



Tyrone D. Williams, Chief  
Budget Branch  
California Department of Fish and Wildlife  
1416 9th Street, 12th Floor  
Sacramento, CA 95814

April 3, 2020

Dear Mr. Williams:

Thank you for submitting the standardized regulatory impact assessment (SRIA) and summary (Form DF-131) for the Risk Assessment Mitigation Program: Commercial Dungeness Crab Fishery, as required in California Code of Regulations, Title 1, Section 200(a)(1) for major regulations. Proposed text of the regulations was not submitted; hence, comments are based solely on the SRIA and other publicly available information.

The proposed regulations establish guidelines for risk assessment and management actions to mitigate marine life entanglement in Dungeness crab fishing gear, starting in November 2020. The guidelines refer to risk criteria that will trigger a management event when the risk of marine life entanglement is high. A management event can be one or more of six actions, ranging from delaying the start of the season to full closure of the season, commensurate with the risk of entanglement. Based on historical data from the past five seasons, Department of Fish and Wildlife modeled five scenarios of possible impacts. Depending on the management action implemented, the proposed regulations would impose direct costs on commercial crab fishers ranging from \$3.4 million due to a 5.5 percent loss in catch revenue during a season that starts on time but closes early to \$62 million or total loss of catch revenue under a full season closure. Total annual economic output costs are estimated up to \$119.6 million if a season closed completely. Of that amount, the regulation is estimated to lead to reduced revenue of \$700,000 to local governments and of \$2.1 million to state government under a full season closure. State government enforcement costs are estimated at \$500,000 annually. Benefits are estimated as 50 percent to 100 percent reductions in average number of entanglements, amounting to \$1.3 million to \$3.6 million annually. The SRIA identifies alternatives including expansion to other fisheries and protection of additional species, more tolerant risk thresholds, and data and methodological changes for determining risks of entanglement, although procedures for assessing risk and determining numerical thresholds are not detailed in the SRIA.

1a Finance generally concurs with the methodology used to estimate impacts of proposed regulations, with three exceptions: 1) the SRIA must disclose and describe the risk factors that would trigger each risk mitigation action, and the associated likelihood that each risk factor occurs based on historical data. The SRIA does not describe the risk thresholds and it is unclear what the typical levels of risk factors are. The analysis and identification of costs ranging from \$3.4 million to \$119.6 million should be augmented with an assessment of the likelihood that a particular mitigation action would be triggered in any one season.

1b Similarly, the SRIA should clarify the methodology for estimating benefits, identify the number of entanglements that occur in the baseline, and assess the likely reduction in

1b/c

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bycatch under each scenario. It is not clear in the SRIA how the 50 percent, 75 percent, and 100 percent reductions relate to the historical data used for the cost estimates. 2) The SRIA must discuss the disparate impacts of the regulations on businesses and individuals. This should be done by clearly describing the number of small versus large businesses, their regional distributions, and how impacts on affected entities might vary. There is brief mention that the industry is made up of large and small operations, but the impacts are assumed to hit each type proportionately. However, disparate impacts might exist, for example with smaller operations finding it difficult to adapt to a risk mitigation requiring alternative gear or for locals in a region impacted by a full season closure. 3) The SRIA must evaluate and discuss the costs and benefits associated with at least two of the alternatives considered.

These comments are intended to provide sufficient guidance outlining revisions to the SRIA. The SRIA, a summary of Finance's comments, and any responses must be included in the rulemaking file that is available for public comment. Finance understands that the proposed regulations may change during the rulemaking process. If any significant changes to the proposed regulations result in economic impacts not discussed in the SRIA, please note that the revised economic impacts must be reflected on the Standard Form 399 for the rulemaking file submittal to the Office of Administrative Law. Please let us know if you have any questions regarding our comments.

Sincerely,



Somjita Mitra  
Chief of Economic Research

cc: Mr. Lenny Mendonca, Director, Governor's Office of Business and Economic Development  
Mr. Kenneth Pogue, Director, Office of Administrative Law  
Mr. Charlton H. Bonham, Director, Department of Fish and Wildlife

# Standardized Regulatory Impact Assessment

## SUPPLEMENT

Proposed Addition of Section 132.8, Title 14, California Code of Regulations  
for the  
Risk Assessment Mitigation Program: Commercial Dungeness Crab Fishery

April 2020

### BACKGROUND

On March 4, 2020, the California Department of Fish and Wildlife (CDFW) submitted to the Department of Finance (DOF) a Standardized Regulatory Impact Assessment (SRIA) for the proposed Risk Assessment Mitigation Program and addition of Section 132.8 to Title 14, California Code of Regulations (CCR). On April 3, 2020, CDFW received a letter from DOF with comments on the SRIA requesting expanded discussion on certain elements of the SRIA. This Supplement addresses those comments and presents such expanded discussion. The SRIA, and this Supplement to the SRIA, are appendices to the Initial Statement of Reasons (ISOR), dated May 5, 2020, to be submitted to the Office of Administrative Law.

### A. Comments on SRIA Addressed

DOF generally concurred with the methodology used to estimate impacts of proposed regulations, with three exceptions as noted below and expanded upon in detail.

#### 1A. DOF COMMENT - RISK FACTORS

The SRIA must disclose and describe the risk factors that would trigger each risk mitigation action, and the associated likelihood that each risk factor occurs based on historical data. The SRIA does not describe the risk thresholds and it is unclear what the typical levels of risk factors are. The analysis and identification of costs ranging from \$3.4 million to \$119.6 million should be augmented with an assessment of the likelihood that a particular mitigation action would be triggered in any one season.

#### 1A. CDFW Response

##### *Risk Factors Thresholds*

Two main risk factors are central to the RAMP risk assessment determinations: 1) number of confirmed entanglements of Actionable Species and 2) the Marine

Life Concentrations of those species. Given the inherent challenges of documenting confirmed entanglements and surveying marine life concentrations, criteria regarding the types of data acceptable to inform those risk factors are to be set in regulation to ensure that the data that inform the risk factors are statistically valid such that any conclusions drawn are reasonably supported and fully transparent.

The proposed trigger levels established in the risk assessment framework were produced through extensive discussions by the California Dungeness Crab Fishing Gear Working Group (WG) based on the best available science and interpretations of the relationship between concentration of whales and sea turtles on the fishing grounds and risk of entanglement (see ISOR).

The ongoing improvement of historical data series on Marine Life Concentrations and Confirmed Entanglements of Actionable Species is one objective of the RAMP program. Since the data collection and verification protocols are just being established for RAMP, precise estimates of the likelihood of the risk factors occurring are not derived as yet. CDFW is working with NOAA and other research institutions to continue to refine historical data series, and further explore the development of predictive models that would enable likelihood estimations and additional risk factor thresholds that would trigger management actions.

While the collection of consistent historical data series to construct overlapping probability distributions is a goal in progress, provisionally, the CDFW Marine Region scientists' observations of the Dungeness Crab fishery support the view that the less restrictive Scenarios 2 or 3 (as described in the SRIA on Projected Scenarios, pgs. 16-18), are anticipated to be the most likely to occur in future fishing seasons.

#### *Proposed Definitions that Inform RAMP Risk Factors*

As detailed in the ISOR (pgs. 3-8), and the Regulation Verbatim, (pgs.1-2), the risk factors rely upon several specific definitions such as: Actionable Species, Confirmed Entanglements, and Marine Life Concentrations. All of these definitions structure the information that feed into the relevant data series that would inform ongoing likelihood/probability analyses.

- For purpose of this regulation, "Actionable Species" are defined as subset of species listed as threatened and endangered under the federal Endangered Species Act (ESA) and/or protected under the Marine Mammal Protection Act (MMPA) and known to be entangled in California commercial Dungeness crab gear (see Table 1 in ISOR).

- The proposed regulation will rely on NOAA's data on "Confirmed Entanglements," (which may be due to commercial Dungeness crab gear or Unknown Gear), because NOAA has developed a rigorous and detailed forensic process to evaluate and identify the species, fishery/gear of origin, and outcome of disentanglements.
- "Marine Life Concentrations" means measures of local abundance of Actionable Species (Humpback Whales, Blue Whales, and Pacific Leatherback Sea Turtles). As noted in subsection (c)(2) of Section 132.8, the proposed regulation may only consider data from telemetry monitoring of Actionable Species and surveys designed, conducted, or approved by NOAA or CDFW during the timeframes of (1) November 1 until the Fishing Season opens statewide, and (2) March 1 until the Fishing Season closes statewide.

### **1B. DOF COMMENT – BENEFIT ESTIMATES**

Similarly, the SRIA should clarify the methodology for estimating benefits, identify the number of entanglements that occur in the baseline, and assess the likely reduction in bycatch under each scenario.

#### **1B. CDFW Response**

##### *Entanglements Baseline*

Reported reductions in 2019 confirmed entanglements (NOAA, 2020, West Coast Large Whale Entanglement Response Program) may suggest that limited 2019 Dungeness crab fishery closures have contributed to reduced numbers of whale entanglements. However, forecasting the relative success of RAMP management actions at reducing bycatch is still unknown. Given that the RAMP program has not been enacted, a cautious approach to projecting the possible benefits was taken. We derived a range of for the monetary value per whale that was used to calculate the dollar value of saving 50% (25 whales saved), 75% (38 whales saved), or 100% (50 whales saved) of the five-year average number of west coast whale entanglements (refer to Table 13 of the SRIA). It must be noted that the benefits calculations incorporated the entanglement history for all species of whales: Humpback, Blue, Grey, and other or unidentified whales. While the proposed RAMP program focuses on the three Actionable Species, the program could contribute to reduced entanglement for all listed and non-listed whales which would benefit the whale-watching industry, provide ecosystem benefits and enhance non-use value benefits.

### **1C. DOF COMMENT– COST PROJECTIONS**

It is not clear in the SRIA how the 50 percent, 75 percent, and 100 percent reductions relate to the historical data used for the cost estimates.

### **1C. CDFW Response**

The costs of implementing each Scenario (see SRIA, Table 5), were based on projected reductions in the Dungeness crab ex-vessel value (harvest tons x market price). CDFW has a long time series of weekly data on harvest and market prices throughout the season. Delays due to other issues (meat quality and/or domoic acid) provided evidence of how season delays or early closures could impact fleet dynamics and harvest volumes (as a sort of proxy for delays or closures due to marine life entanglement risk). With those patterns in mind, projected changes in harvest volume were extracted from the historical landings data to then calculate changes in direct expenditures and the attendant indirect, induced, and employment impacts. The costs impacts are explicitly linked to the implementation of the hypothetical Scenarios. Whereas, given no history on the effectiveness of the proposed RAMP, the benefits achieved from each Scenario could only be speculative, suggesting the strategy of posing a range of success rates to, at a minimum, illustrate the relative magnitude of the probable benefits to costs.

### **2. DOF COMMENT - BUSINESSES AND INDIVIDUALS IMPACTED**

The SRIA must discuss the disparate impacts of the regulations on businesses and individuals. This should be done by clearly describing the number of small versus large businesses, their regional distributions, and how impacts on affected entities might vary. There is brief mention that the industry is made up of large and small operations, but the impacts are assumed to hit each type proportionately. However, disparate impacts might exist, for example with smaller operations finding it difficult to adapt to a risk mitigation requiring alternative gear or for locals in a region impacted by a full season closure.

### **2. CDFW Response**

#### *Disparate Impacts on Businesses and Individuals*

Dungeness crab permit holders/vessel operators and deckhands would be the businesses and individuals directly affected should implementation of the proposed RAMP management actions limit fishing opportunity (SRIA, pg. 7, Table 1). Deckhands may be employees of a specific vessel/business or independent contractors that work for a few vessels/businesses in one or more fisheries throughout year.

As noted in Table 1 of the SRIA, CDFW records show that there are 553 Dungeness crab vessel permits with about 450-470 of these actively used per

Dungeness crab season. CDFW does not collect information on the overall business diversification or size of Dungeness crab permit holders, but data on vessel size is collected (SRIA, pg. 5-8). For the state of California, about 60% of active permits are in the medium and large category or 36-99 feet in length, with the remaining 40% categorized as small vessels or less than 36 feet (per recent CDFW 2013-14 and 2014-15 permitting and landings data).

Dungeness crab permits are tiered by the number of traps from 175 traps to 500 traps per crab vessel. This provides an indication of the business size per vessel, but no information on how many crab vessels or other type of permits a commercial fisher may hold.

In terms of the capital invested and holding costs, higher-tiered vessels would experience higher per day holding costs deficits, should any regulatory action delay or suspend fishing activity. But some express the view that larger vessel with more traps are better able to adapt to regulatory actions that incentivize more intensive effort.

The SRIA (pg. 8) noted surveys (Wilén and Abbot, 2006) that show that expenditures differ by vessel size, by type of operation, and by the fishing strategies employed (single species or multiple species). Dungeness crab fishermen reportedly expend an average 33% of their gross revenue on operating expenses. That average 33% percent of gross revenue that is distributed to other supporting businesses, employees, and individuals is apportioned to various expenditure categories (SRIA, pg. 8, Table 2). Those other businesses that receive and distribute the harvest would be indirectly affected. Individuals who receive income from the above-mentioned business types would also be affected should their income from the fishery and supporting businesses be reduced.

Medium and large vessels land about ~78% of Dungeness crab landings for the same two seasons while small vessels brought in ~22% of the landings. This pattern is reflected in the multipliers where small vessels appear to be generally more labor-intensive, with a much higher employment multiplier and larger indirect and induced effects, as their operations are generally not as vertically integrated as larger vessels. The estimated harvest quantities by vessel size were treated with multipliers that are differentiated by vessel size to more accurately project the impacts on supporting businesses and employment.

Additionally, the SRIA noted that smaller study areas such as localized less economically-diversified coastal areas have significantly smaller multipliers, because spending “leaks out” as fewer products and services are available in the immediate locale. Smaller multipliers translate to weaker stimulus to local businesses from fishery expenditures. Furthermore, reductions in fishery activity is

expected to result in proportionately greater shocks to smaller less-diversified economies as those local businesses are reliant on smaller customer bases.

Anecdotal information suggests greater difficulty is anticipated for small vessel owners to adapt to shorter seasons, more frequent service intervals, and/or depth restrictions. Larger vessels were described as advantaged by ability to operate in a wider range of sea conditions, ability to stay out overnight, and cover more area of the fishing grounds. Some also expressed the view that larger vessels that are affiliated with larger business operations may be more diversified than small vessel owners, such that they can weather a slow down in one fishery, by still working other fisheries.

### **3. DOF COMMENT - ALTERNATIVES COSTS, BENEFITS**

The SRIA identifies alternatives including expansion to other fisheries and protection of additional species, more tolerant risk thresholds, and data and methodological changes for determining risks of entanglement, although procedures for assessing risk and determining numerical thresholds are not detailed in the SRIA. The SRIA must evaluate and discuss the costs and benefits associated with at least two of the alternatives considered.

### **3. CDFW Response**

#### **Alternatives Considered**

##### *Alt 1 - Other Actionable Species*

In considering which Actionable Species to include within the RAMP, CDFW examined confirmed entanglements in California commercial Dungeness crab fishing gear (Saez et al. 2020) and focused on those species that have been entangled on a regular basis or whose population status warranted additional protection. Although Grey Whales have been entangled in California commercial Dungeness crab fishing gear, they were not included as part of this rulemaking because the Eastern North Pacific population once listed as endangered under the ESA successfully recovered and was delisted in 1994.

Is it worth noting that absent formal inclusion in the RAMP, any measures implemented under the RAMP to reduce the risk of entanglement will provide similar protections for other marine life not specifically included in this rulemaking.

##### *Benefits/Costs*

Inclusion of additional species introduces additional likelihood of management actions being triggered in any given season. Using Grey Whales as an example, at this time it is unknown what marine life concentration levels or number of confirmed entanglements would trigger a management action for Grey Whales or another marine species. The implementation and monitoring and costs are



likely to increase under ALT 1 due to the requirement for additional data collection as Grey Whale migration timing occurs on different timeframes than the Actionable Species, as well as the need for additional analysis of information not currently anticipated in these regulations. Assuming the workload would be proportional per species included, for the purposes of cost analysis CDFW considers the inclusion of an additional species to increase the workload in those categories by 1/3. It is also reasonable to assume that inclusion of additional triggers for other species would lead to more frequent curtailment of the commercial Dungeness crab fishery. Because it is unclear what the numerical triggers would be, it is difficult to estimate the increase in delays or closures, but it could be up to a full fishery closure. The benefits analysis in the SRIA is based on the revealed preference of dollar expenditures in the whale watch industry, and therefore any additional whale saved (regardless of species) would have increased benefits; however, because Grey Whales are not listed under the ESA, there would be a proportionately fewer growth in benefits. As discussed above in 1C, given lack of information on the effectiveness of the proposed RAMP, the benefits achieved from each Alternative could only be speculative. A similar range of anticipated benefits to those analyzed in the SRIA pgs. 29-33 are expected, subject to the slightly lower proportional increase for non-ESA-listed species.

#### *Summary:*

Alt 1 - Other Actionable Species: estimated to have higher costs than any of the proposed regulations scenarios evaluated in the SRIA; and the same highest level of benefits of scenario 5 based on similar numbers of saved animals (or slightly reduced) (see Table 2 for cost analysis).

#### *Alt 2 - Higher Entanglement Triggers*

In developing triggers for entanglements, CDFW considered guidance from NOAA and other applicable federal laws governing species of concern [Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA)]. Because this rulemaking will form an integral part of CDFW's Conservation Plan for the Actionable Species and the application for an Incidental Take Permit (ITP), the Department anticipates authorized take levels in an issued ITP to be low. Setting higher triggers would allow additional entanglements to occur prior to taking management action, increasing the likelihood of exceeding take limits in the ITP. Exceeding these take limits would mean the Department is no longer in compliance with the terms of the ITP.

#### *Benefits/Costs*

Exceeding takes limits in the ITP could cause a full closure of the fishery, which would entail similar economic impacts as Scenario 5 where the total economic impacts could exceed \$119,559,959 in the period of one year. Additionally, the benefits would be lower, as more Actionable Species could be entangled

before a management response was taken to reduce future entanglements (See Table 2.) As discussed above in 1C, given lack of information on the effectiveness of the proposed RAMP, the benefits achieved from each Alternative could only be speculative, but relative to the Scenarios and Alternative 1 the benefits are anticipated to be lower.

*Summary:*

Alt 2 – Higher Entanglement Triggers: estimated to have the same costs of the proposed regulation due to possibility of a full closure; and lower benefits (fewer Actionable Species saved) (see Table 2 for cost analysis).

**Scenario/Alternative Comparison**

As discussed in the SRIA ( pgs. 29-32), valuing the use and non-use benefits of the proposed program at reducing marine life entanglements is difficult to do with precision. Given those difficulties, we chose to rank probable outcomes by cost-effectiveness rather than conduct a cost-benefit assessment. The scenarios and alternatives were evaluated by comparing program costs to achieve the common goal of avoiding entanglements.

In summary, the alternatives analyzed here are expected to be greater or equal cost to the Scenarios analyzed in the SRIA with equal or lower benefits. Table 2 provides a summary of the expected costs for each Scenario as well as the two alternatives discussed above.

**Table 2. Dungeness Crab Fishery RAMP Costs By Proposed Regulation Scenario, ALT1 and ALT2**

<b>Average by Scenario #</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>ALT 1</b>	<b>ALT 2</b>
<b>Reduced Ex-vessel Value</b>	\$0	(\$4,620,008)	(\$6,408,106)	(\$16,864,553)	(\$61,825,058)	(\$61,825,058)	(\$61,825,058)
Total Economic Impact	\$0	(\$8,934,371)	(\$12,392,271)	(\$32,613,398)	(\$119,559,956)	(\$119,559,956)	(\$119,559,956)
Employment	0	(70)	(97)	(254)	(932)	(932)	(932)
Tax losses	\$0	(\$51,642)	(\$71,630)	(\$188,512)	(\$691,079)	(\$691,079)	(\$691,079)
Landings Fee losses	\$0	(\$153,846)	(\$213,390)	(\$561,590)	(\$2,057,628)	(\$2,057,628)	(\$2,057,628)
Implementation costs	\$0	(\$398,976)	(\$398,976)	(\$398,976)	(\$398,976)	(\$531,968)	(\$398,976)
Monitoring program	\$0	(\$91,500)	(\$91,500)	(\$91,500)	(\$91,500)	(\$122,000)	(\$91,500)
Enforcement costs	\$0	(\$18,533)	(\$18,533)	(\$18,533)	(\$18,533)	(\$18,533)	(\$18,533)
<b>Total Costs</b>	<b>\$0</b>	<b>(\$9,648,868)</b>	<b>(\$13,186,300)</b>	<b>(\$33,872,508)</b>	<b>(\$122,817,672)</b>	<b>(\$122,981,164)</b>	<b>(\$122,817,672)</b>

Sources: CDFW Marine Landings Data System, COFHE multipliers, CDFW Analysis; with data from: NOAA Whale Entanglement Reports 2015-2019; Jay Barlow and Karin A. Forney. 2007; Chami, R., Cosimano, T., Fullenkamp, C. and S. Oztosun (2019); Erich Hoyt and E.C.M. Parsons (2014); Knowles, T., Campbell, R. (2011); Linwood Pendleton, (2006).

## **B. Changes to the Proposed Regulation Since SRIA Submittal on 3/5/2020**

### **1. MANAGEMENT AREAS DELINEATED INTO SMALLER ZONES**

The existing Dungeness crab fishery areas: the Northern Management Area and the Central Management Area are being proposed to be broken out to smaller Zones 1 through 6, in response to the Working Group feedback. Zones 1 and 2 encompass the Northern Management Area and Zones 3 through 5 encompass the Central Management Area. The Pacific Leatherback Sea Turtle Foraging Area (Zone 6) overlaps Zones 3 and 4 are off the coast of California and a subset of federally designated Pacific Leatherback Critical Habitat.

These areas are familiar with fishermen and based on well-known geographic landmarks. Each Fishing Zone extends to 200 nautical miles, which is the extent of the State's jurisdiction for this fishery.

The delineation of smaller zones within the existing Management Areas will enable a more tailored management response in accord with location-specific risk conditions. Management actions such as season delays, or closures in the proposed smaller zones, without curtailing activity in other zones should result in smaller economic impacts than would occur if management actions were applied to the entire Management Area. The anticipated smaller losses in ex-vessel value enabled by the proposed smaller zones are characterized within Scenarios 2(a) and 2(b) in the SRIA impact assessment sections (pg. 20-21).

### **2. BI-WEEKLY REPORTING REQUIREMENT PROPOSED**

Reporting requirements are proposed to support the collection of essential fishery information and the continued operation of the commercial Dungeness crab fishery under the RAMP.

The bi-weekly collection of baseline information on trap location, depth fished, and number of traps deployed or lost will help CDFW assess the level of entanglement risk with fishing effort, and need or effectiveness of management actions, such as gear reductions or closures. Shorter reporting timeframes (less than two weeks) were considered due to concerns about the amount of workload it would create for both CDFW staff and permit holders. However, longer reporting timeframes may not capture important changes in fishing dynamics in a timely manner. Updated information on all fleet activity is necessary to inform entanglement risk and appropriate management response. Requiring reports to be submitted via email or text is consistent with current communication among the fleet and is less burdensome for CDFW staff. The costs to affected permit holders is anticipated to be minimal in terms of time (less than 1 hour bi-weekly) with no material costs.

### **3. MINIMUM NOTICE REQUIREMENT EXTENDED**

The minimum notice requirement prior to implementing any management action regarding the take of Dungeness crab of 48 hours was increased to a minimum notice period of 72 hours pursuant to subsection (f)(2) of Section 132.8. This is the means by which such management actions or changes in action will be disseminated to the affected public, granting affected fishermen another 24 hours to prepare to action in accordance with the Director's declaration.