

California Department of Fish and Wildlife

Guidance for Testing Trap Fishing Gear Modifications

June 2019



Increased numbers of whale entanglements off the U.S. West Coast in recent years, compared to historical levels, have highlighted the need for trap gear modifications that reduce the risk and severity of marine life entanglements. According to information provided by the National Marine Fisheries Service, over half of confirmed entanglements cannot be attributed to a specific fishery, but when the fishery of origin is known, the majority involve Dungeness crab gear. A variety of potential gear modifications have been identified for the commercial Dungeness crab fishery, and other trap fisheries have expressed interest in similar changes.

The California Dungeness Crab Fishing Gear Working Group has established guidelines for developing fishing gear innovations and modifications ([here](#)¹). Of these guidelines, the California Department of Fish and Wildlife (CDFW) considers enforceability and minimizing impacts to marine life to be the highest priorities.

Prior to widespread adoption, or mandatory use, of any fishing gear modifications, additional testing and refinement must be conducted. CDFW encourages testing through incorporating modifications into legal fishing gear, which can be done in both recreational and commercial fisheries. Grip-sleeves, weak links, line cutters, and alternative rope materials could be tested in several fisheries, as their use is not prohibited by existing statute or regulation.

New or “innovative” gears such as “ropeless gear” (commonly called “pop-up gear”) can only be tested under certain conditions. Fish and Game Code §9005 requires that each trap, or string of traps, must be marked with a buoy. Many trap fisheries also include marking requirements for surface gear (e.g., operator or commercial fishing license numbers, buoy tags, etc). In some fisheries, pop-up gear could be tested if a secondary line and buoy meeting the regulatory requirements of the relevant fishery are attached. However, pop-up gear is *specifically* prohibited within commercial finfish (including Hagfish) trap fisheries, regardless of whether additional, non-pop up gear is attached. Table 1 contains a partial summary of potential fisheries for testing fishing gear modifications, permit requirements, and restrictions on times and areas where gear can be tested.

As a reminder, it is the responsibility of the commercial or recreational fishing vessel operator to hold the required license and/or vessel endorsements for the fishery in which gear is being tested, and to adhere to all fishery regulations. Gear manufacturers and observers must comply with fishing regulations during all onboard activities. If the gear conforms to current regulatory requirements of the relevant fishery, no additional authorizations should be required. Individuals or groups who intend to conduct testing are encouraged to contact CDFW Marine Region staff (Ryan.Bartling@wildlife.ca.gov, Morgan.Ivens-Duran@wildlife.ca.gov) to ensure planned activities are consistent with state regulation. Gear innovators are also encouraged to contact the California Dungeness Crab Fishing Gear Working Group (info@cawhale.org) to coordinate activities and identify potential fishery partnerships.

¹ http://www.opc.ca.gov/webmaster/_media_library/2019/02/Whales-Gear-Innovations-R-and-D-Guidelines-February-2019.pdf

Table 1. Potential fisheries for testing gear modifications and innovations through Fall 2019. Note: this table includes a partial summary of relevant regulations; other restrictions regarding gear, permits, and area fished apply.

Fishery	Permit(s) Needed	Season	Area Restrictions	Other restrictions
Recreational Rock Crab	Sport fishing license	Year Round	NA	Limit = 35 individuals (if catch retained)
Commercial Rock Crab	General Trap Permit, Northern or Southern Rock Crab Permit	Year Round	Cannot be used in Districts 9, 19A, 19B, 21 or the front side of Catalina	
Commercial Spot Prawn	General Trap Permit, Spot Prawn Trap Vessel Permit	Feb – Oct (South of Point Arguello), Aug – April (North of Point Arguello)	South of Point Conception, can only be fished in waters deeper than 50 fathoms	
Commercial Coonstripe Shrimp	General Trap Permit, Coonstripe Shrimp Vessel Trap Permit	May - Oct	South of Point Conception, can only be fished in waters deeper than 50 fathoms	
Commercial nearshore finfish traps	Nearshore or Deeper Nearshore Finfish Permit with a trap endorsement	May - Jan	Cannot be used in Districts 10, 11, 12; Traps cannot be set within 750 feet of a pier, breakwater, or jetty in Districts 6, 7, 17, 18, 19, 19A, 19B, 20, 20A, 20B, or 21	Pop-up devices cannot be used or possessed
Commercial Hagfish	General Trap Permit	Year Round		Pop-up devices cannot be used or possessed

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March 2021



NOTE: Individuals or groups who intend to conduct testing are encouraged to contact CDFW Marine Region staff (Ryan.Bartling@wildlife.ca.gov, Morgan.Ivens-Duran@wildlife.ca.gov) to ensure planned activities are consistent with state regulation. CDFW also encourages all individuals to contact WhaleSafeFisheries@wildlife.ca.gov prior to initiating testing to ensure CDFW Law Enforcement Division is aware of planned activities.

Increased numbers of whale entanglements off the U.S. West Coast in recent years, compared to historical levels, have highlighted the need for trap gear modifications that reduce the risk and severity of marine life entanglements. According to information provided by the National Marine Fisheries Service, over half of confirmed entanglements cannot be attributed to a specific fishery, but when the fishery of origin is known, the majority involve Dungeness crab gear. A variety of potential gear modifications have been identified for the commercial Dungeness crab fishery, and other trap fisheries have expressed interest in testing other modifications.

The California Dungeness Crab Fishing Gear Working Group has established [guidelines for developing fishing gear innovations and modifications](#). Prior to widespread adoption, or mandatory use, of any fishing gear modifications, additional testing and refinement must be conducted. CDFW encourages testing through incorporating modifications into legal fishing gear, which can be done in both recreational and commercial fisheries. Grip-sleeves, weak links, line cutters, and alternative rope materials could be tested in several fisheries, as their use is not prohibited by existing statute or regulation.

New or “innovative” gears such as “pop-up gear” (also called “ropeless gear”) can only be tested under certain conditions. Fish and Game Code §9005 requires that each trap, or string of traps, must be marked with a buoy. Many trap fisheries also include marking requirements for surface gear (e.g., operator or commercial fishing license numbers, buoy tags, etc). In some fisheries, pop-up gear could be tested if a secondary line and buoy meeting the regulatory requirements of the relevant fishery are attached. However, pop-up gear is *specifically* prohibited within commercial finfish (including Hagfish) trap fisheries, regardless of whether additional, non-pop up gear is attached. Table 1 contains a partial summary of potential fisheries for testing fishing gear modifications, permit requirements, and restrictions on times and areas where gear can be tested. Testing may also be conducted under a Scientific Collecting Permit (SCP) issued by CDFW. Research activities under an SCP prohibit retention and sale of any catch. [View more information about SCPs](#). The Fish and Game Commission is currently reviewing and updating Experimental Fishing Permit (EFP) regulations. Once this rulemaking process is complete, interested parties may apply to conduct testing under an EFP from the Fish and Game Commission. [View more information regarding Fish and Game Commission rulemakings](#).

It is the responsibility of the commercial or recreational fishing vessel operator to hold the required license and/or vessel endorsements for the fishery in which gear is being tested, and to adhere to all fishery regulations. Gear manufacturers and observers must comply with fishing regulations during all onboard activities. If the gear conforms to current regulatory requirements of the relevant fishery, no additional authorizations should be required.

Table 1. Potential fisheries for testing gear modifications and innovations. Note: this table includes a partial summary of relevant regulations; other restrictions regarding gear, permits, and area fished apply. It is the responsibility of the operator to comply with all applicable regulations.

Fishery	Permit(s) Needed	Scheduled Season	Area Restrictions	Other restrictions
Recreational Dungeness crab	Sport fishing license with validation stamp	First Saturday in November to July 30 (north of Sonoma/Mendocino) or June 30 (south of Sonoma/Mendocino)	Cannot be used in San Francisco Bay, San Pablo Bay, or the bays, sloughs, and estuaries between the Golden Gate and Carquinez Bridge	Limit = 10 individuals (if catch retained)
Recreational Cancer Crab (except Dungeness)	Sport fishing license with validation stamp	Year Round	NA	Limit = 35 individuals (if catch retained)
Commercial Dungeness crab	Dungeness crab vessel permit	Nov 15 - June 30 (south of Sonoma/Mendocino) and Dec 1-July 15 (north of Sonoma/Mendocino)	Cannot be used between the south sand barrier and breakwater in Crescent City harbor	
Commercial Rock Crab	General Trap Permit, Northern or Southern Rock Crab Permit	Year Round	Cannot be used in Districts 9, 19A, 19B, 21 or the front side of Catalina	
Recreational Spot Prawn	Sport fishing license	Year Round	NA	Limit = 35 individuals (if catch retained)
Commercial Spot Prawn	General Trap Permit, Spot Prawn Trap Vessel Permit	Feb – Oct (South of Point Arguello), Aug – April (North of Point Arguello)	South of Point Conception, can only be fished in waters deeper than 50 fathoms	
Commercial Coonstripe Shrimp	General Trap Permit, Coonstripe Shrimp Vessel Trap Permit	May - Oct	South of Point Conception, can only be fished in waters deeper than 50 fathoms	
Commercial nearshore finfish traps	Nearshore or Deeper Nearshore Finfish Permit with a trap endorsement	May - Jan	Cannot be used in Districts 10, 11, 12; Traps cannot be set within 750 feet of a pier, breakwater, or jetty in Districts 6, 7, 17, 18, 19, 19A, 19B, 20, 20A, 20B, or 21	Pop-up devices cannot be used or possessed
Commercial Hagfish	General Trap Permit	Year Round		Pop-up devices cannot be used or possessed



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Prepared by the Invertebrate Management Program, May 2022

The dramatic increase in large whale entanglements off the U.S. West Coast during the 2014-2016 large marine heatwave highlighted the marine life entanglement risks posed by traditional trap gear. Since then, a variety of gear modifications have been identified which could reduce the frequency and/or severity of entanglements. These gear modifications must be tested under realistic fishing conditions prior to widespread adoption or mandatory use.

Preliminary testing in legal fishing gear can be followed by testing under an [Experimental Fishing Permit \(EFP\)](#) approved by the Fish and Game Commission or under a [Scientific Collecting Permit \(SCP\)](#) issued by CDFW. Since research activities under an SCP prohibit retention and sale of any catch, CDFW anticipates testing would more commonly occur under an EFP. Issuance of an EFP allows the holder and any authorized agents to conduct testing in a manner which would not otherwise be allowed under current fishing regulations. Of particular interest for developers and interested users of pop-up gear is the ability to conduct testing without a secondary line, and to conduct testing in fisheries where pop-up gear is explicitly prohibited. An EFP could also allow testing of both modified and innovative gear to occur in times or areas where the relevant fishery is closed.

Individuals or groups who intend to conduct testing are encouraged to contact CDFW Marine Region staff via WhaleSafeFisheries@wildlife.ca.gov to determine whether planned activities are consistent with state regulation or require authorization under an EFP or SCP.

CDFW encourages preliminary testing through incorporating modifications into legal fishing gear. Grip-sleeves, weak links, line cutters, and alternative rope materials can be tested in commercial and recreational fisheries, as their use is not prohibited by existing statute or regulation. However, new or “innovative” gears such as pop-up gear (also called “ropeless gear”) can only be tested under certain conditions. Fish and Game Code §9005 requires that each trap, or string of traps, must be marked with a buoy. Many trap fisheries also include marking requirements for surface gear (e.g., operator or commercial fishing license numbers, buoy tags, etc). In some fisheries, pop-up gear could be tested if a secondary line and buoy meeting the regulatory requirements of the relevant fishery are attached. However, pop-up gear is *specifically* prohibited within commercial finfish (including hagfish) trap fisheries, regardless of whether additional, non-pop up gear is attached. Table 1 contains a partial summary of potential fisheries for testing fishing gear modifications, permit requirements, and restrictions on times and areas where gear can be tested.

When conducting testing through incorporation into legal fishing gear, it is the responsibility of the commercial or recreational fishing vessel operator to hold the required license and/or vessel endorsements for the fishery in which gear is being tested, and to adhere to all relevant fishery regulations. Gear manufacturers and observers must comply with fishing regulations during all onboard activities.

Table 1. Considerations for testing gear modifications and innovations by incorporating into legal fishing gear. Note: this table includes a partial summary of relevant regulations; other restrictions regarding gear, permits, and area fished apply. It is the responsibility of the operator to comply with all applicable regulations.

Fishery	Permit(s) Needed	Scheduled Season	Area Restrictions	Other restrictions
Recreational Dungeness crab	Sport fishing license with validation stamp	First Saturday in November to July 30 (north of Sonoma/Mendocino) or June 30 (south of Sonoma/Mendocino)	Cannot be used in San Francisco Bay, San Pablo Bay, or the bays, sloughs, and estuaries between the Golden Gate and Carquinez Bridge	Limit = 10 individuals (if catch retained)
Recreational Cancer Crab (except Dungeness)	Sport fishing license with validation stamp	Year Round	NA	Limit = 35 individuals (if catch retained)
Commercial Dungeness crab	Dungeness crab vessel permit	Nov 15 - June 30 (south of Sonoma/Mendocino) and Dec 1-July 15 (north of Sonoma/Mendocino)	Cannot be used between the south sand barrier and breakwater in Crescent City harbor	
Commercial Rock Crab	General Trap Permit, Northern or Southern Rock Crab Permit	Year Round	Cannot be used in Districts 9, 19A, 19B, 21 or the front side of Catalina	
Recreational Spot Prawn	Sport fishing license	Year Round	NA	Limit = 35 individuals (if catch retained)
Commercial Spot Prawn	General Trap Permit, Spot Prawn Trap Vessel Permit	Feb – Oct (South of Point Arguello), Aug – April (North of Point Arguello)	South of Point Conception, can only be fished in waters deeper than 50 fathoms	
Commercial Coonstripe Shrimp	General Trap Permit, Coonstripe Shrimp Vessel Trap Permit	May - Oct	South of Point Conception, can only be fished in waters deeper than 50 fathoms	
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Prepared by the Invertebrate Management Program, December 2023

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When conducting testing through incorporation into legal fishing gear, it is the responsibility of the commercial or recreational fishing vessel operator to hold the

required license and/or vessel endorsements for the fishery in which gear is being tested, and to adhere to all relevant fishery regulations. Gear manufacturers and observers must comply with fishing regulations during all onboard activities.

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Commercial Hagfish	General Trap Permit	Year Round		Pop-up devices cannot be used or possessed

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.