Minutes of the Technical Sub-committee of the Canada-United States Groundfish Committee

Forty-first Annual Meeting
May 9-11, 2000
Nanaimo, British Columbia

I. Call to order

Chairman Barnes called the meeting to order at 1:07 PM Tuesday, May 9, 2000. He thanked PBS and Mark Saunders for hosting the meeting. Mark Saunders thanked everyone for attending the meeting in Nanaimo.

II. Appointment of Secretary

Mark Saunders appointed Lesley MacDougall as secretary.

III. Introductions

Introductions were made around the table. A general list of participants was passed around for updating.

Canada: Department of Fisheries and Oceans (DFO)

Rick Stanley, Pacific Biological Station, Nanaimo, B.C.
Shayne Maclellan, Pacific Biological Station, Nanaimo, B.C.
Lynne Yamanaka, Pacific Biological Station, Nanaimo, B.C.
Maria Surry, Pacific Biological Station, Nanaimo, B.C.
Jackie King, Pacific Biological Station, Nanaimo, B.C.
Marilyn Joyce, Groundfish Management Unit, Vancouver BC
Mark Saunders, Pacific Biological Station, Nanaimo, B.C.
Sandy McFarlane, Pacific Biological Station, Nanaimo, B.C.
Jeff Fargo, Pacific Biological Station, Nanaimo, B.C.

United States:

Tom Barnes, California Dept. of Fish & Game, La Jolla CA
Stephen Phillips, Pacific Sates Marine Fisheries Commission, Gladstone OR
Victoria O'Connell, Alaska Dept Fish & Game
Mark Wilkins, Alaska Fisheries Science Centre, Seattle, WA (NMFS)
Martin Dorn, Alaska Fisheries Science Centre, Seattle, WA (NMFS)
Dave Clausen, Alaska Fisheries Science Centre, Juneau, AK (NMFS)

Tom Jagielo, Wash. Dept Fish & Wildlife, Olympia, WA
Bob Mikus, Newport OR, Oregon Fish & Wildlife
Michael Schirripa, Northwest Fisheries Science Centre, Newport (NMFS)
Bill Barss, Oregon Department of Fish & Wildlife, Newport OR
Kristen Munk, Alaska Department of Fish & Game, Juneau, AK

IV. Approval of 1999 report

Last year's report approved as presented.

V. Approval of 2000 Agenda

Barnes: Under heading VI, a Pacific Sardine working group is listed. There is no such group, that discussion should perhaps occur under heading XIII, C 12, as last year.

VI. Working Group Reports

A. Committee of Age Reading Experts (CARE)

Munk: report is finalised, updated at CARE website. The TSC wanted more hands on at workshop (the next one is next week), and there will be at least 6 teaching microscopes available at the workshop. The age structure exchange will be finalised in a few months. Every CARE report in the future will update the exchange and there will be a hyperlink on website. The exchanges on the priority species are not finalised yet but will be soon. Shayne MacLellan is working on the CARE manual, which will also be updated on the website.

Munk: age readers have continued to express concern about the fact that there is little interaction between age reading staff and managers. Age reading staff may benefit from the research and new patterns reported by the managers. A presentation at the Sitka meeting regarding sablefish ageing accuracy raised many concerns. The nature of the experiment used in the study to assess ageing is not comparable to production sablefish ageing. Much of the error may have been caused by the difficulty in translating the start marks from digital imaging to the same position on the embedded otoliths. Industry needs to know that this experiment did not adequately represent ageing methods used by us.

Dorn: the point being made is that in general, sablefish agers do not feel that the outlook is as negative as reported in this study.

Munk was asked to summarised the report being discussed

Munk: Twenty otolith specimens embedded in resin were given to otolith readers. On a digital image of each otolith was a mark that was to be used as a starting point for ageing. This mark was supposed to be identifiable on the embedded otoliths themselves, and the "age" from that mark outward was known. This experiment was not representative of the methodology used in production ageing. The statement in the report that two annual marks are laid down each year is not necessarily accurate or proven. Percent agreement between readers and the known age were measured with only 35% agreement being reached. However, it is average % error or the CV that is important, not % agreement.

McFarlane: you're not suggesting that we are happy with sablefish ageing?

Munk: No. Sablefish ageing is still considered the most difficult. But it is unfortunate that PBS doesn't do sablefish ageing anymore.

McFarlane: why is it unfortunate if we were not getting results accurate enough to be useful, for example, for recruitment studies.

General agreement (Munk, McFarlane, King) that there are problems, precision may be great (for example) but accuracy may suffer, there is a need to determine (and vocalise) the level of accuracy that is required for a particular study, and the need for ongoing methodology research.

Saunders: if that report is problematic perhaps a reply is required.

Munk: we need to go back to old samples, re-age them using new methodologies, and see if we get the same results. Authors of the 20 fish study will be contacted, a response letter on behalf of CARE will be sent to them, and they will be invited to attend the CARE workshop.

McFarlane: if that study was substandard, hopefully the review process would deal with it.

Concern about how the report was received by industry, and how the ageing process is now perceived by industry.

Munk: CARE's recommendations are found in Appendix 1, the next workshop will address the suggestions raised by TSC.

Saunders: inquired about Dover sole ageing and why DFO was not involved in the exchanges/workshop. Mikus: yes Dover sole ageing is done at PBS on a small scale and they did not participate in the recent meetings because of the small amount of Dover sole ageing they have done so far.

McFarlane: PBS is still collecting sablefish structures, looking for a better way of ageing them, production ageing allows ageing of more fish, but there's a trade-off. It may be better to have better ageing of 500 to 1000 fish, or less confident results for 3 – 4000 fish.

Barnes: cowcod: the best ageing method is a thin XS and polish: but it takes months to age a few hundred fish. Problem: ~200 fish provide very little information on variability of recruitment or mortality, and need a larger sample size for recruitment or year-class success estimates.

McFarlane: perhaps different accuracies are suitable for different studies. I am always in favour of getting as accurate as possible.

B. Pacific Whiting Working Group

Saunders: The Canada/U.S. negotiation resumed this year but with no resolution. There will be further work for the working group in support of the upcoming negotiation meetings. There will be a joint assessment conducted this year but the timing of the assessment and the review has not been determined. A joint review is preferred. It was noted that while there are new age compositions the assessment is unlikely to change dramatically until a new triennial survey is conducted in 2001.

Joyce: Questioned whether new yield options will be tabled and Saunders indicated yes
Joyce: asked when the report will be finalised.
Dorn: was hoping for summer, but that doesn't fit the DFO schedule, but NMFS is committed to the joint review process.

There was discussion about the possible transfer of hake survey and assessment responsibilities to either the NW or SW fisheries Science Centers. Saunders suggested that it would be a good idea to have one survey with overlap, where the group taking over Alaska's work, Alaska, and Canada all worked together.

C. Lingcod Working Group

Jagielo: This year was the first where lingcod stock assessment was determined for the entire US coast rather than separate assessments for the northern and southern coastal areas. The disparity in stock assessment schedules in Canada and the US is problematic. Trans-boundary assessments were not attempted this year. Over 18,000 lingcod were re-aged, using a more involved process. Fin rays that provide clear ages are used to establish criteria for fish that are more difficult to age.

Munk: we use otoliths and have found sex-specific differences in the ageing precision (perhaps related to spacing of annuli). Some of the "noise" Tom mentioned may be this difference.

Jagielo: those differences have been seen and noted in the fin spine samples. We're staying with fins. Question: how long does it take to age otoliths.

Munk: If otoliths are dried, it takes 6 weeks to rehydrate them, and then reading time is less than required for reading fins.

Barnes: lingcod is one of three species determined to be over-fished that are now part of an adopted rebuilding plan – status?

Jagielo: lingcod, POP, and bocaccio – less than 25% of unfished spawning biomass remains. Procedures to rebuild in progress, but there is no formal plan as of yet. The timing of stock assessment plans isn't always useful. Canary and cowcod are being designated this year. There is not a lot of standardisation right now. Statute requires that the stocks be reviewed every two years, but does not require that a whole stock assessment be done (just a management review).

Barnes: for bocaccio and lingcod the requirement and rebuilding targets (removals) are much lower than previously allowed. We have new restrictive management steps for the recreational fishery. Fishing is prohibited for 2 months at the start of each year, to reduce overall take and to reduce in particular the harvest of males guarding nests. This is a significant change.

O'Connell: we've been trying to change lingcod management, bring recreational catches into the TAC. Putting sport and commercial fishery landings together is not easy. Is there no recreational catch in JDF?

Jagielo: very little.

Barss: In 2000, Oregon has begun using slot limits for recreational catches of lingcod. Only fish between 24" and 36" may be retained. Minimum size limit was established to protect juveniles and some nest guarding males. The fishery is not closed during the spawning period. The minimum size (24"), may be a little small to protect first time spawning females.

O'Connell: our limits: 27" in SE, 35" in the central Gulf.

Barnes: slot limit discussed but not pursued in California. Size limit increased from 24 to 26" to reduce catch. An upper limit makes little difference to the fishery in California since the fish are smaller, and industry is opposed as the Party boats don't want to have to throw back potential derby winning fish.

Barss: Commercial fishers can still take fish larger than 36" (all fish over 24 inches), so lingcod released by sport fishers can be taken and retained by commercial fishers.

Barnes: lingcod and rockfish: sport catch is removed from the commercial catch quota. Now that's not feasible. Targets can't be reached by reduction in one fishery alone. Commercial fishery has taken the biggest reduction, and will in turn get the biggest increase should the stock increase in the future.

O'Connell: how accurate do you think the landing recreation fishery landing data are? Why are the recreational reporting programs voluntary?

King: recreational fisheries are very expensive. Definite difficulty to make it non-voluntary. A lot of recreational fisheries are floating lodges and it's tough to keep track of them. Dixon, WCVI, remote and hard to get personnel there. No special license required for charter businesses.

O'Connell: lingcod isn't a target in recreational fisheries, but they're taking #'s comparable to commercial – what will happen when they are a target?

Barnes: some of our programs are voluntary – like observers. Problem with authority: can we put an observer on a boat taking the place of a potential paying customer. Log book program is required, and party boat operators can be cited. The log books provide a long and useful data set. Average landings determined from a 3 year average for rockfish, and a one year average for lingcod.

Barss: Oregon is increasing its work on lingcod sampling and research. More effort is being placed on sampling recreational catches. We are fielding a research study to look at delayed mortality in released lingcod from trawl and hook and line catches through an experiment using ocean cages and our new ROV. We also have a study to look at shrinkage of recreational catches held on ice, because of suggested shrinkage and enforcement of the new slot limit.

King: The Strait of Georgia commercial lingcod fishery has been closed since 1990, and is closed yearly from June – Sept (Oct) for anglers, size limit of 65cm (25"), daily limit of 1 (or 2) a day, plus seasonal limits. Don't know on West Coast how creel surveys deal with underwater spearing.

Joyce: interest by diving council lobbying for more protection.

King: lingcod token spp for MPA suggested as one that would benefit from protection. May re – initiate nest density surveys in spring through divers associations.

Barss: conservative on lingcod – any signs of rebuilding yet?

King: no signs so far. What we know about ecosystem changes etc gives us no reason to expect to see improvement yet – maybe the last two years could have shown change. Working with genetics lab for baseline data. Focus: stock membership in SOG and WCVI of lingcod. Fall: coast wide SA for lingcod (1st since '96): modified version of the 96 rept. Using a report – card approach. Ocean, climate and pre-recruit indices, ecosystem conservation.

Jagielo: What type of genetics analysis is being conducted?

King: microsatellite. Start this summer, go for 2 years. $ from MPA's, looking at stock membership and how large a refugia needs to be.

Saunders: (for Jagielo): Is the Washington survey bottom trawl or troll?

Jagielo: Troll. Juveniles and adults are captured. It's juvenile habitat, primarily male lingcod, from very shallow (kelp areas) to 10 fathoms.

Saunders: Is the lingcod working group active?

Jagielo.: this is it, we speak to each other.

Saunders: transboundary work?

Jagielo: None to speak of, other than exchanging data for separately prepared Canadian and U.S. stock assessments.

D. Yellowtail Rockfish Working Group

Rick Stanley (DFO) summarised the activities of the Yellowtail Rockfish Working group. Canada conducts a yellowtail assessment from central coast VC north every 4 years independent of the U.S. assessment. Jack Taggart (WDFG) updates U.S. assessment with results from the triennial trawl survey. The most recent survey showed an increase in yellowtail rockfish. Coastwide as well as in the three putative stocks. The U.S. assessment working group provides DFO with the assessment for Area 3C. We require a coast-wide genetic study of spawning yellowtail rockfish. They have BC samples but not US.

Wilkins: Can they be picked up on slope surveys (need 100 fish from each location) – we will try to make a tow for them in mid – November.

Stanley: I will comment to J. Taggart.

Saunders: Are 3C fish part of a transboundary stock?

Stanley: It would appear that they're the same stock but we will know better with the genetic testing. I have tended to recommend a smaller 3C quota than the P.M.F.C. But we fish the whole quota and there is a by-catch in the hake fishery.

Barss: There is an attempt to lower yellowtail by-catch in the Pacific fishery as well.

E. Sardines

Barnes: July 1, 1999 Kevin Hill used CANSAR for sardines, and arrived at:

>1 million age 1+ sardines for California

~1.5 million coast wide. Sardine management is moving from California jurisdiction to federal. Quota, using the coastal pelagics method: 120 000t, which was not attained. The demand for market squid, fished using the same boats, is currently greater.

The total sardine harvest was:

60,000t in California

55,000t in Ensenada, making it the largest sardine fishery since the 1940s.

The harvest control rule – requires environmental information be included in allowable harvest calculations e.g. information about productivity vs. water temperature. There has been some discussion at council level about making some proportion of the quota available for Oregon and Washington fishing.

(Determined that the quotas discussed above were for California and Ensenada only, based on population numbers from California only).

Jagielo: In Washington there has been discussion with industry about having observers aboard, due to concern about salmon by-catch.

Barnes: the same concern and observer discussion has been raised for anchovy reduction in the San Franciso area.

Phillips: discussed the Sardine Symposium 2000 to be held in 2 weeks, bringing together scientists from Mexico, Canada, Japan, and the United States. This symposium was developed from a request at the last TSC meeting for a larger information sharing event. Will include presentations and small group sessions, at Scripps and SWFSC.

Discussion about the nature of the sardine stock along the north Pacific coast. It is assumed that they are all one stock. CalCOFI and egg-pump data indicates an expanded sardine spawning area, moving north from California, and moving further offshore. Sardines may have spawned off Columbia and Barkley Sound in 1997 and 1998, with the northward movement of the stock beginning in the early 1990's. Minimum stock estimates for B.C. are 85,000t in 1997, and 75,000t in 1999. At the time of the sardine movement north, conditions were favourable for such movement, and there was a change in phytoplankton and zooplankton assemblages. That condition system as of mid-1999 had changed, and early studies for this year indicate that they may not be as far north as in the rest of the 90's. But historically they may not have shown up in Canada until July, so the summer studies from this year may provide better information.

McFarlane: the sardines captured off the west coast of Canada are older than the southern counterparts, ranging in age from 2 to 8, with an average of about 4 years. A small experimental fishery in BC landed 25 – 200t annually from 1995 to 1997, 300t in 1998, and 1200t in 1999 the TAC for 2000 is 5000t. The fish are used for Japanese bait, and are high quality. There is an attempt to develop a market here.

McFarlane: The zooplankton assemblage changes indicate that overall copepod abundance is lower, chaetognath abundance is higher, and boreal copepods were decreasing in abundance as more southern copepod species became more plentiful. But this trend appears to be changing again.

Discussion about including pelagics in the groundfish committee. May allow better co-ordination and management for transboundaries.

Saunders: suggested the improvement of communication and management of trans-boundary species be a recommendation from TSC to the parent committee.

VII. Other Topics

A. IJFA Funding:

Barnes: Same funding as last year. Summary of projects:

- California:
  - Nearshore biological groundfish
  - Species composition
  - Bottom type
  - Tag and release, GSI
- Washington:
  - Mapping
- Oregon:
  - Biological sampling of nearshore fish

Discussion of definition of "nearshore fish": black rockfish, blue, brown, cabezon, and greenling, fish that fall through the sampling cracks. Nearshore finfish definitions are a problem with CDFC, and part of the IJFA funding received for biological data includes a list of 120 species and counting.

There is a need to ensure there is no conflict between federal and state definitions, and nearshore FNP and "shelf" species (or slope spp. federally). The approach so far has been to identify how the fishery for a species operates and have that match a way to biologically define nearshore.

B. Age Validation

Barnes: age validation:

- Updated list of species and technology
- Prioritised list of species

Munk: within CARE the list is updated whenever there is a need – the list can be found on the CARE website. Sablefish, hake and lingcod received structure exchange, and a letter will be written to Pearson regarding sablefish (regarding borrowing of OTC sablefish otoliths).

McFarlane: Radiometric work may not be able to address the suggestion in his report that there are two annual marks, unless the age of the fish is already known.

Munk: the paper by Kastelle supports the general findings, and should be a good indication.

Discussion of the need to revisit the methodology used by the three labs – one lab takes a different section than the Canada lab, his measurements on first and second rings are smaller, and time of collection criteria, and geographic changes may affect results.

Discussion about the priority list. Need to keep hake on the list, and shortspine thornyhead need to become a higher priority, as this fishery has become an issue. Dorn: some discrepancy in year classes and age composition for hake between U. S. and Canadian labs – there has not been any recent calibration. Suggestion that exchanges need to take place often, even where there is no calibration issue.

Phillips asked for adjournment for the day.

WEDNESDAY meeting called to order at 8:08.

C. GIS

Schirripa: sampling of map overlays based on GIS and greyspace. Current base maps include two data sets:

1. coastline from west coast boundaries to economic exclusion zone.
    a. survey fish ops, bottom and midwater trawls
    b. NMFS egg and larval data
    c. CalCOFI egg and larval
    d. Trawl log book (commercial)
    e. Hook and line (PacFIN) landings (#'s and weights)
    f. NOAA west coast atlas
    g. Kelp bed distribution
    h. Software

2. bathymetric: bathymetry and linear contours SWFSC
(no dedicated GIS personnel)

Barnes: California has been working on a program started in 1997-1998. GIS analyst for marine region contracts with universities to develop GIS databases. GIS dataset exists for shelf substrates, 1:250 000, for all of California coast from 20m out to slope. Some sections of the shelf as well – started in southern California bight, which will be ready in a week or two, with the whole shelf completed by year's end.
Baseline bathymetry for the shelf to be done. Not just contours. Includes polygons with slopes (can be used to simulate 3-D).

One year (1989) kelp bed information – digitised entire coast, and possible a year in the 1990's will also be available. (information collected because the kelp beds are policed for harvest).

Contract with the corps of engineers – for bathymetry for the shallowest 20 m (not included in the other data sets). Small part of the coastline for a pilot program (concerns about damage to marine life / human eye damage from lidar rays). Examples of the substrate classification will not be available until next week.

O'Connell has some examples of a habitat classification scheme and a copy of a paper by Green et al. on deepwater habitat classification published in Oceanologica Acta this year..

Wilkins: discussed work by Mark Zimmerman on percent substrate type for most of the US west coast and part of Canada, relating fish distribution, and groundfish size, to substrate type to see if there is any correlation (in his paper). GSC, Ocean Science (U of Sydney, Australia)

Barnes: suggested that the work that was being done for the California coast could be co-ordinated with the studied mentioned above.

Wilkins: discussed work for Alaska – ARCVIEW for PC, pg. 46 of his report.

Saunders: Use of ARCVIEW is increasing but there are no dedicated GIS personnel, basically it's individuals learning how to use the software on their own. Observer program has 100% coverage and to visualise these data a seamless basemap, including bathymetry has been developed for the BC coast. Shellfish has been using Quester Tangent system for shellfish (bottom classification), IOS is mapping the Strait of Georgia with multibeam sonar. There is room to start co-ordination within DFO and among other agencies on the classification of bottom.

O'Connell: for Alaska we can get backscatter data from the National Ocean Service but unsure of its utility. We will also do small multibeam project with Glacier Bay Park this summer (included in the rockfish portion of report).

D. Webpages

Barnes: a few weeks ago Lisa Bowman offered to work on our website, to make changes and improvements – anyone with suggestions can talk to me. Decided to put draft agency reports, post last year's TSC report, and the minutes from the Parent Committee meeting.

Jagielo: questioned whether or not a direct link to the minutes would be useful (currently there is no direct link).

Discussion: there is a new firewall, could be made more public, however it is still possible for people to link up indirectly. It was designed to reduce paper requirements, and a disclaimer could be added explaining that the site contained preliminary information. Possibly the solution is to have a more public site, including a short description of the TSC, and finalised reports, and a more indirect site where there are minutes, draft reports, list of TSC members and contacts, which will allow researchers from north and south to co-ordinate their information. There is a link to CARE, but not from CARE back to TSC, which may be changed. Decided that a note of thanks should be sent to Liza Bowman for her efforts on the webpage.

Saunders: Maria Surry has been working on the DFO Groundfish webpage, that provides details of groundfish work. The address is www.pac.dfo-mpo.gc.ca/sci/sa-mfpd. Will send management website address and marine fish population dynamics website addresses to Liza, to add as a link to the TSC website.

Munk: asked if there was anything else anyone would like to see on the CARE website. Currently the manual, methodology, and structure exchange are available.

E. Marine Reserves

Yamanaka: The new Oceans Act has lead to a new Ocean's Directorate within DFO that will focus on policy and strategies for ecosystems management, integrated coastal zone management and marine protected areas. The former Minister designated Bowie Seamount, Endeavour, Gabriola Pass in the Strait of Georgia, and Race Rocks, as pilot MPA's. Research work funded by the Ocean's Directorate includes microsatellite DNA analyses of yelloweye rockfish, database development and a submersible survey at Bowie Seamount in the summer 2000.

The Ocean's Directorate have worked on formulating a framework and policy for MPA's implementation. There are some treaty/aboriginal fisheries issues in the Strait of Georgia.

Most studies at Race Rocks are co-ordinated with Pearson College, e. g., habitat mapping with multibeam (also being done at Gabriola Pass). None of the MPA's are designated: they are pilots only.

O'Connell: will they be no-take?

Yamanaka: No decisions have been made. There are two permitted fisheries at Bowie Seamount and rockfish fishery closures at the Race Rocks and Gabriola Pass areas. The concept for these MPAs is modelled after terrestrial parks where zones are identified and uses within these zones are determined. Some areas may be preserved while others are multi-use. The public consultation process will be long and involved. In 1999, areas along the coast were closed to directed hook and line rockfish fishing. In 2000, these closures were extended to the directed halibut fishery.

O'Connell: Discussed a 3.2m^2 reserve for bottom fishing and halibut in Alaska, off Sitka. The Board of Fisheries voted to leave it open for salmon trolling. No bottom fish are allowed however. No sport, commercial, or subsistence fishing allowed for groundfish or halibut. By-catch in the salmon fishery is not directly monitored, but there is a requirement for "full retention": All by-catch must be kept aboard, and sale of by-catch is allowed only up to each licence's portion of the by-catch quota. Full retention is not required on outside fisheries, only coastal waters.

Barnes: discussed California's Marine Life Protection Act. Requires that CDFG has a master plan for marine reserves by January, 2002. They will analyse existing reserves, make recommendations, explain what a network of marine reserves in California should look like. Public consultation and trial will be necessary in the next year. Will be using a GIS approach to how reserves can be used as a management tool – for example to manage cowcod in the California Bight. History of cowcod: recent landings are 20,000t, estimated southern portion of cowcod population is <10% of unfished stock size, recommended removals just to maintain the stock at current levels are only 5,000t – obvious major decrease in landings is required. Noticeable serial depletion of catch rates by block, a few offshore banks left where catches are good. Possibility of choosing a few areas of good abundance for reserves, to help boost cowcod stocks. Positive response from industry. It has been suggested that marine reserves would not be useful in providing protection for market squid. The habitat classification discussed earlier will be useful for determining appropriate marine reserve areas. Although there is no

requirement in the Marine Life Protection Act for identification and protection of ecologically distinct areas, there is a push for ecosystem-based organisation and management, rather than species based management.

Yamanaka: In Canada, the Species at Risk Act has recently been introduced to Parliament but is not yet law. When species are identified for protection under the Act, conservation units will then be determined. Three rockfish species are on the preliminary list and little information is available to determine conservation units for these species.

Barnes: in California the sites designated for protection aren't defined by ecosystem parameters, it is mainly to ensure that quotas are not exceeded for a particular species. There is very little way to ensure that low catch targets are not exceeded, without a lot of observer programs and logbook, etc. Clausen: any discussion of listing cowcod as an endangered spp? Barnes: not in my department, but maybe from NGO's. Wilkins: the strategy of NGO's so far has been to continue to implore council to do the right thing, without directly proposing specific changes and pushing for them. O'Connell: mentioned John Butler, who has an abstract on cowcod with stock assessment information.

VIII. Review of Agency Groundfish Research, Assessment and Management

A. Agency Overview

Barnes: each agency can expand or clarify their reports, otherwise the rest of the meeting will be a question period.

Barss: ODFW is still in the process of reorganising. By this summer we expect to be aligned under three groups, a research program, a program to monitor/sample landings, and a data group.

Barnes.: In California there are 4 new positions (two fisheries manager and two analysts) working on a nearshore fisheries management plan.. They will be responsible for leading the draft fisheries management plan, co-ordinating public input, and incorporating biology and fisheries information. The fisheries managers are: North – Connie Ryan South – Sandy Owen.

B. Multi-species Studies

Wilkins: The crab/groundfish trawl survey in the Bering Sea has been, and will remain, an annual survey, due to its use by ADF&G and NMDFS to set crab quotas for the Bering Sea. The Gulf of Alaska trawl survey and the Aleutian Islands trawl survey had been conducted triennially and now will be conducted biennially in alternating years. The

Bering Sea slope survey will be conducted with the Aleutian Islands shelf survey in even years. Gulf of Alaska shelf and slope (integrated) will be done in odd years.

The Fisheries Behavioural Ecology Program gave a report this year (Mike Davis), noting two kinds of research:
1. By-catch: potential for recovery and survival of fish caught on trawls.
2. Behavioural ecology: pollock and sablefish response to changes in the environment.

Dorn: Biennial schedule planned for acoustic surveys. Summer study in East Bering Sea, mainly to survey pollock, and possibly monitor rockfish populations.

Clausen: SEIS (Supp. Environmental Impact Statement) Initiated in response to lawsuits from environmental groups, claiming current assessments do not account for impacts to marine animals other than those being fished (e. g. marine mammals). Yamanaka: noted that seabird by-catch was an important topic at the Western Groundfish Conference. O'Connell: discussed a new legislation to protect the seabirds, which has resulted in a great reduction in seabird deaths by a few simple modifications to fishing gear. If more albatross are killed, a moratorium on longline fishing in the Bering Sea. The industry is accepting the changes because there is an understanding that seabird deaths could result in fishing closures. Other by-catch deaths, such as sperm whale, may become important in the future. Yamanaka: there will be a national meeting in Halifax to determine what level of seabird deaths will be acceptable.

Saunders: no large-scale multispecies projects to report.

Dorn: Hatfield multispecies studies – Dr. Jean Rogers defining fishing strategies. Observer data from 1980 and logbook data from 1996. Species assemblage, and strategy differences. Looking at the possibility of a changing species composition. Linkages between juvenile groundfish catch assemblage to environmental changes in conjunction with Tiburon lab in California. Juvenile abundance with environmental variables.

Discussion of identification requirements on rockfish by-catch. O'Connell and DFO delegates suggested that rockfish should have to be identified to the most specific level possible, rather than identified to groups of rockfish species only. Oregon delegates suggested that the number of rockfish species caught off the Oregon coast is too numerous for fishers to separate them at sea (not enough bins on the vessels) or separate all species at the processors at landing. Species with separate trip limits are sorted, weighed and recorded by species by the buyers. Other rockfish groups are sorted, weighed and recorded by group by the buyers.

Barnes: Nearshore studies in California – an update from last year's report.
SCUBA transects for kelp bed and rock reef reserves – may be a coast wide study but is not currently. Marine sport fish project (Deb Wilson) – results pg. 9 of the report. Looking at declines in catch rates, fish size or both, continuing ageing work. An estimate of prawn trawl by-catch. Have a permit to fund an observer program for one calendar year (starting in September). Will have observers on 10% of the trips, to determine if a

full observer program is required. The concern is the by-catch of juvenile rockfish. No groundfish mortality in prawn harvest is considered in management estimates, other than that which is landed. Approximately 40 trawlers are operating in California, Sport and Ridgeback, some observers on trappers also.

C. By Species

1. Pacific Cod

Barnes: No one had anything to add to their reports.

2. Nearshore rockfish

O'Connell: Alaska: discussed full retention, prohibit live fish fishery of all groundfish, black rockfish tagging for the next three weeks off Sitka.
Multibeam survey, Cape Addington.

Yamanaka: Microsatellite DNA work will begin on quillback rockfish, in the Strait of Georgia, Puget S. and San Juan islands in 2000. This is part of a larger project that includes lingcod and abalone. Rick Stanley and I are planning a cruise to Bowie Seamount and a site on the Southwest coast of the Queen Charlotte Islands to develop non-intrusive survey methods to assess yelloweye rockfish. Rick will be studying shelf rockfish. This will be a co-operative project involving the Oceans Directorate and Parks Canada.

Joyce: All fisheries will need target for selective fishing and by-catch by 2004.

O'Connell: IFQ fishing: fishermen fishing small portion of the Fairweather Bank and depleting it – how to avoid localised depletion is a concern. Halibut fishing is killing more rockfish than necessary.

Schirripa: centre for rockfish.
Development of draft research plan (3-5 year plan). On Pacific Fisheries Management website. Plan for short and long-term research topics:

Status
Social economics
Man made stress
Climate and ecosystem
Support

Canary rockfish assessment: assumptions made (lack of females after age 20)
conclusion: catch needs to be reduced about 70% from present levels.
Bank rockfish, and darkblotch – assessments presented next week.

Jagielo: working to evaluate rockfish survey methodology. ROV in reef habitat not useful for our objectives. Multibeam mapping, collaborate with sidescan sonar (from

marine sanctuary) data, and habitat typing (3x coverage). Possibly submersibles would also be useful. Ability to maintain transects with ROV was problematic. Unable to pick reliable random transects for stratified random sampling.

Barss: ODFW is conducting a study to determine age at maturity for several species of rockfish including canary, yellowtail, yellowmouth, yelloweye and Pacific Ocean perch. Dr. Kent is co-operating with ODFW and taking some of the same species for a study on parasites and disease. Last year we purchased a ROV, and Habitat Project staff are training to learn how to use it.

O'Connell: good for truthing of sidescan data.

Barss: It is also good for extending our SCUBA transects into deeper water.

Wilkins: Alaska centre (p. 46) studying effects of trawling on hardbottom substrate. TACOS – control altitude of towed sampler, even in swift current – videotapes.

O'Connell: the most expensive part was the trawl winch – replicated in – house (Harold Zenger).

Barnes: nearshore refugia studies: Blue rockfish, 19 year time series YOY index. Correlation between high density YOY and areas of high upwelling (p. 5 of their report). Condition factors minimum in years of high SST. Nearshore tagging summarised in report.

3. Shelf Rockfish

Stanley: We tested the concept of adapting commercial sounders for quantitative hydroacoustic estimation of rockfish. We suggest that implementation will be limited to estimating individual shoals (relationship with fishermen) but not expandable to entire stocks. Never the less, fishers want us to pursue the concept and have a workshop in the fall that will be open to all interested participants.

Barnes.: California listed new regulations in recreational fishery to reduce bocaccio and canary catch.

4. Slope Rockfish

Clausen: second year of POP, shortraker, and rougheye rockfish study. Results: statistical benefits in adaptive sampling in bottom trawl survey for POP but not shortraker or rougheye. Adaptive random sampling at stations with big numbers of fish, do intensive sampling in the area. Difficult to use in trawl survey, logistical problems on standard biennial survey. Questions about dumping fish caught in the survey vs. catching enough to keep a commercial processor working. Similar to Nancy Lo's egg surveys for sardine with adaptive sampling. Confidence intervals are lessened with adaptive and stratified random sampling.

Yamanaka: Industry wants to embark on exploratory fishing for thorneyheads with DFO, whereby an experimental design is developed and biological samples collected to assess the fishery.

Schirripa: mentioned bank and darkblotched. Also: industry co-op slope survey for all rockfish (started in 1998 last two years chartered fishing boats to survey), design provided by scientists. Challenge: to be able to correlate it to existing data: different vessels, speeds, fishing gear, etc. – is running parallel with existing surveys.
Wilkins. noted seasonal, methodology differences, statistical and funding challenges. Standardised net, but not a nor'easter – a scaled-down version for smaller fishing boats. NWCInstitute – Miller Freeman is avail Oct – Dec, but not necessarily the best time for sampling. New sampling to take place in summer when distribution is most stable.

Clausen: prohibit bottom trawl in eastern Gulf of Alaska for 2 years – like a refugia for rockfish on the slope in this area.

O'Connell: trying to make hook and line fishery for POP, trawlers are banned from the Eastern Gulf and previously were not getting much there anyway so there was little resistance.

5. Thornyheads

O'Connell: not included in the full retention policy.

Clausen: graduate student, U of Alaska, looking at density of thornyhead by videotapes (in press).

Joyce: collaboration with industry – DFO selectivity study. Gear effective in releasing small thornyheads but also released marketable sizes of thornyheads.

King: Dr. Beamish offered to investigate ageing of thornyheads using isotopes, and this is currently an active project.

Stanley: Asked Wilkins opinion of the use of swept area surveys for thornyheads.

Wilkins: Reasonable precision but the weakness is catchability estimates. Are the trawl surveys needed for an index or for absolute estimates?

Discussion: O'Connell, Clausen and Wilkins.: thornyheads look fairly evenly distributed, low variance estimates, similar to flatfish. However with small fish, (longspines) there has to be a size-specific catchability curve.

Barnes. Thornyhead can be saved as livefish fishery, concerns as to how to regulate that lots of livefish are thornyheads.

O'Connell, Barnes.: a lot of thornyheads taken are young fish, for the live fish fishery and for aquariums, and are fished with hook and line.

6. Sablefish

Clausen: at the groundfish symposium they discussed the 196 archival tags ($1000 ea.) planted in fish 2 years ago, 12 tags back, 2 from Canada. The tags record temperature and depth of fish every few hours per day, results showed that there was movement of the fish from deep to shallow daily (which was unexpected). Thirty more fish will be tagged and released this year. The money for the tags is from the longline survey contract.

Effect of IFQs on sablefish fishery: since IFQ in place (5 years), longline catch doubled from derby. Taking older and larger fish. Mortality doesn't seem to be higher, smaller ones don't seem to be caught and released, and there is less ghost fishing, less waste.

Saunders: how can there be bigger fish caught if they are not high-grading?

Clausen: because they can go out and fish when they want, and do not need to move into shallower areas to fish, thereby avoiding the smaller fish.

O'Connell: suggested that there is high-grading occurring however.

Saunders: question for O'Connell: SSEI survey – Dogfish by-catch?

O'Connell: large dogfish concentration in Southeast, but they have not been dominant in by-catch.

Clausen: suggested that Dogfish, Salmon sharks and Sleeper sharks were in high abundance (according to work done by Lee Holbert) in the 90's (observer database).

O'Connell: question: are dogfish a problem in the hook and line fishery in B.C.?

Saunders: don't know, by-catch poorly reported in sablefish fishery.

Schirripa: 2 studies at Hatfield

1. OSU Steve Berkley (Auk Bay juvenile study-style) – neuston net tow for larval abundance.
2. Pot vs. long-line study.

Barss: ODFW conducted a pot versus longline study. This was to augment trawl surveys, look at deep water for sablefish, and determine which gear, pot or longline, was the most useful in deep water. In deep water, pots were more efficient and produced a larger size range of fish. ODFW found more by-catch with longline fished in deep water. Also, the ends of the longline strings did not tend bottom. We fished trapezoid shaped pots that could be stacked on the vessel.

Barnes: California: planned sablefish cruise. Shortcoming of our vessel apparent. Continuation of Don Pearson's blue-tag study. Got 269 fish suitable for tagging. Wilkins: were those our pots? Barnes: um sorry, lost the pots. The plan was to return to Pearson's original site, add more numbers to his study, possibly get returns from the first study.

Saunders: there is a potential for collaboration of surveys in next 6 mo. At this point we are all using different methodology (gear, depth stratification etc.). Our work shows that the northern component of the stock is staying in the area or moving further north, fish from central Queen Charlotte's are moving south. May be a good idea to match survey time, gear and slope, and tagging. He suggested a working group could be struck to collaborate on the survey design for studies of early life history (neuston/gillnet), movement (tagging) and adult abundance (longline/trawl/trap).

O'Connell and Clausen: support the idea, can maybe start making changes while some of these groups are in sampling transition anyway.

Shirripa: we can start trying to determine stock lines by biology or jurisdiction.

Clausen: NMFS Alaska centre rockfish working group want a rockfish symposium. Last Wakefield symposium for rockfish in the 80's (mostly for slope rockfish).

7. Flatfish

O'Connell: small flatfish fishery proposal to close bottom trawling like the federal requirement. Can prohibit trawling for flatfish, but they can do beam trawling for shrimp in the same area. Allows 1 or 2 people to fish. Quotas small, virtually no market. Inside waters – beam trawl, Outside waters – there are trawl fisheries east of 140°.

8. Lingcod

O'Connell: ADF&G involved with Rick Starr, California Sea Grant Program on an: acoustic tagging, study of residence time on pinnacle, are they changing depth by season? The majority stay on the pinnacle.

9. Hake

Saunders: Question for Dorn: do we get the age samples to look at? Dorn: yes, choose major ports where hake come in, (city), take otoliths, LF, same done in Oregon (from Newport and Astoria), and Washington (Coos Bay, Westport). 90% of total collected are from Newport and Astoria.

10. Pollock

Dorn: age comparison ADF+G vs. our agers. Using ADF+G in assessment. Munk: Initial subsample next week, entire sample by next fall. Saunders: we still age them, a couple hundred a year. Dorn: age comparison comparable to other labs. Munk: tend to slow growth after years, often under-aged. PWS – different "stock have different age reading errors.

11. Pacific Mackerel

Barnes: juvenile jack mackerel have not been seen in California since the mid-1970's. Before that the California fishery was largely supported by juvenile jack mackerel. Barss: found some small mackerel, but did not know if they were Pacific or Jack.

12. Sardine

Barss: ODFG will hire a sardine observer in 2000. In 1999, about 1.7 million pounds of sardine were landed in Oregon, and we are expecting higher landings this year. The sardines were sent to the Japanese longline fishery for bait. See ODFW report for by-catch species.

Wilkins: Rick Brodeur – coastal pelagics. Gut content study (Bill Pearcy) and maybe some ageing.

13. Dogfish

O'Connell: Board of Fisheries prohibits directed fishing for sharks, including dogfish. A lot of the fleet, especially Yakutat residents have the impression that dogfish populations have increased. Yakutat city wants predator eradication.

Clausen: dogfish are managed by the habitat group, not groundfish.

Saunders: There has been no directed dogfish assessment work conducted by DFO in 10 years. Recently there has been a collapse of East coast and European supply resulting in higher prices and a slight increase in landings. The potential for Individual Vessel Quota's for this species is also increasing the fishing effort as fishers work to establish a landing history regardless of price. This often leads to a dramatic increase in landings. He noted that the Province of B.C. recently placed a moratorium on dogfish processing licences.

Joyce: displacement from salmon fishery – if you have a licence from any other fishery you can fish for dogfish..

14. Other Species

Saunders: Noted that an experimental hagfish fishery will be starting up this year with only one vessel.

Joyce: new and developing fisheries are very conservative. Limits immediately, assessed in phases (e. g. no fishing until phase 0 assessment). Observers paid for by fishery.

O'Connell: similar to Alaska developing fisheries legislation – are the PSARC reports on the web? Answer: the abstracts are, you can write to the secretary to get them, developing fishery is in the CJZ.

Barss: About 700,000 pounds of hagfish were landed in the directed hagfish pot fishery. Thirteen boats were licensed to fish hagfish puts under the developmental fishery program.

Wilkins: Atka mackerel study: to locate nesting habitat in Aleutian Islands. Video footage of nesting activity. Second phase: 1. Tagging 2. Feasibility of doing CPUE study.
Peter Monro, Lowell Fritz, Suzanne McDermott and Bob Lauth.

Clausen: push for Atka mackerel in light of problems with Steller Sea Lions. Mackerel may be an important food source. Very little is known about them.

Barss: Skate landings were up, and landings were driven by the foreign market. The Audubon Society is now concerned with fishing on skates and sharks. We don't know much about skates off Oregon. Our last trawl surveys ere conducted in the 1970's, but we are now doing near-shore work again, so we may get information on skates.

O'Connell: increased by-catch allowed on dogfish, but not skates.

D. Other Related Studies

Clausen: lots of effects of fishing on the bottom, and this info is in our report. Coral habitats are being studied in the submersible.

Stanley: We continue to populate our biological database, It now has nearly 3 million fish entered. We have not progressed in developing a comprehensive catch data system. We now have a database from the 100% observer coverage in the domestic trawl fishery.

Saunders: Was asked if there are observers on sablefish fishery. By-catch on sablefish is relatively clean so there is no observer program.

Joyce: there are observers now on halibut and hook and line.

Saunders: almost all observer programs nationally are up for renewal. There is pressure to look at different business models, like changing from sole source to multiple service providers. DFO hosting Canada – US observer workshops in St. John's, follow up to Seattle workshop.

Stanley: Is there any interest in organizing and banking a coastwide collection of samples for genetics?

O'Connell: good idea but genetics researchers may not agree.

Stanley: The genetics researchers need not collaborate for us to collect all necessary samples in a collaborative process.

Saunders: maybe come up with a plan for 1 year for about 10 species, and then bank them.

Barnes: or maybe take that idea and recommend someone else work out the details. The samples can last a long time – freezing, or 40% EtOH.
Maybe need to contact the genetic researchers/

Yamanaka: It is difficult to acquire the funds to conduct microsatellite DNA analyses. The yelloweye rockfish project was expensive. No stock structure was evident in yelloweye along the B.C. coast. We had individual sample sizes of 100 to 200 fish from 10 sites over various seasons and two years. Samples of dark and light yelloweye rockfish colour morphs were also analysed and did not appear to be separate species, unlike similar colour morphs of the dusky rockfish (*S. ciliatus*).

O'Connell: differences in stock structure are important – we need to keep studying this.

Yamanaka: The dark colour morph is found in shallower water than the light and the ages are always less than about 40 years. This could mean that the dark colour is a transient state. There are also intermediate grades of darkness as well, which could indicate that colour is merely a phenotypic trait and not a genetically distinct stock.

Phillips: Noted potential nearshore rockfish research work funding for Washington, Oregon and California. Proposal to fund integrated west coast rockfish research. Meetings will take place in July in Oakland, CA. to discuss the proposal with WDFW, ODFW, CDFG, NMFS, etc. with WDFW. Budget: $24000 for 2 workshops. Final paper to NOAA..

Schirripa: coupled with west coast Groundfish Research Plan? Phillips: No, not at this point, but expect communication to continue. Barnes will be attending the Oakland meeting and can relate matters of interest to the TSC.

Barss: ODFW has used a voluntary open access logbook program. We have had very few of these logs turned in. In 2000, we have a new high quality voluntary logbook, and we are working to get a better response to keeping open access fishing logs.

Schirripa: voluntary electronic log book program. Wilkins: developed with people in industry. May link with fishing equipment for even more automation.

Saunders: opened discussion on device available for underwater tagging of fish. Cost: $500,000 U. S. Possibility of sharing it among agencies. The issue was tabled to the recommendations discussion.

Saunders: noted a possibility of the Ricker being replaced in the future (2002). Any discussion in the U. S. about on-board processing of research catch, as there is pressure to stop dumping fish captured in research trawls. U. S. group: can't foresee government researchers being able to process fish. Stanley: can't foresee government vessels in Canada being allowed to continue discarding.

Dorn: petition at the last NMFS meeting, list of species submitted, NMFS will consider a subset. Herring, cod, hake, pollock, and copper, quillback and brown rockfish. NMFS determined a set of recommendations, not public yet.

- Biological review team (for each species)
  - What is a distinct population segment
  - Risk analysis
- Endangered species act – distinct population segments
  - Can be a whole population or some portion. Based on: unique habitat, genetics, etc. e.g. hake: genetic distinction between inshore and offshore populations.

Initial report to co-managers, solicit feedback, then make final recommendations. Having difficulty getting through the other species, don't know when they will get on to rockfish.

IX. Progress on 1999 Recommendations

A. From TSC to Itself

1. King/Jagielo: we're staying in contact and sharing information. Joint assessment is difficult because of different fishing season, but we are sharing data.

2. Wilkins: is working on the document.

B. TSC to Parent Committee:

1. Parent Committee conference call on March 2 endorsed the need to discuss yield options to prevent overharvest of trans-boundary stocks.

2. Phillips: PSMFC will be post a summary on the website.

3. Phillips: Agendas available now.

4. Phillips: Letters were sent to Tillman and Pautzke. Want to revisit this year.

5. Phillips – having main TSC site on the PSMFC site is possible, as well as a working site. Liza Bowman contact for any suggestions.

6. Phillips: communication ongoing with technical people on both sides of the border.

7. Barnes: managers have access to the same information on both sides of the border. Saunders: data is not always available in a timely fashion. Sample scheduling is still difficult. We still need ongoing trans-boundary discussion. To match U.S. fisheries we would have to fish earlier than we do now. King: fishing year would change. Saunders: but calendar year wouldn't. King: depends on how much data there is – don't see the need for having lingcod and yellowtail at the same time. Barnes: suggested keeping recommendation #6 from last year.

X. 2000 Recommendations

A. From TSC to itself

1. The TSC understands that the age structure exchange requests to the CARE are an integral statement of standardisation of age-reading criteria, and require time to complete. CARE members must be supported and encouraged to complete these

exchanges in a timely manner, and participate fully in workshop proceedings to resolve differences. TSC members should periodically encourage lines of supervision to age-reading programs, to enable both exchanges and participation in CARE workshop proceedings.

2. Most membership agencies are conducting surveys of sablefish stocks throughout the north Pacific. The TSC recommends that member agencies convene a survey planning working group for sablefish to meet during the year 2000 to review methodology and examine the potential for survey co-ordination.

3. There are a large number of species that would benefit from tagging studies but do not survive the tagging process. An unproved *in situ* tagging instrument has been developed in Europe and is available for $500,000 Canadian. The TSC recommends that Rick Stanley evaluate the efficacy of the tool and if appropriate consider options for joint purchase and shared use.

4. At the recent groundfish conference Don Pearson et al. presented a paper on sablefish ageing that raises questions about sablefish ageing. The TSC recommends that the TSC chair send a letter to Mr. Pearson inviting him to participate in CARE.

5. TSC recommends that the committee explore with the various agencies the potential for a co-ordinated collection and cataloguing of tissue samples for genetics studies of critical groundfish species. The program would lead to a tissue sample bank. Access to the samples could be controlled by a representative advisory panel. Rick Stanley will communicate with the participating agencies to assess support for and feasibility of the concept.

6. TSC recognises Liza Bauman for the considerable effort and expertise that she has devoted to creating and maintaining the TSC website. We recommend that a letter of appreciation be sent to Ms. Bauman for her efforts which have made the TSC more efficient, and greatly facilitated the exchange of information moving between TSC members.

B. From TSC to the Parent Committee

1. The TSC requests that the PSMFC post the PFMC draft Groundfish Strategic Plan on the TSC website and post updates to the plan in a timely manner.

2. The TSC requests that the parent committee write a letter to Dr. Michael Tillman explaining the importance of the TSC and requesting his annual participation and provide an annual report to TSC by the SWFSC. CC the request to the NWFSC Director Usha Varasi, to Rod MacInnis (SW Reg. Dir), and director of Tiburon lab Churchill Grimes.

3. The TSC notes that the combined Canadian/U.S. harvest of hake continues to exceed the adopted coast wide yield option and recommends to the Parent Committee that the bilateral negotiations be encouraged to arrive at a solution. Further, Canadian and U.S. managers have adopted divergent yield options for trans-boundary stocks including yellowtail rockfish and lingcod. The TSC asks that the Parent Committee recommend that the Canadian and U.S. managers develop a process to discuss yield options to prevent overharvest of trans-boundary stocks.

C. TSC to CARE

1. The TSC recognises substantial time is required to complete self–assessments through inter – agency age–structure exchanges. These assessments provide valuable information to our processes; The TSC encourages CARE to complete these exchanges in a timely manner.

XI. Schedule and Location of 2001

The next TSC meeting will be held in Newport, Oregon, from May 8-10, 2001.