



California Whale Entanglement Discussion Dungeness Crab Fishing Gear Working Group Meeting Summary of Key Themes, September 21, 2015

A Dungeness Crab Fishing Gear Working Group met on September 21, 2015 to begin to develop short-term strategies and explore long-term options to reduce the risk of whale entanglements in Dungeness crab fishing gear. Convened by the California Department of Fish and Wildlife (CDFW), with support from the California Ocean Protection Council (OPC), National Marine Fisheries Service (NMFS) and Strategic Earth Consulting, the Working Group is comprised of commercial and recreational fishermen, representatives from environmental organizations, and representatives from federal and state agencies. A list of the Working Group participants is available at the end of this document. [Click here](#) for information about the Working Group's charge.

This key themes summary highlights details discussed during the meeting on September 21, including initial group agreements, ideas for short-term strategies, and next steps. Answers to frequently asked questions and background details are also provided. The Working Group will hold its next meeting on October 8; a key themes summary will subsequently be developed and made publicly available on the OPC website (www.opc.ca.gov).

The primary purpose of these summaries is to provide Working Group participants with information to share and discuss with their constituents, as well as inform ongoing discussions within the Working Group itself. Key themes summaries from the September 21 and October 8 meetings, together with any additional Working Group outputs, will also be used to support discussions on the topic of whale entanglements held by CDFW, NMFS, 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.

Note: For the purposes of the Working Group's discussion, "short-term" refers to strategies that are primarily voluntary, intended to be implemented during the 2015-16 season or shortly thereafter, and will be made available for the DCTF's review during its October 2015 meeting. "Long-term" refers to strategies that could be voluntary or would require regulatory action and would be implemented according to California Legislative and/or Fish and Game Commission regulatory timelines (i.e., 1-3 years).

Working Group Agreements

Agreements in blue gained general support from the Working Group on September 21 to be included in their final recommendations, and will be given a final review during the October 8, 2015 meeting.

- **The Working Group recommends that over the coming months (fishing season and funding confirmation dependent), commercial fishermen in 8-9 major ports/harbors in California become trained by the NMFS Entanglement Response Team and part of the network of first responders to whale entanglements (SHORT TERM). The Working Group also recommends that, over time, NMFS and commercial fishermen begin exploring ways to better integrate fishermen's knowledge into the tools and methods used to disentangle whales (LONG TERM).**
 - This effort would help to build the capacity of the response network, increase the level of information and data available to NMFS, CDFW, and the fishing industry, could help to decrease potential for re-sightings and increase the quality of the data available, and increase the opportunity to respond to and disentangle entangled whales.
 - Additional questions for the Working Group's consideration include:

- What is the appropriate method for encouraging involvement from the recreational/sport fishing community?
 - How is information gathered through fishermen's support going to be used? Is there a way to have fishermen involved in reviewing data to help confirm accuracy before making public?
 - How can NMFS funding for conducting trainings be used most efficiently going forward? *Note: NMFS has submitted a request for funding and may have an update at the October 8 meeting.* How can existing response teams gain additional support (i.e., funding)?
- **The Dungeness crab industry has participated in a California lost fishing gear recovery program beginning in 2014. The Working Group supports an industry-led and statewide lost gear recovery program to be put into place in the long-term.**
 - The Working Group acknowledged the DCTF is engaged in an effort to adopt a permanent statewide version of the current gear recovery program, and includes this recommendation to support conversations happening within the DCTF.
 - The Working Group discussed the process by which they would collectively reach agreements and agreed that consensus of the full group would be required to move a recommendation forward for review and consideration by CDFW, NMFS, OPC, and the DCTF. Discussion details on those strategies/ideas that do not have the full Working Group's support will still be reflected in the key themes summaries (and other Working Group products as developed).
 - Key themes summaries will be made publicly available on the OPC website following each of the Working Group's two scheduled meetings (September 21 and October 8).
 - The September 21 discussion will focus on discussing and developing short-term strategies (i.e., anticipate these will be voluntary and implemented during the 2015-16 fishing season). Long-term strategies will be considered—with more focus during the October 8 meeting—while prioritizing developing short-term steps to inform long-term ideas and options.
 - Working Group discussions, ideas, and strategies will consider the commercial and recreational/sport fisheries. Both sectors agreed to work together and be unified in addressing this issue.

Short-Term Strategy Discussion and Development

Discussions related to short-term strategies were grouped into a number of "bins", including: options to reduce whale entanglements, filling data gaps, improved outcomes of entangled whales, and outreach and communications. Within these bins, specific ideas/strategies were discussed in some detail:

Best Practices Guide: The Working Group discussed the value of developing a "best practices" fishing guide to inform and educate commercial and recreational Dungeness crab fishermen on ways to reduce whale entanglements and avoid navigational hazards (e.g., reduce excess/slack in fishing lines, improve use of leaded lines and/or use of sinking rope, limit night fishing, create standards for weighting recreational traps, prevent strings of traps to be dropped on one another, etc.). While additional discussion on how a guide can be developed, funded, and distributed is needed, initial discussion on the possible ways to share/distribute a guide included the following options:

- Coastside Fishing Club could be a good mechanism to share information about best practices with their recreational membership, such as via their website, online surveys, and newsletters.

- Port marketing meetings prior to the commercial season opener could be a good opportunity to share best practices information with commercial fishermen.
- CDFW will be conducting outreach to the recreational fishing community following the anticipated adoption of new recreational fishing regulations at the October 7, 2015 Fish and Game Commission meeting. There may be an opportunity at that point to do additional communication/outreach regarding best practices.
- The United States Coast Guard (USCG) is interested in working with Working Group participants and agency staff to support the development and communication of a best practices guide.
- Gear stores were identified as another way to share a best practices guide.
- NMFS highlighted an example of a communications 1-sheet, the “Whale Entanglement Wheelhouse Guide” that was developed through a collaborative effort in Alaska aimed to reduce entanglements of whales in both gillnets and fixed gear fisheries. This “fishermen-to-fishermen” outreach document might be a useful example for the Working Group’s consideration when developing a best practices guide.

Processes for Improved Data and Information Gathering: Additional data is needed to fully understand the issue of whale entanglements, and is a necessary first step as part of developing short-term strategies. The Working Group discussed ways to better evaluate existing data, as well as identify data gaps and/or data needs that could be filled by fishermen’s knowledge, fisheries dependent data, small-scale pilot/test projects, and other creative means.

As the Working Group discussed strategies and tools to improve data and information gathering, a number of questions were asked that identified the types of data that would be useful to gather, including:

- Where is fishing gear set? (Aggregated over the course of the season and/or at multiple times throughout the season)
- What type of gear entangles whales? (E.g., overlapping lines, differing line strengths, certain gear configurations, leaded lines)
- Where are entanglements occurring? (I.e., observations of entangled whales not necessarily where the whale was entangled, reports are considered opportunistic)
- Why are entanglements occurring? (E.g. large masses of entangled gear known as “rosebuds”, certain whale behaviors)
- When are entanglements occurring? (E.g., when gear is being actively fished or lost rope/buoys, properly or improperly set gear, specific whale behavior)
- What fishery(ies) entangle whales? (I.e., collect data that helps to gain clearer picture of “unknown gear” category as part of the entanglement dataset)

Initial ideas/tools discussed to help improve data collection and analysis and fill data gaps included:

- *Improved Communications:* Improve communications between NMFS, CDFW, fishermen, environmental organizations, and others. For example, identify a group/network of fishermen to assist NMFS with identifying gear in entanglement photos to help improve reliability and quality of data gathering and analysis. The Working Group discussed how to encourage fishermen to open lines of communication with NMFS.
 - Non-fishing community Working Group participants expressed an interest in being educated on the basics of Dungeness crab fishing to help them understand how things

work out on the water. Fishermen offered to take folks out on the water, as well as explain the general operations of a Dungeness crab vessel.

- *Improved reporting*: Improve reporting of recreational and commercial fishing practices. For example, fishermen could help characterize seasonal density of traps to improve the NMFS co-occurrence model and better identify overlap with whale distributions.
 - There was concern expressed by fishermen regarding how data provided by fishermen would be used. Working Group participants identified tools like “eCatch” that allows fishermen to collect information to gain a better picture of their activities, and to selectively share some or all of that information with regulators.
 - A fisherman stated that his port worked with Dan Lawson, NMFS, to develop list of questions NMFS can use to ask fishermen whose gear has been found on a whale, including how and where gear was deployed.
- *Increased evaluation of PRB (potential biological removal)*: The Working Group expressed concerns about the mismatch between the trajectory of increased whale populations and the frequency of whale population assessments to account for such things as an accurate PBR. NMFS agreed that PBR should be reevaluated more frequently, however suggested developing a recommendation on this point is not a valuable use of the Working Group’s limited time since it is something NMFS is currently evaluating.
 - Concerns were expressed that interactions between whales and fishermen would be an ongoing problem given that whale populations are increasing. The facilitation team explained that the goal is reducing the risk of entanglements.
 - Working Group participants discussed the value of collecting “off-year” metrics, which could include data collected between formal NMFS marine mammal population assessments to inform interim, more frequent PBR calculations.
- *Drones and Aerial Surveys*: Use of drones or planes to fly over geographic areas of concern during months of higher concentration of whale populations to help inform co-occurrence in real time. This would help identify high-risk areas for potential entanglements and address seasonality and/or localized occurrence.
 - Could also fly over areas where whales are not in high concentrations to identify places where co-occurrence is not happening.
 - Potential constraints could include permitting requirements and/or funding. Some data gathered via this tool could be gained via fishing dependent data, which might be more cost effective.
- *Logbooks*: Could provide greater understanding of trap distribution/densities, which would also serve as a proxy for annual changes in crab distribution. Information could be gathered monthly and/or at the end of the fishing season. Information gathered could be overlaid with co-occurrence model.
 - Some fishermen felt logbooks were too time-consuming to implement and would not collect information that would be useful to addressing whale entanglements. The dynamic nature of the fishery (i.e., large amounts of gear are moved up to multiple times per day) does not lend itself well to on-the-job data collection.

Strategies to Reduce and/or Address the Risk of Whale Entanglements: The Working Group reviewed a number of tools that could be potentially tested and/or evaluated to determine their effectiveness in reducing the risk of whale entanglements. The Working Group discussed each tool within the context of considerations such as capacity needs, funding requirements, scope and scale, how pilot projects may help inform data gaps, etc.

It was discussed that pilot projects would be most feasible if they were conducted in the latter portion of the fishing season so those involved in the projects would not be losing income. This timing would also correlate with the increased reporting of whale entanglements during the spring months. The Working Group generally agreed that there is value in taking the next year or so to conduct a series of tests/research to explore a number of ideas to better understand the most viable option(s) and to avoid making regulatory changes without sufficient information. Most of the preliminary options discussed by the Working Group would not be tested fleet wide, but rather would involve a select number of fishermen and/or a specific port/harbor.

Initial ideas/tools discussed to reduce and/or address the risk of whale entanglements included:

- **Gear Modifications:** The Working Group recognized it is difficult to connect gear modifications to specific reductions in whale entanglements in the near-term. However, testing out gear modifications can provide valuable information to base the effectiveness of assessments and/or a selection of options in the future. When possible, gear concepts will be developed across both commercial and recreational sectors without distinction. The Working Group discussed a number of possible gear modifications that could benefit from small-scale testing:
 - **Gear Line Marking:** This would require intermittent markings on the line to help distinguish a Dungeness crab line, particularly when there is no buoy found attached to a line that has entangled a whale. The Working Group discussed how this modification would not help determine where gear was set because gear moves (by weather and by actively fishing the gear), however line markings would be effective for identifying a specific fishery.
 - There was discussion about how often a line would be marked, and concerns expressed by fishermen who work with varying lengths of line that are frequently moved to varying depths. There was also discussion about the costs associated with marking lines. Additional ideas included working with a gear manufacturer to add color to the lines, as well as to gather existing data on the type(s) of fishing line used by each fishery.
 - A number of fishermen suggested that gear marking may not be necessary if they work with NMFS to review photo documentation of entanglements to help identify the gear involved.
 - **Sinking vs. Floating (with lead) Lines:** Testing a sinking vs. a leaded floating line was considered a practical strategy for the fishery to investigate since the outcome could reduce entanglement risk. Since both line types have a different profile underwater, it may also be valuable to investigate the entanglement risk based on underwater profile of a line.
 - Fishermen explained the profile of a floating line in the water, and how due to currents it has more of a potential to create “L-shapes”. Additionally, if a lead falls off, the line will float; lines can also break where a lead is attached due to how the lead affects the “wear” of the line.

- The Working Group discussed the benefits of testing this idea in high-whale traffic areas, and involving areas/ports that have willing participants. The Working Group also discussed investigating and/or gathering data on what type(s) of lines the fleet is using, either through a gear manufacturer/distributor or by polling the fleet.
- **Quick Release Lines:** The Working Group discussed the feasibility of testing quick release lines (i.e., line where whales could break the line but normal fishing activity would not). A recent International Whaling Commission study (<http://onlinelibrary.wiley.com/doi/10.1111/cobi.12590/pdf>) suggests that broad adoption of ropes with a breaking strength of 1,700 lbs. or less could reduce entanglements by at least 72%. The Working Group discussed the possibility of the quick release line being incorporated into the gear either between the trap and the buoy, or between the buoy and the main line.
 - The Working Group learned about equipment that has been used on the East Coast to measure the tension that is applied to gear in real-time. This type of evaluation could be tested through a small-scale pilot program in California with interested fishermen.
 - There was discussion about fishermen knowledge regarding the strength of their lines, and Working Group participants questioned if whales would put more tension on a line than occurs during normal fishing activity (since fishermen use mechanical gear to pull traps).
 - There were some Working Group participants open to testing out this option, while others who were unsure of quick release lines would reduce entanglement risk. Other Working Group participants expressed that quick release lines may reduce mortality and improve outcomes for entangled animals.
- **Other Ideas Discussed:** The Working Group identified a number of other ideas/strategies that would benefit from additional discussion on October 8, including but not limited to line cutter mechanisms/weak links, vessel monitoring system (VMS), trap limit for the recreational/sport fishery, and revisiting the maximum soak time for Dungeness crab gear.
- **Research Questions:** The Working Group highlighted a few questions that are important to consider when conducting any testing/pilot projects, including:
 - Is the modification feasible for the Dungeness crab fishery?
 - Will it inform the whale entanglement issue?
 - Will it help inform data gaps?
 - How will it be evaluated for effectiveness?

Outreach and Communications: The Working Group discussed the need to develop a communications strategy that could be used by all participants to talk about the collective efforts being made to address reducing the risk of whale entanglements. This strategy could also identify steps being taken by the fishing industry, including current responsible actions (e.g., commercial trap limit program, lost gear recovery program, limited entry, etc.). The Working Group requested this topic be added to the October 8 meeting agenda so there could be time to discuss/develop coordinated talking points/statement(s) during the October 8 meeting.

- A participant volunteered to develop bullets to inform development of a Working Group statement to the media upon completion of its efforts for review and discussion on October 8. This statement may be shared with the media or general public following the October 8 meeting, and potentially tie in with the October 2015 DCTF meeting and beginning of the commercial fishing season.
- The Working Group agreed that if the media contacts participants between September 21 and October 8 there will be a concerted effort to provide comments within the context of the Working Group's collective efforts.

Funding for Short-Term Strategy Implementation & Ongoing Function of the Working Group: The Working Group discussed the need for funding/support to implement Working Group recommendations. Participants also discussed the value in functioning beyond November 15, 2015, including how this group could play a role in assessing the success of any short-term strategies that are implemented (e.g., small-scale pilot projects).

- Working group participants and OPC staff will explore possible sources of funding within their respective organizations/associations. Information gathered will be reported back to the Working Group on October 8.

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 before October 2, prior to making it publicly available on OPC's website.
- Working Group participants will discuss ideas, strategies, and initial recommendations with their constituents in advance of the October 8 meeting so participants can arrive prepared with feedback and additional insights on the short-term ideas and strategies discussed on September 21.
- A number of NMFS data/products were identified and requested to be circulated in advance of October 8, including:
 - Protocol to assess entanglements
 - Entanglement data shared with the DCTF earlier this year, with appropriately updated entanglement reports and/or classifications of entanglements
 - Characterization of entanglements related to fishing behavior
 - List of questions developed to ask fishermen whose gear has been involved in a whale entanglement
 - Bring photographs of whale entanglements to the October 8 meeting

Key Questions

Meeting participants asked a number of questions throughout the day's discussion. Key questions and their associated responses are captured below (presented in the order asked during the meeting). For additional answers to key questions, [click here](#).

Q: How many commercial Dungeness crab traps were fished prior to the implementation of the commercial trap limit program?

A: There is no way of accurately knowing this because trap counts were not required. Beyond that, there is a CA Sea Grant study by Chris Dewees in 2004 that utilizes data from 2000 that estimated 170,000 commercial traps were employed. This is the general number that the trap program used as a baseline.

Q: What information is available to assess effort in the Dungeness crab sport fishery? What is the relative proportion of commercial passenger fishing vessels (CPFVs) versus private vessels? Where is the gear being set, and how?

A: Upper estimates of trap deployment can be made for CPFVs [because they have a 60 trap per vessel limit]. Private boats are more difficult to assess because they do not have trap limits. CDFW is exploring adding some questions about trap deployment to the pre-season survey completed through the California Recreational Fisheries Survey (CRFS) program. There is limited information available on the number of CPFVs versus private vessels.

Q: Have Dungeness crab buoys or crab traps with a fisherman's L number been physically attached to a whale and witnessed in-person?

A: Yes, and we try to return the gear to its owner if possible. Entanglement response efforts sometimes result in loss of the gear at sea, however NMFS is in touch with CDFW to get more information when the documentation is sufficient.

Q: How often is an actual trap attached to the whale?

A: It is hit or miss. With spot prawn, whales are often seen with the whole string of traps attached. With Dungeness crab traps, sometimes there is a trap attached however there are many times where it is not.

Background and Purpose

On August 20, 2015, CDFW, NMFS and OPC hosted a meeting to share information and explore ideas for reducing the risk of whale entanglements in California Dungeness crab fishing gear. This discussion was convened to be responsive to the notable increase in the number of whales entangled in fixed-gear fisheries along the West Coast over the last several years. Given that the largest portion of the identifiable gear involved in these entanglements is from the Dungeness crab fishery, the primary focus of the August 20 discussion was share data collection and information amongst interested parties in an effort to explore ways to reduce the risk of entanglements with Dungeness crab fishing gear. The meeting agenda, presentation slides, and key themes summary are available on the OPC website: (<http://www.opc.ca.gov/2015/08/public-meeting-to-discuss-whale-entanglements-off-california/>).

One outcome of the August 20 discussion was the need to convene an informal Working Group 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. The Working Group will meet prior to the start of the 2015-16 fishing season, and will include CDFW and NMFS staff, fishermen, ENGOs, and others, as appropriate. All recommendations developed by the Working Group will be made available to CDFW, NMFS, the DCTF, and others.

Working Group Participants

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