



## California Whale Entanglement Discussion Dungeness Crab Fishing Gear Working Group Summary of Key Themes, July 13-14, 2016

In September 2015, a Dungeness Crab Fishing Gear Working Group (Working Group) was convened to further discuss and develop short-term strategies and begin exploring long-term options for reducing the risk of whale entanglements in California Dungeness crab fishing gear. Information about the Working Group's composition, charge, and activities are available at <http://www.opc.ca.gov/whale-entanglement-working-group/>.

The Dungeness Crab Fishing Gear Working Group met on July 13-14, 2016 to continue building on ideas and recommendations developed in [October 2015](#). This document captures key themes and next steps discussed during the meeting. Key themes 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. Key themes summaries, together with any additional Working Group products, will also be available to support discussions on the topic of whale entanglements held by 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). Additionally, these summaries will act as a source of information for those interested in this topic.

Next steps are captured throughout the document ([blue](#)), and also summarized at the end as part of the "Next Steps" section of the summary.

### Meeting Goals

Goals for this meeting included:

- Reconvene the Working Group, introduce new participants and advisors;
- Confirm Working Group Charter, including the goals and objectives, operating procedures, information sharing protocols, etc. for the next 12 months;
- Reconfirm and prioritize Working Group activities, with specific focus on reducing the risk of whale entanglements in California Dungeness crab fishing gear during the 2016-17 fishing season;
- Identify short-term priority projects/tasks, and outline roles for Implementation Teams for execution of pilot projects and testing;
- Begin discussing potential voluntary and/or regulatory needs associated with short-term priorities; and
- Clearly outline Working Group responsibilities, needs, and next steps in anticipation of September in-person meeting.

### Working Group Charter

A draft charter was developed to ensure a common understanding of the Working Group's charge and general operations. The Working Group had first discussed the draft charter during a conference call on [June 23, 2016](#), and an updated draft was presented to the group during the July meeting. The [Working Group charter](#) was finalized following a number of additional revisions and updates that were discussed on July 13, including:

- *Charge and Timelines*

- The group discussed its charge in terms of arriving at recommendations that would lead to voluntary versus regulatory changes. It was clarified that this group is an advisory body focused on developing recommendations, rather than a regulatory body that can ultimately make decisions.
  - Some participants expressed support for working to reduce whale entanglements through voluntary measures and avoiding, as much as necessary, recommendations for regulatory changes. Some participants expressed support for the group making regulatory recommendations, as long as they are supported by the fishing industry.
- The group agreed that Working Group recommendations will be shared with and considered by the DCTF.
- The idea of adding detailed timelines to the Working Group's charge and objectives was discussed. Working Group participants agreed the intention is to try to address the charter's goals and objectives through July 2017. Any additional timelines associated with specific tasks will be identified by Implementation Teams.
- The group discussed considering leatherback sea turtles to the Working Group's overall charge. Participants generally agreed their efforts should be focused on reducing whales entanglements, but interactions between Dungeness crab fishing gear and turtles will be acknowledged as complementary to the whale discussion and potentially addressed by Implementation Teams and/or through outreach efforts.

- *New and Replacement Participants*

- New and replacement participants were supported and confirmed in the Working Group charter.
- Various participants requested the facilitation team, in cooperation with CDFW, continue to work to identify a participant to represent Monterey Bay area commercial fishermen. Additionally, concern was expressed about the lack of participation from the Fort Bragg commercial fishing representative. **The facilitation team will work with CDFW to create Monterey commercial fishing seat and speak with the Fort Bragg commercial fishing representative about his participation.**
- Working Group advisors were introduced and received support as valuable sources of information to support Working Group discussions. Any new advisors at subsequent meetings will be invited by the facilitation team, CDFW, and/or NMFS.

- *Alternates*

- The Working Group discussed the need for alternates. Participants generally agreed that due to the limited number of meetings through June 2017, alternates would not be permitted. However, each participant may identify a single "observer" to sit in on Working Group meetings and help liaise with participants' peers. Observers will not be permitted to contribute to Working Group discussions or recommendation(s) development unless invited, but may attend whether a participant is present or not.

- *Working Group Meetings*

- The Working Group confirmed that in-person meetings and conference calls will not be open to the public. All meeting summaries are available on the OPC webpage.

- The April 2017 Working Group meeting date listed in the Charter will be revisited to ensure optimal participation and attendance. **The facilitation team will circulate a Doodle poll following the meeting to secure a date/time for this meeting.**
- *Internal and External Communications*
  - All information shared with the Working Group is considered public. The group recognizes the value in sharing information and updates received by the Working Group from its state and federal partners with their peers.
    - Working Group participants agreed they will not speak on behalf of the full Working Group, unless fully agreed to. Working Group participants will use their best judgement for how and when to share information, while also continuing to work in good faith.
    - Working Group products that are in development will not be communicated to the media, peers, or the public until they are deemed final and/or identified by the Working Group that products/projects are a place they can be shared.
  - Fishing representatives expressed concern about damage negative press can cause on the industry, and their participation on the Working Group is evidence of the industry's commitment to addressing the issue of whale entanglements. Environmental organization representatives invited fishing representatives to contact them directly to clarify misinformation and/or messaging that does not reflect the spirit of the Working Group's charge.
  - Participants agreed to keep the rest of the group informed of their efforts and communications as they relate to Working Group activities (e.g. press releases, blogs, etc.).

### **Working Group Updates**

Since October 2015, participants have been individually and collectively active in moving forward Working Group ideas and recommendations. Building off of an [initial update](#) shared by Working Group participants in June 2016, participants outlined the following:

- *Aerial Surveys*: On June 16, 2016, Working Group participants worked with the non-profit organization LightHawk to assess the type and quality of data that could be collected through aerial surveys. This flight built off of an initial "test" flight conducted in May, and focused on investigating the co-occurrence of whales and Dungeness crab fishing gear. Specifically, the June flight explored the feasibility of estimating trap density and location at a fine scale to potentially identify changes in fishing distribution, as well as the co-occurrence of fishing and whale distributions. Summaries of the May and June flights are available on the OPC webpage.
- *Bycatch Reduction Engineering Program (BREP) Project Proposals*: Two projects that investigate gear configurations and line profiles are being considered for funding by NOAA's Bycatch Reduction Engineering Program. If these projects are funded, there may be an opportunity to perform line profile testing and other related ideas the Working Group has identified. NMFS has also been considering how to explore these project ideas if funding does not come through at this time.
- *Gear Modification Outreach/Testing*: During the 2015-2016 Dungeness crab fishing season, fishermen across a number of ports tested different gear modifications. In Morro Bay, fishermen observed whale behavior related to different colored lines (e.g. yellow, red) and observed whales avoiding red lines. Other fishermen tested different strengths and types of rope, placement of swivels, weak links, etc.
  - Fishermen are interested in considering East Coast gear modification testing and lessons learned.
  - There is interest to continue building on the tests conducted by fishermen in coordination with NMFS scientists.

- *Lost Gear Recovery:* Voluntary programs to retrieve lost traps were underway in 2015 through the [Half Moon Bay Seafood Marketing Association \(HMBSMA\)](#) and [SeaSoc Society](#). To inform these efforts, the Nature Conservancy (TNC) have worked with the HMBSMA to pilot a tool where fishermen can collect data on the location of lost fishing gear. A bill is currently in the Legislature ([Senate Bill 1287](#)) that will require the California Dungeness crab fishery establish a lost fishing gear recovery program statewide. **The facilitation team will circulate an update about the status of SB 1287 to the Working Group following the meeting.**
- *Entanglement Response:* TNC is working with NMFS to coordinate whale disentanglement response trainings for fishermen in northern ports. Trainings were also recently made available to the Southern California lobster fishery (Spring 2016).
  - The group discussed the value in coordinating disentanglement trainings across all ports (north and south), because entanglements are occurring coastwide.
  - In addition to being trained to disentangle whales, it was identified that having a prevention aspect to the training (i.e., how to rig gear properly using the Best practices techniques) would be beneficial. This portion of the training could be lead by fishing representatives on the Working Group.

#### **2014-16 Entanglement Data Review and Discussion**

Participants brainstormed on the types of data and information they would like to have available to help inform reducing whale entanglements:

- Information on whale-prey connections.
- Information on gear density at various times of the year and how that relates to the presences of whales.
- Patterns associated with area, timing, whale behaviors, gear configurations, set locations, physical patterns (e.g. water temperature, El Niño, etc.).
- Understanding if entanglements are often caused by the same individuals' gear being involved in multiple entanglements or if it is a broader issue (i.e., fleet wide).
- Exploration into circumstances where there are high concentrations of whales and fishing gear that do not lead to any known entanglements.
- Potential known causes for the increase in whale entanglements over the last two years.

NMFS Working Group participants and the NMFS Southwest Fisheries Science Center (SWFSC) Working Group advisor gave a presentation to the group. The presentation was focused on building a common understanding of what is currently known about whale entanglements and behavior related to the California Dungeness crab fishery. The Working Group was also invited to engage in an in-depth review of whale entanglement photos to help interpret and analyze entanglement events. The subsequent discussion and brainstorm focused on sharing insights and experiential knowledge across meeting participants.

- **The Working Group advisor from the SWFSC will update and share PowerPoint presentation and associated peer reviewed journal articles with the Working Group.**

Key themes that emerged from the discussion of the NMFS/SWFSC presentation, entanglement case-studies, and associated data include:

### **Observed Patterns**

- Participants inquired as to why some entanglements involving Dungeness crab fishing gear are observed outside the Dungeness crab fishing season and the cause for the increased observations of entanglements in California, specifically the Monterey area.
  - Whales can remain entangled for months, and may not be observed until after crab fishing season has ended.
  - Whale distribution varies annually along the California coast and is often related to prey availability.
  - Although whales are highly migratory, “hot-spots” of large concentrations of whales are often observed in California. There are years and months when higher concentrations of whales are present in the Monterey area since it is an important feeding ground. Also, there are more people on the water in the spring and summer months in the Monterey area, including many whale watching boats, to potentially observe entanglements. There are fewer eyes on the water in northern California and in other states.
  - In recent years, there does appear to be a high observed co-occurrence between whales and set Dungeness crab fishing gear in the Monterey area.
- Although many entanglements are the result of unidentified gear, Dungeness crab makes up the largest portion of the gear that can be identified. It is difficult to determine whether the gear associated with a specific entanglement was being actively fished or is lost gear.
  - Improved gear markings and trap tags may help with this kind of identification.
- It is likely that the recent increase in entanglements is correlated to a change in fishing effort, change in distribution of crab over the past 3-4 years, and changes in observed whale distribution.
  - It is unclear if fishing depths have changed in recent years thereby impacting entanglement patterns.

### **Enhanced Reporting**

- The availability of whale observation data and fishing data does not align by month (i.e., most studies that observe whales are being conducted by scientists during spring and summer, while the majority of Dungeness crab fishing typically occurs in the winter and spring months). Resolving this mismatch in data may be valuable in identifying more concrete patterns if they were in alignment.
  - Information from various data sources could be examined to better identify patterns. This could potentially include data from the SPLASH project (<http://www.splashcatalog.org/>), information on whale occurrence from whale watching data, fishery data, etc. **The Working Group advisor from the SWFSC will begin to identify potential data sources and make inquiries with the respective data holders, to obtain additional information, including whale hotspots in the winter/spring months, oceanographic conditions, and other fishery data.**
- Access to better equipment (e.g. underwater cameras) would be valuable to disentanglement teams in gathering more information about the nature of entanglements.
- Information on the qualifications of the individual(s) involved in a sighting (i.e., are they a whale expert or member of the public) may be valuable.

### **Whale Entanglement Case Study Interpretations**

- NMFS has a series of questions fishermen involved in an entanglement event are asked, including gear set location, gear configuration, etc.

- Recently, changes in fishing practices have been observed, including in the way gear is rigged (e.g., extra scope at the surface, multiple trailer buoys). A “derby style” of fishing, particularly in 2016, coupled with a more mobile fleet has led some fishermen to not alter the length of their lines when they move gear across different depths.
  - Observations were made by disentanglement experts and commercial fishing participants that there is likely to be a correlation between whale entanglement and length of line between trailer buoys and/or slack line at the surface.
  - Multiple buoys are often found on entangled whales.
- NMFS indicated that review of entanglement pictures would benefit from the insights and expertise of fishermen, including those on the Working Group. There may be value in convening a Working Group Implementation Team to review images.
  - Fishing representatives would like to share entanglement images with the fleet to inform port discussions and gain additional insights on how gear is rigged that may contribute to whale entanglements.
  - The [California Whale Rescue group](#) has pictures of whale entanglements that can be distributed widely.
  - **NMFS will continue to work to remove proprietary information on entanglement photos so they can be shared with the Working Group and publicly.**

### **Prioritizing Working Group Efforts**

The Working Group discussed and identified priorities for reducing whale entanglements (through July 2017), which were informed by the Working Group’s 2015 recommendations and mindful of the limited timeframe to develop voluntary actions and/or projects prior to the 2016-17 fishing season. Priorities include:

- Understanding dynamics of whale entanglements
- Collaborative projects to test/verify
  - Gear modifications
  - Enhanced reporting (e.g., aerial surveys, electronic monitoring)
- Photo/data review (which may be incorporated into the design of future research projects)
- Communications and Outreach (e.g., NOAA trainings, Best Practices Guide, media)

### ***Gear Configuration and Modification***

To reduce entanglement events and the severity of entanglements, the Working Group generally agreed there was value in examining and testing gear configurations (voluntarily), and potentially recommending modifications based on those tests. Key ideas and considerations that arose from the conversation include:

- Excess surface line was discussed. This seems to be harmful to whales and could be “low hanging fruit” for the fleet to adjust. Reducing surface or slack lines could be addressed through voluntary actions or regulation. For either option to be viable, however, reducing slack lines must be supported by the fleet.
  - Considerations to reduce slack line include determining if the action meets Working Group objectives, is feasible for fishermen to implement (both physically and economically), and is enforceable. Pilot projects should evaluate these variables.
    - The cost of reducing the amount of line used per trap should be negligible.

- Education and outreach on best fishing practices is the most appropriate first step towards changing fishing behavior. Updating the Best Practices Guide, including messaging in the NOAA trainings, distributing the guide widely, etc. are needed.
- If widespread changes are not being made voluntarily and/or there is no reduction in whale entanglements, regulatory action will need to be considered. It is also important to highlight that not all entanglements are the result of multiple buoys, and excess line can be present with a single buoy in use.
- Some fishermen representatives expressed an interest in continuing to test gear modifications, while recognizing that testing can be difficult to do during the season.
- Working Group participants saw value in mapping out an engagement strategy to reach out to the broader fleet on this topic and encourage fishermen to voluntarily reduce slack line. CDFW will work with Working Group participants to develop an outline of feasibility and options for consideration, including how voluntary measures may translate into regulatory action. Working Group participants will work in parallel to continue outreach with the fleet on best fishing practices.
- A number of key questions were captured for the Working Group to consider as the potential recommendation to reduce surface line is developed:
  - What size of buoys are generally involved in entanglements? Should the size of the surface buoy be addressed?
  - Should there be a maximum length of line between surface buoys and/or the main buoy to the extension? Or a maximum number of surface buoys?
  - Should allowable surface slack be correlated with the depth of water the trap is being fished in?
  - Does neutral line cause fewer entanglements? Could the use of neutral line at the surface be tested?
  - What length of line at the surface is needed to minimize lost gear while also reducing the risk of entanglement?
- Projects to investigate effective gear modifications were also identified as a priority to track and potentially engage in.
  - NMFS is working with other scientists to investigate line profiles in the water and will be looking for fishermen to engage in the project(s) to help in the field and beyond (see BREP project details in 'Working Group Updates' section above). The group discussed other projects that could be investigated including whether different types or number of buoys could contribute to whale entanglements, the impacts of leaded line, etc. Some of these ideas may be addressed in the projects NMFS is partnering/coordinating. NMFS Working Group participants will keep the group informed on the progress of these projects.

A Gear Modification Implementation Team call will be scheduled in July to continue discussing the ideas outlined above. The summary of the Implementation Team's call will be shared with the full Working Group to inform discussions at the September in-person meeting. Tom Dempsey volunteered to serve as the lead of the Gear Modification Implementation Team, and Phil Pritting, Englund Marine, (and potentially other advisors) will be invited to join the conference call once scheduled.

### ***Enhanced Reporting and Co-Occurrence***

Since consistent data on co-occurrence of whales and Dungeness crab gear is limited (both in space and time), the Working Group discussed designing project(s) to increase the understanding of fishing behavior/distribution of fishing effort and whale dynamics. Finer-scale information could reduce the need for broad-sweeping closures

and inform smaller scale advisories. The group discussed two potential projects for testing during the 2016-2017 fishing season:

- **Aerial Surveys:** Similar to the efforts through LightHawk, regular aerial surveys over large swaths of the California coastline could be performed to measure the overlap of fishing effort (trap density and distribution) and whale presence. Surveys would focus on gathering information during the winter-spring months to help fill in data gaps and provide more details of whale/gear interactions during the height of the fishing season.
- **Data Loggers:** Passive tools (e.g. VMS, AIS, etc.) could be used to gather fine-scale information on the location of fishing gear compared with data on whale locations. As a first step, volunteer fishermen could share data collected from their existing data loggers (i.e., many fishermen are already using VMS). **NMFS is aware of a colleague that may be analyzing some of these existing electronic data sources and will follow up with that individual to learn about the project and the utility of the data generated.**

A number of questions need to be addressed to determine the feasibility of the data collection tools, related costs, potential sources of funding, data ownership, frequency of data collection, other related costs to fishermen, etc. An Enhanced Reporting Implementation Team call will be scheduled in August to continue discussing the ideas outlined above. The summary of the Implementation Team's call will be shared with the full Working Group to inform discussions at the September in-person meeting. Geoff Shester volunteered to serve as the lead of the Enhanced Reporting Implementation Team with support from Bob Maharry. Advisors will be invited to join the conference been identified as the lead. Bob Puccinelli, CDFW Enforcement, and other CDFW staff are available as needed to advise the projects.

### **Next Steps**

In addition to any next steps identified above:

- A summary of key themes will be developed and circulated to the Working Group for review, prior to making it publicly available on the OPC website.
- Working Group participants will discuss ideas, strategies, and initial recommendations with their peers in advance of the September meeting so participants can arrive prepared with feedback and additional insights on the short-term ideas and strategies.
- Strategic Earth will work to keep the Working Group participants and advisors informed on all of the efforts of the group and Implementation Teams.



**Working Group Participants**

Jim Anderson, *Commercial Fishing, DCTF Member*  
LCDR Jason Brand, *Coast Guard – Absent on July 13-14*  
Tom Dempsey, *The Nature Conservancy*  
Gerry Hemmingsen, *Commercial Fishing, DCTF Member*  
Christy Juhasz, *CDFW Marine Region*  
Kathi Koontz, *California Whale Rescue*  
Doug Laughlin, *Coastside Fishing Club – Absent on July 13-14*  
Dan Lawson, *NMFS*  
Bob Maharry, *Commercial Fishing*  
Tom, Mattusch *CPFV Owner/Operator*  
John Mellor, *Commercial Fishing*  
Kristen Monsell, *Center for Biological Diversity*  
Brian Nolte, *Commercial Fishing – Absent on July 13-14*  
Dick Ogg, *Commercial Fishing*  
Keith Olson, *Commercial Fishing – Absent on July 13-14*  
Kevin Pinto, *Commercial Fishing*  
Andy Roberts, *CDFW Enforcement*  
Lauren Saez, *NMFS*  
Geoff Shester, *Oceana*  
Andrea Treece, *EarthJustice*

**Advisors**

Pieter Folkens, *California Whale Rescue*  
Karin Forney, *SWFSC*  
Phil Pritting, *Englund Marine*

**Additional Attendees**

Tom Barnes, *CDFW Marine Region*  
Peter Kalvass, *CDFW Marine Region*  
Sonke Mastrup, *CDFW Marine Region*  
Robert Puccinelli, *CDFW Enforcement*  
Holly Wyer, *OPC*

**Facilitation Team**

Rachelle Fisher, *Strategic Earth Consulting*  
Sierra Helmann, *Strategic Earth Consulting*  
Kelly Sayce, *Strategic Earth Consulting*