MINUTES
Scientific and Statistical Committee

Pacific Fishery Management Council
Hilton Vancouver Hotel
Heritage E Room
3001 West Sixth Street
Vancouver, Washington 98660
Telephone: 360-993-4500

March 7-8, 2015

Members in Attendance

Mr. Alan Byrne, Idaho Department of Fish and Game, Boise, ID
Dr. Andrew Cooper, Simon Fraser University, Vancouver, B.C.
Dr. Martin Dorn, National Marine Fisheries Service, Seattle, WA
Dr. John Field, National Marine Fisheries Service, Santa Cruz, CA
Dr. Owen Hamel, National Marine Fisheries Service, Seattle, WA
Dr. Galen Johnson, Northwest Indian Fisheries Commission, Olympia, WA
Ms. Meisha Key, SSC Chair, California Department of Fish and Wildlife, Santa Cruz, CA
Dr. Peter Lawson, National Marine Fisheries Service, Newport, OR
Dr. Todd Lee, National Marine Fisheries Service, Seattle, WA
Dr. Kevin Piner, National Marine Fisheries Service, La Jolla, CA
Dr. André Punt, University of Washington, Seattle, WA
Dr. David Sampson, Oregon Department of Fish and Wildlife, Newport, OR
Dr. William Satterthwaite, SSC Vice-Chair, National Marine Fisheries Service, Santa Cruz, CA
Ms. Cindy Thomson, National Marine Fisheries Service, Santa Cruz, CA

Members Absent

Dr. Daniel Huppert, University of Washington, Seattle, WA
Mr. Tom Jagielo, Seattle, WA
Dr. Tien-Shui Tsou, Washington Department of Fish and Wildlife, Olympia, WA

SSC Recusals for the March 2015 Meeting		
SSC Member	**Issue**	**Reason**
Dr. John Field	E.1 California Current Ecosystem Report Including Integrated Ecosystem Assessment	Dr. Field contributed to the report.

A. Call to Order

Ms. Meisha Key called the meeting to order and Dr. Don McIsaac briefed the SSC on the tasks before them at this meeting.

Dr. Field volunteered to work on the Groundfish, HMS, and Ecosystem Subcommittees. Dr. Piner volunteered to work on the HMS and Ecosystem Subcommittees. He also volunteered to chair the HMS Subcommittee. Dr. Todd Lee agreed to be the new chair for the Economics Subcommittee since Ms. Cindy Thomson will be leaving the SSC.

The SSC discussed analyses and proposals for determining a steepness prior in 2015 groundfish assessments. The SSC agreed that Dr. Jim Thorson fulfilled all the SSC requests with respect to documentation of his meta-analysis on steepness. Dr. Hamel briefed the SSC on his modest proposal for addressing the positive bias in determining a steepness prior. The bias arises from using assessments in the meta-analysis with an underlying autocorrelation in estimating recruitment. The proposal is to use a steepness prior of 0.7 (rather than the steepness prior of 0.77 recommended by Thorson). The SSC recommended using the Thorson steepness prior of 0.77 using the approaches outlined in the SSC Groundfish Subcommittee report from November. Owen's modest proposal will also be provided to STATs to inform them of concerns for positive bias in determining a steepness prior.

The SSC reviewed the elaboration requested to further document the geostatistical delta-GLMM for analyzing survey CPUEs. There are lingering concerns on the use of this tool and further detail and a working example of using this tool are requested before considering a full SSC endorsement. The original SSC recommendation stands to use either the default GLMM approaches for developing survey indices or the geostatistical delta-GLMM approach and use the other approach as a sensitivity analysis.

The National SSC meeting was discussed. PFMC will host next year's National SSC meeting. Martin Dorn suggested a National SSC focus that involves an MSE theme could include a discussion on better ways to communicate uncertainty and risk.

The SSC discussed future workload planning. The SSC is still recommending an off-year productivity workshop. The workshop will explore meta-analyses, such as the Thorson steepness analysis, as well as other methods for determining stock productivity, such as the XDB-SRA approach. There was also some discussion regarding a data-weighting workshop. There is a Center for the Advancement of Population Assessment Methodology (CAPAM) data-weighting workshop scheduled for October 19-23. The PFMC data-weighting workshop (or meeting) could play off the CAPAM workshop or, if the CAPAM workshop is sufficiently rigorous and well

attended by SSC members, could supplant the need for a PFMC data-weighting workshop.

Kit Dahl talked about getting the SSC HMS Subcommittee involved in providing input on a planned northern albacore MSE. He recommended a workshop or webinar attended by the HMS Subcommittee, the HMSMT, and perhaps the HMSAS. This meeting would need to occur before the June Council meeting. The SSC preferred waiting on a focused MSE deliberation until after the international MSE workshop in April in which André Punt will be presenting.

The SSC then went into closed session.

H. Highly Migratory Species Management

3. Final Exempted Fishing Permit Approval

The Scientific and Statistical Committee (SSC) reviewed five exempted fishing permit (EFP) proposals (Agenda Items H.3.a, Attachments 1-5) for the drift gillnet (DGN) swordfish fishery in the West Coast Exclusive Economic Zone (EEZ). Proposals were solicited from the Council to test alternative fishing gears or methods, and/or to allow fishing practices that are not allowed under current regulations. Dr. Kit Dahl met with the SSC to discuss the current EFP review process, summarize the EFPs, and answer questions. Because of the shortened EFP review process, the SSC proposal reviews were not guided by specific science questions or concerns from the Highly Migratory Species Management Team (HMSMT).

In general, 100% observer coverage is important given the clear desire to measure protected species interactions, which are typically rare events. All of the proposals include 100% observer coverage except the proposal in Attachment 2, which specifies a minimum of 20%. Observer coverage in the other proposals is contingent on funding. It is important that the EFPs report the economic results of their operations so that information is available about the potential economic viability of alternative fishing gears or methods. The economic information should include revenues, costs, and net-revenue. The catch monitoring and economic data should be made available in a format suitable for use in scientific evaluations and management.

With 100% observer coverage and sufficient economic information, all of the proposals can measure potential economic viability and begin collecting the data necessary to estimate levels of bycatch. The SSC points out that precisely estimating bycatch rates, or determining whether alternative gears or methods have lower bycatch rates than DGNs, is likely to require many years of data collection. This is not necessarily due to the EFPs themselves, but rather due to the rarity of protected species bycatch events and the relatively small number of vessels participating. However, if bycatch rates of new gear types or locations fished are substantially higher than the historical DGN fishery, this may be apparent more quickly.

The proposals contained in Attachments 1, 2, 3 and 5 seek to answer potentially useful scientific questions, but do not contain sufficient methodological information (e.g., sampling rates, sampling methods, or how the data will be analyzed) to evaluate how or whether the scientific questions may be answered. The SSC notes that the HMSMT's EFP evaluation criteria (see Agenda Item E.3.b, HMSMT Report, June 2014) comprise a useful listing of information proposals should contain so that their scientific and other merits may be evaluated.

E. Ecosystem Management

1. California Current Ecosystem Report Including Integrated Ecosystem Assessment

The Scientific and Statistical Committee (SSC) Ecosystem Subcommittee conducted a review of the State of the California Current Annual Report on December 15-16, 2014 in Seattle. The SSC discussed the results of the Subcommittee's review (Agenda Item E.1.c, SSC Ecosystem Subcommittee Report) and heard presentations by Drs. Chris Harvey (NWFSC) and Toby Garfield (SWFSC) regarding efforts underway to address the Subcommittee's recommendations. These changes are responsive to the Subcommittee review, and additional changes are in progress.

The SSC supports the Ecosystem Subcommittee's findings and recommendations. The SSC encourages ongoing efforts by the Integrated Ecosystem Assessment (IEA) Team to improve their indicator screening process and provide additional narrative showing the relevance of the indicators to the Council. In addition to reviewing the IEA Team's Report in March, the SSC is willing to meet with the IEA Team 3-6 months in advance to review proposed indicators in terms of their technical basis and relevance to the Council. Regardless of whether and to what extent ecosystem indicators are used in the future to directly inform Council actions, indicators serve a current purpose by providing the Council with a broader context for considering ecosystem changes that would otherwise be unavailable.

SSC Notes:

The SSC considers the MARSS model and indicators of human dimensions to be priority items for review.

2. Review of Fishery Ecosystem Plan Initiatives

The Scientific and Statistical Committee (SSC) discussed the nine initiatives in the Fishery Ecosystem Plan (Agenda Item E.2.a, Attachment 1) as well as the new initiative on indicator review proposed by the Ecosystem Workgroup (Agenda Item E.2.b, Supplemental Ecosystem Workgroup Report). Most of the initiatives involve scientific considerations. The SSC should consequently be involved throughout the implementation of the initiatives, and particularly during the planning stages. Several of the initiatives appear to involve similar work and could be merged to improve efficiency.

The proposed new initiative could be combined with Initiative 9 (Indicators). Initiative 9 could also address several of the aims of initiative 7 (Socio-economic Effects). The SSC is working with the Integrated Ecosystem Assessment group to identify criteria for selecting indicators for inclusion in the State of the California Current Report (Agenda Item E.1.c, SSC Ecosystem Subcommittee Report). SSC members should be involved in any workgroup established to identify and develop indicators. The full SSC should also be involved in reviewing the outcomes of the workgroup.

Initiative 1 (Effect of Harvest Policies on Age- and Size-Distribution of Managed Stocks) could be expanded to examine the consequences of harvest policies on other life history characteristics which could impact productivity, such as spatial distribution and spawn timing. Considerable

research has been conducted on the effects on productivity of changes to life history characteristics. Much of the work for this initiative therefore relates to reviewing existing scientific results so substantial progress could be made on this initiative relatively quickly.

Models such as Atlantis could prove informative in implementing Initiative 8 (Effects of Climate Shifts). The SSC has reviewed the Atlantis model and has made several recommendations regarding the use of this model for the Council process, including the impact of climate shifts (Agenda Item H.1.a, Attachment 1; November 2014).

I. Council Administrative Matters, continued

1. Legislative Matters

There was no report to the Council for this agenda item.

SSC Notes:

Jennifer Gilden gave a presentation to the Scientific and Statistical Committee (SSC) on the status of the Magnuson-Stevens Act (MSA) Reauthorization bills and the proposed revisions to the National Standard 1 (NS1) Guidelines.

Council staff will compile and organize SSC's previous comments on MSA Reauthorization and NS1 Guidelines to ensure the SSC has fully commented on each and to allow the SSC to re-emphasize the most important points.

Previous versions of the MSA Reauthorization bills contained language that would allow fishery impact statements to satisfy NEPA reporting requirements. That wording has been removed from the current versions, thus maintaining the status quo.

Current versions of the MSA Reauthorization bills have removed the 10-year rebuilding requirement, and now base rebuilding timelines on the time to rebuild with F=0 and mean generation length. This means short-lived species may have rebuilding timelines shorter than 10 years.

Once passed, the MSA Reauthorization bill will supersede the proposed revisions to the NS1 Guidelines if they are in conflict. Despite this, NMFS will continue the process for the proposed revisions, even though they may have to rewrite them after passage of the MSA Reauthorization bill.

The transparency clauses in the MSA Reauthorization bill will require that all SSC meetings be recorded, and possibly have searchable transcripts made available. The SSC was concerned that this may stifle scientific debate and affect how the meetings are run.

The MSA Reauthorization bills currently preserve the status quo process for gaining access to confidential fishery data. However, it does prevent observer data from being used for coastal and marine spatial planning unless the Secretary determines it constitutes essential information.

H. Highly Migratory Species Management, continued

2. Recommendations for International Management Activities Including U.S.-Canada Albacore Treaty Area Fishery Update

The SSC had a brief discussion regarding the international management strategy evaluation (MSE) process for northern albacore. Dr. André Punt will provide a briefing at an international MSE workshop in May and Dr. Kevin Piner will teach international scientists working on the northern albacore MSE how do conduct MSEs. The SSC provided no formal statement to the Council on this item at this meeting.

4. Drift Gillnet Management and Monitoring Plan Including Final Action on Hard Caps

The Scientific and Statistical Committee (SSC) reviewed the Highly Migratory Species Management Team (HMSMT) report (Agenda Item H.4.b) and received information from Dr. Steve Stohs (NMFS, SWFSC) on the bootstrap simulation methodology that underlies Tables 8 and 9 in the HMSMT report. These tables are meant to show the effect of different hard cap options on the resulting catch of marketable species and economic profitability. The SSC considers the bootstrap methodology an appropriate methodology, but was not provided detailed documentation to allow a review of the economic data that underlies the analysis of profitability. Tables 8 and 9 consider only the no-action alternative and the Council's PPA, and do not include analysis of the five-year hard caps. The tables should include the observed number of interactions that would trigger a closure given the level of observer coverage and the effective expanded hard-cap. The SSC provided Dr. Stohs with recommendations concerning how the analysis could be improved.

SSC Notes:

- *Need more complete documentation that is provided more broadly than to just the SSC.*
- *Document the economic data on costs; how collected, which variables were collected and how fixed costs were allocated to this fishery.*
- *Future documentation should include detailed rationale for the periods of data used for conducting the bootstrap. Use alternative time-periods as sensitivity analyses to bracket uncertainty.*
- *Uncertainty in economic data should be included (prices and costs).*
- *Keep tally of catch as well as net profits so that the effect of hard caps on catch can be separated from profitability.*
- *The hard-caps should be reported in the tables in terms of the corresponding rate of observer coverage.*

F. Salmon Management

2. Review of 2014 Fisheries and Summary of 2015 Stock Abundance Forecasts

<u>2014 Review of Ocean Salmon Fisheries</u>

Dr. Robert Kope discussed the *Review of 2014 Ocean Salmon Fisheries* report with the Scientific and Statistical Committee (SSC). The report includes sections on status determination criteria in Chapters II and III for Chinook and coho salmon stocks, respectively. Table II-5 reports the

performance of Chinook stocks relative to 2014 preseason conservation objectives while Table II-6 summarizes Chinook stock status relative to overfished and overfishing criteria. There were no Chinook stocks classified as overfished based on the geometric mean spawning escapement using the most recent three years of available data. Tables III-6 and III-7 present this same information for coho. There were no coho stocks classified as overfished.

2015 Stock Abundance Forecasts

Dr. Kope also discussed Chinook and coho stock abundance predictions for 2015 as presented in *Preseason Report I.* This year Willapa Bay natural coho have newly adopted management objectives, although the ABC for this stock is not reported in *Preseason Report I.* Given that F_{ABC} is 0.71, S_{ABC} is the preseason forecast x 0.29 (= 1 – F_{ABC}). The preseason forecast is 42,884, so S_{ABC} = 42,884 x 0.29 = 12,436.

The SSC endorses the 2015 forecasts, acceptable biological catches, and overfishing limits, with the addition of the Willapa Bay coho S_{ABC} reported above, as the best available science for use in 2015 salmon management.

SSC notes:

*F_{MSY} for Willapa Bay natural coho adopted by the Council was 0.74, and typically for a Tier-1 stock F_{ABC}=0.95*F_{MSY}, and in this case 0.95*0.74 = 0.703. However, the STT, when calculating F_{ABC} for other stocks (Sacramento River fall Chinook, Klamath River fall Chinook), retains the full precision of the original estimate of F_{MSY} and then rounds F_{ABC} after applying the buffer. Thus F_{ABC} of 0.71 was used for consistency with the approach used for other stocks.*

SSC Subcommittee Assignments, March 2015

Salmon	Groundfish	Coastal Pelagic Species	Highly Migratory Species	Economics	Ecosystem-Based Management
Pete Lawson	**David Sampson**	**André Punt**	**Kevin Piner**	**Todd Lee**	**Martin Dorn**
Alan Byrne	Andrew Cooper	Alan Byrne	Andrew Cooper	Dan Huppert	John Field
Owen Hamel	Martin Dorn	Owen Hamel	John Field	André Punt	Pete Lawson
Galen Johnson	John Field	Dan Huppert	André Punt	David Sampson	Galen Johnson
Meisha Key	Owen Hamel	Tom Jagielo	David Sampson		Todd Lee
Will Satterthwaite	Tom Jagielo	Meisha Key			Kevin Piner
	Meisha Key	Will Satterthwaite			André Punt
	André Punt				Will Satterthwaite
	Tien-Shui Tsou				Tien-Shui Tsou

Bold denotes Subcommittee Chairperson

DRAFT Tentative Council and SSC Meeting Dates for 2015

Council Meeting Dates	Location	Likely SSC Mtg Dates	Major Topics
March 7-12, 2015 Advisory Bodies may begin Fri, March 6 Council Session begins Sat, March 7	Hilton Vancouver Washington 301 W. Sixth Street Vancouver, WA 98660 USA Phone: 360-993-4500	One-day CPS Subcm Session **Thu, March 5** Two-day SSC Session **Fri, March 6 – Sun, March 7**	IEA annual report Final CPS EFP Pacific mackerel set-aside Final CPS methodology review Salmon review/Pre I CA current & IEA reports Unmanaged forage fish FPA
April 11-16, 2015 **Advisory Bodies may begin Fri, Apr 10** **Council Session begins Sat, Apr 11**	DoubleTree by Hilton Sonoma One Doubletree Drive Rohnert Park, CA 94928 Telephone: 707-584-5466	Two-day SSC Session **Fri, April 10 – Sat, April 11**	Pacific sardine assess. Groundfish methodology review COP – final Salmon methodology topic selection NS1 guidelines comments
June 12-17, 2015 **Advisory Bodies may begin Thu, June 11** **Council Session begins Fri, June 12**	DoubleTree by Hilton Spokane City Center 322 N. Spokane Falls Court Spokane, WA 99201 Phone: 509-455-9600	One-day GF Subcm Session **Wed, June 10** Two-day SSC Session **Thu, June 11 – Fri, June 12** One-day GF/Econ Subcms Session **Sat, June 13**	Mackerel assess. & mgt. measures Anchovy update Groundfish stock assess. Groundfish spex process and schedule
September 11-16, 2015 **Advisory Bodies may begin Thu, Sept 10** **Council Session begins Fri, Sept 11**	DoubleTree by Hilton Hotel Sacramento 2001 Point West Way Sacramento, CA 95815 Phone: 916-929-8855	Two-day SSC Session **Thu, Sept 10 – Fri Sept 11**	Plan science improvements Salmon methodology topic priorities Tule control rule review Groundfish stock assess. Groundfish EFH amendment
November 14-19, 2015 **Advisory Bodies may begin Fri, Nov 13** **Council Session begins Sat, Nov 14**	Hyatt Regency Orange County 11999 Harbor Blvd. Garden Grove, CA 92840 Phone: 714-750-1234	Two-day SSC Session **Fri, Nov 13 – Sat, Nov 14**	CPS methodology topic selection Groundfish stock assess, and reb. anal. Groundfish biennial spex Salmon methodology review

SSC meeting dates and durations are tentative and are subject to change in response to Council meeting dates, agendas, workload, etc.

Proposed Workshops and SSC Subcommittee Meetings for 2015

Tentative – Depended on funding, dates subject to change

☐ – Prep. Work Underway, Scheduled to Occur; ▭ – Status of Supporting Analyses Uncertain, Remains a Priority;
▨ Setbacks exist, Questionable; ■ Funding or Prep. Not Avail, likely to be canceled or postponed

	Workshop/Meeting	Potential Dates	Sponsor/ Tentative Location	SSC Reps.	Additional Reviewers	AB Reps.	Council Staff
1	National SSC Meeting	Feb. 23 - 25	WPFMC/ Honolulu	Key, Dorn, Hamel, Satterthwaite	TBD	NA	DeVore
2	Pacific Sardine Update Review	Mar. 6	Council/ Vancouver, WA	CPS Subcommittee	None	CPSMT CPSAS	Griffin
3	Nearshore Assessments Workshop	Mar. 31 – Apr. 2	Council/ Portland	Sampson, Cooper, Key, Dorn	None	GMT GAP	DeVore
4	Canary/Darkblotched Rockfish STAR	Apr. 27 – May 1	Council/ Seattle	Jagielo	2 CIE + Ianelli	GMT GAP	DeVore
5	Pacific Mackerel STAR	Week of Apr. 27	Council/ La Jolla	Punt, Satterthwaite	2 CIE + 1	CPSMT CPSAS	Griffin
6	Review for Sablefish, Petrale Sole, and Chilipepper Rockfish Updates; Arrowtooth Data-Moderate Assessment, and Catch Reports	June 10	Council/ Spokane	GF Subcommittee	None	GMT GAP	DeVore
7	Review Trawl IFQ Model	June 13	Council/ Spokane	GF & Econ Subcommittees	None	GMT GAP	DeVore

Proposed Workshops and SSC Subcommittee Meetings for 2015

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	Workshop/Meeting	Potential Dates	Sponsor/ Tentative Location	SSC Reps.	Additional Reviewers	AB Reps.	Council Staff
8	Bocaccio/China STAR	July 6-10	Council/ Santa Cruz	Dorn	2 CIE + 1	GMT GAP	DeVore
9	Black RF STAR	July 20-24	Council/ Newport, OR	Cooper	2 CIE + 1	GMT GAP	DeVore
10	Kelp Greenling/Widow STAR	July 27-31	Council/ Newport, OR	Sampson	2 CIE + 1	GMT GAP	DeVore
11	Mop-up STAR	Late Sept.?	Council/ TBD	GF Subcommittee	TBD	GMT GAP	DeVore
12	Salmon Methodology Review	Late Oct.?	Council/ Portland	Salmon Subcommittee	None	STT SAS MEW	Burner
13	Data-Weighting Workshop	Oct. 19-23	CAPAM/ La Jolla	TBD	TBD	NA	DeVore?
14	Methods for Data Reweighting Workshop	TBD	NWFSC/ Council	GF & CPS Subcommittees	TBD	GMT GAP	DeVore
15	Reference Points (Bzero) Workshop II	TBD	TBD	GF Subcommittee	CIE/External 1-3:	GMT GAP	DeVore

Proposed Workshops and SSC Subcommittee Meetings for 2015

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▨ Setbacks exist, Questionable; ■ Funding or Prep. Not Avail, likely to be canceled or postponed

	Workshop/Meeting	Potential Dates	Sponsor/ Tentative Location	SSC Reps.	Additional Reviewers	AB Reps.	Council Staff
16	Evaluation of Stock Productivity Methodological Approaches	Spring 2016?	TBD	Full SSC?	TBD	GMT GAP	DeVore
17	Groundfish Historical Catch Reconstructions	Summer 2016?	TBD	GF Subcommittee	TBD	GMT GAP	DeVore
18	Transboundary Groundfish Stocks	?	Council	2 TBD?	?	GMT GAP	DeVore

Appendix

Review of the CCIEA State of the California Current Annual Report by the Scientific and Statistical Committee Ecosystem Subcommittee

The Ecosystem Subcommittee of Scientific and Statistical Committee (SSCES) met with the California Current Integrated Ecosystem Assessment (CCIEA) team to review the annual State of the California Current Ecosystem (SOTCC) Report. The CCIEA team is primarily affiliated with the Northwest and Southwest Fisheries Science Centers. The meeting took place on December 15-16, 2014, at the NOAA Western Regional Center in Seattle, Washington. The meeting was open to the public, and public comments were accepted during the meeting.

The purpose of this meeting was to review the indicators used in the annual State of the California Current Ecosystem Report, which is delivered to the Pacific Fishery Management Council (Council) each March, and to consider how the report might be refined and improved. The first such report was presented to the Council in November 2012. The Council decided to reschedule the report to its March meeting, and received the second report in March 2014. The impetus for this meeting was the concern expressed by both the SSC and the CCIEA team that there was insufficient time during the SSC's review in March to conduct a detailed technical review of the indicators in report. Furthermore, by just focusing on the document at hand, there was no opportunity for the SSC to consider broader issues, such as how ecosystem reports might be improved and utilized in the Council process. The objectives of the meeting were to:

1. Evaluate the technical basis of indicators in the 2014 Annual State of the California Current Ecosystem Report, and make recommendations for their improvement.
2. Evaluate the overall structure and format of the annual ecosystem report, including how the information is summarized, and make recommendations for improving the format of the report.
3. Initiate a process for selection and evaluation of indicators to be included in the report.

It was recognized that this meeting was an initial attempt by the SSC to more thoroughly review the products being developed by the CCIEA team, and that additional reviews, potentially with a different format, might be required in the future.

The review meeting began with overview presentations by Phil Levin (NWFSC) and Chris Harvey (NWFSC), who discussed the goals of the CCIEA and the annual report to the Council. Then the SSCES considered technical criteria for evaluating ecosystem indicators. For the remainder of first day of the meeting, the SSCES received presentations and discussed technical aspects of the indicators in the 2014 report. On the second day, the SSCES received additional presentations on proposed new indicators for seabirds, habitat, and human dimensions. Stephani Zador (AFSC) gave an overview of how ecosystem considerations are included in the North Pacific Council process. The SSCES also discussed broader issues concerning how indicators are selected and evaluated. In an agenda item unrelated to the ecosystem report, Isaac Kaplan discussed and solicited guidance on draft minimum performance standards for end-to-end models. This was a follow-up topic to the review of the Atlantis model earlier this year.