

**ACCOMPLISHMENTS OF THE TECHNICAL SUBCOMMITTEE OF THE
CANADA-U.S. GROUND FISH COMMITTEE, 1960-2000**

by

S. J. Westrheim, Canada Department of Fisheries and Oceans, Fisheries Research Branch, Pacific
Biological Station, October 1984,
T. Jow, California Department of Fish and Game, October 1984
Robert L. Demory, Oregon Department of Fish and Wildlife, April 1992
Mark E. Wilkins, National Marine Fisheries Service, AFSC, April 1995
Mark E. Wilkins, National Marine Fisheries Service, AFSC, May 2001

Prepared and maintained at the request of the
Canada-U.S. Groundfish Committee at their 1983 Meeting

INTRODUCTION

The Technical Subcommittee (TSC) was created by the International Trawl Fishery Committee (now the Canada-U.S. Groundfish Committee) at the latter's initial meeting in Seattle, Washington, on November 4, 1959. The TSC first met in Portland, Oregon, on January 19-20, 1960. Dr. K. S. Ketchen (Canada) served as Chairman. Member agencies at the time were the Fisheries Research Board of Canada (now the Department of Fisheries and Oceans), Washington Department of Fisheries (now the Washington Department of Fish and Wildlife), Fish Commission of Oregon (now the Oregon Department of Fish and Wildlife), and the California Department of Fish and Game. In 1972, two more agencies became members -- the Alaska Department of Fish and Game and the U.S. Bureau of Commercial Fisheries (now the National Marine Fisheries Service).

The TSC has met at least annually since 1960 and submitted a processed report of each meeting to its Parent Committee.

The Terms of Reference of the parent committee, and perforce, of TSC, were as follows:

1. To review proposed changes in trawl regulations affecting fisheries of mutual interest before they are implemented.
2. To review the effectiveness of existing regulations.
3. To exchange information on the status of bottomfish stocks of mutual concern and to coordinate wherever possible programs of research.
4. To recommend the continuance and further development of research programs in order to provide a basis for future management of the trawl fishery.

These terms of reference did not apply to Pacific halibut, whose research and management are the responsibility of the International Pacific Halibut Commission.

The Terms of Reference remained unchanged until 1981 when modifications were approved by the member Governments to acknowledge the new management regimes arising from the 1977 promulgations of 200-mile economic zones by Canada and the United States. Following are the new terms of Reference:

1. Exchange information on the status of groundfish stocks of mutual concern and coordinate, whenever possible, desirable programs of research.
2. Recommend the continuance and further development of research programs having potential value as scientific basis for future management of the groundfish fishery.

3. Review the scientific and technical aspects of existing or proposed management strategies and their component regulations relevant to conservation of stocks or other scientific aspects of groundfish conservation and management of mutual interest.
4. Transmit approved recommendations and appropriate documentation to appropriate sectors of Canadian and U.S. governments and encourage implementation of these recommendations.

There was no change in the status of Pacific halibut, but representatives of IPHC have been regular attendees, as observers, at TSC meetings, since 1969.

The TSC has exhibited considerable flexibility in reacting to the diverse problems of the dynamic groundfish fishery off western Canada and the United States. It has coordinated coastwide fishery statistics and research projects; created working groups to deal in depth with specific problems; scheduled workshops at which appropriate specialists met to jointly deal with specific problems and exchange data and information; and provided an on-going forum for exchange of data, procedures, and regulations. The TSC has identified problems associated with the utilization and management of groundfish resources of importance to both countries, often well in advance of the public or agency awareness. Significant were the concerns expressed in 1962 by the TSC over the development of foreign fisheries and recommendations for stock assessments. TSC-coordinated Canada-U.S. research on Pacific ocean perch provided the basis for negotiation of bilateral fishing agreements between the United States and Japan and the USSR. Furthermore, the continually updated information provided the basis for quotas imposed in 1977 by Canada and the United States when they both promulgated their 200-mile zones of extended jurisdiction.

The importance of groundfish research and management activities was also recognized as both nations supported increases in effort. Combined agency staffs increased from 17 in 1960 to over 150 in 1983. In 1983, the TSC recommended that economists from each nation be invited to attend future meetings as observers. Both nations sent economists to the 1984 TSC meeting. In 1988, the TSC recommended to the Parent Committee that managers from both nations play a bigger role in the annual meetings, attending and participating in discussion sessions. Attendance at the TSC meetings by representatives of the Pacific and North Pacific Fishery Management Councils and their Canadian counterparts from the DFO Offshore Branch has been more regular since 1989.

Coordination

The single most important coordinated project was that of creating the PMFC Groundfish Data Series (1956-1984). This project began at the 1960 meeting and resulted in the annual publication of groundfish landings by species by month by TSC established International Statistical Area. Initially these records were limited to trawl landings in the California-B.C.

Region (Areas 1A-5E), but were expanded to include groundfish landings of all gear (1973), and expanded northward in 1975 to include all of Alaska (Areas 7A-8C). A further refinement in 1982 was reporting annual landings of "other" rockfish (other than Pacific ocean perch) by species. The Data Series was last updated in 1984 for 1981 landings and has since been replaced by the Pacific Fisheries Information Network (PacFIN), operated and maintained by the PSMFC on the mainframe computer at the NMFS Alaska Fisheries Science Center in Seattle.

Coordinated coastwide research projects, not handled by working groups or workshops, are listed chronologically below:

1960. Petrale sole stock delineation (tagging) and stock assessment to evaluate effectiveness, and problems associated with, the winter closure promulgated in 1958 for the B.C.-Oregon region. Results of the analyses led TSC to recommend abolishment of the closure.
1962. Reviewed stock assessments of Pacific cod, and concluded that the substantial decline in abundance was not due to the fishery, and hence no regulations were necessary.
1964. Recommended coastwide stock-delineation analysis of English sole, based on tagging. Results were published in PMFC Bulletin 7 (1969).
1965. Recommended compilation of a groundfish bibliography. Result was published as FRBC Tech. Rep. 246 (1971).
1967. Noted that: 1) collecting trawling effort by depth, as well as area, might eliminate the necessity of using qualification levels; and 2) catch-per-unit-effort as a measure of abundance has serious disadvantages, and a better measure is needed. In 1983 Canada published a report which utilized for the first time the depth arrays of landings and effort to allot trawling effort in a mixed-species fishery (Can. J. Fish. Aquat. Sci. Vol. 40).
1968. Continuing discussions of age-determination problems led U.S. agencies to establish an age-reading center in Seattle, Washington. Canadian specialists assisted in training readers to interpret Pacific ocean perch otoliths.
1969. Coordinated agency-wide update on sablefish stock assessments and an FRBC-WDF stock assessment of Pacific cod in Area 3C.
1972. Coordinated agency-wide reports on groundfish ageing techniques, biology of other rockfish, Area 3C lingcod stock assessment, and sablefish research programs.
1973. Coordinated coastwide sablefish tagging, for stock delineation.
1976. Coordinated joint Canada-U.S. field test of biomass-estimation techniques on Pacific ocean perch in Queen Charlotte Sound.

Coordinated preparation of other rockfish bibliography, published as FRBC Tech. Rep. 659 (1976).

1977. Coordinated joint Canada-Poland-U.S. field calibration of hydroacoustic equipment aboard the R/Vs G. B. REED, PROFESSOR SEIDLECKI, and MILLER FREEMAN, September 1977.

1979. Coordinated joint Canada-U.S. trawl survey of rockfish in the Dixon Entrance-Cape Ommaney Region, September 1979.

1960-80.

Coordinated recommendations of regulations concerning stocks of mutual concern with respect to domestic and foreign fleets. Particular attention was paid to Pacific ocean perch.

1984. Recommended that a fishery economic report be submitted annually by each country beginning in 1985.

Coordinated species endorsements for the break and burn otolith age determination method.

1986. Coordinated division of PFMC area 3C and INPFC Vancouver area into national components: 3C-S (US) and 3C-N (Canada); Vancouver -S (US) and Vancouver-N (Canada).

Recognized Mr. Jergen Westrheim and Mr. Tom Jow for their long-standing involvement in the TSC and numerous contributions. Both would be retiring within the year.

1987. The move to establish a POP working group was abandoned. Nothing further could be accomplished considering state of stock (low) and current management strategies.

Recommended that management agencies make attempts to determine bycatch, bycatch mortality and at-sea discard rates in all groundfish fisheries.

1988. Coordinated effort to revise the TSC agenda to focus more on transboundary stock issues and research, eliminate the US section meeting as being redundant, and not request annual economic reports.

Undertook measures to strongly encourage more participation in TSC meetings by resource management representatives from the NPFMC, PFMC, and appropriate Canadian counterparts.

1989. Recommended that Canadian and U.S. managers begin deliberations on whiting allocation.

1990. Recommended that a sablefish symposium be developed for early 1992.
Reiterated recommendation that managers deliberate whiting allocation.

1991. Recommended that a sablefish symposium be held in April 1993.

Recommended that OTC injection for age validation of Dover sole and other important flatfish be undertaken in the proposed 1992 flatfish survey.

Reiterated the need for rapid settlement of whiting allocation between the two countries.

Recommended that the HAL database be given one final review by contributing agencies and, subsequent to review, be made available upon request.

1992. Recommended that the cooperation between U.S. and Canadian scientists continue in the hydroacoustic survey of Pacific hake and that the two agencies (DFO and NMFS) cooperate in the design and implementation of surveys to assess other transboundary stocks, e.g. yellowtail rockfish, sablefish, etc. In particular, the utility of expanding the U.S. bottom trawl survey into Canada should be examined.

Recommended that member agencies direct significant efforts toward research validating the ageing criteria for thornyheads and rockfish species.

Recommended measures to assure the success of planned Dover sole age validation involving release of tagged and OTC injected (or otherwise marked) fish.

Recommended that a rockfish management workshop be convened to discuss rockfish management options and to advocate appropriate measures to manage this valuable marine resource.

Recommended that Canadian and U.S. managers initiate discussions to develop management plans in their respective countries to insure that conservation mandates are met with regard to yellowtail rockfish.

Once again, recommended bilateral discussions between Canadian and U.S. governments on allocation of Pacific hake resume as soon as possible and encouraged work towards agreement to resolve allocation before conservation issues become more serious.

1993. Reaffirmed the need for age validation of Dover sole and arrowtooth flounder, raising the possibilities of alternative methods such as radioisotope dating and use of alternative otolith marking compounds.

Clarified issues to be discussed at the rockfish management workshop. Proposed that the focus should be on management approaches for nearshore rockfish stocks and not on presentations on rockfish biology which, though informative, would detract from the objectives of this workshop.

Reaffirmed its recommendation to pursue a standard, well-documented procedure with the FDA for approving the use of OTC for fish age validation.

Noting that the combined Canada/U.S. harvest of Pacific hake continues to exceed the ABC and that this level of harvest is considered undesirable, recommended that bilateral negotiations again be encouraged to arrive at a quick resolution to this issue.

1994. Recommended to itself measures to facilitate timely exchange and dissemination of the information in agency TSC reports. The objective of this was to minimize routine reporting of activities and allow discussions during the annual TSC meeting to focus on addressing issues of concern solicited from member agencies and the Parent Committee in advance of the meeting.

Recommended that the two previous (1984 and 1992) reports detailing the accomplishments of the TSC, be combined, updated to the present, and submitted to the TSC.

Supported wide distribution of the Nearshore Rockfish Management Workshop summary document. Noting that all objectives of the workshop were not achieved, the TSC recommended that a future workshop should be considered to identify management alternatives for nearshore rockfish and other species in the absence of reliable fishery and biological data.

Reiterated their concern and recommendation for quick resolution of the Canada/U.S. Pacific hake allocation issue.

1995. Requested each member agency to summarize any cost-recovery or user-pay programs that are used by their agency.

Recommended following up 1994 Nearshore Rockfishes Management Workshop by convening to explore and develop recommended management strategies.

1996. Recommended US and Canada jointly review lingcod stock assessments and facilitate collaboration of stock assessment teams of both countries, in view of the transboundary issues involved.

Requested that agencies involved in research or management of mackerels or sardines begin submitting summaries of this work in 1997.

1997. Recommended establishing internet home pages for TSC and CARE on the PSMFC website to facilitate dissemination of information and reports.

Asked Parent Committee to consider urging US NMFS to support development and adoption of a multispecies FMP for pelagic species, including mackerels and Pacific sardine.

Recommended that Parent Committee pursue development of a formal coordinated physical and biological oceanographic monitoring program for the west coast of North America.

1998. Added annual discussions of Marine Protected Areas (MPA) to the agenda, including the role of MPAs in management and conservation of groundfish, research refugia, and Essential Fish Habitat.

Recommended that researchers involved in collection and analysis of Pacific sardine data review most recent information on stock structure and discuss appropriate assessment configurations.

Recommended to Parent Committee that they support a joint US/Canada technical review meeting of Pacific whiting (hake) stock assessments and recommend to US and Canadian managers a range of yield options for 1999.

Inter-Jurisdictional Fisheries Act (IJFA) funding focus shifted from coastal pelagics to nearshore rockfishes, available monies earmarked to fund new research. Necessitated interagency coordination to plan and prioritize research programs, including evaluating existing refugia and evaluation placement of proposed refugia.

1999. TSC website operational and proved to be an effective way to exchange information and agency reports. Discussed whether website can be used as the primary mode of circulating the final annual report of each TSC meeting. Asked Parent Committee for guidance as to the advisability of this suggestion.

Asked member agencies to assess the potential for conducting joint US/Canada stock assessment reviews for transboundary stocks of lingcod and yellowtail rockfish.

Requested that PSMFC present annual summaries of their groundfish activities, particularly PacFIN.

2000. Recommended interagency coordination of sablefish survey activity in the form of a survey planning working group to review methodologies and examine the potential for coordination.

Recommended exploring among member agencies the potential for establishing a coordinated collection and cataloguing of tissue samples for genetic studies of critical

groundfish species. Such a program would lead to a tissue sample bank with the potential for access by investigators from cooperating agencies.

Working Groups

As the groundfish fisheries increased in complexity, the TSC responded by creating working groups to undertake specific problems, deal with them between meetings, and usually submit written reports to subsequent meetings. During 1969-89, TSC created 20 temporary working groups, and in 1982, a standing group called CARE (Committee of Age Reading Experts) was created. Following is a chronological list of working groups:

WORKING GROUP	TIME ESTABLISHED	RESULTS
1. Lingcod stock assessment in Area 3C	1969	Report submitted at 1970 TSC Meeting
2. Sablefish stock assessment, coastwide	1969	Report submitted at 1970 TSC Meeting
3. Pacific ocean perch stock assessment, B.C.-Oregon	1970	Report submitted to 1972 TSC Meeting, 1972 INPFC Meeting, and published as FRBC Tech. Rep. 369 (1972)
4. Pacific ocean perch stock assessment -- II. B.C.- Oregon	1973	Report submitted to 1974 TSC Meeting, 1974 INPFC Meeting, and published as FRBC Tech. Rep. 690 (1977)
5. Pacific cod stock assessment in Area 3C	1973	Report submitted to 1974 TSC Meeting
6. Identify species and areas of concern other than Pacific ocean perch and sablefish	1973	Report submitted to 1974 TSC Meeting
7. Other rockfish species composition, landings, effort, and LPUE	1975	Report submitted to 1977 TSC Meeting, 1977 INPFC Meeting, and published as WDF Tech. Rep. 34 (1977)
8. Pacific cod/lingcod/petrale		Postponed due to priority

WORKING GROUP	TIME ESTABLISHED	RESULTS
sole multispecies stock assessment in Area 3C	1976	changes in one agency. Dissolved in 1978.
9. Pacific cod/lingcod/rock sole multispecies stock assessment in Areas 5A and 5B	1976	Postponed due to priority changes in one agency. Dissolved in 1978.
10. Sablefish statistics, biology, and stock assessment	1977	Report submitted to the 1978 TSC Meeting
11. Shelf rockfish stock assessment	1977	Reported to Interim 1977 TSC Meeting
12. Pacific ocean perch	1977	Report submitted to 1978 TSC Meeting
13. Pacific ocean perch stock assessment in Area 3C	1981	Report submitted to 1982 TSC Meeting
14. Pacific hake stock assessment, coastwide	1981	Report submitted to 1982 TSC Meeting
15. Sablefish stock assessment, coastwide	1982	Report submitted to the 1983 TSC Meeting
16. Sablefish tagging evaluation	1983	Report submitted at 1984 TSC Meeting
17. Pacific whiting. Joint Canada-US stock assessment with special attention to a technical fix on migration.	1981	Progress report submitted to TSC in 1989. Work was to continue.
18. Dover sole. Stock delineation using all tag return data from all west coast studies.	1985	Accepted for publication by the North American Journal of Fisheries Management, 1990.
19. Yellowtail rockfish. Provide joint Canada-US stock assessment.	1988	Progress report submitted to TSC in 1990.
20. Dover sole. Develop	1989	No progress as of April 1992.

WORKING GROUP	TIME ESTABLISHED	RESULTS
protocol for Dover sole age validation.		

Workshops

During 1978-94, eleven workshops have been scheduled by TSC to provide opportunities for specialists to meet and deal with specific technical problems. Following is a chronological list of workshops:

WORKSHOP	TIME	PLACE
1. Age determination	April 1978	Nanaimo, B. C.
2. Hydroacoustics	April 1978	Seattle, WA
3. Sablefish	February 1978	Seattle, WA
4. Recreational fisheries	1980	Monterey, CA
5. Lingcod	1981	Nanaimo, B.C.
6. Pacific hake (whiting)	1982	Seattle, WA
7. Age determination I	January 1983	Pacific Grove, CA
8. Age determination II	April 1983	Seattle, WA
9. Age determination III	August 1983	Nanaimo, B.C.
10. Sablefish Symposium	April 1993	Seattle, WA
11. Rockfish Management	April 1994	Portland, OR
12. Lingcod assessment	March 1997	Olympia, WA
13. Sardine Symposium	May 2000	La Jolla, CA

EXCHANGES

- 1960 Synopsis of otter trawl regulations in effect January 1, 1960.
- 1961 Summary of petrale sole tagging experiment results.
- 1962 Summaries of recent petrale sole taggings and returns.
- 1963 Catalogue of market sampling techniques used by Canada, Washington, Oregon, and California.

Revised summary of otter trawl regulations in effect July 1, 1963. Preliminary results of tagging experiments of all agencies (exchanged annually after 1963).
- 1966 Groundfish tag release inventory, 1955 onward (updated annually). Preliminary results of completed tagging experiments.
- 1969 Synopsis of otter trawl regulations in effect July 1, 1969.
- 1970 Synopsis of otter trawl regulations and their rationale as of July 1, 1970.
- 1971 Historic trawl fishery data of all agencies. Current market sampling techniques of all agencies.
- 1975 Summary of coastal groundfish regulations in effect July 1, 1975.
- 1979 List of reports published by TSC agencies for the past year (appended to TSC annual report 1979 and annually thereafter).
- 1997 Logbooks used by member agencies to collect groundfish fishery information, including example logbook pages (appended to TSC annual report 1997 and annually thereafter).
- 1998 Information pertaining to the use of GIS systems used by member agencies, such as software, basemaps, and sources of bathymetric data (appended to TSC annual report 1997 and annually thereafter).

History of TSC meeting locations, hosts, and chairpersons.

<u>YEAR</u>	<u>DATES</u>	<u>LOCATION</u>	<u>HOST</u>	<u>CHAIR</u>
1984	June 20-22	British Columbia	Westrheim	Rigby
1985	June 25-27	Juneau, AK	Morrison	Westrheim
1986	June 19-19	Ashland, OR	Demory	Westrheim
1987	June 9-11	Seattle, WA	Jagielo	Demory
1988	June 7-9	Carmel, CA	Henry	Demory
1989	June 6-9	Ladysmith, BC	Saunders	Jagielo
1990	June 5-7	Sitka, AK	Bracken	Jagielo
1991	June 4-6	Newport, OR	Barss	Wilkins
1992	May 5-7	Seattle, WA	Jagielo	Wilkins
1993	May 5-7	Point Lobos, CA	Thomas	Saunders
1994	May 3-5	Nanaimo, BC	Saunders	Saunders
1995	May 2-3	Seattle, WA	O'Connell	Bracken
1996	May 7-9	Newport, OR	Barss	O'Connell
1997	May 6-8	Tiburon, CA	Thomas	Barss
1998	May 5-7	Olympia, WA	Jagielo	Barss
1999	May 4-6	Seattle, WA	Methot	Barnes
2000	May 9-10	Nanaimo, BC	Saunders	Barnes
2001	May 8-10	Newport, OR	Schmitt	Schmitt
2002	May 7-8	Point Lobos, CA	Barnes	Methot

ACKNOWLEDGMENTS

The authors wish to thank all members of the Technical Subcommittee (Messrs. Jow, Thomas, Rigby, Bracken, Robinson, Barss, Tagart, Jagielo, Wilkins, Wilderbuer, and Drs. Adams, Lenarz, MacCall, Methot, and Tyler) and the Parent Committee (Dr. Harville, Messrs. Thornburgh, Six, Hanson, Phillips, and Zyblut and Ms. Adams) for reviewing the manuscript.