GROUNDFISH ENDANGERED SPECIES WORKGROUP REPORT

The Groundfish Endangered Species Workgroup (GESW; Workgroup) received presentations regarding fishing effort in the groundfish fishery from Dr. Kayleigh Somers, Northwest Fisheries Science Center (NWFSC) Fisheries Observation Science Program (FOS), and on the bycatch of the listed species from Brad Hanson (NWFSC), Thomas Good (NWFSC), Rick Gustafson (NWFSC), Kate Richerson (NWFSC), and Scott Benson (SWFSC). Brian Hooper, National Marine Fisheries Service Sustainable Fisheries Division (NMFS SFD) acted as Chair for the meeting.

Additional Workgroup members (or alternates) participating included: Jonathan Scordino (Tribal Representative - Makah Tribe); Dan Lawson, NMFS Protected Resources Division (NMFS PRD); Dr. Jason Jannot (NWFSC FOS); Michele Zwartjes, U.S. Fish & Wildlife Service (USFWS); Corey Niles, Washington Department of Fish and Wildlife (WDFW); Lynn Mattes, Oregon Department of Fish and Wildlife (ODFW); Caroline McKnight, California Department of Fish and Wildlife (CDFW); and Bob Eder (Industry Representative).

Additional participants included: Anna Weinstein (Audubon); Brett Wiedoff (Pacific Fishery Management Council; PFMC); Catherine Kilduff (Center for Biological Diversity); Christa Colway (NMFS FOS); Christian Heath (ODFW); Dan Waldeck (Groundfish Advisory Subpanel; GAP/at-sea processor); Daniel Studt (NMFS SFD; Groundfish Management Team; GMT); Heather Hall (WDFW); Heather Mann (Midwater Trawlers Cooperative); Jason Eibner (NWFSC); Jenn Humberstone (The Nature Conservancy); Joseph Krieger (NMFS Alaska Region); Katie Pierson (ODFW/GMT); Keeley Kent (NMFS SFD); Kelly Cates (NMFS AKR); Louie Zimm (Council member); Merit McCrea (GAP/SoCal Charter); Mike Burner (PFMC); Mike Luchino (Trident Seafoods); Phillip Bizzell (Pacific States Marine Fisheries Commission); Robert Anderson (NMFS PRD); Sarah Nayani (GAP); Sean Matson (NMFS SFD); Stacey Miller (NMFS SFD); Susan Chambers (GAP); Todd Phillips (PFMC); Troy Buell (ODFW); Victoria Knorr (WDFW); and Whitney Roberts (WDFW/GMT).

The terms of reference for the Workgroup, approved at the June 2015 Council meeting, are provided as Appendix B to this report. In general, the Workgroup's objectives and duties are to:

1. Consider whether the amount of incidental take stipulated in the biological opinions (BiOps) was exceeded,
2. Consider whether new information reveals effects not previously considered in the BiOps,
3. Recommend new analyses to improve bycatch estimates, and;
4. Propose for Council consideration, conservation and management measures to minimize bycatch of listed species, if needed, in the groundfish fishery.

The Workgroup appreciates the work done by everyone on the bycatch teams in updating reports on fishing effort, humpback whales, short-tailed albatross, eulachon, green sturgeon, and leatherback sea turtles to include information from 2018 and 2019. In addition, the Workgroup appreciates the presentations by the bycatch team leads and the discussion that followed.

General Comments

The Workgroup process for integrating the Endangered Species Act (ESA) consultations with Council management continues to create effective communication between all parties. It brings together experts in the behavior and biology of the listed species with experts on the management and behavior of the fishing fleets. More so, any suggestions for new management measures benefit from the feedback, openness, and transparency of the Council process. We very much appreciate the protected species professionals for continuing to support these integrative discussions. The Council appointed Bob Eder as an industry representative for this Workgroup meeting. The Workgroup found Mr. Eder's input to be very valuable as he helped provide an understanding of how the gear is fished and how vessels operate. The Workgroup is supportive of an industry member having a more permanent position on the Workgroup in the future.

Groundfish fisheries generally have minimal interactions with ESA-listed marine mammals, sea turtles, eulachon, green sturgeon, and seabirds. The rarity of these ESA-listed species in the catch data makes projecting and estimating incidental take challenging. Outside of the shoreside individual fishing quota (IFQ) and at-sea hake fishery sectors that have 100 percent observer coverage, this rarity means when observer coverage in a specific sector is low, it can result in estimates of take being inherently imprecise and variable. Even where 100 percent observer coverage exists, variability and rarity of encounters can mask the causes of encounters and add uncertainty to future projections.

As in previous Workgroup meetings, the benefits of a logbook in Federal fixed gear fisheries came up several times. The Workgroup recognizes and emphasizes the benefit this information may lend to estimating bycatch for protected species for all fixed gear sectors. The logbooks would reduce uncertainty by providing better estimates on location-specific effort and total effort overall (e.g. number of hooks or pots set in the year). A fixed gear logbook would also be expected to reduce uncertainty in bycatch estimates for both overfished groundfish species and protected species, especially for fixed gear sectors that have low observer coverage rates. ODFW is the only agency currently requiring a logbook for fixed gear vessels and provided a successful example during model federal logbook development. However, the limited spatial extent of ODFW logbooks (Oregon coast) limits their value for developing coastwide (WA, OR, CA) bycatch estimates. NMFS is currently developing an electronic fixed gear logbook with the goal of completing the rulemaking in 2022 so the logbook can be in place for the 2023 fishery.

Workgroup recommendations endorsed by the Council are typically addressed in future BiOps, the next groundfish harvest specifications and management measure process, or in a standalone action like what the Council has used in the past for seabird mitigation measures. The Council has envisioned a similar standalone action to consider humpback whale mitigation measures, such as changes to pot gear marking requirements.

The Workgroup discussed the benefits of completing sensitivity analyses for the Bayesian models used to estimate bycatch of short-tailed albatross and humpback whales. These analyses would investigate the effects of a new take on the time series of estimates. The bycatch report authors plan to explore these analyses for future bycatch reports.

The Workgroup will continue its efforts to improve the feedback loop on the actions taken by the Council so Workgroup members have an idea on why, or why not, certain recommendations were taken up.

The BiOps for the groundfish fishery, as well as the 2019 Workgroup reports are available on the NMFS west coast groundfish website.

Fishing Effort Report

The Workgroup received an updated report on fishing effort in the 2002-2019 Pacific Coast groundfish fisheries (PCGF) by Dr. Kayleigh Somers. The patterns seen in fishing effort and catch were well within the bounds of what was expected. While the changes in fishing patterns discussed below are notable, the Workgroup agreed that the changes did not constitute new information or effects that were not previously considered in the BiOps.

With increased targeting opportunities for widow and yellowtail rockfish, the midwater rockfish trawl sector continued to develop, and landings doubled between 2017 and 2018. The bottom trawl sector's landings in both 2018 and 2019 were the lowest since 2002. About 25,000 mt were landed annually by the non-hake trawl sector in 2017, 2018, and 2019. This matches or exceeds the annual catch by the non-hake trawl fleet from 2002 to 2010.

Fleet-wide pots used by both catch shares and non-catch shares increased from 2013 to 2017 before a decrease in 2018 and slight rebound in 2019. The number of pots per set was highly variable, with the median number ranging from about 15 to 40 since 2011.

Pacific whiting landings in the shoreside and at-sea hake sectors increased from 2011 to 2017 but plateaued or decreased in 2018 and 2019. Total towing hours by the shoreside fleet reached an almost historic high of 6,600 hours in 2019, while total hours of towing by the at-sea processing fleet was lower in 2017-2019 compared to historic highs in 2016. Fishing effort in the at-sea midwater hake trawl fishery continued to be concentrated off of Oregon. Spatially, the shoreside whiting fleet focused more northerly, and somewhat shallower than in past years.

The Workgroup asked Dr. Somers to potentially explore anomaly plots in future reports if time allows. Anomaly plots compare data from the most recent year or set of years to a baseline average and could more directly show effort/catch changes.

Workgroup recommendations:

The Workgroup did not have any substantial recommendations on the fishing effort report but again thanks Dr. Somers and her colleagues for the time and effort taken to produce it.

Humpback Whales

The Workgroup received a presentation from Mr. Brian Hooper on the 2020 Biological Opinion on the effects of the continuing operation of the Pacific coast groundfish fishery on humpback whales. This was a similar presentation to what the Council received at its April 2021 meeting. The Workgroup discussed that the final critical habitat designation is now complete (86 FR 21082, April 21, 2021) and effective May 21, 2021. As part of the BiOp, NMFS found that the groundfish fishery is not likely to adversely affect the proposed critical habitat. NMFS will now work to confirm that finding as the final ESA analysis for critical habitat.

The Workgroup also received a presentation from Dr. Brad Hanson on the bycatch of humpback whales in the groundfish fisheries. The BiOp sets take amounts for both the Mexico distinct population segment (DPS) and the Central America DPS. However, the DPS origin of an individual whale is not commonly known. Therefore, the incidental take of ESA-listed Mexico DPS and/or Central America DPS humpback whales is exceeded if:

- more than 5 humpback whales are observed or estimated to have been incidentally captured in the Pacific Coast Groundfish Fishery in any one year, or
- the 5-year running average of humpback whale bycatch exceeds 2.34 per year

There have been two documented takes of a humpback whale in the Pacific Coast groundfish fisheries—one in the Limited Entry (LE) sablefish pot fishery sector in 2014 and one in the Open Access Fixed Gear (OAFG) pot fishery sector in 2016. Pot and trap fisheries generally represent the majority of documented fishery interactions with humpbacks along the U.S. west coast.

Bayesian estimates of humpback whale entanglements/takes for the LE Sablefish pot sector, the OAFG pot sector, and the sectors combined did not exceed the 2020 BiOp-established thresholds of five individuals observed or estimated in any one year or a 5-year running average of 2.34 individuals per year. To be consistent with the BiOp the Workgroup recommended adding catch share sector estimates into the humpback whale bycatch report. Zero entanglements/takes were observed in the catch shares sector which has 100 percent observer coverage and/or electronic monitoring.

The 2020 BiOp assumes that approximately 90 percent of sablefish pot fishing effort is off California/Oregon and approximately 10 percent is off Washington. The Workgroup agreed future bycatch reports should include a check-in on sablefish pot fishing effort distribution in the next report; this distinction informs the take by DPS calculations in the BiOp.

At its April 2020 meeting, the Council made multiple recommendations regarding the humpback whale BiOp for NMFS to consider as it moves forward with satisfying the terms and conditions of the ITS. Of note, the Council recommended that NMFS should hold workshops with fishing industry members to develop any potential new management measures related to the humpback whales. The Council also recommended that dedicated Council meeting agenda items should be used to consider and provide input to NMFS on draft new management measures prior to finalization of any regulatory changes.

The Workgroup discussed these recommendations and offers the following suggestions to increase participation in the workshops. Mr. Eder suggested NMFS stress the potential regulation changes

and have direct contact with permit holders. He noted that virtual meetings may be easier to attend and suggested options for call-in/webinar to promote participation. Mr. Lawson recommended consulting with PSMFC staff, Tri-state Dungeness crab fisheries managers, and State whale entanglement working groups working on Dungeness crab fisheries who have been actively engaged in soliciting input from the fishing industry on whale entanglement issues including gear marking, gear modifications, etc. Mr. Lawson noted those entities likely have good advice on lessons learned and how to best engage with industry to meet desired objectives, and on any relevant discussions of gear marking and topics that might be useful for consideration of measures in groundfish fisheries. He also recommended review of recent proposed regulations under the Atlantic Large Whale Take Reduction Plan that include updated gear marking and modification requirements for Atlantic pot/trap and gillnet fisheries, and consultation with appropriate NMFS staff as necessary to understand those proposed requirements in advance of any workshops.

The Workgroup also discussed some conservation measures that could be considered as part of the NMFS workshops and/or future Council action. Potential conservation measures suggested by Mr. Eder and discussed by the Workgroup included:

1. Changes to the gear configuration regulations to allow vessels to voluntarily use 1 buoy line instead of 2 buoy lines. The option is not permitted under current rules (see 50 CFR 660.219 - Fixed gear identification and gear marking). This could potentially reduce the number of vertical lines in the water and the risk of entanglement.
2. Explore electronic monitoring in the LE pot fishery to increase coverage and reduce uncertainty.
3. Investigate the use of Automatic Identification System (AIS) beacons to get near real time gear location information.

Prior to the Workgroup meeting NMFS PRD, NMFS SFD, and Council Staff met to discuss if any changes to the Workgroup's terms of reference (Appendix B) were needed to comply with Term and Condition 2 from the BiOp. They concluded the terms of reference provided flexibility to address the needs of the humpback whale BiOp through development of the Workgroup agenda and that there was not an immediate/obvious need for changes to the terms of reference. The Workgroup agreed.

Workgroup recommendations:

The Workgroup reviewed and noted the conservation measures identified above, as well as the ones presented in the recent humpback whale BiOp for potential future development. The Workgroup supports and encourages the workshop and other efforts to get robust industry engagement, but has no specific recommendations for the Council with respect to humpback whales.

Short-tailed albatross

The Workgroup received a report from Dr. Thomas Good on the bycatch of short-tailed albatross (STAL) in the groundfish fishery. Consistent with the 2017 BiOp, the NWFSC used a bycatch estimation that is able to address the impacts to STAL directly using a Bayesian approach.

No STAL takes were documented in the West Coast groundfish fisheries in 2018-2019. Data from 2002-2019 showed one observed STAL take in 2011 off the West Coast in the sablefish fixed gear fishery. Fleet-wide estimates of mean bycatch from the best model ranged from 0.2 to 1.8 STAL/year. Based on the analysis presented in the bycatch report, the groundfish fishery did not exceed the Incidental Take Statement (ITS) thresholds of an estimated five albatross in a two-year period or one observed albatross in a two-year period.

At its June 2019 meeting the Council directed the Workgroup to locate and review any new STAL telemetry or observer data south of 36° N. latitude, and provide this review in its report back to the Council, for purposes of possibly reconsidering the exemption from the streamer requirement for longline vessels operating south of 36° N. latitude. The Workgroup reports that there have been no STAL sightings south of 36° N. latitude in U.S. waters since 2011, and there are no new observations or telemetry data south of 36° N. latitude. As a caveat, the Workgroup notes that effort and observer coverage in this area tends to be lower. We request guidance from the Council on if the Workgroup should review and summarize STAL telemetry and observer data south of 36° N. latitude in future reports.

Recent morphological research suggests there may be two cryptic species of STAL: Senkaku Island and Torishima Island. USFWS indicated that it is not acting on this finding yet in terms of separate species listings. If a two species classification is officially adopted, the BiOp would require reinitiation and a reevaluation of the status and distribution for each species. USFWS noted that in practice the listing of two separate species may not make a substantial difference to management. Dr. Good reported that no recent telemetry work has occurred on the Senkaku Islands population. That population has not been visited since 2002, due to an international disagreement over ownership. Therefore, determining distributional differences between the two populations is not presently possible.

At the request of the public, Ms. Keeley Kent (NMFS SFD) provided an update on the status of seabird BiOP terms and conditions. We summarize the key points below as a full update is provided in the bycatch report. New streamer line and night-setting measures became effective in January 2020 (84 FR 67674, December 11, 2019). Overall implementation appears to be successful. The regulations capture the majority of the fleet and the smaller boats (less than 26 feet) tend to use rod and reel gear and fish closer to shore where STAL occur less. NMFS and USFWS funded the production of streamer lines and have distributed many lines to the fleet. Each year, NMFS mails out waterproof flyers to the fleet with seabird avoidance information. In 2020, NMFS distributed extra flyers in ports and through rule-related outreach.

Beyond hook and line vessels, NMFS conducted four years of data collection on seabird interactions with trawl cables on West Coast hake catcher-processor trawl vessels using NWFSC fisheries observers. Subsequently, NMFS collaborated with Oregon Sea Grant to conduct more focused observations on West Coast hake catcher-processor trawl vessels using dedicated seabird observers. Focused observations, primarily of the third wire, following hard cable strikes enabled

the calculation of mortality rates from those interactions for black-footed albatross and other seabird species. No short-tailed albatross cable interactions were observed in either of these studies.

Previously, NMFS presented these two research studies on trawl impacts on seabirds to USFWS. NMFS made the recommendation that no further action is required on trawl seabird bycatch at this time, as their research demonstrates that the risk of trawl gear to short-tailed albatross off the West Coast is significantly less than previously considered in the BiOp. NMFS intends to convene a public meeting/workshop to present these research results, hopefully before the end of the year. The hake catcher-processor fleet continues to explore best practices to minimize seabird bycatch to the extent practicable, and NMFS supports these voluntary mitigation measures. USFWS concurred with the NMFS recommendation and considers Reasonable and Prudent Measure 2/Term & Condition 1 to be met at this point. NMFS and USFWS could revisit the T&C in the future if there is new information that suggests the risks to STAL from this gear type are greater than currently understood. USFWS recommended concentrating resources on issues that are of greater conservation concern, specifically, research into avoidance or minimization measures to reduce bycatch from floating longline gear. NMFS agreed that this would be the best use of its resources. Research on floating longline gear is funded for FY2022 and being planned by NMFS, Oregon Sea Grant, and industry collaborators and the research hopes to recommend operationally feasible solutions to protect floated longlines from sea birds.

Workgroup recommendations:

The Workgroup recommends the Council support efforts that explore ways to improve streamer lines or gear configuration for the purpose of mitigating seabird interactions. The Workgroup recommends the Council encourage industry participation in cooperative research to test alternative mitigation measures for floated longline gear that are designed to further reduce bycatch of seabirds. We request guidance from the Council on if the Workgroup should review and summarize STAL telemetry and observer data south of 36° N. latitude in future reports.

Eulachon

The Workgroup received a presentation from Dr. Rick Gustafson on the bycatch of eulachon in the groundfish fishery. The 2018 BiOp for eulachon includes two incidental take thresholds that are designed to account for the fluctuating abundance of eulachon. The precautionary and reinitiation thresholds are five year geometric means of 0.01 percent and 0.02 percent of minimum Columbia River abundance. These thresholds are meant to be compared to a five year geometric mean bycatch estimate for eulachon, which is based on the mean generation time of the species and is calculated from the most recent year's and the four preceding year's bycatch count estimates in the West Coast groundfish fishery.

Total fleetwide estimated bycatch in U.S. West Coast groundfish fisheries increased from 68 eulachon in 2017, to 782 eulachon in 2018, and 3,121 eulachon in 2019. The increase in bycatch parallels recent increases in adult abundance estimates of eulachon. In 2018, the five-year geometric mean of eulachon bycatch in U.S. West Coast groundfish fisheries was 28 percent and 14 percent of the precautionary (1,602) and reinitiation (3,204) thresholds, respectively. In 2019, bycatch was about 30 percent of the precautionary (1,205) and 15 percent of the reinitiation (2,411) threshold. Therefore, these thresholds were not exceeded in 2018 or 2019.

The group noted that eulachon bycatch is commonly observed in the ocean (pink) shrimp fishery. While not subject to the groundfish BiOp, observed bycatch of eulachon in the ocean (pink) shrimp fishery is discussed in Appendix A of the eulachon report. Of note, was the increase in the eulachon bycatch and bycatch ratios in the Washington, Oregon ocean shrimp fisheries in 2018 and 2019. Eulachon bycatch in California ocean shrimp fishery remained low. The Workgroup discussed this may be attributed to the overall increase in abundance of eulachon in 2018 and 2019. The Workgroup also noted that use of green LED lights on trawl net footropes to reduce eulachon bycatch were required in Oregon and Washington beginning in 2018 with studies showing they achieve substantial reductions in eulachon bycatch.

Workgroup recommendations:

The Workgroup notes the importance of the Columbia River eulachon spawning stock biomass (SSB) survey. It is fundamental for monitoring the population and forms the basis for the Workgroup's estimates of abundance, and what the impacts of the groundfish fishery are measured against. As in past reports, the Workgroup commends the structure of the eulachon BiOp and its accounting for swings in catch rates that are likely due to swings in abundance. The SSB survey is conducted by WDFW and is supported in part by funding by NMFS's West Coast Region Protected Resources Division. The funding is made available through a yearly proposal process conducted by the WCR. The available funding varies year to year and is not guaranteed. The Workgroup recommends the Council express support for the continued funding of the SSB survey.

Green Sturgeon

The Workgroup received a report from Dr. Kate Richerson on the bycatch of green sturgeon in the groundfish fishery. Green sturgeon encounters in the groundfish fishery have been observed in the Limited Entry bottom trawl (prior to 2011), IFQ bottom trawl (2011-present), and at-sea hake sectors.

There are two distinct population segments (DPS) for green sturgeon on the West Coast: the Southern DPS and the Northern DPS. Only the Southern DPS is listed under the ESA. Neither DPS can be determined morphologically upon bycatch encounter, so a genetic stock identification (GSI) technique is used. The annual take of Southern DPS green sturgeon was estimated using individual assignments of GSI where available and an estimated ratio of Southern to Northern DPS by given catch area otherwise (48 percent for Washington and Oregon, and 96 percent for California coast). There have been zero green sturgeon bycatch observed in 2018 and 2019. The estimated number of Southern DPS green sturgeon encountered in the federally-managed sectors for 2015-2019 ranged from 0-12 per year. This is below the threshold of 28 individuals established by the BiOp. Therefore, the estimated bycatch of the Southern DPS of green sturgeon has not exceeded the ITS amount of 28 fish per year.

Most of the sturgeon bycatch occurs off the Columbia River mouth, with some off southern Oregon and northern California. Bycatch appeared to be highest in the spring at shallower tow depths (less than 40 fathoms). Trawl fisheries tend to operate in deeper water and this may be a factor in the overall low bycatch numbers of green sturgeon in that fishery. Most of the bycatch was sub-adults and most fish were released alive. There was no real relationship between depth of capture and sturgeon length. Bycatch is more likely to occur early in the year, and then again in November.

The report includes a section on the observed bycatch of green sturgeon in the California halibut trawl fishery, but this fishery is state managed and not part of the groundfish BiOp.

The report also includes a section on the observed bycatch of green sturgeon in the directed Pacific halibut fishery. NMFS started observing the Pacific halibut fishery in 2017. One green sturgeon was observed off California in 2019. The bycatch estimate was expanded to 2 fish based on the limited fishing effort and high observer coverage in 2019. The bycatch came from a vessel fishing in a relatively unusual place, so the bycatch event may not be reflective of the probability of bycatch overall. The vessel retained some groundfish under open access trip limits on the same trip. Since the primary purpose of the trip was established as Pacific halibut during debriefing, the Workgroup concurred with the report author that the bycatch would best be assigned to the Pacific halibut fishery. The Workgroup discussed how bycatch in the directed Pacific halibut fishery fits into the scope of our work. We noted the bycatch of ESA-listed green sturgeon in Pacific halibut fishery is covered in a separate BiOp specific to that fishery. The Workgroup recommended the bycatch information be passed along to the Pacific halibut managers for their own bycatch monitoring/accounting. Given that such bycatch is not applicable to the groundfish fishery BiOP, the Workgroup does not plan on reporting green surgeon bycatch from the directed Pacific halibut fishery in future reports, unless directed otherwise by the Council.

Workgroup recommendations:

The Workgroup had no recommendations with respect to green sturgeon.

Leatherback Sea Turtles

The Workgroup received a presentation from Mr. Scott Benson on the bycatch of leatherback sea turtles in the groundfish fishery. As in past reports, the best available data continues to show a continued and concerning decline of the species. The Workgroup's understanding of the science is that the main cause of the decline are animals caught or entangled by fishing vessels particularly outside of US jurisdictions, and predation and harvesting at nesting beaches in the western Pacific. New trend information from California foraging grounds is showing a long term decline similar to the trend at index nesting beaches in Indonesia.

As with other protected species considered by the Workgroup, the greatest difficulty in estimating leatherback sea turtle bycatch in fisheries managed under the Groundfish Fishery Management Plan is the rarity of encounters. Rare bycatch events are known to lead to high uncertainty when estimating total bycatch, especially if observer coverage levels are low, as is the case in the OAFG pot fishery.

No interactions with leatherback sea turtles were observed in the groundfish fisheries during the most recent five-year period (2015-2019). All U.S. west coast groundfish fisheries are therefore below the BiOp ITS take limit of an average of 0.38 leatherbacks per year for the most recent five-year period (and up to one turtle in a single year). The single take observed in 2008 in the OAFG pot fishery remains the only observed take of leatherback sea turtles in fisheries observed by the NWFSC FOS.

Bycatch was estimated using a Poisson model which is similar to the humpback whale model but without the Bayesian framework. The Workgroup brought up the idea that analysis for the next

bycatch report could explore using the Bayesian analyses being undertaken for humpback whales and short tailed albatross. Unless there are serious workload considerations, the Workgroup recommends exploring the same approach as taken for humpback whales and short-tailed albatross for estimating rare events and communicating uncertainty. This approach may be especially useful if another event (take) were to be observed and would better capture the bycatch risk.

With the great concern over the recovery of this species and its transboundary nature, NMFS Headquarters (HQ) is leading a group to investigate best available data and model approaches across the West Coast Region, Pacific Islands region, and the Office of Protected Resources. At the time of our discussion, the Workgroup was unsure about the scope of their work. Upon follow-up, NMFS WCR was informed that the NMFS HQ group is focused on species extinction risk/modeling, and not investigating bycatch-related modeling. NMFS WCR will keep the Workgroup informed about any relevant findings that emerge from the NMFS HQ group.

Workgroup recommendations:

The Workgroup highlights its concern for the declining trend in the leatherback sea turtle population. As this concern is primarily related to international fisheries and observer coverage issues, the Workgroup recommends the Council explore ways for the Council to support leatherback sea turtle recovery through the Regional Fisheries Management Organization (RFMO). As workload allows, the Workgroup encourages analysts to explore the rare event methods to model and estimate bycatch of leatherback sea turtles similar to STAL and humpback whale encounters.

Appendix A

Listed Species, ITS Amounts, and Estimated Catch.

Detailed bycatch reports are presented in the briefing book for this meeting. The table below shows the listed species covered in the NMFS and USFWS BiOps, the incidental take allowances, and the estimated catch from the bycatch reports.

Species	Incidental Take Amount or Extent of Take from BiOps	Estimated Catch	Incidental Take Amount Potentially Exceeded?
Humpback Whales	**Entanglements** – five individuals observed or estimated in any one year or a 5-year running average of 2.34 individuals per year	Estimate: 5-year average of 2.16 whale/year. Observed: 2013 – 0 2014 – 1 (Limited Entry sablefish pot) 2015 – 0 2016 – 1 (Open Access pot) 2017 – 0 2018 – 0 2019 – 0	No
Short-tailed albatross	**Injury or mortality -** should not exceed an estimated five albatross in a two-year period or one observed albatross in a two-year period	Estimate: mean bycatch of 0.2 to 1.8 albatross/year Observed: 2018 – 0 2019 – 0	No

Species	Incidental Take Amount or Extent of Take from BiOps	Estimated Catch	Incidental Take Amount Potentially Exceeded?
Eulachon	**Bycatch/handling or mortality** – The precautionary and reinitiation thresholds are five year geometric means of 0.01% and 0.02% of minimum Columbia River abundance	2018 – 728* 2019 – 3,121** * 28% of the precautionary threshold and 14% of the reinitiation threshold. ** 30% of the precautionary threshold and 15% of the reinitiation threshold	No
Green Sturgeon	**Non-lethal bycatch/handling in the fishery** - 28 fish/year expected and up to 86 fish/year in no more than 2 years within a period of 9 consecutive years; **Lethal bycatch in the fishery** - 2 fish/year expected and up to 7 fish/year in no more than 2 years within a period of 9 consecutive years.	2015-2019 bycatch estimates ranged from 0-12 per year Zero observed in 2018 and 2019.	No
Leatherback Sea Turtles	**Injury or mortality from entanglement** - 5-year average of 0.38 turtle/year and up to 1 turtle/year in a single year. One leatherback sea turtle mortality in 2008 in open access pot fishery.	Observed: 2006-2011 – 1 2012-2019 – 0	No

Appendix B

Pacific Coast Groundfish and Endangered Species Work Group Terms of Reference (June 2015)

PURPOSE:
The Pacific Coast Groundfish and Endangered Species Work Group is established pursuant to Section 302(g)(2) of the Magnuson-Stevens Act to serve as a multi-party advisory body to the Council for the purpose of supporting Endangered Species Act (ESA) compliance of the Pacific Coast Groundfish Fishery (Fishery) for green sturgeon, eulachon, humpback whales, Steller sea lions, leatherback sea turtles, and short-tailed albatross consistent with the requirements of NMFS and USFWS ESA Section 7(a)(2) biological opinions on the continuing operation of the Fishery.[1]

COMPOSITION:
The Work Group shall consist of 11 or more members as specified from each entity or category below. The representatives selected to serve on the Work Group shall have appropriate expertise in conservation of the aforementioned species, groundfish fisheries management, or quantitative analysis.

- Four taxa experts. One each for fish, marine mammals, sea turtles, and seabirds.
- One representative of the West Coast Groundfish Observer Program.
- Two representatives from the NMFS. One from the Protected Resources Division and one from the Sustainable Fisheries Division.
- One representative from the USFWS.
- Three representatives of State management agencies. One each from California, Oregon, and Washington.
- Other representatives as determined by the Council. Representatives in this category may be short-term appointments (e.g., one meeting) to address specific issues.

OBJECTIVES AND DUTIES:

1. The Work Group shall at a minimum convene on a biennial basis or more frequently as directed by the Council.
2. The Work Group shall review NMFS reports on annual tracking of observed take, fleet-wide take reporting, spatial and temporal characteristics of fisheries by gear type, observer coverage analysis and implementation plans, and other reports as outlined in the biological opinions or generated under 3.a, below.
3. Based on review of the NMFS reports, the Work Group shall

[1] The opinions are available here:

- https://alaskafisheries.noaa.gov/protectedresources/seabirds/esa/pcgf_biop1112.pdf
- https://pcts.nmfs.noaa.gov/pcts-web/dispatcher/trackable/NWR-2012-9437?overrideUserGroup=PUBLIC&referer=%2fpcts-web%2fpublicAdvancedQuery.pcts%3fsearchAction%3dSESSION_SEARCH

a. Recommend new analyses, reports, or changes to sampling protocols to improve bycatch estimates of the aforementioned species.
b. Consider whether the amount or extent of incidental take stipulated in the biological opinions is exceeded.
c. Consider whether new information reveals effects in a manner or to an extent not previously considered in the biological opinions.
d. Propose, for Council [2] consideration, conservation[3] and management measures to minimize bycatch of the aforementioned species. If directed by the Council, the Work Group will meet jointly with the Groundfish Management Team, Groundfish Advisory Panel, or other Council advisory bodies, to incorporate stakeholder perspectives in the development of management measures.

4. NMFS shall take a lead role in chairing the committee, developing agendas, developing or procuring review materials, and drafting and presenting Work Group reports.
5. Council staff will notice meetings, coordinate presentations to the Council and its advisory bodies, and provide logistical support.

[2] Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggested regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information.

[3] Conservation measures are actions to benefit or promote the recovery of listed species that are proactively taken to minimize or compensate for effects on the species under review. These may include actions taken prior to initiation of consultation or actions committed to through the course of a consultation.