PACIFIC SALMON COMMISSION
TECHNICAL COMMITTEE ON DATA SHARING

REPORT TCDS (90)-1

1989 ANNUAL REPORT
OF THE DATA SHARING COMMITTEE
AND ITS WORK GROUPS

May 1990

"Data problems are being experienced for coho because the biology of the species is not tailored to the meeting schedules established by the Pacific Salmon Commission." GM 2-87

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I. INTRODUCTION

This is the first annual report of the Data Sharing Committee. The Committee was formed in 1985 and reports to the Standing Committee on Research and Statistics. The first meeting was held in February 1986. A history of the Data Sharing Committee through 1988 is given in Appendix I. The initial goals or 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 Data Sharing Committee works in part through the use of work groups, which are established to work on specific tasks that are expected to take an extended time to accomplish and that need people with special qualifications. At the first meeting of the Data Sharing Committee, two work groups were established: the Mark-Recovery Work Group to look into standardizing statistical techniques for using code-wire-tag data and the Mark-Recovery Databases Work Group to look into ways of standardizing coded-wire-tag databases to facilitate sharing of the data coastwide. In 1989 two new work groups were established: the Data Standards Work Group to provide continual maintenance of data standards and formats and the Catch Data Exchange Work Group to develop standard formats for catch and effort data. When a work group has completed its assignment, it is disbanded, as was done with the Work Group on Mark-Recovery Databases in 1989.

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. While major tasks are assigned to work groups, the Data Sharing Committee addresses other problems concerning data needs of the Parties or joint PSC technical committees, such as difficulties in data exchange, misunderstandings in data interpretation, and maintenance of standards in data collection.

At the initial meeting of the Data Sharing Committee, the timely exchange of data was a large concern. It was decided that for most data, exchange could be best handled directly between agencies or through the joint PSC technical committees, but that for coded-wire-tag data, a centralized database was the best answer. The Mark-Recovery Databases Work Group later determined that actual storage and maintenance of the database was best handled within each country. Data, in a standardized format, would then be exchanged between a designated data center from each Party.

The Data Sharing Committee determined that standardizing data reporting formats for other commonly exchanged data would be desirable. With the completion of the work by the Work

Group on Mark-Recovery Databases, Data Sharing is now undertaking the standardization of formats for catch and effort data exchange. The modified approach of developing standard formats for data exchange rather than building one common database is reflected in the name of the new work group under the Data Sharing Committee: Work Group for a Catch Data Exchange.

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

II. DATA SHARING

The Data Sharing Committee held three meetings in 1989: one each in April, July, and October. The U.S. co-chair, Norma Jean Sands, presided over the meetings in 1989. Louis Lapi was the Canadian co-chair and will preside over the meetings in 1990.

Accomplishments

The Data Sharing Committee provided a communication link to address problems with discrepancies in catch statistics and sampling rates between Canada and Washington State. Sales slip reports of the catches of coho and sockeye salmon from Washington State which were processed in Canada were inconsistent with results reported by Canadian tag samplers. It appears that in one year, 1987, some coho salmon may have been reported as sockeye salmon, as the price difference was small that year and the catch was comprised predominantly of sockeye salmon. Washington samplers will be on the lookout that this does not happen again. Canada was also concerned that the percent of catch that is not sampled for tags has increased in recent years in Washington. This problem was related to the difficulty of obtaining area-specific catch sampling from buyers who purchase fish from more than a single catch area. Resolution of this problem would require additional sampling personnel in Washington and modification of buyer proceedings to separate catch by area.

At the request of the U.S. members of the Transboundary Technical Committee, the Data Sharing Committee looked into in-season communication problems between Whitehorse and Juneau. This resulted in improved computer software for the Whitehorse management office, allowing for electronic exchange of data by modem instead of just verbal exchange over the telephone. Some problems still remained during the 1989 fishing season, but it is hoped that in 1990 Whitehorse will be able to telephone the MicroVAX in Juneau such that both Parties may be able to use and

look at the same copy of the joint Stikine Management Model that governs harvest sharing and provides data to help in-season management.

In July the Data Sharing Committee presented the report "Activities of the Work Group on Mark-Recovery Statistics 1986-1988" (TCDS 89-1) to the Committee on Research and Statistics (R&S). R&S instructed the Data Sharing Committee and its Work Group on Mark-Recovery Statistics to meet with Technical Committee Co-chairs to compile and prioritize a list of work proposals. The Work Group desired that work proposals submitted to them be written, be specific in nature, and include data where possible. Many of the projects they are currently working have developed out of rather general requests from the past. The Data Sharing Committee then drafted a protocol for submitting statistical problems to the Work Group on Mark-Recovery Statistics and for dealing with the proposals (Appendix IV).

Terms of Reference for the two new Work Groups formulated this year, on Data Standards and for a Catch Data Exchange, were written and adopted by the Data Sharing Committee in 1989 (Appendix V).

The Data Sharing Committee received a letter from Ken Johnson, as Regional Mark Coordinator, on coded-wire-tag issues impacting the PSC formats developed by the Work Group on Mark-Recovery Databases (version 1.2). Several concerns were addressed including difficulty in reporting all unmarked production, the need for standardizing location codes between agencies, and additional fields needed in the PSC format. The Data Sharing Committee replied to these concerns and decided that greater communication was needed between the Data Sharing Committee and the Mark Committee, since both groups dealt with coded-wire-tag data management. A decision was made to try to coordinate a Data Sharing meeting with the annual Mark Committee meeting to be held in February 1990.

R&S requested that the Data Sharing Committee develop a source list for Treaty-related catch data. This is presented in Appendix VI.

Future Tasks

The Data Sharing Committee will help prioritize problems to be tackled by the Mark-Recovery Statistics Work Group.

Research and Statistics has asked the Data Sharing Committee to look into the feasibility and desirability to organize a workshop on improving and standardizing escapement estimation techniques.

The Data Sharing Committee is working on developing recommendations for uniform hatchery practices involving the use and recovery of coded-wire tags for reporting salmon production. To aid in this, a questionnaire is being formed to catalogue methods used in current coded-wire-tag studies. This questionnaire should be finished in early 1990 and subsequently sent out to appropriate parties.

A date for officially approving Version 2.0 of the Mark-Recovery Database format will be set for some time in 1990. It is expected that another major revision will not be needed for several years.

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). Although this Work Group attempts to meet three or four times a year, the group met only once in 1989. This was on July 11 in connection with the Data Sharing meeting held July 12, giving members a chance to attend the parent committee meeting and Data Sharing members a chance to attend the Work Group meeting. This was felt to be productive for both sides.

The meeting was held in Vancouver, B.C., and the Canadian co-chair, Jon Schnute, chaired the meeting. It was decided at this meeting that the co-chair in whose country the meeting was being held would act as chair. The meetings alternate between Canada and the United States. Ray Hilborn became the new U.S. co-chair this year, replacing Frank de Libero.

Accomplishments

Research and Statistics has asked the Work Group on Mark-Recovery Statistics and the Data Sharing Committee to produce a list of projects received and/or being worked on by the Work Group and to prioritize this list. This list has been compiled and is presented in Appendix VII. The Data Sharing Committee will make recommendations for prioritization early in 1990.

Future Tasks

Early in 1990, the Work Group expects to issue a recommendation on the statistical usefulness, if any, of embedded replicate tags.

IV. MARK-RECOVERY DATABASES

The Work Group on Mark-Recovery Databases was established to develop a standard format and process for the exchange of coded-wire-tag data. The Work Group functioned over a two and a half year period (1987-1989). The Pacific States Marine Fisheries Commission (PSMFC), Portland, Oregon, is the depository of the U.S. copy of the database and the Pacific Biological Station, Nanaimo, B.C. is the depository for Canada. The PSMFC has been verifying the data received to insure that it follows the set standards and uses recognized codes. Much of the coded-wire-tag release data from the various agencies has been received and verified, but not a large percentage of recovery and catch/sample data has been converted to the PSC format yet and very little unassociated hatchery production releases have been reported. Agencies are urged to complete their conversion process as soon as possible, preferably before the end of 1990.

The Work Group was disbanded in 1989 at completion of its task of producing a fully document exchange format (version 1.2) for coded-wire-tag data and of developing a mode of exchange between the two countries. As agencies converted their databases to meet the PSC standard, constraints and lacking data fields have been discovered and it was realized that the data format would need periodic updating and revising. A new work group with a new set of terms of reference was established for this purpose (see Section V).

Accomplishments

The report "Information Content and Data Standards for a Coastwide Coded-Wire Tag Database, Version 1.2" (TCDS 89-1) was finalized.

V. DATA STANDARDS

At the April 18, 1989, meeting of the Data Sharing Committee, The Work Group on Data Standards was established to continue to develop the format for code-wire-tag data and to provide assistance in standardization of formats for exchanging other types of data. . Terms of Reference for the Work Group were approved July 12, 1989 (Appendix IV). The Work Group met twice in 1989. The group first met on July 11, 1989, in conjunction with the Data Sharing meeting. At this first meeting, the Work Group identified the level of changes needed in the Version 1.2 Mark-Recovery Database Format. A second meeting in 1989 was held October 2-4, preceding the Data Sharing meeting held October 5, 1989, to discuss each of the specific potential changes identified.

Accomplishments

It was determined that a major revision of the Mark-Recovery Database Format (Version 1.2) was needed and that it would be labeled Version 2.0. Several new data fields have been identified and approved by the Data Sharing Committee. The new fields would be added at the end of the existing fields to facilitate conversion to the new version by the reporting agencies. Not all agencies would even need to use all the new data fields.

Future Tasks

Version 2.0 of the Mark-Recovery Database Format is expected to be finalized in 1990 and a revised report written at that time.

VI. CATCH DATA EXCHANGE

This Work Group was formulated at the October 5, 1989, meeting of the Data Sharing Committee and Terms of Reference for the Work Group were approved (Appendix V). The Work Group did not meet bilaterally in 1989 and is expected to have their first bilateral meeting early in 1990. 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. It is hoped they will finalize this task by the end of 1991.

APPENDIX I. A HISTORY OF THE DATA SHARING COMMITTEE

A HISTORY OF DATA SHARING

Original Memorandum of Understanding, January 28, 1985

Section B. Data Sharing: "the Parties consider it necessary to develop a coastwide stock assessment and management data system, including catch, effort, escapement, and coded-wire tag data that will yield reliable management information in a timely manner and to develop analytical models along with standardized methods for monitoring fishing effort."

More specifically "The Parties agree to maintain a coded-wire tagging and recapture program designed to provide statistically reliable data for stock assessments and fishery evaluations. The Parties agree to establish a work group prior to April 1, 1985, to review the program..."

September 1985 letter to PSC Commissioners from Bevan and Riddell (Data Sharing Task Force co-chairs)

1. An Equipment Work Group was established to review equipment needs of PSC "including electronic data processing and/or communication equipment."

2. Identified areas of uncertainty: a) role of Commission in maintaining centralized databases and/or facilitating data sharing; b) what secretariat functions the Commission will provide; and c) what equipment will the PSC absorb from the IPSFC.

3. Recommendations from Task Force: a) **establish Data Sharing Technical Committee** to address uncertainties; b) develop an electronic mail system between the commission, Commissioners, and the Parties; c) establish communication link between U.S. and Canadian mainframes; and d) provide microcomputers to each Party's section of each technical committee.

First meeting of the Data Sharing Technical Committee, February 18, 1986

Participants Riddell, Lapi, Schutz, Bjerring
Bevan, Marshall, Seibel, Henry

1. Reviewed commitments in the Memorandum of Understanding. The first need was felt to be the identification of various sources of information, availability of data to external users and identification of limitations to timely availability of some data. Accessibility to "in-season ("soft" or preliminary) catch/effort data would be desirable."

2. Discussed approaches to sharing essential information.

Centralized databases were not felt to be essential for all data types. For the coastwide coded-wire-tag data it was felt that a centralized database would be best. For catch and effort data it was thought that making agency databases available to each other was the best approach. For escapement data, which is often interpretative and qualitative, it was best to have a contact person named per agency for requesting such data.

3. Initiated review of feasibility of electronic mail systems to facilitate communications between Parties. It was recognized that rapid communication in-season was often needed between Parties to aid management of stocks. Specific systems were discussed.

4. Development of Terms of Reference for the Work Group on Mark-Recovery Statistics in the coded-wire-tag program was deferred to a later meeting and clarification of the status of this group was requested from the Commissioners by letter from the chair of Data Sharing.

Second meeting of the Data Sharing Technical Committee, April 30-May 1, 1986
(Sand Point, Seattle)

1. Clarified structure of the Data Sharing Committee and its work groups. Data Sharing is a committee reporting to the R&S; two work groups under Data Sharing have been established, one for mark-recovery databases and one for mark-recovery statistics.

2. Discussed progress in selection of an electronic mail system. An ad hoc work group was set up to compare systems and costs. (Marasco to coordinate group)

3. Data exchange protocols. Contact persons were named for different agencies for access to in-season catch data.

WDF Dave Pratt	Col.R. ?
ADFG Larry Talley	PSC Ian Gutherie
DFO Jim Bjerring	

Summaries of in-season information should be provided by agencies and distributed by Commission staff. Availability of historic databases was discussed and the possibility of DFO participating in a coastwide historic catch database (PacFIN) being maintained on the Burroughs computer at Sand Point was brought up.

4. Define tasks of mark-recovery database work group. Current databases were discussed and the need of a common data set expressed.

5. Define tasks of mark-recovery statistics work group. Terms of Reference were drafted to define the type of information desired by PSC and a report of conclusions from the group was desired by April 1, 1987.

6. The Data Sharing Committee supported a recommendation to the F&A to proceed with purchase of terminals to support an electronic mail system.

Third Meeting of the Data Sharing Committee, February 23, 1987 (Seattle)

1. Report of Mark-Recovery Database Work Group, tentative data format presented. Full membership roster presented (5 U.S., 2 Canadians)

2. Report of Mark-Recovery Statistics Work Group, work has not progressed as fast as desired due to poorly defined terms of reference and lack of resources on the U.S. side. Work Group will work on redoing terms of reference. U.S. will look for federal assistance. The Committee asked the Work Group to work with technical committees on prioritizing problems for the Work Group to work on. Full membership roster presented (5 U.S., 5 Canadians).

3. Timely exchange of data was discussed, especially in regard to chinook and coho data. These species have late runs, so that complete data is often not available by February. (U.S. co-chairs of technical committees wrote letters to the Data Sharing Committee expressing these problems.) It was recommended that R&S consider the problem of PSC meeting times in regard to having time to analyze data needed before meetings start. Also that the R&S should be used for resolution of problems in data exchange.

4. Electronic mail, problems with implementation continue, but are going with the UW Cyber to set up an electronic bulletin board.

5. Word Processing software, Considering the shift from WordStar to WordPerfect.

6. Coded-wire tagging, concern for decreased recovery sampling due to budget reductions.

Fourth Meeting of the Data Sharing Committee, May 27, 1987 (Vancouver)

1. Mark-Recovery Database Work Group report: has agreed on content and format of database, next item for discussion, what system to handle data. Want cost estimate of different systems from Work Group. The Committee felt effort should be added to database, will ask Mark-Recovery Statistics Work Group.

2. Escapement data discussed, need exists for good escapement data.

3. Mark-Recovery Statistics Work Group report, Lapi reviewed work of this group from minutes. The Committee request Work Group to explain current terms of reference and problems with original ones; to develop procedure to ensure technical committees are involved and have input into work of committee.

4. R&S requested The Data Sharing Committee to investigate ways to provide "Bulletin Board" type information in timely fashion; to be implemented by PSC staff. Ian Gutherie will check with agencies on what data is available.

Fifth Meeting of the Data Sharing Committee, November 15 & 16, 1987 (Portland)

1. The goals of the Statistic Work Group were discussed; standard methodologies for mark-recovery analysis by the PSC is desired but may be difficult to achieve in the near future.

2. Progress of the mark-recovery database work group were discussed and data formats and protocols reviewed.

3. Administration of the E-mail system was determined to be the responsibility of the Parties, not of the PSC staff. This committee highly recommended use of E-mail.

4. Met with the Coho Technical Committee to identify problems related to data sharing. Again, timely exchange of catch and effort data was stressed and use of E-mail to facilitate exchange was discussed. Also the problem of obtaining published and unpublished data reports used by the two Parties was brought to light.

5. Met with chairs of the other Technical Committees; Chinook TC wished for exchange of biological data, Chum TC was interested in coastwide catch and effort database, Northern Boundary TC was interested in better in-season exchange of data, Transboundary TC was interested in development of historical databases.

Sixth Meeting of the Data Sharing Committee, January 20, 1988 (Vancouver)

1. Reviewed progress of Work Groups. Received several manuscripts on ongoing work by members of the Mark-Recovery Statistics Work Group. Discussed timetable for exchange of coded-wire-tag data.

2. Discussed escapement as a possible next project after the Mark-Recovery Database is completed.

Seventh Meeting of the Data Sharing Committee, February 17, 1988 (Vancouver)

1. Finalized a report to the Research and Statistics Standing Committee (TCDS 88-1): 1) advocating acceptance of work accomplished by the Mark-Recovery Database Work Group (Version 1.1 of the Data Standards); 2) recommending increased support by the Parties to the Mark-Recovery Statistics Work Group in the form of additional personnel; 3) suggesting escapement by the next project for data standardization; 4) asking for prioritization of items listed

in Terms of Reference for Data Sharing; and 5) requesting permission to formulate a new work group to maintain continued standardization of codes and formats in exchanged databases.

2. Reviewed request from R&S to identify type and amount of additional resources required by the Work Group on Mark-Recovery Statistics.

3. Entertained a request form the Coho Technical Committee to review coded-wire-tag stock composition approach. The request will be forwarded to the Mark-Recovery Statistics Work Group.

4. Alternatives to E-mail were discussed including various network systems.

Eighth Meeting of the Data Sharing Committee, June 6, 1988 (Vancouver)

1. Finalized a report to the Research and Statistics Standing Committee concerning the feasibility of establishing coastwide catch versus escapement data bases.

2. Terms of Reference for the Data Sharing Committee were formalized.

3. It was decided that the Mark-Recovery Statistics Work Group needed members who could spend a minimum of three months a year on coded-wire-tag statistics.

4. E-mail is still being supported by the U.of Washington for a while, although the CYBER computer is being phased out; good alternatives or improvements to this system have not been found.

Ninth Meeting of the Data Sharing Committee, October 12, 1988 (Seattle)

1. A review of projects by the Mark-Recovery Statistics Work Group was made and it was decided to write a formal report on progress of the group.

2. Modifications to the Mark-Recovery Database were reviewed and accepted.

3. Letters from technical committee co-chairs about catch data needs were presented and will be reviewed before the next meeting.

4. A draft letter for recommended additional resources to the Mark-Recovery Statistics Work Group was approved to present to R&S.

APPENDIX II. LIST OF MEMBERS

CANADA	UNITED STATES

Technical Committee on Data Sharing (7-12-89) (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
	Dr. Phil Mundy
	Mr. Joseph Pavel

Work Group on Mark-Recovery Statistics (6-19-89) (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 Mark-Recovery Databases (7-12-89) (disbanded)

Mr. Louis Lapi (Co-chair)	Dr. Frank de Libero (Co-chair)
Mr. Marc Hamer	Mr. Charles Corrarino
Mr. Paul Starr	Mr. Bill Johnson
	Mr. Ken Johnson
	Mr. Dick O'Connor

Work Group on Data Standards (7-18-89) (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 (12-89) (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. Burnie Bohn

APPENDIX III. 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.

APPENDIX IV. PROTOCOL FOR STATISTICAL REQUESTS

MEMORANDUM

TO: Ray Hilborn and Jon Schnute, co-chairs of the Mark-Recovery Statistics Work Group

FR: Data Sharing Committee

RE: Protocol for Handling Request for Assistance of the Mark-Recovery Statistics Work Group

DATE: October 5, 1989

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1. Mark-Recovery Statistics Work Group to develop a suggested format for request for assistance (request to be in written from, and accompanied by a sample data set where relevant).

2. Requests to be submitted directly to the Co-Chairs of the Mark-Recovery Statistics Work Group with a courtesy copy to the Co-Chairs of the Data Sharing Committee.

3. Meetings between the requestor and the Mark-Recovery Statistics Work Group (or designated representative) to be held as necessary to facilitate mutual understanding of needs and expectations.

4. Mark-Recovery Statistics Work Group to compile and maintain a list of request for assistance, with notes as to areas being addressed by Work Group efforts.

5. Lists of request to be periodically discussed and prioritized by the Data Sharing Committee and referred back to the Mark-Recovery Statistics Work Group.

6. Assignments and schedules to be made within the Mark-Recovery Statistics Work Group to address priority areas. Data Sharing Committee and individuals(s) requesting assistance to be notified of responsibilities assigned to individual members of the Mark-Recovery Statistics Work Group and timetable for expected results.

7. The list of request for assistance to be reviewed at each meeting of the Mark-Recovery Statistics Work Group. Periodic progress reports to be made to the Data Sharing Committee and the individual(s) requesting assistance.

APPENDIX V. TERMS OF REFERENCES

WORK GROUP ON DATA STANDARDS
TERMS OF REFERENCE

This Work Group of the Data Sharing Committee shall report to and take directions from the Data Sharing Committee. The membership of this Work Group shall consist of not more than five members from each Party. At least one member from each Party shall also be a member of the Data Sharing Committee. The Work Group shall:

(1) have the standing task of maintaining the specifications and documentation for approved contents, codes, and formats used in the exchanged mark-recovery data sets;

(2) make modifications to the contents, standards, and procedures pertaining to the mark-recovery data sets only as directed by the Data Sharing Committee and, when made, coordinate the implementation of these changes;

(3) ensure the uniformity and consistency of codes and formats of additional exchanged data sets that may develop through the parent committee; and

(4) meet as needed with the understanding that, where possible, each Party should resolve issues at a national level first, so that the frequency and duration of bilateral meetings may be minimized.

WORK GROUP FOR A CATCH DATA EXCHANGE
TERMS OF REFERENCE

This Work Group of the Data Sharing Committee is a temporary work group with a specific task, to develop a catch data exchange system for the PSC. The Work Group shall report to and take direction from the Data Sharing Committee. The membership of this Work Group shall consist of not more than five members from each Party. At least one member from each Party shall also be a member of the Data Sharing Committee. The Work Group shall:

(1) prepare a report, to be included in the 1989 annual report of Data Sharing, on the status of available catch data, including where the data currently reside, when they are available on an annual basis in preliminary and/or final form, and a contact person or agency for each;

(2) consulting with potential users of the catch data, determine the type of data and information needed, e.g. catch (weight or numbers or both), effort (units), district stratification, time stratification, test fishery catches, estimation techniques where used, etc.;

(3) consulting with the Work Group on Data Standards, develop a common file format and document data codes that will be used for each Party's catch data that will be exchanged;

(4) consulting with the Work Group on Data Standards, outline a system for exchange of the catch data, including the exchange medium and format for both Parties, a time table for exchange and updating of data, identifying verification systems for data, etc.;

(5) send minutes of bilateral meetings of the Work Group to the co-chairs of the Data Sharing Committee and to the PSC office; and

(6) prepare a final report that fully describes the catch data exchange system developed according to paragraphs (2) through (4).

APPENDIX VI. SYNOPSIS OF CURRENT CATCH DATABASES WITHIN EACH PARTY

U.S. Salmon Catch Databases

There are three primary authoritative sources of commercial salmon catch information and they are the three states of Alaska, Washington and Oregon. Two secondary authoritative sources exist: the Northwest Indian Fish Commission and the Pacific States Marine Fisheries Commission.

Commercial Catches in Southeast Alaska

First buyers report to the Alaska Department of Fish and Game by means of state designed fish tickets. The basic observation is the weight landed; however, the processor may also count the fish or calculate the number based on average weight, depending on the volume processed. Catch data by area, gear, and week are available in-season from the fish-ticket system. Past years' data for catch in numbers and effort in boats and hours by area, gear, and week are available from the RUNTIME system.

Contact: Karla McLean
Alaska Department of Fish and Game
Commercial Fisheries Division
(907) 465-4250

The Metlakatla Indian Community conducts its own fisheries separate from those of the State of Alaska. These fisheries occur in the waters adjacent to Annette Island, south of Ketchikan, Alaska. The tribe keeps catch records, although the catches are also recorded with the Alaska Department of Fish and Game and may be obtained from the above contact as well as from the Bureau of Indian Affairs.

Contact: Bob Ringo
Bureau of Indian Affairs
Portland, Oregon
(503) 231-6749

Sports Catches in Southeast Alaska

Sports catch data are collected by two methods, mail survey and creel census. The creel censuses are conducted in marine and freshwater. The mail survey is based on a random sample of 12,000 individuals for the entire state from the computerized sports fish license data.

Contact:

Mike Mills
Alaska Department of Fish and Game
Sports Fish Division
333 Raspberry Road
Anchorage, AK 99502
(907) 267-2369

Alaskan Subsistence Catches

Both native and nonnative residents can harvest salmon under a subsistence permit. The permit is the mechanism to record the harvests, since the permit is issued for a specific number of fish of each species as specified by the applicant. The data commonly available would be the number of fish by species and the location of harvest.

Contact:

Subsistence Division
Alaska Department of Fish and Game
P.O. Box 3-2000
Juneau, AK 99802
(907) 465-4100

Net and Troll Catches in Washington

Two net and troll databases are used: one for in-season harvest management based on aggregated catch by gear type for a date and area (the auxiliary system) and a historical database containing the individual line items from sales receipts (fish receiving tickets) executed by the state licensed processor at the point of landing. Processors are required to record fisherman identification (Indian) or boat identification (nonIndian). tribe date of landing, catch area, species by number and weight, and value on each fish receiving ticket. cannery fish receiving tickets are used for nonIndian landings and Treaty Indian Fish receiving are used for Indian landings. Each type of ticket has a section for recording noncommercial catch (e.g. take home portion of catch from a commercial landing or special noncommercial fishery such as ceremonial or subsistence).

Four historical computer database systems exist for treaty and nontreaty catches which draw upon the same data source. Tapes of this data source are available for each year with approximately 130,000 records per year at 119 bytes/record. The Northwest Indian Fisheries Commission maintains the HC/LS data base which provides daily catch by species back to 1952 in two editions: 1952 to present and 1975 to present. The Washington Department of Fisheries maintains Fish Ticket, a database similar to the HC/LS. Catch data for Washington State are summarized in a convenient format for retrieval on the CIRS, the Computer Information Retrieval System. The MHCLS system, also maintained by the Northwest Indian Fish Commission is a microcomputer based system which is able to split down treaty catches into tribal components.

Contact:

Dave Pratt
Washington Department of Fisheries
115 General Administration Bldg.
Olympia, WA 98504
(206) 753-6093

Mike Messenger
Northwest Indian Fish Commission
6730 Martin Way East
Olympia, WA 98506
(206) 438-1180

Washington Sports Catch Reporting

From the late 1930's to 1964, there was a survey of "boat houses", rental facilities for boats and motors for sports salmon fishing on Puget Sound. During the 1950's the number of privately owned boats and motors increased and the boat house survey was replaced with the punch card system in 1964. The historical sport catch database is electronically available from WDF. Salt and freshwater catches are recorded by the punch card system.

Contact:

Dave Pratt
Washington Department of Fisheries
115 General Administration Bldg.
Olympia, WA 98504
(206) 753-6093

Oregon Commercial and Sport Catches

Commercial and sport salmon catches in Oregon are reported and recorded in a manner similar to and closely coordinated with the state of Washington. More information is available under the Pacific States Marine Fisheries Commission and the Pacific Fisheries Management Council.

Contact:

Dave Judkins
Oregon Department of Fish and Wildlife
500 SW Mill Street
Portland, OR
(503) 229-5505

Columbia River Treaty Ceremonial and Subsistence Catches

The overall number of each species in the Columbia River subsistence harvest is set by the terms of the Columbia River Fish Management Plan to be proportional to run strength above some minimum number. This entitlement is apportioned among the tribal governments for distribution to tribal members. Actual levels of catches are surveyed in the field by tribal fisheries programs and by the Oregon Department of Fish and Wildlife and the Washington Department of Fisheries.

Contact:

Howard Schaller
Columbia River Inter-Tribal Fish Commission
975 SE Sandy Blvd
Portland, OR 97214
(503) 238-0667

Pacific States Marine Fisheries Commission

Under the Pacific Fisheries Information Network (PacFIN) the PSMFC has been working to establish a southern United States Coastwide commercial salmon catch database.

Contact:

Will Daspit
NMFS
7600 Sand Point Way NE
Bin C15700 Bldg 4
Seattle, WA 98115
(206) 526-4072

Canadian Salmon Catch Databases

Catch/Effort Fred Wong Database

This is a summary database of salmon catch data. Data are received on VAX readable tapes from the Statistics Division in Vancouver. The data are usually finalized by October of the following year. The on-line Catch Summary Data System (CSDS) gives summary catch information by year, area, period, gear and species. The data is stored in binary form arranged in a tree structure nested three levels deep. Area, period and gear are the three major keys. Data are stored in two separate random access files for each year. Catches in pieces and weight are sorted by species, gear, period and area, then stored in data files (CAyy.DAT). Pointers to the data file for each key are stored in the index file (CAyy.IDX). Other data such as effort, days opened and days fished are also stored in the index file. The data may be accessed via menu driven report writers, or by user written fortran programs. Library routines exist to handle data access.

Contact: Louis Lapi, (604) 756-7144
Location/System: PBS Nanaimo, VAX/VMS cluster, Custom/Fortran
Data Available: 1978 to the present
Discription:

Field	Data Description
Year	Year of catch
Area	Statistical area of catch
Period	Month (01-12) & week (0-5)
Gear	Fishing gear used
Species	Species caught
Pieces	Number of pieces landed
Total weight	Total number of pounds caught
%Dressed weight	Weight dressed (no head)
Days open	Not available
Days fished	Days fished if troll, else # of deliveries
Effort	Number of days fished
Price	Total amount paid in cents

Native Food Fishery - NATIVE

Native food fishery catch and permits issued for B.C. and Yukon, 1951 through 1988. Catch in pieces and number of food fishery permits issued by year, period, area, location, species, band, and gear.

Contact: Lia Bijsterveld, (604) 666-6501
Location/System: DFO, Vancouver, VAX 8530, Ingres
Data Available: December of following year.
Discription:

Field	Data Description
Transaction Number	Unique record number assigned by the system.
Catch_year	The calendar year of catch.
Period_code	The CCSS code (list attached) corresponding to the fishing period (week or month) of catch.
Area_code	The CCSS code (list attached) corresponding to the statistical area of catch (map attached).
Maploc_code	The code (list attached) corresponding to a map location of the catch.
Species_code	The Statistics code (list attached) corresponding to the species caught.
Catch_pieces	The catch in numbers of fish.
Band_num	The INAC (Indian/Northern Affairs) band number.
Gear_code	The CCSS code (list attached) corresponding to the fishing gear used.
Permits	The number of food fishery permits (band or individual) issued.

Recreational Fishery - RECSTATS

Recreational catch and effort for B.C., 1951 through 1988. Catch is reported in pieces and effort in angler days by year, month, area, and species.

Contact: Lia Bijsterveld, (604) 666-6501
Location/System: DFO, Vancouver, VAX 8530, Ingres
Data Available: December of following year.

Description:

Field	Data Description
Transaction Number	A number consisting of year + month + area. This combined with species code forms a unique key.
Catch_year	The calendar year of catch.
Catch_month	The calendar month of catch.
Area_code	The CCSS code (list attached) corresponding to the statistical area of catch (map attached).
Species_code	The Statistics code (list attached) corresponding to the species caught.
Catch_pieces	The catch in numbers of fish.
Days_fished	The number of angler days. An angler day is counted for any part of a day spent fishing.

READ CAREFULLY

1. Reporting of all catches to the Dept. of Fisheries and Oceans is the responsibility of the fisherman and a condition of licence renewal.
2. Accurate catch reports must include the map number or numbers showing the area in which your fish were caught.
3. The statistical areas shown on this map are to be used as a guide only. For more exact information refer to the Pacific Fishery Management Area Regulations.

Dept. of Fisheries and Oceans Office

Statistical areas are divided by red lines

Surfline

Note: All areas revised February 1985

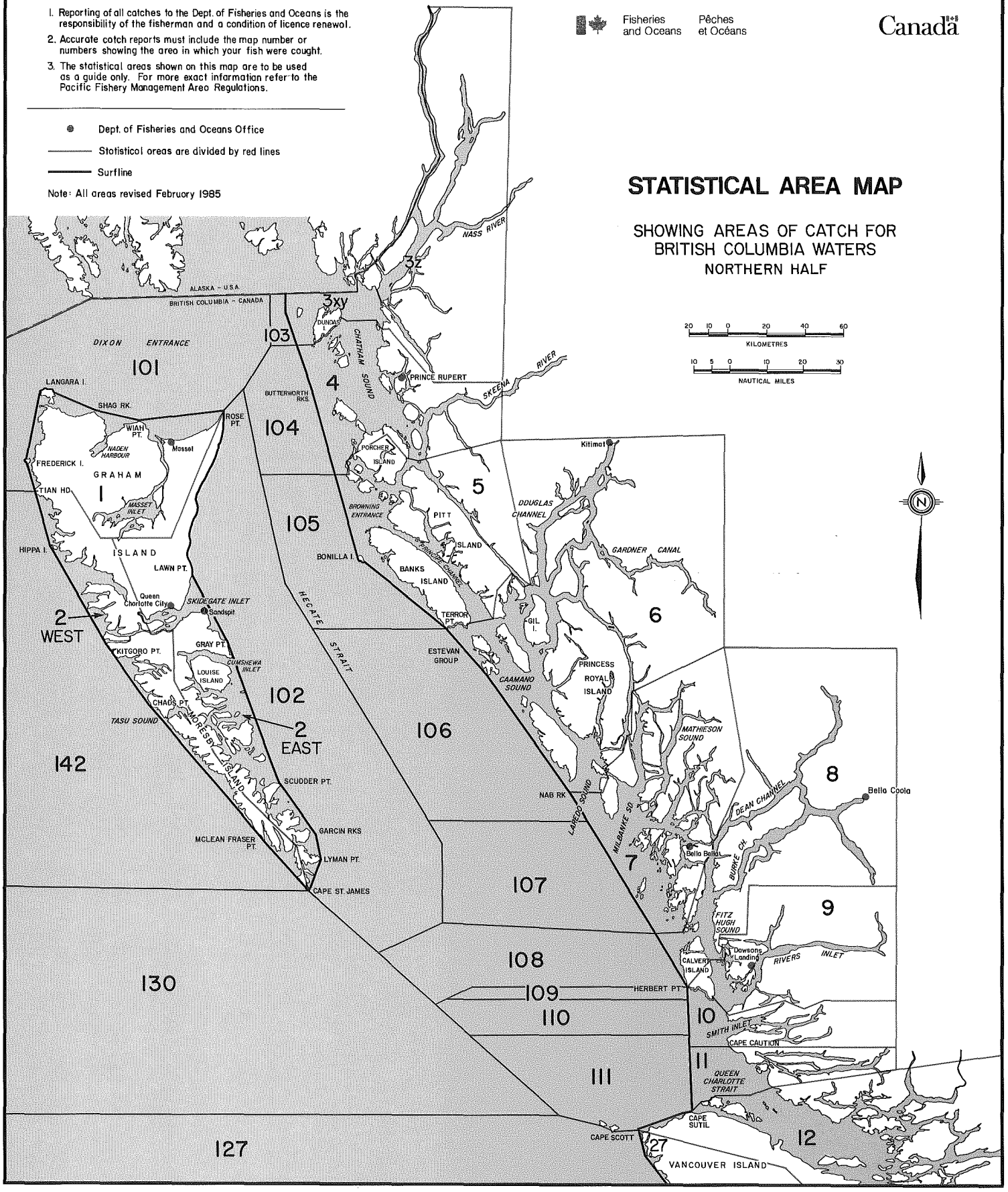
Fisheries and Oceans / Pêches et Océans

Canada

STATISTICAL AREA MAP

SHOWING AREAS OF CATCH FOR BRITISH COLUMBIA WATERS

NORTHERN HALF



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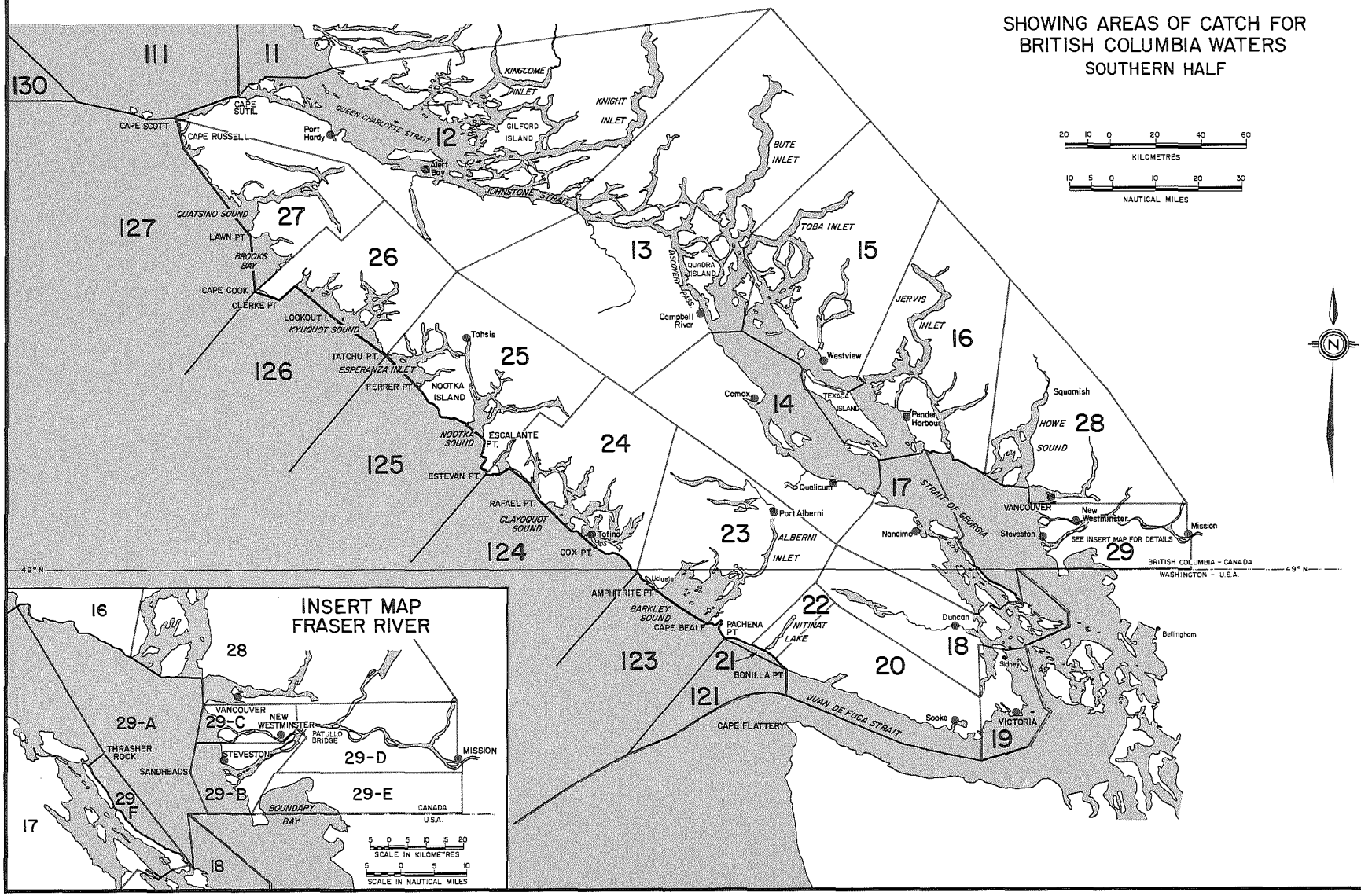
Canada

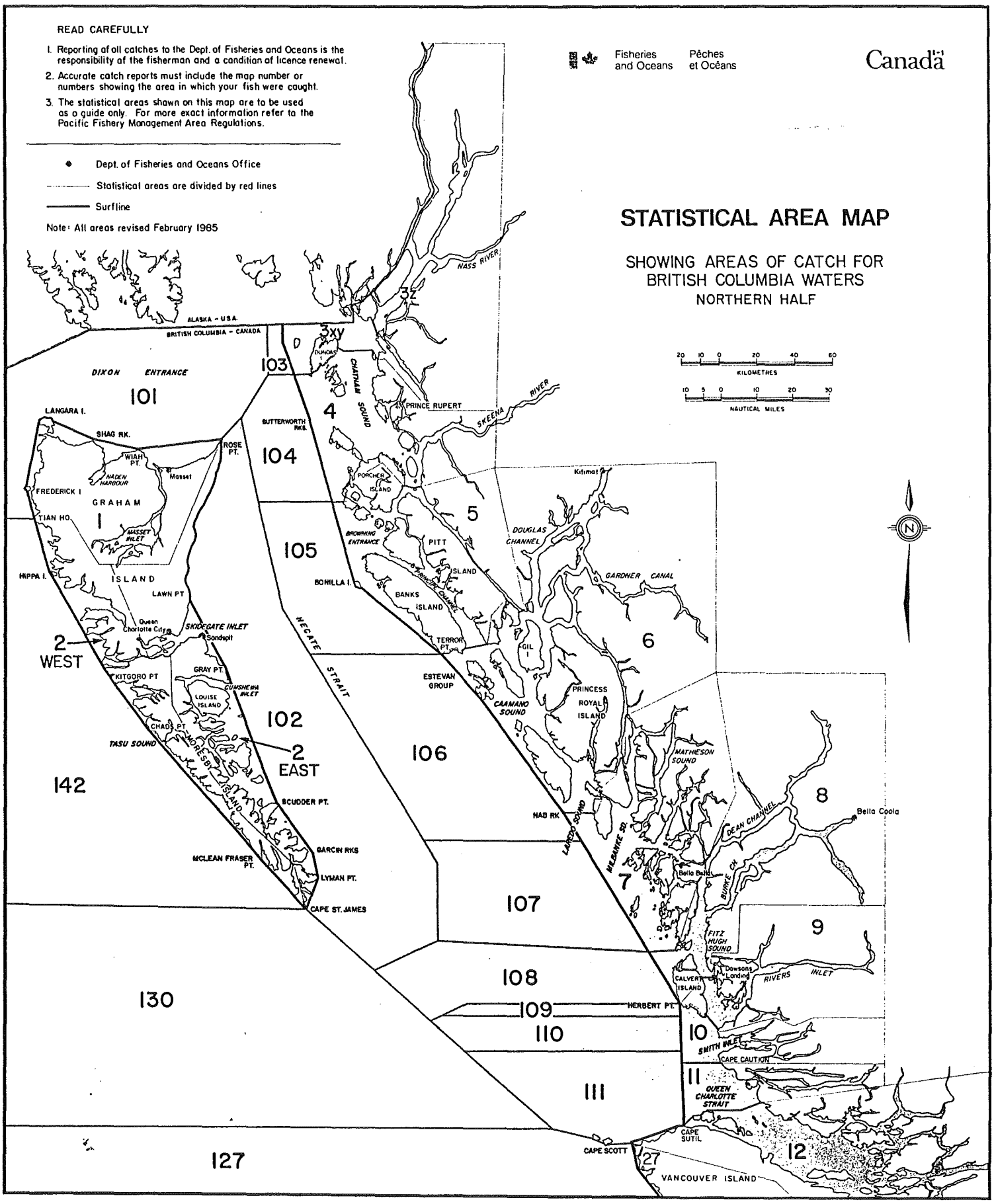
STATISTICAL AREA MAP

SHOWING AREAS OF CATCH FOR BRITISH COLUMBIA WATERS

SOUTHERN HALF



SIXTH EDITION FEB 1985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Fisheries and Oceans
Pêches et Océans
Canada
STATISTICAL AREA MAP
SHOWING AREAS OF CATCH FOR BRITISH COLUMBIA WATERS
NORTHERN HALF
KILOMETRES
NAUTICAL MILES
ALASKA - U.S.A.
BRITISH COLUMBIA - CANADA
DIXON ENTRANCE
101
LANGARA I.
SHAG RK.
WIAH PT.
ROSE PT.
HAIDEN HARBOUR
Masset
FREDERICK I
GRAHAM
1
TIAN HO
MASSET INLET
ISLAND
HIPPA I.
LAWN PT
Queen Charlotte City
SKIDEGATE INLET
Sandspit
2 WEST
KITGORO PT
GRAY PT.
CUMSHEWA INLET
LOUISE ISLAND
CHAOS PT.
TASU SOUND
MORESBY ISLAND
142
130
127
103
104
105
102
106
107
108
109
110
111
2 EAST
SCUDDER PT.
GARCIN RKS.
MCLEAN FRASER PT.
LYMAN PT.
CAPE ST. JAMES
3xy
DUNDAS I.
3z
NASS RIVER
D
CHATHAM SOUND
PRINCE RUPERT
SKEENA RIVER
4
BUTTERWORTH RKS.
PORCHER ISLAND
5
BROWNING ENTRANCE
PITT ISLAND
BONILLA I.
BANKS ISLAND
PRINCE CHANNEL
HECATE STRAIT
TERROR PT.
ESTEVAN GROUP
Kitimat
DOUGLAS CHANNEL
GARDNER CANAL
6
GIL I.
CAAMANO SOUND
PRINCESS ROYAL ISLAND
MATHESON SOUND
NAB RK
LAREDO SOUND
MILBANKE SD.
7
8
DEAN CHANNEL
Bella Coola
Bella Bella
BURKE CH.
FITZ HUGH SOUND
9
CALVERT ISLAND
Dawsons Landing
RIVERS INLET
HERBERT PT.
10
SMITH INLET
CAPE CAUTION
11
QUEEN CHARLOTTE STRAIT
CAPE SUTIL
CAPE SCOTT
27
VANCOUVER ISLAND
12
SIXTH EDITION FEB 1985

READ CAREFULLY

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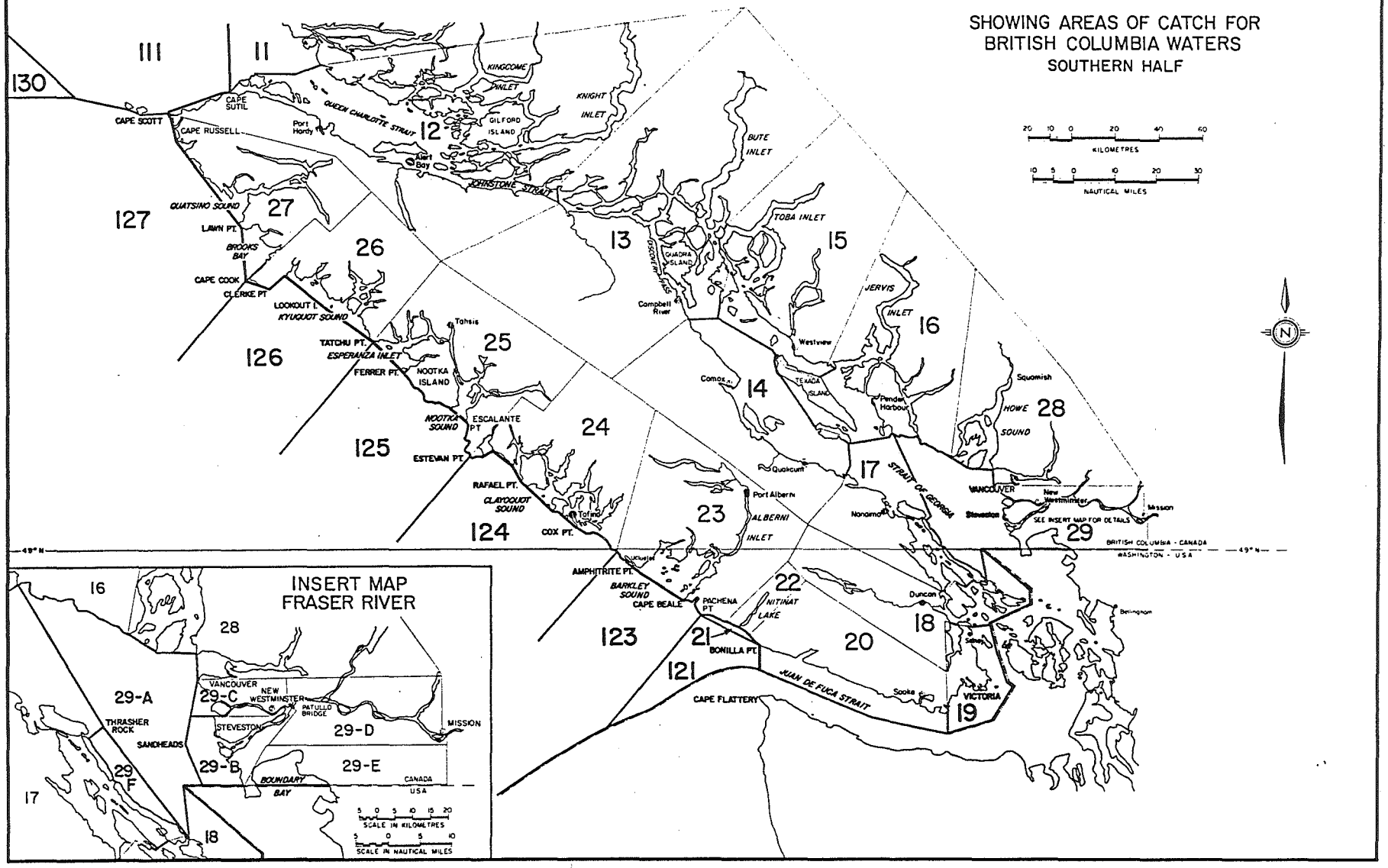
SHOWING AREAS OF CATCH FOR BRITISH COLUMBIA WATERS
SOUTHERN HALF



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19	190
20	200
21	210
22	220
23	230
24	240
25	250
26	260
27	270

DISTRICT 4:

ALASKA	400
TAKU	441
STIKINE	442
YUKON	450

DISTRICT 5:

WASHINGTON	508
OREGON	518
CALIFORNIA	528

DISTRICT 6:

INTERNATIONAL WATERS	600

SOLE
(form 1,2,3,6,7)

30	BRILL PETRALE
31	BUTTER
32	DOVER
33	LEMON
34	REX
35	ROCK
36	MIXED

ROCKFISH
(form 1,2,3,6,7)

44	PAC. OCEAN PERCH
45	REEDI (YELLOW MOUTH)
46	GREENIES (YELLOW TAIL)
47	ROCKFISH
48	RED SNAPPER (YELLOWEYE)
58	IDIOT

GROUNDFISH & OTHER SPECIES
landed form 1, except (*)

27	HAGFISH
50	SALMON ROE
51	NON-FOOD,MINKFEED,SCRAP REDUCTION
54	FLOUNDER*(1,7)
55	SKATE*(5)
56	EULACHON
57	STURGEON*(1,2,3)
59	PERCH (SILVER) (1,6)
60	TUNA (1,2,3)
62	SMELT
63	OTHER FISH
64	TURBOT*(1,7)
65	POLLOCK
67	DOGFISH*(0,1,2,3,5,6)
68	HAKE (0,1,2,3,6)
84	FRESH WATER FISH (1) Yukon, Taku, Stikine only
95	SHARK (1,2,3,7)
96	ANCHOVIES (1,2,3)

HERRING
( ) indicates landed forms

89	ROE ON KELP (0,1)
90	ROE HERRING (0,1)
91	FOOD HERRING (0,1)
92	BAIT HERRING (1,8)
93	POND HERRING (1,8)
94	(RESERVED)

26	BLANK CODES
29	
38	
99	

8	DOZENS (ROUND)
9	PIECES (ROUND)

SHELLFISH
landed form 1, except (*)

52	SQUID
53	PLANKTON
61	OCTOPUS
	SEA URCHIN (1,9):
69	- RED SEA URCHIN
02	- GREEN SEA URCHIN
70	PRAWNS (1,4,7)
71	SHRIMPS (1,4,7)
72	CLAMS - RAZOR (1,7)
73	- BUTTER (1,7)
74	- JAP. L.N./MANILA (1,7)
75	- NAT. L.N. (1,7)
76	- MIXED (1,7)
77	ABALONE (1,7)
	CRAB (1,7,8,9):
78	- DUNGENESS/GREEN/RIVER/OCE
03	- TANNER
04	- KING (GOLDEN/RED)
05	- RED ROCK/OTHER
79	OYSTER
80	GEODUCKS
81	HORSE CLAMS (1,7)
82	MUSSELS
83	GOOSENECK BARNACLES
85	SCALLOPS (1,7)
86	SNAILS
87	CRAYFISH
88	SEA CUCUMBER (1,7,9)

FORMS FOR CODS

GREY COD - FORM 1, unless otherwise specified. BLACK COD - FORM 3, unless otherwise specified. LINGCOD- FORM 3, unless otherwise specified. RED, ROCK, BASS, SNAPPER, & ROCKFISH - FORM 1 unless otherwise specified.

CATCH STATISTICS CODING SUMMARY

With "old" area codes Revised February 8, 1989

AREAS

FRASER:

28	280
29AB	791
29C	792
29D	793
29E	794

NORTH:

1	010
2E	021
2W	022
3XY	031
3Z	033
4	040
5	050
6	060
7	070
8	080
9	090
10	100
30	300

SOUTH:

11	110
12	120
13	130
14	140
15	150
16	160
17	170
18	180
19	190
20	200
21	210
22	220
23	230
24	240
25	250
26	260
27	270

DISTRICT 4:

ALASKA	400
TAKU	441
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YUKON	450

DISTRICT 5:

WASHINGTON	508
OREGON	518
CALIFORNIA	528

DISTRICT 6:

INTERNATIONAL WATERS	600

GEAR CODES

01	OTHER GEARS	50	TRAWL
10	SALMON GILLNET	51	MID-WATER TRAWL
11	OTHER GILLNET	52	PAIR SEINE
19	HERRING GILLNET	57	SHRIMP TRAWL
20	SALMON SEINE	59	HERRING TRAWL
21	OTHER SEINE	70	BEACH SEINE
29	HERRING SEINE	80	DIVING
30	TROLL & HANDLINE	97	PRAWN TRAP
31	TROLL FREEZER	98	CRAB TRAP
40	LONGLINE	90	OTHER TRAP

LANDING STATUS

01	COMMERCIAL	09	CONTAMINATED
02	TEST FISHING	10	HATCHERY SALES
03	RESEARCH	11	FENCE SALES
04	SEIZED	12	SLIP NOT RECEIVED
05	LOSS AT SEA	13	DIRECT EXPORT TO NON-USA COUNTRIES
06	DUMPED		
07	PERSONAL USE/ NOT SOLD	14	AQUACULTURE
		15	LATE SALES SLIPS
08	DIRECT EXPORT TO USA		

SALMON

SPECIES		FORM	
10	LGE. RED CHINOOK	1	ROUND - PCS. & WT.
11	MED. RED CHINOOK	2	ROUND - WT. ONLY
12	SMALL CHINOOK	3	DRESSED H/ON - PCS. & WT.
12	JACKS (pieces only, GN, SN only)	4	DRESSED H/ON - WT. ONLY
13	#2 RED CHINOOK - troll, troll freezer	5	PIECES ONLY - JACKS
14	WHITE CHINOOK	6	DRESSED H/OFF - PCS. & WT.
15	SOCKEYE	7	DRESSED H/OFF - WT. ONLY
16	COHO		
17	PINK		
18	CHUM		
19	STEELHEAD		

NON-SALMON

HALIBUT (form 2,3)

20	LARGE 60 - OVER
21	MEDIUM 10 - 59
22	CHIX UNDER 10
23	#2
24	MIXED NO SIZE LIMIT

SOLE (form 1,2,3,6,7)

30	BRILL PETRALE
31	BUTTER
32	DOVER
33	LEMON
34	REX
35	ROCK
36	MIXED

GROUNDFISH & OTHER SPECIES landed form 1, except (*)

27	HAGFISH
50	SALMON ROE
51	NON-FOOD, MINKFEED, SCRAP REDUCTION
54	FLOUNDER*(1,7)
55	SKATE*(5)
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65	POLLOCK
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68	HAKE (0,1,2,3,6)
84	FRESH WATER FISH (1) Yukon, Taku, Stikine only
95	SHARK (1,2,3,7)
96	ANCHOVIES (1,2,3)

COD (form 1,2,3,6,7) except (*)

41	LINGCOD*(1,2,3,6)
42	PACIFIC COD (GREY COD)
43	SABLEFISH (BLACK COD)*

ROCKFISH (form 1,2,3,6,7)

44	PAC. OCEAN PERCH
45	REEDI (YELLOW MOUTH)
46	GREENIES (YELLOW TAIL)
47	ROCKFISH
48	RED SNAPPER (YELLOWEYE)
58	IDIOT

HERRING

( ) indicates landed forms

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90	ROE HERRING (0,1)
91	FOOD HERRING (0,1)
92	BAIT HERRING (1,8)
93	POND HERRING (1,8)
94	(RESERVED)
26	BLANK CODES
29	
38	
99	

FORM

0	TONS
1	ROUND OR IN SHELL
2	DRESSED H/ON
3	DRESSED H/OFF
4	TAILS
5	FLAPS/WINGS
6	JAPANESE CUT
7	MEAT/FILLETS
8	DOZENS (ROUND)
9	PIECES (ROUND)

SHELLFISH landed form 1, except (*)

52	SQUID
53	PLANKTON
61	OCTOPUS
	SEA URCHIN (1,9):
69	- RED SEA URCHIN
02	- GREEN SEA URCHIN
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76	- MIXED (1,7)
77	ABALONE (1,7)
	CRAB (1,7,8,9):
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05	- RED ROCK/OTHER
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GREY COD - FORM 1, unless otherwise specified. BLACK COD - FORM 3, unless otherwise specified. LINGCOD- FORM 3, unless otherwise specified. RED, ROCK, BASS, SNAPPER, & ROCKFISH - FORM 1 unless otherwise specified.

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
21.	?	Request to compare the several variance estimates so far put forth by members of the Work Group and others and make recommendations on which to use.	Not started

Standardization of Hatchery Practices

22.	Cross, Birch, Comstock	Standardization of hatchery sampling practices, questionnaire is currently being developed to send out to hatcheries on current practices.	In progress

References Cited

Clark, J.E. & D.R. Bernard. 1987. A compound multivariate binomial-hypergeometric distribution describing coded microwire tag recovery from commercial salmon catches in southeastern Alaska. ADF&G, Informational Leaflet No. 261.

Clark, J.E. & D.R. Bernard. in press. Optimal allocation of funding between and within coded-wire tagging and sampling programs by evaluation of a compound probability density function. Biometrics.

Kuhn, B.R., L. Lapi, & J.M. Hamer. 1988. An introduction to the Canadian database on marked Pacific salmonids. Canadian Technical Report of Fisheries and Aquatic Sciences No. 1649: viii + 56 p.

Kuhn, B. 1988. The MRP-Reporter program: a data extraction and reporting tool for the mark recovery program database. Canadian Technical Report of fisheries and Aquatic Sciences No. 1625: 145 p.

Mathews, S.B., J. Skalski, & R. Cormack. 1987. Coded Wire Tag Workshop Final Report, 1987. Report to Columbia River Intertribal Fishery Commission.

Newman, K. 1988. Variance estimation of contribution rate estimates based on sample recoveries of coded-wire-tagged fish. Presented at the Workshop on Coded-Wire-Tag Statistics, Seattle, WA, 1988.

Schnute, J.T. *in prep.* The statistical futility of imbedded replicates.

Schnute, J.T., T.J. Mulligan & B.R. Kuhn. *in press.* Analysis of bias from salmon tagging data using an errors-in-variables model. Canadian Journal of Fisheries and Aquatic Sciences.

Shaul, L.D. & J.E. Clark. 1988. Use of coded-wire-tag data to estimate aggregate stock composition of salmon catches in multiple mixed stock fisheries. Presented at the Workshop on Coded-Wire-Tag Statistics, Seattle, WA, 1988.