Crab Gear/Whale Entanglement Workshop
Workshop Summary

Thirty-nine crab fishermen, gear specialists, and marine mammal specialists from Washington, Oregon and California attended the two-day workshop held March 29, 30, 2017 in Portland, Oregon.

The workshop, convened by Pacific States Marine Fisheries Commission thanks to a BREP grant (NMFS Bycatch Reduction Engineering Program), was organized with the help of a team consisting of NMFS West Coast Region (Protected Resources Division), Oregon Sea Grant, Oregon Department of Fish and Wildlife, and HT Harvey and Associates.

The workshop was structured to share information about what is known and not known about entanglements on the U.S west coast, general knowledge of gear behavior and whale behavior, as well as possible fishing innovations and other options that might be effective in reducing the growing number of entanglements on the U.S. west coast, especially of humpback whales, that have manifested in recent years.

Two guests from the east coast shared their expertise dealing with reducing whale entanglements, especially the highly endangered North Atlantic right whale. The representative from the Maine Lobstermen's Association discussed all the many actions that they had taken to reduce entanglements and cautioned the group about the lack of flexibility for their industry under the "Take Reduction Team" established under the provisions of the Marine Mammal Protection Act (MMPA) and operating on the east coast for the last two decades to reduce whale entanglements there. No such team has been set up on the west coast, but entanglement reports are increasing to a level where it may be necessary in the future, so it's best to be pro-active now when there is flexibility.

On the west coast, agencies and the crab industry have already been working together productively and pro-actively on a number of endeavors such as lost gear recovery programs and the development of best management practices to reduce entanglements. In California, fishermen have been working for the last two years with agencies, academics, and non-governmental organizations on the Dungeness Crab Fishing Gear Working Group to make progress on this issue and a

similar group is starting up this spring (2017) in Oregon. Some of the fishermen present had additionally already been working with NMFS and HT Harvey to test gear modifications and many had already attended presentations about this topic. Many fishermen are already using neutral/sinking line that many folks believe might help keep line profiles more vertical in the water column. Whale disentanglement teams are especially active in California and Washington.

However, the efforts to date are not sufficient. More needs to be done, as entanglements continue to rise and future marine mammal stock assessments will reflect increased entanglement risks for west coast crab fisheries (and other fixed gear fisheries involved with entanglements) through the MMPA List of Fisheries. Changes in categorization of fisheries under the List of Fisheries increase the chance that west coast crab fisheries could fall under increased regulations under the MMPA. Fishermen (and all participants) stressed their intention to continue to work to get out ahead of this situation and keep the crab fishery sustainable and with a good reputation. No one wants to see a whale entangled.

The reason for increasing entanglements on the U.S. west coast are unknown, but may be due to a combination of factors that could include changing ocean conditions such as longer-lasting high domoic acid levels that have delayed the fishery, poor ocean conditions driving humpbacks closer to the coast searching for food, and larger whale populations. Changes in the distribution of fishing effort and whales could have led to more of a co-occurrence of whales and fishing gear. There is also a large gap in understanding the many factors that lead to entanglement and therefore the efficacy of various gear modifications is also speculative. Research is ongoing to try to understand how whales get entangled, what part of the gear entangles them first and other such factors. However, since whale entanglements are infrequently observed as they are occurring and details from the observation of entangled whales are often lacking, little progress has been made to date in understanding this.

It is generally assumed that reducing the number of vertical lines in the water and any loops and roughness or snag points in those lines and in the length of the trailer line will reduce the likelihood that whales will get entangled. It was noted that at least a third of humpback whales seen on the U.S. west coast have

entanglement scars on them, which means that some whales can free themselves of the lines. However, how they do so, how many do so successfully, and what might make gear more likely to be able to be shed is unknown. The long-term health impacts of whales being entangled and ultimately freed is also not understood.

After the background information was shared, break-out discussions and full-group discussions were focused on various options that could be tested or tried including gear modifications as well as time and area modifications of fishing practices or effort. Additional innovations on removal of lost gear was also discussed. Increased and improved entanglement reporting, improved gear marking to help with understanding the origins of entanglement, and other research needs were noted. Because the gear testing will take time to establish feasibility and it will be difficult to pinpoint gear modification effectiveness, some workshop participants suggested time, area and effort considerations to reduce entanglements were potentially more immediate and meaningful solutions. In general, there was consensus that any innovations or measures to reduce entanglements should be focused on times when entanglement risks are higher, and not work to undermine the heart of efficient crab fisheries.

It is important to note that ideas generated and discussed by the group during the workshop and presented in this report are individual comments (though some fishermen represented their groups) and no consensus on the best way forward for west coast crab fisheries as a whole was sought or achieved during the workshop. It is expected that groups like the CA and Oregon working groups, fishing groups or individual fishermen throughout the coast, and other marine mammal and gear experts will draw from the ideas and conversation of this workshop for more discussion and further consideration. The ideas to reduce/minimize entanglements generated and discussed during the workshop are as follows:

Gear Innovations

(note: gear innovation/adjustment may be seasonal in nature)

1. Sinking or neutral lines
2. Length of trailer lines
3. Keep gear tighter
4. Breakaway gear
5. Whale-friendly buoys (no knots, smooth)
6. Time-release line cutter

7. A “pool noodle” deflection sleeve below buoy (to make gear more likely to roll off and not get caught)
8. Colored lines or Lights?
9. Multiple traps on line (called “trawling up” on east coast)
10. Samson line (stronger, thinner rope)
11. Elimination, where possible, of leads and line splices
12. Buoy-less gear (no lines, gear in water until remote trigger)
13. Additional marking on line to improve tracking
14. Acoustic deterrents

Lost Gear Initiatives

1. Change the dates for lost gear recovery to allow recovery earlier
2. Changes to or expansion of in-season lost gear retrieval programs
3. Gear retrieval incentives
    a. Directly pay for retrieval
    b. OR system - return the pot but keep the crab
    c. WA system - keep the pots you retrieve in the off-season
4. Dragging in April/May to remove pots without buoys
5. Regularly updated lost gear charts

Seasonal Changes

Note: seasonal changes could be regionally considered

1. Decrease fishing effort in the Spring (reduced pot limits, earlier closure, other mechanisms?)
    a. Requires state-level process to change fishing seasons
2. Limit fishing to specific depths or locations in the Spring and/or in specific ocean condition years (e.g., prey type/abundance, ocean temperature, predicted whale presence)
3. Start harvest season earlier by changing market size limitations
4. Seasonal gear changes

A list of these ideas was distributed to the participants in the form of a survey which each person could fill out. People were given time within the workshop to fill it out. They were collected at the end of the workshop. The survey form asked each person’s input on whether the option would have a high or low cost to the fishery, if it was do-able?, would it be likely to make a difference to the whales?, and if it was a good prospect for testing. Participants were also asked what research did he/she think should be done and what has already been done. Thirty-six of the thirty-nine participants filled out the survey.

Gear options regarding multiple traps on a line, Samson lines, and acoustic deterrents were generally questioned or rejected as potentially causing more harm to whales than doing good. Other options such as breakaway gear and buoy-less gear were a real concern for their perceived high cost and potential for gear loss, at least at this stage of development. Other potential gear innovations such as whale –friendly buoys and time-release cutters also have high costs presently and are untested, but could be developed for testing.

Much has already been done to incentivize the retrieval of lost pots, but increased in-season or earlier season retrieval were ideas that received support.

Since most of the crab fishery value is in the first few months of the season, shortening the season to avoid times in spring and summer when whales are more likely to be in the area gained traction with some participants as a way to have an immediate impact on reducing potential entanglements. Many fishermen have moved on to other fisheries by then. Some states already have limits in the amount of crab that can be landed in the later season. However, there are some fishermen that would be harmed by this approach. Additional exploration of any ideas that focus on the spring and summer crab fisheries was considered valuable.

The workshop notes follow, including a copy of the agenda, as implemented, a list of participants, copies of the presentations, the 2016 entanglement report, and best management practices flyer.