

Committee of Age-Reading Experts

2013 Committee Report

Prepared for the Fifty-fifth Annual Meeting of the
Technical Subcommittee of the Canada-USA Groundfish Committee

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CARE 2013 Report to the Technical Subcommittee Of the Canada-USA Groundfish Committee

A. CARE Overview

1. History

The Committee of Age-Reading Experts, CARE, is a subcommittee of the Canada-USA Groundfish Committee's Technical Subcommittee (TSC) charged with the task to develop and apply standardized age determination criteria and techniques and operate 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.

2. Report Period

This report covers the work period of January 1, 2013 through December 31, 2013. This reporting period includes information from the Executive Summary prepared by outgoing Chair Sandra Rosenfield. Current officers elected at April 2013 meeting are:

Chair - Elisa Russ (ADF&G)

Vice-Chair - Chris Gburski (AFSC)

Secretary - Lance Sullivan (NWFSC)

3. CARE Workshop

CARE meets biennially for a three day workshop. Workshops typically consist of one "business" day and one and a half days of hands-on calibration at microscopes to review and standardize age reading criteria.

a. Overview: The most recent biennial CARE workshop was held April 16-18, 2013 at the NOAA Alaska Fisheries Science Center (AFSC), Sand Point facility in Seattle, WA, and hosted by Delsa Anderl and the Age and Growth AFSC staff. The meeting was attended by 37 CARE members (Table 1) from participating agencies ADF&G (5), AFSC (12), CDFO (3), IPHC (4), NMFS – Auke Bay (1), NWFSC (6), ODFW (1), and WDFW (5). Also present was Theresa Tsou, WDFW, and member of TSC. The next CARE workshop in 2015 will be held prior to the TSC meeting at the AFSC in Seattle, WA.

b. Business Session Highlights:

i. Scientific presentations:

Four PowerPoint presentations were given:

- *The Spiny Issue of Ageing Spiny Dogfish: Historical Dogma vs. New Methods* by Cindy A. Tribuzio, AFSC – Auke Bay.
- *Age validation using stable oxygen isotopes ($\delta^{18}O$) signatures in otoliths: Comparison of secondary ion mass spectrometry and micro milling/continuous flow isotope ratio mass spectrometry*, by Dr. Thomas Helser, AFSC - Seattle.
- *A new bomb-radiocarbon reference curve for the Bering Sea, and age validations for two species, northern rockfish and yellowfin sole* by Craig Kastle, AFSC - Seattle.
- *The Potential Long Term Effects of Otolith Storage in Glycerin* by Sandra Rosenfield, WDFW.

ii. Agency Reports:

ADF&G -all sites (Elisa Russ, Kevin McNeel, Willy Dunne), WDFW (Lance Campbell and Jennifer Topping), AFSC (Tom Helser), ODFW (Lisa Kautzi), NWFSC (Patrick McDonald), IPHC (Joan Forsberg) and CDFO (Darlene Gillespie) provided reports summarizing and updating agency activities, staffing, organization, new species and

projects. Important to note was the retiring of Kris Munk (ADF&G) and Shayne MacLellan (CDFO). NWFSC purchased elevating desks for all their employees that comply with ergonomic standards.

iii. Discussion Topics

There were six discussion topics of new business.

a) Symposiums/Conferences:

1. International Otolith Symposium, Spain, October 20-24, 2014:
Members were encouraged to attend. Lance Campbell (WDFW), Craig Kastle (AFSC), and Darlene Gillespie (CDFO) all expressed an interest to attend pending funding approval. Darlene said she has possession of the poster that was made for the last IOS symposium and if she is not able to attend she will relinquish it to another member who could attend. There was also mention of the 'Age Validation Conference' co-sponsored by Allen Andrews (NOAA-PIFSC) which coincides with the IOS.
 - As of April 2014, Helser and Allen Andrews (NOAA-PIFSC) confirmed to attend. Helser willing to represent CARE.
 - The CARE poster will be presented.
2. Helser presented at the 2012 American Marine Science Symposium meeting (AMSS) in Anchorage on age validation of skates.

b) Charter:

There was discussion about the Charter and if there was a need to continue the Charter Committee or disband it. Members decided that it should continue and three new members joined. Additional information to include timelines for the CARE Chair regarding TSC meetings, TSC reports, and examples of oral reports given to TSC was discussed. Include a time table reference for scheduling the bi-annual meetings, draft agendas as well as promoting and encouraging the CARE sub-committees were also discussed. Timelines will be added for the Vice Chair and Secretary as appropriate. These outlines will be presented to CARE for approval in 2015. Included in CARE to CARE recommendations.

c) Age Determination Manual:

There was discussion on whether potential differences in age determination within species, between stocks, should be included in the manual. Members concurred that there are regional differences depending on where specimens were collected, particularly in the Gulf of Alaska as move south to north, and ADF&G staff noted that certain species collected further north (PWS, North Gulf) can be easier to age than those collected in Southeast, which often present with a "noisier" pattern; although age determination criterion does not change based on sample location. Stock location is included on the website for age structure exchanges. The CARE Manual Committee will consider how to incorporate this information, in regards to age determination, into the manual and further discuss at the next CARE meeting.

c) Archived Structures:

CARE discussed where and how to add spreadsheets containing Archived Structures information from member agencies to the website. Jon Short (AFSC) suggested we add a link to the existing Species Information table. Members agreed this would be a temporary fix until the website is updated to accommodate a different arrangement.

d) Forum:

The CARE forum is an online place where members and other interested age readers can have discussion. The usefulness of the Forum was addressed. Nikki Atkins (NWFSC) reported that it's rarely used by our members. However, she has had three requests for new accounts from otolith age readers from other states in the US and abroad. It was decided that as CARE's reputation expands the Forum will encourage outside contacts and the Forum requires little effort to maintain. Also, with sequesters and budget constraints, it may still prove useful in the future for emergency communication purposes. Members agree the Forum should continue.

e) Effects of long-term storage of otoliths in glycerin:

The Focus of CARE for 2013 was the effect of otoliths stored long term in glycerin. Sandra Rosenfield (WDFW) presented a PowerPoint presentation of observations of otoliths stored in glycerin since 1970. Samples from 1970 -1985 were stored in vials with the otoliths separated by paper disks and then filled with a liquid media of 30% ethanol and water or 30% glycerin, water and pinch of thymol. At the time there was no preference as to which media was used. The vials once filled were dipped in paraffin to prevent evaporation. Over the years, the samples in ethanol and water did evaporate, but there was no long term effect on the ability to age the otoliths. The glycerin, water and thymol samples did not evaporate. The otoliths, when removed from the vial, appeared translucent and seeped glycerin for days. 5% of otoliths were etched on the surface with a powdery residue. When broken and burnt, 60% showed a cloudy band on the outer edge concealing 5 to 15 annuli. Members were asked to fill out a survey on procedures used for otoliths storage. The results showed two other agencies having issues with glycerin when used for long term storage of otoliths. Shayne McLellan (CDFO) noted hake stored from the 1970's were recently aged using the break and burn method and they also revealed a milky white band on the outer edge. The white edge was very apparent, though CDFO could age around or see through the "milky white edge." MacLellan also stated that small sablefish otoliths (stored long term in glycerin) had a white powdery film all over them and they removed them from the glycerin media and now store them dry. Joan Forsberg (IPHC) noted their juvenile halibut otoliths stored in glycerin had become pliable and coated with a white film. They also removed the otoliths from the glycerin media, rinsed them in water and then stored them dry. Forsberg was concerned because they no longer age halibut otoliths using the surface method; they recently changed to baking and breaking. She said their archives go back to 1914 and everything is stored in glycerin. Forsberg is going to age the halibut using the break and bake method and report back to CARE in 2015. The members discussed potential causes attributing to the otoliths' deterioration, potential issues for age validation, and concern for the otoliths' integrity if they remain in glycerin. AFSC archives all of their otoliths in glycerin because of fire regulations. They are also going to age their otoliths and report to CARE in 2015. The findings from this report and information from IPHC and AFSC will collectively be considered when a recommendation is made to the manual committee regarding the use of glycerin as a storage media.

iv. Hands-on Session Highlights and Discussion:

a) Hands-On Age Reading at Microscopes:

A total of 27 readers reviewed 10 species during the hands-on workshop. Members aged sardines, geoduck, black rockfish, blue rockfish, rougheye rockfish, hake, yelloweye rockfish, redbanded rockfish, Pacific cod, and

shortraker rockfish. All the species aged, participating members, and agencies are listed in Table 2.

b) Dogfish mini workshop:

A dogfish mini workshop led by Cindy Tribuzio (AFSC, Auke Bay) convened on Wednesday, April 17. The spiny dogfish ageing manual from the NPRB study (April, 2013-draft) *Methods for the preparation of spines and vertebrae and an overview of age structure reading* was first discussed. Age structures were processed by Cal Blood for a reference collection to calibrate ages across agencies, and were aged by all attending age readers and inter-reader ageing results were compared including precision (CV) by Tribuzio. Live images for vertebrae were viewed and growth patterns and age assignments were discussed. After group agreement on an age, the consensus age was recorded. Participating members and agencies: Nikki Atkins, Tyler Johnson (NWFSC), Beth Matta, Chris Gburski (AFSC), Sandra Rosenfield, Jennifer Topping (WDFW), Willy Dunne (ADF&G) Vanessa Hodes (CDFO) and Cal Blood (independent contractor).

B. CARE Subcommittee (Working Group) Reports

There were four active working groups that reported at the 2013 CARE workshop.

1. **CARE Manual/Glossary Committee** – Betty Kamikawa (NWFSC) resigned as lead and responsibilities were assumed by Elisa Russ (ADF&G - Homer) in March 2013. The other members of the manual working group include: Barbara Campbell (CDFO) [not present at the 2013 meeting] and Betty Goetz (AFSC). New members of the manual working group that joined during the 2013 CARE meeting are Willy Dunne (ADF&G), Lisa Kautzi (ODFW), and April Rebert (ADF&G).

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

At the 2013 CARE meeting, the CARE manual was updated with three new sections that were reviewed in 2012/13 by the CARE membership:

- 1) Age Determination of Pacific Halibut section submitted by J. Forsberg (IPHC),
- 2) Quality Assurance/ Quality Control (QA/QC) section submitted by B. Campbell, and
- 3) updated Accuracy and Precision section (including validation methods) submitted by Craig Kastle (AFSC).

Two additional sections that were completed and reviewed by both the manual working group and the membership were 4) Age Determination of Lingcod Otoliths, and 5) Thin Sectioning Method.

These final two sections have not been incorporated into the CARE Manual because clarification was needed on how to proceed. Decisions regarding these sections were made at the 2013 CARE meeting as follows. The draft for Age Determination of Lingcod Otoliths was submitted by Kris Munk (ADF&G – Juneau, retired), and initial review was completed in 2013, however, there are new terms in the section that need to be clarified and/or added to the glossary and due to K. Munk's retirement prior to the April 2013 CARE meeting, final review of the lingcod otolith section and glossary will be conducted with other members that interpret lingcod otoliths, then submitted for approval to the membership with intended incorporation into the manual at the 2015 CARE meeting. Charles Hutchinson (AFSC) submitted the short section on Thin Sectioning Methods, and the working group needed to determine how to incorporate it into the manual in relation to the existing and fairly comprehensive existing

Rockfish Ageing Thin Sectioning information, and it was decided to edit the draft and include in the General Ageing Procedures section, and then edit the Rockfish section to avoid redundancy.

The ambitious list of additional sections to be drafted and submitted for approval for the 2015 CARE meeting are a short section on Ergonomics (initial draft begun at 2013 CARE meeting), Baked Otolith Methods (to be included under General Ageing Procedures), review and update Rockfish Ageing Procedures, and Acknowledgements section (to replace current documentation sections at the beginning of the manual describing participants and contributors), as well as a new section on Walleye Pollock age determination and a revision to the Sablefish Ageing Procedures section. After review and approval by the Manual Working Group, all revisions will be submitted to the full CARE membership for final review and approval followed by incorporation into the CARE manual. Recommendations are included in CARE to CARE 2013.

2. **CARE Website Committee** – Jon Short (AFSC) Chair and webmaster, Nikki Atkins (NWFSC)

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/>.

In 2013, J. Short updated the CARE website with 2012 production numbers, 2012 age structure exchanges, and the 2013 CARE meeting approved minutes. In early 2014, J. Short added 2013 age structure exchanges to the website. N. Atkins continued to maintain the CARE Forum in 2013 (link on website) and also posted Excel spreadsheets (including two macros) to assist in QA/QC and determining bias (including statistics APE, CV, % agreement).

3. **Charter Committee** – Elisa Russ (ADF&G), Betty Goetz (AFSC)

The Charter, initiated in 2000, provides a framework in which the original intent of CARE may continue. It also familiarizes new CARE members to the function of CARE and the responsibilities of its officers and members. The committee is responsible for facilitating changes and updates to the Charter.

Kris Munk retired and thereby resigned as lead of the working group. The committee had been reconvened in 2008, after being previously disbanded, to make updates to the CARE Charter, many of which were completed. The committee was not active in 2012. At the 2013 CARE meeting, E. Russ volunteered to lead the group. Tasks to be completed for the 2015 CARE meeting are to review the Charter and recommendations from 2011 CARE: 1) Define working groups, 2) Specify work and reporting obligations, 3) Suggest time limits, and 4) Add new members or disband the charter committee after the 2015 meeting, once updates are completed and approved by the CARE membership.

4. **Sablefish ad hoc Working Group** - Delsa Anderl (AFSC) was appointed as chair after Shayne MacLellan (CDFO) retired and stepped down. The other current committee members are: Tom Helser (AFSC), Lisa Kautzi (ODFW), Darlene Gillespie (CDFO), Patrick McDonald (NWFSC), Kevin McNeel (ADFG), John Brogan (AFSC), and new member April Rebert (ADF&G).

The sablefish working group convened, reviewed and discussed results of sablefish exchanges. In addition to extensive exchanges during the 2008-13 of up to 100 samples from each region, the working group also completed age structure exchanges, initiated in 2012, of known age sablefish (n=24) with participating agencies ADF&G, CDFO, PSMFC, and AFSC prior to the 2013 CARE meeting. These exchanges helped identify patterns with slow growth for otoliths younger than age 5 years which

contributed to difficulties with calibration. The sablefish working group made a recommendation to revise the Sablefish Ageing Procedures section of the CARE manual that will be submitted to the manual committee by December 2014 for incorporation into the CARE manual at the 2015 meeting.

C. Age Structure Exchanges

Age structure exchanges occur periodically to assess calibration among CARE age-reading agencies. Depending on results, specimens of interest (e.g. demonstrated biases) are then reviewed and discussed. Exchanges are tracked by the CARE Vice-chair. Data from exchanges are available on the CARE website. There was one age structure exchange initiated in 2013 on geoduck clams between ADF&G and CDFO. Species exchanged were sablefish and sardines. In 2014, five exchanges have been initiated to date on rougheye rockfish, Pacific spiny dogfish, lingcod, big skate, and longnose skates. In 2013, an effort was made to retrieve missing CASE (CARE Age Structure Exchange) invoices which were then appended to the website. Age structure exchanges initiated and completed 2012-2013 are listed in Table 3.

D. Recommendations C.A.R.E. ~TSC

In 2013 recommendations were made by CARE to CARE, TSC to CARE, and CARE to TSC. Some recommendations may take more than one cycle to complete. This list contains recommendations that are still pending or provide background for those made by CARE/TSC in response to prior recommendations.

1. 2013 Recommendations

1.1. CARE to CARE

- 1.1.1. CARE recommends the manual working group post archived editions of the CARE Manual on the website with a link to the year of publication.
- 1.1.2. CARE recommends the Manual/Glossary Committee continue revision and expansion of the C.A.R.E. Manual on Generalized Age Determination (CARE Manual) as described here. Finalize the draft on Lingcod Otolith Ageing and incorporate into the CARE Manual by June 1, 2013. Edit the draft for the updated Thin Sectioning Method and include in the General Ageing Procedures section in the manual to reference all age structures (otolith, vertebrae, and fin rays) and then edit the Rockfish Ageing Thin Section Method section to avoid redundancy. Write a section to be included in General Ageing Procedures describing baking otoliths and collaborate with other agencies that utilize that method for rockfish. Additionally, revise the remaining sections of the Rockfish Ageing Procedures section and move some information to the Otolith Ageing Procedures section where appropriate (e.g. microscope equipment information). Write a short section on Ergonomics and include with general information on equipment. Draft a new section on Walleye Pollock Ageing Procedures with collaboration with other agencies that age pollock. Revise the Sablefish Ageing Procedures section. Additionally, CARE recommends removing the documentation sections at the beginning of the manual (describing participants and contributors) because the documentation is incomplete, and then add an Acknowledgements section at the end of the document listing contributors to the manual. However, in order to maintain the CARE Manual as a historical reference, it is also recommended to post the old version(s) of the CARE Manual (when new versions are produced) to the website with links referencing their year of publication. The Thin Sectioning, Baked Otolith methods, updated Rockfish Ageing Procedures, Ergonomics, and

Acknowledgments sections are assigned and to be submitted to the lead of the Manual Working Group (Elisa Russ) by October 2013, and the Walleye Pollock and sablefish sections are to be submitted by December 2014. After review and approval by the Manual Working Group, all revisions will be submitted to the full CARE membership for final review and approval followed by incorporation into the CARE Manual.

- 1.1.3. CARE recommends that the Forum continue.
- 1.1.4. CARE recommends the Website committee load a new version of Joomla for the CARE website or one of the other popular CMS, such as WordPress or Drupal. Future planned updates to the website include creating consistent capitalization on Species Info page, update agency production numbers, and add a webpage for age structure inventories.
- 1.1.5. Propose further study of otoliths stored long term in glycerin-thymol, from IPHC and AFSC, after several agencies observed otolith degradation from long-term storage in glycerin-thymol. At the next CARE, their observations regarding the media of glycerin-thymol combined with reports from 2013 will collectively result in a recommendation to the manual committee in 2015.
- 1.1.6. Charter Working Group: The charter will be expanded to include timelines for reports and meetings for possible additions to the charter pending CARE membership approval.

1.2.CARE to TSC

- 1.2.1. At the 2013 CARE meeting, the manual working group drafted a section on Ergonomics for inclusion in the CARE Manual on Generalized Age Determination. It is important that agency leaders recognize the health risks associated with age reading and equipment options that may be available to mitigate these risks.

1.3.TSC to CARE

- 1.3.1. TSC acknowledges CARE's concerns regarding ergonomic injuries caused by extended periods ageing fish and has recommended that the Parent Committee request Agencies to investigate ergonomic remedies to minimize ergonomic injuries and the TSC suggests looking at ergonomic injuries and solutions in similar assembly type work (circuit boards) and medical pathology (microscope slide reading).

2. 2012 Recommendations

2.1 TSC to CARE

- 2.1.1. The TSC thanks CARE for their continued good work and would like to acknowledge their continued work to support the online posting of otolith archives by member agencies in light of their many other work pressures.

3. 2011 Recommendations

3.1. CARE to TSC

2.1.1. With regards to “...examining the feasibility of preparing an on-line summary of the material that is archived by each of the west coast groundfish research agencies”:
Most agencies do not have publicly accessible age data sample inventories now, except AFSC. CARE recognizes that there are advantages and disadvantages associated with making inventories public. A CARE portal, the website, may be a possible platform to identify inventories. CARE requests clarification on what data the TSC envisions would be made available on said inventory. Then CARE members would consult their agencies regarding the TSC recommendation and will formulate a reply by year end.

3.2. 2011 TSC to CARE Recommendations:

3.2.1. “TSC would like to fully endorse the activities of CARE and acknowledge their great contribution to groundfish research and stock assessment.

TSC thanks CARE for their discussions and consideration of the 2010 request to examine the feasibility of preparing an on-line summary of archived ageing material from their member agencies. Since most agencies do not currently maintain publicly accessible on-line inventories, TSC appreciates that this task will be laborious. “

1. *To clarify for CARE, TSC’s 2010 information request includes the following by species:*

Number of ageing structures collected by:

- a. *structure type*
- b. *agency*
- c. *year*

2. *Number of structures aged by year (already on the website)*
3. *A link to a contact person at each agency.*

3.2.2. CARE Chair query regarding 2011 archive recommendation:

"Am I correct in assuming that the TSC is looking for numbers of fish age structures (#1) collected for all groundfish species going back as far as each agency has records for?"

3.2.3. The TSC reply was:

"This is something that we would like CARE to work toward beginning with the most recent years and progressing back in time if resources permit. This needn't be a scrupulously thorough and exhausting exhumation of numbers of structures and could be an effort that begins with the easiest information and gets added to as they can. But the more information, the better, eventually."

3.3. 2011 CARE reply to TSC:

3.3.1. Three CARE member agencies are willing to compile and forward "an on-line summary of archived ageing material". This could increase as two more member agencies are willing pending approval. Each member agency has selected a contact person for the website link.

Three CARE member agencies chose not to participate. Some will link the CARE website to their agency website and provide a contact name.

The CARE executive committee is considering how to include the summary of archived ageing material on to the website. In 2012 changes will be made to the CARE website to record the summary of archived ageing material and be ready to implement after the 2013 CARE meeting, pending membership approval.

3.4. 2011 CARE to CARE:

3.4.1. Website Committee: CARE recommends the website committee update the CARE website content management system from JOOMLA version 1.12 to version 1.5 to remain current with technology for security and bug fixes.

3.4.2. Manual Working Group: CARE recommends the manual working group continue revision and expansion of the CARE manual to include sections on hake, lingcod otoliths, skates, age validation, and updated rockfish ageing information. In addition, we recommend that a section on ergonomics be added. These additions or revisions should be submitted to the CARE Manual Committee (led by Kamikawa) by April 2012 for committee review. The Manual Committee will submit all changes and updates to CARE for consideration at the 2013 CARE workshop. The CARE Manual Committee will review the halibut and QA/QC sections that were submitted at the 2011 CARE meeting and distribute final drafts to the CARE membership for review.

3.4.3. CARE recommends all members review the method and validation species information on the Species Information webpage to confirm the data is current. Updates or changes should be forwarded to Short. This table will be reintroduced into the biennial meeting agenda for agency updates.

3.4.4. CARE recommends that the 2013 agenda address the effects of long-term storage of otoliths in glycerin.

4. 2010 Recommendations

4.1. TSC to CARE

4.1.1. Recognizing the value of carbon dating and other potential uses of archived ageing material, TSC recommends that CARE examine the feasibility of preparing an on-line summary of the material that is archived by each of the West Coast groundfish research agencies.

Note: Complete minutes of 2013 CARE compiled by Chris Gburski (AFSC), outgoing secretary, are available online at:

http://care.psmfc.org/docs/minutes_13.pdf

Table 1. Attendees of the 2013 CARE Workshop, April 16-18 2013, Seattle, Washington, U.S.A.

Last name	First name	Agency	Location	Country	Email
Dunne	Willy	ADF&G	Homer	USA	willy.dunne@alaska.gov
McNeel	Kevin	ADF&G	Juneau	USA	kevin.mcneel@alaska.gov
Pollak	Andrew	ADF&G	Homer	USA	andrew.pollak@alaska.gov
Rebert	April	ADF&G	Juneau	USA	April.Rebert@alaska.gov
Russ	Elisa	ADF&G	Homer	USA	elisa.russ@alaska.gov
Anderl	Delsa	AFSC	Seattle	USA	delsa.anderl@noaa.gov
Brogan	John	AFSC	Seattle	USA	john.brogan@noaa.gov
Colman	Jamie	AFSC	Seattle	USA	jamie.colman@noaa.gov
Gburski	Chris	AFSC	Seattle	USA	christopher.gburski@noaa.gov
Goetz	Betty	AFSC	Seattle	USA	betty.goetz@noaa.gov
Helser	Tom	AFSC	Seattle	USA	thomas.helser@noaa.gov
Hutchinson	Charles	AFSC	Seattle	USA	charles.hutchinson@noaa.gov
Johnston	Chris	AFSC	Seattle	USA	chris.johnston@noaa.gov
Kastelle	Craig	AFSC	Seattle	USA	craig.kastelle@noaa.gov
Matta	Beth	AFSC	Seattle	USA	beth.matta@noaa.gov
Piston	Charlie	AFSC	Seattle	USA	charlie.piston@noaa.gov
Short	Jon	AFSC	Seattle	USA	jon.short@noaa.gov
Gillespie	Darlene	CDFO	Nanaimo	Canada	darlene.gillespie@dfo-mpo.gc.ca
Hodes	Vanessa	CDFO	Nanaimo	Canada	vanessa.hodes@dfo-mpo.gc.ca
Hudson	Mary-Jane	CDFO	Nanaimo	Canada	mary-jane.hudson@dfo-mpo.gc.ca
Blood	Cal	IPHC-Retired-Contractor	Seattle	USA	calvin.blood@frontier.com
Forsberg	Joan	IPHC	Seattle	USA	joan@iphc.int
Gibbs	Linda	IPHC	Seattle	USA	lindagibbs17@gmail.com
Tobin	Robert	IPHC	Seattle	USA	robert@iphc.washington.edu
Tribuzio	Cindy	NMFS-Auke Bay	Juneau	USA	cindy.tribuzio@noaa.gov
Atkins	Nikki	NWFSC	Newport	USA	nikki.atkins@noaa.gov
Higgins	Brooke	NWFSC	Newport	USA	brooke.higgins@noaa.gov
Johnson	Tyler	NWFSC	Newport	USA	tjohnson@psmfc.org
McDonald	Patrick	NWFSC	Newport	USA	patrick.mcdonald@noaa.gov
Sullivan	Lance	NWFSC	Newport	USA	lance.sullivan@noaa.gov
Whiteside	Cassandra	NWFSC	Newport	USA	cassandra.whiteside@noaa.gov
Kautzi	Lisa	ODFW	Newport	USA	lisa.a.kautzi@state.or.us
Campbell	Lance	WDFW	Olympia	USA	lance.campbell@dfw.wa.gov
Claiborne	Andrew	WDFW	Olympia	USA	andrew.claiborne@dfw.wa.gov
Rosenfield	Sandy	WDFW	Olympia	USA	greenthumb51@hughes.net
Topping	Jennifer	WDFW	Olympia	USA	toppijat@dfw.wa.gov
Tsou	Tien-Shui	WDFW	Olympia	USA	tien-shui.tsou@dfw.wa.gov

Table 2. 2013 CARE Hands-On “Scope Time” Session – Species Aged, Participants, and Agency.

Species	Participants	Agency	Comments
Sardine	Jennifer topping	WDFW	Sample exchange
	Vanessa Hodes	CDFO	
Sardine	Sandra Rosenfield	WDFW	Sample exchange
	Vanessa Hodes	CDFO	
Pacific cod	Chris Johnston	AFSC	Calibration
	Elisa Russ	ADF&G	
	Andy Pollak	ADF&G	
	Delsa Anderl	AFSC	
Yelloweye	Elisa Russ	ADF&G	Calibration
	Andy Pollak	ADF&G	
Shorthead	Charles Hutchinson	AFSC	
	Jeremy Harris	UW	
Rougheye	Betty Goetz	AFSC	Calibration
	Lance Sullivan	NWFSC	
	Cassie Whiteside	NWFSC	
	Charles Hutchinson	AFSC	
	Mary Jane Hudson	CDFO	
Redbanded	Betty Goetz	AFSC	Calibration
	Lance Sullivan	NWFSC	
	Cassie Whiteside	NWFSC	
	Charles Hutchinson	AFSC	
	Mary Jane Hudson	CDFO	
Black rockfish	Elisa Russ	ADF&G	Calibration
	Andy Pollak	ADF&G	
	Willy Dunne	ADF&G	
	Mary Jane Hudson	CDFO	
Geoduck	Darlene Gillespie	CDFO	Calibration
	April Rebert	ADF&G	
	Kevin McNeel	ADF&G	
Geoduck	Darlene Gillespie	CDFO	Calibration
	April Rebert	ADF&G	
Dogfish	Patrick McDonald	NWFSC	Spines
	Chris Gburski	AFSC	
	Vanessa Hodes	CDFO	
	Beth Matta	AFSC	
Dogfish	Cindy Tribuzio	NMFS-Juneau	Vertebrae
	Patrick McDonald	NWFSC	Training
	Chris Gburski	AFSC	
	Vanessa Hodes	CDFO	
	Beth Matta	AFSC	
	Sandra Rosenfield	WDFW	
	Jennifer topping	WDFW	
	Willy Dunne	ADF&G	
	Cal Blood	contractor	
Blue rockfish	Jennifer topping	WDFW	Cross training
	Lisa Kautzi	ODFW	
Black rockfish	Sandra Rosenfield	WDFW	Cross training
	Lisa Kautzi	ODFW	
Hake	Mary Jane Hudson	CDFO	
	Darlene Gillespie	CDFO	

Table 3. CARE age structure exchanges initiated/completed 2012-2013.

Exchange ID No.	Exchange Year	Species	Stock	Originating Agency	Coordinator	Coordinator (s)
13-001	2013	Geoduck	SE Alaska	ADF&G- Juneau	A. Rebert	CDFO, WDFW
12-003	2012	Sardine	Mixed	WDFW	S. Rosenfield	CDFO
12-002	2012	Sardine	British Columbia	CDFO	V. Hodes	WDFW
12-001	2012	Sablefish	Astoria, OR	ADF&G	Munk	AFSC, NWFC

Figure 1: Attendees of the 2013 CARE Workshop, April 16-18 2013, Group Photo and Hands-On “Scope” Time Session Participants.



APPENDIX-I



Seventeenth Biennial Meeting of the Committee of Age Reading Experts

**C.A.R.E. Agenda
Canada – US Groundfish Committee
April 16 – 18, 2013
AFSC, Sand Point, Seattle, WA, USA
Traynor Room**

Tuesday April 16, 2013 (8:30 am - 4:30 pm)

I. Welcome and Opening Statements (8:30 – 9:15)

- A. Call to Order (Sandra Rosenfield, CARE Chair)
- B. Host Statements
 - 1. Opening statements (Theresa Tsou and Thomas Helser)
 - 2. Host information (Delsa Anderl)
- C. Introductions
 - 1. Round-table introductions (name, agency, location)
 - 2. Attendance, address, phone, email
- D. Approval of the 2013 agenda
- E. CARE to CARE recommendations from 2011
 - 1. Review the usefulness of the Forum
 - 2. Update website version from 1.12 to 1.5
 - 3. Review the method and validation in Species Info on the website (for updates and changes contact Jon Short)
 - 4. Update the manual to include:
 - a. Sections on Halibut
 - b. QA/QC
 - c. Draft a hake section, skate section and ergonomics section
 - d. Lingcod otoliths added to the lingcod finray section,
 - e. Updated rockfish section to include thin sections and baked otolith
 - 5. Age validation section reviewed for updates and revisions

II. Working Group Reports / Activity Since CARE 2011 (9:15 - 10:00)

- A. 2012 TSC Meeting (Sandra Rosenfield)
- B. Age structure exchanges (Elisa Russ)
- C. CARE Manual (Elisa Russ)
- D. Website (Jon Short)
- E. Forum (Nikki Atkins)
- F. Sablefish (Delsa Anderl)

Break (10:00-10:15)

III. Agency Overviews and Updates (10:15-11:00)

*No PowerPoint; 5 minute updates (staffing, organizational, new species/projects, etc.)

- A. CDFG
- B. SWFSC
- C. CDFO (Darlene Gillespie)
- D. IPHC (Joan Forsberg)
- E. ODFW (Lisa Kautzi)
- F. AFSC (Tom Helser)
- G. NWFSC (Patrick McDonald)
- H. WDFW (Lance Campbell and Jennifer Topping)
- I. ADF&G (Elisa Russ, Kevin McNeel, Willy Dunne)

IV. Topics for Discussion / New Business (11:00-12:00)

- A. Otolith Symposium 2014 and other symposiums
- B. Conferences since 2011
- C. Charter: "The purpose is to familiarize new CARE members with the function of CARE and the responsibilities of its officers and members. The committee is responsible for facilitating changes and updates to the Charter." Kris Munk suggested:
 - 1. Define working groups
 - 2. Work and reporting obligations
 - 3. Suggest time limits
 - 4. Add new members or disband the committee
- D. Should the Manual include potential differences between stocks within species?
- E. Archive structures added to the website:
 - 1. Location on the CARE website
 - 2. Agency contacts
 - 3. Link to other websites (AFSC)
- F. Species Info on the website - needs Agency updates
- G. Additional topics
- H. Non-agenda items

Lunch (12:00-1:00)

V. Scientific PowerPoint Presentations (1:00 – 2:00pm)

- A. The Spiny Issue of Ageing Spiny Dogfish (Cindy Tribuzio)
- B. A new bomb-radiocarbon reference curve for the Bering Sea (Craig Kastelle)
- C. High resolution $\delta^{18}\text{O}$ sampling of otoliths for age validation – a comparison using micromilling/continuous flow mass spectrometry and secondary ion mass spectrometry (Thomas Helser)

VI. Work Shop Focus (2:00 – 2:30)

- A. Longtime storage of otolith in glycerin using WDFW's samples from the 1970s (Sandra Rosenfield)
- B. Discussion

Break (2:30-2:45)

VII. Working groups & Hands-On Workshop (2:45 – 4:30 pm)

A. Working groups:

1. Meet and formulate written recommendations
2. Prepare the recommendations electronically (to be presented Thursday morning)

B. Hands-on scope work

1. Sign up for scope station space and time

Wednesday April 17, 2013 (8:30 am - 4:30 pm)

I. Working groups & Hands on Workshop Continued

A. Dogfish working group (Room 2079)

B. Working Groups

C. Hands-on Workshop

Thursday April 18, 2013 (8:30 am – 12:00 noon)

I. Recommendations (8:30 – 9:00)

A. 2013 CARE to TSC

B. 2013 CARE to CARE

II. Concluding CARE business (9:00 -10:00)

A. Administration nominations

B. Schedule and location of 2015 meeting

III. Working groups & Hands on Workshop (10:00 – 12:00 noon)

A. Working Groups

B. Hands-on Workshop

IV. Adjourn (12:00 noon)