

2006 Biennial Meeting

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CARE MEETING MINUTES APRIL 18-20, 2006

OPENING REMARKS:

Patrick McDonald, chair of CARE 2004-2006, opened the meeting at 8:45 am, April 18, 2006 at the NOAA-Fisheries Sand Point facility, Seattle, Washington. He welcomed everyone to the workshop, and we moved right into introductions.

INTRODUCTIONS:

Participants introduced themselves and stated the agency represented:

Philip Cowan ADFG-Homer
 Willy Dunne ADFG-Homer
 Chris Russ ADFG-Homer
 Kristen Munk ADFG-Juneau
 Jodi Neil ADFG-Juneau
 Joan Brodie ADFG-Kodiak
 Darlene Gillespie CDFO
 Shayne MacLellan CDFO
 Cal Blood IPHC
 Joan Forsberg IPHC
 Linda Gibbs IPHC
 Stephen Wischniowski IPHC
 Greg Cailliet MLML
 Delsa Anderl NOAA-Fisheries-AFSC
 Irina Benson NOAA-Fisheries-AFSC
 John Brogan NOAA-Fisheries-AFSC
 Dan Foy NOAA-Fisheries-AFSC
 Chris Gburski NOAA-Fisheries-AFSC
 Betty Goetz NOAA-Fisheries-AFSC
 Charles Hutchinson NOAA-Fisheries-AFSC
 Chris Johnston NOAA-Fisheries-AFSC
 Craig Kastle NOAA-Fisheries-AFSC
 Dan Kimura NOAA-Fisheries-AFSC
 Charlie Piston NOAA-Fisheries-AFSC
 Wes Shockley NOAA-Fisheries-AFSC
 Jon Short NOAA-Fisheries-AFSC
 Nikki Atkins NOAA-Fisheries-NWFSC-PSMFC
 Betty Kamikawa NOAA-Fisheries-NWFSC-PSMFC
 Patrick McDonald NOAA-Fisheries-NWFSC-PSMFC
 Omar Rodriguez NOAA-Fisheries-NWFSC-PSMFC
 Josie Thompson ODFW
 Sandra Rosenfield WDFW
 Jennifer Topping WDFW

An attendee sign up sheet was passed around. (Attachment 1. - 2006_CARE-Attendee_List.xls)

Anderl and Kastle briefly discussed some building safety protocols.

MEETINGS:

McDonald and members updated everyone on upcoming meetings:

Technical Sub-Committee (TSC) - May 2- June 7, 2006 - Newport, Oregon
 Sablefish Workshop - Jan 07
 2008 Western Groundfish Conference - California

Skate Symposium - uly 18, 2006 - New Orleans

Dendrochronology (including a sclerochronology section) - May 30, 2006 Newport, Oregon

APPROVAL OF AGENDA:

All participants approved the 2006 agenda proposed by the chair (Attachment 2. CARE_Draft_Agenda_4_13_06.doc).

APPROVAL OF 2004 MEETING MINUTES:

All participants approved the 2004 meeting minutes (Attachment 3. CARE2004draftminutesfinal.doc).

WORKING GROUP UPDATES:

2002 C ARE TO CARE RECOMMENDATIONS revisited

Charter: Goetz announced there was no meeting prior to CARE. Members felt that updates were finalized at the last meeting, MacLellan recommended we look at the charter once more and pass it in order to provide guidelines for responsibilities and procedures for new members and officers. Munk added that once it was passed the Charter Committee should disband. Goetz will get some hard copies to review and final action was tabled until Thursday.

Manual/Glossary: MacLellan felt the lingcod and Dover sole sections could be discussed and possibly passed for entry into the manual this meeting. Lisa Lysak would like to enter the Dover sole portion in memorium to Bob Mikus. MacLellan stated that hake was fairly complete other than the need for figures and some minor text and margin questions to be addressed. There were no new changes requested for the glossary. Final actions were tabled until Thursday.

Web site: Short continues as web site manager. He would like to create a search form for CARE members. The manual with its new cover has been added to the site, and that was all that was required. (Completed)

Summary of Age Reading Methods: McDonald reminded members that some issues and concerns regarding this table had yet to be addressed. Some columns needed to be renamed and new ones added, to make it more valuable for users. Thoughts thrown out were placing validation elements on a second graph, the value of knowing annual production numbers as well as the number of agers associated with those numbers. To accommodate this and to make the table less unwieldy, the thought was to break the table into two. MacLellan, Short and Kamikawa formed a group to work on this. Blood felt the vice chair should update these tables annually. This would also help keep CARE members more active between biennial sessions.

The CARE Age Structure Exchange (CASE) form was addressed as well, proposing that it could also be more helpful to end-users. Anderl, Munk, and McDonald formed a workgroup to look into updating the form.

Website link: Short demonstrated some links he had added to the CARE website, where a species could be brought up and linked with the agencies involved.

Structure exchanges: The vice chair records and reports the exchanges. Exchanges are initiated through recommendation by the TSC or independently by the agencies. Munk reported the following exchanges:

Hake - CDFO & NOAA-Fisheries-NWFSC-PSMFC
 Sablefish - DFG, CDFO, NOAA-Fisheries-NWFSC-PSMFC, & NOAA-Fisheries AFSC
 Pacific Ocean Perch (POP) - ADFG-Juneau & NOAA-Fisheries AFSC
 Pacific Cod - DFG (Kodiak) & NOAA-Fisheries-AFSC

There were a total of 12 exchanges, involving 5 agencies, 10 readers, 4 species, and 613 specimens.

The 2006 sablefish exchange involved 4 agencies and 6 readers, with comparisons confined to one age estimate per agency. Each agency contributed 20-25 specimens (sharing the burden of putting a sample together), for a total of 89 specimens. The sablefish exchange is expected to be completed by June 2006.

AGE & GROWTH LAB OVERVIEW AND UPDATE BY AGENCY

ADFG: Munk reported for their three lab locations at Juneau (central), Homer, and Kodiak. The Juneau lab has statewide responsibilities. The Homer and Kodiak labs have part-time agers. In Juneau, the Age Determination Unit (ADU) has three age reader positions and one support technician position. Only the technician and one age reader position is filled. Funding of the ADU is primarily through a Federal grant, with mandated responsibilities for aging of sampled commercial or research harvested groundfish. Without long term stable funding, filling another position would only reduce available work time for the current two employees. A closure this past winter of a dominant yelloweye rockfish fishery has resulted in fewer specimens for aging: yelloweye have routinely contributed to one of the higher volume/priority-species aged. The ADU database is called AegIS, "Age Information System". AegIS is still a work in progress and is presently only "age data in, age data out". Munk discussed two potential age reading concerns: underaging of roughey rockfish (results in a "wall effect" in graphed data), and potential "range error" (due to banding vs. splitting) in aging of Southeast Alaska lingcod. She noted aging of Southcentral lingcod does not have the same problem. The ADU is conducting age related work: "otometrics" comparing somatic growth to otolith accretion; documenting otolith accretion in Pollock; and a partial age "slot" validation measuring bomb radiocarbon in shortspine thornyhead. She also mentioned distinction of two growth forms (fast vs. slow) for the tentative splitting of roughey rockfish species, with possibility of separating these two forms by otoliths. The ADU tests precision on approximately 20% of all specimens. They calculate a variety of precision statistics using an EXCEL template, however primarily use "average percent error" (APE) and apply APE control limits for species error. The Homer and Kodiak labs do a 20% precision test on species aged, between or within reader(s).

Morning Break 10:10 a.m. to 10:30 a.m.

Post break announcements:

Cal Blood will be hosting yet another potluck Weds., starting at 6:00pm, eating probably around 6:30-7:00pm. Some fishes will be provided, BYOB and hor d'oeuvres or side dish. Cal will bring maps.

Joan Forsberg is collecting \$ for the mugs and t-shirts.

Greg Cailliet will be arriving tomorrow from Moss Landing and give his presentation on their projects.

AGENCY UPDATES (cont.)

CDFO: MacLellan reported there are nine - ten people on staff, ageing 50-80% of the time. One person is totally dedicated to salmon age database doing little to no age determination. They are looking into succession planning with many agers within 2-5 years of retirement. FTE and salary caps may hinder hiring. Numbers of fish aged are set by a priority committee where caps are also established. These caps have helped to establish schedules. The Species at Risk Act (SARA) has

affected how or whether a species is listed. This enabled some funding to be earmarked for certain rockfish species and provided funding to hire an additional reader to age these species. CDFO has added thornyspine to species that is requested to age in 2006. Sardines may also be aged as herring samples may decline this coming year. Some work on developing a few shellfish species such as urchin, geoduck and horse clams has occurred. Four new compound scopes have been purchased, miscellaneous accessories and some ergonomic parts. CDFO is also looking into microtomography (internal imaging) and its potential use, as it could imply no otolith processing. Recent research included a Pacific cod ageing study. (See Attachment 4. - CDFOSpeciesAgedPerYear.xls, for recent historical age reading numbers.)

IPHC: Forsberg reported that they age about 30,000 halibut annually from two main sources: survey and commercial. The IPHC has a total of 5 agers; 4 of them are production readers. The goal is to age 1500-2000/per regulatory area, of which there are nine. The lab uses Tray biens for storing their otoliths. Steve Wischniowski reported on current research at the IPHC: one project involves trace element and stable carbon/oxygen isotope analysis to determine halibut nursery origin and to determine differences between true annuli and checks. Another project is a marginal increment analysis which will be followed by an edge type study. Cal Blood added that edge codes have been problematic due to time of year most of IPHC's otoliths are collected and the wide geographic area included. Steve Wischniowski is also investigating methods for aging sleeper sharks. Age determination methods for Pacific halibut were validated in 2004 by bomb radiocarbon. The halibut radiocarbon reference curve has been used by numerous researchers validating other west coast species.

NOAA-Fisheries-AFSC: Kimura reported that their lab has a staff of 13 of which 9 are primary agers. Quality control can be found at their website and they reage at 20%. Craig Kastle is their validation specialist working with radiometric and C-14 bomb carbon age validation. Jon Short is the IT specialist handling AGEDATA database, website, otolith inventories, preparing otoliths for ageing, and managing the photograph website. A Biometrician serves as the overall program manager. Production ageing is handled by two team leaders: Betty Goetz, assigned to Bering Sea & Aleutian Islands pollock, rockfish, forage fish and skates; and Delsa Anderl, working with Gulf of Alaska pollock, sablefish, Atka mackerel, Pacific cod. Charles Hutchinson is assigned as specialist on new species. NMFS has embraced Ecosystem management. This has brought several newer species, other than those of commercial concern, to the forefront, ie. skate, grenadiers and sculpins. There is also pressure to age species skipped due to difficulty of ageing, to determine whether or not they are being over fished, ie. roughey rockfish, shortraker rockfish, Greenland turbot and shortspine thornyhead rockfish. Research projects are divided between age validation work and developing ageing methods for new species. A good number of research projects and papers are completed, in the works, or nearing completion regarding age validation and age method development for new species. www.afsc.noaa.gov

CDFG: no representation this year.

ODFW: Josie Thompson introduced herself, letting us know she has been in her new position only since Friday. She is anxious to dig into the job and looking forward to spending time looking at species of concern for her lab while at this workshop. Josie will begin working with Black rockfish.

WDFW: Topping reported that the WDFW lab works for Ecological Investigations and they currently have two full-time groundfish agers. This year's production species included Canary rockfish (a new species for them this year), English sole, black rockfish and spiny dogfish, while ongoing species include: misc. rockfish, lingcod, sardine, yellowtail rockfish, yelloweye rockfish, and petrale sole. They maintain a production level of 100 structures/day. Samples are precision tested, depending on species, every 4th, 10th, or even every fish. WDFW is currently contracted to age dogfish spines for the UW dogfish program for the next five years.

NOAA-Fisheries NWFSC-PSMFC: Kamikawa and Rodriguez filled us in on the activities at their lab. Money has been expended to make ergonomic upgrades to their equipment. Their ageing is driven by stock assessments. They currently have 6 full time agers and aged 66,000 structures the past two years. Ageing priorities for 2006 include sablefish, Pacific hake, darkblotched rockfish, Pacific Ocean perch, canary rockfish, English sole and arrowtooth

flounder. Different age structures/techniques were assessed for petrale sole and English sole and the lab will age these new species as well as arrowtooth flounder, using the break and burn method. Pacific hake research that involves annual growth increment measurements to examine environmental effects on growth is ongoing. In 2005 two agers visited the CDFO lab in Nanaimo for a hands on ageing session for POP and hake.

Lunch break 12:10 p.m. to 1:40 p.m.

RECOMMENDATIONS

2005 TSC TO CARE RECOMMENDATIONS.

There were no recommendations to CARE from the 2005 meeting of the TSC.

2004 CARE to CARE:

McDonald revisited 2004 recommendations. Some discussion ensued regarding the feasibility of hands on workshops between the biennially held CARE workshops. Travel and funding issues would probably always be an issue, and funding for specific species would probably need to be driven by the data users. MacLellan stated that it was probably inevitable that these workshops be on an as needed if able to (\$) basis.

The statistics chapter recommended to be added to the manual in 2004 is still in progress.

Rodriguez expressed a concern that the CARE manual states samples collected in June and July should not be exchanged due to edge difficulties, yet samples continue to be collected at that time and become part of exchanges. Members admitted that it cannot always be avoided, but should be attempted. Rodriguez thought the wording could be adjusted in the manual.

PRESENTATIONS

Craig Kastelle (NMFS): Age Validation of POP using Bomb Radiocarbon

With POP being the most abundant and commercially important rockfish species harvested it is important to establish as much accuracy in age determination as possible since ages are used to determine the harvest quotas. POP ages are generally less than 20 years, some over 50 years, and the maximum age around 100 years. Previous work pooled otoliths, not validating them on an individual fish basis where structures were selected for fishes born during Bomb testing years. Kastelle concludes that ages have been validated for fish between the ages of 18 and 47 years with bomb radiocarbon. There is some possible underageing.

Wischniowski added that the method can't get closer than ± 3 .

Darlene Gillespie (CDFO): Progress on Developing a Method for Ageing Pacific Cod

CDFO began a 2 year process of looking at different structures for ageing their Pacific cod to determine which would be the most reliable for production ageing. First Year: the 1st and 2nd dorsal fin ray sections of younger fish 20-60cm size, 0-2 years were first looked at because they were best supported by length frequency data. For otoliths, thin sections and baked thin sections were used. They found that the 1st to 3rd annuli on thin sections were the most vague due to checkiness, and that it was best to start their thin sectioning as close to the base as possible. 5-6 sections per ray were taken. Three agers read all structures and the following conclusions were made: All readers had a greater confidence in ages derived from dorsal fin rays. First and 2nd dorsal fins produced more consistent ages than either otolith preparation.

APE was lowest for dorsal fins across all age groups

There was less overlap in length at age and annuli measurements for fins vs. otoliths.

During the 2nd year of the study dorsal fins were collected from 500 cod ranging in length from 20-80 cm. Approximately 5-6 sections were taken starting from the base of the fin-rays. Two readers aged all 1st dorsal fin XS (not independent) and resolved. Measurements of the 1st-4th annuli were taken along the longest axis. Ageing criteria were established for ageing Pacific cod using fin rays. In determining a final age, generally all fin sections were looked at. Some checkiness and vagueness is still a problem, but not as great as with otoliths. Data analysis of annual growth measurements appears useful in establishing location of the 1st & 2nd annulus. CDFO will continue to investigate the use of dorsal fin rays to age Pacific cod next year and refine the age criteria once data analysis of 2004 samples has been done.

Afternoon Break 3:20 p.m. 3:40 p.m.

Charles Hutchinson (AFSC): Developing Ageing Criteria for Shortraker Rockfish: Beginning in 2000, the AFSC Age and Growth Program began investigating new methodologies for ageing shortraker rockfish. The methodology known as thin sectioning proved better than the break and burn method at eliminating burning artifacts and glassy areas in the reading surface of the otolith. Hutchinson felt the preparation of shortraker otoliths had been refined and was aiding ageing positively. Using the thin section method, three different strategies were examined based on growth patterns seen on the otoliths, including determination of a "transition age," an age where the fish's somatic growth slows. Ages using the different strategies were compared to radiometric ages to determine which strategy was most accurate. The use of radiometrics was also used to validate the transition age in shortraker rockfish. Brief description of the three age reading methods: Strategy 1 involved lumping annuli, in which they felt they were underageing. In Strategy 2, annuli were split out and the result was overageing. Strategy 3 was a combination of the two, whereby lumping was felt appropriate up to a critical transition year of approximately 23 years. The samples will be retested using a transition year of 20. Charles plans to have the ages retested with a second reader. Conducting radiometric work and also applying bomb radiocarbon, if he can get enough older fish, would be extremely valuable in age determination/validation of this difficult to age species.

Jodi Neil (ADFG): Age Validation of Shortspine Thornyhead Rockfish Using Bomb Radiocarbon: Jodi is currently grinding Shortspine thornyhead rockfish otoliths down to their core to the first year of growth. This will allow for a partial age slot validation using the bomb radiocarbon signal put into the environment during the 1950's and 1960's.

(Brief discussion ensued re: post bomb testing validation. The slow downward curve of Bomb C-14 during the post testing years would make validation very difficult. Did Chernobyl leave a mark?)

Jon Short (AFSC) Age reading demonstration; an interactive ageing program: Jon gave us a show and tell demonstration of ARD or Age Reading Demonstration which he has put together on the AFSC website. Nine species are included in the demonstration, with photos of otoliths of varying degrees of ageing difficulty for each species. A visitor to this site can click on the annuli, ageing the specimen, and then check their work with another click. The Demonstrations can show the public, stock assessors and other agers, how and what we do. Look for it at www.afsc.noaa.gov along with other cool stuff for agers.

Shayne MacLellan (CDFO) Greenland Halibut Ageing Workshop Summary: Shayne described the workshop which she and Delsa attended in St. John's, Newfoundland. The Greenland Halibut is a species aged by many agencies. The

agencies were not in agreement as to how or what structures to age. The Russians were using scales. . Winnipeg had been looking at a variety of aging methods. With otoliths, now taking precedence, different methods were being investigated including whole otolith ageing, baking otoliths, thin sections, acetate peels, staining, and the use of different lighting techniques. In learning about CARE they have realized they don't totally need to reinvent the wheel.

McDonald thanked the presenters, who were awarded a thankful round of applause.

ELECTION OF 2006-2008 OFFICERS

Prior to the nomination and election of officers, MacLellan announced that Nanaimo would like to host CARE in 2008 if members felt it would be feasible or desired, mentioning international travel restraints. It is the 100th year anniversary of the Pacific Biological Station, and would be a fitting addition to the celebration. Members liked the suggestion and Brodie added that taking on an officer duty would probably assure that person's attendance.

Chair: Kristen Munk
 Vice Chair: Shayne MacLellan
 Secretary: Jodi Neil

All officers were elected unanimously.

Adjourn for the day, 5:10 p.m.

Wednesday, April 19, 2006

PRESENTATIONS (cont.)

MLML: Greg Cailliet reported on age validation research being carried out at Moss Landing Marine Laboratories and the Pacific Shark Research Center. MLML is part of the California State University system, and therefore is, primarily involved in educational activities, much of which involves graduate student (M.S. thesis) research. PSRC is a federally-funded chondrichthyan research facility housed within MLML.

Cailliet's colleague, Allen Andrews, is the primary person leading the radiometric age validation work, both using natural radionuclides like Radium 226 and Lead 210 ratios and bomb radiocarbon. With chondrichthyan species (sharks and rays) vertebrae, dorsal spines, caudal Field Code Changed thorns and neural arches have been used for ageing. MLML and PSRC operate by stimulating students to come up with thesis projects, many of which involve radiometric analysis for age validation of various bony and cartilaginous fishes. Although radiometric applications did not work for cartilaginous fishes (sharks), they were able to conclude that many deep-sea fishes such as rockfishes (species in the genera *Sebastes* and *Sebastes*) are long-lived, ranging up to a hundred or more in total longevity. Skate and shark validations have also been attempted, some of which were suggested, and several more species are in progress. Recently, work conducted on corals for biogenic habitat studies, have confirmed that the extreme longevities of some of their colonies have made them also highly vulnerable to trawling activities. The red tree coral lives 100 years, while bamboo coral and precious coral could possibly live to older than 200 years.

Scope work and discussions from 9:30 a.m. noon at scheduled work stations.

Morning Break 10:00 a.m. to 10:20 a.m.

Lunch 12:00 p.m. to 1:15 p.m.

Continue with collaborative scope work and discussions.

Adjourn for the day, 4:30 p.m.

Potluck social hosted by Cal Blood and family this evening at 6p.m.
Thursday, April 20, 2006

Continuation of collaborative scope work 8:00 a.m. - 11:05 a.m.

11:05- noon: Wrap-up Group Session

Anderl, Munk and McDonald brought back their workgroup draft on the CASE form. Members viewed the form, which should be more useful to end-users. The form was unanimously accepted with minor modifications and the pdf or Excel version of this form will be placed on the website and linked to the exchange table.

Kamikawa, MacLellan and Short worked on the Summary of age Reading Methods table, reworking the unwieldy table into two separate tables, one table is proposed to contain species age methods by agency and validation to date, while the other would list how many of what species and number of readers, for total age per year. It was suggested that perhaps a key be added for acronyms, and it was recommended that the summaries be updated annually via the vice chair.

McDonald made a motion to accept the revised forms and tables. Brodie 2nd, motion was approved unanimously. (Attachments 5 & 6, drafts, still being worked on.) The above two form updates are formalized below as recommendations under 2006 CARE Age Reading Workshop Recommendations.

McDonald inquired as to folk previewing the Charter. Brodie made a motion to accept the member charter, Goetz 2nd, there were no objections. (see Attachment 7.) Upon reviewing 2004 minutes, this had already been accomplished. The Charter committee officially disbanded.

Members felt a CARE to TSC recommendation was appropriate to encourage funding for participants, in regards to holding the 2008 meeting in Nanaimo, to coincide with the 100th anniversary of the PBS. The recommendation passed unanimously (see 2006 CARE Age Reading Workshop Recommendations.).

It was recommended that the lingcod and Dover sole chapters be entered into the manual on the website. McDonald motioned that we accept these chapters, Rodriguez 2nd, the motion passed unanimously.

Atkins volunteered to design a logo for the 2008 CARE meeting. Newport and Nanaimo could combine efforts into this since the meeting will take place in Nanaimo in conjunction with the 100th anniversary of the Pacific Biological Station. MacLellan stressed again the importance of keeping members active between CARE meetings, and recommends that design ideas be completed a year prior to the 2008 meeting. Proceeds from items made with the logos helps purchase meeting snacks and beverages.

Munk mentioned that Michael Schirripa was uncertain the 07 Sablefish Workshop would take place, but felt that a Sablefish ageing workshop should happen for calibration and in an effort to compile reference collections.

Anderl recognized staff members from the AFSC Age and Growth Program who took time out of their day to setup, cleanup, etc. for the meeting.
Group photos were taken.

2006 CARE AGE READING WORKSHOP RECOMMENDATIONS

2006 CARE TO CARE RECOMMENDATIONS

1. The CARE Age Structure Exchange (CASE) table presently identifies inter-agency exchanges occurring on species of interest to the TSC, or other inter-agency calibrations as needed. CARE recommends to itself to modify the CASE table and process. We will continue to track structure exchanges per the CARE Charter, however, we will drop precision test results from the CASE table. We will develop a CASE invoice, accessible on the CARE website. Upon initiating an exchange, the originating agency will contact the CASE coordinator for an exchange id. number. The originating agency will conduct the exchange, fill out all information in the CASE invoice, and submit it to the CASE coordinator upon its completion. . The CASE coordinator or designee will update the website to allow linked access within the CASE table. Inclusion of precision statistics is optional.

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

2006 CARE to TSC Recommendation

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

Lunch 12:00 1:15 p.m.

1:15 3:30 p.m. Continuation of microscope collaborative work and discussions, meeting photos were viewed.

Meeting adjourned 3:30 p.m.

End of 2006 CARE workshop