Minutes for the Pacific Scientific Review Group Meeting
Watertown Hotel, Seattle WA
10-12 March 2015

The 25th meeting of the Pacific Scientific Review Group (SRG) was held at the Watertown Hotel in Seattle from 10-12 March 2015. All SRG members except Jim Harvey, Doyle Hanan and Chuck Janisse were present. Karin Forney served as rapporteur. Michael Scott served as chairman of the SRG. The attending SRG members and other participants are listed in Appendix 1, review documents are listed in Appendix 2, and the agenda of the meeting is in Appendix 3.

General Topics

Development of a tier system for PBR

Paula Moreno provided background on the Independent Advisory Team for Marine Mammal Assessments (IAT), part of the Science Center for Marine Fisheries (SCeMFiS). The IAT includes Paula Moreno, André Punt, John Brandon, and Randy Reeves, and their goal is to reduce uncertainty of stock assessment estimates (*e.g.*, N_{min}, trends), maximizing the use of existing data and the efficiency of effort allocation (PSRG-2015-06). The team will provide research recommendations to the SCeMFiS. Punt gave overview of the project to develop and test a tier system for PBR. The project seeks to evaluate PBR performance relative to management objectives (Management Strategy Evaluation, MSE), to understand which strategies are most robust to resolvable and unresolvable uncertainty. Information quality is ranked in terms of tiers (*e.g.*, Tier 1 = multiple abundance estimates and trend information; Tier 4 = no absolute abundance estimates, but indices of relative abundance). At this time, the IAT is looking for input on which scenarios to test, how to evaluate performance, and aspects of a Tier system. They specifically want to look at the effect of stock structure uncertainty on PBR performance.

The SRG asked about the motivation for SCeMFiS. Punt indicated the IAT is intended as a think-tank for marine mammal stock assessment challenges. There is a recognition of uncertainties with the PBR approach, and this effort is intended to explore ways to improve performance. Funding for the current project came from the Western Pacific Regional Fishery Management Council. The IAT is looking at generic questions and methods of applying PBR, such as how to deal with outdated abundance estimates, or age/sex selectivity of bycatch.

The SRG discussed stock structure uncertainties in the context of the IAT project, and noted that stock structure is increasingly becoming the most challenging issue. The SRG noted that genetics studies have resulted in splitting up of original stocks as new information becomes available and wanted to know if there is another mechanism for capturing the uncertainty, rather than making more and more stocks. For example, the more stocks are split, the greater the abundance CV becomes, so there can be a trade-off between stock structure and precision of abundance. The IAT approach will look at the impacts of stock structure assumptions, quantify uncertainties, determine where can things go wrong, and whether a different approach to using the data would change performance metrics. The SRG asked whether it can help determine stock boundaries, often a key question for stock determination. Punt's approach may help evaluate the consequences of each decision.

The SRG noted that dealing with outdated surveys has been a persistent problem and asked whether all data available are used regardless of how old or are older estimates discounted? Punt's model down-weights older data, with the size of the discount-factor a function of how old the estimate is and how long data will be used in the future. By documenting rules and testing how well they perform, one can choose how to apply the most appropriate rule in any situation.

Jeff Moore has begun to incorporate older data into trend-based models and the SRG has been encouraging this approach. Currently this is on a stock-by-stock basis as different uncertainties may be relevant for different stocks. Punt agreed that each stock is different and they want to stay broad to develop a framework that allows one to test different scenarios such as those proposed in GAMMS III. Most of the work has been scoping so far, but they would like feedback once there is something to show.

Barlow *g(0)* analysis

Karin Forney presented an overview of document *PSRG-2015-B01* on behalf of Jay Barlow. In this study, differences in apparent cetacean density were used to estimate the proportion of animals on the transect line that are missed during SWFSC line-transect surveys. For most species, the probability of detection (*g(0)*), was lower than previously estimated. This will affect abundance estimates for the 2014 U.S. West Coast survey. Barlow plans to prepare a manuscript with new abundance estimates for 2014 and a re-analysis of previous 1991-2008 surveys using the new correction factors.

2014 SARS

Shannon Bettridge informed the SRG that the Draft 2014 SARs have been delayed considerably, but NMFS is working on getting the schedule back on track. She noted that petitions for humpback whale delisting were submitted to NMFS and are being considered, with a Federal Register notice to be published soon. Bettridge shared some issues discussed by the other SRGs at their meetings. A question was raised about the nature and extent of information that is sufficient to warrant updating SARs. Another issue was whether partial surveys should be used to provide estimates of N_{min}. The Alaska SRG has been challenged by very old bycatch data for some stocks and wondered whether this should be used if it is the only information. The Marine Mammal Commission is conducting a review of SARs nationwide. Many of these questions are of national relevance, and NMFS is planning to hold a Joint SRG meeting during 2016 to discuss these and other topics, including outdated bycatch estimates, pooling bycatch estimates over more than 5 years, uncertainty sections in the SARs, new methodologies, and other topics.

Pacific Islands fisheries and management

Nancy Young provided a management update (summarized in PSRG-2015-07). A new 5-year ESA/MMPA permit was issued in June 2014 for research and enhancement activities designed to conserve and recover the endangered Hawaiian monk seal. The membership and structure of the monk seal recovery team has been reorganized and meetings were held in Aug 2014 and March 2015. NMFS plans to release a draft of the Main Hawaiian Islands Monk Seal Management Plan for public review by mid-2015 and expects to publish a final rule revising Hawaiian monk seal critical habitat during 2015. The Pacific Islands Regional Office completed a non-jeopardy biological opinion on the Hawaii deep-set longline fishery and its effects on eight ESA-listed species, and NMFS issued a permit for incidental take of several marine mammal species in the deep-set longline fishery. Young reviewed changes in the 2015 List of Fisheries, and provided updates on the False Killer Whale Take Reduction Plan (TRP). She also provided an overview of Marine Mammal health and stranding responses, which included 31 major monk seal responses, 24

cetacean strandings, and the large whale entanglement response network. The gear documented on whales appears to be from a variety of sources including AK and HI fisheries, and Amanda Bradford is working with Ed Lyman to summarize the available information. The SRG complimented the agency on the increased stranding response effort, specifically for monk seals. Ann Garrett provided some additional detail on cultural issues, noting that conflict has arisen because animals are considered ancestors and local communities object to necropsies. Efforts are underway to develop methods that are culturally acceptable. Hannah Bernard noted that there is concern about misinformation regarding monk seals and their presence in the main Hawaiian Islands (MHI), and there is an effort to educate local communities.

On behalf of Jamie Marchetti, Young also provided updates on the PIRO observer program. Coverage levels have been stable (~20% for deep-set and American Samoa longliners, 100% for shallow-set longliners), with the majority of takes on the high seas. During 2014 the deep-set fishery had one humpback whale and one *Kogia* interaction in addition to eleven false killer whales (up from 3-4 during 2012-2013). The shallow-set fishery included more diverse species, including two elephant seals and one unidentified sea lion. One short-finned pilot whale was observed taken in the American Samoa fishery. There are efforts to understand the larger number of false killer whale interactions in the deep-set fishery within the False Killer Whale Take Reduction Team (TRT) framework. The TRT is also considering whether vessels may be more likely to fish on the high seas when an observer is present, which would affect the bycatch estimation that is extrapolated based on observer coverage.

Nearshore fisheries information

In response to PSRG and TRT requests for information on State of Hawaii fisheries and marine mammal interactions, Erin Oleson summarized results from analyses done by Chris Boggs and colleagues, to be summarized in a report "Marine Mammals Reported under Catch lost to Predators on Fisherman's commercial catch reports to the state of HI 2003-2014". The goal was to look at depredation records to evaluate patterns and review catch and effort data from various fisheries. The State of HI collects commercial fishery data for state and some federal waters on a geographic grid. Data include fishing effort, catch, catch lost to predators, type of gear, date, zip code of license holder, and port of origin. The Boggs *et al*. report aggregated data across years or species to protect confidentiality.

Oleson first highlighted caveats and limitations to interpretation of the data, including that these self-reported data may not be comprehensive and marine mammal species may not be accurately identified. Predation was reported from "porpoises," dolphins, monk seals, pilot whales, false killer whales, and pygmy killer whales by fishermen using nine fishing methods, including several trolling and handline methods. Seasonal patterns in predation may reflect seasonality in the fisheries. Increased numbers of predation reports in recent years may be a result of outreach and education.

A second source of information is the Fishing Ecosystem Assessment Tool (FEAT) developed by the PIFSC to visualize catch, effort, and fishermen demographics. Oleson presented an example of FEAT outputs, showing data from 1996-2014 for all gear types and catch species, which indicated concentrations of catch at Cross Seamount, off Kona, Oahu, Hilo, and south of Kauai. Kona comprises about 1/3 of all reports for HI and the greatest proportion of catch. Troll gear and handlines are mostly used off the Kona coast. The rate of catch has been relatively constant from 1996-2014, but has been increasing for some components.

The SRG commended PIFSC for addressing this recommendation from last year's meeting so quickly, and wondered what the plan for publication and next steps will be. Oleson indicated that the depredation report is going through internal review to make the information available quickly, but there are plans to do more in-depth analyses and publish a peer-reviewed manuscript. At this time, there are no specific plans for the visualization tool.

Hawaii State update

Elia Herman (by phone) presented information updates on behalf of the State of Hawaii, including staffing changes within the State of Hawaii Department of Land and Natural Resources, Section 6 Grants for monk seals (funded for FY06-07 and FY09-15) and false killer whales (provisionally funded), and the ongoing Hawaiian Islands Humpback Whale Sanctuary Management Plan Review. Key aspects of the Section 6 false killer whale research include 1) filling in data gaps regarding insular false killer whale spatial use patterns around the MHI, 2) assessing the spatial and temporal overlap between insular false killer whales and State fisheries in the MHI, and 3) conducting stranding investigations that include screening for infectious diseases and examination of anthropogenic impacts to identify and evaluate threats to endangered false killer whales as well as sperm and humpback whales.

Pacific Islands research and SARs

Amanda Bradford summarized the revised stock boundaries for false killer whales in Hawaiian waters (PSRG-2015-09). The SRG had previously discussed the various options during a conference call. Bradford reviewed the available stock-specific data, and considerations for developing new boundaries (*e.g.*, the MHI insular stock's greater use of leeward than windward areas, accounting for a hotspot off windward Maui, and incorporating uncertainty in spatial use of false killer whale Clusters 2 and 3 and in the seasonality of spatial use by all clusters). Based on all considerations and pre-meeting feedback from the SRG, a minimum convex polygon of a 72-km radius around the MHI was selected as the insular false killer whale stock boundary. The pelagic stock inner boundary was revised to be at 11 km from shore. For the northwestern Hawaiian Islands (NWHI) stock, three factors were considered – the eastern extent (off Oahu), the western extent, and the north-south range extent. The eastern extent was not changed because a single southwest Oahu sighting of NWHI whales appears to have been a rare event (out of 67 sightings in this region, only one was NWHI stock). The western extent was not changed because of the existing uncertainty in the stock's use of this portion of the NWHI. The north-south extent was modified to take into account additional telemetry data on NWHI false killer whale movements.

False killer whale bycatch estimates and SAR

Erin Oleson reviewed methods of allocating bycatch in the Hawaii-based longline fisheries, given recent changes in the longline exclusion zone (part of the TRP) and revised stock boundaries/overlap zones (PSRG-2015-01). Marti McCracken estimated annual bycatch inside and outside of the EEZ. Estimates for 2008-2012 were based on the proportion of animals killed or seriously injured (DSI) *vs*. not seriously injured (NSI) before the implementation of the TRP. The 2013 bycatch estimate used only the 2013 proportion of DSI/NSI because of operational changes in the fishery from the TRP's requirement for weak hooks. Oleson then prorated McCracken's annual EEZ estimates among the false killer whale stock overlap zones based on the distribution of fishing effort (by set) in those areas. Within overlap zones, Oleson then apportioned takes among false killer whales based on their relative densities, although; if a take was observed in an overlap zone it was assigned to that zone. Oleson summarized the revised

take estimates for 2008-2013 (including pre- and post-TRP periods), which are presented in the draft SAR.

Changes to the Draft 2015 false killer whale SAR included new stock boundaries, new pelagic and NWHI abundance estimates (revised to take into account the revised stock boundaires), updated MHI minimum abundance based on individuals in the photo-identification catalog within the most recent 4-year period, updated bycatch estimates, and some additional citations to disease factors that may be immuno-compromising the stock. Within the SAR, bycatch was evaluated over multiple time-frames because of the changes in the fishery (*i.e.*, the TRP) that may affect rates. The MHI false killer whale stock is strategic because of ESA status, the pelagic stock is still strategic because of fishery takes, and the NWHI stock is not strategic.

Oleson answered a question about available evidence for a potential observer effect, noting that the proportion of sets inside *vs*. outside the U.S. EEZ matched for observed *vs*. non-observed sets in the past but there may be a recent discrepancy. Other factors, such as seasonal patterns in fish and observer placement may play a role, and analysis of the data are ongoing. Oleson also noted that the MHI false killer whale samples had high immune-suppressant contaminant levels.

Other Pacific Islands cetacean research

Oleson provided an overview of other PIFSC research. Surveys have continued in Guam and the Commonwealth of the Northern Mariana Islands, focusing mostly on photo-identification studies, biopsy sampling and satellite tagging. Long-term acoustic monitoring at Saipan and Tinian since 2010 has revealed (in decreasing order of occurrence) sperm, humpback, fin, blue, sei, minke whales and 'unidentified' calls, as well as beaked whale clicks by Blainville's, Cuvier's and 'unidentified BWC' (previously documented at Cross Seamount and possibly Gingko-toothed beaked whale). A Feb-Mar 2015 land-based and small-boat survey identified 12 humpback whales including 4 cow/calf pairs. Oleson will contact Russian, Japanese, and Philippine researchers to compare photo-identification catalogues. Calambokidis noted that genetic matches may be possible based on SPLASH samples.

Studies on false killer whale acoustics have also continued, developing click classifiers (to distinguish from pilot whales) based on a combination of HARP detections and satellite-tagged animals moving nearby. On the Kona HARP there have also been investigations of high-frequency sounds thought to be *Kogia*, which might allow evaluation of geographic, seasonal, and diel patterns. Sea-glider and Wave Glider studies to develop survey capability in the absence of ship time included a successful mission off Kona. The Wave Glider is very noisy, so efforts are needed to make the platform quieter.

Acoustic monitoring of the deep-set longline fishery has continued, with single and multiple instruments, using volunteer fishermen and observers. So far 127 sets on 12 trips have been monitored. Whistles were detected on 30 sets and depredation on 10 sets (about 8% catch depredation rate). Animals are more likely to be detected going away from the vessel along the gear. The Southeast Alaska sperm whale avoidance project (seaswap.org) recorded a false killer whale taking bait on a pelagic longline set.

Use of habitat-based abundance models

Forney presented background and some considerations for the potential use of habitat-based abundance estimates (PSRG-2015-B02), but noted that uncertainty estimates are currently incomplete (including only the model-uncertainty). The SRG expressed interested in a more

fully fleshed out analysis on the potential use of habitat models for Palmyra, including ways to incorporate uncertainty and estimate N_{min} as a number that meets MMPA definition.

Hawaiian monk seals and draft SAR

Jason Baker gave a summary of monk seal research results and the updated SAR (PSRG-2015-02). Abundance information is not available for Necker/Nihoa, so the trend no longer includes these islands. The six subpopulations included in the trend are declining, while others are stable or increasing. The apparent decline may be at least in part caused by decreasing effort. Albert Harting is working on an approach to use all available data to estimate abundance and uncertainty. Pup translocations during 2008-2014 have increased pup survival rates, and satellite transmitters indicate home ranges are similar to control pups. Rehabilitation efforts include 2 juveniles and 2 prematurely weaned pups rescued, rehabilitated and released, thanks to the Kona facility. An adult female in Nov 2012 who had been hooked and tethered to the bottom for a prolonged time leading to severe emaciation and tissue necrosis was also rehabilitated and released, and she has had two female pups. Harting et al. published a recent paper in Endangered Species Research evaluating the benefits of opportunistic survival-enhancing interventions for Hawaiian monk seals (n=645 from 1980-2012). Results indicate that 32% of the 2012 population is composed of intervention seals and their descendants. The SRG inquired whether the different trends in in NWHI *vs.* MHI would warrant separate stock designation, given demographic independence. Baker responded that he does not believe this is warranted, because demographic independence needs to be defined relative to a duration of time and other factors.

2015 List of Fisheries

Nancy Young and Monica DeAngelis provided updates on the 2015 List of Fisheries (LOF), which was finalized at the end of 2014. There were no fishery reclassifications in the Pacific Islands, but a few fisheries were added or removed. For the West Coast Region, there was one error correction (Pacific HMS drift gillnet moved to Category 1), and a few Category II fisheries were removed, renamed, or split. The 2016 LOF is now under development and efforts are underway to characterize all fisheries and post online descriptions at the Office of Protected Resources LOF website.

Hannah Bernard inquired about re-categorization of HI fisheries given the new evidence of interactions and the need to be able to obtain more information about these fisheries. Young indicated that the information is still very new and analyses are ongoing. There are quantitative thresholds for assigning Categories, although there are qualitative/similarity measures that can be used to elevate from Category III to Category II in some circumstances. Elevating to Category II may not yield more information or new mechanisms, but NMFS will continue to evaluate the available information. For false killer whales, the only direct evidence to date to implicate any fishery came from the stranded animal with ingested hooks. Scarring shows evidence of interactions, but not which fishery is involved. The SRG discussed the new data collection efforts under the State's Section 6 grant and through Robin Baird's studies. The SRG noted that NMFS and the State are collaborating towards increasing information.

Humpback whale delisting petition

Bettridge provided background on the humpback whale status review and delisting petition. As NMFS was completing a global status review of humpback whales a few years ago, two separate petitions were received to consider North Pacific humpbacks and Central North Pacific humpback whales, respectively, as Distinct Population Segments and to delist them. Both

petitions were found to be warranted, so the required status review was include in the ongoing global review. NMFS is now developing a response to the petitions and a proposed rule is expected in the next few weeks. Currently there are 4 humpback whales stocks in Pacific US waters that are listed as depleted by default because of ESA listing. Any change could have implications for the depleted status under MMPA.

West Coast Regional Office management

West Coast Region staff (Lynne Barre; Monica DeAngelis and Tina Fahy by phone) provided a variety of management updates. A final rule was issued requiring NMFS-approved vessel monitoring system and 48-hr pre-trip notification on all California swordfish drift-gillnet vessels. The goals of these measures are to address an ESA Section 7 Biological Opinion reasonable and prudent condition and to compare observed *vs*. unobserved fishing effort. During September 2014 there was a large whale workshop in La Jolla to support collaboration among whale researchers, and another workshop is planned just before the spring 2015 International Whaling Commission (IWC) Meeting in San Diego to develop consensus predictions of whale distribution and abundance based on a variety of models. A vessel traffic separation scheme is currently being evaluated in consultation with the U.S. Coast Guard, and a trial incentive program was implemented in the Santa Barbara Channel shipping lanes to slow cargo ships down to 12 kts to reduce air pollution and increase protection of endangered whales. During February 2015, NMFS published a proposed rule and request for comments on a Letter of Authorization for the incidental taking of marine mammals during SWFSC scientific research, and a NWFSC application is currently under development. The blue whale recovery plan has been delayed but is still moving forward.

Sightings of uncommon, warm-water species have increased off California during 2014 and 2015, and there is concern that the resulting behavior of some human individuals may adversely affect marine mammals or interfere with scientific research. Collaborative efforts are underway to highlight poor whale-watching practices and develop a whale-watching association (*e.g.*, WhaleSENSE) to promote responsible whale-watching on a voluntary basis. John Calambokidis noted that there has been a dramatic expansion of whale-watch operators off Southern California, changing from strictly winter whale-watching (targeting gray whales) to year-round operations that also target blue and fin whales and other species. Issues regarding the use of drones continue to be a priority for the agency and the region, including the issue of whale-watching companies promoting drones on their web sites and the scientific value of data collection. For pinnipeds, there is some evidence of disturbance caused by drones. Permitting requirements are not clear and there currently is no permit mechanism in place, but this is being considered.

During 2014, there were 30 reported whale entanglements, with some fatalities but most reported alive at the last observation. Determining the involved gear type has been tricky, but Dungeness crab and spot prawn traps are the most common, with one entanglement each on sablefish and crab pots. One humpback whale was entangled for over two weeks on a Wave Rider Buoy off Monterey, apparently when changing currents caused slack in the cable. There was also one case of a fluke floating with line and floats. The fluke was genetically determined to be a humpback whale and the gear was traced to the crab fishery operating out of Half Moon Bay.

CA sea lions are still experiencing an Unusual Mortality Event (UME). Hundreds of animals are in rehabilitation facilities, and pups are considerably underweight (19% below average). Likely contributors to the UME is the reduction in the availability of sardines and the higher sea surface temperatures (similar to the 1997 El Niño). Fahy provided some information on the Guadalupe

fur seal status review, for which NMFS requested information via an October 2014 Federal Register notice. The species was listed in 1985 but no recovery plan or status review was completed. In 2007-2009 there was an unusual mortality event in the Pacific Northwest for Guadalupe fur seals, and up to 14 Guadalupe fur seals, including three females with pups, were recorded at San Nicolas Island during 2008-2013. The population appears to be increasing, and a recent population count is available from Mexican researchers.

A 10-year report on Southern Resident Killer Whales (SRKW) was published in 2014, and a final rule that includes the captive whale 'Lolita' in the DPS was issued in 2015. There has also been a 12-month finding regarding designation of SRKW critical habitat along the coast. During a Feb/Mar 2015 research cruise, scientists successfully tagged animals to obtain data on whale use of coastal habitats. Efforts to remove sea lions in the Columbia River are ongoing with the States, and the current authorization is effective through 2016. There is also a new Oregon Department of Fish and Wildlife monitoring program at Willamette Falls to estimate predation by sea lions. A draft EIS was recently released regarding Makah whaling, and there will be a 90-day comment period and public meetings before the final rule. Barre described a Puget Sound Partnership to characterize health of the region, which has put together an inventory of monitoring projects, identified gaps, and presented the information to the Puget Sound Partnership Leadership Council. The effort seeks to bring together information on SRKW (health, PBDE monitoring) and harbor porpoises (see also http://psp.wa.gov).

Pacific Offshore Cetacean Take Reduction Team (TRT)

Fahy noted that the TRT has been in place nearly 20 years (since 1996), and the last in-person meeting was in Feb 2014. Emergency regulations were drafted in 2013 because of high estimated sperm whale takes (>PBR), and included 100% coverage requirement for drift gillnet fishing vessels fishing in areas of deeper waters, which reflected greater risk to sperm whales. There was also a hard cap for sperm whales to reduce the impact to the species, when, if reached, would shut down the fishery for the rest of the fishing year. Following review of information and new sperm whale abundance and bycatch estimates (including a trend model incorporating greater years of survey data), the TRT agreed that the short-term goal to reduce mortality and serious injury (MSI) below PBR was reached for sperm whales. The fishery now has a 48-hr notification and vessel monitoring system (VMS) requirements. A negligible impact determination under the MMPA will be in place prior to the start of the drift gillnet season. The TRT discussed potential caps and 100% coverage, as proposed by the Pacific Fishery Management Council. The majority favored 100% coverage, but not the hard caps. Instead, they suggested a trigger that would cause NMFS to investigate to better understand circumstances driving bycatch events (*e.g.*, changes in sperm whale abundance/distribution, modification to fishing practices/gear).

Next week there will be a meeting in Long Beach to address Pacific Fishery Management Council discussions to develop a drift gillnet management and monitoring plan under Magnuson–Stevens Act (MSA) authority. The drift gillnet fishery now has about 19 active vessels. The plan would include 100% coverage (including electronic monitoring), and hard caps and performance measures for high priority protected species, including some marine mammals. Hard caps would be annual and aligned with fishing season (May 1- Jan 31). The fishery would close immediately when estimated MSI equals the cap for any of the included species. Proposed marine mammal caps are: 2 fin whales, 2 humpback whales, 2 sperm whales (all from the incidental take statement in the 2013 Biological Opinion), 5 pilot whales (rounded up from 4.6 PBR), 6 offshore bottlenose dolphins. Four sea turtle species are also included.

There are significant challenges related to MSI determinations, extrapolating from observed takes to total takes with variable observer coverage that cannot be estimated well in real-time, future adjustments to hard caps, and calendar year *vs*. fishing year structure. The Council has also requested alternate gear proposals. They received five applications for pelagic longlining, deep-set buoy gear, a comparison of different methods (deep-set buoy, shallow-set buoy, shallow-set shortline), and a comparison of driftnet and shallow-set longlines within and outside of the LCA. All proposals called for 100% observer coverage, but no funding source was identified for this.

The SRG discussed whether Council's actions, based on the MSA, are valid under the MMPA. Fahy noted that using MSA authority in this manner is unprecedented. The SRG was also concerned that rounding PBR upwards could lead to an unsustainable take. Kristy Long said that NMFS has told the Council that marine mammal bycatch should be dealt with under the TRT process, but the Council is still moving forward. The NMFS rarely disapproves Council recommendations although it can approve, disapprove, or partially approve. SRG input would be welcome. The SRG confirmed that they support the TRT process. Kristy noted that the Council no longer has a member on the TRT, but NMFS is encouraging such a formal connection. The SRG noted that the Council process is odd and redundant, given the TRT's efforts under MMPA authority. The SRG and NMFS have an obligation to decide which is scientifically valid. The SRG is concerned that having the Council create a cap that consumed an entire PBR (or more) for a single fishery was inconsistent with the PBR guidelines, which allocates PBR takes among multiple fisheries and other mortality sources.

CA/OR/WA Research

Southern California cetacean tagging and photo-ID update

Greg Schorr provided a summary of cetacean tagging and photo-identification efforts Southern California Bight (SCB), particularly in the Navy range off San Clemente Island (PSRG-2015-B03). Cuvier's beaked whales show very little overlap between the east and west sides of San Clemente Island. Mark-recapture estimates indicate there are about 220 animals over the 7-year study period, and there is some information on calving rates. There have been 67 tag deployments on fin whales lasting up to 240 days, but often only a short time. Although some animals moved out of the region, the vast majority of locations are in the SCB, and animals that leave generally return. There are seasonal movements inshore during winter and offshore during spring/summer. Mark-recapture estimates for fin whales in the SCB are about 298 whales during 2009-2012, which similar to the survey-based estimate for this region by Barlow and Forney (2007). Combined, the tagging and photo-ID data raise questions whether there are separate stocks of Cuvier's beaked whales or fin whales in the SCB, which would have implications for ship strike impacts and military activities. Future investigations will include more genetic sampling, examination of acoustic data, and addition mark-recapture efforts.

CalCURCEAS 2014 cruise summary

Forney provided a brief summary of results for the Aug- Dec 2014 CalCurCEAS cruise, which was led by Jay Barlow. Warm-water species were more abundant and cool-water species were documented to have a more northerly distribution. More sei whales and larger groups of sperm whales were also observed. Several pilot whale sightings were made, and pygmy killer whales were documented for the first time off California, consistent with the unusually warm water conditions. SWFSC plans to try to complete another west coast survey during 2015, funding and ship availability permitting.

US West Coast Serious Injury Determinations
Jim Carretta reviewed types of injuries documented along the US West Coast (PSRG-2015-10). For large whales they included ship strikes and entanglements. For pinnipeds they included entanglements, hook-and-line injuries, gun shot, power plant entrainment, dog bites, and pups taken from the beach by members of the public. In some cases, X-rays showed multiple hooks in stomach, but the availability of X-rays depends on location, resources, and whether there are other obvious signs (*e.g*., line coming out of mouth). For animals with an obvious constriction around neck, Fraker wondered what proportion is fishing gear *vs*. other debris and Carretta suggested it was about 50/50. Carretta noted that several records of humpback whales sighted at sea were accidentally omitted from the original SI spreadsheet, but he has added them now. All determinations have been reviewed by experts at other centers (*e.g*., large whales by NEFSC).

Marine mammal bycatch in the CA drift gillnet fishery for swordfish, 2001-2013
Carretta reviewed the last 13 years of bycatch (PSRG-2015-11). During 2013 there were 470 total drift gillnet sets, with 175 observed, including 100% coverage in deep-water zone <2000m. This resulted in 37% total observer coverage, and 26% inshore coverage. Observed takes included: 6 short-beaked common dolphins, 2 *Lissodelphis*, 3 CA sea lions, and 1 gray whale. Annual bycatch estimates are provided using ratio estimators and tree-based models with cross-validation that include information on ocean conditions. The tree-based *vs*. ratio estimates for 1990-2000 and 2001-2013 (pre- *vs*. post LCA periods) are similar although the variance of the tree estimate is greater. Annual sperm whale estimates differ in select years for the two methods. Jeff Moore (by phone) noted that the greater CVs are in part caused by model uncertainty and considered the tree-based CVs more reliable. Maps of predicted *vs*. observed bycatch (*e.g*., for CA sea lion) show good concordance.

Model-based approach for improving bycatch estimation
Jeff Moore (by phone) described the motivation for developing model-based approaches, and explained that he and Carretta are taking slightly different model-based approaches that yield similar results. Model-based estimates are similar to ratio estimators for commonly caught species, and are better for rare events than annual ratio-based estimates. Moore's approach is a Bayesian parametric approach based on fishing effort, whale abundance, and a catchability parameter. Abundance comes from a trend abundance model (previously presented to the SRG), and fishing effort is estimated by the observer program. Catchability is probability that one vessel would catch one whale that was out there. Advantages of model-based approach are that it maximizes the available information on the fishery and abundance, and it obviates decisions on how many years to use to average bycatch information. It is especially useful for rare-event cases for which single-year estimates are often poor. The greater stability of model-based estimates can improve management. The SRG has previously expressed support for this approach, as well as averaging bycatch over more than 5 years.

Puget Sound harbor porpoise surveys
Smultea Environmental Services has been collecting aerial survey and behavioral data on harbor porpoise and other marine mammals in Puget Sound, and Sarah Courbis provided an overview of preliminary results for surveys conducted Aug-Sep 2013, Jul 2014, Sep 2014, and Jan 2015. Harbor porpoise sightings per survey ranged from 68-367 (~744 total). The observer configuration included bubble windows and a belly window. Other species included pinnipeds, two Risso's dolphins observed twice, and a minke whale; surprisingly, no Dall's porpoises have been seen. Additional harbor porpoises were recorded during a flight in Straight of San Juan de Fuca. More flights are planned in the Strait out to the Pacific Ocean during the next survey.

Preliminary analysis yield a density estimates of 0.7 porpoise/km^2 and a total abundance of about 1832 harbor porpoises, suggesting they may be recovering in this area. Forney wondered whether circling for behavioral information could create a bias, as this was not consistent with the methods used to estimate the trackline detection probability, g(0).

Other research
John Calambokidis made the group aware of studies and publications relating to ship strikes and blue whales, and how the behavior of whales may impact assessment of anthropogenic impacts. A manuscript on Biologically Important Areas in HI, AK, and along West Coast, lead-authored by Calambokidis was also just published in Aquatic Mammals. Gray whales in northern Puget Sound will be a topic of greater research because of potential conflict between ghost shrimp harvest (for bait) and foraging gray whales.

US West Coast cetacean SARs
The SRG had some comments related to the blue whale SAR (PSRG-2015-03), particularly the cited Monnihan *et al.* paper indicating eastern North Pacific blue whales may be close to their carrying capacity. Calambokidis noted that the population dynamics modeling approach is very interesting, although he has some concerns about the way ship strikes were evaluated (without consideration of other impacts). He commented that the wording proposed in the Draft SAR seems to address the issue appropriately. Bob Brownell has organized a review of blue whale papers at the IWC meeting in San Diego (May 24-25). The IWC has not reviewed North Pacific blue whales since 1972, and Brownell would like to have a review at which the concerns are examined more thoroughly. The SRG made a few specific suggestions for the blue draft SARs, including the addition of caveats regarding the Monnihan *et al*. study and removing the reference to fin whales in the fishery Information section that says large whales may swim through gillnets.

California northern fur seal SAR
Marcia Muto reviewed California northern fur seal SAR updates (PSRG-2015-04), including population size, trends and fishery information. Jon Scordino questioned the support for a separate California stock, stating that there is no genetic differentiation among rookeries and there is some emigration or immigration. SRG members and other meeting participants indicated that there is strong support for separate stocks. Fur seals were first observed to have recolonized San Miguel in 1969, but none of the Pribilof Island pups have ever come south. However, the assignment of takes to stock was uncertain, because Pribilof animals also forage off the U.S. West Coast. The group was interested in this question in light of the SDGI workshop conclusions.

Southern resident killer whale SAR
Brad Hanson reviewed the SAR (PSRG-2015-05) and provided updates on population size and satellite tagging, which included focal follows and diet studies on the outer coast. During the 2015 cruise, they followed J, K and L pods and collected prey, fecal, and mucous samples, yielding about 50 prey and 35 fecal samples. Whales are eating primarily chinook but also steelhead, chum and halibut. Fecal sample DNA also showed primarily Chinook from the large watersheds, but especially in March there were lingcod, halibut and steelhead. A new calf was also discovered on this cruise. Past SRG recommendations included learning more about habitat use on the outer coast, so Hanson also deployed acoustic recorders during 2009-12 and 2014-15. All of the results are feeding into an assessment of critical habitat. The SRG noted that SRKW are similar to monk seals because they are not recovering despite lack of human-caused mortality, and questioned why there was not similarly an 'undetermined PBR' for SRKW as

well. Bettridge noted that GAMMS suggests calculating a PBR but indicating that the population is endangered and declining and therefore PBR does not apply.

SRG membership review process

Bettridge provided an overview of NMFS' SRG on the membership review process, as outlined in the Terms of Reference (PSRG-2015-B06). NMFS will continue to seek a balanced representation of viewpoints (interpreted as expertise, not stakeholder groups as in other areas of MMPA). Each SRG will be divided into 3 groups that will be reviewed every 3 years, with a goal of having no more than 1/3 turnover in any given year. Each year, NMFS will evaluate needed expertise, identify gaps, and determine how best to fill any identified gaps (replace members, add new members, invite experts). Following this determination, a Federal Register notice is published to solicit nominations for the expertise needed within each SRG region. During 2015, new member nominations were solicited only for Atlantic and Pacific SRGs, since the Alaska SRG just appointed four new members to fill gaps. The period of nomination is open until March 20, 2015. For the Pacific SRG, areas of expertise that were identified for additional nominees were: quantitative ecology, habitat modeling, population dynamics, fisheries gear/techniques (particularly HI and PI fisheries), Hawaii and Pacific Islands ecology, marine mammal genetics, passive acoustics, marine mammal population structure, abundance estimation. When nominations are received, there will be a call between the SRG Chair (who would request input from other SRG members), SRG liaison, and staff from the Regional Offices, Science Centers NMFS Science and Technology, U.S. Fish and Wildlife Service, and the Marine Mammal Commission.

Stock Delineation Guidelines Initiative (SDGI) Workshop

Karen Martien provided an overview of the SDGI (PSRG-2015-12). Although the Guidelines for Assessing Marine Mammal Stocks (GAMMS) provide some guidance on evidence that can be used for stock delineation, they did not specify the weight to be given the different lines of evidence and the most recent GAMMS called for a workshop to address this. The SDGI Steering Committee included participants from the NMFS Science Centers, Office of Protected Resources, and the Marine Mammal Commission. Eight WebEx meetings were held to review different lines of evidence relevant for delineating demographically independent populations (DIPs): acoustics, movements, trends in abundance, contaminants, morphology, life history, stable isotopes and fatty acids, physiographic and oceanographic differences in habitat, distributional hiatuses and low density areas, association data. Genetics will also be considered. A workshop was held in August 2014 with invited experts to develop a Stock Delineation Handbook that would review, assess the strength and data availability of each line of evidence, and consider methods to integrate multiple lines of evidence. To facilitate communication between scientists and managers, stock revisions should be accompanied by a Tech Memo or other publication that clearly and concisely explain the data and analyses and justifies the number of stocks and their boundaries. The SDGI Workshop report is being published as a Tech Memo, and a draft handbook is in preparation and will be reviewed by workshop participants and then more broadly, including by USFWS and the SRGs.

The SRG had a few clarifying questions, including what to do about situations when multiple lines of strong evidence are in conflict, for example fur seals where there are no genetic differences but there are distinct breeding populations. Martien clarified that there is a difference between "how useful is it if you find a difference" and "what is the power of a line of evidence to detect differences". Lack of genetic differentiation does not mean that a population is panmictic, and one needs to evaluate the likelihood of detecting a difference if it exists. These

considerations will be included in the report. Martien noted that the guidance document itself could evolve as new information becomes available. The data availability table has a 5-year timeframe, so this would be reviewed in 5 years.

Marine Mammal Deterrents Workshop

Kristy Long provided an overview of a recent 3-day workshop to develop guidelines for safely deterring marine mammals. Participants included a broad range of expertise, *e.g*., acoustics experts, veterinarians, behavior experts. The steering committee conducted a literature review to look at methods and to develop criteria for evaluation, and at the workshop experts evaluated the likelihood and severity of impacts on marine mammals, and measures that might reduce severity. A workshop report will be prepared soon, and then there will be work groups to produce guidelines that will go out for public comment as part of a formal rule-making process. Acoustic deterrents include a wide range of seal deterrents and pingers. Robin Brown noted that the States are often the points of contact for user groups and requested as much information as possible to facilitate this process. Oregon State often gets inquiries about the type of devices that can be used and Brown suggested having some sort of list with examples of tools on a web site. Jon Scordino pointed out that the more prohibitive the guidelines are, the more likely it is that members of the public will shoot animals (even though it is illegal). Long noted that this was one of the concerns discussed at the workshop, and clarified that the purpose of the guidelines is to let people know what non-lethal alternatives are available and acceptable.

Washington Sea Otters

Lynch noted that there is no new draft SAR for Washington sea otters, but she provided updates on population distribution, status, and sources of mortality for Washington sea otters. The distribution is mostly as before (Pillar Point to Cape Elizabeth), but there are occasional individuals in Puget Sound and increasing reports in Oregon. The population is still increasing at about 8% with most of the growth in the southern part of the range, and the last count was 1573 otters. Otter deaths are on the order of 15-25 animals/year, peaking between May-September. The recovered carcasses are 63% male, and 66% breeding age adults, with 22% immature animals and 11% pups. They appear to be susceptible to *Sarcocystus neurona* (32%), and about 22% are trauma cases including boat strikes, gun shot, and shark attacks. Other identified causes include cardiac disease, bacterial septicemia, and drowning in setnet fishery (2 cases). About 16% are unidentified. No *Leptospirosis* or morbillivirus has been documented since 2008, and the population may now include mainly animals that have not been exposed to morbillivirus. There were some dual-exposure animals with *Sarcocystus* and toxoplasmodium, but they seem more resilient to toxoplasmodium. The SRG asked whether there was a habitat-based estimation of the WA carrying capacity. A reclassification to threatened from endangered would be around 1800, and from threatened to sensitive at about 2500. A graduate student is currently re-evaluating K, because almost half of the population is in sandy habitat, which was not considered high-quality habitat.

Topics, timing, and location of next meeting

The next meeting, which has been proposed to be a Joint SRG meeting, is planned for mid/late February somewhere in La Jolla or Seattle.

Potential joint meeting topics include:

- R_{max}
- PBR for recovered populations and changing K (e.g. climate change)
- MMPA – what has worked and what has not worked

- Update on NMFS incidental take permit for fisheries research
- New methodologies that are incorporated into some SARs but not others.
- What to do when N_{min} is based on only a portion of a stocks range
- MMC review of all SARs and SAR process (and GPRA- Government Performance and Results Act)
- Prescott Funding
- Humpback stock structure (if not in Joint meeting, definitely in Pacific)
- Overview of observer programs
- Very old bycatch estimates
- Minimum new information for updating SARs
- Stock Delineation Guidelines Initiative updates
- Utility of a comprehensive history of management and issues for each stock (historical account of SARs, e.g., history of science and management actions for Atlantic right whales)
- UAS/UAV regulations
- Moreno/Punt Tiered PBR updates.
- Webinar/conference calls (pros and cons)

Potential Pacific SRG topics

- Gray whales (with Alaska SRG?)
- Inland WA harbor porpoise
- OR/WA harbor seals
- HI Sanctuary research and ship strikes
- CA sea lion UME, including broader discussion of oceanographic conditions, population dynamics, management issues, available resources, etc.
- Blue whale IWC review
- Habitat-based density estimates for Palmyra (case study) –possibly for Joint SRG.
- New West Coast abundance estimates and SARs

Previous research and management recommendations
Pacific Scientific Review Group Meeting

The SRG recommends that the NMFS collaborate with the State of Hawaii to produce two reviews that can aid in future management:

1) Expand upon the information presented at the SRG meeting on the fisheries that operate in Hawaiian nearshore waters (such as the troll, handline, shortline, and other fisheries). In addition to the information that is currently collected from fishermen through self-reports, data should be collected on catch amounts, season, location, and types of gear used, including regional variations in gear used. The collaborative research proposed by the Hawaii Department of Land and Natural Resources, with its emphasis on scientific research and outreach to the fishing community and public should be a useful part of this review.

A database has been obtained and a preliminary analyses completed. There are plans for additional examinations and a report.

2) Depredation of fish catches by cetaceans is recognized as a serious problem for both fishermen and cetaceans in Hawai'i. To better understand the dimensions and dynamics of this cetacean-fishery interaction, a review and problem analysis for each of the applicable fisheries could provide both a historical perspective and a current assessment of the problem.

A Section 6 grant proposal was submitted and is pending. NMFS has plans to continue investigations.

The SRG recommends that harbor porpoise assessment surveys be conducted in Washington inland waters in light of 1) the long interval since the last surveys (2002-2003), 2) the evidence for recent ecosystem changes and changes in distribution of harbor porpoise in Puget Sound, and 3) the increased strandings in these waters in 2012. This is particularly important given that PBRs can no longer be calculated because abundance estimates are greater than 8 years old.

Aerial surveys have been done in Puget Sound and surveys are planned for adjacent waters by Smultea Environmental, and waterfowl surveys may also support this effort. Analyses are ongoing but abundance estimates are expected for the surveyed regions.

The SRG recommends that surveys be completed for harbor seal stocks in Oregon and Washington. There are no current abundance estimates, and thus no PBRs, for these stocks.

Puget Sound aerial surveys have yielded some data. Washington State has completed surveys in 2013 and 2014 with Navy and NOAA funding and Oregon State completed a survey in 2014. Analyses are underway.

The SRG recommends that NMFS rapidly develop a multi-year allocation of ship time for marine mammal surveys and increase the priority and funding for these surveys necessary to obtain the abundance estimates required to calculate PBR and thus enable fisheries to meet the standards required by the MMPA. We have repeatedly urged NMFS to conduct shipboard surveys to obtain new abundance estimates for marine mammal populations and remain

extremely concerned that the agency continues to give a low priority to marine mammal research when allocating ship time. In the Pacific area, the US West Coast survey has been postponed until 2014, uncertainties have increased regarding whether funding will be available to support field work to monitor the Hawaiian monk seal population and mitigate human impacts, and PBRs cannot be calculated for new Hawaii pantropical spotted dolphin stocks. When PBRs cannot be calculated, either for lack of abundance estimates or abundance estimates more than 8 years old, a negligible impact determination cannot be made for ESA-listed species and managed fisheries cannot achieve required MMPA standards. Either outcome places an inappropriate burden on managed fisheries, and the lack of data puts populations at risk.

A West Coast survey has been done and another is planned, funding and vessel permitting. Rotation schedule has not yet been accepted or funded nationally. Monk seal shiptime also became available.

There is currently marine mammal bycatch during trawls by NOAA research vessels, but samples and carcasses cannot be collected because there is no NOAA permit issued to do so. The SRG recommends that NMFS rapidly cut through the bureaucratic obstacles that hinder the collection of biological samples from the marine mammals incidentally killed during NOAA research activities.

This is in progress, and a SWFSC permit is expected by June, with others expected during the coming year. NMFS will provide an update at next year's joint meeting.
[The SWFSC received a permit in 2015; other Centers will follow]

The SRG recommends continued funding for studies of movements and genetics of false killer whales and other cetaceans around Hawaii and in the Central Pacific to better understand stock structure. Much has been learned from these studies, but more information is required; for example, movement data from all the social clusters of false killer whales around the Hawaiian Islands are needed to understand stock structure, ecology, distribution, and fishery interactions.

Studies are ongoing, and Hawaii State is seeking Section 6 funds.
[Hawaii State received Section 6 funding for 3 years]

Research and management recommendations
Pacific Scientific Review Group Meeting, 10-12 March 2015

The SRG recommends that the NMFS collaborate with the State of Hawaii to produce two reviews that can aid in future management:

1) Expand upon the information presented at the SRG meeting and the subsequent preliminary studies on the fisheries that operate in Hawaiian nearshore waters (such as the troll, handline, shortline, and other fisheries). In addition to the information that is currently collected from fishermen through self-reports, data should be collected on catch amounts, season, location, and types of gear used, including regional variations in gear used. The SRG supports the collaborative research proposed by the Hawaii Department of Land and Natural Resources, with its emphasis on scientific research and outreach to the fishing community and public.

2) Depredation of fish catches by cetaceans is recognized as a serious problem for both fishermen and cetaceans in Hawai'i. To better understand the dimensions and dynamics of this cetacean-fishery interaction, a review and problem analysis for each of the applicable fisheries could provide both a historical perspective and a current assessment of the problem.

The SRG recommends that NMFS procure and maintain sufficient resources to continue to operate the NWHI monk seal field camps and maintain rescue, rehabilitation, and survivorship-enhancement programs throughout the Hawaiian Archipelago. A recent publication (Harting et al. 2014) shows that about a third of the Hawaiian monk seal population is alive only because of the survival-enhancement efforts of NMFS and its collaborators. The field camps in the NWHI not only allow monitoring status of these rookeries and research, but play a critical part in survivorship-enhancement efforts, from rescuing sick or malnourished pups, removing potentially entangling net debris from the islands, translocating pups to areas where survivorship probabilities are greater, and mitigating mortality from male seal aggression, Galapagos shark predation and entrapment.

The SRG recommends that NMFS develop a multi-year allocation of ship time for marine mammal surveys and increase the priority and funding for these surveys necessary to obtain the abundance estimates required to calculate PBR and thus enable fisheries to meet the standards required by the MMPA. A West Coast Survey was completed that provided new abundance estimates but a national survey plan is needed to allocate enough shiptime to obtain new abundance estimates for marine mammal populations.

There is currently marine mammal bycatch during trawls by NOAA research vessels, but samples and carcasses cannot be collected because there is no NOAA permit issued to do so. The SRG recommends that NMFS rapidly cut through the bureaucratic obstacles that hinder the collection of biological samples from the marine mammals incidentally killed during NOAA research activities.

The SRG recommends continued funding for studies of movements and genetics of false killer whales and other cetaceans around Hawaii and in the Central Pacific to better understand stock structure. Much has been learned from these studies, but more information is required; for example, movement data from all the social clusters of false killer whales around the Hawaiian Islands are needed to understand stock structure, ecology, distribution, and fishery interactions.

The SRG recommends that full funding be reinstated for nationwide mammal stranding networks administered by NOAA (the John H. Prescott Marine Mammal Rescue Assistance Grant Program). Nationwide, marine mammal stranding response networks are run primarily through non-profits and other non-government entities and coordinated through NOAA's National Marine Fisheries Service. These networks perform an array of important functions as they respond to an average of more than 5,000 marine mammal strandings each year. Indeed, the fundamental work of the nation's stranding networks plays a vital role in enabling NMFS to meet its Congressional mandate by supporting the *"stewardship of living marine resources through science-based conservation and management and the promotion of healthy ecosystems"*. Stranding network investigations are necessary for a timely and accurate understanding of ocean health and to document mortality of marine mammals, which is a vital component of the Stock Assessment Reports. Without sufficient federal support, much of this vital work will cease.

A**ppendix 1**

Attendees - Pacific SRG Meeting, 10-12 March 2015 (Seattle, WA)

Scientific Review Group - Pacific Region:

Hannah Bernard	Hawai'i Wildlife Fund
Robin Brown	Oregon Department of Fish and Wildlife
John Calambokidis	Cascadia Research
Mark Fraker	Terramar Environmental Research Ltd.
Steve Jeffries	Washington Department of Fish and Wildlife
Katherine Ralls	Smithsonian Institution
Michael Scott	Inter-American Tropical Tuna Commission
Terry Wright	Northwest Indian Fisheries Commission

Invited Participants and Observers:

U.S. Fish and Wildlife Service
Deanna Lynch

NMFS Southwest Fisheries Science Center
Jeremy Rusin
Bob Brownell
Jim Carretta
Karin Forney
Karen Martien (by phone)
Jeff Moore (by phone)
Jay Barlow (by phone)

NMFS Alaska Fisheries Science Center, NMML
Marcia Muto
Paul Wade
Phil Clapham
Yulia Ivashenko

NMFS Northwest Fisheries Science Center
Brad Hanson

NMFS West Coast Regional Office
Monica DeAngelis (by phone)
Tina Fahy (by phone)
Lynne Barre
Penny Ruvelas (by phone)

NMFS Pacific Islands Fisheries Science Center
Jason Baker
Amanda Bradford
Erin Oleson
Mike Seki

NMFS Pacific Islands Region
Ann Garrett
Nancy Young

NMFS Office of Science and Technology
Mridula Srinivasan

NMFS Office of Protected Resources
Shannon Bettridge
Kristy Long

Marine Mammal Commission
Dennis Heinemann

HI Dept. of Land and Natural Resources
Elia Herman

Makah tribe
Jonathon Scordino

Western Pacific Fisheries Management Council
Asuka Ishizaki (by phone)

Hawaii Longline Association
Svein Fougner
Ryan Steen

Cascadia Research
Robin Baird (by phone)
Greg Schorr (by phone)

Smultea Environmental Services
Sarah Courbis
Dave Steckler

Other
Paula Moreno (IAT)
Andre Punt (Univ. of WA)

Appendix 2

Document List			
Pacific SRG Meeting March 10-12, 2015 (Seattle, WA)			
Last revised: 02/20/2015			
Document No.	Title/Topic	Contributor(s)	Distribution Date
Documents for Pacific SRG review			
PSRG-2015-01	Pacific Islands false killer whale SAR	Oleson	2/17/2015
PSRG-2015-02	Hawaiian monk seal SAR	Baker	2/17/2015
PSRG-2015-03	West Coast cetacean SARs (Bryde's whale, Blue whale)	Carretta	2/17/2015
PSRG-2015-04	Northern fur seal California Stock SAR	Muto	2/17/2015
PSRG-2015-05	Southern Resident Killer Whale SAR	Hanson	2/17/2015
PSRG-2015-06	Development and testing of a tier system for application to PBR	Moreno/Punt	2/17/2015
PSRG-2015-07	Pacific Islands Management Update	Young	2/17/2015
PSRG-2015-08	Minimum population size of main Hawaiian Islands insular false killer whales based on photoidentification	Baird	2/17/2015
PSRG-2015-09	Revised stock boundaries for false killer whales (*Pseudorca crassidens*) in Hawaiian waters	Bradford	2/17/2015
PSRG-2015-10	US west coast Serious Injury Determinations for 2013 (spreadsheet)	Carretta	2/17/2015
PSRG-2015-11	Estimates of marine mammal bycatch in the CA drift gillnet fishery for swordfish, 2001-2013	Carretta	2/17/2015
PSRG-2015-12	Report of the Meeting on the Use of Multiple Lines of Evidence to Delineate Demographically Independent Populations	Martien	2/17/2015
Background Papers - FYI only		**Submitted by**	
PSRG-2015-B01	Inferring trackline detection probabilities, g(0), for cetaceans from apparent densities in different survey conditions	Barlow	2/19/2015
PSRG-2015-B02	Habitat-based models of cetacean density and distribution in the central North Pacific	Forney	2/19/2015
PSRG-2015-B03	Distribution and demographics of marine mammals in SOCAL through photoidentification, genetics, and satellite telemetry	Falcone/Schorr	2/19/2015
PSRG-2015-B04	Estimating historical eastern North Pacific blue whale catches using spatial calling patterns (Monnahan et al. 2014)	Carretta	2/19/2015
PSRG-2015-B05	Do ship strikes threaten the recovery of endangered eastern North Pacific blue whales (Monnahan et al. 2015)	Carretta	2/19/2015
PSRG-2015-B06	Federal Register Notice: Nominations to the Marine Mammal Scientific Review Groups. Document #2015-03196, published 02-18-2015.	Bettridge	2/19/2015
(Documents are posted at: https://swfsc.noaa.gov/srg.aspx)			

Appendix 3

Pacific Scientific Review Group Meeting
10-12 March 2015, Watertown Hotel, Seattle WA

Final Agenda

TUESDAY, 10 MARCH 2015

Welcome & Introductions - *M. Scott, Pacific SRG Chair*

General Topics

- Development of a tier system for PBR – *Moreno/Punt (PSRG-2015-06)*
- Barlow *g(0)* analysis – *Forney (PSRG-2015-B01)*
- Draft 2014 SAR status; updates from the other SRGs – *Bettridge*

Pacific Islands Fisheries and Management

- Pacific Islands Management and Observer Program – *Young (PSRG-2015-07)*
- Nearshore fisheries information update – *Oleson/Young*
- HI State updates – *Elia Herman (by phone)*

Pacific Islands Research and SARs

- False killer whale stock boundaries and abundance – *Bradford (PSRG-2015-09)*
- False killer whale bycatch estimates and SAR – *Oleson (PSRG-2015-01)*
- Other Pacific Islands cetacean research – *Oleson*
- Use of habitat-based abundance models – *Forney/Oleson (PSRG-2015-B02)*

Hawaiian Monk Seals

- Monk seal updates – *Baker*
- Hawaiian monk seal SAR – *Baker (PSRG-2015-02)*

Review recommendations

Adjourn

WEDNESDAY, 11 MARCH 2015

National and West Coast Management Updates

- 2015 LOF updates – *Young/Barre/DeAngelis (by phone)*
- Humpback whale delisting petition updates – *Bettridge*
- Regional Office Management Updates – *Barre and DeAngelis/Fahy (by phone)*
- Pacific Offshore Cetacean TRT updates – *Fahy (by phone)*/*TRT Members*

CA/OR/WA Research

- So. California cetacean tagging and photo-ID update – *Schorr (PSRG-2015-B03)*
- CalCURCEAS cruise summary – *Forney*
- US West Coast Serious Injury Determinations – *Carretta (PSRG-2015-10)*
- Estimates of marine mammal bycatch in the CA drift gillnet fishery for swordfish, 2001-2013 – *Carretta (PSRG-2015-11)*
- Model-based approach for improving bycatch estimation – *Moore (by phone)*
- Puget Sound harbor porpoise surveys – *Smultea/Courbis*

CA/OR/WA SARs

- US West Coast cetacean SARs – *Carretta (PSRG-2015-03)*
- California northern fur seal SAR – *Muto (PSRG-2015-04)*
- Southern resident killer whale SAR – *Hanson (PSRG-2015-05)*

SRG Membership

- SRG membership review – *Bettridge (PSRG-2015-B06)*

Review recommendations

Adjourn

THURSDAY, 12 MARCH 2015

General topics

- Stock Delineation Guidelines Initiative Workshop – *Martien (PSRG-2015-12)*
- Marine Mammal Deterrents Workshop – *Long*

Sea Otters

- Washington sea otter update – *Lynch*

Review Recommendations

Topics, timing, and location of next meeting

Adjourn meeting