December 12, 2022

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West Coast Regional Office
National Marine Fisheries Service

RE: U.S. West Coast Dungeness Crab Conservation Plans and Incidental Take Permits

Dear Mr. Yates,

We extend sincere thanks to you and your colleagues for meeting with our organizations on July 26, 2022, to discuss entanglements of humpback whales, blue whales, and leatherback sea turtles in the commercial Dungeness crab fisheries operating off the three U.S. West Coast states and the progress toward Conservation Plans (Plans) and Incidental Take Permit(s) (ITP). We appreciate the work that the National Marine Fisheries Service (NMFS) has afforded this issue to date. However, entanglements of endangered species continue to occur at an unsustainable level. Over the past several months since we met with you, humpback whale entanglements have been higher than expected, especially in the off-season. There have been 15 confirmed humpback whale entanglements off California in 2022, including two in Oregon Dungeness crab fishing gear. In the 2021 and 2022 calendar years, California's Dungeness crab fishery exceeded its regulatory three-year threshold for humpback whale entanglements and is again experiencing a season delay as a high number of humpback whales are present on the fishing grounds. This situation highlights the need to address the problem with greater urgency. Our organizations believe NMFS must establish stronger standards for conservation plans and take a more proactive role in directing and coordinating these efforts with and between the states. In the absence of such leadership, meaningful solutions are being delayed, and whales are continuing to be killed and seriously injured every year in West Coast fisheries at an unsustainable level. We submit this letter to detail our specific concerns and provide constructive recommendations on how the federal ITP process can be strengthened.

NMFS Must Assume Responsibility for the Development of Sufficiently Protective and Timely Conservation Plans

In order to ensure Conservation Plans meet legal requirements and are implemented in a timely manner, NMFS must direct the contents of Plans and the timing of their submission. We are concerned that NMFS has thus far deferred to individual states instead of assuming leadership. As a result, the draft plans are

inconsistent with each other, insufficiently protective of endangered species, and not being submitted on acceptable timelines. Though NMFS has expressed reluctance to do so, nothing in the law prevents NMFS from establishing such deadlines.

All three states currently operate their Dungeness crab fisheries and knowingly take protected species without authorizations required by the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). California was the first to enact a regulatory program to reduce take, but it did so only after a court-ordered settlement. Oregon and Washington currently lack robust regulations for preventing entanglements. Oregon has thus far failed to propose robust measures to reduce take in its draft Plan, and Washington has not yet released a draft Plan. Oregon's temporary measures are set to expire in the spring of 2023 with no replacements ready to put in place. It should not require additional litigation to motivate these states to act quickly to establish meaningful interim protections and develop fully protective Conservation Plans. NMFS can and should fill that role.

NMFS is the lead agency in this effort, the one ultimately tasked with ensuring the protection and conservation of marine mammals under the MMPA and threatened and endangered species under the ESA. By assuming the states will carry most of the responsibility of determining the details and timing of Conservation Plans, NMFS is falling short of its statutory requirements under the applicable federal law.

To date, NMFS has not established clear standards for assessing the adequacy of the three separate Conservation Plans and conducting its Section 7 consultation. To provide transparent, effective review of these plans, NMFS must establish clear standards on how it will apply its statutory mandates and Conservation Plan guidelines specifically to the entanglement issues in the West Coast Dungeness crab fisheries. How the agency will assess the adequacy of Conservation Plans is a necessary piece of guidance to provide to the states now while the plans are in development. NMFS must establish clear standards for management measures, monitoring, accounting for overall takes and cumulative impacts, and coordinated gear marking that each Plan must meet to gain authorization.

It is also crucial that NMFS provide stronger direction and support to prevent further delays by states in finalizing and submitting their Plans. Timely action is important because, collectively, current measures are not sufficient to reduce entanglement risk. Given the slow pace of action at the state level, NMFS must detail an expeditious timeline for states to submit their Plans and for NMFS to complete federal review. If any state fails to meet NMFS' timeline, NMFS must be prepared to immediately implement appropriate regulations to prevent entanglements.

Precautionary Management of ESA-Listed Species is Required

In the last decade, the number of ESA-listed humpback and blue whales observed entangled in U.S. West Coast Dungeness crab gear has significantly increased, and multiple Pacific leatherback sea turtles have also been observed entangled in West Coast Dungeness crab gear. Confirmed entanglements alone have approached or exceeded Potential Biological Removal for ESA-listed humpback and blue whales, could severely impact hard-fought recovery gains. Since the first state working group to address whale entanglement was initiated in California in 2015, there have been at least 120 ***confirmed*** humpback whale

entanglements and nine blue whale entanglements off Washington, Oregon, and California.[1] Mortality of a single Pacific leatherback turtle on the U.S. West Coast every six years exceeds the published limit reference point for delaying recovery.[2] Furthermore, the Western Pacific population of the Pacific leatherback sea turtle is a NOAA Endangered "Species in the Spotlight" that continues to decline on the U.S. West Coast.[3] The recent decade of elevated entanglement occurrences reflects a long-term problem requiring precautionary, forward-looking measures from state and federal agencies.

Fishing gear, particularly the vertical buoy lines associated with standard pot/trap gear, comprises the majority of *identifiable* entanglements.[4] Experts are unable to identify entangling gear to a fishery for approximately 50 percent of confirmed entanglements.[5] These confirmed, reported entanglements and estimates of serious injuries and mortalities do not reflect the actual number of entanglements that occur or the sublethal impacts they cause, such as nutritional stress, disease, and reduced reproductive success.[6] The apparent recent northward shift in distribution[7] indicates blue whales are using the waters off Oregon and Washington more frequently, where they are less likely to be observed. Entanglements, including those that are non-lethal, can impact individual and overall population health. Climate change and ecological disruptions are likely to have increasingly negative impacts on large whales. For example, the marine heatwave of 2014-2016 has been linked to an increase in entanglements off the West Coast, with the resultant habitat compression[8] driving whales and the Dungeness crab fishery into overlapping areas. NMFS must act now to take precautionary measures to reduce the level of entanglements and other anthropogenic threats pressuring already vulnerable species and to advance management measures with the states to ensure healthy whale and sea turtle populations can coexist with robust fisheries.

NMFS Must Estimate and Account for Unobserved and Unreported Estimates of Take using Best Available Science

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[1] James V. Carretta, Justin Greenman, Kristin Wilkinson, James Freed, Lauren Saez, Dan Lawson, Justin Viezbicke, and Jason Jannot. 2021. Sources of Human-related Injury and Mortality for U.S. Pacific West Coast Marine Mammal Stock Assessments, 2015-2019. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-643; NMFS Annual West Coast Whale Entanglement Summary Reports, available: https://www.fisheries.noaa.gov/west-coast/marine-mammal-protection/west-coast-large-whale-entanglement-response-program; CDFW Risk Assessment Updated Available Data. November 18, 2022. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=207325&inline

[2] Curtis KA, Moore JE, Benson SR (2015) Estimating Limit Reference Points for Western Pacific Leatherback Turtles (*Dermochelys coriacea*) in the U.S. West Coast EEZ. PLoS ONE 10(9): e0136452. https://doi.org/10.1371/journal.pone.0136452

[3] Benson et al. 2020. A long-term decline in the abundance of endangered leatherback turtles, Dermochelys coriacea, at a foraging ground in the California Current Ecosystem. Global Ecology and Conservation Volume 24, December 2020, e01371.

[4] James V. Carretta, Justin Greenman, Kristin Wilkinson, James Freed, Lauren Saez, Dan Lawson, Justin Viezbicke, and Jason Jannot. 2021. Sources of Human-related Injury and Mortality for U.S. Pacific West Coast Marine Mammal Stock Assessments, 2015-2019. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-643.

[5] Saez, L. et al. 2020. Large whale entanglements off the U.S. West Coast, from 1982 to 2017. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-63, 48 p.; Calambokidis, J. et al. "Insights into entanglements from whale population monitoring." Presentation to West Coast Entanglement Science Workshop, August 25, 2020. https://www.opc.ca.gov/webmaster/_media_library/2020/10/M.1-S.2_Calambokidis_Marine-Life.pdf.

[6] Stewart et al. 2022. Oldach, E. et al. 2022. Managed and unmanaged whale mortality in the California Current Ecosystem. Marine Policy, 140, https://doi.org/10.1016/j.marpol.2022.105039.

[7] Barlow, J. 2016. Cetacean abundance in the California Current estimated from ship-based line-transect surveys in 1991-2014. NOAA Southwest Fisheries Science Center Administrative Report LJ-16-01. 63p

[8] J.A. Santora, N.J. Mantua, I.D. Schroeder, J.C. Field, E.L. Hazen, S.J. Bograd, W.J. Sydeman, B.K. Wells, J. Calambokidis, L. S aez, D. Lawson, K.A. Forney. Habitat compression and ecosystem shifts as potential links between marine heatwave and record whale entanglements. Nat. Commun., 11 (1) (2020), p. 536.

NMFS must account for unreported or unobserved mortalities to accurately estimate the impact of West Coast Dungeness crab fisheries on ESA-listed species using the best available estimates and require Conservation Plans to use its estimates. To do so, NMFS must develop estimates of unreported and unobserved mortalities for inclusion in its ESA consultation and the resulting incidental take permits.

NMFS has reliable scientific information available to estimate the number of entanglements that go unreported and unobserved. Robbins et al. 2007 estimated a 50 percent entanglement rate for humpback whales off the U.S. West Coast based on a scarification analysis of photographs.[9] For the East Coast, Robbins and Mattila (2004) estimated using similar scarification studies that the number of reported entangled whales was only 10 percent of the actual number of whales entangled.[10] In 2013, NMFS scientists used this 10 percent reporting rate estimate to extrapolate that there could be an average of 103 whale entanglements off the U.S. West Coast per year, with 93 unobserved and undocumented.[11] The Structure of Populations, Levels of Abundance and Status of Humpback Whales (SPLASH) study provides an estimate that one-third to one-half of humpback whales off the West Coast has been entangled in fishing gear,[12] and recent analysis of scarring on Pacific humpback whales indicates that only 5-10 percent of entanglements are reported.[13] NOAA scientists used Bayesian models to estimate whale entanglement in the West Coast sablefish pot fishery based on fishery observer data.[14] Recent work by Richard Pace and colleagues to estimate the unobserved mortality rate for the North Atlantic right whale provides another useful approach,[15] and these estimates have since been incorporated into the risk reduction level NMFS is requiring of the Northeast American lobster and Jonah crab pot/trap fishery.[16] NMFS must use the results of these studies as the basis for estimating unobserved and unreported take in

[9] Robbins, J., Barlow, J., Burdin, A.M., Calambokidis, J., Gabriele, C., Clapham, P., Ford, J., LeDuc, R., Mattila, D.K., Quinn, T., Rojas-Bracho, L., Straley, J., Urban, J., Wade, P., Weller, D., Witteveen, B.H., Wynne, K. and Yamaguchi, M. 2007. Comparison of humpback whale entanglement across the North Pacific Ocean based on scar evidence. Unpublished report to the Scientific Committee of the International Whaling Commission. Report number SC/59/BC.

[10] Robbins, J., and D. Mattila. 2004. Estimating humpback whale (Megaptera novaeangliae) entanglement rates on the basis of scar evidence. Report to the Northeast Fisheries Science Center National Marine Fisheries Service. Order number 43EANF030121. May 13, 2004.

[11] Lauren Saez, Dan Lawson, Monica DeAngelis, Elizabeth Petras, Sarah Wilkin, Christina Fahy. 2013. Understanding the co-occurrence of large whales and commercial fixed gear fisheries off the west coast of the United States. NOAA-TM-NMFS-SWR-044. September 2013.

[12] Calambokidis, J. et al. (2008). SPLASH: Structure of Populations, Levels of Abundance and Status of Humpback Whales in the North Pacific. Seattle, WA: U.S. Dept of Commerce - Western Administrative Center, 57.

[13] Calambokidis, J. et al. (2020). Insights into entanglements from whale population monitoring. Presentation to West Coast Entanglement Science Workshop, August 25, 2020. hiips://www.opc.ca.gov/webmaster/_media_library/2020/10/M.1-S.2_Calambokidis_Marine-Life.pdf.

[14] Jannot, JE., Ward, EJ., Somers, KA., Feist, B., Good, TP., Lawson, D., and Carretta, JV. (2021). Using Bayesian models to estimate humpback whale entanglements in the United States West Coast Sablefish Pot Fishery. Frontiers in Marine Science, 27 October, 2021. https://doi.org/10.3389/fmars.2021.775187

[15] Pace III, Richard M., et al. "Cryptic mortality of North Atlantic right whales." *Conservation Science and Practice* 3.2 (2021): e346. https://doi.org/10.1111/csp2.346.

[16] *E.g.*, 87 Fed. Reg. 55,405 (Sep. 9, 2022). "In October 2021, the Atlantic Scientific Review Group (ASRG), recommended that NMFS calculate the risk reduction target with the total mortality estimates derived from the population estimate outputs suggesting that many more mortalities occur unobserved than can be accounted for by relying on observed mortality (Pace *et al.,* 2021). The ASRG recommended that NMFS assume those estimated but unseen mortalities be attributed to vessel strike or entanglements as those are the cause of nearly all observed mortalities. Finally the ASRG recommended that NMFS apply the most recent ratio of observed vessel strike to entanglement serious injuries and mortalities to the unseen mortalities to estimate how many were caused by entanglements each year . . . Applying these assumptions, NMFS estimates that to reduce right whale mortality and serious injury caused by incidental entanglement in U.S. commercial fisheries to below PBR, a greater level of risk reduction than originally anticipated across all regulated fisheries is necessary."

the West Coast Dungeness crab fishery unless, or until such time that, it has superior methods or data for doing so.

NMFS Must Ensure Conservation Plans Account for Cumulative Entanglements across all West Coast Fisheries

NMFS must ensure that: 1) the amount of incidental take it authorizes for each state and cumulatively for all three states is sufficiently protective under ESA and MMPA conservation requirements; and 2) management measures set forth in the Conservation Plans collectively will be effective in constraining take to those levels and otherwise promote conservation of the species. NMFS needs to establish clear requirements for individual state Conservation Plans to address the cumulative impacts of entanglements. West Coast populations of humpback whales, blue whales, and leatherback sea turtles are transboundary stocks such that impacts within one jurisdiction affect their range-wide populations. "Potential biological removal" and "jeopardy" are not state-specific, and NMFS cannot simply divide impacts by state and fishery to make negligible impact determinations.

While NMFS may issue separate ITPs for each state and for different fisheries within each state, NMFS must ensure that cumulative incidental take across all fisheries of the three states meets the criteria for a negligible impact determination. This requires all Conservation Plans to include a consistent coastwide entanglement limit and statewide limits whose sum is below the threshold for negligible impact.

NMFS Must Set Minimum Requirements for Conservation Plans and ITP(s)

To ensure the effectiveness of Conservation Plans and the ITP(s), as well as provide for more consistent risk reduction action across states, NMFS should set the following minimum requirements for all three West Coast states:

1. **Require States to Limit the Season in which Standard Vertical Line Crab Gear is Allowed**

To adequately minimize entanglement risk and provide a predictable fishing season, NMFS should require Conservation Plans to shorten the season for crab fishing using standard vertical lines to only the period when whales and sea turtles are historically absent from these foraging grounds and entanglements have been minimal. The season where standard vertical lines are allowed is too long in all three West Coast states. Despite resource-intensive monitoring to determine fishing zone closures under the Risk Assessment and Mitigation Program, California has already surpassed three-year entanglement thresholds in less than two years.[17] Even with intensive monitoring, management has been unable to respond to real-time entanglement risk and minimize entanglements, and this has resulted in significant uncertainty for the fishery. In Washington and Oregon, where the season has not been limited to reduce entanglement risk to date, too many entanglements continue to occur. Pop-up (i.e., "ropeless" or "on-demand") fishing systems could be used outside the period of standard vertical line fishing during the normal crab season for each state.

2. **Require Hard Annual Limits on Entanglements at Regional and Coastwide Scales**

[17] CDFW Final Assessment of Marine Life Entanglement Risk and Management Recommendation. November 21, 2022. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=207351&inline

In addition to shortening the season for standard vertical line crab gear, NMFS should require regional and coastwide limits on confirmed observed entanglements that close areas to vertical line gear if met or exceeded. These should include lower state and/or regional entanglement triggers that close specific areas to vertical line gear if met or exceeded and a higher cumulative trigger that closes the entire Dungeness crab fishery off all three states if met or exceeded. The triggers should be set at levels such that the sum of estimated total Dungeness crab fishery entanglements and expected takes in other West Coast fisheries (including unreported and unobserved entanglements) do not exceed the negligible impact threshold.

3. Require Unique Dungeness Crab Line Marking for Each State

Gear markings on buoys and lines must allow for accurate and unequivocal identification of the fishery and state. To accurately assess impacts and correctly attribute entanglements to each fishery and state, it is critical that NMFS require states to develop unique gear marking requirements on surface buoys and lines and proactively assist and coordinate across states. This requires states not only to require unique gear marking for Dungeness crab fisheries but also to prohibit the use of similar gear marking in all other fixed gear fisheries.

To date, gear marking requirements are insufficient to positively attribute all Dungeness crab gear to its respective state or negatively attribute gear that is not Dungeness crab gear, as evidenced by the large number of "unidentified entanglements" in 2022. While we are encouraged that the West Coast states are coordinating on the development of line marking schemes to differentiate fisheries, they are at different stages of advancing gear marking in their regulatory processes. Efforts to date have largely focused on marking the surface systems, including differently shaped buoy tags and buoy color schemes, which are not always present in an entanglement. Line marking must be evident on all sections of line and should be done in coordination with line manufacturers.

Until gear marking is fully implemented, NMFS should set lower take limits on Dungeness crab fisheries in order to account for entanglements that may involve Dungeness crab gear but cannot be positively identified. As the expert agency charged with identifying gear involved in active entanglements and examining gear after a disentanglement, NMFS should work closely with all three states to ensure that gear marking is sufficient for unequivocal attribution of the gear in all confirmed entanglements.

4. Mandatory Electronic Monitoring of Dungeness Crab Vessels to Identify Real-Time Locations of All Deployed Traps

Assessing and preventing entanglement risk requires fine-scale information on location, amount, and distribution of crab traps in real time to identify areas of co-occurrence with covered species. Therefore, NMFS should require all Conservation Plans to include mandatory electronic monitoring of fishing vessels at a fine scale. We are aware that tri-state discussions of electronic monitoring are underway and that each state has made a commitment to implement some form of electronic monitoring requirements in the coming years. However, the specifics of a coordinated electronic monitoring regime have yet to be established. NMFS should require all three states to develop a coordinated tri-state electronic monitoring plan as part of their Conservation Plans that enables fishery managers to accurately identify the location of all deployed commercial Dungeness crab traps on a daily basis, with no more than a 24-hour delay.

For example, the Automatic Identification System (AIS) is readily available to meet the electronic monitoring needs with respect to wildlife entanglements by providing real-time vessel tracking. Because AIS is public information, it can be used by existing software and machine-learning algorithms such as Global Fishing Watch[18] to accurately infer all trap locations, thereby providing real-time fishing effort information to managers free of charge. Additional options available or in development include Vessel Monitoring Systems (VMS), already used by some fishing vessels, or solar loggers; however, these solutions will need to report vessel location at a sufficiently fine scale and be coupled with analysis tools to allow managers to infer individual trap locations.

5. Pop-up Gear and other Innovations

While much effort has been allocated to exploring gear modifications and innovations to avoid entanglements,[19] the only proven method to date is to eliminate the vertical lines through the use of pop-up (or "ropeless" or "on-demand") gear.[20] Pop-up gear has been tested in California, on the East Coast, and other regions globally[21] and has been shown to be reliable, enforceable, and detectable.[22] Clarity from NMFS that pop-up gear is a viable means to access areas that are otherwise closed to vertical lines would help create additional incentives to test pop-up gear.

We appreciate NMFS' support for the use of pop-up gear, including recent funding for West Coast trials. However, the agency's work to advance this technology on the West Coast has lagged behind its efforts on the East Coast. NMFS Northeast Fisheries Science Center has produced a draft "Ropeless Roadmap" for U.S. Atlantic trap fisheries.[23] which could be adapted for West Coast states. NMFS is actively engaged in Exempted Fishing Permits and directly participating in pop-up gear testing in the U.S. Atlantic. NMFS even produced a video entitled "Lose the Rope, Give Whales Hope," showcasing their progress working with fishermen to advance pop-up gear.[24] We urge NMFS to take a more active role in pop-up gear testing and technology development on the U.S. West Coast and create strong policy incentives for fishermen to adopt pop-up gear. NMFS's requiring of a shortened season for the use of standard vertical lines, along with hard limits on entanglements, will create strong incentives for the fleet to develop and advance pop-up gear as a solution. To address the requirements for a shortened vertical line season, NMFS should require each West Coast state to include a "roadmap" within their Conservation Plan that outlines their approach and timeline to the authorization of pop-up gear. Within these plans, states should identify the opportunities and necessary steps to authorize the use of pop-up

[18] https://globalfishingwatch.org/.

[19] National Marine Fisheries Service and Pacific States Marine Fisheries Commission: Forensic Review Workshop Report: Reviewing the Gear Involved in West Coast Whale Entanglements. August 29-30, 2018. https://habitat.psmfc.org/wp-content/uploads/2018/10/Forensic-Review-Workshop-Report.pdf

[20] Lebon, K.M. and R.P. Kelly. 2019. "Evaluating alternatives to reduce whale entanglements in commercial Dungeness Crab fishing gear," Global Ecology and Conservation 18:e00608 https://doi.org/10.1016/j.gecco.2019.e00608

[21] www.ropeless.org

[22] *E.g., see* Oceana and Sub Sea Sonics. 2022. At-Sea Trials of Sub Sea Sonics Timed Release Pop-up Fishing Gear in Central California Crab Fisheries: September – December 2021. Summary Report Published December 2022. https://usa.oceana.org/wp-content/uploads/sites/4/2022/12/Summary_Report_TR4RT_Pop-up-Reliability2021.pdf. *See, also,* https://ropeless.org/relevant-publications-and-reports/.

[23] NMFS Northeast Fisheries Science Center. 2022. Draft Ropeless Roadmap: A Strategy to Develop On-Demand Fishing. https://media.fisheries.noaa.gov/2022-07/RopelessRoadmapDRAFT-NEFSC.pdf

[24] https://www.fisheries.noaa.gov/video/video-lose-rope-give-whales-hope

gear and establish a proposed transition path, including identifying means of economic support for fishing communities to transition gear. NMFS should help ensure that necessary components of a pop-up gear management strategy, including virtual gear marking, are coordinated across states.

In addition, NMFS should make clear to the states that other proposed means for reducing entanglement risk in Dungeness crab gear, including acoustic pingers and breakaway lines, have not proven successful, and voluntary "best practices" will not be deemed sufficient to achieve the risk reduction required under Conservation Plans.

Industry members have also expressed interest in exploring the use of multiple traps per vertical line, which has long been prohibited in Dungeness crab fishing for a variety of reasons. While we recognize that this reduces the number of vertical lines per trap and may reduce the density of lines that animals encounter, this practice may increase the severity of entanglements that occur due to the heavier weight of multiple traps. Higher-breaking-strength vertical line may be required to haul the gear, and groundlines connecting multiple pots may themselves become an entanglement risk. However, using multiple traps connected by a groundline with a pop-up retrieval system at both ends of the line of traps may increase fishing efficiency and reduce the number of units of pop-up gear needed to fish a given number of traps. Therefore, we request that NMFS require that any exploration of multiple traps connected by groundlines only be used in conjunction with pop-up gear.

6. Preventing and Retrieving Lost Crab Gear

Preventing and recovering lost gear will further limit co-occurrence and entanglement risk, as lost gear may still be attached to vertical lines and buoys**.** California's draft Plan estimates 7,000 to 14,000 traps are lost each season, with less than 5 percent of lost traps recovered.[25] The draft plan includes voluntary measures to assess gear loss and a lost gear recovery program as the primary means to address gear loss. We believe these are insufficient, and NMFS should require stronger measures to accurately assess and prevent gear loss in all Conservation Plans. The Plans should also recognize that successful implementation of pop-up gear could help reduce gear loss.

NMFS Must Require Minimum Standards and Provide a Framework to Ensure Coordinated Monitoring Across States

The success of the ITPs and Conservation Plans are, in large part, reliant on federal and state monitoring plans that are robustly designed, well implemented, coordinated across states, and responsive to the dynamic nature of whale, sea turtle, and fishery distributions. NMFS is ultimately responsible for setting minimum standards for population monitoring of covered species, making sure monitoring protocols are standardized and coordinated, and ensuring states have sufficient funding and resources to carry out the monitoring required in their Conservation Plans. We recommend that NMFS require the following minimum monitoring requirements in each state's Conservation Plan:

- Systematic aerial and/or vessel-based surveys conducted at least once per month, and more frequently during the fishing season, to monitor whale and sea turtle occurrence, abundance, and relative density and to detect any entangled animals.

[25] California Draft Conservation Plan. Section 5.4.

- Archival and near real-time passive acoustic monitoring of whale vocalizations to better understand the timing of migration and habitat use off the coasts of the three states.
- Dedicated survey effort for entanglement events, including the estimated timing and origin location of the entanglement, to fill gaps in the current opportunistic reporting.
- Longitudinal scar and health studies to improve estimates of the unobserved and unreported mortality rate associated with entanglement, as well as the chronic and sublethal impacts of non-fatal entanglements on covered species.

Conclusion

We offer these detailed concerns and recommendations to ensure that the effort all entities are putting into these plans results in the robust, science-based protective measures required by law and supported by West Coast communities that are invested in healthy marine ecosystems. We appreciate NMFS' efforts and communications with our organizations thus far and urge NMFS to fully step into its role as the agency responsible for ensuring the Conservation Plans and associated ITPs meet ESA and MMPA requirements.

Sincerely,

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