

**CARE MEETING MINUTES 16 - 18 APRIL 2013****AFSC SAND POINT, WA, USA****TRAYNOR ROOM****Tuesday, 16 April****Welcome and Opening Statements**

**A. Call to Order** - Sandy Rosenfield (WDFW) 2013 CARE Chairperson-agenda approved. Rosenfield called the meeting to order at 8:30 AM, April 16, 2013 at the AFSC Sand Point, Seattle, WA facility in the Jim Traynor Room. Rosenfield welcomed everyone to the meeting.

**B. Host Statements**

**1. Opening statements:** Theresa Tsou (WDFW) Washington State TSC Representative and Thomas Helser (AFSC) Age and Growth Program Manager. Tsou stated that this is the 17<sup>th</sup> year of CARE which is every two years and started thirty years ago with a yelloweye rockfish working group. She thanked the scientist's for their contributions and dedication for West Coast stock assessment. Helser with introduction and housekeeping: Helser has performed stock assessment for many years and the age data is much appreciated including all the effort and calibration. Helser has had some experience with age reading. Beth Matta (AFSC) is hosting the social at her house on Wednesday, April 17<sup>th</sup> starting at 6:00 PM.

**2. Host information:** Delsa Anderl (AFSC) is the CARE host and mentioned lunch possibilities off-site and the cafeteria on-site. You should all have Id's to show security guard. Maps will be available for Matta's house.

**C. Introductions**

- 1. Round-table introductions (name, agency, location):** CARE attendees/members went around the room and introduced themselves and stated which agency they worked for. (Table 1: 2013 CARE Attendee List)
- 2. Attendance, address, phone, email**

**D. Approval of the 2013 agenda:** Yes.(Appendix 1: 2013 CARE 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 fin ray 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**

A. **2012 TSC Meeting (Sandy Rosenfield)** - Rosenfield stated that the Technical Sub-Committee (TSC) was held in Newport Beach, California, Chaired by Stephen Phillips and hosted by California Dept of Fish and Wildlife. She reported that the 2011 CARE meeting was held in Seattle, 38 members attended. The activities and accomplishments were reported on by sub-committee chairs of the Manual/Glossary, Website, and Charter. The Vice Chair reported the number of age structure exchanges and efforts to retrieve CASE invoices from previous years. The report also included a summary of the recent workshop activities and accomplishments from the Sablefish working group. Other highlights from the 2011 workshop included demonstrations of the group's web forum, digital imaging, micro-milling, and staining of elasmobranch (i-lasme-brangk) vertebrae. Six participants presented their recent research. Major topics of discussion included whether CARE was straying from their mandated activities when filling TSC's request to post archived samples on the web site. Also, there was discussion on the usefulness of the CARE Forum for facilitating communication among members and digital imaging tools and procedures (software, hardware, and protocols).

CARE made five new recommendations to itself. Notable among those was for each agency to review the condition of archived otoliths, specifically those stored long-term in glycerin.

CARE provided an initial response to TSC's 2010 recommendation for examining the feasibility of preparing an online summary of the material that is archived by each of the groundfish agencies. This recommendation prompted discussion regarding the scale of work that publicizing holdings (and the potential for numerous requests) would entail. Several strategies were discussed about how to most efficiently compile the information, such as annual updates from agencies to the CARE website or linking existing tables to the website.

**2011 CARE reply to TSC:** Three CARE member agencies are willing to compile and forward "an on-line summary of archived ageing material" After the agencies name is the contact person. IPHC – Joan Forsberg, CDFO – Darlene Gillespie and SWFSC - David Wells. Willing pending approval is WDFW - Sandra Rosenfield and ODFW – Lisa Kautzi.

AFSC –Tom Helser and NWFSC - Patrick McDonald will link the CARE website to their agency websites with their names and contacts. ADFG chose not to participate.

The CARE executive committee is considering how to include the summary of archived ageing material on 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.

**2012 TSC to CARE:** 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.

McDonald asked a question whether website archived material is on-hold? Lisa Kautzi (ODFW) asked a question, originally to the TSC, whether to report the numbers from all collections (commercial, recreation and special projects). The reply from TSC was yes; include numbers available from all collections. Rosenfield (WDFW) said to classify all special projects as research. Tsou stated to focus on historical site and current fisheries including special projects. Anderl (AFSC) asked how it affected the AFSC? Helser's replied to post historical information on the website including species, structure, number aged and unaged. The observers vs. research surveys are duplicated. The University of Washington or AFSC can sell all the data and having it on the CARE website is redundant; we have all this info on our website. Jon Short (AFSC) said the website is updated daily and CARE is less than daily.

**B. Age structure exchanges (Elisa Russ)** – Elisa Russ (ADFG-Homer) stated that she is the 2013 CARE Vice Chair. There are two reports for the age structure exchange. For 2011, there were four exchanges, one for big skates from (AFSC, ADFG, ODFW), two for longnose skates from (AFSC, ADFG and ODFW) and exchanges three and four between (ADFG, and ODFW). The structures came from the Gulf of Alaska and the US West Coast. No more historical CASE invoices have been recovered. Data is available but statistical data (% agree, CV and APE) is unavailable. The discussion continued about CASE invoice statistical analysis. Russ stated that it would be nice to have formulas and what is expected from everyone? She is seeking advice from the CARE members. Rosenfield replied that statistics are optional. Russ discussed calibration as a purpose for exchanges and that participants should reference procedures for CASE invoices and at least include sample numbers and purpose of study. Anderl asked about sablefish and precision. Russ replied that this topic may be for later in the meeting for recommendations. Russ asked whether the initiating and cooperating agency should send the CASE invoice? The AFSC provided precision but no statistics. Reader agreement, procedure and protocol including the originating and cooperating agency were included. Rosenfield replied to Russ that the data is on the website and asked who does the analysis? Russ replied to Rosenfield that the originator of the CASE invoice generally does the analysis although CARE does not always get the CASE invoice back plus statistics. Rosenfield replied whether the % agreement, APE and CV are posted on the website? Russ replied that if the Vice Chair receives the CASE invoice then, yes, it is posted as part of the CASE invoice and there is a link from the exchange ID #. Rosenfield suggested that we should at least get the CASE invoices back. Russ gives a breakdown by year for CASE invoices: 2011-check on these and follow up later, 2012-no basics and three age structure exchanges, to be completed by the end of 2013. Anderl stated that there is a Pacific cod exchange with

ADFG-Kodiak (Sonya El Mejatti and Joan Brodie) and a sablefish exchange with the working group for 2012. Russ noted that there is no record of the P. cod exchange and no CASE # assigned. Anderl will get the CASE invoice for the P. cod exchange and Kevin McNeel (ADFG-Juneau) will provide the invoice for the sablefish exchange when it is complete. Russ said that in 2012, for which CASE invoice IDs were assigned, there were two sardine exchanges: initiator-WDFW, cooperator-CDFO and one sardine exchange from initiator-CDFO, cooperator-WDFW. The third multiple agencies exchange was for sablefish (as noted above) between ADFG-Juneau, NWFSC, AFSC and CDFO from November 2012. Russ stated she will follow-up with the initiating agencies if there is missing data or CASE invoices. Russ closed this discussion by asking CARE members if there are anymore exchanges and the response was no.

**C. CARE Manual (Elisa Russ)** - Russ reported as acting chair. Betty Kamikawa (NWFSC) has resigned as of March, 2013. Barbara Campbell (CDFO) and Betty Goetz (AFSC) have been active participants. Russ stated that new members are needed. Omar Rodriguez (formerly NWFSC) is no longer employed there. For skates, Matta and Chris Gburski (AFSC) will provide the input. In 2011, the manual committee suggested the need to expand on hake, lingcod, skates and ergonomics and additional information was submitted April, 2012. Discussion about the Manual Committee/Manual working group: have a 2013 report, the 2011 suggestions were not all completed. For the progress on the CARE manual for April, 2013-initial review was March, 2013 with edits, comments and final draft. There were two sections added to the CARE manual: Pacific halibut and updated precision with QA/QC age validation feedback from authors with more edits and comments; lingcod otoliths ageing; and thin sectioning. Clarification on lingcod is needed since Munk has retired and finalization is required with ADFG-Juneau. The thin sectioning piece is in final review and rockfish already has a thin section review. For organization on the manual and manual group, it is hoped to be completed in 2013 with Craig Kastle (AFSC) and Campbell for the QA/QC. Joan Forsberg's (IPHC) halibut has been incorporated. The future inclusion of hake, skates and rockfish ageing criteria are next. For the skates, AFSC will take the lead. Rodriguez in 2011 wanted to expand the rockfish chapter, to include break and bake sections. Willy Dunne (ADFG-Homer) may be interested in working with group members to review the process. Sections for the manual: 1. QA/QC, 2. lingcod, 3. otolith thin sections to be completed by the end of the CARE meeting or at the latest May, 2013, 4. add new sections for hake, skates and maybe pollock for submission by the end of 2014. Rosenfield replied to move forward with CARE by July 1<sup>st</sup>, 2014 with an outline on sablefish by Patrick McDonald (NWFSC) and Darlene Gillespie (CDFO). Helser replied that pollock is in the Age and Growth Manual. Goetz replied about other agency approaches for pollock and talk to Andrew Pollak (ADFG-Homer) about pollock ageing. Russ agreed and noted that ADFG-Juneau is not ageing pollock and all pollock ageing for ADFG is done in Homer (Pollak, Russ). Helser responded about Munk's ADFG process report, which outlines age discrepancies and interpretation differences. The consensus for pollock is to be figured out later but to add hake and skates. Rockfish revision: Add species and ageing criteria techniques, draft date Dec.

13<sup>th</sup> or 14<sup>th</sup>, final April, 2015. For ergonomics, there is no priority but it is important. Goetz responded about equipment and type of accommodations. Kautzi responded about the manual working group and ergonomics. Tsou responded that it was a house issue by agency and CARE-TSC writes a letter to each agency; not a CARE problem but agency though. It is from TSC to CARE or agency directors. Russ responded with a concern for physical problems. Tsou responded with a summary for CARE. Rosenfield and Russ stated that the program lead should be the contact over health concerns and whether to address this to TSC? Tsou said to describe problems and Russ added that the working group can tweak it.

**D. Website (Jon Short)** - Jon Short reported the postings to the CARE website; updated ageing methods, structure exchanges and the production numbers which are trickling in from all participating agencies. At the last CARE, Short was updating the site structure (software-Joomla 1.12) which is 8 years old and the current version is 3.1. The Pacific States Marine Fisheries Commission (PSMFC) provides server support, using Joomla but is considering Word Press since it is hard to update Joomla. The move to Word Press has a different CMS, which is older and more fragile. Rosenfield asked how much time and whether help is needed since it is different than updating the site? Short replied about the core data requires experience with CMS and the development server. Could work on updating to a new structure. Rosenfield asked if it's fragile to add more data. Short said there are different options for an open source database on the back. PSMFS provides space on the server and database. Rosenfield asked about adding archived samples. Short response is to use Excel for inventories and it can be updated later. Rosenfield responded about the holder of spreadsheets and when they could be posted to on the website. Short responded about adding a page with links to data. Rosenfield asked if the link would be under Species Info and go to other page? Short responded with one Excel spreadsheet for otolith inventory. Rosenfield asked about posting archived structures. Short replied about the space for database, preview and summaries for collections. Roenfield replied that we have one year (2012) from SWFSC. Kautzi mentioned that even though ODFW collects large numbers of otoliths each year, our lab only ages a small number of them. Otoliths from ODFW are sent out to NWFSC, SWFSC, and WDFW. Who is responsible for reporting the numbers aged to TSC? TSC said that ODFW would be responsible for reporting the numbers aged if the otoliths were collected by them. Discussion continues about how each agency has to list aged structures and unaged structures. Tsou asked whether each agency or collector's report would be consistent from other agencies? Rosenfield said the report should include agency, species, date of collection and agency who aged them. Tsou said the CARE website is difficult to find when she does a search and asked if Pacific States Marine Fish Commission should help with this? Short responded that a new CMS will improve search availability. Tsou said she tried to Google CARE, but nothing came up. Short said that it is easier to go to your agency links to CARE it shows up better. AFSC has an agency link to CARE which is better.

**E. Forum (Nikki Atkins)** - Nikki Atkins (NWFSC) stated that it takes approx. 20 minutes total to join the Forum and it has been very quiet lately and the web can see the posts. Some non-CARE members have asked to be part of the Forum. Atkins asked the CARE members whether there are any new ideas? There is no cost to keep the Forum going and only takes 10 minutes per month. Even with no state or federal government email, we can still talk to each other. You just need to create an account and stop spam bots. Atkins added that she has just posted the Excel spreadsheets for the QA/QC chart, (male/female) weights and two charts: age/bias macro and entire sample plus each age group. You can download the form from the Forum. For example, there are discussions about preparations and photos using the saw. Rosenfield agreed with Atkins to keep the Forum. Russ asked whether the Forum is opened outside of CARE? Atkins responded that it's open to everyone but you have to contact Atkins to register to be part of it and she is the moderator.

**F. Sablefish (Delsa Anderl)** - Anderl began by saying the working group lost its leadership and the group was started in 2008 by Kris Munk (ADFG) and Shayne MacLellan (CDFO) and now both have retired. She thanked Jodi Neil (ADFG) and Kara Hilwig (ADFG) for the nice minutes! Anderl stated that she is the lead and continued with stating the agency and area: NWFSC-WC, AFSC-GOA, BS, AI and CDFO-BC waters. During the last 5 years, there have been differences in regional growth for age 0 and 1 fish from preliminary analysis. Extensive exchanges with four agencies, up to 100 samples from each region have taken place. There are two known age exchanges and many patterns with slow growth for otoliths smaller than an age of 5 years with difficulties in calibration. She continued saying that you need to look at the data and analyze. A revision of the sablefish section in the CARE manual is needed and new data can be added. She asked where we should go now? She stated that MacLellan was a good guide and parsed out things well. Anderl concluded about the working group meeting tomorrow from 10:00 AM to 10:30 AM, or maybe this afternoon.

### **III. Agency Overviews and Updates**

**A. CDFG (no report)**

**B. SWFSC (no report)**

**C. CDFO (Darlene Gillespie)** - Gillespie began with staffing and stated their lab currently has nine full time staff; two other casual staff were recently laid off due to lack of funding. MacLellan retired last week but will continue in an alumnus status and Steve Wischniowski (formerly IPHC) was hired to replace her. She said they age 80,000 salmon, 14,000 groundfish, 25,000 herring and 5000 shellfish yearly. In 2012, 3000 rock sole otoliths and 1400 Pacific cod were aged with fins and total width including the first 4 years were measured. This year their lab requests to age redbanded rockfish and arrowtooth flounder. For special projects, they participated in a herring reader drift study to examine whether there has been any change in criteria; 3000 fish were aged dated from 1981-1998. For salmon growth studies, they participated in a daily growth and elemental analysis study of Chinook salmon and a pilot study looking at measuring yearly growth rates on chum salmon scales over a 30 year time series to investigate salmon carrying capacity and changing oceanographic conditions. They are developing a sectioned shell method to age manila clams to address possible underageing of older and stunted clams. They continue to

assess the use of the cross-dating technique on yelloweye rockfish to improve accuracy. Over the last couple of years, they have concentrated on publishing a series of technical manuals outlining their methods and procedures. These include a fin sectioning manual, an otolith sectioning manual, and soon to be published, hake ageing manual. MacLellan has completed an in-house manual documenting their Lab's standards, policies & procedures for ageing QA/QC, etc. For inter-agency exchanges and collaborations: 1. from Norway and Steve Campana at the Bedford Institute for *S. mentella* and *S. fasciatus*, 2. herring with ADFG and sablefish with CARE. A new Leica camera was added and the CDFO computers will be upgraded to Windows 7. A Dell tablet will be used for automating the age data processing and input.

**D. IPHC (Joan Forsberg)** – Forsberg began with staffing and they have four readers; three on-site and one off-site and currently hiring for one of the on-site positions. The number and sources of Pacific halibut otoliths (not much change) are: 30,000 – 35,000 otoliths aged each year. Most from commercial and setline survey, others from NMFS trawl survey, tag recoveries and ADFG sport fish samples. For collection, shipping, and storage for commercial samples, they are collected in medication organizers in the field and transferred to Tray Biens in the office. For setline and NMFS trawl surveys, they are collected directly into Tray Biens. Tag recovery otoliths and ADFG sport fish otoliths are stored dry in coin envelopes, transferred to Tray Biens in office and cleared before reading. All otoliths to be aged cleared and stored in glycerin-thymol solution. A new collection was started in 2010; a clean otolith archive collection stored dry, no contact with water, etc. for future elemental work. The target is 100 otolith pairs per year per IPHC regulatory area. The otoliths from juvenile surveys (1926-1986) were removed from glycerin, washed in water, and stored dry after it was discovered that samples  $\leq 2$  yrs old were deteriorating. Most otoliths are now stored off-site (at the National Archives on Sand Point Way). Current techniques being used are: Break-and-bake used on all setline survey, commercial, AK sport, and tag recovery otoliths. Surface used on small fish from trawl survey ( $< 5$  yrs). Trawl survey fish  $> 5$  yrs surface age are broken and baked. Projects include: 1. re-ageing by break and bake of samples collected in 1998 that were previously surface aged with the purpose to answer whether the current transition matrix for surface to break and burn ageing accurately reflects the bias and imprecision of surface ages read during 1996-2001, 2. Subsamples from setline survey collection will be re-aged by break and bake from one year of each decade between 1925-1991; data will be used to generate correction matrices for each decade so that historical surface ages can be included in longer time series assessment (once historical age data is entered). Can then look at changes in size at age changes over time using more accurate ages (bake versus surface), 3. IPHC otolith collection goes back to early 1900s; age data in database from 1960s on, earlier survey age data is being entered, 4. Atlantic/Pacific halibut exchange (thin section images) in 2012 between the Northeast Fisheries Science Center (NEFSC-NMFS Woods Hole) and the IPHC; 25 of each species, 72% agreement (92% within a year) with some preparation problems (missing first year etc.) NEFSC had difficulty with older fish (not accustomed to seeing Atlantic halibut older than 15years).

- E. ODFW (Lisa Kautzi)** - Kautzi said that Josie Thompson transitioned into another position within ODFW and Kautzi was hired in May 2012 as her replacement and is the only age reader for the agency. Since starting, much of Kautzi's time has been spent ageing the backlog of otoliths needed for assessment and filling special project requests. She primarily ages black rockfish (commercial and recreation collections) and has worked on vermilion and blue rockfish projects. For west coast blue rockfish, they are seeing differences in otolith weights and ovaries between blotched and solid blue rockfish.
- F. AFSC (Tom Helser)** - Helser gave an overview starting with the organization. There are 13 age readers and two people doing research. There is a web based system Age and Growth Prioritization System (AGPS) that the end user inputs requests with inventory, prioritizing resources and whether it is critical, high or low priority. We have 60 requests with 50,000 otoliths and typically 30,000 to 35,000 aged per year with an increased demand. On the internet we have an age and growth website. Were moving the entire (2 million pairs) to archive at the Burke Museum-University of Washington (UW) by curators and is funded by the National Science Foundation (NSF). Assisting are undergrads plus one otolith researcher. We have a 2 year funded grant with \$300,000 for otolith microchemistry. For age validation, there is a reference chronology for halibut (IPHC) and to validate northern rockfish, yellowfin sole, big and longnose skates. Oxygen isotopes are being used for age validation with NPRB funding. Pacific cod are ambiguous and were looking at life history transects with Oregon State University (OSU) and related geosciences in Wisconsin. The essential fish habitat for Pacific cod includes trace elemental chemistry; juvenile Pacific cod and elemental composition fingerprints from offshore stocks (cohorts). For sclerochronology from flatfish biochronology, we need to incorporate growth and environment. Biogeography and stock structure: UW fisheries graduate students are working on this to brood pollock at Little Port Walter Marine Station (Auke Bay, AK) for 3 to 4 years with an oxytetracycline stamp and temperature marker for microstructure. Additionally, there is an archaeology project looking at ancient Pacific cod.
- G. NWFSC (Patrick McDonald)** - McDonald began by talking about personnel. They have lost Meredith Cavanagh and Omar Rodriguez but have Brooke Higgins, Cassandra Whiteside, Lane Sullivan and Tyler Johnson, seven total. For new equipment, they have adjustable height desks. The new species being aged are rougheye rockfish and aurora rockfish; always age petrale sole, hake and darkblotched rockfish. In the future, they may be ageing greenling, red blotched rockfish and sharpchin rockfish.
- H. WDFW (Lance Campbell and Jennifer Topping)** - Campbell began by talking about personnel. They have six people and age 20,000 to 50,000 fish annually with salmon the most at 75,000 to 100,000 fish annually by two people. They have one person on warm water species plus one new reader (Andrew Claiborne) on salmon microchemistry. There are two people doing research. For age reading, half the lab production ages with age data input and distribution. The other half does research which keeps the lab afloat with salmon life history. For salmon, they production age from scales. They have salmon life history studies from the Columbia River, and a Hood Canal study

to examine chemical signals of Puget Sound salmonids with toxicology residing in the Puget Sound from signals in otoliths and fin rays. For the manual, they have chemical marking (strontium/chloride mark) and a monthly juvenile fish validation study. They have also looked at fin ray chemistry on the Olympic Peninsula and bull trout on the Elwha River.

**I. ADFG (Elisa Russ and Kevin McNeel)** - Russ began by talking about personnel. She said Willy Dunne (ADFG-Homer) handles the sport fish with three age readers (Willy Dunne, Barbi Failor and Marian Ford) and the commercial staff is herself and Andy Pollak. There are two age readers at the Kodiak ADFG lab (Sonja El Mejjati, Joan Brodie). For ADFG overall, there are three labs: Homer, Kodiak and Juneau and each is autonomous. The recreational fishery for Southcentral (SC) Alaska is a small program with port sampling in the summer and ageing in the winter. For rockfish otoliths they age 13 to 14 species including black, yelloweye and dark dusky. Additionally, they age lingcod fin rays, 2500 to 3500 per year in the winter. Russ continued to report on the commercial side of her program and she manages the ageing program focusing on the biological samples from Cook Inlet (CI) and the Prince William Sound (PWS) fisheries. Pollak is the primary dockside sampler and does most of the production age reading while the precision is done within reader and with Russ for between reader. For PWS and CI pollock in state waters, they age 1000 pairs per year including testing. For dermesal shelf and pelagic rockfish, they age 500 yelloweye, 300 black (directed), 100 quillback (incidental) and 100 dark (incidental). Russ stated that a database is on the horizon. There has been a statewide push to increase data with Oracle-online access, SE first then other areas. They store otoliths dry. For the Kodiak lab, age readers include Sonya El Mejjati and Joan Brodie. For Pacific cod, they age 2000 to 2500 per year from Kodiak and Aleutian Islands (state waters). For black rockfish, they are moving towards ageing otoliths. Homer is unique and submits to the Juneau Age Determination Unit (ADU) the sablefish, lingcod (otoliths only) and the slope rockfish (rougheye/shorotraker). Kevin McNeel (ADFG-Juneau) reported that the ADFG-Juneau ADU has two full time age readers (April Rebert who is in training and himself), one technician (Rob Dinneford), and a part-time supervisor (Kara Hilwig). Kris Munk retired and they lost Jodi Neil to salmon ageing. In 2012, 9052 sablefish were aged with samples from commercial fisheries from both SC (Homer) and SE (Southeast) Alaska and directed surveys from SE Alaska; 1521 yelloweye rockfish from SE halibut bycatch and commercial fisheries; 1469 lingcod otoliths from SC and SE Alaska 244 shorotraker from SC; 350 rougheye from SC; 316 thornyhead rockfish from SC, and incidental species like bocaccio rockfish. For goeducks, the ADU was involved in a 1 year out age reading project with 840 specimens that could continue depending on the age structured model. Russ concluded about the Homer lab and Pacific cod to bring online, since currently Pacific cod are not aged and samples are being archived in Homer (however, the Homer staff has trained with ADFG-Kodiak and the AFSC staff on Pacific cod ageing techniques and criteria). Russ asked about the AGPS system and Helser responded that this system has a low priority for research use, primarily for production.

#### **IV. Topics for Discussion / New Business**

**A. Otolith Symposium 2014 and other symposiums** - Rosenfield initiated this topic about the upcoming International Otolith Symposium (IOS2014) in Mallorca, Spain. Members including Gillespie, Campbell, Helser and Kastle expressed interest in attending but there may be funding problems. Last fall in Bergen, Norway the International Council for the Exploration of the Sea (ICES) had a large section on otoliths and a mini otolith symposium over several days including microchemistry, dendrochronology, stable isotopes and elemental analysis. Campbell and Gillespie discussed the interest of setting up a new workshop being proposed for September, 2013 in Juneau, Alaska to focus on creating a group of salmon age reading experts similar to CARE where they could attend CARE to get ideas and integrate with rockfish. Kautzi responded that she believed that other agencies working on salmonids may be interested in attending a conference similar to CARE. While she worked for Idaho Fish and Game (IDFG) they aged Chinook and steelhead collected at the Lower Granite Dam. Scales from the same location were also aged by WDFW. At the time, she worked for IDFG; no age comparisons were made between the two state agencies. As a new employee with the IDFG scale ageing laboratory, they trained with a long time age reader from the ODFW Corvallis lab. They worked with the Corvallis lab age reader for a few days and found it very beneficial. ODFW has a salmonid ageing and research lab in Corvallis that may be interested in attending such a conference. Campbell stated that more presentations are needed at CARE and that the workshops are helpful. Kastle (AFSC) mentioned that the two workshops could overlap. For the elemental analysis scientific presentation, there is cross interest. Campbell and Gillespie discussed whether this can all be figured out by September and hoped to get back to Russ for the joint meeting in 2015.

Allen Andrews <[allen.andrews@noaa.gov](mailto:allen.andrews@noaa.gov)> from the Pacific Islands Fisheries Science Center (PIFSC) and Rich McBride <[richard.mcbride@noaa.gov](mailto:richard.mcbride@noaa.gov)> from the Northeast Fisheries Science Center (NEFSC) are on the planning committee as the USA representatives for an Age Validation Workshop prior to the **IOS2014**. The lead on the Workshop is Albert Ole Thomas <[ole.thomas.albert@imr.no](mailto:ole.thomas.albert@imr.no)> from the Institute of Marine Research (IMR) under Beatriz Morales-Nin <[beatriz@imedea.uib-csic.es](mailto:beatriz@imedea.uib-csic.es)> from the Mediterranean Institute for Advanced Studies (IMEDEA) and Audrey Geffen <[Audrey.Geffen@bio.uib.no](mailto:Audrey.Geffen@bio.uib.no)> from the University of Bergen (UiB) as the primary organizers.

**B. Conferences since 2011** - Helser mentioned the 2012 American Marine Science Symposium meeting (AMSS) in Anchorage last winter with a presentation on age validation of skates.

**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 had suggested at the 2011 CARE meeting:

1. Define working groups
2. Work and reporting obligations
3. Suggest time limits
4. Add new members or disband the committee

Rosenfield talks about defining the working group, suggested timelines or to disband the charter. Should the charter be pursued or has it fulfilled its purpose? Russ stated that the mission is for all agencies, including new members, and thinks it should be kept. Russ volunteered to chair the charter and craft a response with input and other ideas from the members.

**D. Should the Manual include potential differences between stocks within species?** For the 2011 manual, Rodriguez had previously stated that there is a difference between stocks and species. Is there a difference in stocks? Russ suggested expanding the range from the Gulf of Alaska northward since they are easier to age. Russ said she will add a note in the manual. Goetz mentioned the criteria. Kevin McNeel (ADFG-Juneau) stated that the criterion does not change depending on sample location but regional differences can cause ageing differences. Rosenfield said areas should be noted in a table on the CARE website. Russ acknowledged there are regional differences. For the archived structures added to the website, Rosenfield suggested that Short makes the page the same to save on his time. Gillespie responded with a template by stocks. Short stated that for the database background, we have a spreadsheet and one link for each agency. Rosenfield pulled up the species table on the CARE website and a link with archived samples. Species Info has a line for each agency a contact name needs to be added but all information is already posted. Short will compile the data and put all of this together. Rosenfield suggested he watch for consistency. She also stated that each agency should make a list of corrections to send to Short.

**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** - Rosenfield asked if the information is current. Go through your agency, scroll down and talk to Short and verify the information.

**G. Additional topics** – None to report.

**H. Non-agenda items** – None to report.

**V. Scientific PowerPoint Presentations**

**A. The Spiny Issue of Ageing Spiny Dogfish (Cindy Tribuzio)** - Tribuzio shows her PowerPoint presentation on spiny dogfish. Questions for Tribuzio? Campbell asked about the preliminary vertebrae and why the spines do not match? Helser asked if there is another box plot? Russ asked about the spines that are two times older than the vertebrae, all unworn spines. Helser added that the spines all worn/unworn are mixed. The inter- and intra-reader comparisons were brought up. Cal Blood (IPHC-retired-contractor) talked about the reference collection. Tribuzio stated that there are eight readers total for this study. A question was asked about the training specimens. Blood stated that the stain faded from the 2010 vertebrae but the samples are fresh and up to date now for the new reference collection.

**B. A new bomb-radiocarbon reference curve for the Bering Sea (Craig Kastle)** - Kastle began his presentation with the bomb-carbon reference curve and  $^{14}\text{C}$  radiocarbon (atmospheric) above ground testing from the 1950's and 1960's;  $^{14}\text{C}$  atmosphere  $\rightarrow$  marine environment  $\rightarrow$  calcium metabolism  $\rightarrow$  marine organisms. There is a known age reference chronology for  $\text{CaCO}_3$  with juvenile fish (1 year of age) and the  $^{14}\text{C}$  known age. The Pacific halibut GOA graph plus atmospheric signal  $^{14}\text{C}$  is the calibrated way. Kastle showed a graph of the known age reference chronology for age 1 year fish with birth year on the x-axis and  $^{14}\text{C}$  level on the y-axis. An example is that the age validation is in phase and the Dover sole ages are accurate. The assumption is that the reference chronology is the same system, similar biology and environment. A reference versus test sample graph is shown with birth year on the x-axis and  $^{14}\text{C}$  level on the y-axis. This is out of phase due to ageing error and the wrong comparison violates the big assumption. Samples were collected in the GOA and Eastern Bering Sea (EBS). Kastle continued with the goals for this study including a new reference, age validation for EBS yellowfin sole and GOA northern rockfish. This reduced the issues with the known age reference chronology that was difficult to come by. The study outline included known age juvenile Pacific halibut from the 1950's to 1970's, and to measure  $^{14}\text{C}$  otoliths and compare EBS to GOA Pacific halibut  $^{14}\text{C}$  reference with Bayesian probability. A sample location chart is shown. For statistical analysis, Kastle showed a graph with the birth year on the x-axis and the  $^{14}\text{C}$  level on the y-axis. With the reference curve, 50% rise and whether it was caused by age bias or systemic differences. Kastle continued with another graph showing the age bias (- or +) on the x-axis and density on the y-axis. For the results graph, he has the birth year from 1950 to 1985 on the x-axis and the  $^{14}\text{C}$  level from -150 to +250. The slopes were different with the new reference and  $^{14}\text{C}$  knowledge. He talked about age validation and the EBS halibut reference comparison and the yellowfin sole vs. the GOA northern rockfish and how ages are valid. The interpretation is correct. For the regional differences, there is oceanographic processes and upwelling. Mixing rate is unique by region, upwelling is the source of carbon, continuous freshwater increases atmospheric  $^{14}\text{C}$ , downwelling causes deep mixing of  $^{14}\text{C}$  and shallow regions are well mixed. For the ocean processes, you have dilution of  $^{14}\text{C}$ -downwelling and in the BS and it sped up the signal. For conclusions, Kastle stated to look at ocean processes. The juvenile halibut reference curve was a success; stock assessment is good and new validation. Helser asked a question about why the yellowfin sole radiometric study was used first? Campbell asked Kastle about the  $^{14}\text{C}$  curve decay over 50 to 100 years and whether you can still do it? Can you validate from the  $^{14}\text{C}$  window? You can drop off age validation, mixing and dispersion and use the declining slope for yellowfin sole. Campbell asked about ageing young specimens and with historical samples? Kastle responded by stating there are no historical samples and were caught in 1975. The method will not work. Gillespie had a question about ocean processes. Kastle responded about the new petrale sole signal and summer upwelling.

**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)** - Helser's talk began with stable isotope O-18 research with ODFG, the University of Wisconsin (UWISC) and AFSC collaborators. There are 3 parts to the otolith geochem at the AFSC including trace elements, growth increase data and stable isotope climate change. For Isotope Work, the window from 1959-1980 is best. Pacific cod decreased in longevity leading to deviation in validation techniques. The Accelerator Mass Spectrometer at NOSAMS- Woods Hole and laser ablation with the ion microprobe at UWISC were used. A slide is shown of the age determination background for a Pacific cod otolith with an age of 5 years, maybe 7 years? For the O-18 to temperature, the O-18 fraction in the otolith is related to temperature. A decrease in temperature caused an increase in O-18 and you need to count the sample otolith from the core to the edge. Looking for peaks and valleys, peaks are at the end of the winter. Secondly, you assess bias or validate criteria. Pacific cod have been aged along time. The water temperature was the determinate for the isotope. For the methods, there are nine archived tag with bi-hourly/temperature/depth: 1. otoliths are thin sectioned (pilot study) transversely through center, 2. sectioned, polished and aged using established criteria of bands (Nancy Roberson's [AFSC] method), 3. 20-30 mcg of material, 4. mass spectrometry of O-18 plus  $^{13}\text{C}$ , ion microprobe and O-18 inverse to temperature. For the archived tagged fish, they were captured/tagged in 2002 and 2003. The location of release/recovery was recorded for ages 4 to 6 years, one was at liberty for 2 years and we have a lot of temperature data. For NPRB, there are 40 fish with micromilling and an O-18 count. Age 1 year fish have a cool range of temperature values from bottom trawl data from 2002 and 2003, different than 2010. Helser showed an age validation slide including the microdrill, servo stage and pathways. He continued to talk about the stable isotope lab with up to 39 individual samples over 5 years, 5 peaks and 5 winters. For analysis, Helser showed a plot of the O-18 track number, center to edge; compare transition zones and ion microprobe. For the NPRB, there are 40 'known age' fish from O-18 count and compare to 120 estimated band counts and validate  $7^\circ\text{C}$  as the primary determinate. The age 1 year fish otolith edge was compared to bottom temperature with four signatures for sample plot with consistent results and the check of 1 to 2 for O-18 showed this. For the ion microprobe, Cs-137 bombards the otolith with a dual plasatron. The spot sizes are 10 microns in diameter and 2 microns deep. It counts isotope ions. For the signature isotopes you have the position of visual annuli with red dots and defined peaks; temperature driven variation. For the micromill vs. ion microprobe, the microprobe showed 4 peaks. The age 6 fish, micromilled vs. ion microprobe. The juvenile's edge showed every change with  $5^\circ\text{C}$  of water temp change. The dynamic range was more compressed, twice with the same outcome. Pacific cod were at liberty for 2 years. The water temperature effects O-18, by season you can assign years. A plot of temperature ( $^\circ\text{C}$ ) on the x axis and O-18 level on the y axis was shown. Helser concluded with the caveats including the temperature history of the fish is unknown, migratory fish was a problem, salinity is a factor to O-18, milling resolution especially in later years and smearing of seasonal information.

## VI. Work Shop Focus

**A. Longtime storage of otolith in glycerin using WDFW's samples from the 1970s (Sandra Rosenfield)** - Rosenfield began her talk stating that glycerin has been used since the 1970's. They have 11,000 archived POP otoliths collected from 1970 to 1985; in 1986 they switched to dry storage in Tray Biens. Otoliths were stored in vials dipped in paraffin; those stored in ethanol and water media evaporated. The ethanol media (now perfectly dry), showed no effect on the otoliths. They looked the same as the samples stored dry from 1986 to present. The samples from 1970 – 1985 were archived in vials with the sample number, year, otolith number written on a paper (Rite in the Rain) disk. Whole otoliths removed from the glycerin media appeared (cloudy). There is also decalcification appearing on the surface, a white powdery film when removed etched into the outer surface of the otolith and discolored when baked to a gray color. The otoliths burned quickly. There are edge problems with the glycerin medium. For break and burns, 60 to 70 % have a clouded edge. Rosenfield showed a chart for observations between labs. Forsberg mentioned that during a project in the early 2000s, halibut otoliths from juveniles collected in the 1950's were found to be dissolving and chalky. The IPHC's juvenile otoliths have since been rinsed and are now stored dry. WDFW would like all agencies to go back and age their structures stored in glycerin to reassess this storage media.

**B. Discussion** - The discussion began with the problem of otoliths going from aragonite to calcite while stored in glycerin. Kastle mentioned that the thymol mixture is important since it stops biological activity. It is hard to go in solution though. It is the same as ethanol decreasing below 50 %. McDonald stated that when the ethanol decreased, you get chalky otoliths maybe due to biological activity. Anderl said that there are two types of surveys for the AFSC, observer and survey fisheries and the observers make the glycerin solution different than RACE. Inconsistencies in the solution can lead to biological growth. Forsberg said the occurrence of chalky halibut otoliths (from non-juveniles) is sporadic and may be a result of mixing problems where the thymol precipitates out of the glycerin solution. Rosenfield said that cloudiness on the otoliths edge is a problem and asked whether the absorption of glycerin can effect or impact otoliths usefulness? Kastle said that  $^{14}\text{C}$  analysis is not an issue but how long? General questions included whether any liquid should be used on archived otoliths and how should CARE proceed? Forsberg may test the oldest samples of halibut. Anderl has flatfish stored in glycerin since the 1970's. The arrowtooth flounder (archived samples) from the 80's looked good. Rosenfield stated that for 2015, a serious notation to the manual should be made. Rosenfield stated that it takes six weeks to rehydrate otoliths and Goetz says it takes two weeks to rehydrate. Rosenfield continued with talking about AFSC and IPHC otolith testing with storage problems and how to address this. Russ said that skate vertebrae are stored in an ethanol solution. Rosenfield stored otoliths dry from 1986 onward but not from 1970 to 1985.

## **VII. Working groups & Hands-On Workshop**

### **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** (Table 2: 2013 CARE Scope Time)

## **Wednesday 17, April**

### **I. Working groups & Hands on Workshop Continued**

**A. Dogfish working group (Room 2079)** – Cindy Tribuzio (NMFS) began the spiny dogfish working group. She started by going over the rough draft and said the spiny dogfish technical memo is weeks to months away from completion. For discussion, will look at structures under the scope. At 1:00 PM, a group consensus will be made on structures including calibration and reference samples. For the agenda, Tribuzio talked about the dogfish length measurements from precaudal tip/snout to the notch which is recommended. With the precaudal, there is less variation, flexible tail. For total length (TL), there is natural vs. extended. A conversion/regression is available. For the first and second dorsal spine, do the anterior/posterior ends match? Dunne said that he takes 4 or 5 vertebrae, # vertebrae 3 to 4 inches forward. Tribuzio said with a double sample, there was no difference in ages for vertebrae. Matta said that the larger vertebrae are easier to read. For cleaning spines, Tribuzio boils the tissue and uses a thumbnail to clean off remaining tissue. Blood said you can use back of knife but be careful though. For no boiling, Rosenfield and Tribuzio said to use a paperclip. Tribuzio said to remove the inner plug of tissue, don't cook too long and scrape inside but do not use metal on the outside of the spine. The inside is fine though. Dry spines overnight. Atkins adds that she has made tools to use for cleaning spines. Blood said to use ice cube trays for drying (10 to 12 structures). Atkins arrived with Tyler Johnson (NWFSC). For preservation methods, use 70% ethanol for vertebrae storage. Matta stated that hematoxylin stain expires. Tribuzio said that Blood made molds and sectioned vertebrae at 0.5 mm with the size of the vertebrae being the determinate. The procedure is to section strips, decalcify 5 minutes to 1.5 hours and hematoxylin stain for 8 min depending upon the size of the specimen though. Tribuzio added that she doesn't have pictures of the flexible thin sections. Next, you destain with ethanol. Finally, you mount the sections with Kaiser Jelly. Blood said he takes four sections per vertebrae, reset and recast new sample. Tribuzio said to save extras. Rosenfield asked how many per day? Blood responded with each separate step per day, 27 spines or vertebrae per day. For the resin lab, 30 vertebrae per time in each resin cast. You can stain 30 to 36, mount on slide and the samples are ready. Blood continued with completion of daily samples is a good stopping point. Certain sections you can stop but complete group for others. Rosenfield agreed with Blood for processing about 30 samples per day. Blood said the hot plate he used was small and 3 sets of 9 on small hot plate per 8 hour day. Atkins said that she can do 50 to 60 spines per day. There are resin and staining days. Tribuzio talked about the spine measurements: last readable point (LRP), enamel base diameter (EBD) and the midpoint (MID). Rosenfield said that the

midpoint counting is from the Chang paper. A white band at the base is winter caught in the GOA. Don't count ventral to white band. Tribuzio continued with the pictures with image filters being a toll she has used. An example is shown. She talked about the readability scale with 3 categories: 1. Repeatable, 2. + or - 2 years, 3. No repeats. Rosenfield said to go back 2 yrs, different age and repeat with 2 readers. For category 2, no agree. For ageing vertebrae she showed how to switch from dark to light, reflected vs. transmitted with a slide photo. Tribuzio continued with the corpus calcareum and the focus by showing a schematic including the vertebral radius and birth check. You count with no stacking or clumping compared to spines. The band width changes and splits. For marginal increment analysis (MIA), do not count the jelly on the edge and trim the excess. Atkins said to remove excess tissue too. For the LRP, Tribuzio continued with saying that there is a poor description for LRP, its ambiguous where LRP is. The LRP is the last point on enamel, not worn off, anterior edge. Measure on enamel first. Secondly, she continued talking about how to measure with calipers perpendicular to the axis. A diagram of spine and LRP was shown. Rosenfield said she has no photo software, use mark and width of pen. Atkins added to look at the 90° angle. Rosenfield added to leave the line for next reader. Matta and Tribuzio asked where to count? The LRP can have a big variance. Rosenfield responded with no LRP and the midpoint to LRP is variable. Tribuzio said to estimate from the midpoint, full read LRP and midpoint. Dunne responded with no wear point, enamel is worn, no wear point, enamel stops, LRP confirmation and read too. Rosenfield responded with leave line and check counting with a fixed confirmation point. Tribuzio said there is a difference between labs and Rosenfield responded with saying to check calculation. Tribuzio said there is a Chang/Ketchum methods problem and a substantial difference with Chang. For CDFO, a number of samples have been validated. For Campana, were the spines worn or unworn? In 2009, the dogfish were 20 years at liberty for Beamish and McFarlane. Dunne mentioned Ketchum and the growth rate. Atkins asked where in BC were the samples collected for Ketchum's study? Tribuzio stated to re-parameterize new growth curve and synchrony for enamel vs. vertebrae. The spine enamel is not from the environment; vertebrae are and spines are not. Atkins asked which spine correlates to size? Tribuzio talked about the sport fishing collection and seasonal location. Matta added about the longline collection. Tribuzio said the IPHC has collected big dogfish during their surveys with genetics and sleeper sharks too. No full term pups, small (30 cm), > 100 cm precaudal length is missing. Tribuzio said spines are vague, and shows the 3 worst ones. For consensus viewing: sample #5- 12/13 years consensus and pupped late winter or November to March. For vertebrae ageing: #1- 18/19 years, #2- 16 years?, #3- 19 years, #8- 18 years?-reasonable, #11- 18/19 years, and #10-19 years.

**B. Working Groups (Sablefish minutes to follow)**

**C. Hands-on Workshop**

**Thursday 18, April****I. Recommendations**

**A. 2013 CARE to TSC** - A new dogfish workshop in the future is mentioned and should be recommended to TSC. Russ and Tsou talked about ergonomics and this is important for agencies and how to address it. Goetz stated that we have a draft. For CARE to TSC, Rosenfield asked what is stated? Goetz said this is a general record and an important consideration. For TSC, this is more focus and power for discussion. Rosenfield asked for specifics? Goetz asked to respond to fulfill the ergonomics issue. Rosenfield stated to add a general recommendation plus verbiage. Goetz mentioned the CARE to TSC. Dunne said to stress importance of ergonomics to Tsou in an appropriate way and agencies are aware of it but not proactive. It's a budget issue but cheaper in the long run. Dunne will draft the ergonomics section for the manual. Russ added health concerns. Dunne said to justify the importance? Goetz said that it's an individual basis with medical health professionals and different for each person. Need a draft for the Chair from the committee to submit to TSC.

**B. 2013 CARE to CARE** - For CARE to CARE, Rosenfield talked to Anderl about the glycerol history. A copy is requested from Rosenfield. In addition for CARE to CARE, get info on glycerin and update paragraph. For IPHC/AFSC, check all agencies for this and amount of glycerol per cruise. Go back and look to document it. Rosenfield added to look at oldest collection and do ageing of 100 otoliths if not surface ageing. Several agencies can check on each species? Goetz added to be more specific in the manual where the glycerin section should go. Kastle said to add sentence, update manual on investigation for glycerin. The charter will be revised, expanded and submitted for the next 2015 CARE. For the manual working groups and CARE to CARE recommendations, Goetz asked a question about pollock; need one year with agency specific differences for ageing pollock. Russ stated to draft new CARE to CARE or discuss in 2015. Can add the QA/QC for accuracy and precision including validation. Kastle asked about the status of the pollock section? Russ mentioned the secondary age structure and validation. For CARE to CARE, a new version for 2015. Goetz talked about the rockfish otolith baking section and to generate an ageing procedure for all species. Russ added a line referring to the rockfish baking method and collection with other agencies. Anderl stated there are changes in the sablefish draft of revised addition for 2015. Russ added sablefish manual/section line to the sablefish ageing procedure section. Added baked thin section method line below. Russ asked if all agree about the sablefish and pollock being due December, 2014? Yes, all members agree. For CARE to TSC, Anderl asked how to make changes to the manual and MacLellan was specific about this process. An example would be the thin sectioning process. Goetz responded and asked if it was in the last minutes and the importance to maintain the information in a historic document. Anderl said to make sure it was addressed openly. Goetz responded that it's a cumbersome job detailing rockfish thin sections. Russ said to include current equipment needs and the link to the old versions from 2006 and older versions about the manual so that information can be referenced. Goetz responded about the sections being updated independently. Lance Campbell proposed for a historic inclusion of the manual on the CARE website. Russ added the CARE

proposal line for historical format for the new archived edition format, 2013 CARE to CARE. Proposed by Campbell-unanimous consent.

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

### **A. Administration nominations**

1. Sullivan asked what each charter member does? The secretary takes notes for meeting. For the charter, the AFSC will pass it along. Sullivan is nominated for the 2015 CARE secretary. It was also explained that secretary generally moves to Vice Chair and Vice Chair moves to Chair at next biennial meeting.
2. Elisa Russ accepted position as new Chair
3. Chris Gburski accepted position as new Vice Chair.

**B. Schedule and location of 2015 meeting** – The 2015 CARE meeting will be held at the AFSC.

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

### **A. Working Groups**

### **B. Hands-on Workshop**

## **IV. Adjourn (12:00 noon)**

**Table 1: 2013 CARE Attendee List**

<b>Last name</b>	<b>First name</b>	<b>Agency</b>	<b>Location</b>	<b>Country</b>	<b>Email</b>
Dunne	Willy	ADFG	Homer	USA	willy.dunne@alaska.gov
McNeel	Kevin	ADFG	Juneau	USA	kevin.mcneel@alaska.gov
Pollak	Andrew	ADFG	Homer	USA	andrew.pollak@alaska.gov
Rebert	April	ADFG	Juneau	USA	April.Rebert@alaska.gov
Russ	Elisa	ADFG	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
Atkins	Nikki	NWFSC	Newport	USA	nikki.atkins@noaa.gov
Higgins	Brooke	NWFSC	Newport	USA	brooke.higgins@noaa.gov
Higgins	Brooke	NWFSC	Newport	USA	brooke.higgins@noaa.gov
Johnson	Tyler	NWFSC	Newport	USA	tjohnson@psmfc.org
Johnson	Tyler	NWFSC	Newport	USA	tjohnson@psmfc.org
McDonald	Patrick	NWFSC	Newport	USA	patrick.mcdonald@noaa.gov
McDonald	Patrick	NWFSC	Newport	USA	patrick.mcdonald@noaa.gov
Sullivan	Lance	NWFSC	Newport	USA	lance.sullivan@noaa.gov
Sullivan	Lance	NWFSC	Newport	USA	lance.sullivan@noaa.gov
Whiteside	Cassandra	NWFSC	Newport	USA	cassandra.whiteside@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	Seattle	USA	lance.campbell@dfw.wa.gov
Claiborne	Andrew	WDFW	Seattle	USA	andrew.claiborne@dfw.wa.gov
Rosenfield	Sandy	WDFW	Seattle	USA	greenthumb51@hughes.net
Topping	Jennifer	WDFW	Seattle	USA	toppijat@dfw.wa.gov
Tsou	Tien-Shui	WDFW	Seattle	USA	tien-shui.tsou@dfw.wa.gov

## Appendix 1: 2013 CARE Agenda

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 fin ray 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. ADFG (Elisa Russ and Kevin McNeel)

#### 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 Kastle)
- 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)

**Table 2: 2013 CARE Scope Time**

WDFW Double Scope Station 1			
Date/Time:	Species	Participants/Agencies	Comments
<i>Tuesday April 16th</i>			
Time	None reported	None reported	None reported
<i>Wednesday April 17th</i>			
8:30 am - 10:00 am	spiny dogfish (spines)	Cindy Tribuzio (NMFS)	Training
		Vanessa Hodes (CDFO)	
		Patrick McDonald (NWFSC)	
		Cal Blood (IPHC-retired-contractor)	
		Nikki Atkins (NWFSC)	
		Beth Matta (AFSC)	
		Chris Gburski (AFSC)	
		Sandy Rosenfield (WDFW)	
		Willy Dunne (ADFG)	
Break 10:00 am- 10:15 am			
10:15 am - 12:00 pm	spiny dogfish (vertebrae)	Cindy Tribuzio (NMGS)	Training
		Vanessa Hodes (CDFO)	
		Patrick McDonald (NWFSC)	
		Cal Blood (IPHC-retired-contractor)	
		Nikki Atkins (NWFSC)	
		Beth Matta (AFSC)	
		Chris Gburski (AFSC)	
		Sandy Rosenfield (WDFW)	
		Willy Dunne (ADFG)	
Lunch 12:00 - 1:00 pm			
1:15 pm - 3:00 pm	Pacific sardine	None reported	None reported
Break 3:00 pm - 3:15 pm			
3:15 pm - 4:30 pm	None reported	None reported	None reported
<i>Thursday April 18th</i>			
10:00 am - 12:00 pm	None reported	None reported	None reported

AFSC Double Scope Station 2			
Date/Time	Species	Participants/Agencies	Comments
<i>Tuesday April 16th</i>			
Time	None reported	None reported	None reported
<i>Wednesday April 17th</i>			
8:30 am - 10:00 am	Pacific hake	None reported	None reported
Break 10:00 am -10:15 am			
10:00 am - 12:00 pm	Pacific sardine	Sandy Rosenfield (WDFW)	Sample exchange
		Jennifer Topping (WDFW)	
		Vanessa Hodes (CDFO)	
Lunch 12:00 - 1:00 pm			
1:15 pm - 3:00 pm	Pacific sardine	Sandy Rosenfield (WDFW)	Sample exchange
		Jennifer Topping (WDFW)	
		Vanessa Hodes (CDFO)	
Break 3:00 - 3:15 pm			
3:15 pm - 4:30 pm	Pacific sardines	Jennifer Topping (WDFW)	Cross training
	Pacific hake	Vanessa Hodes (CDFO)	
<i>Thursday April 18</i>			
10:00 am - 12:00 pm	blue rockfish	Jennifer Topping (WDFW)	Cross training
		Lisa Kautzi (ODFW)	

NWFSC Double Scope Station 3			
Date/Time	Species	Participants/Agencies	Comments
<i>Tuesday April 16th</i>			
Time	None reported	None reported	None reported
<i>Wednesday April 17th</i>			
9:15 am - 10:00 am	Pacific cod	Chris Johnston (AFSC)	Calibration
		Elisa Russ (ADFG)	
		Andrew Pollak (ADFG)	
Break 10:00 am -10:15 am			
10:00 am - 12:00 pm	None reported	None reported	None reported
Lunch 12:00 - 1:00 pm			
1:15 pm - 3:00 pm	yelloweye rockfish	Elisa Russ (ADFG)	Calibration
		Andrew Pollak (ADFG)	
	shortraker rockfish	Charles Hutchinson (AFSC)	Calibration
		Jeremy Harris (UW)	
	rougheyeye rockfish	Betty Goetz (AFSC)	Calibration
	redbanded rockfish	Charles Hutchinson (AFSC)	
		Lance Sullivan (NWFSC)	
		Cassandra Whiteside (NWFSC)	
		Mary Jane Hudson (CDFO)	
Break 3:00 - 3:15 pm			
3:15 am - 4:30 pm	black rockfish	Elisa Russ (ADFG)	Calibration
		Andrew Pollak (ADFG)	
		Willy Dunne (ADFG)	
<i>Thursday April 18</i>			
10:00 am - 12:00 pm	spiny dogfish (spines)	Cindy Tribuzio (NMFS)	Calibration
		Cal Blood (IPHC-retired-contractor)	

CDFO Double Scope Station 4			
Date/Time	Species	Participants/Agencies	Comments
<i>Tuesday April 16th</i>			
3:00 pm – 4:45 pm	Goeduck	April Rebert (ADFG)	Calibration
		Kevin McNeel (ADFG)	
		Darlene Gillespie (CDFO)	
<i>Wednesday April 17th</i>			
8:30 am - 10:00 am	Goeduck	CDFO and ADFG	Calibration
Break 10:00 am -10:15 am			
10:00 am - 12:00 pm	None reported	None reported	None reported
Lunch 12:00 - 1:00 pm			
1:15pm - 3:00pm	None reported	None reported	None reported
Break 3:00 pm - 3:15 pm			
3:15 pm - 4:30 pm	Goeduck	Darlene Gillespie (CDFO)	Calibration
		April Rebert (ADFG)	
<i>Thursday April 18</i>			
Time 10:00 am - 12:00 pm	spiny dogfish (spines)	Patrick McDonald (NWFSC)	Calibration
		Beth Matta (AFSC)	
		Chris Gburski (AFSC)	
		Vanessa Hodes (CDFO)	

IPHC Double Scope Station 5			
Date/Time	Species	Participants/Agencies	Comments
<i>Tuesday April 16th</i>			
Time	None reported	None reported	None reported
<i>Wednesday April 17th</i>			
8:30 - 10:00 am	spiny dogfish	None reported	None reported
Break 10:00 am -10:15 am			
10:00 am - 12:00 pm	Pacific halibut	Linda Gibbs (IPHC)	Calibration
Lunch 12:00 - 1:00 pm			
1:15pm - 3:00pm	None reported	None reported	None reported
Break 3:00 - 3:15 pm			
3:15 - 5:00 pm	black rockfish	Lisa Kautzi (ODFW)	Calibration
		Willy Dunne (ADFG)	
		Sandy Rosenfield (WDFW)	
<i>Thursday April 18</i>			
Time 10:00 am - 12:00 pm	Pacific halibut	Linda Gibbs (IPHC)	Calibration
		Joan Forsberg (IPHC)	