

# **Committee of Age-Reading Experts**

## **2008 Committee Report**

**Prepared for the Fiftieth Annual Meeting  
of the Technical Subcommittee  
of the Canada-U.S.A. Groundfish Committee**

5-6 May 2009

Prepared by  
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# **CARE 2008 Report to the Technical Subcommittee of the Canada-USA Groundfish Committee**

## **A. CARE Overview**

### **History**

The Committee of Age-Reading Experts, CARE, is a subcommittee of the Canada-USA Groundfish Committee's Technical Subcommittee charged with the task to develop and apply standardized age determination criteria and techniques and operating within the Terms of Reference approved by the TSC in 1986 and the CARE Charter developed in 2000 and approved by the CARE in 2004.

### **CARE Workshop**

CARE meets biennially at the "CARE Workshop" with workshops typically comprising a "business" day and generally 1.5 days for hands-on calibration at microscopes to review and standardize age reading criteria. The last biennial CARE Workshop was hosted by and held at the CDFO's Pacific Biological Station 1-3 April 2008 at Nanaimo, B.C., Canada. The next CARE workshop is scheduled for 21-23 April 2009, hosted by AFSC to be held at Sand Point, Seattle, WA, U.S.A.

### **Report Period**

This report covers the work period 1 January – 31 December 2008. However, to promote timely reporting of work and recommendations occurring during the recent CARE workshop (April 2009), a separate Executive Summary of the 2009 CARE workshop is included in Appendix I.

## **B. CARE Subcommittee (Working Group) Reports**

1. CARE Manual/Glossary Committee – MacLellan (2008 out-going), Kamikawa (2008 in-coming), Goetz, Munk

The Manual/Glossary working group members develop age reading chapter sections or definitions for age-reading terms suggested by CARE members, which are subsequently approved by CARE members and added to the CARE Manual/Glossary.

2006-2008 manual activity reported at the 2008 CARE meeting:

The lingcod and Dover sole CARE manual sections were inserted to the on-line manual at the CARE website December 2006.

New wording for the term "dark/light boundary" was inserted in the CARE Manual glossary section and updated to the CARE website December 2006.

No progress was made on developing the hake section.

MacLellan requested to be replaced as working group lead. Kamikawa succeeded MacLellan on 1 July 2008.

No additions to the manual were proposed at the CARE 2008 meeting and the Committee was not active for the rest of 2008.

2. CARE Website Committee - Short (2008 co-chair & webmaster), Atkins (2008 incoming co-chair), Anderl

The CARE website working group administers to the appearance, operation, and access to the site, through the cooperation of the PSMFC website and webmaster. The CARE web page is located at <http://www.psmfc.org/care/>.

2006-2008 activity reported at the CARE 2008 meeting:

- 2.1 The CARE website was changed from HTML to a program called “Joomla”.
- 2.2 The Ageing Methods table was updated and/or changed to improve presentation, collation and access to information. The website was upgraded to include user-modifiable linked tables in a relational database that also retains data history/succession. The table “Summary of Age Reading Methodology”, previously EXCEL-based and passed from one administration to the next, now resides on the CARE website under “Species Info” that links to a database that can be searched. It will be updated on an annual basis.

Post-meeting 2008 update:

- 2.3 The CARE website content was updated:
  - 2.3.1 The 2008 CARE minutes were posted to the website in record time.
  - 2.3.2 Photos from Nanaimo CARE 2008 meeting were posted.
  - 2.3.3 The blank CASE invoice is available on site for CARE members to download for exchange reporting.

Short requested to be replaced as the working group lead. Atkins will commence as co-chair with Short, and specifically be responsible for content.

3. Charter Committee – Munk (chair), MacLellan, Anderl/Goetz.  
The Charter, initiated in 2000, provides a framework within which the original intent of CARE may continue. It also expedites familiarization of new CARE Members to the responsibilities and function of CARE. The committee is responsible for facilitating changes and updates to the Charter.

The Charter Committee, previously disbanded, was reconvened to draft new sections and to make some minor edits/updates to the CARE Charter to enhance organizational and operational information to CARE officers and new members. The working group was tasked with providing the recommended updates for approval at the 2009 CARE Workshop.

- 3.1 Drafting of updates (“CASE Invoice Protocol section, “Edit Log” section along with several minor edits) was completed in 2008 ready to present at the 2009 meeting.

4. Forum Working Group – Atkins (Moderator), Short  
This working group was created in response to a 2008 CARE to CARE recommendation. The Moderator was tasked to work with the Webmaster to create a three-year trial CARE

forum for the discussion of age reading topics by the CARE community and other age-reading personnel.

4.1 The forum was up and running successfully in 2008, with some activity.

5. Sablefish ad hoc Working Group- NMFS-NWFSC/PSMFC, ADFG, AFSC, CDFO  
The sablefish age readers convened an ad hoc working group to expand documentation of sablefish age-reading criteria and fundamental differences between stocks from southern to northern extent of the species range. The goals for this group are outlined in Appendix I-B.

5.1 Samples of age zero and age-1y otolith samples from each agency were measured in 2008.

## **C. CARE Agency Structure Exchanges**

Age structure exchanges periodically occur to assess calibration among age-reading facilities, following which specimens with widely varying age estimates are reviewed and discussed. Exchanges are tracked by the CARE vice-chair. Data from exchanges are available upon request of the originator of the sample.

Three age structure exchanges were initiated and completed in 2008. Species exchanged were sablefish and yelloweye rockfish. An updated summary of these and other age structure exchanges made from 2008 thru 2009 (May) are covered in Appendix I – Executive Summary, Table 2.

## **F. Recommendations CARE ~ TSC**

### **1. 2008 CARE to CARE**

1.1. 2008CC-01 “Move CARE workshop to off-year from Western Groundfish Conference”:  
The CARE recognizes that their biennial workshop coincides with the biennial Western Groundfish Conference, and that this co-occurrence creates competition for same-year travel money. This can prevent attendance to one or both, and where off-year travel budgets might be underutilized. CARE proposes to move their workshop out of phase to the Western Groundfish Conference. CARE will next convene in 2009, the adjustment year. This will begin the new biennial sequence of 2009, 2011, 2013, etc.

1.2. 2008CC-02 “Add CARE website disclaimer and citation information”: CARE recommends adding site and citation information to the CARE website. A new link in the sidebar entitled “Site information” will open a page with the following information:

1.2.1. “This website is subject to periodic update and data may not have been formally peer reviewed. If you have specific questions please contact the contributing agencies.”

1.2.2. “If you wish to cite the webpage the following format is suggested: Committee of Age Reading Experts (CARE). “Title of Page.” Date accessed: <access date> <URL>”.

1.2.2.1. CARE 2008 Response: Both posted to the test website.

- 1.3. 2008CC-03 “Create CARE trial forum”: CARE recommends creating a three-year trial forum for the discussion of age reading topics by the CARE community and other age-reading personnel. Users of the forum would be required to set up a user name and password; anonymous commenting would be disabled. Specific categories would be created for different areas of discussion: Specific species (with Flatfish, Rockfish, Roundfish, Elasmobranches, and Invertebrates as sub-categories), Preparation Methods, Digital Imaging, Equipment, Other and Off Topic. Each user will be able to choose whether they receive e-mail notifications of posts for the entire forum, specific categories/sub-categories, individual discussions, or none at all. Nikki Atkins (NMFS-NWFSC/PSMFC) will act as Moderator of the forums.
  - 1.3.1. CARE 2008 Response: Forum was up and running.
- 1.4. 2008CC-04 “Expedite approval of meeting-minutes”: CARE recommends expediting their approval of meeting-minutes. The CARE Chair will send an email to workshop participants asking to approve the minutes: Yes or NO. Workshop participants will be given 2 weeks to reply; if “out of office” emails are received by the Chair, the time frame will be extended per their discretion. Prior to approval, meeting-minutes will be sent out for editing/corrections to members (see Charter protocol). Meeting-minutes will not go out for approval until all edits are complete, and, will not be posted without approval.
  - 1.4.1. CARE 2008 Response: CARE 2008 minutes were posted in record time.
2. 2008 CARE to TSC (none made)
3. 2007 CARE to CARE (none made)
4. 2007 CARE to TSC (none made)
5. 2007 TSC to CARE
  - 5.1. 2007TC-01 TSC will rely on fishery managers and stock assessment authors to interact directly with their ageing lab supervisors to communicate with CARE for ageing exchanges. TSC appreciates the work of CARE and recognizes that a direct link between the assessment biologist and the ageing lab is the most efficient means of requesting species ageing exchanges.
    - 5.1.1. CARE 2008 Response: Acknowledged and accomplished.
6. 2006 CARE to CARE
  - 6.1. 2006CC-01 The CARE Age Structure Exchange (CASE) table presently identifies inter-agency exchanges occurring on species of interest to the TSC, or other inter-agency calibrations as needed. CARE recommends to itself to modify the CASE table and process. We will continue to track structure exchanges per the CARE Charter; however, we will drop precision test results from the CASE table. We will develop a CASE invoice, accessible on the CARE website. Upon initiating an exchange, the originating agency will contact the CASE coordinator for an exchange id number. The originating agency will conduct the exchange, fill out all information in the CASE invoice, and submit it to the CASE coordinator upon its completion. The CASE coordinator or designee will update the website to allow linked access within the CASE table. Inclusion of precision statistics is optional.
    - 6.1.1. CARE 2008 Response: Mostly done. The CASE invoice form is accessible, but completed invoices are yet to be posted to the website.
  - 6.2. CARE recommends making changes to the Summary of Age Reading Method, regarding format and information included. The current table info will be split into two tables; one

to include “Methods” information (agency, species, method, validation, area, structure, validation & validation citation). The method, validation and citation columns would provide anecdotal information that will be updated. The method column would include all methods used historically or currently and provide dates when methods were adopted. The validation column would indicate method and extent (e.g. all ages, up to age 30, longevity) and the validation citation column would indicate dates and contact. The new 2<sup>nd</sup> table would include agency, species, calendar year and number of fish per species aged. Total fish and total species aged would be calculated. Numbers of readers involved per calendar year for all fish aged will also be included. It is recommended that this data would reside on the website and that a small relational database would house the data. A mechanism would be developed to query the database to assess the breadth and depth of expertise for species by agency for all species aged. Development of database will be in small steps. The Vice-chair will be responsible for updating both tables on an annual basis.”

6.2.1. CARE 2008 Response: Mostly done. Underlined elements are incomplete or have been dropped. Discussed options to cite validation and related age and growth literature to the website at 2008 meeting.

7. 2006 CARE to TSC

7.1. The biennial CARE meetings have been held traditionally at the Seattle NMFS-AFSC facilities. The Pacific Biological Station (PBS), Nanaimo representatives offered to host the 2008 CARE meeting. Two reasons were given for this proposed departure. First, this invitation coincides with the PBS 100<sup>th</sup> anniversary (1908-2008). Second, agency travel policies can prohibit age readers from different participating agencies and labs to attend the CARE meeting at the Seattle AFSC facilities. The CARE requests TSC members to support this recommendation and encourage travel funding. This rotation will allow PBS to share in the hosting responsibilities and for greater CARE participation among their personnel. It would also appropriately acknowledge PBS’s substantial contributions to the field of fish age and growth.

7.1.1. CARE 2008 Response: Accomplished.

8. 2006 TSC to CARE (none made)

# APPENDIX I

## EXECUTIVE SUMMARY 2009 CARE Workshop

This Executive Summary of the recent 2009 CARE Workshop is appended to the ‘2008 CARE Annual Report to the TSC’ in order to promote timely reporting of work that would otherwise not be reported till the end of 2009, and to facilitate work and action to occur over the remaining year.

### Overview

The 2009 CARE Workshop was held 20-23 April in Seattle, Washington at the Sand Point AFSC facility, hosted by Delsa Anderl and the Age and Growth staff. This was the first CARE “odd year” meeting since inception. CARE had voted to shift to a rotation opposite to the even year Western Groundfish Conference schedule during the 2008 meeting. A total of 36 individuals representing eight agencies plus a retired CARE member attended (Table 1). An agenda from this workshop follows under Appendix I-A. This was a very active and ambitious workshop, highlighted by: general and working group discussions on varied topics; 5 scientific presentations; notable accomplishments made by the working groups; involvement by more and new CARE members volunteering to participate in committee/working/discussion groups. The CARE officers remain the same for the CARE 2011 meeting, as agreed at CARE 2008. The Sablefish ad hoc working group participated in a mini-workshop with their own ambitious agenda. Two new working groups were convened to: produce an abstract and subsequent poster for the 2009 International Otolith Symposium outlining CARE’s history/accomplishments and to draft some optional recommendations when non-agency researchers request to make use of archival otolith samples. There were no Recommendations made by CARE to the TSC; however, there were seven 2009 Recommendations made from CARE to CARE

### Working Groups and Reports

There were four working groups (Charter, Website, Forum, Sablefish ad hoc) active prior to and reporting at the 2009 Workshop. Two new working groups were organized. The first drafted a CARE abstract (content was accepted by the membership) to be submitted to the 2009 International Otolith Symposium in Monterey, CA. They will collaborate to refine the abstract text and create the poster after the CARE meeting. The second group was convened, for the duration of the workshop, to produce some guidelines that agencies might want to consider when non-agency researchers request access to use of archival otolith samples. Six working groups (Forum, Website, Charter, Manual, Sablefish ad hoc, IOS 2009 CARE poster abstract) will be active during the next rotation.

1. Manual/Glossary Committee (Kamikawa, Goetz, Munk): There was no activity expected or reported for 2008. During the 2009 CARE meeting, the committee put forth an ambitious recommendation that the membership considers reviewing and updating the current manual on a regular basis, as well as drafting sections to include new species, quality assurance and age validation techniques. Two additional people (Barb Campbell - CDFO, Lou Taylor - NWFSC) volunteered to become new members of the working group.

2. Web Committee (Short, Atkins, Anderl): Short reported on the committee's activity in 2008: Atkins updated content; the 2008 CARE minutes were up on the website in record time, photos from the Nanaimo CARE 2008 meeting were posted and the blank CASE invoice was on site. Short decided to go the manual route with putting CASE's on the website instead of a database page. At the 2009 CARE meeting, the following tasks were outlined for the next interval: update both the Structure Exchange Table (add completed CASE invoices and link to table) and the Charter (edits from Charter Committee) and change the Charter introductory page on the website table to clarify contents.

3. Charter Committee (Munk, MacLellan, Goetz): The Charter Working Group, previously disbanded, reconvened in 2008 to make updates to the CARE Charter that, in particular, were aimed at improving and providing more organizational information to CARE officers and new members. The group made the recommended updates and submitted these at the 2009 CARE Workshop for approval. Updates submitted at the 2009 Care meeting included minor rewording to major additions such as: the CASE Invoice Protocol section, the Charter Edit Log (documents, changes or additions since the Charter was accepted by CARE membership in 2004) and Appendices A. CARE Meeting Minutes Format, B. Annual Report to the TSC and C. CASE Invoice are available for inclusion. Appendix D. Precision Test Statistics and Formulation is yet to be drafted.

4. Sablefish Age Readers Ad hoc Working Group: The sablefish age readers (AFSC, ADFG-Juneau, CDFO, NWFSC, lead: Munk [outgoing Jan 2009], MacLellan [incoming Jan 2009]) convened an ad hoc working group during the 2008 Nanaimo workshop to expand documentation of sablefish age-reading criteria and identify fundamental differences between stocks from southern to northern extent of the species range. The goals for this group outlined in the agenda Appendix I-B developed in April 2008 were:

1. Document and report current age-reading standards with a comprehensive age structure exchange
2. Calibrate interpretation of sablefish patterns
3. Document and report size differences for up to age-1y (1+[June]) sablefish stocks from south to north

Goal three was addressed in 2008, with each agency supplying samples of known-age zero to one year otoliths to ADFG for length measurement.

Munk gave an overview of the project to the general membership at CARE 2009. To meet goal two, each agency provided a 20-24 fish sample for a round robin exchange that was completed for the 2009 meeting. At least five otoliths from each sample were imaged and annotated by all participants for comparison at the 2009 meeting. See Sablefish mini-workshop in Workshop and Hands-on session below for more details.

5. Forum Working Group (Atkins, Short): Atkins constructed, and acted as Moderator for, the proposed 3 year trial forum that would facilitate discussion of age reading topics by the CARE membership. The forum came on line with a few postings in 2008. At the 2009 CARE meeting a recommendation was made to the membership to support the forum and post general CARE communications.



### **Age Structure Exchanges** (Vice-chair: Rosenfield)

There were three structure exchanges initiated and completed in 2008. Two were sablefish involving AFSC, CDFO, NWFSC and ADFG and one was yelloweye involving CDFO, WDFW and ADFG-Juneau. Eight age structure exchanges were conducted in the early part of 2009. All but two were complete by the 2009 Care workshop. Four of these originated from the Sablefish ad hoc Working Group, NWFSC and CDFO each exchanged a hake sample with the other and ADFG worked with AFSC on two Pacific cod samples. These data are available upon request of the “Coordinator” of the specific exchange sample. Table 2 lists the 2009 exchanges.

### **Business Session Highlights and Discussion:**

- A working group was convened to produce an abstract and subsequent poster for the 2009 International Otolith Symposium outlining CARE’s history and accomplishments.
- Another working group met and provided the membership with recommendations to consider when approached by non-agency researchers to use archival otolith samples (Appendix I-C).
- There were five scientific presentations: Known-age sablefish research (Anderl), Ad hoc Sablefish Group results (Munk), Lingcod fin/otolith comparison (Dunne), Overview of recent research at AFSC (Kastelle) and Image cataloguing and photo-merging (Short).
- Additional workshop discussion details will be forthcoming upon completion of the 2009 CARE Workshop Meeting Minutes.
- “Recommendation working groups” focused on wording of CARE recommendations.

### **Workshop and Hands-on Session Highlights and Discussion:**

- A total of 27 readers reviewed 12 species during the hands-on session of CARE 2009. Session summaries will be transcribed and appended to the 2009 meeting minutes.
- Readers from all eight agencies worked together during the hands on session to calibrate ageing of 14 species: Pacific cod, hake (Figure 1.) rockfish (black, greenstriped, shortraker, Pacific ocean perch), shortspine thornyhead, skates, pollock, Atka mackerel, capelin/eulachon, market squid, sardine and sablefish (mini-workshop).
- Differences generated from pre-workshop exchanges for hake, Pacific cod and sablefish were reviewed.
- Sablefish mini-workshop: The Sablefish ad hoc working group participated in a mini-workshop with its own agenda (Appendix I-D) that ran concurrent to other species hands-on session (Figure 2). Atkins provided a summary of the otolith measurement data. Even when month of capture data was taken into consideration, preliminary analysis of the measurements suggested a general north-south gradient in size. The CDFO agreed to provide ages for their samples (length was used to assign age for some) to further refine analysis of measurement data. Each agency had collated the data generated from their own samples and presented this to the group. Precision results are yet to be collated for the entire exchange. Difficult patterns were identified and documented. Standard criteria application was discussed. Known-age samples were used to facilitate assessment of criteria. The group was able to work through to agenda item 2b during the workshop and made plans to continue with item 2c in 2009 via exchange. AFSC will circulate a sample of known-age sablefish otoliths to test lessons learned at CARE 2009. The group submitted a CARE to CARE recommendation to investigate the possibility of meeting in a year to complete their agenda.
- Short provided a demonstration of AFSC’s new Isomet 5000 saw used to cut otolith thin sections from multiple otoliths. Some modifications were necessary to the chuck to hold the

multiple specimen block, he changed the cutting action to the top of the blade and moved the water cooling hose out of the way to the back of the machine (Figure 3).

## **Recommendations C.A.R.E.~TSC**

### **A. 2009 CARE to CARE**

1. 2009CC-01 “Check the CARE forum on a regular basis to continue trial assessing usefulness, post general CARE announcements/emails to the forum for membership reference and investigate a notification mechanism.”
2. 2009CC-02 “A focus for CARE 2011 meeting on digital imaging is proposed.” Digital imaging is a useful tool for documenting agency methodologies and for sharing images for the purpose of structure exchanges. Review and discuss optimal use of digital imaging technology for age readers. Topics of interest include equipment, software, image acquisition/storage, processing and cataloguing. Industry reps would be a benefit to present equipment and software.
3. 2009CC-03 “Submit CARE poster abstract to the International Otolith Symposium 2009”
4. 2009CC-04 “Add the latest Charter updates, revise Charter introduction page to clarify contents with links to sections and add Working Group section to highlight purpose and current activities with a link to a past achievements “archive” to the website.
5. 2009CC-05 “Work towards posting all CASE invoices from structure exchanges as PDF’s on the website by linking each to respective line on the Exchange Table.”
6. 2009CC-06 “We recommend that CARE review the current CARE manual and that any changes or updates be submitted to the CARE Manual Committee lead (Kamikawa) by April 2010. Specifically, we wish to complete or initiate sections on hake, lingcod otoliths, skates, halibut, quality assurance and age validation techniques, and increase resolution to the existing rockfish ageing section. The Manual Committee will submit all changes and updates to CARE for consideration at the 2011 CARE workshop. In addition, we recommend that the CARE Manual Committee review and update the CARE manual at least once every 3<sup>rd</sup> workshop.
7. 2009CC-07 “The Sablefish ad hoc Working Group will conduct an exchange of AFSC known-age samples to test lessons learned from the CARE 2009 mini-workshop and explore the possibility of meeting again in 2010 to complete the mini-workshop agenda.”

### **B. 2009 CARE to TSC (none made)**

### **C. 2008 CARE to CARE**

1. 2008CC-01 “Move CARE workshop to off-year from Western Groundfish Conference”: The CARE recognizes that their biennial workshop coincides with the biennial Western Groundfish Conference, and that this co-occurrence creates competition for same-year travel money. This can prevent attendance to one or both, and where off-year travel budgets might be underutilized. CARE proposes to move their workshop out of phase to the Western Groundfish Conference.

CARE will next convene in 2009, the adjustment year. This will begin the new biennial sequence of 2009, 2011, 2013, etc.

i. CARE 2009 Response: CARE met in Seattle 21-23 April 2009.

2. 2008CC-02 “Add CARE website disclaimer and citation information”: CARE recommends adding site and citation information to the CARE website. A new link in the sidebar entitled “Site information” will open a page with the following information:

“This website is subject to periodic update and data may not have been formally peer reviewed. If you have specific questions please contact the contributing agencies.”

“If you wish to cite the webpage the following format is suggested: Committee of Age Reading Experts (CARE). “Title of Page.” Date accessed: <access date> <URL>”.

i. CARE 2009 Response: The disclaimer and citation will be posted to the working CARE website soon after the CARE 2009 meeting.

3. 2008CC-03 “Create CARE trial forum”: CARE recommends creating a three-year trial forum for the discussion of age reading topics by the CARE community and other age-reading personnel. Users of the forum would be required to set up a user name and password; anonymous commenting would be disabled. Specific categories would be created for different areas of discussion: Specific species (with Flatfish, Rockfish, Roundfish, Elasmobranches, and Invertebrates as sub-categories), Preparation Methods, Digital Imaging, Equipment, Other and Off Topic. Each user will be able to choose whether they receive e-mail notifications of posts for the entire forum, specific categories/sub-categories, individual discussions, or none at all. Nikki Atkins (NMFS-NWFSC/PSMFC) will act as Moderator of the forums.

i. CARE 2009 Response: The CARE 2009 meeting participants agreed to continue supporting the forum and make some additions (See 2009CC-01).

4. 2008CC-04 “Expedite approval of meeting-minutes”: CARE recommends expediting their approval of meeting-minutes. The CARE Chair will send an email to workshop participants asking to approve the minutes: Yes or NO. Workshop participants will be given 2 weeks to reply; if “out of office” emails are received by the Chair, the time frame will be extended per their discretion. Prior to approval, meeting-minutes will be sent out for editing/corrections to members (see Charter protocol). Meeting-minutes will not go out for approval until all edits are complete, and, will not be posted without approval.

i. CARE 2009 Response: Accomplished.

D. 2008 CARE to TSC (none made)

E. 2007 TSC to CARE

1. 2007TC-01 TSC will rely on fishery managers and stock assessment authors to interact directly with their ageing lab supervisors to communicate with CARE for ageing exchanges. TSC appreciates the work of CARE and recognizes that a direct link between the assessment biologist and the ageing lab is the most efficient means of requesting species ageing exchanges.

i. CARE 2009 Response: Acknowledged and encouraged.

F. 2006 CARE to CARE

1. 2006CC-01 The CARE Age Structure Exchange (CASE) table presently identifies inter-agency exchanges occurring on species of interest to the TSC, or other inter-agency calibrations as needed. CARE recommends to itself to modify the CASE table and process. We will continue to track structure exchanges per the CARE Charter, however, we will drop precision test results from the CASE table. We will develop a CASE invoice, accessible on the CARE website. Upon initiating an exchange, the originating agency will contact the CASE coordinator for an exchange id number. The originating agency will conduct the exchange, fill out all information in the CASE invoice, and submit it to the CASE coordinator upon its completion. . The CASE coordinator or designee will update the website to allow linked access within the CASE table. Inclusion of precision statistics is optional.
  - i. CARE 2009 Response: Mostly done. From 2009-2010, CARE will work towards posting all CASE invoices from structure exchanges as PDF's on website by linking each to respective line on the Exchange Table (2009CC-05).
2. CARE recommends making changes to the Summary of Age Reading Method, regarding format and information included. The current table info will be split into two tables; one to include "Methods" information (agency, species, method, validation, area, structure, validation & validation citation). The method, validation and citation columns would provide anecdotal information that will be updated. The method column would include all methods used historically or currently and provide dates when methods were adopted. The validation column would indicate method and extent (e.g. all ages, up to age 30, longevity) and the validation citation column would indicate dates and contact. The new 2<sup>nd</sup> table would include agency, species, calendar year and number of fish per species aged. Total fish and total species aged would be calculated. Numbers of readers involved per calendar year for all fish aged will also be included. It is recommended that this data would reside on the website and that a small relational database would house the data. A mechanism would be developed to query the database to assess the breadth and depth of expertise for species by agency for all species aged. Development of database will be in small steps. The Vice-chair will be responsible for updating both tables on an annual basis."
  - i. CARE 2009 Response: Mostly done. A table developed at CARE 2008 for the purpose of listing validation and other age determination related publications associated with the Species Aged database on the website will be retrieved and put forward to membership for consideration at the next meeting (2011).

**Table 1.** Attendees of the 2009 CARE Workshop, 21-23 April 2008, Seattle, Washington, U.S.A.

<b>Attendee</b>	<b>Agency</b>	<b>City, State/Province</b>
Kristen Munk	ADFG	Juneau, Alaska
Jodi Neil	ADFG	Juneau, Alaska
Sonya el Mejjati	ADFG	Kodiak, Alaska
Willy Dunne	ADFG	Homer, Alaska
Elisa Russ	ADFG	Homer, Alaska
Delsa Anderl	AFSC	Seattle, Washington
Betty Goetz	AFSC	Seattle, Washington
Craig Kastle	AFSC	Seattle, Washington
Jon Short	AFSC	Seattle, Washington
Irina Benson	AFSC	Seattle, Washington
Charles Hutchinson	AFSC	Seattle, Washington
Chris Gburski	AFSC	Seattle, Washington
Charlie Piston	AFSC	Seattle, Washington
Chris Johnston	AFSC	Seattle, Washington
John Brogan	AFSC	Seattle, Washington
Beth Matta	AFSC	Seattle, Washington
Barb Campbell	CDFO	Nanaimo, British Columbia
Karen Charles	CDFO	Nanaimo, British Columbia
Darlene Gillespie	CDFO	Nanaimo, British Columbia
Shayne MacLellan	CDFO	Nanaimo, British Columbia
Cal Blood	Retired (IPHC)	Seattle, Washington
Steve Wischniowski	IPHC	Seattle, Washington
Joan Forsberg	IPHC	Seattle, Washington
Linda Gibbs	IPHC	Seattle, Washington
Robert Tobin	IPHC	Seattle, Washington
Nikki Atkins	NWFSC	Newport, Oregon
Betty Kamikawa	NWFSC	Newport, Oregon
Patrick McDonald	NWFSC	Newport, Oregon
Omar Rodriguez	NWFSC	Newport, Oregon
Louis (Lou) Taylor	NWFSC	Newport, Oregon
Jenny McDaniel	SWFSC	La Jolla, California
Sandy Rosenfield	WDFW	Olympia, Washington
Jennifer Topping	WDFW	Olympia, Washington
Lance Campbell	WDFW	Olympia, Washington
Lucinda Morrow	WDFW	Olympia, Washington
Josie Thompson	ODFW	Newport, Oregon

**Table 2.** CARE age structure exchanges and status from 2008 - 2009 (May)

Case No.	Originating Agency	Coordinator	Cooperator(s)	Date Initiated	Species	Sample n=	No. Readers	Status
08-001	CDFO	S. MacLellan	CDFO, NWFSC, ADFG-Juneau	Jan-08	Sablefish	20	3	complete
08-002	NMFS-PSMFC	P. McDonald	NWFSC, ADFG-Juneau, DFO	Jan-08	Sablefish	20	3	complete
08-003	ADFG-Juneau	K. Munk	ADFG-Juneau, CDFO, WDFW	Mar-08	Yelloweye Rockfish	24	3	complete
09-001	ADFG	J. Niel	ADFG, CDFO, NWFSC, AFSC	09-Dec-08	Sablefish	24	4	complete
09-002	CDFO	S. MacLellan	ADFG, CDFO, NWFSC, AFSC	15-Jan-09	Sablefish	24	4	complete
09-003	NWFSC	P. McDonald	NWFSC, AFSC, CDFO, ADFG	21-Jan-09	Sablefish	24	4	complete
09-004	AFSC	D. Anderl	AFSC, NWFSC, CDFO, ADFG	15-Jan-09	Sablefish	20	4	complete
09-005	CDFO	J. Groot	CDFO, NWFSC	17-Feb-09	Hake	?	2	complete
09-006	NWFSC	O. Rodriguez	NWFSC, CDFO,	15-Nov-08	Hake	100	2	complete
09-007	ADFG	S. Emlējati	ADFG, AFSC	08-Apr-09	Pacific Cod	?	2	in process
09-008	ADFG	S.Emiejjati	ADFG, AFSC	08-Apr-09	Pacific Cod	?	2	in process



**Figure 1.** Sablefish ad hoc Working group mini-workshop CARE 2009.



**Figure 2.** CARE members review samples from a hake otolith exchange to resolve differences in their interpretation.



**Figure 3.** Close up of AFSC's new Isomet 5000 saw used to produce otolith thin sections.

## APPENDIX I - A



### **C.A.R.E. Agenda (Committee of Age Reading Experts) Canada-US Groundfish Committee April 21-23, 2009 Sand Point, Seattle, WA, USA Traynor Room**

**Tuesday, 21 April**

**I. Call to Order** [8:30 am] – Shayne MacLellan (Chair)

#### **II. Host Statement**

1. Welcome statements (Dan Ito)
2. Host info: safety/security orientation, social, t-shirts etc (Delsa Anderl)

#### **III. Introductions**

1. Round-table intros (name, agency, location)
2. Attendance, address, phone, email sheet – electronic on dedicated laptop

#### **IV. Approval of 2009 Agenda**

**V. Working Group Reports** [9 -9:30 am] Activity since CARE 2008 & initiate discussion for future activities (5 min each). Can discuss further through out meeting & resolve Thursday am.

1. TSC Meeting/2008 CARE report (Kris Munk)
2. CARE Manual (Betty Kamikawa)
3. Age Structure Exchanges (Vice Chair: Sandy Rosenfield)
4. Charter Committee (Kris)
5. Website (Jon Short)
6. Forum (Nikki Atkins)

#### **VI. CARE recommendations:** [9:30 – 10 am]

1. 2008 CARE to CARE status
  - a. 2008CC-01: Move CARE meetings to odd years beginning 2009.
  - b. 2008CC-02: Add disclaimer & citation info to CARE website.
  - c. 2008CC-03: Create trial CARE forum.
  - d. 2008CC-04: Approval of CARE meeting minutes via email.
2. New for CARE 2011? Can craft through out meeting.



---Break --- 10– 10:15 am ---

**VII. Agency reports** [10:15-10:45 am] ~3 min each – no PPT please (bring electronic version for secretary). Brief update (staffing, organizational, new species/projects)

1. ADFG – (Kris summarize all sites)
2. WDFW – (Lance Campbell)
3. AFSC – (Betty Goetz)
4. ODFW – (Josie Thompson)
5. NWFSC-PSMFC (Patrick McDonald)
6. California – (?)
7. IPHC (Joan Forsberg)
8. MLML (?)
9. CDFO (Shayne)

**VIII. Topics for Discussion/New Business** [10:45 am – noon]

1. Symposia/Conferences since CARE 2008 & upcoming:
  - a. ICES Workshop for Age Determination of Redfish (Shayne) 5 min
  - b. CARE presentation at IOS 2009 Monterey (Shayne) 15 min
2. Topics:
  - a. Defining working groups, roles, purpose & activities. Right now some are buried in Charter & others nowhere – post more obviously on website to see accomplishments? (Shayne) 10 min
  - b. IPHC non-halibut 1960's samples (Steve Wischniowski) 10 min
  - c. Use of digitized otolith reference sets (Steve) & agency protocols for outside use of archival samples 10 min
  - d. Need for standard age reader ID that could be used in the state/federal/provincial(?) databases (Patrick McDonald) 10 min
  - e. Non-agenda items:

--- Lunch --- noon -1 p.m. ---

**IX. Scientific Presentations** 10 min each [1 -2 pm]

1. Known-age sablefish research (Delsa)
2. Ad Hoc Sablefish group results (Kris)
3. Lingcod fin/otolith comparison (Willy Dunne)
4. Overview of recent research at AFSC (Craig Kastle)
5. Automating image cataloging & photo-merging using Excel macros & Photoshop (Jon)

---Break --- 2:00 - 2:15pm ---

**X. Working groups** [2:15 - 2:45] – Meet, discuss & formulate written recommendations throughout rest of workshop. Prepare electronically for Thursday morning.

**XI. Hands-On Workshop** [3:00 – 5:00] Depending on time we finish business we can get a head start on scope work.

**Wednesday, 22 April**

**XII. Hands-On Workshop [9 am – 5 pm]**

- A. Hands on scope work
  - a. Sablefish focus group mini-workshop (mini-agenda attached)
  - b. All other species – Traynor Room

**XIII. Demonstration:** Isomet 5000 saw (Jon) - during Wed. afternoon sometime.

**Thursday, 23 April**

**XIV. Concluding CARE business [9 – 10:30 am]**

- A. Recommendations 2009
- B. Other activities finalization
- C. Administration nominations
- D. Schedule and location of 2011 Meeting
- E. Closing -adjourn

**XV. Continue hands-on [rest of day as needed]**

# APPENDIX I – B

## DRAFT AGENDA

Sablefish Age Readers Ad hoc Working Group  
Convened April 3, 2008 by the Pacific Northwest Sablefish Age Readers

### **Purpose:**

The Sablefish Age Readers Ad hoc Working Group first met April 3, 2008 to discuss interest in and goals to firmly document age reading criteria and fundamental differences between stocks originating from southerly to northerly latitudes.

### **Goals:**

1. Document and report current age-reading standards with a comprehensive age structure exchange
  2. Calibrate interpretation of sablefish patterns
  3. Document and report size differences for up to age-1y (1+[June]) sablefish stocks from south to north
- I. Document interpretation of sablefish patterns
- a. Exchange
    - i. Each agency provides sample n~24 (exchange begin Oct 1, '08)
      1. Samples made up of Jan-May(June) sample dates, if possible
      2. Select proportions in age pools, for ex 1/3 ea: 1-15y, 16-30y, >30y
    - ii. Each specimen should have 4 halves
      1. Each AGENCY new-burns ONE (1) otolith half
        - a. "Designated Ager" responsible for maintaining integrity of sample, for remaining participating agency age-readers
        - b. Emphasize use of photographs, used by additional agency age-readers (to retain sample integrity)
    - iii. Capture month, day, and location (general) will be reported with sample
    - iv. Data sheet – a single data sheet used by all
      1. Mockup due by Aug 1 (Neil)
      2. Will include reference images for learning of identified parameters (for ex transition zone, growth rate, margin)
    - v. Age
      1. Transition zone(s)
      2. Gage "growth rate" (per pattern)
      3. Classify marginal growth (edge)
      4. Each agency provides one data set per sample (due Jan 31, '09)
  - b. Images
    - i. Images accompany data sheet to calibrate to data terms
    - ii. Each exchange sample will be accompanied by photographs of ~6 or more specimens, where each specimen has a full complement of images showing the usual interpretation areas and needed level of magnification

- iii. Each agency will annotate an unmarked image with their annuli
      - 1. format to be determined (ppt 1 slide per image, agency files named: “<Sample name>\_<agency name>”?)
- II. Calibrate interpretation of sablefish patterns
  - a. Group discussion/scope work[simultaneous with 2009 CARE Workshop]
  - b. Assessment
    - i. Age data precision (McDonald)
    - ii. Resolution
    - iii. Image comparison
  - c. Calibration report (<author>)
- III. Document and report size differences for age-1y sablefish stocks from south to north
  - a. Identify regional samples of known-age sablefish, 0 to 1y (group, due <date>)
    - i. n~50
    - ii. emphasize “late zeroes” through “early one-plusses” (thru June)
    - iii. One to multiple samples
      - 1. Intra and interannual
      - 2. Single location, for ex: “Southeast Alaska, 1999 (June, Aug), 2000 (Aug), 2001 (Aug)
  - b. Measure all agency otoliths (ADFG-ADU, send to Munk by “early July” 2008)
  - c. Summarize statistics (Atkins, due ~Oct ’08)
  - d. Develop reference data and table (Atkins, due ~Oct ’08)
- IV. Workshop reports
  - a. Report of the working group (Munk, 2009 CARE Workshop)
  - b. Scientific report of variation in known-age (0 to 1y) sablefish (~2009 or tbd)

**Sablefish Working Group Participants (will add to as advised):**

ADFG: Kristen Munk, Jodi Neil

CDFO: Shayne MacLellan, Karen Charles, Darlene Gillespie, Barb Campbell

NMFS-AFSC: Delsa Anderl, others?

NMFS-NWFSC/PSMFC: Patrick McDonald, Nikki Atkins, others?

## **APPENDIX I – C**

### **Considerations for requests of archived age structures**

The following are considerations CARE member agencies/ageing laboratories may wish to use when handling outside requests for accessing archived age structures. This list was prepared by a CARE working group, and submitted to CARE on April 23, 2009, and are not proposed as agency guidelines.

1. The requesting individual/agency must have demonstrated an ability to complete scientific projects;
2. The applied methods, including requisite sample sizes, must be rigorous enough to support the proposed analyses;
3. Products (i.e., prepared specimens and data) are returned;
4. The study conclusions may not necessarily reflect the position of the agency or cooperators; and
5. The proposed use should not deplete the archive for any internal use (i.e., geographically, by year, or age class).
6. Requests should be accompanied by a written proposal.

## APPENDIX I – D

### CARE 2009: Objectives and Agenda for Sablefish Focus Group Mini-Workshop

#### Objectives:

1. Identify & record difficult/easy to interpret sablefish otolith patterns
2. Establish standard criteria – measurements, patterns
3. Document criteria – CARE manual update, publish

#### Agenda:

1. Review results of measured and exchanged otoliths
  - a. Measurement results (presented during general meeting)
    - i. Discuss/decide if a practical application
  - b. Exchange (results presented during general meeting)
    - i. Kris highlight key differences/agreements for discussion
    - ii. Group image session to illustrate specific examples
    - iii. Scope time to review & key into patterns of concern
  - c. Identify/document easy & common difficult patterns
2. Known-age samples
  - a. Delsa to chose some demonstrative examples to illustrate interpretation of key difficult and easy patterns
  - b. Confirm/establish common easy/difficult patterns & standard way to interpret
  - c. Test participants with small number of known-age to measure lessons learned
3. Document standard criteria
  - a. Cobble an outline & assign work to group
    - i. Written
    - ii. Photographic
  - b. Publication?