____%	Population characteristics at release (e.g. length, weight, etc.)
____%	____%	____%	____%	____%	____%	Physiological status (e.g. ATP-ase, etc.)
____%	____%	____%	____%	____%	____%	Environment at release (e.g. what type of release, were the fish trucked, etc.)
____%	____%	____%	____%	____%	____%	Environmental history during rearing (e.g. max load density, temperature, etc.)
____%	____%	____%	____%	____%	____%	Egg data (e.g. eyeup rates, etc.)
____%	____%	____%	____%	____%	____%	Broodstock data (e.g. method of selecting, fish health, age class of broodstock, etc.)
____%	____%	____%	____%	____%	____%	Pathology profile (Juvenile health at release and during rearing)

6. What types of data are available for marked <u>experimental</u> groups? Please list % of groups, by species, for which this information is available. Please include example reports or data forms.

Chin	Coho	Stlh	Chum	Pink	Sock	
____%	____%	____%	____%	____%	____%	Population characteristics at release (e.g. length, weight, etc.)
____%	____%	____%	____%	____%	____%	Physiological status (e.g. ATP-ase, etc.)
____%	____%	____%	____%	____%	____%	Environment at release (e.g. what type of release, were the fish trucked, etc.)
____%	____%	____%	____%	____%	____%	Environmental history during rearing (e.g. max load density, temperature, etc.)
____%	____%	____%	____%	____%	____%	Egg data (e.g. eyeup rates, etc.)
____%	____%	____%	____%	____%	____%	Broodstock data (e.g. method of selecting, fish health, age class of broodstock, etc.)
____%	____%	____%	____%	____%	____%	Pathology profile (Juvenile health at release and during rearing)

7. Do you estimate the straying of returning naturally spawned fish into the hatchery pond?

_____ YES

_____ NO

If YES, please describe, or reference your methods.

8. Do you estimate the total return of hatchery fish (both to the hatchery and the immediate vicinity of the hatchery).

_____ YES

_____ NO

If YES, please describe or reference your methods.

9. Do you sample, for CWT's, all fish that return to the hatchery.

_____ YES

_____ NO

If NO, please describe your sampling procedure.

10. Do you sample, for CWT's, hatchery fish that spawn in the natural environment.

_____ YES

_____ NO

11. If you have specific criteria for determining when unmarked fish are to be listed as "associated" with or "represented by" a marked group, please describe these criteria or attach appropriate documentation.

12. We understand that hatchery methods are continuously evolving. However, if there is one year since which most of the methods have remained unchanged, please list it. _____

APPENDIX IV. VERSION 2.0 OF THE CODING FOR FISHERIES FOR PACIFIC SALMON COMMISSION'S CODED-WIRE-TAG DATABASE.

Coding for Fisheries
for
Pacific Salmon Commission's CWT Database

VERSION 2.0
02/22/90

I. Overview

Codes	Gear
10-19	Troll
20-29	Net and Seine
40-49	Sport
50-59	Escapement
60-69	Test Fisheries
70-79	Juvenile Sampling
80-89	High Seas
90-99	Miscellaneous

II. Detailed Coding

A. '10' Series: Troll

Code	Fishery	Agency Fisheries and Codes		
10	Ocean Troll (Non-Treaty)	ADFG	11	Commercial Troll
		CDFG	00	Commercial Troll
		CDFO	30	Troll General
		ODFW	10	Ocean Troll
		WDF	41	Troll (Non-Treaty)
11	Ocean Troll-Day Boat	CDFO	32	Troll-Day Boat
		WDF	33	Troll-Day Boat
12	Ocean Troll - Trip	WDF	34	Troll - Trip Boat
13	Ocean Troll - Freezer Boat	CDFO	31	Troll - Freezer
14	Ocean Troll - Ice Boat	CDFO	33	Troll-Ice Boat
15	Treaty Troll	WDF	40	Treaty Troll
16	Terminal Troll	NMFS (AK)	73	Terminal Troll
19	Other	ADFG	01	Other Source Troll Gear

B. '20' Series: Net and Seine

Code	Fishery	Agency Fisheries and Codes		
20	Ocean Gillnet (Non-Treaty)	ADFG	13	Commercial Gillnet
		CDFO	10	Gillnet
21	Columbia River Gillnet	ODFW	13	Columbia River Gillnet

22	Coastal Gillnet	QDNR	16 Coastal Net
		WDF	14 Non-Treaty Gillnet (coast)
23	Mixed Net and Seine	CDFO	15 Mixed Net
		WDF	11 Dip Bag Net
			13 Beach Seine
			14 Non-Treaty Gillnet (inside)
			16 Set Net
			17 Treaty Gillnet
			19 Non-Treaty Purse Seine
			20 Reef Net
			29 Treaty Purse Seine
			51 Treaty Trap
			52 Mixed Net
24	Freshwater Net	CDFO	45 Freshwater Net (mixed)
25	Commercial Seine	ADFG	12 Commercial Seine
		CDFO	20 Seine
26	Terminal Seine	NMFS (AK)	77 Terminal Seine
27	Freshwater Seine	ODFW	36 River Seine (non-Columbia)
28	Other Net	ADFG	04 Other Source Gillnet
29	Other Seine	ADFG	02 Other Source Seine

C. '40' Series: Sport

Code	Fishery	Agency Fisheries and Codes	
40	Ocean Sport	ADFG	20 Sport
		ADFG	-- Marine Boat
		CDFG	03 Sport
		CDFO	07 Sport
		ODFW	11 Ocean Sport
		WDF	95 Marine Sport
41	Sport (Charter)	CDFG	01 Sport-Charter
		WDF	31 Sport-Charter
42	Sport (Private)	CDFG	02 Sport-Skiff
		WDF	32 Sport-Kicker Boat
43	Sport (Jetty)	WDF	36 Jetty
44	Columbia River Sport	ODFW	12 Columbia River Sport
45	Estuary Sport	ADFG	-- Marine Roadside
		ODFW	32 Estuary Sport
		WDF	42 Puget Sound Sport
46	Freshwater Sport	ADFG	-- Freshwater Sport
		CDFO	47 Freshwater Sport
		ODFW	14 Spring Sport

46	Freshwater Sport (continued)	ODFW	26 Deschutes River Sport
			27 Freshwater Sport
			40 Mid Columbia River Sport
		WDF	51 Freshwater Sport
		USFWS	51 Creel Survey
47	Freshwater Sport Snag	WDF	59 Freshwater Sport Snagging
48	Terminal Sport	ADFG	-- Terminal Sport
		NMFS (AK)	76 Terminal Sport
49	Other		

D. '50' Series: Escapement

Code	Fishery	Agency Fisheries and Codes	
50	Hatchery	ADFG	40 Rack Returns
		CDFG	50 Hatchery
		CDFO	40 Hatchery Rack
		NMFS (AK)	50 Hatchery Returns
		ODFW	21 ODFW Hatcheries
			22 Other Oregon Hatcheries
			23 Oregon Private Hatcheries
		USFWS	50 Hatchery Returns
		WDF	50 Hatchery
51	Fish Screens	CDFG	51 Fish Screens
52	Fish Trap (Freshwater)	ADFG	04 Other Source Trap Gear
		CDFG	52 Fish Trap
		CDFO	42 Trap
		NMFS (AK)	52 Fish Trap
		ODFW	24 Fish Trap
		WDF	52 Fish Trap
53	Wild Broodstock Collection (formerly Gaff)	CDFO	43 Wild Broodstock Collection
		WDF	53 Wild Broodstock Collection
		NWIFC	53 Wild Broodstock Collection
54	Spawning Ground	ADFG	40 Escapement Survey
		CDFG	54 Spawning Ground
		CDFO	41 Spawning Ground
		NMFS (AK)	54 Spawning Ground
		ODFW	18 Spawning Ground Survey
		WDF	54 Spawning Ground
55	Treaty Ceremonial	ODFW	16 Ceremonial
56	Treaty Subsistence	ADFG	50 Subsistence
		ODFW	20 Subsistence
59	Other		

E. '60' Series: Test Fisheries:

Code	Fishery	Agency Fisheries and Codes		
60	Test Fishery Troll	ADFG	61	Test Fishery Troll
61	Test Fishery Net	ADFG	63	Test Fishery Gillnet
		ODFW	15	Columbia River Test
62	Test Fishery Seine	ADFG	62	Test Fishery Seine
63	Test Fishery Trap	ADFG	64	Test Fishery Trap
64	Test Fishery Unknown Multiple Gear	ADFG	60	Test Fishery Unknown Multiple Gear
69	Other			

F. '70' Series: Juvenile Sampling

Code	Fishery	Agency Fisheries and Codes		
70	Juvenile Sampling - Troll (Marine)	NMFS (AK)	05	Juvenile Sampling - Troll
71	Juvenile Sampling - Gillnet (Marine)	NMFS(AK)	04	Juvenile Sampling - Gillnet
72	Juvenile Sampling - Seine (Marine)	NMFS (AK)	12	Juvenile Sampling - Seine
		NMFS (CR)	O	Outmigrant Ocean Sampling
		ODFW	19	OSU Experimental Ocean Purse Seine
73	Juvenile Sampling -Seine (Freshwater)	NMFS (CR)	C	Outmigrant Sampling - Columbia River
		NMFS (CR)	S	Outmigrant Sampling - Snake River
		ODFW	28	Juvenile Sampling - Freshwater
79	Other			

G '80' Series: High Seas

Code	Fishery	Agency Fisheries and Codes		
80	Groundfish Observer (CA/OR/WA)	NMFS (AK)	80	Groundfish Observer (CA/OR/WA)
81	Groundfish Observer (Gulf of Alaska)	NMFS (AK)	81	Groundfish Observer (Gulf of Alaska)
82	Groundfish Observer (Bering Sea/Aleutians)	NMFS (AK)	82	Groundfish Observer (Bering Sea/Aleutians)
83	Foreign Research Vessels	NMFS (AK)	90	Japanese Research Vessels
84	Foreign Mothership Vessels	NMFS (AK)	91	Japanese Mothership Vessels
85	Ocean Trawl By-Catch	ODFW	30	Ocean Trawl By-Catch
		ODFW	33	Pacific High Seas

86	Land Based Salmon	NMFS (AK)	86	Land Based Salmon
87	Squid Gillnet By-Catch	NMFS (AK)	87	Squid Gillnet By-Catch
89	Other			

H. '90' Series: Miscellaneous

Code	Fishery	Agency Fisheries and Codes		
90	Multiple Gear	ADFG	00	Other Sources - Unknown/Multiple Gear
91	PNP Cost Recovery	ADFG	30	PNP Cost Recovery
92	Columbia River Shad	ODFW	17	Columbia River Shad
93	Set-Line (Sturgeon)	ODFW	31	Columbia River Set Line (Sturgeon)
94	Fish Trap (Marine)	ADFG	14	Commercial Trap (Marine)
99	Other			

APPENDIX V. VERSION 2.0 OF THE SPECIFICATIONS FOR REPORTING SALMONID PRODUCTION AND CODED-WIRE-TAG DATA.

Specifications for Reporting Salmonid Production and CWT Data

PSC Format Version 2.0
22 February 1990

I. Magnetic Media

A. Disk: 360KB or 1.2 MB density

B. Tape: 1600 bpi, 9 track

1. ASCII
2. Blocked (see specifications below)
3. Unlabeled

II. File Block Lengths

A. Release Data File

1.	Record length:	235	
2.	Block length:	7990	(34 records/block)

B. CWT Recovery Data File

1.	Record Length:	111	
2.	Block Length:	8103	(73 records/block)

C. Catch and Sample Data File

1.	Record Length:	120	
2.	Block Length:	8160	(68 records/block)

D. Location Code File

1.	Record Length:	152	
2.	Block Length:	8056	(53 records/block)

Specifications for Reporting Salmonid Production and CWT Data

PSC Format - Version 2.0

PSC Working Group on Mark/Recovery Databases — 22 February 1990

I. RELEASE DATA

	Datum	Columns Needed	Justification	Format	Explanation
1.	Release Group (Tagged or Untagged) (Cols. 1 - 12)				
	a. Tag Code	12	L	AAD1D2D3D4	Cols. 1 - 2: Agency Cols. 3 - 4: Data 1 Cols. 5 - 6: Data 2 Cols. 7 - 12: Data 3 and 4 ; *Color coded tags and Rare Earth tags reported in Alpha Only **Sequential tags: report only AG, D1, D2. (Note: D3, D4 reported only in Recovery Data File - Fields 33, 34).
	or				
	b. Release Identifier (Untagged Groups)	12		Alpha-Numeric	Unique ID required to identify all hatchery release groups not represented by CWTs
		(Byte 1)		'!'	Flag used for identifying unmarked groups
		(Bytes 2 - 3)		See Field 20	Tag Coordinator code; Right justified and Zero filled
		(Bytes 4 - 12)			Agency defined unique code; No embedded blanks

Comments: **Re-use of tag codes is not allowed. In those cases when a tagcode is re-used, whether by accident or intentionally, any subsequent recoveries will be handled as unresolved discrepancies (status 7's).**

2.	Number of Replicates (Cols. 13 - 14)	2	R	Numeric	Highest replicate code
				Range: 02 - 07	Replicates must be consecutive; Origin = 02; Zero filled
3.	Tag Type (Cols. 15 - 16)	2	R	Numeric	Blank Filled
				'0'	= Standard Binary (1mm)
				'1'	= Half Tags (H Type)
				'2'	= Half Tags (B Type)
				'3'	= 6 Word Half Length Tags
				'4'	= X-ray Binary
				'5'	= Standard Color
				'6'	= Solid Color (##)
				'7'	= Striped Color ($$)
				'8'	= Rare Earth
				'9'	= Embedded Replicate
				'10'	= Sequential 6 Word Binary

I. RELEASE DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
4.	Species (Col. 17)	1		'1'	=Chinook
				'2'	=Coho
				'3'	=Steelhead
				'4'	=Sockeye
				'5'	=Chum
				'6'	=Pink
				'7'	=Masu
				'8'	=Cutthroat
5.	Run (Col. 18)	1		'1'	=Spring
				'2'	=Summer
				'3'	=Fall (includes Type S Coho)
				'4'	=Winter
				'5'	=Hybrid
				'6'	=Landlocked
				'7'	=Late Fall (includes Type N Coho)
6.	Brood Year (Col.19 - 20)	2		Numeric	Last two digits of **calendar year when majority of run returns to spawn**; If more than one brood present (i.e. wild tagging), then use dominant brood and report mixed stock tagging in Comment Field
7.	Release Agency (Col.21 - 24)	4	L	Alpha	Abbreviations for Tagging Agencies provided in annual CWT Release Report
8.	Release Site Code (Col.25 - 43)	19		Alpha-Numeric	Hierarchical location code to pinpoint actual Release Site (see comment below).
	a. Level 0	(1)			State or Province
				'1'	=Alaska
				'2'	=British Columbia
				'3'	=Washington
				'4'	=Idaho
				'5'	=Oregon
				'6'	=California
				'7'	=High Seas
	b. Level 1	(1)			Water Type
				'M'	=Marine
				'F'	=Freshwater
	c. Level 2	(1)		Alpha-Numeric	Sector (Special case: Use asterisk for out-of-State/Province Release Sites)
	d. Level 3	(2)		Alpha-Numeric	Region
	e. Level 4	(4)		Alpha-Numeric	Area

I. RELEASE DATA (continued)

Datum	Columns Needed	Justification	Format	Explanation
f. Level 5	(7)		Alpha-Numeric	Location
g. Level 6	(3)		Alpha-Numeric	Sub-Location

Comments: 1) Release Site Code must match code provided in the Location Code file (see Section IV).
2) All location codes are standardized within a given State or Province, and coordinated by the State/Province (eg: ADFG, CDFO, WDF, IDFG, ODFW, and CDFG).

9.	Release Dates				
	a. Year, Month, 1st Day (Cols. 44 - 49)	6		YYMMDD	First and last release dates (e.g. 900429)
	b. Year, Month Last Day (Cols. 50 - 55)	6		YYMMDD	*If the Release occurs on a single day, report that date for both First and Last dates fields. If a release occurred over more than one day but only one date is known, then leave the unknown date field (First or Last) blank.
10.	Release Stage (Col. 56)	1		'E' 'F' 'G' 'P' 'S' 'A' 'Blank'	= Emergent fry = Fed fry = Fingerling = Pre-smolt = Smolt = Adult = Unknown
11	Rearing Type (Col. 57)	1		'H' 'W' 'M' 'blank'	= Hatchery reared fish (*includes any wild fish reared in the hatchery). = Wild fish = Mixed hatchery & wild (e.g. tagging downstream migrants) = Unknown
12	Type of Release (Col. 58)	1		'E' 'P' 'B' 'O' 'K' 'I'	= Experimental = Production = Both Experimental and Production = Other = PSC Key Indicator Stocks = Other Index Streams
13.	No. Released with CWT (Col. 59 - 66)	8	R	Numeric	Number tagged with CWT corrected for tag loss and mortality; (Enter zero if release not CWT'ed)
14.	No. of Fish that Shed CWT (Cols. 67 - 71)	5	R	Numeric	Number of CWT marked fish that shed tag; (Enter zero if release not CWT'ed)

I. RELEASE DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
15.	No. of Untagged Fish (Cols. 72 - 80)	9	R	Numeric	Total representative fish in release without a CWT (#13) or shed tag (#14). Total may include non-CWT fin marks, including the special case of Adipose only - no CWT marked steelhead. (NOTE: Report total fish released if release not represented by CWT.)
16.	"Counting" Method (Col. 81)	1		Alpha	Method used to determine number of unmarked fish in the given release gr
				'B'	= Book estimates
				'C'	= Actual physical counts
				'P'	= Petersen estimates
				'W'	= Weight derived estimates
				'Blank'	= Unknown
17.	Tag Loss Days (Cols. 82 - 84)	3	R	Numeric	Number of days fish held to measure tag loss; Fish tagged and released the same day are assigned '0' Tag Loss Days
18.	Weight of Fish (Cols. 85 - 90)	6	R	Numeric **(2 implied decimals)**	Units = grams/fish
19.	Length of Fish (optional) (Cols. 91 - 96)	6	R	Numeric	Units = millimeters (fork length)
20.	Tag Coordinator Code (Cols. 97 - 98)	2	R		Reporting Coordinator (Zero Filled)
				'01'	= ADFG (S.E. Alaska)
				'02'	= NMFS - Alaska
				'03'	= CDFO
				'04'	= WDF
				'05'	= ODFW
				'06'	= NMFS - Seattle
				'07'	= USFWS
				'08'	= CDFG
				'09'	= BCFW
				'10'	= IDFG
				'11'	= WDW
				'12'	= ADFG (S. Central AK)
				'13'	= MIC (Metlakatla, AK)
				'14'	= NIFC
21.	Expected Survival (Col. 99)	1		'N'	= Normal range expected
				'D'	= Fish destroyed; Zero survival assumed
				'W'	= Warning flag for serious problems; A comment must be provided in Field 25

I. RELEASE DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
22.	Hatchery/Facility Code (Cols. 100 - 118)	19		Alpha-Numeric	Hierarchical location code to pinpoint actual site. **NOTE: The Hatchery field must be blank filled if the Rearing Type (field 11) is either Wild ("W"), or Mixed Hatchery and Wild ("M").**
	a. Level 0	(1)			State or Province
				'1'	= Alaska
				'2'	= British Columbia
				'3'	= Washington
				'4'	= Idaho
				'5'	= Oregon
				'6'	= California
				'7'	= High Seas
	b. Level 1	(1)			Water Type
				'M'	= Marine
				'F'	= Freshwater
	c. Level 2	(1)		Alpha-Numeric	Sector (Special Case: Use asterisk for out-of-State/Province hatcheries)
	d. Level 3	(2)		Alpha-Numeric	Region
	e. Level 4	(4)		Alpha-Numeric	Area
	f. Level 5	(7)		Alpha-Numeric	Location
	g. Level 6	(3)		Alpha-Numeric	Sub-Location

Comments: 1) Hatchery Code must match code provided in the Location Code file (see Section IV).
2) All location codes are standardized within a given State or Province, and coordinated by the State/Province (eg: ADFG, CDFO, WDF, IDFG, ODFW, and CDFG).

23.	Stock Code (Cols. 119 - 137)	19			Hierarchical coding scheme to pinpoint the stock's location.
	a. Level 0	(1)			State or Province
				'1'	= Alaska
				'2'	= British Columbia
				'3'	= Washington
				'4'	= Idaho
				'5'	= Oregon
				'6'	= California
				'7'	= High Seas
	b. Level 1	(1)			Water Type
				'M'	= Marine
				'F'	= Freshwater

I. RELEASE DATA (continued)

Datum	Columns Needed	Justification	Format	Explanation
c. Level 2	(1)		Alpha-Numeric	Sector (Special Case: Use asterisk for out-of-State/Province stock).
d. Level 3	(2)		Alpha-Numeric	Region
e. Level 4	(4)		Alpha-Numeric	Area
f. Level 5	(7)		Alpha-Numeric	Location
g. Level 6	(3)		Alpha-Numeric	Sub-Location

Comments: 1) Stock code must match code provided in the Location Code file (see Section IV).
2) All location codes are standardized within a given State or Province, and coordinated by the State/Province (eg: ADFG, CDFO, WDF, IDFG, ODFW, and CDFG).

24.	Format Version No. (Cols 138 - 140)	3	R	Numeric **(1 Implied Decimal)**	Format version used to report release data; Zero filled.
25.	Comments (Cols. 141 - 220)	80	L	Alpha-Numeric	Permits brief summary of pertinent information regarding release group; First 34 characters will be printed in annual CWT Release Report.
26.	Sample Size Tag Loss (Cols. 221 - 225)	5	R	Numeric	Number of fish sampled to calculate tag loss (field 14); May be blank.
27.	Lower Range of Sequential Series (Cols. 226 - 230)	5	R	Numeric	Smallest value in sequential number series; Blank filled. Field used for Sequential Tags only.
28.	Upper Range of Sequential Series (Cols. 231-235)	5	R	Numeric	Largest value in sequential number series; Blank filled. Field used for Sequential Tags only.
	TOTAL COLUMNS:	235			

II. CWT RECOVERY DATA

	Datum	Columns Needed	Justification	Format	Explanation
1.	Reporting Agency (Cols. 1 - 4)	4	L	Alpha	ADFG, CDFG, WDF, etc.
2.	Item ID (Cols. 5 - 12)	8	R	Alpha-Numeric	Unique ID's assigned to each recovery record by the recovery agency; ID must be unique for a recovery year.
3.	Recovery Date (Cols. 13 - 18)	6		YYMMDD	e.g.: August 21, 1990 Coded 900821
4.	Nature of Recovery Date (Col. 19)	1		'R' 'C'	=Reported Date =Calculated Date
5.	Sampling Period Type (Col 20)	1		'1' '2' '3' '4' '5' '6' '7' '8'	=Escapement period (across years possible) =Bi-weekly =Semi-monthly =Statistical months =Calendar months =Statistical weeks (beginning Monday) =Weeks (beginning Sunday) =Seasonal (Use for spring, summer, fall, or winter race periods)

Comments: Sampling Period Type and Period Number must match that used in Catch and Sample file for the given stratum.

6.	Sampling Period Number (Cols. 21 - 22)	2		Numeric	Zero Filled: (Required to map across to "Sampling Period Range" in the Catch/Sample file).
				Possible Range:	
				n='01'	=Escapement period (across years possible)
				n='01 - 26'	=Bi-weekly period
				n='01 - 24'	=Semi-monthly
				n='01 - 12'	=Statistical months
				n='01 - 12'	=Calendar months
				n='01 - 54'	=Statistical weeks (beginning Monday)
				n='01 - 54'	=Weeks beginning Sunday
				n='01 - 04'	=Seasonal periods 01=Spring 02=Summer 03=Fall 04=Winter

II. CWT RECOVERY DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
7.	Species (Col. 23)	1		'1' '2' '3' '4' '5' '6' '7' '8'	= Chinook = Coho = Steelhead = Sockeye = Chum = Pink = Masu = Cutthroat
8.	Sample Maturity Class (Col. 24)	1		'Blank' '1' '2' '3' '4'	= Unknown or not recorded = Immature (0-Ocean fish) = Jacks (1-Ocean fish) = Adults = Mixed (adults, immatures and jacks)
9.	Sex (Col. 25)	1		'Blank' 'M' 'F'	= Unknown or not recorded = Male = Female
10.	Weight (Cols. 26 - 28)	3	R	Numeric **(1 implied decimal)**	Weight in Kilograms NOTE: if weight is unknown, then Weight (field 10), Weight Code (field 11) and Weight Type (field 12) must all be blank filled.
11.	Weight Code (Col. 29)	1		'1' '2' '3'	= Round = Dressed, head on = Dressed, head off
12.	Weight Type (Col. 30)	1		'1' '2'	= Actual Weight = Calculated Weight (Sample size may be unknown)
13.	Length (Cols. 31 - 34)	4	R	Numeric	Length in Millimeters NOTE: If length is unknown, then Length (field 13), Length Code (field 14), and Length Type (field 15) must all be blank filled).
14.	Length Code (Col. 35)	1		'0' '1' '2' '3' '4' '5'	= Fork Length (*preferred measurement) = Mid-eye to Fork = Mid-eye to Caudal Peduncle = Total Length = Head Length: Eye to Opercula = Head Length: Tip of Snout to Opercula

II. CWT RECOVERY DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
15.	Length Type (Col. 36)	1		'1' '2'	= Actual Length = Calculated Length (Sample size may be unknown)
16.	Tag Code (Cols. 37 - 48)	12	L	AAD1D2D3D4 Alpha-Numeric	Two-Character fields used for Agency, Data 1, 2, 3, and 4 * Tag Code must be coded same as on Release File. * For Sequential Tags Only, The Sequential Table column and row information stored in Data 3 and Data 4 is not reported here but rather in fields 33 and 34.
17.	Replicate Number (Cols 49 - 50)	2		Numeric Range: 01 - 07	Replicate number if the tag code represents a replicate release group; Must be within 01 to 07 range and zero filled. A blank is permissible if the replicate number is unreadable; However "@" signs are not allowed.
18.	Tag Type (Cols. 51 - 52)	2	R	Numeric '0' '1' '2' '3' '4' '5' '6' '7' '8' '9' '10'	Blank Filled = Standard Binary (1 mm) = Half Tags (H Type) = Half Tags (B Type) = 6 Word Half Length Tags = Xray Binary = Standard Color = Solid Color (##) = Striped Color ($$) = Rare Earth = Embedded Replicate = Sequential 6 Word Binary
19.	Status of Tag (Col. 53)	1		'1' '2' '3' '4' '7' '8'	= Tag Read OK = No Tag = Tag Lost Before Read = Tag Not Readable = Unresolved Discrepancy = Head Not Processed
20.	Sampling Site (Optional) (Cols. 54 - 57)	4	L	Alpha-Numeric	Port of Landing, Hatchery, etc.; Standardized code required.

II. CWT RECOVERY DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
21.	Expansion Level (Col. 58)	1		Numeric	Level of resolution at which expansion is made.
				'2'	= Level 2 ("Sector")
				'3'	= Level 3 ("Region")
				'4'	= Level 4 ("Area")
				'5'	= Level 5 ("Location")
				'6'	= Level 6 ("Sub-Location")
22.	Catch Area Code (Recovery Site) (Cols. 59 - 77)	19		Alpha-numeric	Hierarchical location code to give multiple levels of resolution to Recovery Site.
	a. Level 0	(1)			State or Province
				'1'	= Alaska
				'2'	= British Columbia
				'3'	= Washington
				'4'	= Idaho
				'5'	= Oregon
				'6'	= California
				'7'	= High Seas
	b. Level 1	(1)			Water Type
				'M'	= Marine
				'F'	= Freshwater
	c. Level 2	(1)		Alpha-Numeric	Sector (Special Case: Use asterisk for out-of-State/Province Catch Sites).
	d. Level 3	(2)		Alpha-Numeric	Region
	e. Level 4	(4)		Alpha-Numeric	Area
	f. Level 5	(7)		Alpha-Numeric	Location
	g. Level 6	(3)		Alpha-Numeric	Sub-Location

Comments: 1) Recovery Site Code must match code provided in the Location Code file (see Section IV).
2) All location codes are standardized within a given State or Province, and coordinated by the State/Province (eg: ADFG, CDFO, WDF, IDFG, ODFW, and CDFG).

23.	Fishery Code (Cols. 78 - 79)	2		Alpha-Numeric	Standardized PSC codes required; (Must match Catch/Sample records).
24.	Estimated Number (Cols. 80 - 84)	5	R	Numeric **(2 implied decimals)**	Estimated number of fish with given tagcode in the catch represented by this recovery, as estimated by the reporting agency.

II. CWT RECOVERY DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
25.	Sample Type (Col. 85)	1		'1'	In-sample recoveries from a sampled fishery with known catch; Expansion value is non-zero. (*If sample size is zero, expansion is blank).
				'2'	Voluntary recoveries from a sampled fishery with known catch; Awareness estimates are available; Expansion value is non-zero. (e.g., Puget Sound Sport).
				'3'	Voluntary recoveries from an unsampled fishery. Awareness approximations may be possible yielding non-zero expansion values; Otherwise expansion value is blank. (e.g., Hoh River freshwater sport fishery).
				'4'	In-sample or voluntary recoveries from a sampled fishery with unknown catch. Expansion value is blank. (e.g., Stream Survey).
				'5'	Voluntary recoveries from a sampled fishery with known catch and no awareness estimates available: Use of these recoveries leads to double counting; Expansion value is 0 only. (e.g. Commercial voluntaries and Non-destructive samples). (see also Comment #3).
				'6'	Mark Incidence - Indirect Sample: Voluntary recoveries from indirectly sampled sport fishery; Expansions are calculated from observed marks in mark incidence sample size (see data elements #24 and #25 in Catch/Sample data format).

Comments:

1) Four keys are used to distinguish the type of sample.

   a) Sample: In-sample or Voluntary
   b) Fishery: Sampled or Unsampled
   c) Catch: Known or Unknown
   d) Awareness: Available or Unavailable

2) Awareness estimates (option 2) are based on current year's data, while awareness approximations (option 3) are based on extrapolations of data from previous years.

II. CWT RECOVERY DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
25.	Sample Type (Col. 85) (continued)				

3) "Non-Destructive" Sampling (Sample Type 5)

In sampling certain in-river fisheries, unmarked fish are released while marked fish are killed and snouts removed. The unmarked migrant fish are subject to subsequent "destination" sampling and thus may result in double counting.

Such tag recoveries should therefore be reported as Sample Type 5, with no catch/sample record provided. Sampled fish are select samples with zero (0) expansion value.

26.	Record Type (Col. 86)	1		'2'	Indicates recovery record
27.	Gear Code (Cols. 87 - 88)	2	R	Numeric	Agency gear code: Zero filled; Does not need to match Catch/Sample codes. *(Code used by agency "in-house" to identify its individual fisheries).
28.	Format Version Number (Cols. 89 - 91)	3	R	Numeric **(One implied decimal)**	Format version used to report recovery data. Zero filled.
29.	Run (Col. 92)	1		1 = Spring 2 = Summer 3 = Fall 4 = Winter 5 = Hybrid 6 = Landlocked 7 = Late Fall	Used when sample is stratified by entry run timing (e.g. freshwater sport fisheries where runs can be identified by morphological differences).
30.	Sample Length Class (Cols. 93 - 100)	8		Numeric	Length interval range (mm); Zero filled; (e.g. 800 - 900 mm. length interval coded as 08000900); Blank filled if not used.
31.	Sample Sex Class (Col. 101)	1		F = Female M = Male	Blank filled if sex unknown
32.	Sampling Agency (Cols. 102 - 105)	4	L	Alpha	Agency responsible for sampling and tag recovery; May differ from Reporting Agency (field 1).
33.	Sequential Table Column No. "Data 3" (Cols. 106 - 108)	3	R	Numeric	Value in "Data 3"; Corresponds to column number in Sequential Numbers Table; Zero filled. Field used for Sequential Tags only.

II. CWT RECOVERY DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
34.	Sequential Table Row No. "Data 4" (Cols. 109 - 111)	3	R	Numeric	Value in "Data 4"; Corresponds to row number in Sequential Numbers Table; Zero filled. Field used for Sequential Tags only.
	TOTAL COLUMNS:	111			

III. CATCH AND SAMPLE DATA

	Datum	Columns Needed	Justification	Format	Explanation
1.	Reporting Agency (Cols. 1 - 4)	4	L	Alpha	Agency coding must be same as in recovery records
2.	Record Type (Col. 5)	1		'1'	Indicates Catch/Sample record
3.	Catch Year (Cols. 6 - 7)	2		YY	Calendar year when catch made. For escapement which crosses year boundaries, it is year when majority of run returns.
4.	Status of Record (Preliminary vs. Final) (Col. 8)	1		'P' 'F'	= Preliminary Data = Finalized Data
5.	Date of File Creation (Col. 9 - 14)	6		YYMMDD	Date when Catch/Sample last updated (Year-Month-Day). This date refers to the date the submitting agency last revised any of its own Catch/Sample information for the given year. As such, it applies to all records in the file even though only a few records may have been revised.
6.	Species (Col. 15)	1		'1' '2' '3' '4' '5' '6' '7' '8'	= Chinook = Coho = Steelhead = Sockeye = Chum = Pink = Masu = Cutthroat
7.	Sample Maturity Class (Col. 16)	1		'Blank' '1' '2' '3' '4'	= Unknown age class = Immature (0-Ocean fish) = Jack (1-Ocean fish) = Adult = Mixed (adults, immatures, and jacks)
8.	Sampling Period Type (Col. 17)	1		'1' '2' '3' '4' '5' '6' '7' '8'	= Escapement period (across years possible) = Bi-weekly = Semi-monthly = Statistical months = Calendar months = Statistical weeks (beginning Monday) = Weeks beginning Sunday = Seasonal (Use for spring, summer, fall or winter run periods)

Comments: Sampling Period Type and Period Number must match that used in the Recovery File for the given area and time stratum.

III. CATCH AND SAMPLE DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
9.	Sampling Period Number (Cols. 18 - 19)	2	R	Numeric (possible range)	Zero Filled
				n='01'	=Escapement period (across years possible)
				n='01 - 26'	=Bi-weekly
				n='01 - 24'	=Semi-monthly
				n='01 - 12'	=Statistical months
				n='01 - 12'	=Calendar months
				n='01 - 54'	=Statistical weeks (beginning Monday)
				n='01 - 54'	=Weeks beginning Sunday
				n='01 - 04'	=Seasonal periods 01=Spring 02=Summer 03=Fall 04=Winter
10.	Sampling Period Range (Non-Standard Expansions) (Cols. 20 - 23)	4	R	Numeric	Beginning and ending sampling period numbers for situations where catch data are pooled across time periods: Zero filled; Blank filled if not used (e.g. Weeks 7 through 12 coded "0712"); Applies to expansion factor calculations only (i.e. other reported numbers are pertinent only to the time period reported.
11.	Fishery Codes (Col.24 - 25)	2	R	Alpha-Numeric	Standardized PSC fishery codes; Must be identical to PSC coding used in recovery records.
12.	Catch Area Code (Col.26 - 44)	19		Alpha-Numeric	Hierarchical location code to pinpoint Catch Area.
	a. Level 0	(1)			State or Province
				'1'	=Alaska
				'2'	=British Columbia
				'3'	=Washington
				'4'	=Idaho
				'5'	=Oregon
				'6'	=California
				'7'	=High Seas
	b. Level 1	(1)			Water Type
				'M'	=Marine
				'F'	=Freshwater
	c. Level 2	(1)		Alpha-Numeric	Sector (Special case: Use asterisk for out-of-State/Province Catch Areas).
	d. Level 3	(2)		Alpha-Numeric	Region

III. CATCH AND SAMPLE DATA (continued)

Datum	Columns Needed	Justification	Format	Explanation
e. Level 4	(4)		Alpha-Numeric	Area
f. Level 5	(7)		Alpha-Numeric	Location
g. Level 6	(3)		Alpha-Numeric	Sub-Location

Comments: 1) Catch Area Code must match code provided in the Location Code file (see Section IV).
2) All location codes are standardized within a given State or Province, and coordinated by the State/Province (eg: ADFG, CDFO, WDF, IDFG, ODFW, and CDFG).

13.	Sample Type (Col. 45)	1		'1'	In-sample recoveries from a sampled fishery with known catch; Expansion value is non-zero.
				'2'	Voluntary recoveries from a sampled fishery with known catch; Awareness estimates are available; Expansion value is non-zero (e.g. Puget Sound Sport).
				'4'	In-sample or voluntary recoveries from a sampled fishery with unknown catch; Expansion value is blank. (e.g. Stream Survey).
				'6'	Mark Incidence - Indirect Sample: Voluntary recoveries from indirectly sampled sport fishery; Expansions are calculated from observed marks in Mark Incidence Sample Size (see data elements #24 and #25 below).

Comments: 1) Four keys are used to distinguish the type of sample.

a) Sample: In-sample or Voluntary
b) Fishery: Sampled or Unsampled
c) Catch: Known or Unknown
d) Awareness: Available or Unavailable

2) Awareness estimates (option 2) are based on current year's data.

14.	Number Caught (Cols. 46 - 53)	8	R	Numeric	Total catch of species for this area-period-fishery-age class stratum; Use blanks if catch is unknown (e.g. Recovery Type 4 and sometimes Type 3).
15.	Number Sampled (Cols. 54 - 61)	8	R	Numeric	Number of fish examined for adipose fin mark.

III. CATCH AND SAMPLE DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
16.	Awareness Factor (Cols. 62 - 65)	4	R	Numeric **(3 implied decimals)**	Expansion factor used for voluntary recoveries in sport fisheries.
17.	Number of Tags Recovered and Decoded (Cols. 66 - 70)	5	R	Numeric	Number of observed tags recovered and decoded in the sampling stratum; (i.e. Tag Status = 1).
18.	Estimated Number (Cols. 71 - 75)	5	R	Numeric **(2 implied decimals)**	Estimated number of fish in the catch represented by the individual recovery.
19.	Number of "No Tags" (Cols. 76 - 79)	4	R	Numeric	Number of heads lacking tag in sampling stratum; (i.e. Tag Status = 2).
20.	Number of "Tags Lost" (Cols. 80 - 82)	3	R	Numeric	Number of lost tags in sampling stratum; (i.e. Tag Status = 3).
21.	Number Unreadable Tags (Cols. 83 - 85)	3	R	Numeric	Number of unreadable tags in sampling stratum; (i.e. Tag Status = 4).
22.	Number of Unresolved Tag Code Discrepancies (Cols. 86 - 88)	3	R	Numeric	Number of tag recoveries in sampling stratum which could not be assigned to a tag code. (i.e. Tag Status = 7).
23.	Number of "Lost Heads" or Heads not Processed (Cols. 89 - 93)	5	R	Numeric	Number of lost heads or heads not processed (i.e. no data) in sampling stratum; (i.e. Tag Status = 8).
24.	Sample Size Mark Incidence (Cols. 94 - 98)	5	R	Numeric	Number of fish sampled for marks in sport fishery but heads not taken; Use only with Sample Type 6. (See field 13).
25.	Observed Marks in Mark Incidence Sample (Cols. 99 - 102)	4	R	Numeric	Number of observed marks (e.g. Ad clips) in sport fishery but heads not taken; Use only with Sample Type 6. (See field 13).
26.	Format Version Number (Cols. 103 - 105)	3	R	Numeric **(1 implied decimal)**	Format version used to report Catch/Sample data; Zero filled.
27.	Expansion Level (Col. 106)	1		Numeric	Level of resolution at which expansion is made:
				'2'	= Level 2 ("Sector")
				'3'	= Level 3 ("Region")
				'4'	= Level 4 ("Area")
				'5'	= Level 5 ("Location")
				'6'	= Level 6 ("Sub-Location")

III. CATCH AND SAMPLE DATA (continued)

	Datum	Columns Needed	Justification	Format	Explanation
28.	Run (Col. 107)	1		1 = Spring 2 = Summer 3 = Fall 4 = Winter 5 = Hybrid 6 = Landlocked 7 = Late Fall	Used when sample is stratified by entry run timing (e.g. freshwater sport fisheries where runs can be identified by morphological differences).
29.	Sample Length Class (Cols. 108 - 115)	8		Numeric	Length interval range (mm); Zero filled; (e.g. 800 - 900 mm. length interval coded as 08000900); Blank filled if not used.
30.	Sample Sex Class (Col. 116)	1		F = Female M = Male	Blank filled if sex unknown.
31.	Sampling Agency (Cols. 117 - 120)	4	L	Alpha	Agency responsible for sampling and tag recovery; May differ from Reporting Agency (field 1).
	TOTAL COLUMNS:	120			

IV. LOCATION CODES FILE

	Datum	Columns Needed	Justification	Format	Explanation
1.	Location Code (Cols. 1 - 19)	19		Alpha-Numeric	19 character code used to identify hatchery release site, recovery site, or stock; Coding based on hierarchical scheme to give multiple levels of resolution (See Releases format, field 22 - Hatchery coding - for example). (Also see note below).
	(Col. 20 - Blank)				
2.	Record ID (Col. 21)	1		'1' '2' '3' '4' '5'	Type of location code = Recovery Site = Catch Sample (Code should match Recovery Site Code at Expansion Level) = Release Facility = Release Site = Stock
	(Col. 22 - Blank)				
3.	Description (Cols. 23 - 123)	101	L	Alpha-Numeric	Name of location plus appropriate description as needed. *If location code byte 3 is an asterisk, (i.e. out-of-State/Province sites), then the description must begin with 2-character abbreviation (e.g. AK, BC, WA, etc.) indicating actual origin. The State or Province must be different than that coded in level 0.
4.	File Creation Date (Cols. 124 - 129)	6		YYMMDD	Date when Location Code file last updated.
5.	Format Version Number (Cols. 130 - 132)	3	R	Numeric (1 implied decimal)	Format version used to report recovery data; Zero filled.
6.	Short Description (Cols. 133 - 152)	20	L	Alpha-Numeric	Concise description of the location.
	TOTAL COLUMNS:	152			

NOTE: Standardized location codes are maintained for a State or Province by the State/Province fisheries agency (i.e. ADFG, CDFO, WDF, IDFG, ODFW, and CDFG). These codes must be used by all other agencies within that jurisdiction.

APPENDIX VI. LETTER TO COMMISSIONERS ABOUT CODED-WIRE-TAG DATA FILE EXCHANGE.

MEMORANDUM

DATE: November 6, 1990

TO: PSC Commissioners

FROM: Norma Jean Sands and Louis Lapi,
Co-Chairs, Data Sharing Technical Committee

RE: Coded-Wire-Tag Data File Exchange

The Data Sharing Technical Committee is asking the Commissioners for help in urging the completion of the conversion of coded-wire-tag (CWT) data files to the PSC format by agencies under their jurisdiction. The Work Group on Mark-Recovery Databases was established under Data Sharing in 1987 to develop a standard format and process for the exchange of CWT data. This was accomplished in early 1988 and agencies began submitting converted CWT data files to the Pacific States Marine Fisheries Commission (PSMFC) for verification. It was agreed in the Research and Statistics Committee that data back to 1975 would be converted to the PSC format. While much of the CWT release data have now been converted and submitted (90%), much less of the recovery, catch/sample, and unmarked production data have been converted. Attached are four tables showing the status of conversion by agency and year for each data file. These tables were presented to us at the last Data Sharing Technical Committee meeting (October 30) by Ken Johnson, Regional Mark Coordinator, PSMFC.

While we realize that not all agencies can make this data conversion a number one priority, the completed database is of immediate importance to PSC data exchange, coastwide data management, and technical committee analyses. As things now stand, the regional CWT database is being maintained in both the old PSMFC format and the new PSC format, but is incomplete for both. This results in a very inefficient use of time in maintaining the data. In addition, data users are forced to access both data sets to insure that some information is not missed, or, as is more often done, consult with the different agencies for complete data. This data access problem is currently affecting both the Coho and Chinook Technical Committees who use the data in their respective salmon stock status models. Several man-weeks of Chinook Technical Committee members time could be saved by being able to pull a complete set of data off the PSC database rather than having to request data from each agency and then translating it into a usable form.

PSMFC addressed this problem in April 1990 by writing the directors of those agencies which have not completed the conversion of their historical CWT data and unmarked production data. Unfortunately, submission of the remaining data has remained slow. We would like PSC Commissioners to recognize the importance of completing this process and to recommend to agencies under their jurisdiction to place higher priorities in completing these data submissions.

Although most CWT release data have been submitted, much CWT recovery and catch/sample data are still lacking. The only omission of release data is from the Idaho Department of Fish and Game (IDFG) and they have promised the data within the month. CWT recovery and catch/sample data are lacking from IDFG, Washington Department of Fisheries (WDF), the National Marine Fisheries Service (NMFS) at Auke Bay, the Northwest Indian Fisheries Commission (NWIFC), and the Quinault Department of Natural Resources (QDNR). IDFG personnel say they are working on the data and hope to have it ready by February 1991. WDF has had problems prioritizing time to work on historical data. They are current back to 1984 and hope to have data back to 1975 converted by the end of 1991. No word has been received from NMFS on whether they are even working on the data request for these files. NWIFC and QDNR are both working on the request and plan to have their data submitted by December 1990. Recovery and catch/sampling information is needed in determining distribution of salmon species in the various fisheries.

Unmarked hatchery production release data have not been submitted by most U.S. agencies. In many cases the data have not been centralized or kept in electronic databases and will require extra resources to record in PSC format. Information on hatchery contributions is important for estimation of catch compositions, impact assessments for fishery regimes on stocks of conservation concern, and evaluation of changes in production.

TABLE 1. Status of Conversion to PSC Format

CWT Release Data

Year	Reporting Agency												
	CDFG	ODFW	WDF	WDW	IDFG	CDFO	ADFG	FWS	NMFS (AK)	NMFS (CR)	NWIFC	QDNR	METL
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	
1977	V	V	V	V	-	V	V	V	V	V	V	V	
1978	V	V	V	V	-	V	V	V	V	V	V	V	
1979	V	V	V	V	-	V	V	V	V	V	V	V	
1980	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
1982	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
1984	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
1986	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
1988	V	V	V	V	V	V	V	V	V	V	V	V	V
1989	V	V	V	V	V	V	I	V	V	V	V	V	V
1990	V	V	I	-	I	I	I	I	I	V	I	I	V

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

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
METL	=	Metlakata Indian Community - Alaska

TABLE 2. Status of Conversion to PSC Format

CWT Recovery Data

Year	Reporting Agency											
	CDFG	ODFW	WDF	WDW	IDFG	CDFO	ADFG	FWS	NMFS (AK)	NWIFC	QDNR	METL
1975			-			V						
1976			-			V						
1977	-	V	-		-	V	-		-			
1978	-	V	-		-	V	-		-	-		
1979	-	V	-		-	V	-	V				
1980	-	V	-		-	V	V	V	-	-		
1981	-	V	-	I	-	V	V	V	-	-		
1982	-	V	-	I	-	V	V	V	-	-		I
1983	-	V	-	I	-	V	V	V	-	-	-	I
1984	-	V	V	I	-	V	V	V	-	-	-	I
1985	-	V	V	I	-	V	V	V	-	-	-	I
1986	-	V	V	I	-	V	V	V	-	-	-	I
1987	V	V	V	I	-	V	V	V	I	-	-	I
1988	V	V	V	I	-	V	V	V	-	-	-	I
1989	V	V	V	I	-	V	V	S	-	-	-	I

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

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

TABLE 3. Status of Conversion to PSC Format
CWT Catch/Sample Data

Year	Reporting Agency											
	CDFG	ODFW	WDF	WDW	IDFG	CDFO	ADFG	FWS	NMFS (AK)	NWIFC	QDNR	METL
1975			-			V						
1976			-			V						
1977	-	V	-		-	V	-		-			
1978	-	V	-		-	V	-		-	-		
1979	-	V	-		-	V	-	V	-	-		
1980	-	V	-		-	V	V	V	-	-		
1981	-	V	-	I	-	V	V	V	-	-		
1982	-	V	-	I	-	V	V	V	-	-		I
1983	-	V	-	I	-	V	V	V	-	-	-	I
1984	-	V	V	I	-	V	V	V	-	-	-	I
1985	-	V	V	I	-	V	V	V	-	-	-	I
1986	-	V	V	I	-	V	V	V	-	-	-	I
1987	V	V	V	I	-	V	V	V	-	-	-	I
1988	V	V	V	I	-	V	V	V	-	-	-	I
1989	V	V	V	I	-	V	V	V	-	-	-	I

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

TABLE 4. Status of Conversion to PSC Format
Unmarked Hatchery Production Releases

Year	Reporting Agency											
	CDFG	ODFW	WDF	WDW	IDFG	CDFO	ADFG	FWS	NMFS[1] (AK)	NWIFC	QDNR	METL
1975	-	U	-	-	-	V	-	I	NA			
1976	-	U	-	-	-	V	-	I	NA	-	-	
1977	-	U	-	-	-	V	-	I	NA	-	-	
1978	-	U	-	-	-	V	-	I	NA	-	-	
1979	-	U	-	-	-	V	-	I	NA	-	-	
1980	-	U	-	-	-	V	-	I	NA	-	-	-
1981	-	U	-	-	-	V	-	I	NA	-	-	-
1982	-	V	-	-	-	V	-	I	NA	-	-	-
1983	-	V	-	-	-	V	-	I	NA	-	-	-
1984	-	V	-	-	-	V	-	I	NA	-	-	-
1985	-	V	-	-	-	V	-	I	NA	-	-	-
1986	-	V	-	-	-	V	-	I	NA	-	-	-
1987	-	V	-	-	-	V	-	I	NA	-	-	-
1988	-	V	-	-	-	V	-	I	NA	-	-	-
1989	-	I	-	-	-	V	-	I	V	S	-	-

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

[1]Note: With the exception of 1989, all of NMFS-AK's hatchery production has been represented by CWT studies.

APPENDIX VII. PROJECT LIST FOR THE MARK-RECOVERY STATISTICS WORK GROUP

Benchmark Data Sets

1.	Schnute, Mulligan, Lapi, Kuhn	Canadian benchmark data set, creation of a sample data set using selected tag codes.	Completed (Kuhn et al. 1988; Kuhn 1988)
2.	Clark	Alaska benchmark data set, includes Alaskan tagged chinook and tag recoveries of selected tag codes included in the Canadian benchmark data set.	Completed (available from Clark, ADF&G)
3.	de Libero, Newman	Washington benchmark data set, a subset of Washington tag studies.	Completed (available from Work Group)
4.	Palermo	A comparison of the three benchmark data sets, highlighting problems encountered. This information was used in developing the standard format for coastwide mark-recovery data.	Completed (summary included in minutes of 1987 meeting of Work Group)
5.	Kronlund	Canadian Finclip Database Software Development: includes finclipped chum and pink salmon, 1983 to 1988. To provide a structure for finclip data.	In progress (Kuhn, 1988)

Bias and Variability in Coded-wire-tag Estimates

6.	Schnute, Mulligan	Comparison of release and recovery marking rates, examining apparent paradoxes and contradictions in results due to poor sampling design.	Completed (talk given and reported in minutes of June 1987 meeting of Work Group)

7.	Clark	Inventory of perceived biases in code-wire-tag studies. Partial summary given in workshop talk.	Report in preparation (*in* Mathews et al. 1987)
8.	Mulligan, Schnute	Study of bias in coded-wire-tag estimates of hatchery returns compared to direct counts at hatchery rack.	Completed (Schnute, et al. *in press*.)
9.	Mulligan, Lapi, Hudson	Causes of bias investigated through use of a multiple marking study. Pilot studies are underway for a large scale experimental design.	In progress
10.	Hilborn, Skalski, Pascual	Analysis of variability in coded-wire-tag estimates caused by brood year, wild vs. hatchery stocks, gear type, and time.	In progress

Estimating Contribution Rates of Salmon Stocks to Fisheries Catches Based on Code-wire-tag Studies.

11.	Clark, Shaul	Use of coded-wire-tag data to estimate aggregate stock composition of salmon catches in multiple mixed-stock fisheries.	Completed (Shaul & Clark, *in press*)
12.	Clark, Van Alen	Evaluation on the impacts of hatchery stocks on wild stock harvest in mixed stock fisheries using code-wire tags to estimate stock composition in-season.	In progress
13.	Lapi, Cross	Estimating contribution rates for stocks that are neither tagged or directly associated with a tag group, by scanning coded-wire-tag database for most similar release groups, identifying variables to class groups, and applying variables to nontagged group for association.	In progress

14.	Hilborn, Skalski, Pascual	Monte-Carlo validation of GLM methodology for statistical comparisons of contribution rates.	Report in preparation
15.	Kronlund, Schnute	Log-linear modelling for coded-wire-tag data using GLM, assessing the work of Hilborn et al. (Project 14).	In progress
16.	Hilborn, Skalski, Pascual	Comparing contribution rates of wild versus hatchery salmon using GLM.	Report in preparation

Variance Estimates for Coded-wire-tag Statistics

17.	Schnute	Use of embedded replicate codes on the microwire tags to estimate variance of return estimates, this practice was found to be erroneous.	Completed (Schnute, *in prep.*)
18.	Newman	Variance estimation of contribution rate estimates based on sample recoveries of coded-wire tagged fish.	Completed (Newman, 1988)
19.	Clark	Variance for coded-wire-tag recovery estimates based on a compound multivariate binomial-hypergeometric distribution.	Completed (Clark & Benard 1987, and *in press*.)
20.	Schnute	Variance estimates for compound distributions.	In progress

Standardization of Hatchery Practices

21.	Comstock, Cross, Birch,	Standardization of hatchery sampling practices, questionnaire.	1991 completion

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