

## **Gear Innovations Testing and Validation in the Commercial Dungeness Crab Fishery**

### **Project Overview**

- The National Marine Sanctuary Foundation, in collaboration with the California Ocean Protection Council (OPC) and California Department of Fish and Wildlife (CDFW), is testing gear innovations in the commercial Dungeness crab fishery designed to mitigate the risk of whale and marine life entanglements, and support a thriving fishery. Scientists at the National Oceanic and Atmospheric Administration (NOAA Fisheries) and the California Dungeness Crab Fishing Gear Working Group (Working Group) are also advising on the project.
- The objective of this project is to trial gear innovations and modifications under real-world fishing conditions over an extended period in partnership with commercial Dungeness crab fishermen. The project will trial multiple pop-up fishing technologies, as well as Novabraid “South Shore” sleeves, with a focus on the reliability and retrievability of the gear.
- Specifically, the data obtained will help us answer: (1) can fishermen deploy and retrieve gear using their existing set up (e.g., standard traps, hydraulics, etc.) or with minor modifications, (2) whether gear retrieval is reliable in a variety of sea conditions and depths, and (3) specific to sleeves, how long they last before showing signs of fatigue and/or breakage.
- Results from this project will help inform the research and development of innovative gear types which may later be approved by CDFW for use during periods of elevated entanglement risk. The gear trials are expected to begin in late 2021 and wrap up in late spring 2022. The exact start and end dates will depend on when training is completed as well as the end of the commercial Dungeness crab season in each management area.

### **What gear will be tested?**

- The following gear types will be trialed based upon recommendations from the Working Group, previous gear demonstrations in September 2019, and the availability of manufactured prototypes and budget.
  - [Longsoaker](#) (galvanic timed release pop-up buoy)
  - [Desert Star](#) (on-demand acoustic pop-up buoy)
  - [Fiomarine](#) (on-demand acoustic pop-up buoy)
  - [Edgetech](#) (on-demand acoustic pop-up buoy)
  - [Novabraid](#) (South Shore breakaway sleeves)

### **How can fishermen participate?**

- Fishermen are needed who can provide expertise and feedback on the usability and reliability of the gear types under real-world fishing conditions. Participation will be based on established plans for data collection and reporting, which will guide the testing.
- The project aims to recruit 5 vessels to trial pop-up gear and 10 to trial South Shore sleeves during the open fishing season (target testing window is November 2021 to May 2022). Participating vessels will receive a stipend to support their participation in the project.

- Training will be offered on the project's study design, data collection protocols and reporting, as well as the use and maintenance of the fishing systems. Fishermen trialing pop-up systems will be provided with experimental fishing gear. Fishermen trialing South Shore sleeves will be provided experimental sleeved lines, with the option to keep the rope and sleeves at the conclusion of testing. Virtual training and/or smaller one-on-one meetings will be considered if restrictions from COVID-19 present challenges to in-person gatherings.

#### **How will the trials be carried out?**

- Participants will trial two pop-up gear systems (one at a time) or South Shore sleeves with the flexibility to choose their specific testing period during the open fishing season (target testing period is November 2021 to May 2022). Each fisherman will be requested to achieve a certain number of deployments and retrievals per unit, and may finish their trialing of a gear type in a shorter time period.
- All trials will include a set of controls, i.e. traditional pots that will be deployed/retrieved in conjunction with experimental gear deployments/retrievals. Each pop-up system will have a traditional buoy line to provide a backup in case of retrieval failure and to facilitate safe testing.

#### **What information will be collected and reported?**

- Fishermen will collect data on each deployment and retrieval and provide an evaluation of each system after testing. Data collected will include date, time and location of deployments and retrievals, retrieval success or failure, factors thought to affect gear performance, and sea state and weather conditions. CDFW Marine Region, OPC and Foundation staff may request to ride along to observe and/or participate in data collection.
- The Foundation will oversee data collection, input, security, and analysis during and after each trial. Project status reports and final reports with data summaries will be made publicly available on OPC's website.

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For more information or questions regarding gear innovations testing in the Dungeness crab fishery visit <https://marinesanctuary.org/gear-innovation> or contact the Foundation's Gear Innovations Manager, Greg Wells, by phone (949) 630-6951 or email [gwells@marinesanctuary.org](mailto:gwells@marinesanctuary.org).