

California Dungeness Crab Fishing Gear Working Group
Reflections and Lessons Learned Highlights
2017-18 RAMP Pilot
July 23, 2018

The following document highlights the reflections and lessons learned identified by the Working Group during the Risk Assessment and Mitigation Program (RAMP) pilot that was conducted during the 2017-18 fishing season. It is intended to serve as a resource to inform the continued development of the RAMP for the 2018-19 fishing season and beyond. An overview of the RAMP and its structure is available online ([here](#)). For more information about the Working Group's efforts, including the RAMP, visit <http://www.opc.ca.gov/whale-entanglement-working-group/> or contact info@cawhalegroup.com.

2017-18 RAMP Pilot Reflections and Lessons Learned

Since September 2015, the California Dungeness Crab Fishing Gear Working Group (Working Group) has been taking steps to actively identify and be responsive to elevated risks of whale entanglements in California Dungeness crab fishing gear. The Working Group has developed a draft Risk Assessment and Mitigation Program (RAMP) to support the state in working collaboratively with experts (fishermen, researchers, NGOs, etc.) to identify and assess elevated levels of entanglement risk and determine the need for management options to reduce risk of entanglement. The RAMP was piloted during the 2017-18 Dungeness crab fishing season. As part of the RAMP 2017-2018 pilot, the Working Group and the agencies planned to meet three times to track relative whale entanglement risk (preseason (October 2017), mid-season (Feb/Mar 2018), and late season (May/June 2018)). A smaller subsection of the Working Group, the evaluation team, could be convened rapidly under elevated risk conditions. . The narrative below outlines the reflections and lessons learned from the 2017-18 RAMP pilot.

Pre-season Risk Assessment

October 26 & November 6, 2017 (update [here](#))

The Working Group convened a scheduled "pre-season" risk assessment evaluation call prior to the start of the season. Due to the the initial review of the risk assessment factors (factors) indicating a need for additional data collection, especially near the November 15 season start date, to fully assess the situation, a second call was scheduled. The Working Group identified the pre-season risk levels as follows: whale concentrations, **moderate**; entanglements, forage/ocean conditions, and season delay, **low**. The results of this assessment were emailed and broadly circulated with a focus on fishing leadership and port/harbor representatives. Information was also posted on the Working Group's webpage.

- Although all four factors were evaluated and considered, there was limited information available on whale concentrations during the October 26 and November 6 meeting. In the absence of information, the Working Group landed on a more precautionary approach and arrived at a moderate level of risk for the whale concentrations factor with the request for additional data to be collected from whale watch operators and via an aerial survey.
 - Some Working Group members (and fleet at large) expressed concern with indicating whale concentrations at moderate risk level when the whales were at a transitional time in terms of their migration. There was also support expressed by the Working Group for being precautionary and helping to inform the fleet of elevated relative entanglement risk at the start of the season.
 - The preseason assessment highlighted that there was limited information coming into the RAMP that focused on whale distribution. To help address this information gap, the group identified the need for better coordination and collaboration with the whale watch community, which had not be identified as a target audience for data collection efforts to date. A number of whale

watch operators were added to the Working Group's email distribution list and direct outreach to explore how positional information could be shared with the Working Group was conducted.

- Challenging to mobilize the Working Group quickly closer to the season opener (i.e., the second preseason call) while trying to ensure that fishermen can participate on the call.
 - An anticipated delay in the Northern Management Area due to quality posed challenges in making business decisions, which took priority in terms time/capacity.
 - Recognition and request to have the California Department of Fish and Wildlife (CDFW) and the California Department of Public Health (CDPH) work more expeditiously to make results of quality and/or domoic acid testing results to inform the fishery's season start, which would inform the season delay factor of the risk assessment framework (RAF).
- Establishing a group text thread with fishermen and CDFW staff provided an open line of communication to share what was being observed on the water at the start and throughout the season.
 - Request were made in communications out to fleet to share observed forage/ocean conditions, particularly anchovy, with Jarrod to factor into his analysis.

November Evaluation Team Convening

November 30, 2017 (Working Group advisory [here](#))

The Working Group convened an unplanned call to discuss new reports of high levels of humpback and blue whales being observed by whale watch operations, particularly off of Monterey Canyon and the Gulf of the Farallones. Following the call, an advisory was posted online and circulated to target audiences, which was expanded to include whale watch operators.

During the Working Group/Evaluation Team's discussions, it became clear that fishermen were not observing the same high concentrations of whales in the Central Management Area as being observed by the whale watch community. This led the Working Group to request an aerial survey to be conducted to assess the level of risk by gaining a better understand of the overlap between whales and fishing.

- Challenging to mobilize the Working Group quickly and ensure fishermen could participate on the call once the season had opened.
- Continued use of the group text provided ongoing reporting of what fishermen were observing on the water to compare with whale watch boat reports.
- Efforts were made to strengthen coordination with the whale watch community and a request was made for operators to input their positional information into various applications (HappyWhale, Whale Alert, etc.) to gain a better understanding of where the observed whale were seen. However, the lack of a full-time coordinator to help mobilize this effort and funding needs identified by the whale watch apps resulted in a pause
 - Continued interest by the Working Group to access depth related information from whale watch boats. Efforts were made to try to access AIS data for some boats, but was unsuccessful.
 - Funding proposals were developed in late 2017 and early 2018 to help support this data collection need, but were also unsuccessful.
- Continued indication that there would be a quality delay in the Northern Management Area, which the Working Group (and agencies) needed to track.

December Aerial Survey

December 8, 2017 (report [here](#))

Per the Working Group's request, an aerial survey (funded by an OPC/TNC grant) was conducted on December 8, 2017 and confirmed that there was minimal overlap between whales and fishing. This led the Working Group to changing the whale concentration factor scoring to **low**. However, no new communications were circulated to the fleet indicating this discussion and ensuing change in score until the early part of the year.

- While this move from moderate to low was captured in the January 3, 2018 advisory (see below), there was a missed opportunity to circulate an update to the fleet with the results of the aerial survey and provide more of an explanation of why the risk level was changed. It is important to note, however, that the Working Group was unable to convene between November 30 and January 3 due to schedules (fishing season, holiday schedule, etc.).
 - Based on lessons learned, the Working Group requested that a risk assessment update to capture and record the results of the December aerial survey, which informed the downgraded risk of whale concentrations in later 2017 and into 2018 ([here](#)).
- The value of the aerial survey to confirm the different observations being reported on the water was essential to informing the Working Group's discussions and the need to explore management measures. This data, married with other datastreams, including the group text, were key to understanding the situation at hand and how to navigate it based on best available information.
- The survey design conducted during the December 8 aerial survey was informed by a series of pilot aerial surveys conducted in 2016 that helped to inform the experimental design ([here](#) and [here](#)).

January Evaluation Team Convening

January 3, 2018 (Working Group advisory [here](#))

The Working Group convened an unplanned call to follow up on the aerial survey conducted in December 2017 and review the risk factors, including the quality delay in the Northern Management Area. One entanglement was confirmed involving CA Dungeness crab gear in December. The northern fishery was delayed until January 15 although fishing did not start until February 4 due to price negotiations and market pressure. The Working Group circulated an advisory in advance of the Northern season opener to highlight the increased risk of whale entanglements resulting from the northern delay.

- The value of the aerial survey to confirm the different observations being reported on the water was essential to informing the Working Group's discussions and the need to explore management measures. This data, married with other datastreams, including the group text, were key to understanding the situation at hand and how to navigate it based on best available information.
- The quality delay from December 1 to January 15 in the Northern Management Area was further extended due to pricing and reluctance of buyers to purchase poor quality crab.
 - Interest by the Working Group in learning how quickly the crab was caught in the north (compared to past years without a delay) to increase understanding of how long the high concentrations of gear remain inshore (typically true at start of the season, fleet moves deeper over time).
 - Request for an aerial survey to be conducted in the Northern Management Area around the start of the opener to help understand gear distribution (and whales).
 - Need for fishing effort information apparent, particularly under delayed conditions. The Working Group requested that Strategic Earth reach out to some northern fishermen in a separate text thread to solicit their on-the-water observations to help inform the RAMP.
- Continued discussion and concerns expressed with fishermen who have gear involved in an entanglement, feeling fearful to speak with the National Marine Fisheries Service (NMFS) resulting in less information available associated with the whale entanglement factor.

February Aerial Surveys

February 7, 2018 (Lighthawk report [here](#)) & February 9, 2018 (CDFW report [here](#))

In response to the Working Group's request, two aerial surveys were conducted close to the start of fishing in the Northern Management Area. Both "rapid response" surveys were considered informal information gathering opportunities and followed a basic survey design, rather than the more standardized approach conducted in December 2017.

- Both surveys had similar observed high concentrations of fishing gear throughout the survey area, with low number of observed whales and minimal overlap.
- Both surveys confirmed the Working Group's ability to mobilize (weather and schedule dependant) an impromptu aerial survey using donated time. This type of flight may be needed between scheduled risk assessments.
- These efforts helped provide two complementary snapshots of the whale/fishing conditions around the time of the northern opener, which was a new source of information to the RAMP, and provided a baseline to inform the design of a more systematic aerial survey for this part of the California coast.

Mid-season Risk Assessment

March 14, 2018 (update [here](#))

The Working Group convened a planned "mid-season" risk assessment evaluation during the season. All risk factors were identified as **low** during the mid-season assessment. Following the meeting, an email was circulated with the results of the midseason assessment to the Working Group's master email list and posted online.

- The Working Group recommended updating the "season delay" factor to "fishing dynamics" so the factor could effectively consider and combine a number of elements that can influence gear distribution and concentrations (e.g., delays - domoic acid, market, quality), price per pound, availability of other fisheries to move to, etc.) and be responsive to evaluations conducted throughout the fishing season.
- While each factor was considered low, there was an acknowledgement that the whales and fishery were entering a transition period heading into the spring months.
- When relying on expert input from fishermen, it is important that the information being shared by fishermen (e.g., fishing location information) remains confidential and only summarized at an aggregated level in public documents.
- Working Group participants can help convey to their peers the importance of speaking with NMFS if their gear is involved in an entanglement. This re-emphasizes the need that fishermen on the Working Group are well respected and have good relationships with their peers.
- Expanding the RAMP to consider other whale species may require a broader geographic range of forage data (e.g., Baja to Alaska).
- Recognition that a mid-season assessment call that took 3.5 hours would likely need to be longer if the risk levels were at moderate or high.
- Continued support for the use of aerial surveys - both planned and rapid response methods.
- Would like to see improved integration of spatial data from whale watch boat and fishing boats to inform the RAMP.

April In-Person Working Group Meeting & Bodega Bay Outreach

April 23-24, 2018 (Key Themes Summary [here](#))

The Working Group held an in-person meeting on April 23-24, 2018 to review and evaluate the structure and function of the RAMP, including reviewing the status of pilot projects, evaluating the use and development of the RAF and potential management measures, discussing fleet communication strategies, and discussing funding opportunities. The Working Group set the stage for a full RAMP review at the end of the season and evaluated the RAMP's structure and function to date. Additionally, a sub-group of the Working Group participated in a meeting with the Bodega Bay Fishermen's Marketing Association to share information about the Working Group's efforts and gain feedback on the RAMP pilot and be responsive to questions.

June Evaluation Team Convening

June 5, 2018 (Working Group advisory [here](#))

The Working Group convened an unplanned call at the agencies'¹ requests to discuss elevated numbers of observed/confirmed entanglements in May. The Working Group walked through the RAF with available information and three factors (entanglements, whale concentrations, and forage/ocean conditions) were identified as **moderate** risk; fishing dynamics was deemed **low** risk. Following the meeting, the results of the June assessment were emailed and posted on the Working Group's webpage.

- This convening of the Working Group/Evaluation Team was not prompted by the entanglement factor criteria as defined in the RAMP pilot, since the majority of entanglements reported in May involved unidentified gear. At the time of the meeting, none of the May entanglements had been confirmed as CA Dungeness crab. However, the agencies made a judgement call and convened the Working Group to review available information and discuss strategies for addressing the issue.
 - Since the Working Group is the only group available informed enough to consult on issues like these at this time, the agencies convened the body to discuss the issue, evaluate risk, and identify potential factors that could have lead to the increased entanglements in May and June. This was despite the fact that the source of the entanglements were not indicated to be California Dungeness crab.
 - It would be have been helpful/important to have other fisheries consulted on this situation, as it is challenging for a Dungeness crab-focused body to speak to the role of other fisheries.
 - No communications about the increased entanglements were shared by CDFW with other fisheries, which could have helped inform their fishing practices. Additionally, a planned letter/advisory to California Dungeness crab permitholders was discussed by CDFW but not carried out.
 - The Working Group shared its advisory and communications with the Dungeness crab fleet, but has no mechanism for determining how the information was received and utilized.
- During the 1-hour call, the risk assessment evaluation was conducted quickly and with limited information. Due to the urgent nature of the call, some of the factor leads were able to share information during the call while others had to be followed up with later since they were unavailable for the call or were unable to compile the information in advance of the call
 - To help reduce these logistical issues in the future, a process design document was developed ([link](#)).

Postseason Risk Assessment

July 10, 2018 (update [here](#))

The Working Group convened a planned "postseason" call to review the risk factors and reflect on the 2017-18 RAMP pilot with the goal of using the lessons learned to inform the RAMP 1.0 and 2018-2019 season. No formal risk assessment was conducted during this meeting and the Working Group will look to the preseason

¹ The agencies include CDFW, NMFS, and the Ocean Protection Council (OPC)

assessment in November to inform the outlook for the 2018-19 fishing season. Following the meeting, the results of the July postseason assessment were emailed and posted online.

- Reflecting on the May entanglements and June Evaluation Team call, the Working Group suggested adding a in late April/early May call, in addition to the March Mid-season risk assessment, to ensure factors are being tracked closely during high-risk months. While fishing effort is often lower in May/June, it is important for the agencies to continue to receive regular on-the-water updates to inform ongoing tracking of the risk assessment framework.
- The fishing dynamics factor has been a valuable tool in integrating information from fishermen, and there is a need to broaden the representation in the text thread (geographic, and in commercial/recreational) to improve the breadth of observations being considered by the agencies.
- The fishing dynamics factor relies on qualitative observations and could benefit from objective and quantitative data sources.
- The RAF framework should be more explicit so folks can understand how and when shifts occur between risk levels, and how that might tie into the Working Group’s recommendations for mitigation measures.
 - The whale concentrations factor often indicates an elevated risk in the spring due to migration patterns, even though there may be low levels of fishing. Since the entanglement risk is generally low due to reduced gear in the water, it is important to consider how the factors overlap to more more effectively communicate with the fleet and others.
- The RAMP is focused on Dungeness crab and humpback whales, so it does not capture all of the possible risks (e.g all fishing gear types, ships strikes, etc.) to all marine life. There is an opportunity to fine-tune the RAMP by working beyond Dungeness crab and humpback whales to include other species of interest (e.g., blue whales, grey whales, and sea turtles) and other fisheries (e.g., spot prawn, gillnet, etc).
 - Aerial surveys have proven consistently valuable in informing fleet dynamics and overlap with whale concentrations. Due to weather and funding constraints, these may not always be available so the Working Group is exploring the value in adding vessel surveys as another data stream to inform the RAMP.