

STAFF SUMMARY FOR AUGUST 22-23, 2018

16. DEPARTMENT INFORMATIONAL ITEMS (MARINE)**Today's Item**Information Action

This is a standing agenda item to receive and discuss informational updates from DFW that are marine in nature:

- (A) Director's report
- (B) Law Enforcement Division
- (C) Marine Region

Summary of Previous/Future Actions (N/A)**Background**

Verbal reports are expected at the meeting for items (A) through (C).

- (C) DFW's Marine Region will provide an update on efforts to reduce whale entanglement in fishing gear offshore California. See exhibits C1-C4.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits**

- C1. [California Dungeness Crab Fishing Gear Working Group fact sheet, dated Oct 2017](#)
- C2. [Draft Risk Assessment and Mitigation Program \(RAMP\) voluntary pilot project description for 2017-18](#)
- C3. [California Dungeness Crab Fishing Gear Working Group notes from Jun 5, 2018 meeting \(undated\)](#)
- C4. [RAMP post-season risk assessment, dated Jul 2018](#)

Motion/Direction (N/A)



Dungeness Crab Fishing Gear Working Group

Working Collaboratively to Reduce the Risk of Whale Entanglement in the California Dungeness Crab Fishery

The California Dungeness Crab Fishing Gear Working Group is a collaboration among multiple diverse stakeholder groups who have come together to tackle the challenge of reducing the risk of whale entanglements in Dungeness crab fishing gear. This group strives to find solutions that support thriving whale populations along the West Coast and a thriving and profitable Dungeness crab fishery.

THE ISSUE OF WHALE ENTANGLEMENTS IN FISHING GEAR

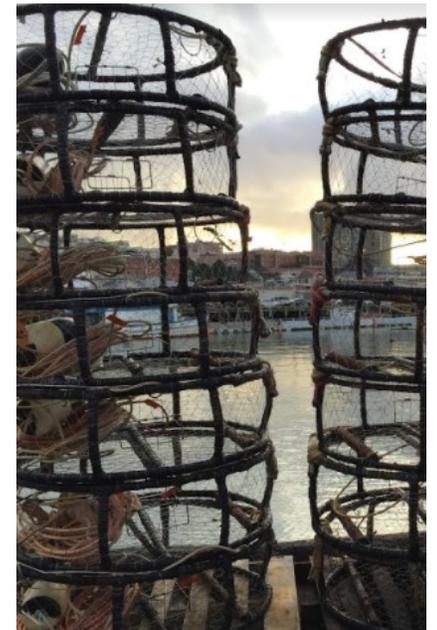
Variable, dynamic ocean conditions are impacting California's valuable natural resources, human populations, and marine life. Recently, oceanographic and biological changes due to warmer water off the West Coast have led to delays and closures of commercial and recreational fishing seasons, altering the dynamics of fishing activity. At the same time, growing whale populations and shifts in their feeding patterns have resulted in an increased risk of whales interacting with fishing gear. In recent years, reports of whales entangled in fishing gear off California have been higher as compared to the historical number of reports since NOAA Fisheries started keeping records in 1982. A variety of factors may contribute to the increase in the number of reported entanglements, including changes in the distribution and abundance of whales, changes in fishing effort, and an increase in public awareness and reporting. Although there are many unknowns, multiple fisheries have been identified as entangling whales, including the Dungeness crab fisheries on the California coast. This creates social, environmental and regulatory challenges. It also creates risk for marine mammals and threatens the stability and viability of an important fishery and coastal fishing communities dependent on this fishery. State and federal agencies, fishermen, environmental organizations and scientists have been responsive to this issue and are working collaboratively to identify and implement solutions.

THE FORMATION OF THE DUNGENESS CRAB FISHING GEAR WORKING GROUP

In response to the recent spike in whale entanglements, the California Department of Fish and Wildlife (CDFW), in partnership with National Marine Fisheries Service (NMFS) and the California Ocean Protection Council (OPC), convened the Dungeness Crab Fishing Gear Working Group (the Working Group) to tackle the challenge of reducing the risk of whale entanglements in the California Dungeness crab fishery.



Photo Courtesy of Jakara Hubbard



Established in September 2015, the 20-member Working Group is a unique coalition of diverse stakeholders, including commercial and recreational fishermen, environmental organization representatives, members of the whale entanglement response network, and state and federal agencies. All experts in their field, these individuals have voluntarily come to the Working Group with the common goal of supporting thriving whale populations along the West Coast and a thriving and profitable Dungeness crab fishery. Scientists, legislative staff, and gear manufacturers also participate in Working Group meetings to support and inform discussions. Since its creation, the Working Group has met seven times, and participants are committed to identifying solutions to this complex issue.

Members of the Working Group are committed to identifying solutions to the entanglement challenge. Participants have been responsive to the issue and have volunteered their time and expertise to work collaboratively towards feasible, tangible solutions. The Dungeness Crab Fishing Gear Working Group is a prime example of constituents with diverse expertise and interests uniting for a shared goal.

SUPPORTING COLLABORATIVE PROJECTS

The Working Group is currently working on the following activities: (1) supporting the implementation of collaborative projects to collect new information and synthesize existing information to enhance our understanding of whale distribution and fishing dynamics, and to test gear modifications; (2) developing effective communications materials and conducting outreach, such as the development and sharing of a Best Practices Guide. It is important to have the support of the Dungeness crab fleet, state legislators, and all stakeholders to advance these projects and to address the whale entanglement issue.

- **Whale forage distribution research:** Researchers from the UC Santa Cruz and the Southwest Fisheries Science Center are leading a project to: organize historical data, including existing ocean condition data, prey distribution patterns, and whale sightings; create maps of existing data relative to historical entanglement patterns; and evaluate capabilities to forecast whale distributions.



California Dungeness Crab Fishing
2017-18 Best Practices Guide to Minimize Whale Entanglement Risk

Support for Best Practices
 National Marine Fisheries Service (NMFS) has confirmed significant increases in large whale entanglements over the last few years, and specifically in California Dungeness crab fishing gear. This situation threatens the stability of the fishery and coastal fishing communities. In response, a Working Group has developed this Best Practices Guide to highlight voluntary actions believed to be an important step towards reducing whale entanglements.

BEST PRACTICES

- No excess lines should be floating at the surface. Floating line should only be between the main buoy and trailer.
- When changing set location across depths, adjust the length of trap lines by adjusting shots (i.e., measured length of line) to maintain taut vertical lines.
- Avoid setting gear in the vicinity of whales whenever possible.
- Maintain gear to ensure lines and buoys are in good working condition and will not break under natural conditions causing gear to become lost or irretrievable. Lost gear contributes to marine debris and increases risk of whale entanglements.
- All gear should be clearly marked consistent with applicable regulation. All gear should be maintained so markings are clearly legible to facilitate correct identification of the origins of the gear involved in entanglements.
- Use the minimum amount of scope required to compensate for tides, currents and weather. Whales are more likely to become entangled with slack lines, which can potentially create a "floating snare".
- Remove all fishing gear by the end of the season when gear is no longer allowed in the water.

BUOY SET-UP BEST PRACTICES

RECREATIONAL shortest as possible, max of 2 fathoms (12M)

COMMERCIAL

Inside 30 fathoms	shortest as possible, max of 3 fathoms (18M)
30-50 fathoms	shortest as possible, max of 4 fathoms (24M)
Outside 50 fathoms	shortest as possible, max of 5 fathoms (30M)

Minimize # of buoys in set up—no more than 1 trailer buoy inside 30 fathoms
 Keep line between trap and main buoy running vertical and taut

1 fathom = 6 feet

- **Disentanglement Trainings:** NMFS, in partnership with California Whale Rescue, The Nature Conservancy (TNC), and the Working Group, are training commercial and recreational fishermen in whale entanglement response.
- **Gear modification:** A federally funded Bycatch Reduction Engineering Program project is underway where scientists, in collaboration with fishermen, evaluate the line profiles and load strengths of different types of fishing line, as well as the visual contrast of different line types/colors in the water column.
- **Whale and crab gear distribution surveys:** The Working Group has worked in partnership with the National Marine Sanctuaries, Point Blue Conservation Science, NMFS, Oceana, and LightHawk to conduct a series of aerial and cruise vessel surveys to document the distribution of whales and crab fishing gear.
- **Electronic reporting tool research:** Fishing participants are working with CDFW and TNC to conduct a series of pilot projects on different types of data loggers, with a focus on solar loggers and TNC's eCatch, to gain a more comprehensive understanding of fishing dynamics.

LOOKING AHEAD: CONTINUED COLLABORATION

In addition to collaborative research projects and the Best Practices Guide, the Working Group also looks forward to piloting a draft voluntary risk assessment and mitigation program in the upcoming 2017-2018 Dungeness crab fishing season. Throughout 2017 and into 2018, the Working Group will continue to support implementation of collaborative projects and communications; provide guidance and recommendations to the California Dungeness crab fishing industry, the Dungeness Crab Task Force, and the state of California about how to reduce the risk of whale entanglements; and identify measures to address the entanglement issue.

Best Practices Guide to Minimize Whale Entanglement Risk

The Working Group developed several voluntary "best practices" focused on recommendations for surface gear set up for the 2017-18 fishing season, including improved buoy setup, reduced slack surface line, and limited number of trailer buoys. More than 2,250 copies of the resulting Best Practices Guide are being shared widely with fishing associations, local gear stores, fishing harbors, and by CDFW Enforcement, the US Coast Guard, and the California Recreational Fishing Survey surveyors, as well as online distribution via CDFW and recreational fishing clubs.

Draft Risk Assessment and Mitigation Program (RAMP): Voluntary Pilot, 2017-18 CA Dungeness Crab Fishing Season California Dungeness Crab Fishing Gear Working Group

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. This unique coalition of diverse stakeholders—which includes commercial and recreational fishermen, environmental organization representatives, members of the whale entanglement response network and state and federal agencies—is committed to developing solutions that support thriving whale populations along the West Coast and a thriving and profitable Dungeness crab fishery. *For a Fact Sheet about the Working Group and other background information, visit <http://www.opc.ca.gov/whale-entanglement-working-group/>.*

Working Towards Solutions: A Collaborative Approach to Reducing Whale Entanglement Risk

For the past two years, the Working Group has been working to better understand the issue of entanglements and to identify methods to mitigate entanglement risk. In May 2017, the group identified the need for a process that could help identify circumstances that can elevate risk and develop pathways to addressing these situations. The Working Group has considered an approach that is rooted in best fishing practices and is flexible to be responsive to elevated entanglement risk. Involving a range of experts — agencies, fishermen, researchers, and others—who will work collaboratively to evaluate risk, identify information needs, and assess the need for voluntary and/or (longer-term) mandatory management options that could be recommended to California Department of Fish and Wildlife (CDFW) is key to the program’s success.

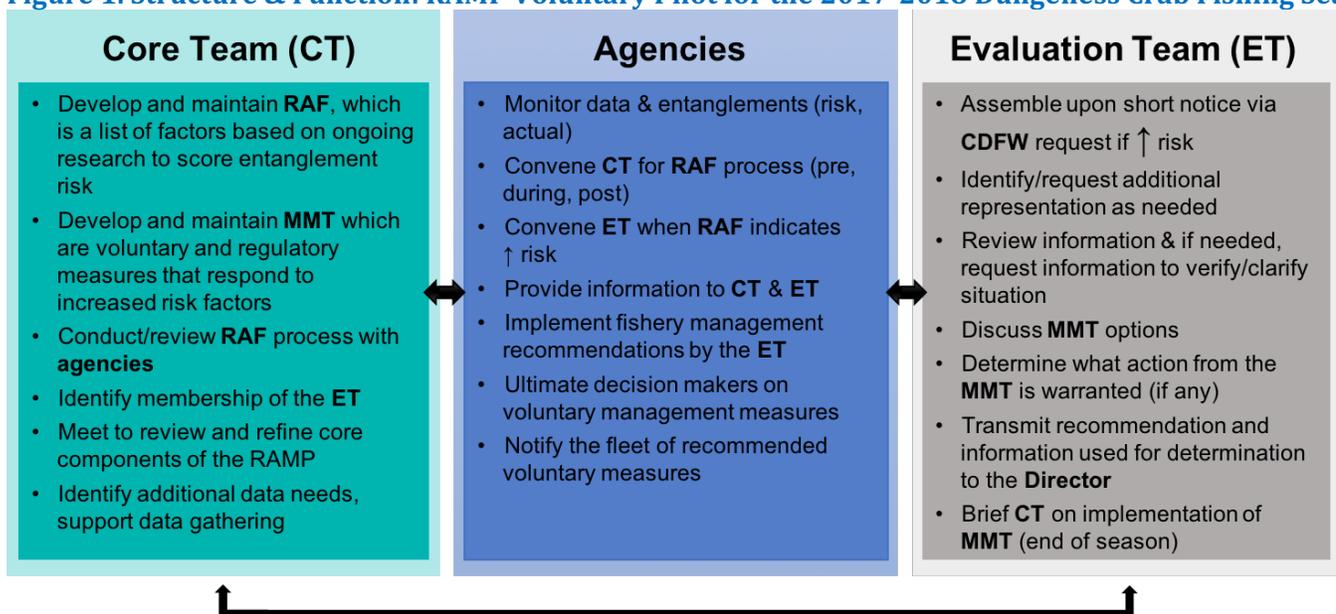
The Whale Entanglement Risk Assessment and Mitigation Program, or RAMP

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.

Roles & Responsibilities

The draft RAMP involves three groups: a core team (CT), evaluation team (ET), and agencies. The core team and the agencies will meet three times per year to track relative entanglement risk (preseason (October), mid-season (Feb/Mar), and late season (May/June)). The evaluation team will only be convened under elevated risk conditions. During the 2017-18 RAMP pilot, the Working Group will serve as both the core and evaluation teams. CDFW, the National Marine Fisheries Service (NMFS), and the Ocean Protection Council (OPC) will coordinate as the group of state and federal agencies in the pilot RAMP. Figure 1 outlines the key roles and responsibilities of each group, and illustrates the high degree of coordination that will occur between all of the groups.

Figure 1. Structure & Function: RAMP Voluntary Pilot for the 2017-2018 Dungeness Crab Fishing Season

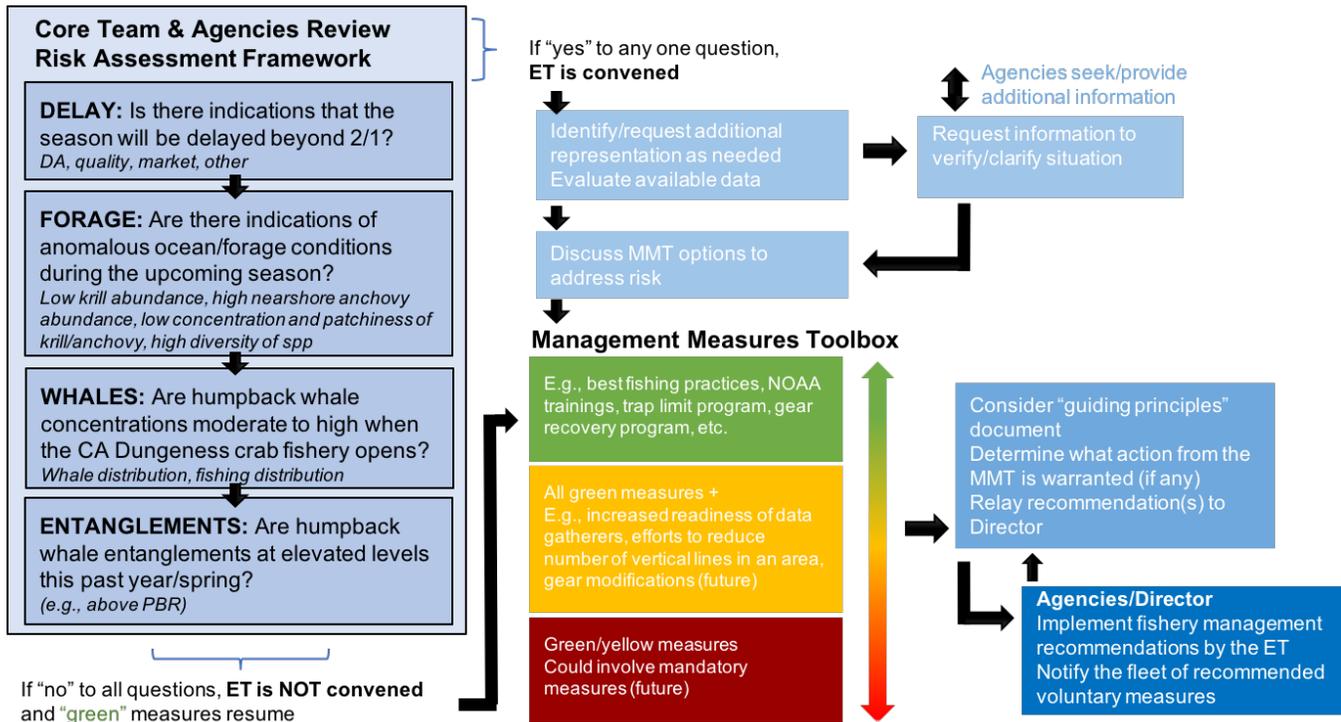


CT: Core Team; ET: Evaluation Team; RAF: Risk Assessment Framework; MMT: Management Measures Toolbox

Risk Assessment & Management Tools

Two tools will be involved in evaluating and responding to elevated risk: a risk assessment framework (RAF) and a management measures toolbox (MMT) (see Figure 2). The RAF will not act as a decision-making tool, but rather be used by the core team and agencies to indicate if an evaluation team needs to be convened due to elevated risk. The MMT will be developed by the core team and agencies for the evaluation team's use. Figure 2 illustrates the factors and questions the RAF will focus on during the RAMP pilot, together with the steps the evaluation team will take if convened. Included are examples of different management options that could be included in the MMT.

Figure 2. Risk Assessment Framework Factors and Questions, and Evaluation Team Process to Consider Possible Management Measures (voluntary for 2017-18 RAMP Pilot)



A number of guiding principles have been developed to support the evaluation team in their application of the MMT, such as all management measures will be fact-based and science driven, negative economic impacts to fishermen will be minimized and disproportionate impacts on a subset of the fleet avoided, and recommendations will identify a clear process for evaluating compliance and when/how fishermen are able to re-establish regular fishing practices. *A full summary of guiding principles are available on page 3 of this document.*

2017-18 Pilot: Seeking Fleet Input

The draft RAMP is in its beginning stages of development. The voluntary pilot will provide an opportunity to test out the draft RAMP's structure and function, explore aspects of the RAMP that could benefit from legislative support, and to learn what may need to be adjusted and fine-tuned, including the program's working assumptions and guiding principles.

During the RAMP pilot, commercial and recreational fishermen and others involved in the California Dungeness crab fishing industry are invited to review the draft RAMP approach and provide feedback on all aspects of the program. Ideas on how to improve the Working Group's approach to assessing risk, considerations for possible management measures, and suggestions related to new technologies are welcomed and encouraged. Additionally, the Working Group is planning to hold a select number of meetings in 2018 at port locations in an effort to share information and address questions.

Information learned during the 2017-18 pilot phase will be shared with CDFW, NMFS, OPC, Fish and Game Commission, Joint Committee on Fisheries and Aquaculture, and California Dungeness Crab Task Force in summer/fall 2018.

RAMP Guiding Principles To Inform an Evaluation Team's Consideration of Management Options California Dungeness Crab Fishing Gear Working Group

The Working Group supports thriving whale populations along the West Coast, and a thriving and profitable Dungeness crab fishery. Our charge is to:

- Provide guidance and recommendations to the California Dungeness crab fishing industry, including the DCTF, to avoid/minimize entanglements and identify measures or experiments that can be developed or implemented by the fishing community to address the entanglement issue;
- Collaboratively inform and guide the state of California (CDFW, OPC, Fish and Game Commission, and the Legislature) in addressing key information gaps and/or measures to reduce the risks of entanglements in Dungeness crab fishing gear; and
- Guide whale entanglement reduction efforts by establishing priorities for the Working Group, and help inform other entities seeking to address the issue of whale entanglements in California.

The following draft principles/characteristics have been developed to help guide the Working Group (which will act as the Evaluation Team during the 2017-18 RAMP pilot) under circumstances where the risk assessment framework (RAF) indicates an elevated risk for entanglements. These guiding principles will be used when the Working Group reviews the management measures toolbox (MMT) and considers possible management measures. These guiding principles will be evaluated during the 2017-18 RAMP pilot, and may be further updated based on lessons learned by the Working Group and input from the fleet and others.

Management Options/Measures

- The Working Group is working to identify and recommend management measures that can effectively reduce whale entanglements in CA Dungeness crab fishing gear.
- Management measures will be fact-based and science driven and will be updated as new information becomes available.
- Management measures will be scalable and any application should be narrowly focused in geographic area and time frame. Management measures will be consistently applied and will be enforceable.
- Management measures will be adaptable and additional management measures may be included as identified by the Evaluation Team and reviewed and confirmed by the Core Team.
- Management measures will aim to maintain fishermen's safety, minimize negative economic impacts, and avoid disproportionate impacts on a subset of the fleet. Where possible, mitigation options will be considered, including identifying alternative harvesting opportunities for impacted fishermen.
- Management measures will be evaluated and measured across a number of stages, including effectiveness of communication out to the fleet; level of understanding of the communication; and level of response to management measure.
- Once a management measure has been identified, a clear process for evaluating its implementation and identifying when/how fishermen are able to re-establish regular fishing practices in as short a timeframe as possible will be developed.
- Annual evaluation of the management options list will be conducted so the suite of options can be refined based on experiences and lessons learned. As appropriate, lessons learned will be shared with other CA fixed-gear fisheries for review and consideration.

For more information about the Working Group's efforts and the 2017-18 RAMP pilot, including opportunities to provide feedback and share your expertise, visit <http://www.opc.ca.gov/whale-entanglement-working-group/> or contact the Working Group at info@cawhalegroup.com.

**Draft Risk Assessment Framework (RAF) Assumptions
Voluntary Pilot, 2017-18 CA Dungeness Crab Fishing Season
California Dungeness Crab Fishing Gear Working Group**

The 2017-18 RAMP pilot will be conducted under the following working assumptions:

CA Dungeness Crab Fishery: the pilot will include both commercial and recreational fishing.

State-managed Fisheries: the pilot will focus on state-managed fisheries only. There is expressed interest to work with the PFMC in the near future.

Voluntary: the RAMP will be a voluntary program during the 2017-18 season. It is anticipated core components of the program will become mandatory in future seasons.

Management Action: the RAMP Framework is designed to indicate a need for more focused attention on the issue of whale entanglements in a fishery/area by an interdisciplinary team. No management measures are prescribed by the framework.

Spatial Scale: data will be considered at the statewide level at the start of the fishing season, with certain factors focusing on regional (north/south) and/or port level information as the fishing season progresses.

Seasonal: the RAMP Framework will consider factors across a seasonal calendar/scale.

Marine Mammals: the pilot will focus on humpback whales. The intention is for information gathered during the pilot to be applicable to other whales (e.g., blues) and other endangered marine animals (e.g., leatherback turtles). There has been some expressed interest to expand beyond humpbacks following the pilot phase (blues, greys, turtles, etc.), with a request to have experts on those species available to help inform the Working Group's efforts. In July, the Working Group requested CDFW and NMFS to discuss how both agencies intend to consider turtles in the short and longer term.

Historical "norm": the RAMP Framework scoring baseline is based on historical "norms", with the intention to highlight/focus attention (i.e., raise the flag) under anomalous conditions.

Entanglements:

- The Working Group has identified the following as priorities for tracking entanglements:
 - Any entanglements in CA Dungeness crab fishing gear
 - Any entanglements observed/occurring in CA waters, regardless of fishing gear type
- Entanglements are measures of actual risk, rather than expected risk
- Entanglements will be considered in terms of patterns (e.g., multiple entanglements over a defined period of time)
- Scoring is based on verified entanglements
- Certain entanglement circumstances can mobilize team discussions without other factors in play

CALIFORNIA DUNGENESS CRAB FISHING GEAR WORKING GROUP

June 5, 2018 Convenings

Rate of Whale Entanglements at Moderate Risk

2017-18 Whale Entanglement Risk Assessment & Mitigation Program (RAMP) Pilot

On June 5, 2018, the California Department of Fish and Wildlife, in partnership with the National Marine Fisheries Service and the Ocean Protection Council, convened the California Dungeness Crab Fishing Gear Working Group (Working Group) to discuss elevated numbers of entanglements observed in May 2018, as well as review other risk assessment factors including whale concentrations, forage/ocean conditions, and fishing dynamics. The Working Group reviewed the available information and the following risk level was identified:

- Entanglements: **Moderate**
- Whale concentrations: **Moderate**
- Forage/ocean conditions: **Moderate**
- Fishing dynamics: **Low**

More information about the scoring of each factor is available [here](#) (see “Summary” section below for additional details). As we look ahead to the final weeks of the 2017-18 fishing season, migrating whales are expected to be present in high numbers in traditional Dungeness crab fishing ground throughout California.

Those who are no longer fishing are strongly encouraged to remove all fishing gear that is not being actively fished. The Working Group recommends fishermen avoid fishing in areas where there are groups of feeding or migrating whales, schools of anchovy, and/or swarms of krill and proceed with caution in the vicinity of submarine canyons, and if possible, consider reducing the number of traps that are being actively fished. All Dungeness crab traps need to be removed by the close of the fishing season south of the Sonoma/Mendocino county line on June 30 and north of the Sonoma/Mendocino county line on July 15.

To minimize the potential for whale entanglements, the commercial fleet and recreational fishing community are requested to follow the recommendations outlined in the [2017-18 Best Practices Guide](#), with specific attention to the setup of surface gear. Fishermen, particularly those fishing in the Northern Management Area, are encouraged to share observations of whale activity and ocean conditions (e.g., are you seeing schools of anchovy, and if so, where?) to help inform the Working Group’s efforts. Text 310-738-2665 or email info@cawhalegroup.com.

The California Department of Fish and Wildlife, National Marine Fisheries Service, and Working Group advisors will continue to work collaboratively and monitor any changes in risk throughout the 2017-18 fishing season. In collaboration with agencies and researchers, the Working Group will continue to evaluate, and be responsive to the relative risk of entanglements and will inform the industry as new updates are available. Additionally, CDFW will be releasing a press release to inform all fixed gear fisheries of these voluntary recommendations.

This update will be shared via the [DCTF email list](#), the [Working Group webpage](#), and [CDFW’s crab webpage](#). The Working Group welcomes your feedback and insights about the Working Group’s efforts and the 2017-18 RAMP pilot. Please visit <http://www.opc.ca.gov/whale-entanglement-working-group> or contact the Working Group at info@cawhalegroup.com.

Summary

In May 2018, there were seven (7) confirmed entanglement reports in California involving five (5) confirmed humpback whales, one grey whale, and one fin whale. Most of the gear involved in the entanglements is unidentified, with one report involving CA Dungeness crab gear that was set in the Crescent City area. Entanglements have been observed from the CA/OR border to Ventura. There have also been three (3) confirmed entanglement reports in Washington.

In addition to this recent uptick in whale entanglements, it was reported that concentrations of whales migrating along the West Coast continue to increase, as expected for this time of year. Upwelling has continued resulting in a very good krill year, particularly around the shelf and canyon areas. Anchovy populations are showing up in some concentrated areas in high numbers along the coast. While patchy in distribution, this could bring humpbacks closer inshore, putting them at increased risk of entanglements. While fishing effort continues to decrease, it was reported that a fair price is still holding and some fishermen plan to fish until the end of the season.

Postseason Risk Assessment Evaluation, July 2018 2017-18 Risk Assessment and Mitigation Program (RAMP) Pilot

Dear CA Fishing Leadership and Members of the Whale Watch Community,

As part of the Risk Assessment and Mitigation Program (RAMP) 2017-18 Pilot, the California Dungeness Crab Fishing Gear Working Group (Working Group) reconvened on July 10, 2018 to conduct a postseason risk assessment evaluation. This was the last of three planned risk assessments under the RAMP (see [here](#) for summaries from the pre- and mid-season assessments).

During the postseason assessment, the Working Group discussed each of the priority factors—*forage/ocean conditions*, *whale concentrations*, *fishing dynamics*, and *rate of entanglements*—and how each factor and related criteria had been successfully applied during the RAMP pilot. Additionally, the group reviewed information available on each factor looking ahead into the summer months and in anticipation of the 2018-19 fishing season. Key highlights from the discussion include:

- **General:** Overall, the Working Group expressed support and confidence in the RAMP pilot structure and function, and looks forward to working - in partnership with commercial and recreational fishermen - to continue to develop and fine-tune the program, with the goal to implement this version of the RAMP during the 2018-19 fishing season. The group discussed the importance of maintaining open lines of communication with the Oregon and Washington Working Groups that are also working to address the issue of whale entanglements in Dungeness crab fishing gear.
- **Rate of Entanglements:** To date, NMFS reported there have been two confirmed entanglements in California Dungeness crab fishing gear during the 2017-18 fishing season: one in December 2017 and one in July 2018, both involving humpback whales. The Working Group reflected on the importance of maintaining this factor as one that, when elevated, leads to the immediate convening of the Evaluation Team; challenges with the delay in receiving entanglement information; and the need for continued discussion on the appropriate role of the Working Group under circumstances where the rate of entanglements is elevated but the gear involved is primarily “unknown” in origin, as was the case when the Evaluation Team was convened in June 2018. The group discussed the merits of increasing communications and coordination during the spring months (March-June) in an effort to closely monitor all of the risk factors, including the rate of entanglements.
- **Forage/Ocean Conditions:** Jarrod Santora, Associate Researcher at the University of California, Santa Cruz and Working Group Advisor, confirmed that the spring 2018 forecasted forage/ocean conditions materialized as anticipated: a good krill year due to upwelling and concentrated patches of anchovies along the coast. Jarrod and the Working Group will continue to monitor the [ENSO alert system](#), which currently forecasts a 65%-70% chance for El Niño conditions during winter 2018-19. The Working Group reflected on the need to make stronger connections between forage conditions and fleet behavior; the local and regional role that currents may play in relative entanglement risk; and adapting forage data to help inform blue whale patterns as part of next season’s implementation of the RAMP.
- **Fishing Dynamics:** Fishermen on the Working Group shared that increased efforts were made to remove all gear from the water in the Central Management Area at the end of the season on June 30, and fishermen working in the Northern Management Area are actively removing their gear in advance of the July 15 season end date. The group reflected on the effects of the crab quality delay in the Northern Management Area on shifting fishing effort compared to years with no delay; the need for continued outreach to ports not represented on the Working Group (e.g., Santa Cruz); and the need for ongoing evaluation and review of how to learn and build upon supplemental projects conducted during the 2017-18 pilot (e.g., fishermen’s text thread, solar loggers, etc.). The Working Group highlighted the

value in gaining on-the-water reports from the commercial fleet and opportunities to expand this in the future, as well as improving outreach and coordination with the recreational fleet.

- **Whale Concentrations:** Karin Forney, Research Biologist with NOAA's Southwest Fisheries Science Center and Working Group advisor, shared the most recent 7-day composite running average of Monterey Bay whale watching operations' sightings ([here](#)) as a proxy for whale presence based on migration patterns. The Working Group reflected on the opportunities and limitations of using this datastream as a proxy for whale concentrations; the importance of aerial surveys for capturing both whale counts and trap numbers over a large geographic scale, acknowledging limitations due to weather; the possibility of revisiting vessel-based surveys to help supplement aerial survey data; and the interest of continuing to merge available whale, fishing, and forage information to gain a better understanding of the relationships across risk factors.

The Working Group plans to develop a more comprehensive lessons learned summary, and anticipates making this publicly available following their August meeting. This update will be shared via the [DCTF email list](#), the [Working Group webpage](#), and [CDFW's crab webpage](#). The Working Group welcomes your feedback and insights about the Working Group's efforts and the 2017-18 RAMP pilot.

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