



California Whale Entanglement Discussion Dungeness Crab Fishing Gear Working Group Summary of Key Themes, August 1-2, 2018

The California Dungeness Crab Fishing Gear Working Group held an in-person meeting on August 1-2, 2018 to continue evaluating the Risk Assessment and Mitigation Program (RAMP) pilot and refine the RAMP's structure and function in advance of the 2018-19 fishing season. Objectives for the August meeting included:

- *Continue to evaluate the RAMP 2017-18 Pilot, and confirm and/or update the RAMP's structure and function as outlined during the April in-person meeting.*
- *Brainstorm on a draft framework for a potential RAMP rulemaking package, including how CDFW would implement recommended management measures.*
- *Continue to fine-tune the RAF factors, including objective criteria and guiding questions.*
 - *Discuss pilot projects conducted to-date and identify priority research projects for the 2018-19 season with specific focus on informing the RAMP.*
 - *Learn about socioeconomic research being conducted by NOAA's Northwest Fisheries Science Center and explore how/if this information can help inform the RAMP.*
 - *Begin to learn about other marine species that could be included in the RAMP, starting with a brief introduction to blue whales.*
- *Confirm communications plans for August-September to share updates with target audiences, including strategy for introducing the RAMP to other fixed-gear fisheries.*
- *Receive updates on the status of available funding in the near and longer-term, as available.*

The following summary captures key themes discussed by the Working Group and its advisors during the August 1-2, 2018 meeting; it is not to be considered a transcript. **Feedback from fishermen, decision makers, and others on the ideas and concepts discussed during the August meeting is welcome and can be shared directly with the Working Group at info@cawhalegroup.com.**

The summary, in addition to other meeting materials and products, have been made available to the California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), the Ocean Protection Council (OPC), and the California Dungeness Crab Task Force (DCTF). This summary will also be shared with the Fish and Game Commission and California State Legislature, along with fishing associations and leadership throughout California.

Summaries are developed following all Working Group meetings, and are designed to provide Working Group participants with information to share and discuss with their peers, as well as inform ongoing discussions within the Working Group itself. Additionally, these summaries will act as a source of information for those interested in this topic. Previous meeting summaries, memos, and other information about the Working Group is available at <http://www.opc.ca.gov/whale-entanglement-working-group/>.

2017-18 RAMP Pilot Reflections

During its August 2018 meeting, the Working Group continued to discuss lessons learned experienced during the 2017-18 RAMP pilot and used a document summarizing reflections to-date ([here](#)) to guide the discussion.

Overall, Working Group participants are pleased with the progress made on the RAMP and looks forward to working to fine-tune and implement the program in the 2018-19 fishing season. The Working Group identified a need to make clearer connections across risk assessment factors (i.e., entanglements, forage/ocean conditions, whale concentrations, and fishing dynamics) and continued improvement and evaluation of data streams to inform the factors, and improved communications with the fleet. There is also an interest in looking at other efforts (e.g. the East Coast lobster fishery) to inform the RAMP moving forward.

As the core tool of the RAMP, the risk assessment framework (RAF) proved to track entanglement risk well. However, participants reflected that the RAF and its data inputs should help better understand where whales are in relation to Dungeness crab fishing gear at key points in the season. More consistent aerial surveys and communications with the fleet may help address this data need in a more timely fashion. Data from these sources should be verifiable and reliable. A suggestion was also made that trained observers could join fishermen and help support the whale reporting needs. Additionally, since the RAF only assesses the risk to Humpback whales in relation to the commercial Dungeness crab fishery, the Working Group highlighted the need to consider impacts from other fisheries (e.g., coonstripe, hagfish, rock crab, lobster, etc.) and risks to other species (e.g., blue whales).

Aerial surveys were discussed at length and highlighted as an important snapshot of real-time information to help confirm and/or inform the RAF conclusions and the concentrations of whales. Two types of aerial surveys were performed during the pilot: systemic and opportunistic aerial surveys. Both types of surveys served important purposes and the Working Group discussed the importance of ensuring consistent methods in the systematic surveys. The results of those surveys should be communicated with the fleet more rapidly to ensure the fleet is informed of the concentrations of whales when that data is known. The Working Group also acknowledged that there are timing and weather constraints associated with aerial surveys that can be difficult to navigate.

During the RAMP pilot six (6) electronic communications were circulated to the fleet to provide updates on risk assessment framework, or the status of the risk of whale entanglements in the Dungeness crab fishery. These assessment updates were received by the broader Dungeness crab fleet and resulted in mixed responses with some fishermen changing behavior as a result of the communication and others maintaining status quo. The Working Group discussed the idea that some fishermen may be resistant to change, and that the goal of the Working Group should be to provide information to educate the fleet and recognize that not everyone will see the issue. Participants suggested developing a fleet-wide survey to gather feedback on the effectiveness of these communications and the RAMP overall.

Continuing to Refine the RAMP's Structure and Function

Building on discussions during their April meeting ([here](#)), the Working Group continued to fine-tune the RAMP in advance of the 2018-19 fishing season. The ideas outlined below are considered draft. Working Group participants will be reaching out to their peers and colleagues in advance of the Working Group's September 2018 in-person meeting where the Working Group will further refine the RAMP for implementation during the 2018-19 fishing season.

RAMP Structure

- *Member Appointments and Alternates:* The Working Group discussed how to ensure the representation on the Working Group continued to balance the various interests, a reduction in the burden to Working Group participants who are not always able to participate in meetings, and new participants are able to join the Working Group while also ensuring institutional knowledge with veteran participants on the Working Group. The Working Group also confirmed the need for alternates and that all members and their alternates will be vetted and appointed by the Governor through a publicly notified, nomination

process (e.g., self nomination and/or by peers). Qualifying criteria (e.g., ability to participate in in-person meetings and conference calls, violations, etc.) would be developed and participants would be subject to 3-year terms. The group agreed to have a staggered nomination/appointment process at the end of each 3-year term to maintain institutional knowledge within the Working Group where new participants join the Working Group following the close of a fishing season. Participants continued to suggest the need to add a fishing participant from all commercial ports, including the Santa Cruz area. Additionally, there was interest in adding another recreational fishing representative from a northern port. Looking to other models for inspiration (e.g., regional councils), the Working Group suggested new members and alternates be required to participate in educational trainings to ensure all participants are starting from the same baseline of information. There may also be value in creating a Working Group “user’s guide” to support training new members and alternates.

- **Evaluation Team:** The Working Group continued to consider the composition of the Evaluation Team (ET), a subgroup of the Working Group that is responsive under circumstances of elevated risk. The ET should convene within 24 hours to one week depending on the urgency of the issue. Once the ET is convened, the process to collect additional information and develop recommendation(s) should occur within 1-2 days or up to 1-2 weeks. As time allows, the ET would provide a draft recommendation to the full Working Group and allow them to review it for up to 72 hours before the recommendation is forwarded to the Director. Although the ET should have as broad participation from the Working Group as possible, to help ensure the ET is nimble and can assemble quickly (i.e., within 24-48 hours). The group suggested streamlining the minimum composition required for an ET to convene. The requirement for a recreational/CPFV participant was removed and the group agreed to remove a minimum number of agency representatives. Discussions to potentially reduce the number of representatives from non-profit organizations from 2 to 1 will be revisited during the Working Group’s September meeting. The agencies will work to ensure specific regional representation is in attendance and local fishermen (or others) may also be invited to lend additional expertise. The Working Group suggested that the agencies continue to encourage as many Working Group participants to be present during ET conversations as possible.

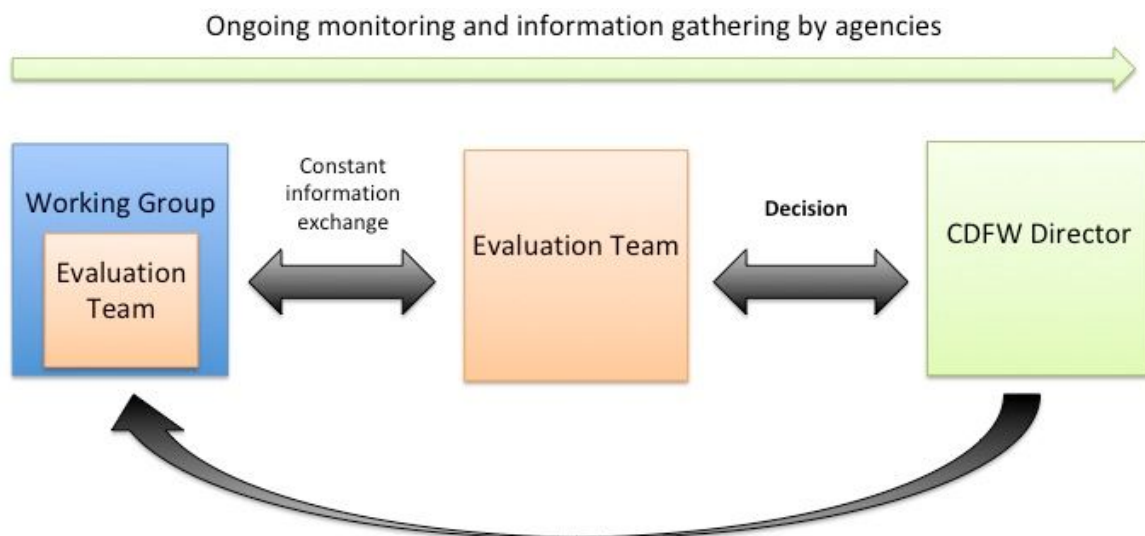


Figure 1. Flowchart illustrating the communication flow across RAMP groups, including the development of management measure recommendations from the Evaluation Team to the CDFW Director for consideration.

RAMP Function

- **Meeting Schedule & Day Rates:** The Working Group discussed a general annual RAMP meeting schedule to include four (4) planned risk assessment evaluation conference calls (pre, mid, late, and postseason) and one (1) in-person annual meeting (likely late summer early fall). Additional unplanned conference calls when the ET is convened are also anticipated. The group confirmed the need for an established day rate to help offset lost wages of fishermen and others, specifically, when attending in-person RAMP meetings and potentially conference calls. Participants suggested a stipend of \$500 per meeting plus travel expenses would be reasonable. Working Group participants will consider funding sources and the mechanics of issuing stipends to participants.
- **Risk Assessment Framework (RAF):** The RAF continues to be seen as a useful tool to assess risk in a given time. However, the Working Group believes the RAF needs clearer connections across risk assessment factors (i.e., entanglements, forage/ocean conditions, whale concentrations, and fishing dynamics) and continued improvement of access to and evaluation of data streams to inform the factors. The Working Group will continue to discuss options for refining the available data to inform the factors, especially the whale concentration and fishing dynamics factors, to better inform the RAF assessments and options for scoring factors in a way that better balances expert judgement with more objective and systematic criterias. The Working Group clarified that the criteria for each factor are related to when an ET is convened, not when a management measure is recommended. There may be instances where the agencies use their own judgement to convene an ET even when the criteria have not reached a trigger.
 - **Whale Entanglement Factor:** Participants generally agreed that the current criteria for this factor seemed right. The criteria to indicate elevated risk and convene an ET were slightly updated to be clearer: “Any season/offseason where 5 or more humpback whale entanglements are confirmed by NMFS and suspected/reported with CA Dungeness crab gear, or 2 or more humpback entanglements confirmed by NMFS in a month suspected/reported with CA Dungeness crab gear.” Since the factor tracked issues beyond commercial Dungeness crab, there is a need to consider other fisheries in the assessment of this factor (see below) and better understand how to characterize those entanglements when considering action on the Dungeness crab fishery. Finer-scale data would also be helpful to communicate to the fleet where the entanglement are both occurring and/or being observed. The Working Group also acknowledged that this factor was unique since it is “retroactive.” Therefore, it will be important that the other factors are fine-tuned to help the RAMP be more proactive to risk rather than responsive.
 - **Forage/Ocean Conditions:** The Working Group acknowledged that forage and ocean conditions is an important factor informing the RAF. Suggestions were made to utilize broader data sources to inform this factor to better anticipate geographic and temporal changes in forage patterns. Suggestions were also made to better connect this factor to the whale concentrations factor. While there are opportunities to make this factor more systematic and automated, the Working Group believes the interpretation of this factor should reserve some judgement so that there is a balance of subjectivity and objectivity. The Working Group will consider how to support a project to enhance this factor and will look to Working Group advisors to help inform the discussion. Additionally, funding is needed to help support the continued compilation and interpretation of this factor by experts.
 - **Whale Concentrations:** The factor has been tracked using Monterey Bay Whale Watch (MBWW) data, opportunistic and systematic aerial surveys, and observations from fishermen in a text thread. Other data sources were also identified that could be used to better understand whale distribution, including including HappyWhale, WhaleAlert, northern and southern California whale watch vessels, and ACCESS research cruises. Constraints were identified with all of the data sources being considered. More detailed spatial and seasonal whale/prey models are under

development but will take time to complete and validate as part of the RAMP. The MBWW data that has been heavily relied on to-date is very localized and doesn't provide a broad picture of presence/whale activity along the coast and questions about how well this information relates to general whale migration patterns. As a result, there is interest in exploring other datasets that could inform dynamic migration patterns as well as data that moves beyond our seasonal understanding of whale patterns to better understand spatial and temporal changes. Additionally, the Working Group suggested refining the criteria to reflect when dynamic whale concentrations are at play, changes in forage patterns, etc. The Whales Project Team will convene prior to the September meeting to consider alternative, credible, standardized data sources to better understand the spatial and temporal concentration of whales and consider updating the criteria.

- **Considering Other Marine Species:** A presentation on blue whale behavior and biology was also provided and the Working Group will consider potential updates to the RAMP to include blue whales, which will be piloted during the 2018-19 fishing season. The Working Group requested the blue whale experts at the meeting to develop draft blue whale risk assessment criteria and guiding questions across the factors for discussion at the September 2018 in-person meeting. The Working Group agreed to include blue whales, in addition to humpback whales, in the 2018-19 RAMP.
- **Fishing Dynamics:** The Working Group was supportive of the criteria established and data used to inform this factor, but highlighted that it does not inform whether and where fishing effort may move. For example, landings data indicates when effort has decreased, but it does not indicate whether there is less gear in the water. There are also opportunities to look at historical landing patterns, international markets, make-up of the fleet (e.g., local and traveling vessels), CPUE, price differences in the northern and southern extents of the fishery, and fishing trade-offs to inform the interpretation of this factor. The Working Group also highlighted that the factor should make stronger connections with the forage factor.
 - **Fishing Dynamics:** The Working Group received a presentation by NOAA's Northwest Fisheries Science Center ([here](#)) that considered PacFIN and VMS data to try to understand how/if the California Dungeness crab fishery has changed over time. VMS data was looked at over the last eight seasons and informed by other data sets. The data is potentially biased since it is more reflective of vessels larger than 40 feet. The goal of the research is to understand the costs and benefits to the fishery and to the whales under different ocean conditions and how to minimize economic losses during domoic acid years while addressing rise in whale entanglements. The group expressed interest to continue working with NOAA scientists and other outside experts to inform socioeconomic considerations in the RAMP.
- **Data Collection Tools:** Data was well tracked using aerial and vessel surveys, whale watch data, landings information, a group text function between agencies and fishermen and entanglement reports. Aerial surveys and the fishermen's text thread were identified as valuable real-time information gathering tools during the pilot that should be expanded and scaled in the RAMP moving forward. Looking ahead E-Tix ([here](#)) may be a useful information gathering tool and CDFW may consider including a prompt to gather information about where the landed crab was caught. Working Group participants were not supportive of using block numbers to gather this information since many individuals would likely report inaccurate block numbers. Instead, there were suggestions to use GPS coordinates or landmarks to indicate where crabs were caught on E-Tix. Working Group participants believed solar loggers were a more efficient tool to inform the fishing dynamics factor than VMS and AIS and suggested solar loggers to a more diverse cross-section of the fleet and whale watch vessels in the upcoming season.

- **Communications:** Communicating with the fleet throughout the season on the status of the RAMP, and RAF scoring specifically, is paramount to ensuring response from the fleet and success of the program. While broad communications attempts were successful, suggestions were made on tools that may be more effective in reaching the fleet and encouraging changes in fishing behavior as needed (e.g., real-time maps of whale concentrations, visuals, broader text thread, etc.). The Working Group highlighted that there was mixed responses during the pilot to the updates shared by the Working Group where some individuals moved their gear out of whale “hotspots” while others were resistant to changing their behavior and others weighed risk of entanglements with reward of fishing efforts, especially during the spring and summer months. The whale concentrations were identified as one of the most important data streams to share with the fleet as it is available.

Informing CDFW’s Rulemaking Process

Senate Bill 1309 ([here](#)), if passed, will formalize the RAMP and would require the California Department of Fish and Wildlife (CDFW) to develop Title 14 regulations by November 2020 that would be reflective of the RAMP details. The Working Group, with support from CDFW, brainstormed on how to ensure the right level of detail was included in a draft RAMP regulatory package to guide its implementation while also ensuring sufficient flexibility to support unforeseen issues and continued research and development of new tools. Scaling of regulations, communications to the fleet, response time of the fleet, rigor of data to inform decision-making, and the list of management measures that could be considered by the Director were all discussed. Codifying the use of verifiable tools (e.g., E-Tix, solar loggers, etc.) to inform the RAMP and the decision-making process may be considered in the rulemaking or could be included in guidance materials to support the regulations.

- **Process for Removing/Relaxing a Management Measure:** The Working Group highlighted that in addition to implementing management measures, the Director should also have the authority to relax those measures once the risk of entanglements has abated. The ET should provide guidance on how to relax the measures when they submit the recommendation to implement the measure(s), which may consider timing (e.g., how close to the end of the season, etc.), distance to other open/closed areas, port infrastructure (i.e., availability of hoists and gear storage space), access to gear (e.g. ocean conditions, boat size), how “fished out” the area is, etc. The Working Group highlighted that if there are less than three weeks remaining in the season, it may not be economically viable and a good use of the agencies’ time to reopen the fishery.
- **Management Measures Toolbox (MMT):** The MMT was reviewed, discussed, and further refined ([here](#)) to consider what could be addressed in CDFW’s current rulemaking directive. Some tools were removed from the main list of tools and moved to a ‘Research and Development Ideas’ section until there was a better understanding of how they could be implemented and enforced. The group acknowledged the need to ensure the MMT could continue to be populated over time as new concepts and ideas arise and are tested. All tools should be implemented in a “focused” way to ensure they are scaled in focused on the area (e.g., block, depth contour, port, etc.) of the problem, not coast-wide. Suggestions for other tools include reducing the amount of gear in an area, time-specific fishing permits (e.g., spring permits), gear innovations, monetary incentives to not fish, etc. Reducing the number of traps in an area was a concept that the Working Group supported continuing to explore. Suggestions were made to modify trap tag colors to ensure the tool could be enforced. The MMT guiding principles ([here](#)) were also updated to be clear that the level of response will be relative to the risk of entanglement and may also be included in the rulemaking process. Participants suggested that these Guiding Principles be incorporated in the rulemaking and to inform the intent of the regulations. These Guiding Principles may be further wordsmithed by CDFW during the rulemaking process.
 - **Gear Innovations:** The Working Group discussed the initial “hands on” testing of acoustic release/ropeless gear technology that was conducted in Spring 2018 involving a number of Working Group participants (see brief summary report [here](#)). The group discussed how the

- technology was not “shovel ready” as currently designed and requires additional discussions and improvements specific to design, function, costs, enforcement, and impacts to whales and other marine life. There was some interest expressed to continue exploring this and other gear innovation ideas for consideration to include in the MMT, however it was agreed that these gear innovations would not be available to be implemented for the 2018-19 fishing season (at minimum).
- **Informing the Fleet of Regulations:** Agencies should immediately issue a notice to the fleet once the ET has been convened. All fishermen should be required to provide an updated email address to CDFW to ensure they can receive timely communications. Regardless of the management measure selected by the ET and/or Director, clear communications must be shared with the fleet as quickly as possible to ensure the fleet has ample time to respond. Additionally, any plans to relax management measures should also be included in those communications to allow fishermen to prepare and anticipate changes in their business.

Brainstorm on Reaching Out to Other Fixed-Gear Fisheries

During the pilot, 5 of the 26 confirmed entanglements that were identified as originating from the California Dungeness crab fishery highlighted the need for state and federal agencies to also engage with other fixed-gear fisheries to more fully address the risk of whale entanglements in fishing gear. Engaging with other fisheries on this topic will be complex moving forward. While the agencies do not have the resources to convene separate Working Groups for each fishery, it will be important that all of the fixed-gear fisheries are fairly represented and can engage in a conversation on the topic. Additionally, due to the different seasonalities, fishing operations, etc. methods to address the risk of whale entanglements in those fisheries may be different than those identified for Dungeness crab.

The Working Group’s efforts to-date have mostly focused on the commercial Dungeness crab fishery with little effort invested into the recreational Dungeness crab fishery. The recreational and Commercial Passenger Fishing Vessel representatives on the Working Group were supportive of reaching out to the broader recreational fleet. Last year, the Working Group developed a survey ([here](#)) to gather information from the recreational fleet to inform the RAF. While the response rate to the survey was low, there was support in broadening communications and expanding the recreational survey to inform the fishing dynamics factor. Since it would be unfair to disproportionately implement closures and other effort reducing regulations on the commercial fishery while allowing the recreational fishery to operate business as usual, the Working Group generally agreed there was value in expanding communications and engaging with the recreational fleet. Since the recreational fishery is managed through the Fish and Game Commission (Commission), efforts also need to be made to inform the Commission of this issue.

Recognizing the sensitivities associated with the issue, the Working Group will look to CDFW to initiate the conversations with the other fisheries and the Working Group could facilitate the effort by sharing information including the updated Best Practices Guide ([here](#)), the final surface gear regulations (CCR Title 14 Section 132.6), forage factor information, and MMT guiding principles ([here](#)). There could also be opportunities for CDFW to host a webinar or invite fixed-gear fishery leadership to a Working Group meeting to facilitate information sharing. The Working Group also welcomes the opportunity to be of service to the other fisheries’ efforts.

Surface Gear Rulemaking

CDFW requested the Working Group’s feedback on input received by the DCTF on the surface rulemaking package ([here](#)). The DCTF were in support of the proposed regulations in general, and made the suggested amendment to allow for an additional buoy to be included in the shallower depth range and include a clarification on how to measure the distance between the main and trailer buoys. The Working Group discussed

these suggested amendments and the whale experts in the room could not, at this time, confirm whether the additional buoy would increase entanglement risk. While not considered a full Working Group recommendation, those participants at the meeting suggested that CDFW move forward with the DCTF's recommended amendment. It was acknowledged that the rule could be updated in the future if new data became available that the additional buoy in shallower depths was increasing the risk of entanglements.

Next Steps

Following this meeting, the Working Group will develop a number of products to help communicate their work and related activities, including, a key highlights document and summary of key themes. Additionally, the Working Group will update the 2017-18 RAMP Pilot reflections documents. All materials and summary documents will be circulated via the DCTF email list and posted on the Working Group's webpage.

The Working Group will reconvene in September 2018 to continue evaluating the 2017-18 RAMP Pilot and plan for the 2018-19 fishing season. Additional data collection and analysis are scheduled over the coming months and informational materials will be updated prior to the start of the 2018-19 fishing season based on discussions during the September meeting. Additionally, CDFW will take steps to being to outline a draft RAMP rulemaking package informed by the Working Group's discussions during the August 1-2 meeting. In advance of the September meeting (and following), Working Group participants will discuss with their peers and colleagues the updated RAMP structure and functions, share outstanding considerations, and solicit feedback and ideas.

All meeting materials and products developed by the Working Group are available at <http://www.opc.ca.gov/whale-entanglement-working-group/>. Please send direct communications to the Working Group, including ideas, questions, or concerns, to info@cawhalegroup.com.