



Other than a general trap permit, pursuant to FGC sections 9000.5 and 9001, no special permits are required to commercially fish for hagfish. There are no daily, seasonal, or annual catch limits for hagfish. Further, the fishery has no reporting requirement, other than a landing receipt, and there is no minimum size limit, landing quota, or seasonal closure. There is no recreational fishery for hagfish. This open access fishery provides additional income to vessel owners and crewmembers who participate in other permitted fisheries. For those that do not have other permits or fishery opportunities, fishing hagfish serves as their sole source of income. This low profit, volume-based live fishery serves primarily as export only to South Korea, though hagfish dealers seek other markets, domestic and foreign, to sell live hagfish. Fishermen are often motivated to catch and deliver as much hagfish as possible per fishing trip to maximize profit.

The hagfish resource is considered data poor; the status or size of its biomass, and other aspects of its life history remain unknown. While individual hagfish are known to have a low fecundity rate with less than 30 eggs per spawn cycle (Barss 1993), it is unknown how many spawn cycles occur per year. Hagfish inhabit deep water, soft bottom (i.e., mud) habitat in ocean depths ranging from 30 to 2,400 feet (9 to 732 meters) (Miller and Lea 1972). In California, hagfish are usually captured in depths less than 1,800 feet (549 meters), and based on landings data, population numbers appear greater north of Point Conception. Approximately 79 percent of soft bottom habitat within fishable depths is available. However, the distribution of such available habitat is patchy along the California coastline, and fishermen often concentrate on those fishing locations known for adequate hagfish numbers to sustain their fishing effort. While there is limited knowledge about localized or broad movement of hagfish, they appear to alter their localized movement in response to food availability (decaying organisms, invertebrates, as well as baited traps). Thus, fishing has the potential to shift hagfish distribution by causing artificial movement toward an area due to baited traps (Martini 1998). Voluntary logbook data suggests that fishermen rotate trap set locations, eventually fishing the same areas after a period of rest. This information indicates that even while there may be localized depletion, hagfish will return to an unfished area after a certain amount of time (Tanaka 2015).

## **Existing Regulations**

The existing regulation, subsection (b) of Section 180.6, provides that each permittee can utilize up to 25 barrel traps (in the water, aboard a vessel, or in combination thereof) to take hagfish, spread on up to three ground lines or strings. FGC Section 9005 requires every trap or string of traps to be marked with a buoy, and FGC subdivision 9006(b) requires the buoy identifying traps used to take hagfish to be marked with the operator's (i.e., responsible fisherman's) commercial fishing license identification number only ("L

number”) with no prescribed lettering. Subdivision (b) of FGC Section 9001 requires all participants on a fishing vessel (i.e., vessel operator, crewmembers or deckhands) who operate, or assist in operating, any trap to take hagfish, or who possess or transport hagfish on any boat, barge, or vessel when any trap is aboard, to have a current general trap permit, and thus serve as “permittees.” Thus, a permittee may be any crewmember, or the vessel operator (who may also be the responsible fisherman under whose L number the vessel is operating). General trap permits are purchased over the counter and there is no cap on the number of general trap permits issued per year. The current regulations allow each vessel utilizing hagfish barrel gear to utilize and possess up to 25 barrel traps per permittee.

When Section 180.6 was last amended (rulemaking file number 2016-0920-02s, effective January 1, 2017) to shift barrel traps from a 40-gallon volume to a dimension-based measurement of barrel size, subsection 180.6(b) was amended in an attempt to simplify language regarding trap use by a vessel by stating that “...no permittee may possess more than 25 barrel traps aboard a vessel or in the water or combination thereof.” Due to the fact that a permittee can be the vessel operator, and/or any crewmember, the current language allows the use of 25 barrel traps per permittee, which goes against the original intent of the regulation effective January 1, 2016 to allow a maximum of 25 barrel traps per vessel (the volumetric equivalent to the 200 five-gallon bucket trap limit prescribed by subdivision (b) of FGC Section 9001.6).

There is no fishery management plan for hagfish. The Department collects dockside samples of hagfish on an *ad hoc* basis. Dockside sampling includes evaluating the catch for average weight. If time allows, randomly selected fish are taken and processed back at a Department office to obtain data on individual fish sex, length, weight, and spawning condition. At present, annual landing totals appear to be stable. In 2018, 49 fishermen made at least one landing of hagfish using either barrel or bucket traps. For vessels that used up to 25 barrel traps or 200 bucket traps, the average landing was 1,367 pounds of hagfish. One vessel was identified as using more than 25 barrel traps; this vessel averaged 14 times this amount (21,573 pounds) of hagfish per landing (it is unknown if these landings resulted from one or more days fished).

### **Proposed Regulation Amendment and Addition**

The proposed amendment to subsection (b) of Section 180.6 re-establishes the number of allowed barrel traps (25) per vessel, regardless of the number of permittees. The words “permittee may possess” will be deleted, thus linking the 25-barrel trap limit to the vessel.

New subsection 180.6(c) is proposed to be added to require buoys used to mark any hagfish traps (barrel traps, bucket traps and Korean style traps) to be marked with the vessel’s California commercial boat registration number in

addition to the fisherman's L number mandated by subdivision (b) of FGC Section 9006.

### **Necessity of Proposed Regulation**

Due to data deficiencies in hagfish population size, status, and other aspects of its life history, it is unknown whether the fishery can sustainably withstand an increase in fishing pressure attributed to vessels using more than 25 barrel traps. The proposed amendment to subsection (b) of Section 180.6 is necessary in order to clarify the original intent of the regulation effective January 1, 2016 restricting a vessel to utilize and possess no more than 25 barrel traps per vessel. This clarification will help ensure the sustainability of the hagfish fishery, and reduce excessive take. Limiting the number of traps deployed in proximate locations to one another also reduces the potential for user conflict among fishermen accessing the same area. In addition, restricting a vessel to 25 barrel traps reduces the potential for stray trap gear on the seafloor, and limits the number of vertical buoy lines to reduce potential impact to other marine life (Tanaka 2015).

The proposed addition of subsection (c) of Section 180.6 is necessary for the Department's Law Enforcement Division (LED) wildlife officers to effectively enforce the number of traps per vessel. When only the L number marks the buoy used to mark hagfish traps, officers are unable to determine which trap string belongs to which vessel, unless the officers can observe a vessel servicing (i.e., deploying or recovering) the traps.

#### **(b) Goals and Benefits of the Regulation:**

It is the policy of the State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State and to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the oceans and other waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to insure their continued existence, and the growth of local commercial fisheries taking into consideration the necessity of regulating the catch within the limits of maximum sustainable yields.

The proposed regulation will help ensure sustainability of the hagfish resource, reduce potential conflicts among fishermen using similar fishing grounds, and limit the number of vertical buoy lines to reduce potential impact to other marine life.

The proposed regulation will also require the use of the vessel's California commercial boat registration number to mark the buoy used to mark any hagfish trap to assist LED staff in determining, at sea, how many traps a vessel is utilizing and/or possessing and meet concerns to enforce 25 traps per vessel.

(c) Authority and Reference Sections from Fish and Game Code for Regulation:

Note: Authority cited: Sections 8403, and 9022, Fish and Game Code.  
Reference: Sections 8403, 9001.6, 9001.7, 9006, and 9022, Fish and Game Code.

(d) Specific Technology or Equipment Required by Regulatory Change:

None.

(e) Identification of Reports or Documents Supporting Regulation Change:

Tanaka, T. 2015. Final Report: Evaluation of the Use of 40-gallon barrel Traps for the Take of Hagfish. California Department of Fish and Wildlife, Marine Region (North-Central Finfish Research and Management Project).

(f) Identification of Reports or Documents Providing Background Information:

Barss, WH. 1993. Pacific Hagfish, *Eptatretus stoutii*, and Black Hagfish, *E. deani*: the Oregon fishery and port sampling observation, 1988-92. Marine Fisheries Review 55(4):19-30.

Martini, FH. 1998. The ecology of hagfishes. Pages 57-77 in J.M. Jorgensen, J.P. Lomholt, R.E. Weber and H. Malte, editors. The biology of hagfishes. Springer-Science, London, United Kingdom.

Miller, DJ, & Lea, RN. 1972. Guide to coastal marine fishes of California. California Department of Fish and Game. Fisheries Bulletin 157.

(g) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are being held prior to the notice publication. The 45-day comment period provides adequate time for review of the proposed amendments.

IV. Description of Reasonable Alternatives to Regulatory Action

(a) Alternatives to Regulation Change:

No alternatives were identified by or brought to the attention of Commission

staff that would have the same desired regulatory effect.

(b) No Change Alternative:

If the current regulations are retained, vessels may run multiple sets of 25 barrel traps, one each per permittee (crewmember), thus increasing overall take of hagfish beyond levels that are known to be sustainable. Annual landings are relatively stable and appear sustainable at the current level. However, if more vessels increase the number of traps used, overall take of hagfish would increase. The potential effect of the No Change Alternative on the entire hagfish population is unknown, but it is possible that significant, localized depletion would occur.

Under the No Change Alternative, fishermen will continue to mark the buoys used to mark hagfish traps with their L number as required by subdivision (b) of FGC Section 9006; however, without including the California commercial boat registration number, it would be difficult for LED to determine which traps are deployed by a given vessel.

V. Mitigation Measures Required by Regulatory Action

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The California hagfish fishery is primarily a live export fishery. Currently, there is increased demand for California-caught hagfish due to the consistency of catch and lower dock price compared to hagfish fisheries in other states.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impacts on the creation or elimination of jobs, the creation of new business, the elimination of existing businesses or the expansion of businesses in California. There are no anticipated benefits to the health and welfare of California residents and worker safety. However, clarifying the original intent of the regulation effective January 1, 2016 by limiting the number of barrel traps to 25 per vessel would benefit the environment by promoting sustainability of the hagfish resource, limit the amount of barrel gear on the seafloor, and limit the number of vertical buoy lines in the fishery that could potentially impact other marine life.

(c) Cost Impacts on a Representative Private Person or Business:

A vessel that may have deployed more than 25 barrel traps in the past could face a reduction in fishing income due to a reduction in the number of traps deployed per vessel. However, the regulation effective January 1, 2016 intended that only 25 barrels be used per vessel, and the majority of fishermen conform to this practice.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment:

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

None. The proposed regulatory action to clarify the original intent of the regulation effective January 1, 2016 restricting a vessel to utilize and possess no more than 25 barrel traps per vessel is not anticipated to affect the creation or elimination of jobs, which are primarily influenced by the foreign market demand for hagfish.

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

None. The proposed regulatory action to clarify the original intent of the regulation effective January 1, 2016 is not anticipated to affect the creation of new businesses or elimination of existing businesses, which are primarily influenced by the foreign market demand for hagfish.

(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

None. The proposed regulatory action to clarify the original intent of the regulation effective January 1, 2016 is not anticipated to affect the expansion of businesses currently doing business within the state. Entry to or exit from the open access hagfish fishery is predominately driven by the hagfish export market demand and opportunity in other more profitable fisheries (such as ocean salmon or Dungeness crab). Approximately 50 percent of hagfish fishery participants (vessel owners or operators) hold permits in other fisheries and may pursue hagfish to fill gaps in between seasons. There are some vessel operators and crewmen who rely on the hagfish fishery as their only source of income. Since crew identity is not documented as part of Department landing requirements, it is unknown exactly how many crewmembers solely rely on hagfish.

(d) Benefits of the Regulation to the Health and Welfare of California Residents:

None. The proposed regulatory action is not anticipated to benefit the health and welfare of California residents.

(e) Benefits of the Regulation to Worker Safety:

None. The proposed regulatory action is not anticipated to benefit worker safety.

(f) Benefits of the Regulation to the State's Environment:

The proposed regulation is anticipated to benefit the environment by clarifying the original intent of the regulation effective January 1, 2016 of limiting the number of barrel traps to 25 per vessel, which is expected to promote the sustainability of the hagfish fishery, limit the amount of barrel gear on the

seafloor, and limit the number of vertical buoy lines in the fishery that could potentially impact other marine life.

## Informative Digest/Policy Statement Overview

In California, Pacific Hagfish (*Eptatretus stoutii*) (hagfish) is an open access commercial fishery administered by the Department of Fish and Wildlife (Department). Fishing is allowed year-round in all depths of State and federal waters, except in Marine Protected Areas. The hagfish fishery is primarily managed via restrictions on the amount and type of gear allowed. The method for take is by one of three baited trap types: bucket trap, Korean trap, and more recently, barrel traps. Section 9000.5 and subdivision 9001.6(b) of Fish and Game Code (FGC) define and authorize no more than a total of 500 Korean-style traps, or a total of 200, five-gallon bucket traps aboard a vessel, or in the water or combination thereof. The Fish and Game Commission (Commission) approved the use of 25 barrel traps (40-gallon capacity) as an alternative trap type under subsection (b) of Section 180.6, Title 14, California Code of Regulations (CCR) effective January 1, 2016. The 25-barrel trap limit was intended to be per vessel, and serve as a volumetric equivalent to the 200 five-gallon bucket trap limit prescribed by subdivision (b) of FGC Section 9001.6.

There are no daily, seasonal, or annual catch limits for the hagfish fishery. Further, the fishery has no reporting requirement, other than a landing receipt, and there is no minimum size limit, landing quota, or seasonal closure. There is no recreational fishery for hagfish. Pursuant to FGC sections 9000.5 and 9001, all participants on a fishing vessel (i.e., vessel crewmembers) are required to have a current general trap permit, and thus serve as “permittees.” FGC Section 9005 requires every trap or string of traps to be marked with a buoy, and FGC subdivision 9006(b) requires the buoy identifying traps used to take hagfish to be marked with the operator’s (i.e., responsible fisherman’s) commercial fishing license identification number only (“L number”) with no prescribed lettering.

When Section 180.6, Title 14, CCR was last amended (effective January 1, 2017) to shift from a 40 gallon volume to a dimension-based measurement of barrel trap size, subsection 180.6(b) was amended in an attempt to simplify language regarding trap use by a vessel by stating that “...no permittee may possess more than 25 barrel traps aboard a vessel or in the water or combination thereof.” Due to the fact that a permittee can be the vessel operator, and/or any crewmember, the current language allows the use of 25 barrel traps per permittee, which goes against the original intent of the regulation effective January 1, 2016 to allow a maximum of 25 barrel traps per vessel (the volumetric equivalent to the 200 five-gallon bucket trap limit prescribed by subdivision (b) of FGC Section 9001.6).

### Proposed Regulation

The proposed amendment to subsection (b) of Section 180.6, Title 14, CCR re-establishes the number of allowed barrel traps (25) per vessel, regardless of the number of permittees aboard the vessel. In addition to the commercial fishing license identification number, hagfish fishermen will also be required to mark buoys used to mark any hagfish traps with the vessel’s California commercial boat registration number.

The following is a summary of the changes proposed for Section 180.6, Title 14, CCR:

- Remove the words “permittee may possess” from subsection (b), thus linking the 25 barrel trap limit to the vessel.
- Add subsection (c) requiring the use of the vessel’s California commercial boat registration number to mark the buoy used to mark any hagfish trap (fishermen will continue to mark buoys with all fishermen L numbers operating the vessel, as required by FGC subdivision 9006(b)).

### **Benefits of the Proposed Regulation**

Linking the maximum number of barrel traps utilized and possessed to the vessel instead of the permittee will limit the fishing capacity of vessels that utilize this gear. Since there are no other management measures that limit hagfish fishing capacity, limiting the number of barrel traps by vessel will help ensure sustainability of the hagfish resource, reduce potential conflicts between fishermen using similar fishing grounds, and limit the number of vertical buoy lines to reduce potential impact to other marine life.

By requiring the use of the vessel’s California commercial boat registration number to mark the buoy used to mark any hagfish trap, Law Enforcement Division (LED) staff will be able to determine, at sea, how many traps a vessel is utilizing and/or possessing. This requirement would apply to all trap types authorized for the take of hagfish.

### **Consistency and Compatibility with Existing Regulations**

Section 20, Article IV, of the State Constitution specifies that the Legislature may delegate to the Fish and Game Commission such powers relating to the protection and propagation of fish and game as the Legislature sees fit. The Legislature has delegated to the Commission the power to regulate the commercial take of finfish using traps (FGC sections 8403 and 9022). No other State agency has the authority to promulgate commercial fishing regulations. The Commission has reviewed its own regulations and finds that the proposed regulations are neither inconsistent nor incompatible with existing State regulations. The Commission has searched the CCR for any regulations regarding the use of traps for the commercial take of hagfish and has found no such regulation; therefore the Commission has concluded that the proposed regulations are neither inconsistent nor incompatible with existing State regulations.