Minutes for the
Pacific Scientific Review Group Meeting
22-25 March 2022

The 32nd meeting of the Pacific Scientific Review Group (SRG) was held as a multi-day on-line meeting using Google Meets, due to travel restrictions as a consequence of the COVID-19 pandemic. All Pacific SRG members participated in the meeting, except Rebecca Lewsion: Scott Baker, Simone Baumann-Pickering, Lars Bejder, John Brandon, John Calambokidis, Doug DeMaster, David Itano, Leslie New, Daniel Palacios, and Tim Tinker. John Calambokidis served as Chair of the SRG, Laura McCue facilitated the webinar and served as rapporteur. The attending SRG members and other participants are listed in Appendix A, the agenda of the meeting is in Appendix B, and the documents are listed in Appendix C.

National Topics

GAMMS

Eric Patterson from NMFS OPR provided an overview of the general topics that are included in the 4th revision of the GAMMS. These updates include improving the language throughout the document, incorporating the MMPA Stock Policy, guidance on how to calculate Nmin, address the biases of the 8-year rule, update the strategic status language, and guidance on climate change, among other topics. OPR plans to hold webinars and finalize the document in late 2022. These changes would then begin to be implemented in the 2023 SARs.

The Pacific SRG requested that they have the ability to provide input on the revisions ahead of the public comment period, due to the importance of this topic and how it affects everything else the PSRG reviews.

Serious Injury Determination Policy Revisions

Jackie Taylor from NMFS OPR provided an overview of the general topics that were revised in the serious injury determination policy. In general, the serious injury annual determination process is working well; however, there were enough substantive issues to warrant revisions to the Procedural Directive. These issues include: Re-evaluate known outcomes (survival/mortality) of injured large whales and update resulting proration factors; re-evaluate small cetacean injury criteria for "hook in the head;" add new injury types or expand existing sub-categories (e.g., harassment, use of seal bombs, vehicle (non-vessel) collisions); and develop more specific guidance on capture myopathy. After webinars for partners and a public comment period in early Spring of 2022, OPR plans to finalize the document in late spring of 2022.

MMPA sec 101(a)(5)(E) permits

Kristy Long from NMFS OPR provided an update on the MMPA sec 101(a)(5)(E) permits that have been issued or drafted that applies to the Pacific Region. These include Category II WA/OR/CA sablefish pot fishery and Category II CA thresher shark/swordfish drift gillnet (U.S. and high seas components).

Deterrents Proposed Rule Update

Long also provided an update on the status of the deterrents proposed rule. After the draft was published in the Federal Register, OPR received hundreds of public comments, which they are currently

reviewing and applying to the final rule. New information was provided to OPR that will affect the final rule, including substantive changes to the acoustic thresholds, which will change the guidance on acoustic deterrents. Moving forward, the acoustic deterrents will be in a separate rule, and non-acoustic deterrents will be included in this current rule.

Biologically Important Areas (BIAs)

Jolie Harrison from NMFS OPR provided an overview of the status of the draft document outlining Biologically Important Areas (BIAs). The first iteration of this effort (BIA 1) was published in 2015, but needed updating, so the current process is to update the BIAs with the intent of this effort to aid resource managers, Federal agencies, and public. There are four types of BIAs (reproductive, feeding, migratory, and small and resident populations BIAs), with 131 BIAs for 24 species across 7 regions identified in BIA 1. In BIA 2, many changes have been made, including:

- A New systematic scoring and labeling framework for BIAs was developed,
- In this round, all existing BIAs were assessed, scored, and modified if necessary, and new BIAs were also identified,
- While current focus is on BIAs that overlay US waters, boundaries were not truncated at US EEZ - which was a concern raised with BIA 1,
- Goal was to compile and assess existing information that support BIAs, not to ensure that every species has a BIA. To do this, we expanded our request for input in this round,
- As with BIA 1, we were clear in our BIA 2 protocols and meetings that BIA boundaries reflect the information; “buffers” were not added to address uncertainty or predicted management use,
- Contractors from Duke University developed a New database and GIS tools to assist with data compilation, scoring documentation, and review,
- While regional groups scored the BIAs, we had extensive national (and regional) coordination and aforementioned tools to assist with consistency across regions,
- More structured Expert Elicitation was incorporated into the BIA 2 effort relative to BIA 1, and
- The focus remained on cetacean species in BIA 2 efforts due to insufficient time and resources to address concerns related to other marine mammal species.

The BIA scoring methodology included factors including intensity, support, importance, boundary certainty, and spatiotemporal variability. The timeline for the BIA 2 effort included a submission to Frontiers In Marine Science Special Issue in June, 2022, and then a New BIA II website & database to be finalized in the Fall of 2022.

TOR Update and PSRG Membership Review Summary

Zac Schakner from NMFS OST provided an update on the status of the SRG TOR revisions and provided a summary of the Pacific SRG membership review. The SRG TOR revisions have been posted and are considered final. They will be reviewed again in 5 years. The Pacific SRG membership review went well. There were 4 nominations, of which 1 was accepted, and 2 renewals of current members, which went forth. Schakner then updated the SRG that the 2021 draft SARs have an extended public comment period and the 2 main ways the product of the SARs will be streamlined.

PSRG Membership discussion, including new chair, co-chairs, vice chair

John Calambokidis, Pacific SRG chair, noted that because his term as the current chair will end after next year's meeting, he suggested that a co-chair, who will become the new chair, be identified. He deferred this discussion to the closed session on day 4.

Humpback Whale Session

Humpback stock update

Patterson and Schakner provided an overview of the process and status of revising the MMPA stocks for North Pacific humpback whales. Of the 14 Distinct Population Segments (DPS) under the ESA, 4 occur in the North Pacific. Currently there are 5 humpback whale stocks managed under the MMPA (and not under the ESA). The goal is to try to align the designations under the two statutes better. The stock policy that was finalized in 2019, and how that is applied to North Pacific humpback whale stocks were reviewed. The discussion on DIPs was summarized and an overview of what went into the tech memos for each DIP was outlined. Finally, a summary of the discussion of applying the Distinct Independent Population (DIP) lines of evidence and the stock policy to the proposed stocks was explained, highlighting the current step in the process at the SRG meeting. Five new stocks in the Pacific were to be reviewed in the SARs provided for this meeting.

The PSRG had questions regarding the inclusion of Oregon and Washington in the single stock that's connected to Central America. The genetics show a steep transition along the coast, meaning that the animals in OR and WA are not the same mix of individuals off CA. This may also have unintended consequences in other ways, such as with mortality allocation. A discussion ensued about the difficulties in trying to deal with these stocks under the MMPA and also the DPSs under the ESA. More information will be provided in later talks in this session.

Proration of humpback whale M/SI in Alaska to MMPA stocks.

Paul Wade of NMFS AFSC MML provided a summary of the proposed proration designation of M/SI to Alaska humpback whale stocks. Wade explained how the 2004-2006 SPLASH data and photo-identification matches were used in multistate mark-recapture models to determine area-specific abundance estimates and estimates of movement been winter and summer areas, as documented in Wade et al. (2016) and Wade (2021). He then explained how, in the draft Hawaii, Western North Pacific, and Mexico-North Pacific humpback SARs, NMFS prorates M/SI to a stock or DIP/unit using the movement probabilities. He also noted other potential methods for prorating instead of movement probabilities, such as using proportions from a recent genetic mixed-stock apportionment study (Lizewski et al. 2022). Lastly, Wade outlined next steps, including the IWC Scientific Committee's forthcoming comprehensive assessment and Wade's plans to revisit the movement probability analysis and submit the manuscript to a journal.

The Pacific SRG questioned how the proration would change due to environmental factors. Wade agreed that environmental phenomena or changes could definitely change the movement patterns and therefore the ratios, especially in feeding areas where the prey distribution could shift with changing environmental conditions. There was agreement that without real time data, it is difficult to address this issue at this time.

SAR-related humpback whale genetics project

Karen Martien from NMFS SWFSC provided an overview of the progress on a project analyzing mitochondrial and nuclear (GTseq) data from humpback whale herds from the U.S. west coast, BC, and southeast Alaska and the ability to assign individuals to a herd, genetically. An overview of the migratory herd concept was reviewed before more information of the mitogenome project was provided. Martien then summarized the mitogenome project, which was presented to the PSRG previously, in which photo-identification was used to stratify samples collected off of California and Oregon into two herds: those that winter in Central America (CentAm-CA/OR) and those that winter off of mainland Mexico (MMex-CA/OR). Full mitogenome sequences were generated for these herds, which were then compared to each other and to SPLASH wintering ground data (mainland Mexico) in an attempt to use herd data to develop an assignment model to assign animals to a wintering ground. The results showed that CentAm-CA/OR herd and MMex-CA/OR herd are significantly different; the MMex-CA/OR herd is significantly different from all mainland Mexico animals; shared haplotypes between herds precludes confident assignment based on mtDNA alone; and there was no significant change in haplotype frequencies of humpback whales off CA/OR between SPLASH (2004/2005) and CCES (2018).

A new project is underway that will dramatically expand the sample size and geographic scope of this project, and incorporate nuclear SNP data. The current project is expected to generate nuclear genotype data for over 800 samples at more than 400 loci. More analysis will occur this year, and an update on the status of the project will be provided at the 2023 Pacific SRG meeting.

SPLASH-2 and Central America/ west coast humpback research updates

Jeff Moore from NMFS SWFSC provided an update of the SPLASH-2 steering committee workshop, research questions and data-sharing agreements, and the Central American and southern Mexico fieldwork. The major objectives of SPLASH-2 are to: Update estimates of humpback whale abundance throughout the North Pacific; update/improve our understanding of genetic structure and movements throughout the North Pacific; and address high-priority science and research objectives for different Distinct Population Segments and stocks. So far, two workshops were held in December 2020 and 2021, field work in Central America was conducted in both 2021 and 2022, and a steering committee of 27 people representing regional and topical expertise was formed. Financial support was provided to collaborators to prepare data for sharing with HappyWhale and SPLASH-2 analyses, and for some data collection at Revillagigedos Island. Progress on the analyses include a new time series of basin-wide population estimates and new estimates for Central American DPS.

Central America / Southern Mexico humpback abundance tech memo

Alex Curtis of NMFS SWFSC presented the results of an analysis of the abundance of Central America / Southern Mexico - CA/OR/WA DIP, for consideration for updating the SARs. The context for this Technical Memo is that the DPSs and MMPA stocks don't align, and with the migratory herd concept, we need a DIP-specific abundance. A model was fitted to sightings histories of used 430 individuals identified during winter off Central America and Southern Mexico from 2019 to 2021, and results were corrected for expected bias from simulation. This provided an abundance estimate of humpback whales in the Central America / Southern Mexico - CA/OR/WA DIP, which allowed deductive inference on the population's growth and on abundance of Mainland Mexico - CA/OR/WA DIP abundance in U.S. waters.

The Pacific SRG had a few questions regarding sensitivity of the model and recommended adding in language to the memo that states everything that was considered, so that the reader knows it was not overlooked.

Humpback whale SARs

Four SARs for humpback whales were provided for Pacific SRG review: 1) Central America / Southern Mexico - CA / OR /WA stock, 2) Mainland Mexico - CA/ OR / WA stock, 3) Hawai'i stock, and 4) Western North Pacific stock. Updates that have been made to the SARs were briefly described by the authors and a discussion about each of these points ensued. It was agreed that all technical edits would be sent directly to the SAR author and any other points, like the use of species specific Rmax value and the use of the 95% confidence interval value for prorating mortality incidental to commercial fishing or shipping, would be captured in the PSRG recommendations letter to NMFS.

Alaska California Current Ecosystem Program (CCEP) Science Updates

Updated Abundance Estimates for Harbor Seal Stocks in Washington

Casey Clark from the WA DFW presented results for consideration for updating the SARs for the Washington harbor seal stocks (through 2019 for inland waters stocks, and through 2014 for the outer coast). Two key points of discussion included: 1) the difference between WDFW's approach to estimating abundance compared to an abundance estimate that was recently published by Jefferson et al. 2021 for some of the same stocks; and, 2) a proposed change to the boundaries between two stocks of harbor seals in Washington's inland waters (Southern Puget Sound and Northern Inland stocks). It was noted that the WDFW's abundance estimate was significantly higher than previous publications, and that different stock boundaries were used in the assessments. The PSRG agreed with the authors that this approach was more consistent with available information on stock structure and abundance, and is therefore preferred for the SAR.

The Pacific SRG had comments on the data used in the population growth curve, on methodology for assessing abundance, and what model should be used, and noted that they would send follow-up comments as part of the PSRG recommendation letter to NMFS.

AFSC Marine Mammal Laboratory West Coast Pinniped Research Update

Sharon Melin from NMFS AFSC MML provided a review of the status of the SARs for West Coast pinnipeds, plans for bringing all species up to date, and a review of data gaps in support of the SARs. The current research on pinnipeds to support the SARs include studies on abundance, distribution, movements and migration, diet, ecosystem interactions, condition and health, vital rates, and stock structure for seven species. A list of the publications over the last year was summarized, which included: updated PCFG gray whale abundance estimate through 2020 submitted to PSRG; updated Inland Washington Pacific harbor seal stock assessment submitted to PSRG (WDFW lead); update California sea lion abundance and survival estimates through 2021 to update SAR in 2023; and update CA/OR/WA EDPS Steller sea lion abundance, survival estimates, and a complete analysis of colonization and population trends. Melin then summarized the planned future research projects for each species that relates to the SARs, which include abundance studies and non-abundance related research on several pinniped species, and targeted research on PCFG gray whales and Pacific harbor seals.

West Coast Region Management Updates

WCR updates

Penny Ruvelas from NMFS WCRO – Long Beach, CA provided an update on current management issues along the West Coast, including large whale entanglements, ship strikes, fisheries, aquaculture and offshore wind, and Guadalupe fur seals.

- Whale entanglements have increased from prior years, especially unconfirmed reports, but they are still less than the peaks observed in 2015 and 2016, and mainly affect humpback whale stocks.
- Fisheries updates include gear marking, gear limit restrictions, closures and delays, OR and CA conservation plans. Progress is being made towards meeting short-term and long-term goals under the Pacific Ocean Cetacean Take Reduction, with only sperm whale takes exceeding PBR. It was noted that the fishery council recommended a hard cap rule for closing the CA drift gillnet fishery. Further, it was noted that a driftnet modernization and bycatch reduction act was currently awaiting action from the House and President, which would phase-out large mesh drift gillnets in CA. In addition, within the DGN 2021-22 fishing season, 13 short beaked common dolphins were observed taken. In the deep-set buoy gear and deep-set linked buoy gear exempted fishing permits. Finally, it was reported that there were zero interactions with protected species in 2021.
- Vessel strikes are at similar levels to the past several years, and gray whales are the species of cetacean most often struck. It was noted that the lawsuit regarding the traffic separation schemes in San Francisco and LA/Long Beach has not yet been resolved. As well, there is a new petition for vessel speed reductions, and a new proposal for Santa Barbara Channel and areas to be avoided.
- Aquaculture updates included several SoCal projects entering the permitting stage. It was noted that there is a NEPA process for an Aquaculture Opportunity Area, with a draft expected at the end of May 2022.
- Offshore wind updates include 3 potential lease areas on the West coast for which NMFS is providing expertise on sensitive areas for marine mammals in these areas. In addition, it was noted that future consultations and permits will be promulgated in several stages.
- The Guadalupe fur seal UME was closed after being established for the past 6 years. Next steps involve continued monitoring of strandings, and a planned meeting with Mexico to develop a binational recovery plan.

Grace Ferrara from NMFS WCRO – Seattle, WA provided an update on gray whales and the Makah waiver.

- A gray whale UME was declared in May 2019, and as of March 7, 2022, 517 strandings have been reported in the U.S., Canada, and Mexico. The cause for most of these strandings is unknown.
- The Makah waiver update included the recommendation from the ALJ, which was to issue the waiver, and now the NMFS AA will work on publishing a final decision and regulations. If the AA denies the request, the process stops, and if the AA decides to move forward with the waiver, it then moves into the MMPA permit process, where again the request could be denied. It was

recognized that the waiver process still has a ways to go before any sort of subsistence hunt for gray whales could be authorized.

Megan Wallen from NMFS WCRO- Seattle, WA provided an update on Southern resident killer whale research and management:

- The SRKW management update included an overview of the stock's recent decline in abundance and risks relative to recovery; the SRKW 5-year review status, which was completed in December 2021 and kept the endangered status; an update on the critical habitat revision in 2021 that expanded critical habitat in WA, OR, and CA; the Orca Task Force updates, including reports with recommendations, bills that were passed in both the House and Senate, and the new Orca Recovery Coordinator position with the State of WA; the report to Congress published in January 2022 on recovering threatened and endangered species, with a spotlight on NFWF as a partner; and an update on the species in the spotlight priority action plan for 2021-2025, which addresses 4 main priorities: vessel impacts, prey, health and emergency response, and inspire stewardship.

SRKW SAR

Brad Hanson from NMFS NWFSC presented a summary of the SAR for SRKW for Pacific SRG review and provided an overview of the current population trend and details of the births and deaths within the population, which led to a net change of +2 animals this past year. The current population size is 74, with a the recovery factor set at 0.1 and a PBR of 0.13 animals. Hanson also discussed future research, which will focus on vessel disturbance and impacts, monitoring the soundscape of inland waters, contaminant levels, photogrammetric analyses, prey availability, and the small population size relative to the risk related to the potential for inbreeding depression.

The Pacific SRG had many questions about the risk of inbreeding depression and the implications this situation could have on the status of the stock. Mike Ford from the NWFSC clarified that the two major findings related to possible inbreeding depression are: 1) the population is markedly more inbred than the other North Pacific killer whale populations, which is consistent with the general patterns of growth of those different populations, and 2) within the southern residents, there's a relationship such that the more inbred an animal is, the less likely it is to survive. With the population modeling that's been done, that degree of inbreeding depression is sufficient to make the difference between population growth and declines. He gave an example, that if you do the theoretical experiment and assume that the whole population is as inbred as the least inbred individuals, it predicts that the population should be increasing. The PSRG agreed that they would write a recommendation regarding this topic.

West Coast Region Research Updates

Summary of SWFSC/MMTD FY21 research accomplishments and FY22 research objectives

Dave Weller from NMFS SWFSC provided an overview of the science being conducted by the Marine Mammal and Turtle Division, including accomplishments of the division from FY21 and the priorities for FY22, which focus in part on gray whales, and humpback whales.

Update on gray whales

Weller provided an overview of the planned ENP gray whale research in partnership with AFSC, including studies on the UME from 2019-2022; continuing SWFSC calf production surveys in 2023,

similar to those in 2021 and 2022; continuing SWFSC abundance surveys in 2023, similar to those in 2022; and AFSC small boat-based research and photo/UAS on PCFG whales in 2023, similar to those completed in 2021 and 2022.

Josh Stewart from NMFS SWFSC presented on "Integrated Population Modeling: Understanding Fluctuations in the Eastern North Pacific Gray Whale Population." The main points covered in this presentation included: the ability to describe complex population dynamics due to sufficient data on ENP gray whales (e.g. abundance, body condition, calf production, and stranding data) over decades, prey availability and access to foraging grounds may explain these dynamics, datasets in addition to abundance are key to estimating annual carrying capacity, and gray whale strandings per capita remain slightly elevated but are on their way down.

The Pacific SRG had a long discussion about carrying capacity (K), the actual change in K from one year to the next, and whether it is truly K, or something more like a parameter measuring the current strength of density-dependent mortality. The PSRG stated they will write a recommendation for this topic.

Peter Mahoney from NMFS AKFSC presented on the recent trends in abundance of PCFG gray whale from 1996-2020. Using individual photo-identification records, a Jolly-Seber CMR model was used to update the abundance from 2017 to 2020. They found that PCFG numbers have remained relatively stable for the past 20 years, the UME in 2019 did not appear to have impacted PCFG abundance, and in the past 3 years, fewer whales sighted in only one year have been observed.

Updates on SAR-related genetics projects at SWFSC

Martien presented on the epigenetic aging of Main Hawaiian Island (MHI) false killer whales (FKW) project she is conducting with colleagues. She is developing a model using non-genetic influences on gene expression by 1) selecting animals of known age, 2) estimating methylation levels of those individuals at many CpG sites, and 3) estimating parameters of a linear model that predicts age from methylation profile. The Bayesian model should predict absolute age, age class, and ordinal age. The techniques from this study can be applied to other species including gray whales and short-finned pilot whales.

Martien then presented on the redescription of *Delphinus bairdii*. Current taxonomy recognizes long-beak (*Delphinus delphis bairdii*) and short-beak common dolphins (*Delphinus delphis delphis*), which show different skull growth patterns in the juvenile stage and different rostrum lengths and zygomatic widths at adulthood, which is fully diagnosable. They are in distinct clades with Peruvian long beak dolphins sister to California long-beak dolphins. Therefore, they are being redescribed as: long beak common dolphin (*Delphinus bairdii*) and short beak common dolphin (*Delphinus delphis*). This will be present in the next SAR.

U.S. West Coast SARs

Jim Carretta from NMFS SWFSC provided the SARs for eastern North Pacific stock of gray whale and CA/OR/WA stock of Cuvier's beaked whale.

Update on status of the Northern CA - Southern OR and Central OR stock of harbor porpoise

Karin Forney from NMFS SWFSC presented updates on the status of harbor porpoise, including: an additional population boundary in OR. This would split the Northern CA/Southern OR stock into 2 new stocks: Central OR and Northern CA/Southern OR (with a reduced range). Forney explained the considerations for designating new stock boundaries, and the next steps, which include a memo to the record, conducting new abundance analyses, and preparing draft SARs for review at the 2023 meeting.

Pacific Islands Regional Office Management Updates

PIRO Updates

Diana Kramer from NMFS PIRO presented on the following topics:

- Hawaiian Spinner Dolphin Protective Regulations
    - September 2021 published final rule, which prohibits swimming with, approaching, or remaining within 50 yards of a Hawaiian spinner dolphin, including approach by interception, or placing a vessel, person, or other object in the path of a Hawaiian spinner dolphin so that the dolphin approaches within 50 yards. The final rule applies within 2 nautical miles from shore of the main Hawaiian Islands and in designated waters bounded by the islands of Lānaʻi, Maui, and Kahoʻolawe.
    - September 2021, published a proposed rule to establish time-area closures at five sites in the main Hawaiian Islands. The proposed rule would establish mandatory time-area closures of Hawaiian spinner dolphins' essential daytime habitats from 6 a.m. to 3 p.m. daily in areas of Kealakekua Bay, Hōnaunau Bay, Kauhakō Bay (Hoʻokena), and Makako Bay on Hawaiʻi Island, and La Perouse Bay on Maui. The final rule is in process.
- False Killer Whale FY21 Appropriations Projects Updates
    - Acoustic Monitoring: Two vessels monitored under this funding, project leads working to partner with additional vessels.
    - Telemetry Deployments: Some tagging occurred in May; additional field work this month.
    - Hook Corrosion and Breaking Strength: Work complete, draft manuscript in progress.
    - Camera System Development: Prototype cameras built, initial field testing beginning this month.
    - Handling Tools: UH Dept. of Engineering in progress of developing options to test.
    - Electronic Monitoring of Empty Hooks: Contract awarded in September 2021, work projected to complete in March 2022.
- PIRO "Weak Hook" Study Update
    - Study complete with 4 vessels participating, with 178 sets completed, and 3,536 animals (fish) caught, of which 48% were caught on control hooks and 52% caught on weak hooks. The grand mean differences between strong and weak hooks for length (0.4%) and weight (5.2%) were within TRT's threshold of revenue loss (<10% reduction). PIRO staff are currently reviewing the final report and will consider results in the context of FKW Take Reduction measures.
- 2021 False Killer Whale Interactions Summary

    - There were 15 observed FKW interactions in 2021. Five of those were determined to be serious injuries, all of which were inside of the EEZ.
- Hawaiian Monk Seal Action Plan and Recovery Plan
    - New Action Plan covers 2021-2025. Key actions include:
        - Improve survival of juvenile and adult female seals in the Northwestern Hawaiian Islands
        - Mitigate human-seal interactions to ensure natural population growth and minimize conflict
        - Address diseases with population level impacts
        - Foster community support for monk seal recovery
    - HMS Recovery Plan
        - The current Hawaiian Monk Seal Recovery Plan includes efforts to model shoreline evolution under higher sea level scenarios and to devise strategies for active mitigation of hazards.
        - The Recovery Plan also includes increasing outreach and education to develop a culture of coexistence between humans and seals in the Main Hawaiian Islands.
        - The Recovery Plan is currently in process of revision, and NMFS will continue to include recovery actions addressing the threat of habitat loss in the broader Northwestern Hawaiian Islands.

Krista Graham from NMFS PIRO presented on the Insular False Killer Whale Final Recovery Plan and Implementation Strategy.

- Summary of recent ESA actions for MHI IFKW:
    - Oct. 2020 – Published Recovery Status Review, Draft Recovery Plan & Draft Recovery Implementation Strategy,
    - Dec 15, 2021 – Public comment period closed; 6 submissions,
    - Aug 2021– Published updated RSR,
    - Nov 2021 – Published Final RP & RIS.
- Overview of new 3-part recovery planning framework. Separates out:
    - Species' status & threats (science) – **(Recovery Status Review- RSR),**
    - Overarching recovery goal, objectives, criteria, time & costs, and high-level recovery actions – **(Recovery Plan),**
    - Recovery activities to implement recovery actions – **(Recovery Implementation Strategy).**
- Recovery of species (goal, objectives, criteria, time, costs):
    - **Goal**: remove MHI IFKW from the Federal List of Endangered and Threatened Wildlife *(i.e., delist),*
    - Interim goal: reclassify from Endangered to Threatened status *(i.e.., downlist),*
    - **Time**: Estimated time to recovery is ~50 years,
    - **Cost**: Estimated cost is $346,866,000.
- Next steps:

- Implement / track recovery actions & activities,
- Continue to update RSR,
- Publish 5-year review of MHI IFKW to determine if *endangered* listing is still appropriate (*~April*).

Hawaiian Monk Seal (HMS) Research Updates

Research Update

Jason Baker from NMFS PIFSC provided an update on the 2021 population assessment results. The regional estimated abundance is 1190 in the NWHI and 379 in the MHI. The range-wide estimate is 1,570 animals. This is an increase from the 2019 estimate, which was 1,435. This also marks the first time that the species has exceeded 1500 animals. They continue to face issues of habitat loss in the NWHI.

Stacie Robinson from NMFS PIFSC provided an update on toxoplasma research. She reviewed the risk factors for toxoplasmosis in HMS from both feral cats and companion cats, oocysts, and hydrology. Results from the model showed: estimated oocyst export varied linearly with cat population size; landscape weighting had minimal impact on oocyst export estimates, but shifted 'hottest' watershed; oocyst shedding prevalence (varied by 10x) had high impacts on oocyst export estimates; and in all scenarios human-associated cats (Colony or Pet) contributed most to estimated oocyst export. Using seal space use and *T. gondii* exposure risk, the model showed areas of elevated oocyst export and high seal use coincide with areas of multiple toxoplasmosis strandings.

The PSRG had many questions regarding the PIRO updates, including instances of FKW entanglements, the spinner dolphin rule status, and the weak hook study. In particular, the weak hook study was deemed inconsistent and confusing. Itano noted that a recommendation for this topic will be provided.

The Pacific SRG had questions regarding the toxoplasmosis research and were very interested in this study and the outcomes of the model. They also had questions about the management of sea level rise in the NWHI for PIRO, but technical issues prohibited staff from answering the question. The PSRG noted they will write a recommendation for this topic.

HMS SAR

J. Baker also provided the SAR for Hawaiian monk seals. There were no substantive comments from the PSRG.

Pacific Islands Cetacean Research Updates

False Killer Whale Update

Robin Baird from Cascadia Research Collective provided an update on false killer whale survey effort, photo-identification, tagging, sampling, and analyses in 2021, with advances over previous years.

- Many (46%) of the photos collected for photo ID were from whale watch companies and citizen scientists.
- Social network data showed only one new distinctive individual in 2021, which suggests broadly comprehensive coverage of at least clusters 1, 3, and 5 in recent years. Less survey effort was conducted in high density areas for clusters 2 and 4.

- Six FKWs were satellite tagged in 2021. Results showed the first records of Cluster 3 and Cluster 5 off Kaua'i/Ni'ihau. The data from the tags were used to provide updated maps of spatial use by cluster.
- Biopsy samples were collected from three of the five clusters, with three new individuals biopsied in both clusters 3 and cluster 5.

Baird then described planned future analyses and publications that Cascadia or other researcher groups have planned for the next year.

- Photo-ID catalog-based age estimation of MHI insular false killer whales (Cascadia),
- Methylation-based age estimation of MHI insular false killer whales (SWFSC),
- Assessment of body condition in relation to fishery interactions (Cascadia, PWF, UH),
- UAS photogrammetry to determine length of MHI insular false killer whales (PWF, UH),
- Blubber histology from stranded animals to inform analysis of nutritional status from biopsies (UH),
- Blubber hormones from stranded animals to inform analysis of biopsies (UH),
- CATS tags and UAS photogrammetry of MHI insular false killer whales (PWF, UH, Cascadia),
- MHI insular false killer whale movements in relation to fish-aggregating devices (FADs) (OSU, Cascadia),
- Diving behavior of false killer whales from two populations in relation to diel and lunar cycles (Cascadia, UW, OSU),
- Updating the abundance analysis for MHI insular false killer whales (PIFSC).

Update on MHI insular FKW abundance and trend analysis

Janelle Badger from NMFS PIFSC provided an overview of the analysis she is conducting to produce updated abundance estimates for MHI insular FKWs. This ongoing effort will improve the stock assessment, including developing an approach that allows for trend estimation, and provide robust and updated inputs to the population recovery plan. The presented model – a pseudo-spatial mark-recapture model - improves upon the previous mark-recapture approach by incorporating animal availability into the abundance estimation. The process involves:

- summarizing yearly survey effort,
- defining and modeling animal space use from telemetry,
- determining overlap, and
- incorporating data into the detection process of a POPAN mark-recapture model.

Initial results showed similar values to the previous approach, with higher precision in most years. The updated model also helps alleviate sampling bias, can accommodate multiple types of data, and has the potential to be used for a trend analysis. The limitations of this method include making assumptions regarding population space use—specifically, that variability in individual movement is mainly governed by social cluster space use, and cluster space use has remained relatively static over the study period. From analyses of available telemetry data, these assumptions seem reasonable.

The Pacific SRG members were supportive of this effort and provided useful feedback and suggestions on aspects of the data and modeling approach.

Update on spinner dolphin surveys and analyses

Claire Lacey from UH Manoa MMRP provided an update on the spinner dolphin research, including line transect surveys and a photo ID study, that are being conducted around Oahu, and the current analyses and preliminary results. This is an update from last year's meeting where Lacey described this study but had not started it in earnest yet.

The line-transect surveys include an inshore and offshore strata. The total on-transect effort was 2,485.7km, with surveys occurring from June 2021 through Feb 2022. Most effort occurred off the west side of the island, with very little effort occurring on the north shore of Oahu. While spinner dolphins were the target species, and observed most often, sightings of FKW, bottlenose dolphins, and spotted dolphins also occurred. Lacey then provided a timeline for future work and the completion of density estimates, and spatial distribution maps, which will be presented at the 2023 Pacific SRG meeting.

The photo ID study by Liah McPherson is being conducted off the west side of Oahu. The goals of this study include collecting photos of unique individuals for the photo ID catalog and used to estimate abundance, and to estimate the age structure of the Waianae coast population via UAS photogrammetry. Lacey then ended her presentation by mentioning that future plans will include group size estimates from UAS data for Oahu, and conducting similar spinner dolphin fieldwork off of Hawaii island in 2022.

The PSRG asked a few clarifying questions and were grateful for the update.

Update on cetacean line-transect abundance estimation

Amanda Bradford from NMFS PIFSC and Elizabeth Becker from NMFS SWFSC provided an update on the results of the winter HICEAS (WHICEAS) 2020 abundance estimation, and their planned next steps.

The goals were to produce design-based estimates for species sighted on systematic survey effort and compare them to summer-fall estimates from HICEAS 2017, and to produce model-based estimates for species with sufficient sample sizes through WHICEAS 2020 and examine seasonal differences in distribution and abundance.

For the model-based estimates, they used three separate but related analyses using sighting data from 2000-2020 in Hawaiian EEZ: 1) Evaluate potential seasonal differences in species abundance; 2) Based on results of the seasonal analysis, develop either seasonally stratified or year-round habitat-based SDMs; and 3) If year-round sample sizes were sufficient, develop SDMs for the insular stocks of pantropical spotted and common bottlenose dolphins. They found that seven species could be used for seasonal models and nine species could be used for habitat-based density models, including new SDMs for humpback whales and spotted and bottlenose dolphin stocks.

For the design-based estimates, some species were sighted in 2020 that were not seen in 2017, allowing for abundance estimates for those species. Abundance estimates for species seen within the WHICEAS study area in both 2017 and 2020 were compared as a means of making seasonal comparisons. Further, design-based estimates were developed for 3 insular populations, with results showing imprecise and higher than expected estimates, likely due to both the small number of insular sightings as well as sparse and potentially biased effort within the population ranges. Comparisons of the design-based and the model-based estimates for seasonal differences were presented for three species. From their analysis they concluded that seasonal differences in small cetacean abundance are unlikely, the winter survey

detected the expected increase in relative abundance of large whales, and additional winter survey effort and insight from other data streams may reveal seasonal differences that could not be identified here. Further both design and model-based estimates were provided for humpback whales, the first for Hawaii since SPLASH (2004-2006), with the model-based estimate for the full Hawaiian EEZ more relevant to assessment and management.

Bradford ended the presentation with a short overview of a new project she initiated, in collaboration with others from PIFSC and SWFSC, which would update the design-based estimation routine using an open data science approach. This work will result in an R package that is tentatively being called 'LTabundR.' The core components of the package include data processing, data evaluation, and parameter estimation for both the group-based method that covers most species and the subgroup-based method used for false killer whales. The next steps of the project include moving from the initial validation with HICEAS data to an extensive validation with WHICEAS 2020 data, continuing to update the online package 'bookdown' guide, and using the package for a novel analysis; specifically, to produce design-based estimates for cetaceans in the Mariana Archipelago.

Many of the Pacific SRG members were excited and supportive about the development of the design-based abundance estimation R package.

Overview of MACS 2021- data collected and analysis plans

Marie Hill from NMFS PIFSC provided an overview of the Marianas Archipelago Cetacean Survey (MACS) 2021 project including the data collected and future analysis plans. The MACS project was the first comprehensive survey for cetaceans and seabirds of the entire Guam/CNMI EEZ. Data collection included visual and passive acoustic line-transect surveys, as well as the use of drifting acoustic recorders (DASBRs), and the primary goal was to collect data needed to estimate the abundance and distribution of cetaceans. This project included 59 days at sea. Results included:

- Sightings: 77 groups, 47 sightings of identified species, first sighting of Longman's beaked whale in the Marianas,
- Passive acoustics:
    - Towed Array: 248 detections; 47 concurrent with visual observations, 201 acoustic detection only.
    - Drifting Acoustic Recorders: 22 deployed and recovered. Recordings lasted between 1-24 days (avg 8 days)
    - Sonobuoys: 15 deployed opportunistically with 6 detections, including some unknown baleen whale call types,
- Seabirds: 1,605 sightings of approximately 3,266 birds from 29 species and 12 taxa,
- Oceanographic Sampling: 79 CTD casts conducted over the 59 days at sea.

The data analysis plans include:

- estimating density and abundance using the two approaches (design-based and model-based) described in the previous talk by Bradford and Becker, which we plan to complete by the summer of 2023,
- estimating beaked whale distribution and density from the drifting recorder dataset ,
- incorporating acoustic data into species classification models,

Genetic analysis of Mariana Islands bottlenose dolphins

Martien presented on a genetic analysis she conducted on bottlenose dolphins in the Mariana Islands, which share ancestry with Fraser's dolphin. Using mitochondrial control region haplotypes, she was able to determine that animals with Fraser's dolphin haplotypes have bottlenose dolphin morphology, which suggests introgressive hybridization. She then estimated the proportion of the CNMI population's mtDNA and nuclear DNA ancestry that is attributable to bottlenose vs. Fraser's dolphins by using Bayesian analyses for nucDNA, and found that hybridization was restricted to CNMI and likely occurred at least two generations ago.

Pacific Islands Region passive acoustics research update

Erin Oleson from NMFS PIFSC provided an overview on the updates and advances of PIFSC's passive acoustic research. These topics included:

- Acoustic monitoring of the longline fishery to identify and mitigate cues leading to depredation and bycatch of FKWs,
- Advances toward passive acoustic abundance estimation from towed array data,
- Examining performance of automated classifiers,
- Development of multi-target tracking techniques,
- Assessing cue rate for sperm whales,
- Evaluating use of passive acoustic gliders for remote cetacean surveys,
- Examining species/stock distribution and vocal behavior using diverse PAM datasets,
- Examining soundscapes at long-term monitoring sites.

The PSRG was appreciative of the update, but did not have time for discussion.

U.S. Fish and Wildlife Service Update

Pacific Northwest-Washington Northern Sea Otter SAR

Teal Waterstrat from USFWS – Seattle provided an update on the status of the northern sea otter. The primary range and extralimital sightings made by aerial and shore-based surveys were reviewed. The current minimum population estimate is 2785 otters, and trend was increasing by 9.8% per year from 1989-2019. Due to covid, surveys were not completed in 2018 and 2020. Stranding reports are, on average, 31 animals per year, with the majority in WA, which has been increasing with increasing population growth, and expanding. In 2021, average strandings reported increased, especially in April – August. A cause of death was determined in approximately 1/3 of the stranded animals; most were diseased or emaciated and others were from trauma. Shark attacks have been increasing. None of the sources of mortality are significantly impacting the population currently, nor do any causes appear to be limiting the population from expanding range southward or into the Straits of Juan de Fuca.

The PSRG recommended a different methodology for survey design, which will be included in a recommendation.

Southern Sea otter Management Update

Lillian Carswell from USFWS – California provided an update on the status of the southern sea otter. She noted that the final SAR published June 2021, with a flat population growth trend from 2015–2019. There is continuing high mortality due to shark bites, especially at range peripheries, and there has been

no sustained range expansion approximately 20 years. The population estimate is approximately 3,000 animals, which is well below candidate OSP value (CA only) of 10, 236 (Tinker et al. 2021). The USFWS received a congressional directive to study the feasibility and cost of reestablishing sea otters on the Pacific Coast of the contiguous United States, and to report to the Committees on the results of such a study within one year of enactment of this Act. To address this directive, USFWS using a Framed Assessment as a companion to the Elakha Alliance Feasibility Study. The USFWS Framed Assessment followed the IUCN framework found in the following publication: Guidelines for Reintroductions and Other Conservation Translocations (2013). There is limited consideration of moving southern sea otters to OR and N CA as part of the translocation proposal considered above. In addition, the USFWS received a petition to delist the southern sea otter DPS. We expect to publish a 90-day finding in May 2022. If warranted, we will do 12-month finding, and finalize draft Species Status Assessment.

After all presentations and discussions ended, the meeting ended with a closed session for just the Pacific SRG members present. Discussions included designating a Pacific SRG co-chair and reviewing recommendations for NMFS.

References:

Lizewski, K., D. Steel, J. Urbán R., J. Calambokidis and C.S. Baker. 2022. Mixed-stock apportionment of humpback whales in the North Pacific based on mtDNA haplotypes and microsatellite genotypes. Paper SC/68d/IA05 submitted to the Scientific Committee of the International Whaling Commission.

Wade, P.R., T.J. Quinn II, J. Barlow, C.S. Baker, A.M. Burdin, J. Calambokidis, P.J. Clapham, E. Falcone, J.K.B. Ford, C.M. Gabriele, R. Leduc, D.K. Mattila, L. Rojas-Bracho, J. Straley, B.L. Taylor, J. Urbán R., D.Weller, B.H. Witteveen, and M. Yamaguchi. 2016. Estimates of abundance and migratory destination for North Pacific humpback whales in both summer feeding areas and winter mating and calving areas. Paper SC/66b/IA21 submitted to the Scientific Committee of the International Whaling Commission, June 2016, Bled, Slovenia.

Wade, P.R. 2021. Estimates of abundance and migratory destination for North Pacific humpback whales in both summer feeding areas and winter mating and calving areas. Paper SC/68c/IA03 submitted to the Scientific Committee of the International Whaling Commission.

Appendix A

Participant List

Pacific Scientific Review Group Members
C. Scott Baker
Simone Baumann-Pickering
John Brandon
Lars Bejder
John Calambokidis
Doug DeMaster
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Daniel Palacios
Tim Tinker

NMFS Office of Science and Technology
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NMFS Office of Protected Resources
Shannon Bettridge, Megan Ferguson, Jolie Harrison, Joseph Heckwolf, Ellen Keane, Kristy Long, Eric Patterson, Trevor Spradlin, Jaclyn Taylor,

NMFS Pacific Islands Fisheries Science Center
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NMFS Southwest Fisheries Science Center
Jay Barlow, Elizabeth Becker, Robert Brownell, Jim Carretta, Alex Curtis, Karin Forney, Kristen Koch, Aimee Lang, Robin LeRoux, Josh Lindsay, Karen Martien, Jeff Moore, Phil Morin, Josh Stewart, Barbara Taylor, Dave Weller

NMFS Northwest Fisheries Science Center
Mike Ford, Brad Hanson, Nature McGinn

NMFS Alaska Fisheries Science Center
John Bengtson, Manuel Castellote, Brian Fadely, Nancy Friday, Jeff Harris, Peter Mahoney, Sharon Melin, Tony Orr, Paul Wade, Nancy Young

NMFS West Coast Region
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Marine Mammal Commission

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Alaska Scientific Review Group Members
Beth Concepcion, Thomas Doniol-Valcroze, Lorrie Rea

Western Pacific Fishery Management Council
Asuka Ishizaki

U.S. Fish and Wildlife Service
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Oregon Department of Fish and Wildlife
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Cascadia Research Collective
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University of Hawaii - Manoa
Claire Lacey, Aude Pacini, Philip Patton

Mahak Tribe
Brian Gruber, Jon Scordino

Other
Danielle Cholewiak (NMFS SEFSC); Sarah Colosimo (Oceans Initiative); Jens Currie (Pacific Whale Foundation); Albert Harting (Harting Biological Consulting); Catherine Kilduff (Center for Biological Diversity); Stephanie Stack (Pacific Whale Foundation); Ryan Steen (Stoel Rives);

Appendix B

Pacific Scientific Review Group (PSRG)
Webinar Meeting, 22-25 March 2022

Final Agenda (03/22/2022)

-- All times are Pacific Daylight Time—

Google Meet joining info:
Video call link: https://meet.google.com/aok-fmuv-mto (**video and audio**)
Or dial: (US) +1 585-532-5480 PIN: 947 288 087# (**audio only**)

*If you do not have a google account, you will need to be accepted into the meeting, which Laura will monitor. If you have any issues, contact her at laura.mccue@noaa.gov.

The meeting will be audio recorded for notetaking purposes.

Pacific SRG Members:
John Calambokidis – Chair – Cascadia Research Collective
C. Scott Baker – Oregon State University Marine Mammal Institute
Simone Baumann-Pickering – Scripps Institution of Oceanography, University of California San Diego
Lars Bejder – University of Hawaii Marine Mammal Research Program
John Brandon – ICF International, Inc.
Doug DeMaster - Consultant
David Itano – Fisheries Consultant
Rebecca Lewison – San Diego State University
Leslie New – Washington State University
Daniel Palacios – Oregon State University Marine Mammal Institute
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NMFS Liaison to the Pacific SRG:
Laura McCue – (laura.mccue@noaa.gov), PIFSC

National SRG and SAR Coordinator:
Zac Schackner – (zachary.schakner@noaa.gov), NMFS OST

DAY 1 (3/22/22) – NATIONAL TOPICS		
HEADQUARTERS NATIONAL UPDATES		
10:30 PDT	Introductions and Welcome, Introduce new member, Dr. John Brandon	McCue, Calambokidis
10:45	*GAMMS –* *overview of the general topics for the revisions*	Patterson
11:00	*Serious Injury Policy –* *overview of the general topics for the revisions*	Taylor
11:15	*MMPA sec 101(a)(5)(E) permits* *update on anything we have issued or drafted that applies to the PAC region.*	Long
11:25	Deterrents proposed rule update	Long
11:30	Biologically Important Areas (BIAs)	Harrison
11:40	TOR Update and PSRG Membership Review Summary	Schakner
11:50	PSRG Membership discussion, including new chair, co-chairs, vice chair	McCue, Calambokidis
12:05	---Break--- (30 min)	
HUMPBACK WHALE SESSION		
12:35	Humpback stock update – *(PSRG_2022_B01, PSRG_2022_B02, PSRG_2022_B03, PSRG_2022_B04, PSRG_2022_B20, PSRG_2022_B21, PSRG_2022_B22, PSRG_2022_B23)* *Summary of intersessional meeting (stock policy), status of 4 tech memos, management considerations (memos to the record), new stock designations, review all new PAC/AK SARs this year*	Schakner, Patterson
12:55	Proration of humpback whale M/SI in Alaska to MMPA stocks. *With multiple humpback whale stocks using and overlapping in summer feeding areas in Alaska, bycatch and other M/SI in Alaska has to be assigned to stocks. We are proposing to prorate Alaska M/SI to stocks using movement probabilities of whales from a mark-recapture analysis.*	Wade
13:10	SAR-related humpback whale genetics project *Nuclear (GTseq) analysis of humpback whale herds from the U.S. west coast, BC, and southeast Alaska -- progress on a project aimed at being able to assign individuals to herd genetically*	Martien
13:20	SPLASH-2 and Central America/ west coast humpback research updates *SPLASH-2 steering committee workshop, research questions and data-sharing agreements, Central American and southern Mexico fieldwork*	Moore, Calambokidis
13:40	Central America / Southern Mexico humpback abundance tech memo (*PSRG_2022_09)* *Present results on abundance of Central America / Southern Mexico - CA/OR/WA DIP, and deductive inference on its growth and on abundance of Mainland Mexico - CA/OR/WA DIP abundance in U.S. waters, for consideration for updating the SARs*	Curtis
13:55	*Humpback whale SARs (PSRG_2022_11, PSRG_2022_12, PSRG_2022_17)* *Central America / Southern Mexico - CA / OR /WA stock - Jim Carretta* *Mainland Mexico - CA/ OR / WA stock - Jim Carretta*	Carretta, Wade, Oleson

	Hawai'i stock - Paul Wade *Western North Pacific stock - Erin Oleson*	
14:55	Last questions, go over next day, and other misc.	McCue
15:00	Adjourn	Calambokidis

DAY 2 (3/23/22) – ALASKA, U.S. WEST COAST, & PACIFIC ISLANDS TOPICS		
10:30 PDT	Welcome, questions from previous day material	Calambokidis
ALASKA CCEP SCIENCE UPDATES		
10:40	Updated Abundance Estimates for Harbor Seal Stocks in Washington *(PSRG_2022_10, PSRG_2022_B18)* *Washington Department of Fish and Wildlife would like to present our results for consideration for updating the SARs for the Washington harbor seal stocks (through 2019 for inland waters stocks, and through 2014 for the outer coast). Two key points of discussion will be: 1) the difference between our approach and that recently published in Jefferson et al. 2021 for some of the same stocks; and, 2) a proposed change to the boundaries between two stocks of harbor seals in Washington's inland waters (Southern Puget Sound and Northern Inland stocks).*	Clark, Melin
11:10	AFSC Marine Mammal Laboratory West Coast pinniped research update *A review of status of SARs for West Coast pinnipeds and plans for bringing all species up to date and a review of data gaps in support of SARs*	Melin
WEST COAST REGION MANAGEMENT UPDATES		
11:25	WCR updates *(PSRG_2022_B07, PSRG_2022_B19)* *Updates on large whale entanglements, Southern resident killer whale research, Makah, and new and emerging activities*	Ruvelas, Ferrera
12:05	SRKW SAR	Hanson
12:15	---Break--- (30 min)	
WEST COAST RESEARCH UPDATES		
12:45	Summary of SWFSC/MMTD FY21 research accomplishments and FY22 research objectives	Weller
12:55	Update on gray whales *(PSRG_2022_14, PSRG_2022_B05)* *Includes ENP gray whale UME and PCFG abundance estimates*	Weller, Stewart, Mahoney
13:05	Updates on SAR-related genetics projects at SWFSC *Topics to be discussed include: epigenetic age determination of MHI false killer whales, and redescription of Delphinus bairdii*	Martien
13:15	U.S. West Coast SARs *(PSRG_2022_11)* *Gray Whale (Eastern N Pacific stock),Cuvier's Beaked Whale (CA/OR/WA stock)*	Carretta
13:35	Update on status of the Northern CA - Southern OR and Central OR stock of harbor porpoise *The SARs will be updated next year when new abundance estimates are available. We will provide an overview of the stock designation rationale*	Forney
PIRO MANAGEMENTS UPDATES		
13:45	PIR Updates *(PSRG_2022_B08, PSRG_2022_B09, PSRG_2022_B10, PSRG_2022_B11, PSRG_2022_B12)* *Hawaiian Spinner Dolphin Protective Regulations (Final and Proposed Rule), Insular False Killer Whale Recovery Final Recovery Plan and Implementation Strategy, Updates on False Killer Whale FY21 Appropriations Projects and Team discussion of hook study final report and next steps, Monk Seal Action Plan and Recovery Plan*	Brindock, Kramer, Graham, Amlin
HAWAIIAN MONK SEAL RESEARCH UPDATES		

14:25	Hawaiian monk seal research update *(PSRG_2022_08)* *Summary of research conducted by the Hawaiian Monk Seal Research Program since the previous PSRG meeting*	Baker, Robinson
	Hawaiian monk seal SAR *(PSRG_2022_07)*	Baker
14:55	Last questions, go over next day, and other misc.	McCue
15:00	Adjourn	Calambokidis

DAY 3 (3/24/22) - PACIFIC ISLANDS & USFWS TOPICS		
10:30 PDT	Welcome, questions from previous day material	Calambokidis
	CETACEAN RESEARCH UPDATES	
10:40	False Killer Whale Update	Baird
11:00	Update on MHI insular FKW abundance and trend analysis *Here, I will present an updated abundance analysis for the Main Hawaiian Island false killer whale stock. This new modeling framework incorporates survey effort and animal telemetry (satellite tags) to account for spatial biases in sampling, providing more precise estimates of population size.*	Badger
11:30	Update on spinner dolphin surveys and analyses *(PSRG_2022_B16)* *We present a summary of the line transect surveys conducted to date, along with information on the proposed 2022 field season and forthcoming analyses.*	Lacey
12:00	Update on cetacean line-transect abundance estimation *(PSRG_2022_13, PSRG_2022_B15)* *We'll present design- and model-based estimates of cetacean abundance following WHICEAS 2020 and provide an update on an effort to transition the design-based estimation code into an open data science format.*	Bradford, Becker
12:25	---Break--- (30 min)	
12:55	Overview of MACS 2021- data collected and analysis plans *(PSRG_2022_B17)*	Hill
13:20	Genetic analysis of Mariana Islands bottlenose dolphins *Summary of analyses indicating that MI bottlenose dolphins are a small, resident population with a history of introgression from Fraser's dolphins.*	Martien
13:30	PIR passive acoustics research update *(PSRG_2022_B13, PSRG_2022_B14)* *Topics to be discussed include: mitigating depredation in the longline fishery, acoustic glider surveys, Sperm whale cue rates, Bryde's whales in the Marianas, soundscape analyses, and other passive acoustics advances*	Oleson
	USFWS UPDATES	
13:50	PNW-Washington Northern Sea Otter SAR	Waterstrat
14:00	Southern Sea otter Management Update	Carswell
14:10	Last questions, adjourn public session	Calambokidis
14:15	***PSRG only closed session***	
15:00	Adjourn	

DAY 4 (3/25/22) - Closed session; PSRG only	
11:00 PDT	Draft 2022 recommendations

Appendix C

DOCUMENT LIST

REVIEW DOCUMENTS		
DOCUMENT NAME	**AUTHOR/POC**	**DOCUMENT NUMBER**
Spreadsheet of serious injury determinations _humpbacks	Bradford	PSRG_2022_01
Spreadsheet of serious injury determinations _non-humpbacks	Bradford	PSRG_2022_02
Long line interactions	Bradford	PSRG_2022_03
California swordfish drift gillnet bycatch estimates for 1990 - 2020	Carretta	PSRG_2022_04
U.S. West Coast Serious Injury Determinations	Carretta	PSRG_2022_05
U.S. West Coast Serious Injury Determinations spreadsheet	Carretta	PSRG_2022_06
Draft Hawaiian monk seal SAR	J. Baker	PSRG_2022_07
Summary of Documented Human-Caused Mortality, Serious Injury and Non-Serious Injury in Hawaiian Monk Seals	J. Baker	PSRG_2022_08
Abundance of CentAm/SMex-CA/OR/WA unit of humpback whales (*Megaptera novaeangliae*) from a one-dimensional spatial capture-recapture model	Curtis/Moore	PSRG_2022_09
WDFW harbor seal abundance summary document	Clark	PSRG_2022_10
U.S. West Coast SARs	Carretta	PSRG_2022_11
HI Humpback SAR	Wade	PSRG_2022_12
Bradford et al. Design-based line-transect estimates of cetacean abundance around the main Hawaiian Islands during winter.	Oleson, Bradford	PSRG_2022_13
2018-2019 PCFG abundance estimate report	Weller, Melin	PSRG_2022_14
Residency and movement patterns of common bottlenose dolphins off O'ahu and Maui Nui carry implications for current stock boundaries	Baird	PSRG_2022_15
A gray whale sighting off Hawaii Island, the first record for the central tropical Pacific.	Baird	PSRG_2022_16
WNP humpback whale SARs	Oleson	PSRG_2022_17
SRKW draft 2022 SAR	Hanson	PSRG_2022_18
SRKW draft 2022 SAR Figure 2	Hanson	PSRG_2022_19
BACKGROUND DOCUMENTS		
DOCUMENT NAME	**AUTHOR/POC**	**DOCUMENT NUMBER**
Evaluation of humpback whales wintering in Central America and Southern Mexico as a demographically independent population	Taylor	PSRG_2022_B01
Evaluation of Mexico Distinct Population Segment of Humpback Whales as units under the Marine Mammal Protection Act	Martien	PSRG_2022_B02
Evaluation of Hawai'i Distinct Population Segment of Humpback Whales as Units Under the Marine Mammal Protection Act	Wade	PSRG_2022_B03

Evaluation of the Western North Pacific Distinct Population Segment of Humpback Whales as Units under the Marine Mammal Protection Act	Oleson	PSRG_2022_B04
Joshua D. Stewart and David W. Weller. 2021. Estimates of eastern North Pacific gray whale calf production 1994-2021. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-653.	Weller	PSRG_2022_B05
Barlow et al 2021. Acoustic-based estimates of Cuvier's beaked whale (*Ziphius cavirostris*) density and abundance along the U.S. West Coast from drifting hydrophone recorders.	Barlow/Moore	PSRG_2022_B06
SRKW Species in the Spotlight Action Plan	Barre	PSRG_2022_B07
Catch Retention Hook Study Final Report	Kramer	PSRG_2022_B08
Hawaiian Monk Seal Recovery Plan	Kramer	PSRG_2022_B09
Hawaiian Monk Seal Species in the Spotlight Priority Action Plans	Kramer	PSRG_2022_B10
Insular False Killer Whale Recovery Plan	Kramer	PSRG_2022_B11
Insular False Killer Whale Implementation Strategy	Kramer	PSRG_2022_B12
Merkens et al. 2021. Characterizing the Long-Term, Wide-Band and Deep-Water Soundscape Off Hawai'i. Frontiers in Marine Science. https://doi.org/10.3389/fmars.2021.752231	Oleson	PSRG_2022_B13
McCullough et al. 2021. An Acoustic Survey of Beaked Whales and Kogia spp. in the Mariana Archipelago Using Drifting Recorders. Frontiers in Marine Science. https://doi.org/10.3389/fmars.2021.664292	Oleson	PSRG_2022_B14
Becker et al. Abundance, distribution, and seasonality of cetaceans within the U.S. Exclusive Economic Zone around the Hawaiian Archipelago based on species distribution models.	Oleson	PSRG_2022_B15
Lacey et al. Survey and analysis update for MHI spinner dolphins.	Oleson	PSRG_2022_B16
Yano et al. Cetacean and Seabird Data Collected During the Mariana Archipelago Cetacean Survey (MACS), May–July 2021	Oleson	PSRG_2022_B17
Jefferson et al_2021_Harbor seal abundance estimates	Clark	PSRG_2022_B18
SRKW 5 year Review	Barre	PSRG_2022_B19
Memo to Record_Central America DPS humpback whales	Patterson	PSRG_2022_B20
Memo to Record_Mexico DPS humpback whales	Patterson	PSRG_2022_B21
Memo to Record_Hawaii DPS humpback whales	Patterson	PSRG_2022_B22
Memo to Record_Western North Pacific DPS humpback whales	Patterson	PSRG_2022_B23
Place based conservation matrix - BIAs	Harrison	PSRG_2022_B24