

California Dungeness Crab Fishing Gear Working Group
Draft Key Findings, Risk Assessment Factors
2017-18 RAMP Pilot
August 15, 2018

The following document summarizes key findings identified by the Working Group specific to the risk assessment framework's (RAF) performance during the 2017-18 Risk Assessment and Mitigation Program (RAMP) pilot and discussed during their August 1-2, 2018 meeting. This document can act as a compliment to a summary of reflections and lessons learned developed when reviewing the 2017-18 RAMP pilot ([here](#)), and is intended to serve as a resource to inform the continued development of the RAMP for the 2018-19 fishing season and beyond. It is anticipated the RAF key findings will continue to refined and updated in advance of and/or during the Working Group's September 2018 meeting.

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.

Key Highlights and Findings

The RAMP pilot worked relatively well to assess the relative risk of whale entanglements in the California Dungeness crab fishery throughout the 2017-18 fishing season. The key findings from the pilot include:

- The **risk assessment factors (factors)** were adequately and regularly tracked throughout the 2017-18 fishing season. The Working Group generally agrees that the factors identified in the RAMP are the right factors, however, the forage/ocean conditions, whale concentrations, and fishing dynamics factors should be assessed in connection to one another. Additionally, some factors would benefit from some refinement.
 - The **entanglements factor** was an important primary indicator of increasing risk. However, data related to the source of an entanglement is often delayed and limited in real-time, resulting in a delayed response by the RAMP. The Working Group believes the data associated with this factor would be improved if all gear associated with fixed-gear fisheries is better marked to understand the source of the entanglement. Additionally, the National Oceanic and Atmospheric Administration (NOAA) is continuing to improve their data collection and analysis efforts related to entanglements.
 - The **forage/oceanographic conditions factor** was able to be tracked well due to the consistent data available through surveys, vessel cruises, and other data sources. The Working Group agrees that scoring of this factor could be improved by balancing expert judgement with more objective and systematic criteria.
 - The **whale concentrations factor** was tracked using Monterey Bay Whale Watch data as a proxy for whale migrations. While the data source was useful in identifying transitions in whale migrations on a seasonal scale, the Working Group identified the need for better temporal and spatial data related to this factor. Verifiable data that improves our understanding of how whales move in space and time in relation to the other factors as well as identification of abnormal whale concentrations would be valuable. The Working Group's whale-focused project team will meet over the coming weeks to develop straw proposals for refining and improving this factor.
 - The **fishing dynamics factor** utilized a fishermen's text thread, landings data, and ex-vessel value data to track this factor. The Working Group believes the text thread was an invaluable tool that should be scaled to reach a broader representation of the commercial and recreational fleets and better inform the spatial and temporal trends of fishing effort. More comprehensive tools (e.g. solar loggers, e-tix) are continuing to be considered and explored to improve quantitative

real-time data availability. Understanding of price and how available markets impact the factor should also be further explored to improve understanding of this factor.

- **Aerial surveys** continue to be identified as a valuable tool to gain a snapshot of the overlap of fishing effort and whale concentrations, and especially to help clarify interpretations associated with these factors. Weather constraints did hinder the timing of aerial surveys, making it difficult to rely solely on this tool to assess the factors. During the pilot, both systematic (planned, rigorous sampling design) and opportunistic (responsive, informal sampling design) aerial surveys were used, which worked well under different circumstances/needs. Moving forward, opportunistic and systematic surveys should continue to be utilized. A systematic survey design should be developed to ensure consistency and allow for more synoptic snapshots that can be adapted/tailored to the needs identified in the RAF. The Working Group suggested a pre-season aerial survey occur as close to the start of the season (central and north) as possible. Also, improving the communications out to key audiences of the results of the aerial survey was an area that could benefit from improvement (e.g., group text, Coast Guard radio channel, etc.).
- **Communications** to the fleet are vital to ensuring the success of the RAMP pilot. Results of each risk assessment were circulated electronically through the Working Group, Dungeness Crab Task Force email list, and a through a list of port leads and harbor masters. There were mixed responses from fishermen changing their behavior due to changes in the factor scores. Working Group participants highlighted that communicating the forage factor and other predictive tools to the fleet would be better received than whale watch data since it would allow fisherman an opportunity to plan ahead. The Working Group also continued to state the need to improve communications to the fleet.
- The **Management Measures Toolbox (MMT)** is anticipated to continue to be informed and populated as the RAMP evolves beyond the pilot. In August 2018, the Working Group continued to refine a draft MMT for industry review and consideration ([here](#)).

Connecting Assessments to the Entanglement Record

The 2017-18 RAMP pilot produced a pre-, mid-, and postseason risk assessment plus three Evaluation Team (ET) updates. The pre-season risk assessment indicated a potential for an elevated risk due to an overlap between fishing effort and whale concentrations. However, follow up data collection and analysis by the ET indicated that the risk was low except in a small area of Monterey Bay. Working Group participants indicated that as a result of this assessment, fishermen generally avoided the area of concern. However, in June 2018, increases in whale entanglement reports sparked the need for an ET conference call. During the call, each factor was assessed individually. Whale entanglements, forage/ocean conditions, and whale concentrations were scored as moderate risk and fishing dynamics was scored as low risk. Since so few individuals continued to fish, the Working Group felt an advisory, and not changes in fishing effort, was needed to address this elevated risk. In August 2018, it was revealed that the number of entanglements related to the California Dungeness crab fishery had increased to 5 confirmed entanglements with the overall West Coast entanglements reaching 27 confirmed entanglements (33 reports). The Working Group will continue to reflect and discuss refinements to the RAMP that may be needed to better detect potential for these postseason entanglement reports.