

Core Factors	Mid-season Risk Assessment - CURRENT (March 19, 2019)	Mid-season Risk Assessment - LOOKING AHEAD (April/May 2019)	Guiding Questions (questions in blue are under development, along with objective criteria, during the 2018-19 RAMP)	Objective Criteria to Indicate Elevated Risk	Mid-season Information Used to Inform Assessment	Comments/Notes	Next Steps
Entanglements in CA Dungeness crab fishing gear	Low	Moderate to High	<p>Were there 5 or more humpback whale entanglements confirmed by NMFS and suspected/reported with CA Dungeness crab gear during the 2018-19 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.	<p>To date, National Marine Fisheries Service (NMFS) confirmed that during the 2018-19 fishing season there has been 1 entanglement of a humpback whale species in California Dungeness crab commercial fishing gear in December 2018. There have been no entanglements reported since the beginning of 2019, which is not unusual for this time of year.</p> <p>NMFS also reported there have been no entanglements of blue whale but include detailed information of the blue whale entanglement reported in July 2018 4 miles off Salmon Creek, trailing 2 dark/yellow buoys about 40 feet behind whale.</p>	<p>Discussed current and forecasted relative risk of entanglements. Current relative risk of humpback whale entanglements is low (see whale concentrations factor). Looking ahead to the spring months, and reflecting on the increased number of entanglements in California Dungeness crab fishing gear (and other fishing gear) that were reported during May-August 2018, the forecasted relative entanglement risk is moderate looking ahead to the coming weeks and into the spring/summer months.</p>	<p>Will need to continue monitoring this factor closely heading into spring when historically the risk of entanglements has been higher.</p> <p>Entanglements of humpbacks (and blues) 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	Moderate to High	<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>As for March 14, 2019, the El Niño Southern Oscillation (ENSO) report predicted an 80% chance of a spring El Niño and 60% chance in summer.</p> <p>ENSO Report (3/14): http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ens0_advisory/ensodisc.shtml</p> <p>Aerial Survey: http://bit.ly/March15-16AerialSurveyPlot</p>	<p>Recognizing the information provided by the ENSO report, the group still requires additional support in interpreting ocean conditions relative to the California Current to help with looking at conditions in the coming weeks/months.</p> <p>Anchovies were reported off Half Moon Bay during the 3/15-3/16 aerial surveys and fisherman reported seeing large schools of anchovies on the west side of Soquel Canyon, in very spread out/patchy areas. CDFW also had reports of higher numbers of anchovy catches out of Moss Landing and Monterey, although it was noted that anchovy landings are not a direct indicator of fish populations.</p> <p>Discussed the positive lag effect that good krill years have on subsequent years. The group anticipates an average amount of krill this year given that 2018 was a healthy krill year, even with warmer ocean temperatures. The Working Group noted the possible similarities in ocean conditions to 2015 when there was a high number of entanglements and agreed that this should continue to be monitored closely.</p>	<p>Need for additional forage data and requested the agencies seek out available acoustic trawl survey data and other sources in the near-term. There remains, however, a continued need for the interpretation of that data to effectively inform this factor.</p> <p>The Working Group, together with the agencies, will continue to track this factor closely and proactively heading into spring months. The Working Group will communicate any changes in the forage/ocean conditions to the fleet over the coming weeks.</p>
Concentrations of whales	Low	Low to High*	<p>Are whale concentrations moderate to high as of March 19, 2019? (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>Karin Forney, Research Biologist with the Southwest Fisheries Science Center and Working Group advisor, provided a snapshot of seasonal humpback whale distribution information since 2012. This information can serve as an indicator for humpback whales' seasonal migration and anticipated arrival to California feeding grounds. As of March 16, 2019, the 7-day composite running average of whale sightings in the Monterey Bay area was less than 5 whales, which is within the low concentration range. No blue whale observations have been reported and grey whales continue to migrate in steady numbers, heading north.</p> <p>The whale watch data was supported by two aerial surveys conducted on March 15 and 16, 2019. A few humpbacks were observed between Monterey Bay and Gualala feeding on anchovies at the surface.</p> <p>Observations of low humpback whale concentrations were confirmed by on-the-water reports by fishermen.</p> <p>Aerial Survey: http://bit.ly/March15-16AerialSurveyPlot</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/March192018-19WhalesData</p>	<p>It was determined that humpback whales and blue whales have not yet arrived in their traditional feeding grounds in moderate or high numbers. Grey whales are continuing to migrate north and appear to be at minimal risk for entanglement, primarily due to the speed they are traveling (i.e., not remaining in one place for an extended period of time).</p> <p>Monterey Bay Whale Watch reports seeing a few whales, approximately three to four per day. Based on historical records, this is a time of lower humpback whale sightings, but that is expected to change in the next two to three weeks when humpbacks typically return in greater numbers based on their annual migratory patterns. As more whales return it is expected that they will remain concentrated in the Ano Nuevo area, based on location of forage.</p>	<p>Bi-weekly reports of the MBWW and Oceanic Society data will continue to be provided to closely track changes in humpback whale concentrations as the season progresses. Request to spend time during 3/26 meeting on evaluating the spatial area of forage concentrations to help inform where whales are anticipated to congregate in the coming months.</p> <p>The whales concentrations factor will continue to be monitored by the agencies. Additional aerial surveys may take place through May (weather dependent) and historical whale concentration data may be made available to help inform the Working Group's continued tracking of this factor during the 3/26 meeting and throughout the remainder of the 2018-19 season.</p>

Fleet dynamics	Low to Moderate	Low to High*	<p>How has the impact of the Northern delay affected fishing behavior?</p> <p>How is pricing/markets affecting the spring fishery?</p> <p>Do fishermen have other fisheries to transition to this spring?</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 (e.g., delays, ability for fishermen to transition to other fisheries during spring season, market price, etc.).</p>	<p>Informed by the March 15 and 16, 2019 aerial surveys, Karin Forney, Research Biologist with the Southwest Fisheries Science Center and Working Group advisor, reported high concentrations of fishing gear off Half Moon Bay, north of Monterey Bay, and in the Gulf of Farallones between 30-50 fathoms. She observed 1767* Dungeness crab traps were counted during the aerial surveys. Based on sampling methodology, it was estimated a minimum number of 62 vessels and maximum number of 31,000 traps are in the fishing area (within the aerial survey scope).</p> <p>Fishermen reported that gear was continuing to come out of the water, with some ports having 6-8 fishermen still fishing. Fishing is taking place, but not at a high level and gear is spread around the fishing grounds (i.e., not concentrated areas of gear) with some exceptions (e.g., between Point Reyes and Russian River). Recreational fishing was also observed to be minimal via on-the-water observation. Price was reported to be holding, particularly in the north, and not showing an increase per pound which is more typical for this stage in the fishing season.</p> <p>Aerial Survey: http://bit.ly/March15-16AerialSurveyPlot</p> <p>*3/25: Karin revisited the aerial survey information following the 3/19 call and the total number of crab pots indicated on her previous aerial survey plots (1,787) accidentally included both the 1,403 pots seen during their systematic lines and 384 additional pots recorded during transit flights. Only the pots seen on systematic lines are suitable for total abundance/density estimation. Using only the 1403 pots observed during the systematic lines results in a somewhat lower total estimate of 24,600 pots within the study area.</p>	<p>Discussed the observed number of Dungeness crab traps and the extrapolated number based on sampling methods. Fishermen questioned the accuracy of the multiplier and disagreed with the report of 31,000 traps currently in the water. Focused discussion on the need to better understand the sampling methods, as well as learning more about different types of fixed-gear fishing (e.g., hagfish, coonstriped shrimp, etc.) that would be occurring in the crab grounds that could have been observed via the aerial survey. Explored the idea of some gear being lost gear, as some of the observed traps were fouled. However, that is common this time of year due to sunny weather and does not necessarily indicate derelict gear.</p> <p>Solar loggers were discussed as useful tool to better understand what gear is being fished and observed via the aerial surveys.</p> <p>Price of crab remaining flat in the North Coast could be due market dynamics as a result of the late start in the Northern Management Area.</p>	<p>During the 3/26 meeting, the Working Group is interested in exploring such questions as:</p> <ul style="list-style-type: none"> - Are there any other fixed-gear fisheriers that would be out in the crab grounds? - Could there be lost gear? - How is the multiplier arrived at? - How might landings data help gain another estimate of the amount of gear currently out on the water? <p>Fishing dynamics will continue to be tracked by CDFW and updates will be shared with the Working Group and the broader fleet. The Working Group requested that, as available, additional fishing information be brought forward during the March meeting which could be gathered by aerial surveys that are planned for February through May.</p>
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