

Minutes from the 2015 Meeting of the Alaska Scientific Review Group

25-26 February - Seattle, Washington

This report summarizes the 2015 meeting of the Alaska Scientific Review Group (SRG). This document is intended to summarize the main points and does not attempt to record everything that was said during the meeting.

Meeting Called to Order

Lloyd Lowry, the SRG chair, called the SRG meeting to order. Lowry welcomed everyone to the meeting and began introductions. Attendees included:

Alaska SRG Members: Lloyd Lowry, Robert Suydam, Beth Mathews, Kate Wynne, Grey Pendleton, Kate Stafford, David Tallmon, Craig Matkin, Karl Haflinger, Mike Miller

Observers and Invited Participants: Robyn Angliss (AFSC), Marcia Muto (AFSC), Van Helker (AFSC), John Bengtson (AFSC), Doug DeMaster (AFSC), Shannon Bettridge (NMFS HQ/PR2), Kristy Long (NMFS HQ/PR2), John Kurland (NMFS AKR), Bridget Mansfield (NMFS AKR), Sam Simmons (MMC), Karen Martien (SWFSC), Paul Wade (AFSC), Lowell Fritz (AFSC), Phil Clapham (AFSC), Marilyn Dahlheim (AFSC), Rod Hobbs (AFSC), Kathryn Sweeney (AFSC), Josh London (AFSC), Peter Boveng (AFSC), Alex Zerbini (AFSC), Tom Gelatt (AFSC), Lowell Fritz (AFSC), Jay Ver Hoef (AFSC), Paul Conn (AFSC), Joel Garlich-Miller (USFWS), Charlie Hamilton (USFWS), Patrick Lemons (USFWS), Erich Regehr (USFWS), Jim MacCracken (USFWS)

Adoption of Agenda

Robyn Angliss began by thanking Marcia Muto for her hard work editing the 2015 SARs following Dee Allen's departure. The SRG did not have any comments on the minutes from the 2014 meeting and the minutes were finalized.

Alaska SRG 2014 Recommendations and Responses from NMFS

Lowry began discussing the 2014 SRG meeting recommendations and National Marine Fisheries Service (NMFS) response. He said NMFS efforts to address the SRG's recommendations are evident in the updates to the SARs which include CVs for the humpback whale population estimates and an effort to clarify fishery observer coverage. Lowry appreciated that NMFS is heeding and addressing the SRG's recommendations.

AK SRG Membership and Turnover Plan

Bettridge provided the SRG with a briefing on the AK SRG membership and turnover plan. The terms of reference for the SRGs were finalized in 2014. One of the aspects

of the terms of reference states that the agency will annually review the expertise available on each of the SRGs, identify any gaps in expertise, and try to achieve a balanced representation in regards to scientific expertise and discipline among the individuals on each SRG. Members may serve three consecutive terms of three years each prior to being asked to step down for at least a one year hiatus. NMFS is trying to avoid a turnover of more than one third of membership per SRG in any given year. This is a challenge given that the SRGs have been functional for many years and many members have been in place for more than nine years.

Each SRG is partitioned into three review groups, with approximately one third of SRG members in each group (groups are named A, B, C). The plan is to review one of the groups (A, B, or C) each year. NMFS is going to assume that for the first review, those in group A will be reaching the end of their first term, regardless of how long they've been on the SRG. An individual's SRG membership may be renewed at the end of each term, or that member could be replaced.

If expertise gaps are identified, members will be replaced and/or added, or the gaps in expertise may be filled by inviting experts to attend meetings. If new SRG members are to be selected, a Federal Register (FR) notice will be published to seek nominations. NMFS' goal is to have a single FR notice for all three SRGs. The FR is intended to provide advance notice to interested parties such as coalitions, state governors, the Marine Mammal Commission (MMC), etc. Once the nominations are received they will be compiled, then reviewed by the SRG chair and the SRG. For the AK SRG, a discussion will be held with SRG chair, the SRG liaison, the SRG coordinator (Bettridge), the Alaska Regional Office (AKRO) (Kurland), the Alaska Fisheries Science Center (AFSC) (Bengtson), a representative from NMFS Office of Science and Technology, a US Fish and Wildlife Service (USFWS) representative, and a MMC representative. After completion of the review, new members will be selected and invited to join the SRG.

NMFS requests nominations be submitted with the nominated individual's CV and a letter describing how the nominated individual would meet the minimum selection criteria and add to the expertise and balance of the SRG. Self-nominations are acceptable or the SRG can nominate potential members. There are no restrictions on who is allowed to nominate potential members. The criteria that are considered when reviewing nominations include the nominated individuals:

- Ability to make time available for purposes of the SRG
- Knowledge of the species of marine mammals in the SRG's region
- Scientific or technical achievements in a relevant discipline
- Demonstrated experience working effectively on teams
- Expertise relevant to current and expected needs of the SRG
- No conflict of interest with respect to their duties as a member of the SRG (e.g., no registered lobbyists)

Robert Suydam asked if there were rules regarding SRG membership and conflicts

of interest. Bettridge said this is addressed in the terms of reference. Lowry asked how interested USFWS has been in this process. Bettridge said that NMFS has reached out to USFWS already, but could stand to do more. USFWS has not adopted the terms of reference or the Guidelines for Assessing Marine Mammal Stocks (GAMMS), so this process is challenging. Regardless, NMFS will involve USFWS in the membership review process.

Update from the Alaska SRG Liaison

Angliss reminded the SRG that Dee Allen took a job with the Marine Mammal Commission in fall of 2014. Marcia Muto has stepped in for the interim to take the lead on edits for the 2015 SARs. Muto is committed to see the 2015 SARs through to making them available to the public and will continue to help out through June. NMML is still having discussions internally about how best to fill the role of SRG liaison for the long-term. Angliss asked the SRG what specific things NMML should consider as NMML seeks a long-term replacement for Allen.

Lowry said he thought the quality of the SARs depend on the quality of the SRG liaison and their ability to work with staff within the building. He recommended someone who could work well with NMML staff and entice them to do a good job.

Status of GAMMS III

Bettridge reminded the SRG that the Guidelines for Assessing Marine Mammal Stocks (GAMMS) III workshop report recommended changes to the GAMMS for each of the nine topic areas. NMFS has received public comments on those proposed changes. In particular, there was concern among those that commented with topics 1 (*What happens to PBR when Nmms are greater than 8 years old?*) and 2 (*Improving unreliable stock identity to increase effective PBR management*). The Office of Protected Resources (OPR) is going begin finalizing recommendation topics 3-9 and will revisit topics 1 and 2. The aim is to finalize topics 3-9 in 2015 so they are available prior to the joint SRG meeting in 2016.

Sam Simmons asked if Bettridge anticipated doing another round of public comments on GAMMS topics 1 and 2. Bettridge said there would be another round of comments if there are significant changes from what was proposed.

2012 and 2013 Alaska Marine Mammal Observer Program

Bridget Mansfield discussed the preliminary results from the 2012-2013 Alaska Marine Mammal Observer Program's (AMMOP) observation of the Southeast Alaska drift gillnet fishery. The observers recorded all interaction details which were then used by NMML to make injury determinations. Observers noted some whales that swam through gillnets ("blow throughs") in 2012 and 2013. These were assumed to be humpback whales. Observers noted one Dall's porpoise entanglement in 2012 which was later determined to be a serious injury. The AKRO contractor, Bryan

Manly, who estimated bycatch in the fishery, has extrapolated these events across the districts that were observed (districts 6, 8, 7a). AKRO also asked Bryan Manly to extrapolate the observed interactions across the entire fishery. This information is available in a recently published report¹. In 2013, AMMOP observed one humpback whale interaction which was determined to be a serious injury, whale blow throughs, harbor porpoise serious injuries and non-serious injuries, and a sea otter entanglement. There were two observed incidents where harbor porpoise were observed to be entangled and released without serious injury, and there were two harbor porpoise that were observed to be entangled and released alive, but were later determined to have been seriously injured. AKRO's intent is to take the results from 2012 and 2013, run appropriate extrapolations, and average the extrapolations over the two years observed to calculate a mean take for the two years observed.

Kate Wynne asked if Mansfield could elaborate on how the total fishery information was extrapolated. Wynne had concerns that the areas sampled were previously identified as high risk areas in terms of potential for marine mammal take, and interaction events in these 'high risk' sampled areas were to be extrapolated across an entire fishery operating in a larger area much of which may have a lower risk for marine mammal take.

Mansfield said that AKRO did choose areas of observation that were thought to be areas with higher risk of marine mammal takes. There are many assumptions made with the extrapolations to the entire fishery. Typically AKRO's extrapolations are based on the effort information on all fishing vessels in an observed district. Effort information is only available for areas that are observed. For the areas not observed, effort is calculated based on landings. Landing information from the Alaska Department of Fish and Game (ADFG) is compared to effort metrics tracked by observers. AKRO has found that landings track consistently with hours fished. Bryan Manly's extrapolations to the entire fishery are based on effort and landings, since that is the only information that is available. There are some issues with that, but this is the best information available.

Wynne said the observer program's design was flawed because AKRO did not randomly sample districts within the fishery and instead focused observation on a high risk area, yet AKRO intends to extrapolate takes observed in a high risk area across a whole fishery that includes lower risk areas. Mansfield said NMFS would discuss Wynne's concerns internally to determine whether they could be addressed in the current analysis.

Beth Mathews asked Mansfield to address the reasons why there is such a difference between 2012 and 2013 observations. Craig Matkin said there were more fish

¹ <http://alaskafisheries.noaa.gov/protectedresources/observers/2012-13/incidentaltakes2012-2013.pdf>

caught in 2013 and asked if there was more effort. Mansfield said there was a slight difference in salmon runs between the two years and more fishing effort in 2013, but the analysis should account for that difference.

Paul Wade, one of 3 peer reviewers of the draft bycatch estimation report, said that in 2012, only one seabird species was bycaught. This suggests that the distribution of fishing effort during the two years was quite different from one year to the next. Wade added that one Dall's porpoise was caught in 2012, and in 2013 there were four harbor porpoise caught. This is a small sample size, but Dall's porpoise and harbor porpoise don't have completely overlapping distributions. Wade recommended a finer scale analysis of where the fishermen actually fished. Matkin agreed with Wade's recommendation, and added that one of the years observed included a large pink salmon run. Matkin thought it was likely that fishermen were concentrating effort in different locations.

SE Alaska Harbor Porpoise Research Update

Marilyn Dahlheim said NMML's current harbor porpoise team consists of Phil Clapham, Alex Zerbini, Janice Waite, Amy Kennedy, and Kim Parsons. NMML's harbor porpoise program has been in place for over twenty years. The trigger for the initial harbor porpoise research was the 1988 reauthorization of the MMPA, under which takes could be authorized for marine mammal stocks that met Optimum Sustainable Population (OSP) criteria. At the time NMML did not have sufficient data with which to determine appropriate incidental take levels. In 1991, NMML initiated dedicated aircraft and vessel surveys for harbor porpoise. Currently there are three stocks of harbor porpoise in Alaska: the Bering Sea, Gulf of Alaska, and Southeast Alaska stocks. From 1991 to 1993 and 1997 to 1999 NMML conducted aerial surveys throughout the range of those three stocks. These are the only surveys that have attempted to determine abundance for AK harbor porpoise stocks. Southeast Alaska vessel based harbor porpoise surveys began in 1991. Between 1991 and 1993 there were three porpoise cruises per year during spring, summer, and fall. From 1994 to 2005 NMML continued with vessel surveys at a rate of two surveys per year, but with a focus on killer whales and humpback whales. During this twelve year period NMML researchers did not conduct standard line transects but did record all cetacean sightings. NMML researchers noticed an absence of harbor porpoise sightings, particularly near Wrangell and Zarembo Island, during this time period. Starting in 2006, NMML began conducting line transects again and followed the same tracklines as in the 1990s, however, the number of cruises and observers varied from year to year. In all, NMML has conducted 18 line transect surveys in the inland waters of Southeast Alaska from 1991 to 2012. A review of survey data shows a spring-time concentration of harbor porpoise around Glacier Bay and Icy Strait, a smaller concentration around southwest Frederick Sound, and a concentration around Wrangell and Zarembo Island. Summer and fall surveys showed similar concentrations of harbor porpoise. Dahlheim said harbor porpoise seemed to be more widely distributed in summer than in spring or fall. Group size was found to stay fairly consistent from spring to

fall, with a slight increase in group size in fall. NMML analyzed data from the eight summer surveys for abundance and trends. NMML did not conduct g(0) experiments, therefore no correction factor is available. A reasonable correction factor could be 2.5 to 3, based on similar survey vessels in other regions. For the 1991 to 1993 period NMML estimated there were 1,076 animals within the inland waters of Southeast Alaska. This estimate dropped to 604 in the mid-2000s, and 975 in 2010 to 2011. Possible explanations for the differences in estimates over this time period include: variation in observer experience, variation in survey vessels used, missed areas of porpoise concentrations, and movement of animals outside the study area to offshore waters. Analysis of the data suggests that these explanations are unlikely to be responsible for the differences in estimates.

Wynne asked about the frequency of Dall's porpoise sightings during the cruises. Dahlheim said that Dall's porpoise are routinely observed in Southeast Alaska's inland waters during spring, with fewer observations in summer, and even less in fall. Dahlheim investigated the possibility of species misidentification contributing to the observed decline in harbor porpoise, but this also seems unlikely. In the years with the lowest number of harbor porpoise observations at Wrangell and Zarembo Island there were no unidentified porpoise sightings. Dahlheim said fisheries bycatch contributing to the observed decline is a possibility. Traditional drift gillnet fisheries in Southeast Alaska overlap with areas known for high concentrations of harbor porpoise. The decline could also be caused by predation, changes in prey distribution and abundance, or habitat degradation due to increased human activities. Dahlheim said the survey results from 1991 to 2010 led her to believe a consistent decline was occurring, however, inclusion of the 2011 and 2012 data suggests the harbor porpoise population may be recovering. Dahlheim did not know whether there had been a true decline or if the apparent decline was the result of the survey methods.

Dahlheim hypothesized that there could be two harbor porpoise stocks within the inland waters of Southeast Alaska based on NMML's 25 years of data collection. Of utmost concern is that incidental takes within a small region, such as Wrangell and Zarembo, could severely impact currently undefined, localized stocks.

NMML's future harbor porpoise research priorities include identifying stock structure. Dahlheim has identified 85 harbor porpoise tissue samples from various locations between Barrow and Southeast Alaska. These are archived at SWFSC. The sample size from some regions may be too small and NMML would like to increase the sample size especially from the inland waters of Southeast Alaska. Last year Dahlheim found four suitable locations for harbor porpoise capture work. NMML sought input regarding harbor porpoise research during a workshop on December 17, 2014. The report from the workshop was included in the SRG materials. Priorities identified at the workshop include:

- Systematically evaluating existing distribution data to identify hiatuses in harbor porpoise distribution/density in the inland waters of Southeast Alaska to use as possible lines of evidence for stock structure delineation
- Analyze 2012 double observer tracking experiments to estimate $g(0)$
- Analyze 2-day line-transect data collected in Zarembo and Wrangell Islands area in July 2014 to update trend information
- Seek more information on distribution of herring and other forage fish as potential prey for harbor porpoise from ADF&G. Investigate the herring collapse in 1993 and subsequent recovery
- Evaluate overlap of fishing effort with harbor porpoise density areas

Planned research methods for 2015 include biopsies, acoustic recording of Dall's porpoise and harbor porpoise, and water sampling for genetic material in areas with harbor porpoise present. Phil Clapham said that environmental sampling for DNA is problematic. Currently, it is only possible to identify species using environmental DNA (eDNA), it is not possible to identify individuals. Clapham said that Craig Ventner, the man behind the human genome project, is working with SWFSC on methods to identify population structure from water samples. This field is advancing quickly and holds the potential for cost effective and non-intrusive sampling, despite the number of details to be worked out.

Someone proposed that harbor porpoise tissue samples could be obtained by requesting fishermen provide samples from bycaught harbor porpoise. Kristy Long said that AMMOP did not take samples from the four bycaught harbor porpoise observed during the 2013 AMMOP because observers were not instructed to take samples from live animals. Only dead animals were to be sampled, though no dead marine mammals were observed. Long said NMFS-certified observers may take samples from live animals in the future. Mike Miller thought that trying to get the industry to provide tissue samples will be a challenge. Beth Mathews suggested that observed killer whale predation events on porpoise would present a good opportunity to obtain tissue samples from the water. Mathews also suggested anchoring the research vessel and waiting for porpoises to come to boat and proposed moving away from biopsies towards a tissue scrape type sample. Mathews said there are also credible reports that people had seen 60-100 harbor porpoise in a single event in Southeast Alaska and asked if it was possible that NMML's surveys may have missed these aggregations in some years. Dahlheim said that was a possibility. Mike Miller said that a state wildlife biologist reported observing 200+ harbor porpoise in a single sighting. Miller also commented that NMML did not conduct much harbor porpoise survey effort offshore. Dahlheim replied that there was no vessel survey work conducted offshore. Kate Stafford said that it looked like many of the porpoise sightings from the aerial surveys were at the very outside of the survey tracklines. Future surveys should consider tracklines farther offshore.

Craig Matkin asked if there was any hope in identifying stock structure from the 85 available tissue samples. Kim Parsons said that the analysis would be limited by the small number of samples and distribution of the samples, but it will be possible to

gain insight into the stock structure throughout Alaska. One potential complication in the analysis is the potential to encounter Dall's/harbor porpoise hybrids. Hybridization has been found to be widespread between these species. There are F1 and F2 hybrids, of which the F1s are viable. Another interesting and recent finding is that hybrids could not be reliably identified using visible characteristics, even by experienced observers.

Mathews asked Dahlheim why NMML research did not use aerial surveys more frequently. Dahlheim said the research program had access to a 'free' research vessel and there are also aircraft safety concerns. Mathews asked if there were any plans to replicate the 1997 to 1999 aerial survey work that sampled all three stocks. Kristy Long said such a survey would be cost prohibitive. Dahlheim said surveying just Southeast Alaska would take up to 120 hours of flight time and would cost approximately \$250,000. Mathews said the 1997 to 1999 statewide aerial survey provided abundance with reasonable CVs, and that there hasn't been anything since then for any of the three stocks. Mathews proposed replicating this survey on an interval that provided meaningful data on population trend.

John Bengtson said the MMC, SRG, AKRO, and AFSC all agree that such survey programs provide meaningful data, but there is no discretionary money available to spend on such a program. The vessel charters used for harbor porpoise surveys were provided for free and everything else was run on a shoestring. All of NMML's funding comes with restrictions. For example, NMML is unable to run a harbor porpoise study with pinniped money. An aerial survey costs hundreds of thousands, and the money is not there.

Lowry said that harbor porpoise are at the top of the SRG's list of concerns. Good baseline information on the stocks is not available and the animals frequent areas of high fishing effort. The SRG can continue to point out that this issue is not getting enough attention. Bengtson said the SRG is in a position to influence the flow of money, but the money will have to come from somewhere else and will likely impact another program or project.

Clapham said the harbor porpoise research program has benefited from the use of the John N. Cobb and later Cobb replacement funds. Aside from the money issue, this is also a difficult species to work with. The key with harbor porpoise is determining stock structure. If more was known about stock structure NMML could interpret many of these data from previous surveys. Stock structure is best defined through tagging and genetics, and neither of these methods is easily accomplished with harbor porpoise.

Lowry asked how the harbor porpoise tissue samples from the Bering Sea were obtained. Dahlheim said observers take tissue samples from bycaught animals. Wynne asked for an update on the water sampling. Parsons said it is not possible to use eDNA for anything beyond species identification at this time. Another challenge to be addressed relates to sampling water in an area where there are multiple

animals. In these situations it is possible that any results will consist of a chimera created by mixing DNA fragments from multiple animals.

Bering-Okhotsk Seal Survey (BOSS) Update

Peter Boveng said his team continues to make progress towards the completion of the first reliable and comprehensive estimates of abundance for populations of ice-associated seals in Alaskan waters. This work has involved collaboration with Russia, which surveyed the western Bering Sea and Sea of Okhotsk. NMML also plans to extend the surveys to the Chukchi and Beaufort Seas. The project has been primarily funded by NOAA with substantial contributions from BOEM. Up until now, bearded, spotted, ribbon, and ringed seal population sizes and other vital information had been poorly documented. The potential for changes in population sizes due to the changing environment, and improved sensors and statistical methods, encouraged NMML's recent attempt to establish new abundance estimates.

Seal surveys occur in April and May which coincides with the molting period. Surveys rely entirely on cameras and sensors to detect and identify seals. The project uses a thermal video camera paired with a high resolution digital SLR camera. Three sensor pairs can be accommodated within a Twin Otter and two sensor pairs can be accommodated in an Aero Commander. The Russians use a similar sensor pair. In 2012 and 2013 the project flew 117 survey flights consisting of 87,000 km of survey effort. The analysis team is still working through all imagery, but is making good progress. After the 2012 survey, Boveng's team wanted to use the data they had obtained to quickly get a better sense of whether the project was on the right track. A single camera's content from 10 of 30 flights was analyzed. Preliminary estimates were calculated from those data (which comprised about 6% of the total data collected), and this is the basis for the new abundance estimates in the SARs.

Data analysis consists of detecting hotspots in the thermal video and an automated system allows for a faster and higher detection rate than a human analyst is capable of. The automated thermal detection method detects 95% of seals versus an 81% detection rate achieved with manual review. After a hotspot is detected in thermal video the timestamp is noted and cross-referenced to the color images obtained with the digital SLR camera. Images are reviewed and seals are then classified by species. The probability of correctly classifying the species is between 0.83 and 0.97 depending on species. The analysis is based on a spatial regression which makes use of environmental covariates associated with the observations. Abundance was modeled from counts based on relationships with the following environmental covariates: sea ice concentration, distance to the shelf, distance to the coast, distance to 10% ice cover, distance to 0% ice cover, and ecoregion. Satellite tagged animals provide estimates of the proportion of seals that are hauled out on ice and available to be seen by survey aircraft. This preliminary analysis was published in *Methods in Ecology and Evolution*.

The preliminary abundance estimates are calculated to be about 300,000 bearded seals, 184,000 ribbon seals, 460,000 spotted seals, and 175,000 ringed seals. However, the ringed seal estimate is not a number to use at this time because at the time surveys are conducted many ringed seals are within the fast ice along the mainland coast and that area requires a different survey approach.

There will likely be some future changes in the abundance estimates since the current estimates are based on a small sample of overall data. Key improvements in this new abundance estimate method compared to previous methods and estimates include better detection rates through sensors, lower rates of disturbance, and more accurate species identification. This is most likely why the new abundance estimates are higher than the previous estimates. The project's next steps include using data from all flights and cameras, including a haulout model for ringed seals, adding a temporal component to the model, and combining US and Russian estimates. There are four publications from this research project that are already published or about to be published. A big challenge when surveys span a substantial amount of time is that the ice can change rapidly during a survey period. This requires a spatio-temporal model which is a very challenging statistical problem. Fortunately, Paul Conn has developed a method for dealing with these challenges. This method is to be published in Ecological Monographs and will be the basis for the overall analysis of the entire dataset.

Bob Small asked how the new abundance estimates will be used in relation to stock boundaries. Boveng said his team has essentially covered the range of ribbon and spotted seals, but only has achieved partial coverage of the range for ringed and bearded seals. The Chukchi Sea remains an important area for an overall population estimate. Boveng said his research team is working to determine the appropriate timing to survey ringed and bearded seals in the Chukchi.

Small asked if funding was available for such a survey in 2016. Bengtson said he thought a Chukchi Sea survey is doable in 2016. Boveng said that a good portion of the funds for a 2016 survey have been identified through the Loss of Sea Ice (LOSI) program. Robert Suydam asked if the Endangered Species Act (ESA) listing of ringed and bearded seals made any difference in terms of funding or research priority. Bengtson said that NMML thought it was important to get a reliable estimate for all of these stocks, but that listing status is a factor in determining priority.

Using Unmanned Aircraft Systems (UAS) for Steller Sea Lion Surveys

Kathryn Sweeney said NMML's typical method to assess Steller sea lion abundance and trends relies on manned aircraft surveys. Unfortunately, poor weather and high winds have prevented consistent Steller sea lion surveys with manned aircraft in the Aleutians. As of 2014, some Aleutian sea lion sites had not been surveyed by NMML since 2008. To assist in obtaining data from these troublesome locations NMML acquired an APH-22 hexacopter, a small UAS, which is capable of capturing higher

resolution images than those taken from the traditionally used Twin Otter. NMML first used the APH-22 during the 2014 summer Steller sea lion cruise. The use of the UAS on this cruise contributed to the completion of the most complete Steller sea lion survey in the Aleutians since the 1970s. The UAS team, based on a research vessel, conducted 17 flights and collected 1,500 aerial images in the western Aleutians while the Twin Otter surveyed the central Aleutians and eastward. Aerial images are used to obtain counts.

The 2014 counts show that abundance trends are negative in the western Aleutians, but stable or increasing elsewhere. Images obtained by the UAS can also be used to read brands on animals while only causing an observed 0.3% disturbance rate. This is a lower rate of disturbance than the 5% caused by the Twin Otter. NMML's future plans include acquiring another hexacopter with more powerful motors allowing for flights in higher wind speeds, beginning vessel based flights, developing a model to assess sea lion body condition from aerial images, documenting northern fur seal rookery space use, and investigating use of UAS for northern fur seal abundance studies.

Gray Pendleton asked what the hexacopter's maximum range was. Sweeney said the maximum range was one km from the operator.

Humpback Whale Stock Update

Shannon Bettridge reported that NMFS initiated a global status review of humpback whales a few years ago. As that status review was wrapping up, NMFS received a petition from a fishing group requesting that NMFS classify the North Pacific humpback whale as a distinct population segment (DPS) and delist that DPS. This petition was followed by another petition from the state of Alaska to designate the Central North Pacific humpback whale stock as a DPS and to delist the DPS. After review, NMFS determined both petitions may be warranted and both petitions were then addressed in the ongoing status review. That status review is now complete and NMFS is in the process of developing a proposed rule. The rule will have a 90 day public comment period with about four public meetings. Currently, NMFS recognizes four humpback whale stocks in US waters, three stocks are in the North Pacific and one is in the North Atlantic. Humpback whale stocks currently have depleted status under MMPA due to their ESA listing. NMFS' intent is to investigate aligning stock structure with the ESA's DPS once the DPS's are finalized. As soon as the proposed rule is published the status review will be made available.

Killer Whale Stock Structure

Paul Wade said killer whale population structure is relatively well known for residents and transients in the Prince William Sound and Kodiak region, but not much work has been done west of the Gulf of Alaska. Over the last decade NMML has collected data from the Aleutian Islands region. Kim Parsons published a paper in 2013 on killer whale genetics that covered an area from the Gulf of Alaska through

Russia and Craig Matkin, Eva Solitas, Kim Parsons, and Paul Wade are currently writing white papers to support future stock structure changes. There are distinct genetic subdivisions reported in the Kim Parsons paper. The current Bering Sea Aleutian Island Transient stock contains three to four genetic subdivisions. The current Alaska Resident stock contains four genetic subdivisions. Stable isotope, movement, and pollutant data align with genetic subdivisions for both transients and the residents. Dave Tallmon asked which genetic markers were used for comparison. Wade said control region haplotypes and microsatellites are used to compare samples using a variety of analytical tools and pairwise comparisons.

By fall of 2015 the killer whale stock structure team hopes to be at a decision point on stock structure revisions. If revisions are made the team would write new stock assessment reports to reflect that. Wade said the stock structure team will distribute any draft decision to the SRG for review following a NMFS internal review.

Cook Inlet Beluga Whale Draft Recovery Plan

John Kurland said AKRO has found it challenging to complete the Cook Inlet beluga whale draft recovery plan due to other competing priorities and a limited amount of staff time. Kurland said the draft recovery plan has been passed onto NOAA General Counsel for review. Following review by General Counsel it will be reviewed by Headquarters. AKRO released a draft recovery plan² in May 2015.

2014 Cook Inlet Beluga Whale Aerial Survey and Other Beluga Studies

Rod Hobbs said a Cook Inlet beluga whale aerial survey was conducted in June of 2014. Aerial surveys are used to collect video as well as observer counts. Group size estimates are based on video and observer counts and each survey comprises ten days of flying. The survey was quite successful with several good survey days and three days suitable for estimating abundance. NMML is in the process of finalizing those survey results, and they should be available soon. The survey results were consistent with results of previous years. Animals were found in the Susitna and Chickaloon areas and there were no groups of beluga whales found in the southern end of the inlet. Hobbs said NMML has produced beluga whale abundance estimates since 1994, and maintains a number of other data sets containing calving indices, opportunistic sightings, acoustic monitoring, age estimation, and satellite tagging results.

Upcoming research includes another abundance survey in 2016. NMML will continue its participation in the Bristol Bay beluga whale health assessment which obtains data through live capture and tagging. NMML also hopes to begin a biopsy program in Cook Inlet in the summer of 2015 or 2016. NMML is also collecting

² <https://alaskafisheries.noaa.gov/protectedresources/whales/beluga/recovery/draft-cibrecoveryplan051515.pdf>

audiograms from Bristol Bay beluga whales, and has 14 audiograms to date. Studies of Bristol Bay beluga whales are applicable to Cook Inlet. There are no plans to capture Cook Inlet whales, but NMML is considering the possibility of taking advantage of live strandings to collect samples, including audiograms. Cook Inlet beluga whale audiograms may differ from Bristol Bay audiograms due to differences in ambient noise.

NMML aims to collect up to 50 Cook Inlet biopsies per year yielding information on genetics, reproductive and stress hormone levels from the outer blubber layer, stable isotope ratios from skin samples, contaminant levels from skin and blubber, animal condition, and skin microbiome. Additional areas of future studies include investigation into historical population size, the mechanisms for the continued decline and contraction of range, food habits, life history, social structure, winter habitats, habitat quality, and the stressors whales are subject to.

Lowry asked about the Cook Inlet beluga whale Population Viability Analysis (PVA). Hobbs said NMML calculated a PVA for the status review and will have a paper available before the next abundance estimate is out. Essentially, the PVA matches abundance data. Hobbs said the most likely rate of Cook Inlet beluga whale decline is about 1% per year. It is 98% likely that the population is not recovering at a 2% growth rate, and 70% likely that the population will continue to decline.

Competitive Funding Process for Alaska Pinniped Studies

John Kurland said that the period of earmarked funds for pinniped research has become a thing of the past and that it is necessary for the AKRO to transition to a competitive process for funding pinniped studies. This is the first year of that process. AKRO issued a federal funding opportunity notice in the FR requesting proposals. Proposals for 2015 may be submitted until April 6, 2015.

The FR notice specifies pinniped research priorities for FY2015 and is open to all parties. Any research proposal should match one or more research priorities. The priorities include research on:

- The western DPS of Steller sea lions and their lack of recovery in the western Aleutians
- The eastern DPS of Steller sea lions and changes in trends and pup production
- The carrying capacity for the eastern Pacific stock of northern fur seals
- The extent of exposure of pinnipeds to diseases
- The factors contributing to the decline of harbor seals in the western Aleutians
- Habitat use, movements, and foraging behaviors of ringed and bearded seals

Lowry asked how these priorities were selected. Kurland said selection was a multistep process that began with internal discussion at the AKRO. The AKRO then

sought input from the public via the FR, and ran a draft list by NMML. Small asked if Kurland thought there would be any potential changes from this year's priorities to 2016's priorities, specifically in regard to Steller sea lions. Small said potential changes from year to year in terms of research priorities will affect plans for long-term studies. Kurland said the potential for annual updates to research priorities will allow for the addition of emerging priorities to the list. He did not anticipate big changes to priorities from year to year, but each cycle the AKRO will have the ability to specify additional priorities. Suydam requested the AKRO send a draft priority list to the SRG. The SRG could provide comments on SAR related needs. Kurland thought this was a good idea and said AKRO's goal for 2016 is to begin the application period two or three months earlier and to consider multi-year projects in addition to single-year projects.

Use of "Old" Incidental Take Data in the SARs

Mathews said the Pacific SRG notes outdated bycatch information in a 'historical fisheries data' section of each SAR. She thought it was particularly important to retain old bycatch information within the SARs and doing so in a 'historical fisheries data' section may be the best way to do it. Wynne said last year the AK SRG recommended NMFS remove the old bycatch data, specifically the drift gillnet bycatch information from the early 1990s, from tables within the SARs, and proposed retaining the old bycatch information in the text. Wynne endorsed retaining old bycatch data, but did not support using it for calculation of annual takes.

Kristy Long said that 'old' take data are still used to classify fisheries on the List of Fisheries (LOF) as without more recent observer data, that remains the best available information. NMFS cannot remove it from the SARs altogether, but if desired, it can be removed from the bycatch table. Angliss said it is more transparent to include old bycatch data in the tables if they are being used for the LOF classifications. Transparency to the reader and the public is reduced if old bycatch data are presented in the SAR text rather than tables. Suydam said an alternative is to present historical data in one table and newer data in another table. This may be a way to segregate data but increase transparency. Long said that the term 'historical data' may lead people to believe it is no longer being used for management, when in fact it is (e.g., LOF classification) and thus need to be transparent. Suydam asked when information becomes too dated for use in classifications. Long said that NMFS cannot reclassify a fishery in the absence of new information. Wynne said that the old data may not be representative of current takes and that takes could be even higher now. Wade said some of the data being referred to is old logbook data. In Southeast Alaska logbook data were some of the only reports of porpoise bycatch prior to AMMOP. After the MMPA made marine mammal bycatch self-reporting mandatory, fishermen stopped reporting bycatch. The old data may not be current, but they are honest and accurate. Lowry suggested looking into different approaches and presentations of the current and old data that NMFS and the SRG can agree upon.

Angliss proposed taking the existing table in the SARs and splitting it into two contiguous parts. One part of the table would contain historical data and one would contain recent data. This approach would require minimal changes to the SARs and maintain transparency.

Wynne pointed out that NMFS does not use abundance estimates that are more than eight years old but NMFS uses bycatch data that are 25 years old to calculate annual takes. Long said this difference in approach is due to the GAMMS, which does not specify a timeframe for validity of bycatch data. Suydam said this issue applies to subsistence takes as well. The data in the SAR being used to estimate annual bearded seal take are from the 1980s or 1990s. Suydam did not think there was any indication that the harvest was the same now. Using subsistence data that old as part of a PBR calculation is a problem. Bettridge said old data is generally a problem for the Alaska stocks; the other regions don't often have cases where data are ten to twenty years old.

Wynne thought the SAR should state that old bycatch data may not reflect current bycatch and that current bycatch could be much higher or much lower. She also proposed defining a useful age for bycatch data. Mathews thought that the GAMMS committee could address a means of incorporating increased uncertainty over time. Wade said that was attempted for abundance and was quite unpopular. Grey Pendleton said there are a large number of fisheries that have never been monitored, but easily could contribute more bycatch than all of those that have been monitored. Currently, there is no way to tell what proportion of fisheries potentially interacts with marine mammals and which of those have been monitored. This is not transparent. Angliss proposed the SRG come up with a way to improve this situation, with the caveat that any changes would have to be coordinated with the Alaska Region & Headquarters as well as other NMFS regions.

Alaska Region Observer Program Update

John Kurland provided an update on the Alaska Marine Mammal Observer Program (AMMOP) run by the AKRO. AMMOP does not have a funding source for continued operations and the future prospects do not look good. At this point, there are no plans to undertake additional observer coverage in the fishery. The AKRO does not yet know how to use the information gathered over 2012 and 2013, but the best course may be to use the information that was obtained, extrapolate that information across the fishery, and provide a thorough description of any problems and assumptions.

Doug DeMaster asked if the agency would have the authority to put cameras on a Category II fishing boat for observing marine mammal takes. Kurland said such an approach would be complex and is not something they've considered. Regardless, the program is facing a funding issue and such an approach would be expensive. Wynne asked if Kurland was comfortable publishing an extrapolated number based

on many assumptions that will be used for the next 25 years. Kurland replied that it is a difficult situation and would try to be transparent as possible with caveats and explanations. Long said NMFS routinely extrapolates very small numbers of takes from a small sample size to the whole fishery.

Wynne said that most observer programs strive to be randomly sampled, whereas the fishery management districts covered by the 2 years of observer coverage by AMMOP were strategically chosen to focus on the marine mammal interaction hotspots. Long said many observer programs maximize their coverage for fish and NMFS still uses derived numbers. Karl Haflinger said he hoped to review the AMMOP report and extrapolations before it is published.

Wade said an improved method of extrapolation would consider the relative density of porpoise in an area. Such an approach would change the assumption that interaction rates would be the same everywhere to an assumption that porpoise density will dictate frequency of fishery interactions. This is a much better assumption. NMML has the data in hand to do this type of extrapolation from the shipboard survey work. This would entail weighting the fishery effort data by the relative density of porpoise in the area. Zerbini said he would investigate using this method of extrapolation.

Harbor Seal Abundance Estimates and Recovery Factors

Peter Boveng said there have been substantial changes to the harbor seal SAR and requested input and feedback from the SRG regarding the changes and choices that were made by the SAR authors. The numbers within the SAR are based on Jay Ver Hoef's analysis. Harbor seal surveys were conducted from 1998 to 2011. Due to funding shortfalls there were no surveys in 2012 and very few in 2013. Boveng's team is still counting and processing data from 2014's surveys. Telemetry datasets from satellite tags have been expanded and haul out proportions were calculated from that data set. Haulout data are based on 100 tagged animals in Cook Inlet, Shelikof Strait, Kodiak, and Southeast Alaska. Animals were tagged at terrestrial and glacial sites during July through September, and haulout data corresponds to this time period. Tagged animals provided information on haulout proportions for the project's model. Survey data are stitched together with a temporal Bayesian hierarchical model. This model can provide estimates for abundance and trend for all sites and stocks in all years, even if a particular area was not surveyed in a particular year. Results are expressed as probability distributions, and variance increases over time without new survey data. The increase in statewide harbor seal abundance numbers is mostly a function of the updated haulout data. The trend information is a little unconventional; trend is expressed in terms of 'seals per year.' This is a linear trend in abundance rather than an exponential or proportional trend that are often used for population trends.

Abundance estimates are derived from the lower bound of the 80% credible interval from the posterior Bayesian distribution. This should accomplish the same thing as

the formulae in GAMMS and it is a very direct measure for an estimate of N_{min} . Five year trend estimates are presented in terms of number of seals per year. For example, in the Aleutian Islands NMML estimates that seals have been increasing over the last 5 years at 75 seals per year. A probability of decrease is also calculated and which allow for probability statements in regard to trend. NMML has always had difficulty trying to choose the appropriate recovery factor, the language in the GAMMS is obscure and there is range for discretion. Boveng thought it would be good to have a relatively objective way of setting the recovery factor, and proposed using a 'probability of increase' as the metric. Since the recovery factor is a value between 0.1 and 1 a value of less than 0.1 would not be used. Boveng was interested in SRG feedback on taking a recovery factor from the output of the model as well as an appropriate time-frame for determining trend. NMML has chosen to use five year trends, but a downside with five year trends is that trends may sometimes flip from positive to negative. Josh London said the new framework allows the harbor seal team to improve decision-making regarding where to conduct surveys. It may be possible to mitigate five-year trend fluctuations to some extent because the biggest influence on trend stability is the amount of survey effort.

Boveng said that due to higher abundance estimates the PBRs are now substantially higher than they were in the past. He did not think there were any stocks where human caused mortality, as accounted for in the SAR, is close to PBR for harbor seals. Suydam asked if the recovery factor of 0.5 for stable harbor seal populations was too precautionary. Boveng said yes, and that the new method of calculating recovery factor was more precautionary in some cases. Pendleton thought such a recovery factor calculation may not be appropriate for populations that have suffered a significant decline in the past and now have a low but stable five-year trend. Lowry proposed only applying this new method of recovery factor calculation to non-depleted stocks. Mathews was pleased to see twelve N_{mins} and PBRs for Alaska harbor seals.

Harbor Seal SAR review

Small suggested rewording the first section of the SAR which discusses harbor seal decline to put the decline into perspective. Small appreciated the new work and estimates, but added that there is a need for continued discussion on the new recovery factor calculation approach. He requested that Table 1 provide additional information on the years surveyed, rather than just the last year each stock's range was surveyed. Boveng said his team could create a table indicating the years in which there was some survey effort by stock. Small said a statement in the text would suffice. Pendleton proposed a statement describing the number of years sampled in the last decade, or some other indicator describing survey effort.

Small said he really liked the idea of probability of decrease as well as the five-year trend estimate, but for some stocks, such as the Aleutian Islands stock, there is a lower probability of decrease (0.36) than for Cook Inlet (0.38), but the trend is very different between those two (75 vs. 313 seals per year, respectively). There is a

higher trend for Cook Inlet, but a higher probability for decrease. This is confusing. Boveng said Ver Hoef plans to write a manuscript that lays out rationale for assessing a population in this way, fitting the abundance to a sensible model and then deriving the trend from those abundance estimates. There is a reason to calculate the trend linearly rather than exponentially. Boveng said he meant to raise a point regarding the western Aleutians. NMML's observers may be getting better at finding harbor seals in the Aleutians as the harbor seal research team has increased their efforts in the Aleutians. This may be having an effect on the recent apparent stabilization of the Aleutian trend. London added the eastern portion of the Aleutian stock may be overly influencing the trend of the whole stock.

Haflinger noted the numerous changes and found the writing straightforward and easy to read, although it lacked context without the previously mentioned manuscript. Haflinger liked the new five-year trend estimates and the probability of decrease and requested the SAR include historical population levels to put the current abundance into perspective. Boveng said he has high confidence there was a decline in population, but that belief is based on an index, rather than a known abundance estimate. Historical population data are not available. Boveng said he would provide more detail on the historical context within the SAR. He said Ver Hoef will also be publishing a manuscript supporting the new changes to the SARs.

Wynne said Table 3 has some observer data that were not used at all, even though it was the only data available. The pollock trawl observer data should not have been deleted because there was no newer data available to replace it. Table 4 contains state fishery observer program data, and some older data were retained while other data were eliminated. She said if old bycatch data is retained in one SAR it should be retained consistently, including information on observed fisheries with no takes. There are a couple of observer programs in southeast Alaska that were not listed in the SAR such as the 2007-2008 Yakutat gillnet fishery. Angliss asked if the SAR should include all monitored fishery data, including those fisheries with zero monitored takes. Wynne said that zero takes in observed fisheries are data and should be reported.

Mathews requested the SAR include an explanation as to why the lower 80% bound was used to calculate abundance estimates on page 5. She said table 3 attributes 2 harbor seal takes to every stock per year. It makes sense to apply these takes to stocks that could reasonably occur in the vicinity of the take rather than adding mortalities to all stocks. Pendleton noted the subsistence harvest numbers from 2011 and 2012 are much lower than the 2004 to 2008 numbers. Boveng said that when harvest surveys were conducted annually the subsistence takes steadily declined over time. Lower numbers in 2011 and 2012 are representative of that trend. Miller said the subsistence surveys were predominantly targeted towards subsistence hunters seeking meat. There are also market hunters who take seals for fur. Their meat is not processed, and they probably don't participate in the surveys. A concern of Miller's is that the fur hunters report their take data somewhere, but no one seems to be tracking it, and it is not available. Miller thought harvesting for

food use was going down but other takes may be going up. Lowry said there are probably raw fur export tags in someone's drawer in Anchorage or Juneau. Miller said that despite coordinated efforts tracking these tags down has been a failure. Miller added that he was surprised by the increase in the seal population. He said the PBRs seem high and in excess of the trend. Pendleton said there is a paper that suggests a 67% decline in Aleutian Island harbor seals occurred. He asked if the SRG should recommend this stock be designated as depleted. Bettridge said this was discussed at GAMMS III, where it was recommended that stocks be designated as depleted following a 50% decline. Lowry said such a recommendation may be outside the SRG's bounds.

Haflinger said some people on the SRG were surprised by the increase in harbor seal abundance estimates and thought the SAR should explain the reasons behind the increase in abundance. Wynne pointed out there were a number of observed fisheries with zero takes that were removed from the harbor seal SAR in recent update. She suggested leaving these in to be consistent with other bycatch tables. Haflinger reminded Wynne that the SRG had previously requested NMFS remove fisheries with zero takes from what were then endless tables. Miller suggested the SAR clarify that the updated abundance numbers do not actually reflect an increase in seals. Boveng said this can be clarified in the SAR.

Small had a question regarding PBR on page 8, which states that there will typically be a 2-3 year lag between recent surveys and SAR updates. Small asked if this was accurate. Boveng said his group can typically count seals from surveys in about a year's time. Then the SAR cycle adds another year. Some counts, particularly glacial counts are more labor intensive and can take additional time.

Suydam said there is a paper referenced in the SAR on page 5 that is listed as in prep. If this paper is not available by the time that the SAR is published a summary in the SAR would be helpful. The recovery factors on page 5 are calculated using a new approach, and if this SAR is published following our review the SRG is essentially endorsing this new approach. The SRG may need to include a parenthetical statement in the SAR urging caution and further evaluation of this approach. Lowry proposed phasing in the new recovery factor calculation methods, if appropriate, after the paper describing the methods has been published. Suydam added an additional confusing aspect of the new recovery factor method using the Aleutian Island harbor seal stock as an example. Under the current population trends for the stock there is a population increase of 75 seals per year with a probability that the stock is decreasing of 0.36. He thought this might confuse readers in that the SAR notes an increase in population of 75 seals per year but also notes a 36% possibility of decline.

Bearded Seal SAR Review

Suydam said a sentence under population size on page 2 should be changed from "a reliable population is currently considered not available" to "a reliable population is

not available.” Under PBR on page 3, the SAR should state that the PBR based on the N_{min} for the Bering Sea is a minimum estimate and is biased low. For fisheries information on the same page only federally regulated fisheries are mentioned. There have been bearded seals caught in the Kotzebue Sound salmon fishery which are not mentioned in the SAR. Under fisheries information on page 3, paragraph 2 “estimated minimum annual mortality” is mentioned in the text but the table below shows “mean annual mortality.” These should be changed for consistency. Suydam also thought the presentation of harvest data from 1960s and 1970s could be reduced considerably to just a couple sentences. There is also ADFG harvest data that is quite dated. Lowry said there was newer information on subsistence takes available from ADFG, and that the SRG would make that information available to Muto.

Suydam said there is a paragraph about the unusual mortality event (UME) under ‘other mortality.’ He thought bearded seals were hardly affected by UME and said this section should clearly note how many bearded seals were involved in the UME. Suydam said it would be worthwhile to add a statement about commercial shipping in Bering Strait and the risk for oil spills. Lowry added that the PBR calculation should be clearly identified as partial PBR to put the fisheries and subsistence takes into perspective. Pendleton said on page 1 there is a sentence which states ‘Bearded seals summer along the ice edge in the Chukchi Sea.’ He pointed out there was no ice edge in the Chukchi sea during summer any longer.

Boveng said that his program’s telemetry work shows that bearded seals are less associated with ice than had been thought. Many bearded seals spend their summers far away from any ice edge. That statement in the SAR represents a dated view. Suydam said that there appeared to be an increasing number of bearded seals hauling out on land and added that bearded seal vocalizations are not heard consistently year round as mentioned in the SAR. Stafford agreed to modify the sentence in the SAR regarding bearded seal sound records. Bearded seals vocalizations are detected predominantly November through June.

Ribbon Seal SAR review

Lowry said the ‘population trend’ section should also cite the Conn et al. paper in addition to the Ver Hoef et al. paper and the Conn et al. estimates should be added to this section. The ‘status of stock’ section should identify the PBR as a partial PBR. Suydam said the geographic range section describes ribbon seals ranging in Alaska from Bristol Bay to the Chukchi and Beaufort seas, but the map includes the North Pacific as part of the range. Change the text or the map. Below the map there is a sentence that states there is little information on the distribution of ribbon seals during the rest of the year, but the paragraph goes on to discuss ribbon seal information during the rest of the year. The statement about ‘little information’ can be removed.

Suydam said the Ver Hoef et al. estimates and Conn et al. estimates are compared on page 2, but these estimates are not comparable. Under 'current population trend' there should be references cited for the historical estimates provided. Under 'PBR' the recovery factor is listed as 0.5. The recovery factor should be 1.0 as opposed to 0.5. Lowry agreed.

Western Steller Sea Lion SAR Review

Haflinger was surprised that the Prince William Sound drift gillnet mortality estimates from 1990 to 1991 are included in the SAR while other mortality estimates of zero are being removed from the SAR. Haflinger asked why some bycatch estimates from 1990 to 1991 are being retained while other estimates are being taken out. He said the lack of current subsistence estimates is troubling because removal from the population is being calculated from previous estimates. Haflinger said the currently used 172 annual subsistence takes might not be accurate since it is out of date.

Small said there should be current harvest data available from some areas of Alaska, and thought the SAR should include available harvest data by region and show which areas information is current. Small said the SAR should clearly state there is not a good way of estimating abundance, and therefore the SAR focuses on trend. Small said there is good information on the Russian counts and it would be helpful to add a map displaying the location of Russian counts. Pendleton said Table 2 on page 7 includes a sea lion take that was noted as 'off effort' despite 100% observer coverage. He asked how this was possible and said the percentage of observer coverage should reflect the actual observed hauls, not percentage of observer coverage on trips. Angliss said she would check to see that 100% coverage is accurate in this instance.

Pendleton thought the statement regarding lack of takes from offshore fishing was baseless and may not be true. He recommended removing such speculative statements that are not based on data. He added that Table 5 states the threat posed to Steller sea lions from the effects of marine debris entanglements is low, but the paper cited is 30 years old. Pendleton said that paper may be too dated to be relevant.

Northern Fur Seal SAR Review

Pendleton suggested eliminating the donut hole from the map depicting the northern fur seal range. He said there was no estimate of variance associated with the Nmin and a default of 0.2 was used. Pendleton asked if that was a standard GAMMs convention. Angliss said there are some other stocks where NMML has used 0.2 as default. Pendleton said page 5 discusses entanglements in the Pribilofs. The number of animals noted as entangled (0.35%) when extrapolated out would be hundreds of animals. These numbers should be used in the SAR.

Haflinger asked why there was a sentence stating that not all fisheries known to interact with the northern fur seals have been monitored, therefore serious injury and mortality rates may be underestimated. He said that this statement is true of all stocks and asked why it was specifically included with this stock. Angliss said this was text the SRG recommended adding at last year's meeting following Pendleton's request. Wynne requested zero observed takes from observed fisheries that were to be removed from the SAR be added back into the SAR.

Cook Inlet beluga SAR Review

Small said Figure 2 did not contain a probability to accompany the annual trend figure and requested a probability be added. Table 1 lists Cook Inlet beluga strandings investigated by NMFS and also lists the number of belugas found dead from natural or unknown causes, but there is no mention of sex, age, or any other information. The table includes a large number of animals, and if there is additional information available it should be included. Small requested clarification regarding beluga movement and restriction of range on page 6 of the draft SAR and said this section could be tightened up. Small said a statement indicating that Cook Inlet beluga occupy the upper inlet year round should be added. Matkin disagreed with the proposed removal of old fishery information from the SAR. Matkin proposed leaving old fishery information in the SAR, even as a simple statement in the text. Matkin said the 'habitat concerns' section was misleading and he was going to provide Muto with his edits for this section.

Suydam asked if the PBR for the stock should be zero rather than undetermined. Bettridge said there are situations where the underlying assumptions for the PBR equation do not apply. Such a situation arises when a stock is below OSP and is declining, yet human caused mortality is not a major factor in the population's trend. Thus for unknown reasons the stock's dynamics do not conform to the underlying model for PBR. Hawaiian monk seals are cited in GAMMS as such an example. In these situations NMFS may report PBR as undetermined. Pendleton said that whatever approach is used to report PBR in these instances, whether zero or undetermined, it should be consistent across NMFS. Lowry said there should be a published PBR. Suydam agreed and asked what would happen if two Cook Inlet belugas were caught in a gillnet and there was no PBR. Suydam and Lowry proposed a PBR of zero for Cook Inlet beluga. Bettridge said if a PBR of zero is used it should contain a qualifier.

Lowry said the Cook Inlet beluga trend estimate is a 13-year trend estimate beginning in 1999. He asked the SRG if the trend estimate should be revised to exclude the older years and base the trend to a recent five-year period. Hobbs said the reason for the 13-year trend is due to a substantial change in stock management, which occurred in 1999. NMML's harvest co-management agreement requires a 10-year trend and the current version of the recovery plan uses a 20-year trend. Different management schemes have chosen different timing of trends. Hobbs

proposed including these trends in the SAR as well. Pendleton said he wanted to see a 10-year trend included in the Cook Inlet beluga SAR.

Minke whale SAR review

Stafford said there is new information available on minke whales in the Chukchi Sea based on acoustic data. Minkes make geographically distinct 'boing' sounds and these sounds have been heard to a limited extent in the Chukchi Sea. The pulse rates of the calls associate the whales with the central North Pacific and not Hawaii. Stafford said she summarized two recent publications and sent those summaries to Muto. Stafford said a recent survey within a Navy range in the Gulf of Alaska detected so few minkes that an abundance estimate could not be calculated. She said the SRG should also be concerned about the migratory destination of the whales being taken by the Japanese in the Northwest Pacific because the destination of these whales is unknown but could very well be the Bering or Chukchi Sea. Lowry thought this concern was worth including in the SAR. Tallmon said the SARs are inconsistent in extrapolating data. The minke whale SAR extrapolates population numbers from a subset of the range in a different manner than the harbor porpoise SAR uses.

Bettridge said only a portion of the range has been sampled for some stocks. In these cases a partial sample is still considered an Nmin. Sometimes this is best information available, but the drawback is the result can be misleading. This is a good discussion topic to add to the 2016 joint SRG discussion agenda.

Pacific White Sided Dolphin SAR Review

Matkin said the SAR update should not remove the fisheries information with zero observed takes. Older fisheries information can be paired down, but there needs to be some indication of effort and timing of surveys. Matkin also requested a habitat section similar to that in the Dall's porpoise SAR. Mathews requested the map include the 45 degrees north line of latitude on the map, since it is referenced in the text. She also requested a CV for the population estimate and that any cited survey results include the year in which the survey was conducted.

Dall's Porpoise SAR Review

Matkin said the SAR mentions a winter movement of Dall's porpoise out of Prince William Sound and out of the Bering Sea, and he requested a reference accompany this statement. Matkin said the statement regarding docks, shallow water, and dredging could be removed from the habitat concerns section to improve accuracy.

Wynne requested the SAR include a historical fisheries table. Haflinger said he was uncomfortable seeing the AMMOP report, an 'in prep' report, cited in this SAR. Long said the AMMOP report authored by Bryan Manly is nearly complete, and that it would be available very soon. Lowry recommended minimizing the use of 'in prep'

and 'pers comm' within the SARs, however, 'in prep' seemed appropriate in this case due to the short timeline until publication.

Wynne asked whether the extrapolations from the observed takes will be conducted within Bryan Manly's AMMOP report or under an agency publication. Angliss said the AKRO would see that a paper presenting the extrapolation process would be published. Wynne requested the statement regarding resource partitioning in areas where Dall's and harbor porpoise both occurred be removed.

Southeast Alaska Harbor Porpoise SAR Review

Mathews said it should be a priority to determine a correction factor for the new harbor porpoise abundance data so that it can be compared to the previous abundance estimate of 11,146. She also requested the SAR include the years of the surveys mentioned in the 'population size' section. The 2010 to 2012 harbor porpoise abundance estimate only represents a small area within the stock boundaries. The SAR should provide an estimate of the fraction of the total area used by the stock that the abundance estimate represents. Mathews requested the SAR include Nmins for the three harbor porpoise sub-areas within Southeast Alaska. Mathews added that she thought the SAR was leading up to suggesting the Nmin for the Wrangell and Zarembo Island area should have a unique PBR. If this was an omission this unique PBR should be added. In response to Mathews suggestion, Alex Zerbini said he did not think a correction factor could be determined for the recent survey data and that unique PBRs could not be calculated from existing data.

Western North Pacific Humpback Whale SAR Review

Tallmon noted the SAR's PBR value is based on the Nmin and correctly calculated, but the associated PBR calculations include the abundance estimate, not the NMin. Tallmon also asked if the 100% observer coverage figure was really accurate. Stafford suggested updating the historical whaling section with a citation to Ivaschenko (2013). Stafford also had new information about humpbacks in the Chukchi Sea, which she was going to provide to Muto. Mathews appreciated the addition of the CVs to the SAR. She said that observers in Glacier Bay recorded 23% fewer humpbacks in their survey area in 2014 compared to previous year, and of the fourteen of the female/calf pairs tracked through the season five of the calves were no longer observed by October 2014.

Central North Pacific Humpback Whale SAR Review

Stafford said this SAR was less focused than the Western North Pacific SAR, particularly regarding the variety of population estimates. There are good recent estimates with CV's. She said if the Wade et al. estimates and CVs are the best available science, the population section should focus on those figures. NMML has good science for humpback whales and should not obfuscate it with old information. Stafford added that in Hawaii people are seeing bumpy whales and it was recently

reported the bumps contain a strain of bacteria. Researchers should be releasing reports on this subject soon.

Wade said the humpback whale stocks are based on breeding areas, but the SAR may be able to include abundance and PBR calculations for the feeding areas. Matkin asked why basing stocks on feeding areas was no longer being considered. Bettridge said the Pacific Ocean humpback whale stocks are currently based on breeding areas to be consistent with ESA. Lowry thought the Southeast Alaska feeding aggregation should remain in the SAR to provide additional perspective. Wynne said there are a number of observer programs that did not observe mortalities that should be included in a historically observed table for this stock.

Stock Delineation Guidelines Initiative

Karen Martien said the GAMMS provides guidance on how to delineate stocks, which are defined as demographically independent populations (DIPs). Although the GAMMS provides guidance on stock delineation, GAMMS does not provide guidance on how to weight lines of evidence when deciding to delineate stocks. This has resulted in a lack of progress and inconsistency across NOAA Science Centers in terms of stock delineation. The originally defined stocks were delineated at very large geographic scales in 1995 due to a lack of data, and there have been few delineation revisions since 1995. This is a problem because some existing stocks are too large to meet management recommendations under the MMPA, so GAMMS III recommended a national workshop which was held in August of 2014 to facilitate the integration of multiple lines of evidence in stock delineation and promote consistency and transparency in stock delineation across the agency. A steering committee was formed in October of 2013 with representatives from all six Science Centers, Sam Simmons from the MMC, and Shannon Bettridge from OPR. Lines of evidence were then reviewed by the steering committee at eight meetings. The result from those meetings will be a stock delineation handbook. This handbook will have four main components, which include:

- A review of the lines of evidence (LOE) and factors that should be considered when collecting, analyzing, and interpreting data
- An assessment of the strength of each LOE when positive results are found and sampling is adequate
- An assessment of the data availability for each line LOE in order to describe best available science
- Methods to integrate multiple lines of evidence for DIP delineation

The review of the LOEs is based on journal club summaries and the August workshop. Assessing the strength of the LOEs is based on journal club discussions and the knowledge of meeting participants. The strength of every LOE was assessed separately for every cetacean and pinniped species listed in the SARs (except for walrus, managed by USFWS) and assessments for most LOEs were consistent across

species. The third component of the handbook assesses what constitutes the best scientific information available. The MMPA directs NMFS to use best scientific information available when preparing SARs. For some species it is difficult to get robust genetics or movement data and in other species, or photo identification is impractical, thus the availability of different LOEs will vary across species. A data availability table is being developed that describes the 'best scientific information available' for a given stock. The data availability table is based on a five-year time frame and is a living document that needs to be updated every five-years as new information becomes available. The final part of the handbook discusses integrating multiple lines of evidence. There is no uniform approach to integrating multiple lines of evidence and decisions must be made on a case-by-case basis, therefore all delineation revisions should be accompanied by a technical memo or other publication that clearly and concisely explains data and analyses. These publications should justify the number of DIPs delineated and placement of boundaries between stocks and facilitate communication between scientists and managers. Delineation revisions should use a formal decision making framework, such as Structured Expert Decision Making (SEDM). SEDM has been used in a number of ESA biological reviews and MMPA decisions. This is a useful technique for analyzing weaknesses in data. SEDM consists of informed experts addressing questions regarding strength of inference and quality of data. Once a draft of the handbook is completed the draft will be reviewed by the workshop participants then distributed in draft form for comments from NMFS, the SRGs, and USFWS before finalizing document.

Lowry said he represented the AK SRG at the August meeting and was hopeful the handbook would be helpful. Lowry asked Martien how the handbook was going to be used. Martien said this document can be used as a reference in future stock delineation decisions. Hopefully this document will contribute to greater consistency in stock delineation and will help people outside the agency to better understand the process by which stocks are delineated. This handbook will increase transparency. Mathews asked if there was a mechanism for updating the boundaries of a stock as more information becomes available over time. Martien said such situations would be discussed in the handbook. Small said there are often discussions about 'stock' vs 'DPS', and asked if the agency was considering using a similar approach for DPS. Martien said she was unaware of any such efforts. One thing that will be included in the handbook is a review on the history of stock delineation under the MMPA and a summary of the differences between DIPS and DPS. Lowry thought it would be helpful if the handbook could include a checklist to assist NMFS and the SRG in decision making.

USFWS Representatives Provide an Update to the AK SRG

Charlie Hamilton said the USFWS has an ambitious FY2015 and tight budgets required that they participate in the SRG meeting remotely. Deb Pierce-Williams, who had been leading the Marine Mammals Management group at USFWS in Anchorage, has accepted a new position, and Mary Callahan will be taking Deb's place.

Pacific Walrus Listing Decision

Jim MacCracken said USFWS is due to make a decision regarding ESA listing of the Pacific walrus by FY2016. USFWS has put together a scientific advisory team and is beginning to gear up for the listing decision process.

Patrick Lemons said there is not a good estimate of the size of the walrus population and USFWS does not have good demographic rates on survival and reproduction. The USFWS has collaborated with other groups to conduct a genetics based mark-recapture project. The original goal was to collect 1,300 samples annually. There were ~3,500 biopsy samples collected in 2013 and 2014. USFWS surpassed goals in all age classes and sexes, except for calves. Sampling operations have been restricted to the US side of the Bering Sea because permissions from Russia have not been granted. USFWS has developed 32 single-nucleotide polymorphism (SNPs) and screened them for use on this project. Analysis of all 32 SNPs should be completed by March at which point USFWS should have some preliminary mark-recapture rates. An additional 32 SNPs are also being developed, and all 64 SNPs for each individual should be analyzed by the end of 2015. USFWS hopes to conduct a bilateral walrus research cruise, in the US and Russia. The cruise will involve US and Russian scientists.

Tallmon asked if 64 SNPs will be enough to uniquely identify thousands of individuals. Lemons estimates that it would only take 32 SNPs to identify individuals, but due to potential for relatedness between individuals USFWS has increased its SNP count to 64. Lowry asked if USFWS was using satellite tagging. Patrick said ADFG and USGS have satellite tagged 30-40 animals per year over last 2 years and will continue tagging in Russia this year. Suydam asked what the timeline was for sample analysis. Lemons said USFWS is nearly done with sample analysis for the 32 SNPs and will process another 32 SNPs for each sample by the end of the summer. Lemon's team won't begin analyzing results until fall of 2015 and don't expect to have any information available until 2016.

Suydam recommended holding a community meeting in Wainwright, due to concerns that USFWS research activities affected subsistence hunts. Lemons said USFWS was organizing a number of community outreach meetings to share the results of recent research. Lemons said he would pass on the need for a meeting a Wainwright to the meeting planners. Small asked what the timeline was to obtain new abundance estimates. Lemons said USFWS needs to continue the project for another five to ten years. The project is expensive and USFWS struggles every year to get the needed funding. Mathews asked how precise this method of mark-recapture estimation would be. Lemons said Bryan Manly estimated a coefficient of variation of around 20%.

Sea Otter Research and Monitoring

Joel Garlich-Miller said there are three stocks of sea otters in Alaska. The Southeast, Southcentral, the ESA listed Southwest stock. The most recent SAR for the Southeast stock included abundance estimates from aerial surveys with an Nmin of 21,800 otters and the trend for this stock is thought to be one of growth. USFWS is not planning any additional survey effort for next year on the southeast stock. The US Geological Survey (USGS) has flown aerial surveys in Prince William Sound in 2013 and 2014 to assess the Southcentral stock and a manuscript should be out soon reporting results. There is a new Prince William Sound estimate of ~12,500 otters, up slightly from the last estimate. USFWS also has new information for the Southwest stock. A 2014 Kodiak National Wildlife Refuge aerial survey resulted in a revised abundance estimate of 13,204, up slightly from the previous estimate. There are few sea otter/fisheries interactions to report. Two interactions occurred in the Southcentral stock and two in the Southwest stock. USFWS will have new subsistence harvest information in next SAR which is reported as a rolling five-year average. The most recent statistics for the Southeast stock show an average annual harvest of 1,013 animals, up sharply from the previous report. The bulk of that harvest is occurring from Sitka and Prince of Wales Island communities. For the Southcentral stock the most recent five-year average annual harvest is 323 animals, up slightly. Most of that harvest occurs in Prince William Sound. For the threatened Southwest stock, the most recent average annual harvest is 192 animals, up from 76, and the bulk of that harvest occurs out of Kodiak Island.

Garlich-Miller provided an update on ongoing and planned research by stock. The primary management issues for the Southeast stock are fisheries conflicts and local harvest management issues. Over the past several years Verena Gill has been working on a North Pacific Research Board (NPRB) funded project investigating interactions between sea otters and commercially important prey species in Southeast Alaska. Her findings show that a significant portion of the sea otter diet is Dungeness crab and sea cucumbers. These species were found to compose 32% of their diet. The study also showed that subsistence hunting patterns are also likely influencing sea otter habitat use in the region. These results are available in a 2014 NPRB report. For the Southcentral stock, USFWS received three applications for MMPA take authorizations associated with seismic exploration in Cook Inlet last year. A population trend survey is to be repeated in Western Aleutians later this summer and USFWS plans to survey Cook Inlet this summer. The recovery plan for the Southwest stock identifies needs to monitor population trends as a top priority and USFWS will be repeating a population trend survey in the Western Aleutians in summer of 2015.

USFWS has a statewide stranding program that has been in operation since 2006. This program has collected a considerable amount of information on sea otters, disease, and pathogenic factors. Verena Gill and others are working on a comprehensive analysis of that information. USGS is also working towards implantable life history tags which would record end of life information and allow

researchers to determine whether the cause of death was a predatory or non-predatory event.

Wynne recommended Garlich-Miller pursue the AMMOP record that contains an additional sea otter/fishery interaction. Long said NMFS sent Verena Gill fisherman self-reports on fisheries related sea otter interactions.

Polar Bear Stock Update

Erich Regehr said the USFWS convened a polar bear recovery team in 2013. The draft conservation management plan is to be released for public comment in May of 2015. The polar bear range states are also currently developing a circumpolar protection plan. National action plans will be appended to this circumpolar action plan.

Southern Beaufort Sea Polar Bear Stock Update

Regehr said an updated draft SAR for the Southern Beaufort Sea polar bear stock will be provided to SRG for review at the 2016 SRG meeting. A population study (Bromaghin et al.) was released in November 2014. This study used capture-recapture data from 2001 to 2010 and showed there was low survival for all age classes from 2004 to 2006. The study also showed more complex ice-survival relationships than had previously been put forth and led to updated estimates of abundance. Research by USGS is ongoing and there is capture based research planned for 2015. The USFWS conducts onshore monitoring including den detection studies, community based biological monitoring, and aerial surveys.

Chukchi Sea Polar Bear Stock Update

Regehr said an updated Chukchi Sea polar bear stock SAR will be published in 2015. The SAR is currently in departmental review. There is some new information on the biological status of stock, which suggests capacity for positive population growth. A paper recently published by Rode et al. discussed good body condition and reproduction for the Chukchi Sea stock for the 2008-2011 period when compared to historic data. The population may be below carrying capacity due to removal of animals from population in Russia in late 1990s and early 2000s. Other recent publications relevant to the Chukchi stock include: Wilson et al. (2014), Voorhees et al. (2014), and Kochnev et al. (in press). USFWS plans to continue spring capture-based research and development of methods for abundance estimation in 2015. Phased implementation of regulated harvest in the US and Russia will be initiated in January of 2016.

Suydam asked at what interval the USFWS intended to update the polar bear SARs. Hamilton said that because polar bears are listed as threatened and depleted, the USFWS conducts an analysis every year on the polar bear SARs. If no new information is available the SAR is not updated. If there is new information that

allows for a better description of status of the stock, then the SAR is updated. Suydam asked if data from 2011 through present will be analyzed in time for the 2016 SAR revision. Regehr said no, he did not think there would be any studies with more recent data published by next year. Suydam said last year's SAR showed the boundary between the Southern Beaufort and Chukchi Sea stocks between Barrow and Wainwright. In practice, the boundary has really been between Wainwright and Point Lay. Suydam asked if USFWS could provide some updates on what the boundary is between the two stocks. Regehr said there is an area of overlap between the stocks and boundaries are defined differently under different contexts. The Polar Bear Specialist Group's defined boundary is near Icy Cape and this is reflected in the SAR.

NMML Funding Update

Bengtson provided a brief update on each NMML's program achievements over the last year. Tom Gelatt's Arctic Ecosystem Program (AEP) has achieved excellent Steller sea lion survey results through the use of UAS and has published empirically derived survival rates for the Western stock of Steller sea lions and recently completed a biennial abundance estimate for northern fur seals. Peter Boveng's Polar Ecosystem Program (PEP) tagged ice-associated seals with satellite and depth tags during a spring cruise, instrumented harbor seals in Adak, and finalized plans for analyzing US and Russian ice-associated seal survey data. Phil Clapham's Cetacean Assessment and Ecology Program (CAEP) conducted Cook Inlet beluga surveys, Southeast Alaska harbor porpoise surveys, and developed new humpback whale feeding stock abundance estimates. Bob Delong's California Current Ecosystems Program (CCEP) documented the development of a Steller sea lion rookery off the Washington Coast, conducted northern fur seal assessment in the Channel Islands, updated harbor sea stock identification using new genetic analyses, and developed new abundance estimates for the Neah Bay gray whale feeding group.

Over the past year NMML has worked with AKRO to ensure their information needs are being met and NMML and AKRO have worked together to identify joint Arctic research priorities. NMML is continuing to develop its data management program in order to meet new data availability requirements that would make data freely accessible to the public. NMML also created an outreach brochure³ for the FY15 Alaska fieldwork, and convened and participated in a workshop on using UAS to research wildlife and wildlife habitat. NMML will also undergo a protected species science program review on 16-20 March 2015.

NMML's budget in FY14 was ~\$15 million. About half of that is operational funding, which includes contract, term, or temporary labor expenses. Much of this operational money comes from outside of NOAA. NMML's funding comes from an appropriation from NMFS, from transfers within NOAA, and from other agencies

³ http://www.afsc.noaa.gov/nmml/images/2015_NMML_fieldwork.pdf

such as BOEM or the Navy. Funding has different strings attached limiting discretion on how money is spent. There are no substantial changes in the budget from FY14 to FY15. Expected reimbursable and transfer funds include funding for development of new analytical tools for protected species research and management, ice associated seal genetics, and using UAS to assess large whales in the Arctic. Additional proposals are pending.

Beyond FY15 NMML is expecting stable funding for Steller sea lions, northern fur seals, harbor seals, and Cook Inlet beluga. NMML is constantly seeking support for research on arctic cetaceans and ice-associated seals. Data from 2014 and later must be made publicly available by July 2016 and this will require additional resources.

Suydam complimented Bengtson on NMML's work, particularly recent accomplishments with harbor seals, ice seals, and the outreach flyer. The flyer is a positive thing for Alaska communities. Suydam thought it may be worthwhile for NMML to approach the Arctic and Shell baseline studies to see if they would be willing to contribute to NMML's efforts. These groups are interested in leveraging funds. Small asked if there was a document available that specifies the new federal metadata requirements and if any group receiving federal funding would have to comply. Bengtson said that anyone or any group receiving federal funding must comply with the new requirements. If ADFG receives money, then ADFG will be responsible for meeting these standards. All digital data must be made available to the public. DeMaster said that there are exceptions, for example, confidential data will not be made available to the public.

Lowry said there has been talk over the years of doing away with the individual monitoring required under Incidental Harassment Authorizations (IHA) held by the oil and gas industry, and instead use those funds towards developing a more comprehensive marine mammal research program. Lowry asked if there was a possibility of developing a pot or fund that industry can contribute to in order to fund more relevant research. Bengtson said that groups, states, and federal agencies are becoming increasingly willing to do this, provided there is an appropriate mechanism for doing so. There are a number of monitoring programs in the Arctic already managed by the National Science Foundation, the Arctic Council, etc. Bengtson thought there is an opportunity to link those up in some way, and that this is worth pursuing.

Lowry thought the SRG could make such a recommendation and added that one of the biggest impediments to such a change is the NMFS permit office. Suydam said the permitting office has concerns about moving that direction, but they are looking into it. The other difficulty is industry's concern regarding lawsuits if they eliminate their observer programs. Suydam did not think industry would ever get away from having observers onboard survey vessels, but there is room for changes.

Discussion on Key SAR Issues - Frequency of SAR Review

Lowry proposed that SARs receiving only editorial formatting need not be considered updated and reviewed by the SRG. Bettridge said a similar discussion was held during the 2015 Atlantic SRG meeting. If the stock is strategic, the SAR needs to be reviewed every year, but not necessarily revised. It was agreed that updates and reviews were required for SARs following publication of a significant paper or if the stock is subject to a take reduction plan, but not for editorial changes. The Pacific SRG does not update their reports every year and NMFS reviews many more stocks than they update. Haflinger said the fisheries SARs have a summary of changes at the very beginning of the document. It would be helpful if there were just a few sentences at the beginning of each marine mammal SAR stating which sections were updated and how. That would allow the SRG to focus on the relevant sections during review.

Angliss said this is not the first time the SRG brought this up. NMML can reduce the number of SARs requiring annual review if NMML does not update the fishery bycatch estimates annually. If fishery information is updated annually, as it is now, there will be many SARs requiring review annually. Lowry said it is the SRG's opinion that if the serious injury and mortality updates don't change the status of the stock then the SAR does not need to be reviewed. Bettridge said the Atlantic SRG is opting to include a link to the LOF tables rather than updating the fisheries appendices in the SAR every year.

Discussion on Key SAR Issues - GAMMS Decision Tree

Tallmon said he developed a draft key that could be used on each SAR to assist in determining whether that SAR contains required information. Tallmon provided a basic idea of how to use the key in regards to PBR. Lowry thought the key was useful and recommended that NMFS should use this key as an example, develop a finished product, and distribute the key to the SRGs.

Discussion on Key SAR Issues - Disclosing Fishery Observer Coverage in the SAR text

Pendleton proposed an example of the type of statement he would like to see in the SARs regarding fisheries, observer coverage, and mortality to marine mammals. His example statement was tailored specifically for the Southeast Alaska harbor seal stock:

“Of the 27 fisheries that potentially interact with this stock, 2 of which are known to have caused serious injury and mortality in the past, 1 has had bycatch monitoring in the past 5 years.”

Angliss said there a number of fisheries that overlap with, for example, the Southeast Alaska harbor seals. Robyn asked how NMML was supposed to

distinguish between a fishery that has the potential to interact with a marine mammal stock and a fishery that is unlikely to interact with a stock, or if the statement should be totally based on those fisheries that have been observed and those fisheries that have not been observed. Lowry said Pendleton's request would just require three things: whether the fishery was known to interact with a stock, whether it has the potential to interact with a stock, and the level of observer coverage of those fisheries. The SRG would be happy to provide a recommendation on whether a fishery has the potential to interact with a marine mammal stock. It would be good to have that perspective on fisheries take data in the SARs. Angliss said that even providing the SRG with enough information to make determinations on a fishery's potential to interact with marine mammal stocks is going to take a lot of work. Lowry said it is important to point out gaps in observer coverage. Suydam said that Pendleton has been suggesting this for some time. Pendleton suggested starting with harbor porpoise and humpbacks and then NMML and the SRG could reassess. Angliss said NMML will try this for a small selection of stocks and report back next year. Small offered the SRG's assistance.

Wade said NMFS seems to be failing in providing the public with a statement regarding bycatch and monitoring in the SAR. Wade proposed adding 'An Adequacy of Monitoring and Potential Threats' section to the SAR which would include the number of Category II fisheries that named a given marine mammal stock as potentially interacting with it and a statement regarding number of those fisheries observed. A section with a caveat could be added that would list those fisheries that are not being monitored but which have a high potential to interact with the stock. Lowry said this type of section may provide good rationale for establishing new observer programs. Angliss supported Wade's proposal because it did not require much guess work or extrapolation. Bettridge reminded the SRG to be cognizant of the 'SAR creep' and avoid adding too much new information to the SAR. Lowry said this change would only require a few sentences.

Discussion on Key SAR Issues - Actions to Reduce the Level of Incidental Takes

Wynne said there was a recent workshop to help NMFS develop draft guidelines for approved deterrents to protect personal property and fishing gear from marine mammals. The workshop concluded that any form of deterrence needs to be assessed on a stock-by-stock and case-by-case basis. For example, if every lobster pot in the Gulf of Maine was equipped with a pinger, the cumulative effect of those thousands of pingers may cause problems to marine mammals. At the workshop, Wynne recommended stock specific approaches to using deterrence. Three kHz pingers when used properly can prevent whales from running into nets. Used improperly, problems are exacerbated.

Suydam said that oil spill response interests are also working on ways of deterring marine mammals from oil spills. He asked if there was any discussion within NMFS regarding oil spill response. Long said the deterrence workshop held a couple weeks ago was about private property and gear. In such situations all deterrence had to be

safe to the marine mammal (i.e., does not result in mortality or serious injury. For oil spills, NMFS may allow deterrence that has the potential to cause serious injury to marine mammals if it keeps the animals out of oil.

Discussion on Key SAR Issues - Miscellaneous Topics

Angliss said NMFS has a metric for tracking SAR quality overall. This metric provides ranking for all data that goes into SAR and is reported annually. For every SAR in Alaska that goes up in quality NMML has another that drops in quality due to aging data or something similar each year. Angliss proposed providing information on the rating system as a presentation at the next SRG meeting.

Haflinger asked what criteria NMFS used when determining when a SAR needs to be revised. Angliss said strategic stocks are reviewed every year. Other stocks are reviewed on a three year cycle, unless there is a critical update. Mathews noted that some healthy stocks are considered strategic due to ESA listing.

Pendleton asked if stocks with a recovery factor of 0.1 only due to their listed status could be changed to something higher. Bettridge said is the GAMMS provides discretion for changing the recovery factor in certain situations.

Other SAR Discussion

Suydam said in the Chukchi Sea, harbor porpoise may be located further offshore than is depicted on the map. Suydam requested the SARs eliminate the term 'native harvest' and switch to 'subsistence harvest.' This could be accompanied by a statement describing how Alaska Natives may hunt marine mammals for subsistence. The SAR also states that subsistence hunters have not taken harbor porpoise from the Bering Sea stock, but that's not true. There are people that incidentally catch harbor porpoise in fishing gear, and some of those animals are then used for subsistence. Lowry did not know of any directed effort to take harbor porpoise and wanted the text to be clear that any takes of harbor porpoise were incidental.

Muto said the AKRO requested the addition of 'native' to the SAR, and requested the removal of information not specific to native harvest. Angliss said the AKRO is trying to differentiate between personal use subsistence and Alaska Native subsistence hunting. Suydam advised using the term 'Alaska Native subsistence hunting.' Lowry and Suydam thought it was best to leave the Alaska Native subsistence hunting background information in the SAR rather than removing it.

Clapham said his program has received money to analyze some acoustic data obtained from the Bering Sea including Unimak and Umnak passes. He anticipated publishing a report within 6-12 months. Clapham said there is currently no money available for right whale research. In addition, it is now known that there were 771 North Pacific right whales killed by Soviets in the 1960s.

Wynne said the Gulf of Alaska harbor porpoise bycatch table contains Cook Inlet and Kodiak fishery data that is used to come up with a mean annual mortality. Wynne said this information should be put in a historic table and should not be used for an estimate.

Bob Small requested that the National Marine Mammal Laboratory (NMML) post next year's SRG reference material on a website. For a number of SRG members working through Google Docs is problematic. NMML has the capability to post material for the SRG on an FTP site and this method will be pursued for 2016.

Recommendations to the Agencies

Lowry thought the USFWS did a good job with their presentations and recent work. He would write USFWS a short kudos letter, compliment them, and list the SRG's expectations for next year's SAR review.

DeMaster said the USFWS is moving toward using a current carrying capacity and away from historic carrying capacity. For walrus, USFWS is using 80% of K for OSP. The SRG is in a good position to make inquiries & recommendations to the USFWS regarding these changes.

Regarding NMFS, Lowry encouraged a switch from the struggle associated with the strict PBR calculation and encouraged finding a way to monitor stock status and exploring options for mitigating takes.

Wynne said old fisheries data should be retained in a historic data table unique to each SAR, and old data should not be used to estimate annual take.

Lowry had some concerns regarding the (1.0 - (probability of decline)) calculation of recovery factor for harbor seals and suggested that the 2015 SARs use the standard method of calculating recovery factor. He also recommended setting the PBR to zero or clarifying that no takes were authorized for North Pacific right whales, Cook Inlet belugas, and AT1 killer whales.

Pendleton requested SARs contain a statement regarding observer effort and the potential for fisheries to interact with marine mammal stocks. He said he would work with Angliss on this subject.

Angliss proposed a table format that would segregate historic from current fisheries information that would provide an annual mean based on current and historic data.

Lowry asked if a long-term solution to guidance on the usability of old data would have to wait until a GAMMS IV. Wynne said the LOF allows for the assistant administrator to reclassify fisheries by analogy. She suggested old bycatch data would no longer need to be used in the SARs if the assistant administrator classified

fisheries with a history of takes appropriately. Long said there are some implications with Wynne's suggestion. Long thought the suggestion was feasible, but it would be a policy change. Angliss said taking out historic information may have trickle down effects that could cause unexpected changes in the categorization of multiple fisheries. In such a scenario, NMFS might not have to classify a single fishery by analogy, but may also have to include other fisheries by analogy because the historical data will no longer be contributing takes towards the threshold necessary to trigger Category II LOF classification. Long said if the SRG thinks that some of the historical fisheries data is no longer reliable it would be helpful if they voiced that concern with specific instances to NMFS. Then NMFS could have a GAMMS IV type discussion because the timeframe of fisheries bycatch data reliability is a big question. Lowry said he was supportive of Wynne's suggestion and he would be happy to put that recommendation in a letter. Matkin said it would be good to have a cutoff date for the use of bycatch information.

Agenda Items for Next Year

Bettridge said that in 2016 NMFS intends to have a two-day joint SRG meeting followed by another day for each individual SRG to review SARs. Bettridge asked if there were any items the SRG wanted to see on the agenda.

Angliss thought a presentation and discussion on the evaluation of stock assessment quality would be appropriate for the joint SRG meeting.

Bettridge said other possible topics include:

- SARS in which only a portion of stocks range is sampled
- New methods being used by SWFSC such as:
 - pooling bycatch estimates for longer periods of time in cases of rare take events
 - using models to estimate abundance of fin whale, beaked whale, and sperm whale
 - new studies on estimating $g(0)$ and R_{max}
- Stock delineation handbook
- The MMC review of all NMFS SARs Observer program presentations
- Data inadequacies

Lowry said he would like to see an opportunity for each SRG to discuss the challenges they face. Small asked for a presentation/discussion on when SARs require updates and review.

DeMaster said that there is a new initiative for promoting recovery of 'priority' ESA listed species. 'Priority' is defined as listed, in decline, and with the potential for recovery. Cook Inlet beluga and North Pacific right whales are prime candidates for this initiative. DeMaster asked if the SRG had a preference if funding were to be

pursued for one of the two stocks. Lowry said DeMaster had the SRG's support in pursuing funding for the Cook Inlet beluga under this initiative.

Angliss said SRG comments on SARS should be sent to Muto within the next three weeks.

Meeting Adjourned