

California Dungeness Crab Fishing Gear Working Group
2018-19 Risk Assessment and Mitigation Program (RAMP)
Preseason Risk Assessment—Key Highlights and Next Steps
October/November 2018

On October 30 and November 6, 2018, the California Dungeness Crab Fishing Gear Working Group (Working Group) convened to discuss the relative risk of whale entanglements in anticipation of the 2018-19 California Dungeness crab fishing season. This assessment was conducted as part of the 2018-19 Risk Assessment and Mitigation Program (RAMP), a program that is designed to identify, where possible forecast, and be responsive to elevated entanglement risk in the California Dungeness crab fishery. For more information about the RAMP and this effort, visit www.opc.ca.gov/whale-entanglement-working-group.

The following provides key highlights and next steps from the risk assessment process. This summary is publicly available via the Working Group’s webpage and has been circulated via the Working Group email list, the Dungeness Crab Task Force (DCTF) email list, the California Department of Fish and Wildlife (CDFW) Dungeness crab listserv, and posted to the CDFW Dungeness crab webpage. To be added to these email lists and/or receive updates on the progress of the RAMP and the Working Group’s efforts, please contact info@cawhalegroup.com.

Key Highlights, 2018-19 RAMP Preseason Risk Assessment

The Working Group discussed each factor (entanglements, forage/ocean conditions, whale concentrations, and fishing dynamics) and available information and arrived at consensus-based agreements for each factor regarding relative preseason entanglement risk. Two tables summarizing the information shared with the group are included on pages 7-9 of this document.

Each factor was reviewed and discussed for both humpback whales and blue whales, as both species are being considered during the 2018-19 RAMP. Efforts were made by the Working Group to consider the relationships between/across factors with the recognition that each are inherently connected to one another.

Preseason Risk Assessment for Humpback Whales

The preseason assessment indicated a ‘moderate risk’ for three of the four factors that are tracked in the RAMP: entanglements, forage/ocean conditions, and whales concentrations factors for humpback whales. The Working Group recognizes that November is a transitional time for whale migration patterns, forage/ocean conditions, and fishing dynamics and the agencies will continue to closely track each factor over the coming days and weeks. Next steps for information gathering have been identified for each factors to help inform the RAMP. The Working Group will continue to track progress via email and an Evaluation Team may be convened by the agencies as new information becomes available to further discuss and evaluate these factors. Details of how and why each factor was scored including next steps are listed below.

- **Entanglements in California Dungeness crab fishing gear**

Preseason risk level: Moderate

Guiding Questions: *Were there 5 or more humpback whale entanglements confirmed by NMFS and suspected/reported with CA Dungeness crab gear during the 2017-18 fishing season, including offseason?*

Data source: *NMFS 2018 entanglement summary, October 12, 2018 ([here](#))*

National Marine Fisheries Service (NMFS) confirmed that for 2018 there has been 5 confirmed entanglements in California Dungeness crab fishing gear and 6 confirmed during the 2017-18 fishing season, including the offseason (July 15-November 15). The Working Group discussed the 3 entanglements in CA Dungeness crab gear reported during the offseason (July, August, and September) and agreed there is a need to refine the 2018-19 RAMP so it is more sensitive to indicators of elevated risk during the latter portion of the season. While it is generally unknown if whales observed/confirmed

entangled in the late spring and summer became entangled during the season or by lost gear after the season is closed, NMFS highlighted that humpback whales have been known to carry gear for long periods prior to being observed entangled. The Working Group requested that the Whales Project Team continue to consider this factor and develop options for how to improve it in anticipation of the mid- and late-season risk assessments that are planned for 2018-19.

The Working Group also considered the relative risk of entanglements heading into the 2018-19 fishing season. Based on the moderate level of risk identified for both the forage/ocean conditions and whale concentrations factors, together with a confirmed entanglement reported at the start of the 2018-19 recreational fishery opener on November 3, 2018, the Working Group agreed that the relative risk of entanglements of humpback whales was moderate and would benefit from ongoing monitoring by the agencies.

The group discussed the importance of circulating information about how fishermen should respond when they observe an entanglement was discussed. The Working Group highlighted the need for broad sharing of the 2018-19 Best Fishing Practices Guide and providing more opportunities for fishermen to be involved in NOAA's Level 1 disentanglement training.

Entanglements of humpbacks will continue to be tracked by NMFS and updates will be shared with the Working Group, CDFW, and the broader fleet. An Evaluation Team will be convened if 2 or more humpback entanglements suspected/reported with CA Dungeness crab gear are confirmed by NMFS in a month or 5 or more humpback whale entanglements are confirmed by NMFS and suspected/reported with CA Dungeness crab gear the 2018-19 fishing season.

- **Forage/ocean conditions**

Risk level: Moderate

Guiding question: *Are there indications of anomalous forage/ocean conditions occurring during the 2018-19 fishing season?*

Data source: *Analysis conducted by Jarrod Santora informed by NOAA's ENSO advisory ([here](#)) and NOAA's GODAS data ([here](#))*

Additional information: *presentation given by Jarrod Santora, May 2017 ([here](#))*

Jarrold Santora, Associate Researcher at the University of California, Santa Cruz and Working Group advisor, provided an overview on the current distribution and abundance of krill and anchovy, which are key forage species for humpback whales. He reported that atmospheric and oceanic models indicate a 80% chance of a weak El Niño form in winter 2018-19, with a 55-60% chance in late spring. If this occurs, there is an increased chance that krill populations may be reduced in distribution and abundance. However, because krill are currently abundant in the northern-central California offshore region, it is anticipated this reduction would result in relatively average krill population levels (within 1 standard deviation of the long-term mean). Sea temperature anomalies in the North Pacific are also anomalously warm, with the upper 100m of the North Pacific Ocean north of 40°N now warmer (relative to normal) than at any time in the modern data record (1980-present) ([here](#)). Jarrod reported that, as suspected from early summer and fall coastwide ecosystem surveys, and the recent aerial survey (see below), the anchovy population is thriving and widely distributed, and anticipated to persist at high levels throughout the winter into the spring. Availability of dense anchovy schools on the shelf (<200m) could move foraging humpback whales closer inshore and increase overlap with fixed fishing gear. Additional analyses are needed to fully evaluate this factor along with a description of uncertainties, with the goal that information will be available to the Working Group in early 2019.

The Working Group discussed the degree of uncertainty that exists with this factor in late October/early November in terms of the likelihood of an El Niño occurring and the degree of its strength if it does. The group also discussed the ocean conditions at this time of year and the anticipated transition that will

occur in December once the NW winds arrive and the seasonal transition of the California Current follows, which likely will influence the distribution and abundance of anchovy. The group acknowledged the anomalous conditions currently at play, and requested the mid-season risk assessment be moved earlier to February (rather than March) so this factor could continue to be tracked closely and proactively. Additionally, commercial and recreational California Dungeness crab fishermen are requested to provide details on their observations of anchovy—how far offshore? what is the westernmost school being seen?—to help understand if the population will expand/contract over the coming months. Observations can be shared with Jarrod (jsantora@ucsc.edu) and/or Strategic Earth (info@cawhalegroup.com).

The forage/ocean conditions factor will continue to be tracked by the agencies and updates will be shared with the Working Group and the broader fleet. The Working Group will fully reassess this factor in February 2019 to help understand relative entanglement risk during the spring and summer.

- **Whale concentrations**

Risk level: Moderate

Guiding question: *Are humpback whale concentrations moderate to high when the CA Dungeness crab fishery opens?*

Data source: *Monterey Bay Whale Watch data and Oceanic Society Data ([here](#)), November 1-2, 2018 aerial survey ([here](#))*

Karin Forney, Research Biologist with the Southwest Fisheries Science Center and Working Group advisor, presented a snapshot of seasonal humpback whale distribution information from the Central Management area since 2010. This information can serve as an indicator for humpback whales' seasonal departure from California feeding grounds. As of October 27, 2018 the 7-day composite running average of whale sightings in the Monterey Bay area is between 5 to 20 whales, which is within the moderate concentration range.

An aerial survey was conducted on November 1-2, 2018 between Bodega Head and Cypress Point to gain further information about pre-season whale distribution. Multiple aggregations of humpback whales were documented off Pt. Reyes, just outside of the Golden Gate, off Pigeon Point, and in Monterey Bay. Surface-visible anchovy balls were also documented near the humpback whale aggregations, suggesting they were feeding on anchovies in these areas. These observations support the reporting provided for the forage/ocean conditions factor. Crab pots, presumed to be lost gear from the season before, were documented throughout much of the study area, especially from Half Moon Bay to Tomales Bay and including an entire string of at least 8 pots near Bolinas. Most of the gear had two buoys with varying lengths of line between the main buoy and trailer buoy.

Based on the information available, the Working Group agreed specific attention of whale concentrations, particularly those feeding inshore on anchovy, were of main concern throughout the Central Management Area. The group discussed the relationship between whale concentrations and forage distribution. Considering the forage/ocean conditions information, and with humpback whale populations increasing, whales are expected to exploit all available food sources (krill and anchovy). It will be important throughout the 2018-19 fishing season to track the overlap between whales, fishing, and forage, specifically fishing and anchovy.

The group discussed aerial survey observing gear in the water in advance of the 2018-19 fishing season. There was agreement that lat/long coordinates be shared with CDFW Law Enforcement Division and with those involved in gear recovery efforts to make every effort to remove the traps from the water, if appropriate. Additionally, the Working Group continued to highlight the need for more comprehensive whales data to help inform this factor, as recommended the [2018-19 Recommendations Memo](#), including the synthesis of available whale watch data (e.g., Monterey Bay Whale Watch) and compare

this information with other whale sightings datasets (e.g., systematic vessel and aerial surveys) to evaluate the utility of whale watch data (local and regional) to inform the RAMP.

The whales concentrations factor will continue to be monitored by the agencies, and a second aerial survey is scheduled (weather dependent) to occur close to the start of 2018-19 commercial fishing season on November 15, 2018. An Evaluation Team will be convened as needed once additional information is available.

- **Fishing Dynamics**

Risk level: Low

Guiding question: *Are there indications the CA Dungeness crab fishing season will be delayed beyond February 1, 2019?*

Data source: *California Department of Public Health Domoic Acid Test Results ([here](#))*

CDFW presented recent domoic acid test results (via the California Department of Public Health's (CDPH) website [here](#)) and reported that the majority of the testing conducted in the the Central Management Area (south of the Mendocino/Sonoma county line) does not show elevated levels of domoic acid. The exception is in the Bodega Bay area, which may result in the area from around Pt. Reyes north to the Mendocino/Sonoma county line to be delayed beyond November 15, 2018 for the commercial fishery ([here](#) for the CDFW announcement delaying the opener of the commercial California Dungeness crab fishery from Bodega Head north to the Mendocino/Sonoma county line). Domoic acid testing in the Northern Management Area (the Mendocino/Sonoma county line to the California/Oregon border) has come back with some sites exceeding the threshold. However, recent quality test results in the north have come back extremely low and it is anticipated that the Northern Management Area will not open on December 1, 2018 due to quality. Should the Northern Management Area be delayed due to quality, the delay could not extend beyond January 15 unless domoic acid remains an ongoing issue. It is unclear at this time whether any delay in the north could lead to increased fishing effort in the south since crabs appear to be more abundant in northern waters. Additional sampling will be conducted in Bodega Bay and these northern areas, as two consecutive clean tests are required before CDPH will recommend opening an area. CDFW is also working with the fleet to to perform crab quality testing.

The recreational fishery opened on November 3, 2018, with the exception of the area from Patrick's Point to the California/Oregon border which has a delayed opener due to elevated levels of domoic acid.

Commercial fishermen on the Working Group reported that they anticipate fewer traveling boats from the Northern Management Area and out of state to start the season in the Central Management Area due to the distribution of crab. The group discussed the possibility of the Central Management Area that is permitted to open on November 15 being delayed due to price negotiations. It is not anticipated this market delay will extend beyond Thanksgiving.

The status of delays, related to domoic acid, quality, and price negotiations, will continue to be tracked by CDFW and updates will be shared with the Working Group and the broader fleet. CDFW will be in direct communication with commercial fishing representatives on the Working Group within the first 8-10 days of the start of the season to gain an on-the-water picture of the general distribution of the fleet. Additionally, an aerial survey (coordinated by the Working Group) is scheduled between November 15-December 1 (weather dependent), which will also provide information on the distribution of the fleet in a portion of the Central Management Area. An Evaluation Team will be convened if there are any indications of delays beyond February 1.

Preseason Risk Assessment for Blue Whales

The objective criteria for each of the factors for blue whales is currently under development by the agencies, Whales Project Team, and other Working Group advisors.

- **Entanglements in California Dungeness crab fishing gear**

Preseason risk level: Low

Guiding Questions: *Were there 1 or more blue entanglements confirmed by NMFS and suspected/reported with CA Dungeness crab gear during the 2017-18 fishing season, including offseason?*

NMFS confirmed there has been no blue whale entanglements confirmed in California Dungeness crab fishing gear during the 2017-18 season (or offseason). It was flagged that blue whales had been entangled in California Dungeness crab fishing gear in 2016 (2) and 2017 (1). Entanglements of blue whales will continue to be tracked by NMFS and updates will be shared with the Working Group, CDFW, and the broader fleet. An Evaluation Team will be convened if 1 or more blue whale entanglements are confirmed by NMFS and suspected/reported with CA Dungeness crab gear the 2018-19 fishing season.

- **Forage/ocean conditions**

Preseason risk level: Low

Guiding question: *Currently under development*

Data source: *Information shared by Jarrod Santora*

Based on the information shared by Jarrod during the evaluation of humpback whales, the Working Group acknowledged that continuing to track krill populations into the spring and summer months will be key to understanding blue whale distribution during the 2018-19 fishing season. If there is an El Niño, then this could reduce the populations of krill to average levels. However, if there is not an El Niño then krill populations will likely remain high and which could attract blue whales to feed or remain in CA waters for longer periods of time. Additional assessments are needed to better integrate information regarding changes in the spatial distribution of krills within the entire California Current ecosystem, which may impact where blue whales are likely to aggregate. This may include assessing whether there are changes in density of krill in certain areas when compared to others (e.g., the Southern California Bight relative to the central coast). Forage/ocean conditions updates will be shared with the Working Group and the broader fleet. The Working Group will reassess this factor in February 2019 to help understand relative entanglement risk during the spring and summer.

- **Whale concentrations**

Preseason risk level: Low

Guiding question: *Currently under development by the Whales Project Team*

Data source: *Monterey Bay Whale Watch data and Oceanic Society Data ([here](#)), November 1-2, 2018 aerial survey ([here](#)), blue whale tagging information from Cascadia Research*

Karin reported that the running average of blue whales in the Central Management Area, and specifically Monterey Bay and the Gulf of the Farallones, are low. This was confirmed by the aerial survey, which observed two blue whales SW of Bodega, in water depths of about 40 fm and 110 fm. John Calambokidis, founder of Cascadia Research and Working Group advisor, shared data of a blue whale that was tagged in mid-October and the Working Group discussed the patterns of the whale's movements over time. John confirmed that it appears that the blue whales are currently migrating south. This factor will continue to be tracked by the agencies. A second aerial survey is scheduled (weather dependent) to occur close to the start of 2018-19 commercial fishing season on November 15, 2018 and any updated information related to blue whales will be shared with the Working Group.

- **Fishing Dynamics**

Risk level: Low

Guiding question: Currently under development

Based on the evaluation of the other factors and the information shared regarding fleet dynamics during when considering humpback whales, the Working Group agreed that the fishing dynamics factor should be revisited during the midseason assessment to prepare for the blue whale migration in spring/summer 2019.

Next Steps

As outlined above, the Working Group will continue to work with agencies and researchers to evaluate, and be responsive to, relative risk of entanglements throughout the 2018-19 fishing season. If there are additional indications of elevated risk identified in the near-term and Evaluation Team will be convened. Otherwise, the group is scheduled to reconvene in February to conduct a mid-season risk assessment. This will involve reviewing the same four factors identified above, some of which will have more information available to help inform discussions.

Commercial and recreational fishermen and industry leaders, whale watch operators, gear manufacturers, and other interested members of the public are invited to provide feedback on all aspects of the RAMP. Ideas on how to improve the Working Group's approach to assessing risk, considerations for possible management measures, and suggestions related to new technologies are welcomed and encouraged. Information learned during the 2018-19 RAMP will be shared with CDFW, NMFS, the California Ocean Protection Council, the Fish and Game Commission, Joint Committee on Fisheries and Aquaculture, and California Dungeness Crab Task Force throughout the 2018-19 fishing season.

For more information about the 2018-19 RAMP and the Working Group's efforts, including opportunities to provide feedback and share your expertise, visit <http://www.opc.ca.gov/whale-entanglement-working-group/> or contact the Working Group at info@cawhalegroup.com.

2018-19 RAMP Preseason Risk Assessment for Humpback Whales

Core Factors	Preseason Risk Assessment	Guiding Questions (questions in blue are under development, along with objective criteria, during the 2018-19 RAMP)	Objective Criteria to Indicate Elevated Risk	Preseason Information Used to Inform Assessment	Comments/Notes	Next Steps
Entanglements in CA Dungeness crab fishing gear	Moderate	<p>Were there 5 or more humpback whale entanglements confirmed by NMFS and suspected/reported with CA Dungeness crab gear during the 2017-18 fishing season, including offseason?</p> <p>Is there an increase of entanglement activity during a month along the entire coast reported in CA involving multiple gear types (including unknown)?</p> <p>What is the relevance of postseason entanglements to risk for next fishing season?</p> <p>Is there a need to refine any of the risk factors as we look ahead to the next season?</p>	Any season/offseason where 5 or more humpback whale entanglements are confirmed by NMFS and suspected/reported with CA Dungeness crab gear, or 2 or more humpback entanglements confirmed by NMFS in a month suspected/reported with CA Dungeness crab gear.	National Marine Fisheries Service (NMFS) confirmed that for 2018 there has been 5 confirmed entanglements in California Dungeness crab fishing gear and 6 confirmed during the 2017-18 fishing season, including the offseason (July 15-November 15).	<p>Discussed the 3 entanglements in CA Dungeness crab gear reported during the offseason (July, August, and September) and need to refine the 2018-19 RAMP so it is more sensitive to indicators of elevated risk during the latter portion of the season. It is generally unknown if whales observed/confirmed entangled in the late spring and summer became entangled during the season or by lost gear after the season is closed. Humpback whales have been known to carry gear for long periods prior to being observed entangled.</p> <p>Considered the relative risk of entanglements heading into the 2018-19 fishing season. Agreement that the relative risk of entanglements of humpback whales was moderate and would benefit from ongoing monitoring by the agencies.</p> <p>Discussed the importance of circulating information about how fishermen should respond when they observe an entanglement was discussed. Need for broad sharing of the 2018-19 Best Fishing Practices Guide and more opportunities for fishermen to be involved in NOAA's Level 1 disentanglement training.</p>	<p>The Working Group requested that the Whales Project Team continue to consider this factor and develop options for how to improve it in anticipation of the mid- and late-season risk assessments that are planned for 2018-19.</p> <p>Entanglements of humpbacks will continue to be tracked by NMFS and updates will be shared with the Working Group, CDFW, and the broader fleet.</p>
Forage/ocean conditions	Moderate	<p>Are there indications of anomalous ocean/forage conditions occurring during the 2018-19 fishing season?</p> <p>What are the connections/relationship between ocean conditions (forage) and crab distribution?</p>	Low krill, high anchovy abundance and density; El Niño, or high diversity of species, especially if there is a delay in the season.	<p>Atmospheric and oceanic models indicate a 80% chance of a weak El Niño form in in winter 2018-19, with a 55-60% chance in late spring. If this occurs, there is an increased chance that krill populations may be reduced in distribution and abundance. However, because krill are currently abundant in the northern-central California offshore region, it is anticipated this reduction would result in relatively average krill population levels (within 1 standard deviation of the long-term mean). Sea temperature anomalies in the North Pacific are also anomalously warm, with the upper 100m of the North Pacific Ocean north of 40°N now warmer (relative to normal) than at any time in the modern data record (1980-present) (here).</p> <p>Anchovy populations are thriving and widely distributed, and anticipated to persist at high levels throughout the winter into the spring. Availability of dense anchovy schools on the shelf (<200m) could move foraging humpback whales closer inshore and increase overlap with fixed fishing gear.</p> <p>http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ens0_advisory/ensodisc.shtml</p> <p>https://alaskapacificblob.wordpress.com/2018/11/06/record-north-pacific-warmth/</p>	<p>Discussed the degree of uncertainty that exists with this factor in late October/early November in terms of the likelihood of an El Niño occurring and the degree of its strength if it does. Discussed the ocean conditions at this time of year and the anticipated transition that will occur in December once the NW winds arrive and the seasonal transition of the California Current follows, which likely will influence the distribution and abundance of anchovy. Anomalous conditions are currently at play and the mid-season risk assessment will be moved earlier to February (rather than March) so this factor could continue to be tracked closely and proactively.</p>	<p>The forage/ocean conditions factor will continue to be tracked by the agencies and updates will be shared with the Working Group and the broader fleet. The Working Group will fully reassess this factor in February 2019 to help understand relative entanglement risk during the spring and summer.</p> <p>Commercial and recreational California Dungeness crab fishermen are requested to provide details on their observations of anchovy.</p>
Concentrations of whales	Moderate	<p>Are whale concentrations moderate to high as of October 30/November 6, 2018? (and where?)</p> <p>Are whale concentrations expected to be high in the near future (i.e., days) (and where)?</p> <p>Are whales inshore? offshore? And where?</p> <p>Are the whale concentrations identified in via the MBWW data (i.e., Monterey area) applicable to other areas along the coast?</p> <p>What stage is the migration pattern (seasonality)? What variability is occurring locally/regionally (forage driven)?</p> <p>How does fishing factor relate to whale concentrations?</p> <p>Do we have a prediction for spring/early summer forecast for whale concentrations (broaden MBWW, spatial distribution) - whale/forage models?</p>	<p>The following criteria have been developed when considering relative risk of entanglements for season humpback whale migration patterns:</p> <p>High: running average >20 whales present Moderate: running average 5-20 whales present Low: running average <5 whales present</p> <p>Averages considered over sustained period of 1 week</p>	<p>A snapshot of seasonal humpback whale distribution information from the Central Management Area since 2010 was presented as an indicator for humpback whales' seasonal departure from California feeding grounds. As of October 27, 2018 the 7-day composite running average of whale sightings in the Monterey Bay area is between 5 to 20 whales, which is within the moderate concentration range.</p> <p>An aerial survey was conducted on November 1-2, 2018 between Bodega Head and Cypress Point to gain further information about preseason whale distribution.</p> <p>Monterey Bay Whale Watch data: http://www.montereybaywhalewatch.com/slstcurr.htm</p> <p>Worked up Monterey Bay Whale Watch data and Oceanic Society data: http://bit.ly/Preseason2018WhaleData</p> <p>November 1-2, 2018 Aerial Survey Report: http://bit.ly/1-2NovAerialSurveyReport</p>	<p>Specific attention of whale concentrations, particularly those feeding inshore on anchovy, are of main concern throughout the Central Management Area. Discussed the relationship between whale concentrations and forage distribution. Considering the forage/ocean conditions information, and with humpback whale populations increasing, whale are expected to exploit all available food sources (krill and anchovy). It will be important throughout the 2018-19 fishing season to track the overlap between whales, fishing, and forage, specifically fishing and anchovy.</p> <p>Need for more comprehensive whales data to help inform this factor to evaluate the utility of whale watch data (local and regional) to inform the RAMP.</p>	<p>Coordinates of fishing gear observed during the November 1-2, 2018 aerial survey will be shared with CDFW Law Enforcement Division and with those involved in gear recovery efforts to make every effort to remove the traps from the water, if possible/appropriate.</p> <p>The whales concentrations factor will continue to be monitored by the agencies, and a second aerial survey is scheduled (weather dependent) to occur close to the start of 2018-19 commercial fishing season on November 15, 2018.</p>

2018-19 RAMP Preseason Risk Assessment for Humpback Whales, continued

Fleet dynamics	Low	<p>Is the season anticipated to be delayed beyond Feb 1?</p> <p>How is pricing/markets affecting the spring fishery?</p> <p>Are there large aggregations of gear concentrations concentrated in areas?</p> <p>Where is the location of crab and the location/concentration of gear relative to whale concentrations?</p>	<p>To consider a number of factors throughout the season that would influence/inform the concentration and/or distribution of CA Dungeness crab fishing gear. Factors include:</p> <p>Delays: Any delay (domoic acid, quality, market, etc.) that causes the setting of gear to delay beyond February 1 in either management area. Setting of gear would lead to a pattern that could increase relative risk of entanglements (high concentrations of gear in local/small area) informed by whales concentrations factor</p>	<p>Recent domoic acid test results report elevated levels of domoic acid in the Bodega Bay area, which may result in the area from around Pt. Reyes north to the Mendocino/Sonoma county line to be delayed beyond November 15, 2018 for the commercial fishery (see link below to CDFW announcement regarding delay). Some sites in the Northern Management Area (the Mendocino/Sonoma county line to the California/Oregon border) have exceeded the domoic acid threshold. Quality test results in the north have come back low and it is anticipated that the Northern Management Area will not open on December 1, 2018 due to quality.</p> <p>The recreational fishery opened on November 3, 2018, with the exception of the area from Patrick's Point to the California/Oregon border which has a delayed opener due to elevated levels of domoic acid.</p> <p>CDFW announcement delaying the opener of the commercial California Dungeness crab fishery from Bodega Head north to the Mendocino/Sonoma county line: https://cdfgnews.wordpress.com/2018/11/09/southern-commercial-dungeness-crab-season-delayed-in-ocean-waters-north-of-bodega-head-due-to-public-health-hazard/?mc_cid=c0c6ef8e2e&mc_eid=e27b678251</p> <p>DA CDPH's website: https://www.cdph.ca.gov/Programs/CEH/DFDCS/Pages/FDBPrograms/FoodSafetyProgram/DomoicAcid.aspx</p>	<p>Anticipate fewer traveling boats have been observed from the Northern Management Area and out of state to start the season in the Central Management Area due to the distribution of crab.</p> <p>Discussed the possibility of the Central Management Area that is permitted to open on November 15 being delayed due to price negotiations. It is not anticipated this market delay will extend beyond Thanksgiving.</p> <p>Discussed the need for ongoing communications with recreational and commercial fishermen to gain real-time information to understand fleet movement at the start of the season. Two group texts involving fishermen in both Management Areas have been established and will be tracked.</p>	<p>Additional sampling will be conducted in Bodega Bay and these northern areas, as two consecutive clean tests are required before CDPH will recommend opening an area. CDFW is also working with the fleet to perform crab quality testing.</p> <p>The status of delays, related to domoic acid, quality, and price negotiations, will continue to be tracked by CDFW and updates will be shared with the Working Group and the broader fleet. An aerial survey (coordinated by the Working Group) is scheduled between November 15-December 1 (weather dependent).</p>
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2018-19 RAMP Preseason Risk Assessment for Blue Whales

Core Factors	Preseason Risk Assessment	Guiding Questions (questions in blue are under development, along with objective criteria, during the 2018-19 RAMP)	Objective Criteria to Indicate Elevated Risk	Preseason Information Used to Inform Assessment	Comments/Notes	Next Steps
Entanglements in CA Dungeness crab fishing gear	Low	Was there 1 or more blue whale entanglements confirmed by NMFS and suspected/reported with CA Dungeness crab gear during the 2017-18 fishings season, including offseason?	Any season/offseason where 1 or more blue whale entanglement is confirmed by NMFS and suspected/reported with CA Dungeness crab gear	NMFS confirmed there has been no blue whale entanglements confirmed in California Dungeness crab fishing gear during the 2017-18 season (or offseason).	It was flagged that blue whales had been entangled in California Dungeness crab fishing gear in 2015 and 2016. Entanglements of blue whales will continue to be tracked by NMFS and updates will be shared with the Working Group, CDFW, and the broader fleet.	An Evaluation Team will be convened if 1 or more blue whale entanglements are confirmed by NMFS and suspected/reported with CA Dungeness crab gear the 2018-19 fishing season.
Forage/ocean conditions	Low	Where are the high concentrations of krill located (inshore? offshore/canyons?)? How does the location of krill relate to the concentration of whales? Fishing activity? What data do we have? What do we need?	TBD- Need to develop objective criteria for blue whales	Some krill patches have been reported along the shelf break but limited information. Spring indicators may shift to lower krill. If there is an El Niño, then this could reduce the populations of krill to average levels. However, if there is not an El Niño then krill populations will remain high and may attract blue whales to feed.	Discussed the relationship between krill and blue whale distribution. If no krill, will blues show up? It was confirmed that blue whales follow the krill and are continually seeking productive feed areas.	Continuing to track krill populations into the spring and summer months will be key to understanding blue whale distribution during the 2018-19 fishing season. Additional assessments are needed to better integrate information regarding changes in the spatial distribution of krills within the entire California Current ecosystem, which may impact where blue whales are likely to aggregate. This may include assessing whether there are changes in density of krill in certain areas when compared to others (e.g., the Southern California Bight relative to the central coast). Forage/ocean conditions updates will be shared with the Working Group and the broader fleet. The Working Group will reassess this factor in February 2019 to help understand relative entanglement risk during the spring and summer.
Concentrations of whales	Low	What are high/med/low concentrations of blue whales in x area? What do we know about blue whale concentrations in other geographic locations (i.e., Alaska) and how this informs CA waters? How do the ocean conditions inform where blue whales may be aggregated and how many are in West Coast waters?	TBD- Need to develop objective criteria for blue whales	The running average of blue whales in the Central Management Area, and specifically Monterey Bay and the Gulf of the Farallones, are low. This was confirmed by the aerials survey, which observed two blue whales SW of Bodega, in water depths of about 40 fm and 110 fm. Data collected in October of a tagged blue whale showed the movement concentrated at the shelf edge in 200-300m water depth. Blue whales appear to be migrating south.	The group discussed the information made available by the tagged blue whale, including observations of different movement patterns for evening/day, feeding/not feeding, traveling, etc. Two other blue whales were tagged in October so additional data should be available in the coming weeks/months.	This factor will continue to be tracked by the agencies. A second aerial survey is scheduled (weather dependent) to occur close to the start of 2018-19 commercial fishing season on November 15, 2018 and any updated information related to blue whales will be shared with the Working Group.
Fleet dynamics	Low	Is the season anticipated to be delayed beyond Feb 1? How is pricing/markets affecting the spring fishery? Are there large aggregations of gear concentrations concentrated in offshore canyon areas? Is fishing being pushed into deeper water (seasonality)? Where is the location of crab and the location/concentration of gear relative to blue whale concentrations?	TBD- Need to develop objective criteria for blue whales	Considered the same information shared during the humpback whale preseason assessment.	Discussed the importance of considering the movement of Dungeness crab fishermen to other fisheries during the spring months.	Based on the evaluation of the other factors and the information shared regarding fleet dynamics during when considering humpback whales, the Working Group agreed that the fishing dynamics factor should be revisited during the midseason assessment to prepare for the blue whale migration in spring/summer 2019.