

CALIFORNIA DUNGENESS CRAB FISHING GEAR WORKING GROUP

Guidelines for Research and Development Projects

Focus on Ropeless Gear Innovations

February 2019

The California Dungeness Crab Fishing Gear Working Group (Working Group) is committed to reducing the risk of whale entanglements in Dungeness crab fishing gear while supporting thriving whale populations and a thriving and profitable Dungeness crab fishery along the West Coast. Since 2017, the Working Group has developed the [Risk Assessment and Mitigation Program \(RAMP\)](#), which is designed to identify and assess elevated levels of entanglement risk of whales and other marine life and determine the need for management options to mitigate risk. The Working Group is interested in working with the agencies, fishermen, researchers, innovators, and others to develop management ideas and options to include in the RAMP's draft [Management Measures Toolbox \(MMT\)](#). This includes the research and development of fishing gear innovations and technologies.

In October 2018, the Working Group submitted a recommendation to the California Ocean Protection Council, California Department of Fish and Wildlife (CDFW), and the Pacific States Marine Fisheries Commission to establish a clear and transparent process to prioritize funding for research and development projects ([here](#)). The Working Group has developed the following guidelines to specify key benchmarks that are essential to consider during the development phase and prior to widespread use of any new gear innovation (low tech or high tech). The Working Group recommends that innovators and entrepreneurs consider the following when developing gear innovations to reduce entanglement risk. The Working Group also requests that agencies consider the following when developing criteria to review and evaluate gear innovation funding proposals at the research and development phase to ensure gear innovations are suitable for implementing at a broader scale.

Based on gear innovation discussions to date, this guidance is focused primarily on ropeless gear technologies. However, the Working Group envisions that these guidelines will be applicable to other gear innovations. For additional information about the Working Group's efforts regarding research and development projects, please contact info@cawhalesgroup.com or Paige Berube (Ocean Protection Council, paige.berube@resources.ca.gov), and visit <http://www.opc.ca.gov/whale-entanglement-working-group>.

Ropeless Gear Innovations Guidelines

The Working Group has identified the following priorities for successful gear innovation efforts. At-sea testing of technologies that meet these guidelines, or projects intended to develop or advance existing technologies to meet these guidelines should be prioritized.

- **Enforceable** - The location of gear must be available to CDFW's Law Enforcement Division (LED), either visually or virtually, to ensure fishermen are fishing within their trap limit allotment, aren't fishing in Marine Protected Areas or other restricted areas, etc. Gear innovations that fail to provide the location of gear will not be adopted or allowed for commercial use. Lost and abandoned gear should be easily traced to encourage responsible ownership and allow for enforcement actions.

- **Economical** - The cost to obtain the new gear innovation needs to be practical relative to the economics of the fishery. In addition, there is an average loss rate which adds additional annual costs for new gear. Conversely, some gear innovations may reduce gear loss relative to current operations. Gear innovation must consider how to reduce loss rates and/or keep additional costs to a minimum. Gear innovation may test ways to reconfigure gear to reduce costs.
- **Fishable** - Gear innovation must be configured and deployed in a manner compatible with the operation of the fleet, for both small and large boat operations. Deployment and retrieval must be practical, simple, and efficient with time. In addition, the location of the gear must be easily identified by other fishermen in the vicinity; it is an added bonus if gear design prevents theft.
- **Reliable** - The gear must have demonstrated a low failure rate in varied ocean conditions (i.e., gear was consistently and successfully deployed and retrieved) and must have a functioning prototype. Projects should consider testing gear to determine failure rates of actual equipment in varied ocean conditions.
- **Safe** - The gear must be proven to be safe for use in rough ocean conditions being mindful of the fishing vessel capabilities operating the gear.
- **Minimize adverse impacts to marine life** - Gear innovation must minimize potential negative impacts to whales or other species of concern, including the potential for acoustic release mechanisms to emit sounds that may disrupt the behavior or injure marine life, especially when the gear is in high concentrations.