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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
DECLARATION OF FISHERY SEASON DELAY
IN THE COMMERCIAL DUNGENESS CRAB FISHERY
DUE TO RISK OF MARINE LIFE ENTANGLEMENT

Pursuant to Fish and Game Code Section 8276.1(b) and California Code of Regulations, Title 14, Section 132.8 ("Section 132.8"), I find and declare that:

I

On December 11, 2020 I evaluated entanglement risk for the commercial Dungeness crab fishery pursuant to Section 132.8(b). I provided the California Dungeness Crab Fishing Gear Working Group (Working Group) and the Whale Safe Fisheries email listserv with notice of the risk assessment and all non-confidential data under consideration on December 8, 2020. Prior to this risk assessment and management response, I considered the Working Group's December 10, 2020 management recommendation, and other relevant information provided to my staff.

II

NOAA-standardized data from commercial whale-watching trips in Fishing Zone 4 between November 18 and December 4 show weekly running averages of 8.7 and 6.2 Humpback whales in Monterey Bay. Pursuant to Section 132.8(c)(2)(A)(4)(a), I must implement a Fishing Zone delay or other protective management action.

III

NOAA-standardized data from commercial whale-watching trips in Fishing Zone 4, 11 and 5 Blue whales were sighted on Dec 2 and 3, respectively. Pursuant to Section 132.8(c)(2)(A)(4)(b), I must implement a Fishing Zone delay or other protective management action.

IV

Section 132.8(b)(4) requires that when new information so indicates, I must lift or modify any fishing restrictions in a manner that promotes fair and orderly fisheries.

V

Upon evaluation of the management considerations pursuant to Section 132.8(d), I have determined that the management action listed below protects Humpback whales and Blue whales based on the best available science. Additional information on the relevant management considerations is provided in the attachment to this declaration.

VI

THEREFORE, under the authority granted by Fish and Game Code Section 8276.1(b) and Section 132.8 of Title 14 of the California Code of Regulations, I am implementing the following management action:

1. The opening of the commercial Dungeness crab fishery in Fishing Zone(s) 1 – 6 is delayed until December 23, 2020. Take and possession of commercially caught Dungeness crab is prohibited in the delayed Fishing Zones. The pre-soak period in Fishing Zones 1-2 will begin at 8:01 am on December 20; the pre-soak period in Fishing Zones 3-6 will begin at 6:01 am on December 22. The season opening will be subject to a Fishing Advisory as described below.
2. A Fishing Advisory is issued for ocean waters statewide reminding fisherman to use best practices while fishing and avoid setting gear at the edges of Monterey canyon and areas around Point Reyes and the Farallon Islands.

This management action is in effect until the next risk assessment, which is expected to occur on or around January 15, 2021.

The best practices guide is located on the Working Group Website. Updates and material regarding future entanglement risk evaluations in the commercial Dungeness crab fishery will be made available on the Department's web page.

Charlton H. Bonham, Director

12/11/20 5:22 pm PST
Date/Time

ATTACHMENT TO DIRECTOR DECEMBER 11, 2020 DECLARATION OF SEASON OPENING AND FISHERY ADVISORY IN THE COMMERCIAL DUNGENESS CRAB FISHERY DUE TO RISK OF MARINE LIFE ENTANGLEMENT

Information referenced in this Attachment is further described in the Data Summary Compilation dated December 10, 2020, and located at the Department's Whale Safe Fisheries website, which to the Department's knowledge represents the best available science informing the management considerations in Section 132.8(d).

Information Supporting Trigger for Management Action Under Section 132.8(c)

Marine Life Concentrations:

- **Fishing Zone 4:** weekly running average of 6.2 Humpback whale sightings and a single day sighting of 11 and 5 Blue whales based on Monterey Bay Whale Watch data.

Relevant Management Considerations Under Section 132.8(d)

1. **Working Group Management Action Recommendation and Best Available Science Made Available to the Department**

   The Working Group considered multiple management recommendations, with broad support for a state-wide season delay. This recommendation was also brought forward from several port associations during the Working Group meeting discissions. Other options considered were opening the season statewide under a Fishing Advisory and opening the season statewide with a Fishing Advisory limited to Fishing Zone 4; these options received less support than a statewide season delay.

2. **Information from NOAA**

   No additional information was made available for this risk assessment.

3. **Effectiveness of Management Measures to Minimize Entanglement Risk**

   Based on recent survey data and available information, risk of entanglement is low. Information indicates that migration has begun and that remaining whales are offshore with limited overlap within Fishing Grounds. Therefore, a Fleet Advisory provides fishermen with the necessary information to help further reduce the risk of entanglement. However, whale observation does indicate that whales are still present, even if largely located outside traditional Fishing Grounds. Additionally, a season delay is the anticipated management action in Section132.8(c)(2)(1)(4)(a)-(b) in response to concentration triggers being reached for Humpback whales and Blue whales.

4. Total Economic Impact to the Fleet and Fishing Communities

Total economic costs are considered when deciding between management measures that equivalently reduce entanglement risk. Current considerations include the loss of December holiday markets, possible fishing effort shift, poor market conditions (price), crab availability, and general economic impacts due to the ongoing COVID pandemic. While several large port associations indicated a delay would be the preferable management response given the potential economic consequences from an entanglement in both this season and future seasons, overall fleet support for a delay was mixed.

5. Data Availability Within and Across Fishing Zones

Aerial and vessel surveys were conducted across Fishing Zones 1-4. Data from Point Blue Conservation Science, Monterey Bay National Marine Sanctuary, Channel Islands National Marine Sanctuary and habitat modeling from Whale Watch 2.0 for Fishing Zones 1-6 was also reviewed. Paired with the data collected over the course of the previous risk assessments this season, the Department considers this comprehensive data set to adequately cover the full geographic extent of those Fishing Zones to inform the appropriate management response. However, the Department recognizes that less survey data was available for this risk assessment as compared to previous risk assessments this season, including a lack of aerial or vessel-based surveys over certain areas in Fishing Zones 3 and 4. More limited data is expected given the time of year due to weather conditions and further complicated by the COVID pandemic and safety concerns for staff. Aerial surveys did cover areas in which observation data indicated whale presence.

6. Known Historic Marine Life Migration Patterns

Seasonal migration for Humpback whales out of California to Mexico and Central America typically occurs in November and early December. Based on information provided by scientific advisors, when Humpback whales start their migration, they tend to move offshore and head directly south, avoiding Fishing Grounds along the California coast. While Humpback and Blue whale numbers in Fishing Zone 4 remain above average when compared to historical weekly averages from Monterey Bay Whale Watch data, numbers are trending downward and will likely soon fall below the Marine Life Concentration trigger. Trend data from Point Blue Conservation Science indicates more Blue whales are being sighted near the Channel Islands and fewer Humpback whales are being sighted in Fishing Zone 4.

7. Fishing Season Dynamics

No delay is anticipated due to public health hazards. Tri-state quality testing protocols have been met and the existing quality delay in Fishing Zones 1 and 2 will

lift on December 16, 2020. Working Group members requested any delays be until December 31 and occur state-wide to support a fair and orderly fishery.

8. Known Distribution and Abundance of Key Forage

Blue whales were sighted around the edge of the Monterey Canyon foraging on krill based on Point Blue observation data.

9. Ocean Conditions

La Niña conditions are currently forecast for winter/spring 2021. Monthly Habitat Compression Index in November 2020 indicates a medium compression state with increased cool habitat area since October.

10. Current Impact Score Calculations

a. Fishing Season – n/a

b. Calendar Year – calendar year impact score calculations will begin January 1, 2021.

11. Marine Life Concentrations and Distribution During the Current Fishing Season

Aerial survey data and Monterey Bay Whale Watch data indicates fewer whales are present in Fishing Zones 1, 2, 3 and 4. Whale Watch data also shows remaining whales in Fishing Zone 4 on the shelf break and over deep-water canyons. Trend data from Point Blue Conservation Science indicates more Blue whales are being sighted near the Channel Islands and fewer Humpback whales are being sighted in Fishing Zone 4.

Migration reports from Cascadia Research and collaborators have confirmed, two Humpback whales sighted during November surveys in Monterey are now on the breeding grounds off mainland Mexico. An additional eight California Humpback whales have been confirmed to be on the breeding grounds off mainland Mexico as well as 11 of 12 identified migrating humpback whales off central and northern Baja encountered during November 20-25 that were known whales to feed off of California. However, at least 18 different identified Humpback whales have been seen offshore California between December 1-7, confirming that some individuals have not yet started migrations.

Chosen Management Action and Rationale

Based on the management considerations outlined above, the Director is modifying the previous season delay in Fishing Zones 3-6 to allow the opening of the commercial

Dungeness crab Fishery in Fishing Zones 1-6 on December 23, 2020 pursuant to the Fleet Advisory.

Pursuant to Section 132.8(b)(4), previously implemented management actions must be lifted or modified as new information is available if a different management action is more appropriate, and those modifications must be undertaken in a manner that promotes a fair and orderly fishery. Based on the best available science available at this time, the previously implemented season delay is being extended statewide until December 23, and the season will open under a Fishing Advisory.

Fishing Zone 4 reached a marine life concentration trigger, leading to analysis of the management considerations under Section 132.8(d) and appropriate management response under Section 132.8(c). Those sections anticipate a broader analysis of the factors impacting entanglement risk statewide.

In consideration of information collected throughout all risk assessments this season, marine life concentrations are trending downward, and based on migration reports, whales previously observed in California waters are beginning to arrive on the breeding grounds in Mexico. However, both surveys and observational data indicate Humpback whales and Blue whales are still present offshore California, although in fewer numbers than sighted during previous surveys. Although Monterey Bay Whale Watch data indicates whale presence is still higher than average, but the numbers of observations is trending downward and will likely soon fall below the marine life concentration trigger. Additionally, aerial surveys included ocean waters where observational data indicated whale presence, and whales were not sighted during two overflights of that area; these are additional indications that whales are moving out of the Fishing Grounds.

Information and observations are consistent with published migration trends indicating Humpback and Blue whales are leaving California waters. Reports from collaborators in Mexico shows that whales previous observed in California waters are beginning to arrive in the breeding grounds in Mexico. We expect whale numbers to drop rapidly now given all indications that the migration south has begun. According to Working Group experts, large whales tend to move south offshore rather than along the coast during their migration out of California, further reducing the likelihood of overlap with fishing activity. Any whales still migrating out of California waters on December 23 would likely be doing so outside of the Fishing Grounds.

Remaining whales observed during surveys and from observation data were primarily sighted at or near the edge of deep-water canyons, indicating foraging activity appears to have shifted offshore. These areas are unlikely to see high levels of fishing effort due to their location on the outer edge of the Fishing Grounds. However, is still clear that there are whales in the Fishing Grounds and while risk appears to be low, a more precautionary approach is to delay the season an additional week, at which point even more whales shall have migrated out of the Fishing Grounds.

Fishing Zone 5 has limited commercial take of Dungeness crab due to limited fishing grounds off the Big Sur coast, and there is only limited take of Dungeness crab in Fishing Zone 6, therefore the likely overlap of fishing activity with whales migrating offshore is low.

Opening on December 23 allows for a unified statewide opening of the season, which is not expected to result in fishing effort shift, but instead should more evenly distribute gear throughout the state. Additional delays in parts of the state would be expected to lead to effort shift as fishery participants try to capitalize on the holiday markets, which could lead in turn to high gear concentrations and increase entanglement risks in those areas.

Pursuant to Section 132.8(d)(4) and (7), consideration of total economic impacts to the fleet as well as fleet dynamics were taken into consideration. Following the release of the Department's initial recommendation to open on December 16, a large proportion of the fleet expressed support for an additional delay to ensure the lowest possible risk of entanglement before fishing began. While the Department initially considered a statewide season opener on December 16 with a Fleet Advisory, the Department also supports a more precautionary approach of an additional delay. A statewide opener on December 23rd will allow additional time for remaining whales to migrate out of California waters, further reducing the already low entanglement risk. Additionally, a unified opener is not expected to result in fishing effort shift, but instead should more evenly distribute gear throughout the state, further mitigating against any possible entanglement risk.

Neither a season delay or Fleet Advisory under section 132.8(e) are necessarily limited to a single Fishing Zone, and compliance with best management practices throughout the state will ensure that entanglement risk continues to remain low as any remaining Humpback and Blue whales migrate out of the Fishing Grounds.

California Dungeness Crab Fishing Gear Working Group (Working Group) Management Recommendation Form to inform the Risk Assessment and Mitigation Program for the California Department of Fish and Wildlife

Discussion: December 10, 2020; Memo Finalized: December 11, 2020

Submitted to the California Department of Fish and Wildlife Director for the Risk Assessment Mitigation Program Section 132.8 Title 14, California Code of Regulations to assess marine life entanglement risk in the Commercial Dungeness Crab Fishery.

The Working Group considered Available Data provided by CDFW on [insert date], as well as an initial CDFW assessment of management considerations and preliminary management action. The Available Data, initial and final versions of CDFW's assessment are available on the Whale Safe Fisheries webpage.

Multiple management options were put forward by Working Group members. They are listed below in the order they were raised during the discussion. Their order does not reflect a ranked level of support by Working Group members.

Recommendation Option: Statewide Opener on December 16, with Fleet Advisory for Fishing Zone 4

Support CDFW's Initial Assessment to have a statewide opener based on the rationale as articulated in the Initial Assessment. The opener should include a Fleet Advisory limited to Fishing Zone 4. As part of this announcement, CDFW should clarify what is constituted by a Fleet Advisory, similar to what was shared by CDFW staff on the call. All fishery participants are encouraged to use best practices.

This option did not receive broad support from the Working Group.

Recommendation Option: Statewide Delay to December 31

Port meetings were held on December 9 in Crescent City, Trinidad, Eureka, Fort Bragg, Bodega Bay, San Francisco, Half Moon Bay, Monterey Bay, and Morro Bay. With the exception of Morro Bay and Trinidad, all participating ports supported an additional delay of all Fishing Zones until December 31. Working Group members conveyed

support from the port meeting participants for a unified statewide opener. There is concern about what opening the fishery under a Fleet Advisory would mean. Given the lack of recent aerial or systematic vessel surveys confirming the departure of Humpback whales and Blue whales from Fishing Zone 4, limited aerial survey information in Fishing Zone 3, and the potential for any entanglement in these Fishing Zones to impact the duration of the season in other Fishing Zones, the season should be delayed statewide until December 31.

This option received broad support from the Working Group, in their capacity as representatives of the interests of their ports and local port organizations.

Recommendation Option: Statewide Opener on December 16, with Fleet Advisory for all Fishing Zones

Support CDFW's Initial Assessment to have a statewide opener on December 16 based on the rationale as articulated in the Initial Assessment, with a Fleet Advisory for all Fishing Zones. The Fleet Advisory should include specific recommendations regarding areas to avoid or other measures to implement that will reduce co-occurrence between whales and fishing gear.

This option did not receive broad support from the Working Group.

California Department of Fish and Wildlife Final Assessment of Marine Life Entanglement Risk and Management Recommendation

Date: December 11, 2020

An initial assessment and preliminary recommendation was developed by California Department of Fish and Wildlife (CDFW) Marine Region staff for consideration by the California Dungeness Crab Fishing Gear Working Group (Working Group) for the Risk Assessment Mitigation Program (RAMP; Section 132.8, Title 14, California Code of Regulations) regarding Management Actions to address marine life entanglement risk in the commercial Dungeness crab fishery. The initial assessment was shared with the Working Group on December 8, 2020 and finalized on December 11, 2020 based on discussion during the Working Group meeting on December 10, 2020.

A. Marine life entanglement risk, relative to the triggers in subsection (c)

Confirmed Entanglements in California Commercial Dungeness Crab Gear

- During the current Fishing Season: 0
- During the current calendar year: **1 Humpback whale**

Confirmed Entanglements in Unknown Fishing Gear reported from California:

- During the current Fishing Season: 0
- During the current calendar year: **3 Humpback whales**

Marine Life Concentrations Surveys and/or Satellite Telemetry Observations:

- **Fishing Zone 4: a weekly running average of 6.2 Humpback whale sightings and single day sightings of 11 and 5 Blue whales** based on Monterey Bay Whale Watch data; these survey data exceed the Marine Life Concentration trigger under RAMP (c)(2), 20 Humpback whales or 3 Blue whales during a survey or a running weekly average of 5 Humpback whales or 3 Blue whales

B. Scope of elevated risk based on Management Considerations in subsection (d)

Section 132.8(d)(2): Information from NOAA

- No additional information was made available for this risk assessment

Section 132.8(d)(3): Effectiveness of management measures to reduce entanglement risk

- RAMP regulations 132.8(c)(2)(A)(4)(a) and (b) specify a season delay in the event of a concentration trigger being reached, or other management action that the Director demonstrates protects Humpback whales and Blue whales based on the best available science. Based on available data on migration trends and whale location showing limited overlap within the Fishing Grounds, a Fleet Advisory will protect Humpback and Blue whales.

Section 132.8(d)(4): Total economic impact to the fleet and fishing communities

- Early season Management Action(s) have variable economic costs when seasons are delayed. Current economic considerations include loss of holiday markets, fishing effort shift, poor market conditions (price), crab availability, and numerous impacts due to the ongoing COVID pandemic. Current concerns regarding economic impacts include:
    - Further delay of the opener would result in loss of holiday markets.
    - Uncertain market conditions due to COVID should be considered and balanced against the risk of entanglement and economic impacts from entanglements in both current and future seasons.
    - Anticipated low crab abundance based on sampling and reports from the recreational fleet.

Section 132.8(d)(5): Data availability within and across Fishing Zones

- Aerial surveys were conducted across Fishing Zones 1, 2, and 3. Monterey Bay Whale Watch data was available for Fishing Zone 4. Additional observation data were contributed for Fishing Zones 3, 4 and 6 and Blue whale habitat predictions are available for all Fishing Zones.

Section 132.8(d)(6): Known historic marine life migration patterns

- Seasonal migration of Humpback whales out of California waters to Mexico and Central America typically occurs in November and early December. Humpback whales appear

to be migrating from central and northern areas (where high numbers of Humpback whales were previously sighted). When Humpback whales start their migration, they tend to move offshore and head directly south, avoiding traditional Fishing Grounds along the California coast.

- Trend data from Point Blue Conservation Science indicates more Blue whales are being sighted near the Channel Islands and fewer Humpback whales are being sighted in Fishing Zone 4.
- It should be noted that Humpback and Blue whale numbers in Fishing Zone 4 (Monterey Bay) remain above average when compared to historical weekly averages based on Monterey Bay Whale Watch data. However, they are trending downward and likely will soon fall below the Marine Life Concentrations trigger.

Section 132.8(d)(7): Fishing Season dynamics

- No delay anticipated due to public health hazards.
- Tri-state quality testing protocols have been met and the quality delay will lift on Dec. 16, 2020.
- There is no fair start provision in the event of a season delay due to elevated entanglement risk.

Section 132.8(d)(8): Known distribution and abundance of key forage

- Blue whales were sighted around the edge of the Monterey Canyon foraging on krill based on Point Blue observation data.

Section 132.8(d)(9): Ocean conditions

- La Niña conditions are currently forecast for winter/spring 2021. Monthly Habitat Compression Index in November 2020 indicates a medium compression state with increased cool habitat area since October.

Section 132.8(d)(10): Current Impact Score Calculation

- Impact score calculation under RAMP begins January 1, 2021.

Section 132.8(d)(11): Actionable Species migration into or out of Fishing Grounds and across Fishing Zones

- Based on aerial survey data, whale watch data and marine sanctuary observations, migration appears to be underway to Mexico and Central America via offshore waters.
- Migration reports from Cascadia Research and collaborators have confirmed two Humpback whales sighted during November surveys in Monterey are now on the breeding grounds off mainland Mexico. An additional eight California Humpback whales have been confirmed to be on the breeding grounds off mainland Mexico. These reports are an indicator that the migration has begun and that more animals will continue to leave California waters.

C. Recommended Management Action from options identified in subsection (e)

Fishing Zones 1-6: CDFW Marine Region staff's final recommendation is to open statewide on December 23, 2020 under a Fleet Advisory as described in RAMP subsection (e)(1) for Fishing Zones 1-6. Marine Life Concentrations are trending downward based on surveys and observations in Fishing Zones 1, 2, 3 and 4. The remaining whales observed in Zone 4 were primarily sighted at or near the edge of the deep-water canyons. These areas are unlikely to see high levels of fishing effort because they are on the edge of the Fishing Grounds. A Fleet Advisory is further supported by additional information outlined above under the Management Considerations. Foraging activity appears to be shifting offshore in Fishing Zone 4 and fewer whales were observed across Fishing Zones 1, 2, 3 and 4 when compared to previous CDFW-approved surveys. Though some animals remain, these observations are consistent with published migration trends indicating whales leave California waters during late November and early December. It is also verified by recent reports of California Humpback whales arriving on the breeding grounds off mainland Mexico. Based on the whale distribution patterns observed in Fishing Zones 1-4, the tendency of whales to move south and offshore rather than along the coast during their migration out of California, and the small number of whales previously sighted in Fishing Zones 5 and 6, CDFW Marine Region's recommendation is to also open Fishing Zones 5 and 6 under a Fleet Advisory as noted above. Additionally, there is limited commercial take of Dungeness crab in Fishing Zone 5 and only intermittent take of Dungeness crab in Fishing Zone 6.

CDFW Marine Region staff acknowledge the broad (though not unanimous) support voiced by industry and Working Group representatives for a further statewide delay of the commercial season due to potential for entanglement risk versus uncertain market conditions due to the COVID pandemic. Marine Region staff consider currently available data as indicating a low and declining risk of entanglement which would allow the season to begin on December 16, 2020. However, staff also note that a further delay until December 23, 2020 would provide additional opportunity for Humpback and Blue whales to migrate out of California Fishing Grounds and further decrease entanglement risk prior to the season opener.

In the event of a December 23, 2020 statewide season opener, CDFW Marine Region staff recommend the Director notify the fleet as early as possible to allow them to begin gear preparation and for processors/buyers to anticipate commercial landings shortly after the opening. For the northern management area, Fishing Zones 1 and 2, the pre-soak period will begin December 20th at 8:01 am and for the central management area, Fishing Zones 3, 4, 5 and 6, the pre-soak period will begin December 22nd at 6:01 am. While operating under a Fleet Advisory, the fleet should review and implement fishing best practices by minimize knots and line scope and should review the Best Practices Guide prior to setting gear.

CDFW will continue to monitor all available data to inform the next risk assessment (expected to occur on or around January 15, 2021).

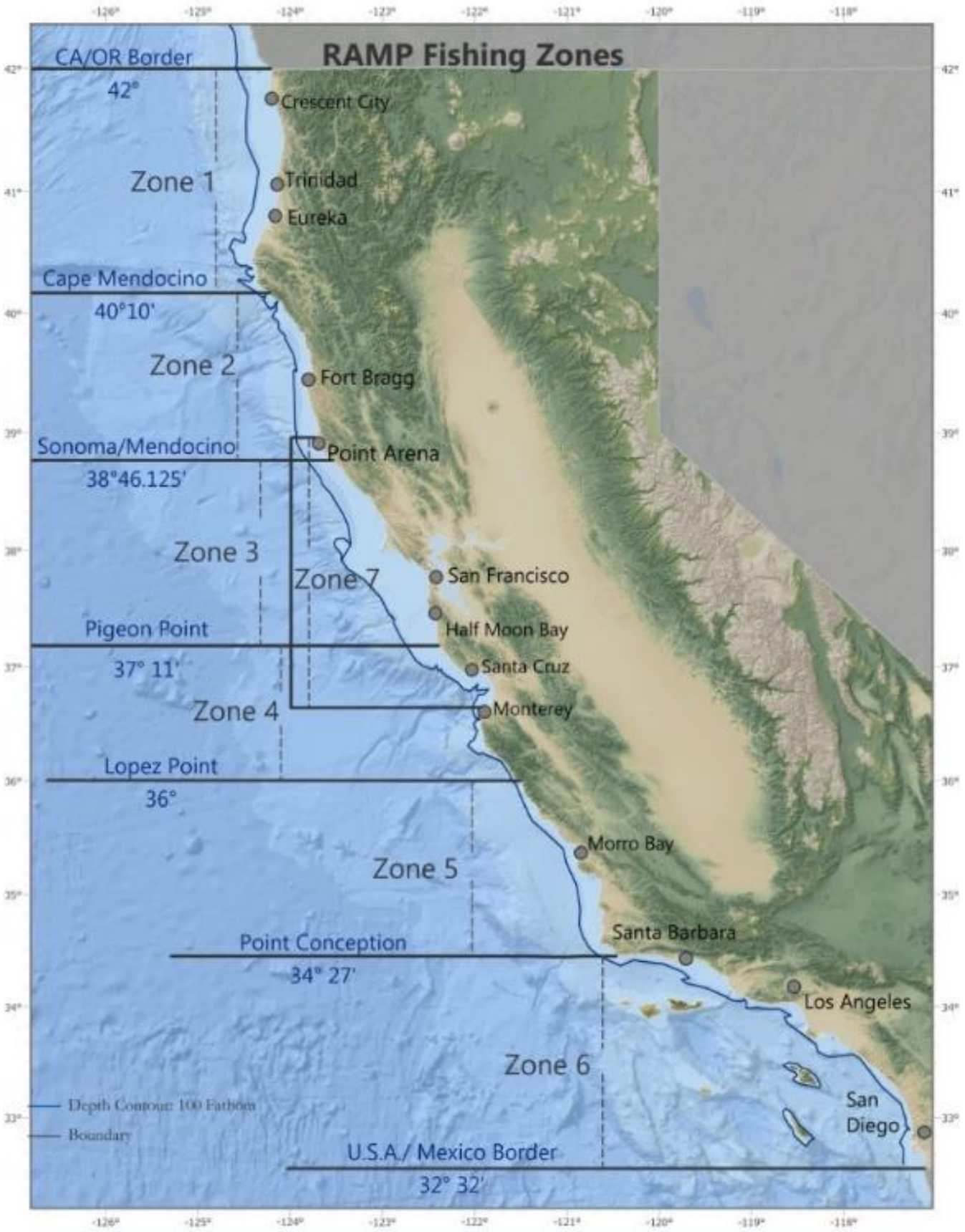

Figure 1. RAMP Fishing Zone boundaries.

California Department of Fish and Wildlife Initial Assessment of Marine Life Entanglement Risk and Preliminary Management Recommendation

Date: December 8, 2020

CDFW will prepare a Final Assessment and Management Recommendation after review of the Working Group Recommendation and any other relevant information.

This assessment and preliminary recommendation has been developed by California Department of Fish and Wildlife (CDFW) Marine Region staff for consideration by the California Dungeness Crab Fishing Gear Working Group for the Risk Assessment Mitigation Program (RAMP; Section 132.8, Title 14, California Code of Regulations) regarding Management Actions to address marine life entanglement risk in the commercial Dungeness crab fishery.

A. Marine life entanglement risk, relative to the triggers in subsection (c)

Confirmed Entanglements in California Commercial Dungeness Crab Gear

- During the current Fishing Season: 0
- During the current calendar year: **1 Humpback whale**

Confirmed Entanglements in Unknown Fishing Gear reported from California:

- During the current Fishing Season: 0
- During the current calendar year: **3 Humpback whales**

Marine Life Concentrations Surveys and/or Satellite Telemetry Observations:

- **Fishing Zone 4:** a **weekly running average of 6.2 Humpback whale sightings** and a **single day sighting of 5 Blue whales** based on Monterey Bay Whale Watch data; these survey data exceed the Marine Life Concentration trigger under RAMP (c)(2), 20 Humpback whales or 3 Blue whales during a survey or a running weekly average of 5 Humpback whales or 3 Blue whales

B. Scope of elevated risk based on Management Considerations in subsection (d)

Section 132.8(d)(2): Information from NOAA

- No additional information was made available for this risk assessment.

Section 132.8(d)(3): Effectiveness of management measures to reduce entanglement risk

- RAMP regulations 132.8(c)(2)(A)(4)(a) and (b) specify a season delay in the

event of a concentration trigger being reached or other management action that the Director demonstrates protects Humpback whales and Blue whales based on the best available science. Based on available data on migration trends and whale location showing limited overlap within the Fishing Grounds, a Fleet Advisory will protect Humpback and Blue whales.

Section 132.8(d)(4): Total economic impact to the fleet and fishing communities

- Early season Management Action(s) have variable economic costs when seasons are delayed. CDFW will continue to work with the fleet to inform this management consideration and have provided recent analytical work in the Available Data document. Current economic considerations include loss of holiday markets, fishing effort shift, poor market conditions (price), crab availability and numerous impacts due to the ongoing COVID pandemic.

Section 132.8(d)(5): Data availability within and across Fishing Zones

- Aerial surveys were conducted across Fishing Zones 1, 2, and 3. Monterey Bay Whale Watch data was available for Zone 4. Additional observation data were contributed for Fishing Zones 3, 4 and 6 and Blue whale habitat predictions are available for all Fishing Zones.

Section 132.8(d)(6): Known historic marine life migration patterns

- Seasonal migration for Humpback whales out of California waters typically occurs in November and early December to Mexico and Central America. Humpback whales appear to be migrating from central and northern areas (where high numbers of Humpback whales were previously sighted). When Humpback whales start their migration, they tend to move offshore and head directly south, avoiding traditional Fishing Grounds along the California coast.
- Trend data from Point Blue Conservation Science indicates more Blue whales are being sighted near the Channel Islands and fewer Humpback whales are being sighted in Zone 4.
- It should be noted that Humpback and Blue whale numbers in Fishing Zone 4 (Monterey Bay) remain above average when compared to historical weekly averages based on Monterey Bay Whale Watch data. However, they are trending downward and likely will soon fall below the Marine Life Concentrations trigger.

Section 132.8(d)(7): Fishing Season dynamics

- No delay anticipated due to public health hazards.

- Tri-state quality testing protocols have been met and the quality delay will lift on Dec. 16, 2020.

- There is no fair start provision in the event of a season delay due to elevated entanglement risk.

Section 132.8(d)(8): Known distribution and abundance of key forage

- High anchovy abundance is expected to drive high density aggregations of Humpback whales during fall 2020. Total krill abundance is expected to increase from below average to above average over the winter months.

- Blue whales were sighted around the edge of the Monterey Canyon foraging on krill based on Point Blue Observation data.

Section 132.8(d)(9): Ocean conditions

- La Nina conditions are currently forecast for winter/spring 2021. Monthly Habitat compression Index in November 2020 indicates a medium compression state with increased cool habitat area since October.

Section 132.8(d)(10): Current Impact Score Calculation

- Impact score calculation under RAMP begins January 1, 2021.

Section 132.8(d)(11): Actionable Species migration into or out of Fishing Grounds and across Fishing Zones

- Based on aerial survey data, whale watch data and marine sanctuary observations, migration appears to be underway to Mexico and Central America via offshore waters.

C. Recommended Management Action from options identified in subsection (e)

- **Fishing Zones 1-6:** CDFW Marine Region staff's preliminary recommendation is a statewide Fleet Advisory under RAMP subsection (e)(1). Marine Life Concentrations are trending downward based on migration patterns observed in Zones 1, 2, 3 and 4. The remaining whales observed in Zone 4 were primarily sighted at or near the edge of the deep-water canyons. These areas are unlikely to see high levels of fishing effort because they are on the edge of the Fishing Grounds. A Fleet Advisory is further supported by additional information outlined above under the Management Considerations. Foraging activity appears to primarily have shifted offshore and fewer whales were observed across Fishing Zones 1, 2,3 and 4 compared to previous surveys. These observations are consistent with published migration trends indicating whales are leaving California waters. Based on the whale distribution patterns observed in Zones 1-4, the tendency of whales to move south offshore rather than along the coast during their migration out of California, and the small number of whales previously sighted in Zones 5 and 6, CDFW's recommendation is to also open Fishing Zones 5 and 6 under a Fleet Advisory. Additionally, there is limited commercial take of Dungeness crab in Zone 5 and only sporadic take of Dungeness crab in Zone 6.

In the event of a December 16, 2020 statewide season opener, CDFW Marine staff recommend the Director notify the fleet as early as possible to allow them to begin gear preparation and for processors/buyers to anticipate commercial landings shortly after the

opening. For the northern management area, Fishing Zones 1 and 2, the pre-soak period will begin December 13th at 8:01 am and for the central management area, Fishing Zones 3, 4, 5 and 6, the pre-soak period will begin at December 15th at 6:01 am. CDFW will continue to monitor all available data to inform the next risk assessment (expected to occur on or around January 15, 2021).

2020-21 Risk Assessment: Available Data

Last updated: December 10, 2020[1]

TRIGGERS REQUIRING MANAGEMENT ACTION

Section 132.8(c)(1): Confirmed Entanglements

Data provided by: Lauren Saez and Dan Lawson (National Marine Fisheries Service)

Evaluation of RAMP Triggers (by CDFW)

Total number of Confirmed Entanglements in California Commercial Dungeness Crab Gear

- During the current Fishing Season: NA
- During the current calendar year: 1 Humpback whale

Total number of Confirmed Entanglements in Unknown Fishing Gear reported from California

- During the current Fishing Season: NA
- During the current calendar year: 3 Humpback whales

Summary of All West Coast 2020 Entanglements (by NMFS)

Total entanglements for calendar year 2020

- 16 confirmed (10 Humpback whales, 5 Gray whales, 1 Sperm whale)
- 10 unconfirmed (3 Humpback whales, 4 Gray whales, 1 Bryde's whale, 2 unidentified whales)

Total entanglements for calendar year 2020 by species

- Humpback whales: 10 confirmed entanglements
    - One confirmed Humpback whale entanglement involved California commercial Dungeness crab gear; the gear was set in Fishing Zone 3 (Bodega Bay to Point Reyes, 38-45 fathoms) and reported in Fishing Zone 4
- Blue whales: 0 confirmed entanglements
- Leatherback sea turtles: 0 confirmed entanglements

[1] This document was updated following the December 10 Working Group meeting to incorporate additional information shared on the call.

Additional details regarding confirmed Humpback whale entanglements are provided in the November 24, 2020 Available Data document.

Section 132.8(c)(2): Marine Life Concentrations

Data provided by: Monterey Bay Whale Watch (processed by Karin Forney, NOAA), California Department of Fish and Wildlife

Monterey Bay Whale Watch

- Commercial MBWW whale-watching trips have been conducted from Monterey throughout the summer and fall. Karin Forney has standardized these trips to the same 'whales per half-day-trip' unit used in previous summaries.
- The number of documented Humpback whales been declined slightly since the previous assessment in mid-November (Figure 1), when the 14-day average was 12.2 whales-per-half-day-trip for the period Nov 1-14. The two most recent 7-day averages are 8.7 whales per half-day-trip during Nov 18-24, and 6.2 whales per half-day-trip during Nov 28 – Dec 4.
- Following several weeks without sightings of Blue whales, this species has again been observed during the most recent assessment period (Figure 2). One whale was documented on Nov 20, and 11 and 5 whales were observed, respectively, on Dec 2 and 3.

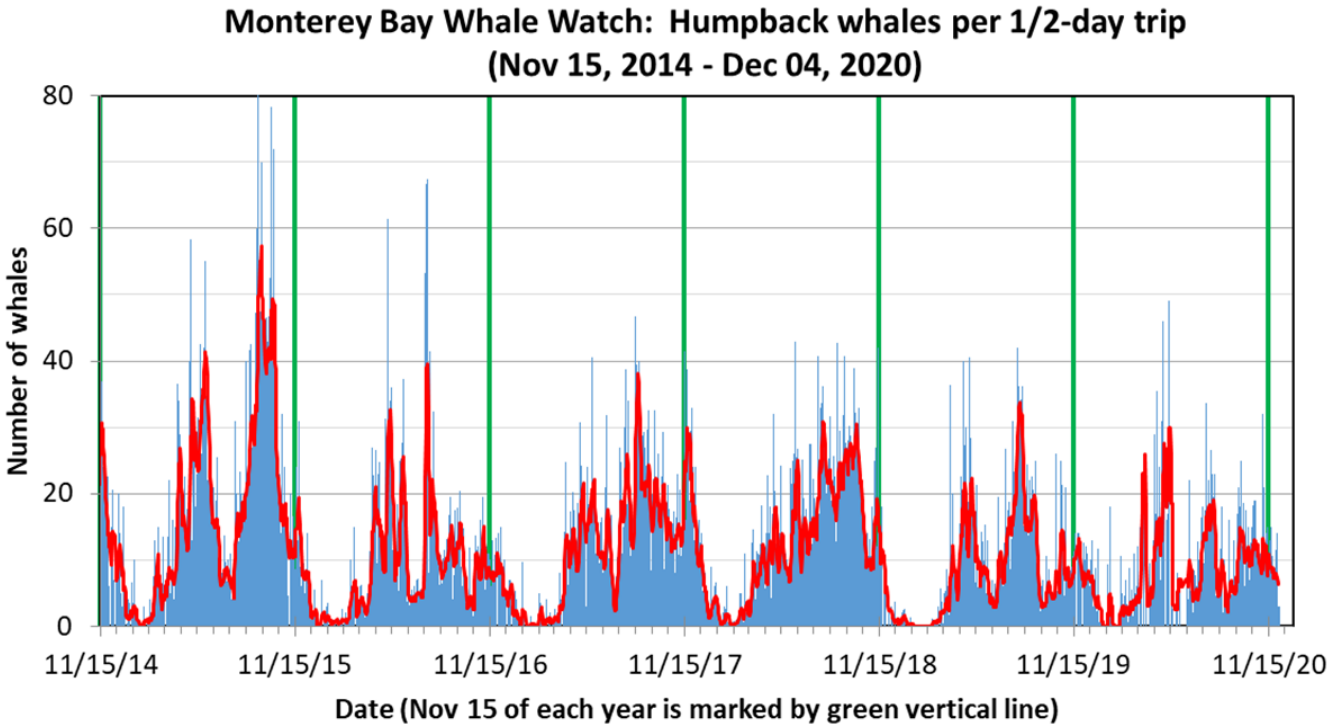

Figure 1. Standardized number of Humpback whale sightings from 15 November 2014 – 04 Dec 2020 for Monterey Bay Whale Watch. The y-axis is the number of whales per half-day trip; the thin blue bars are the average daily whale

numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.

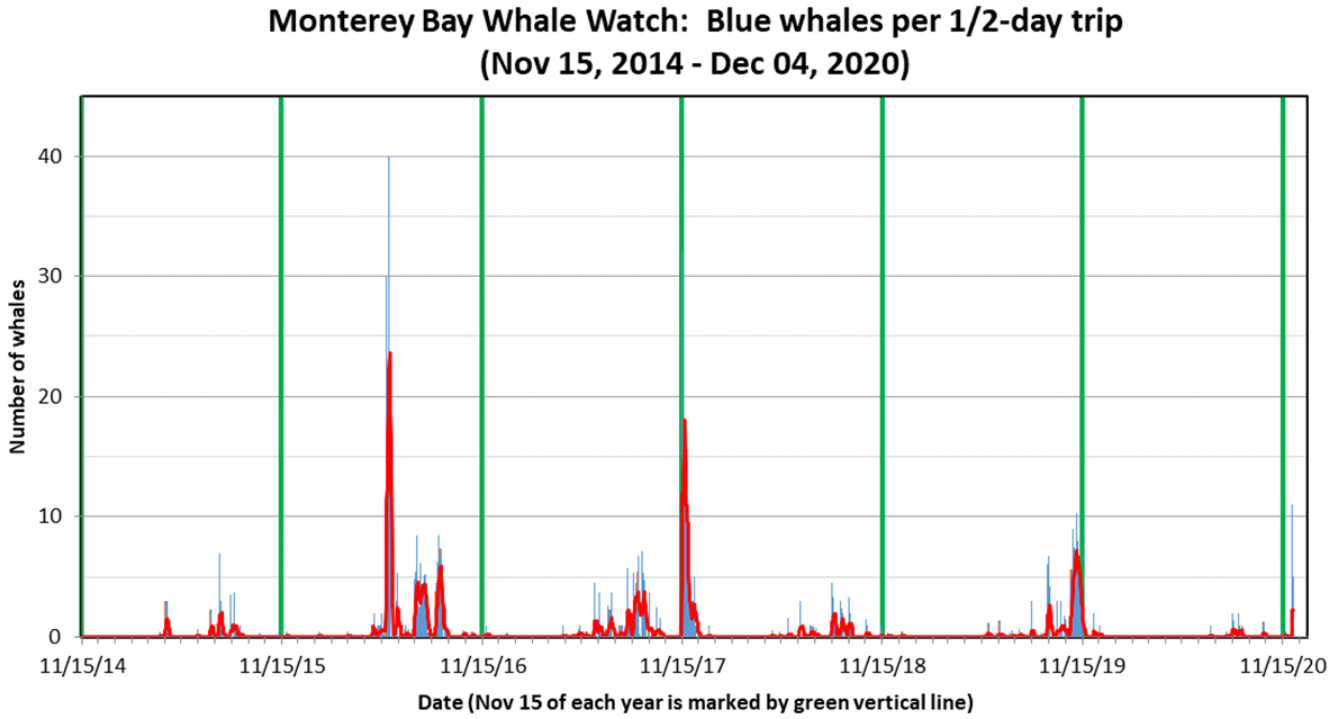

Figure 2. Standardized number of Blue whale sightings from 15 November 2014 – 04 Dec 2020 for Monterey Bay Whale Watch. The y-axis is the number of whales per half-day trip; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.

CDFW Aerial Survey – *Fishing Zones 1-3*

CDFW staff conducted a limited aerial survey in a portion of Fishing Zone 3 (Russian River to the Farallon Islands) on December 5, 2020 during which 7 Humpback whales were observed. An additional survey on December 7, 2020 covered the area north of Half Moon Bay to Crescent City. During the December 7 survey, 1 Blue whale was observed in Fishing Zone 2 and 5 Humpback whales were observed in Fishing Zone 3. Clusters of trap gear were observed just north of Fort Bragg, outside Humboldt Bay and north of the Farallon Islands. Bait balls were also sighted in multiple locations within Fishing Zone 3.

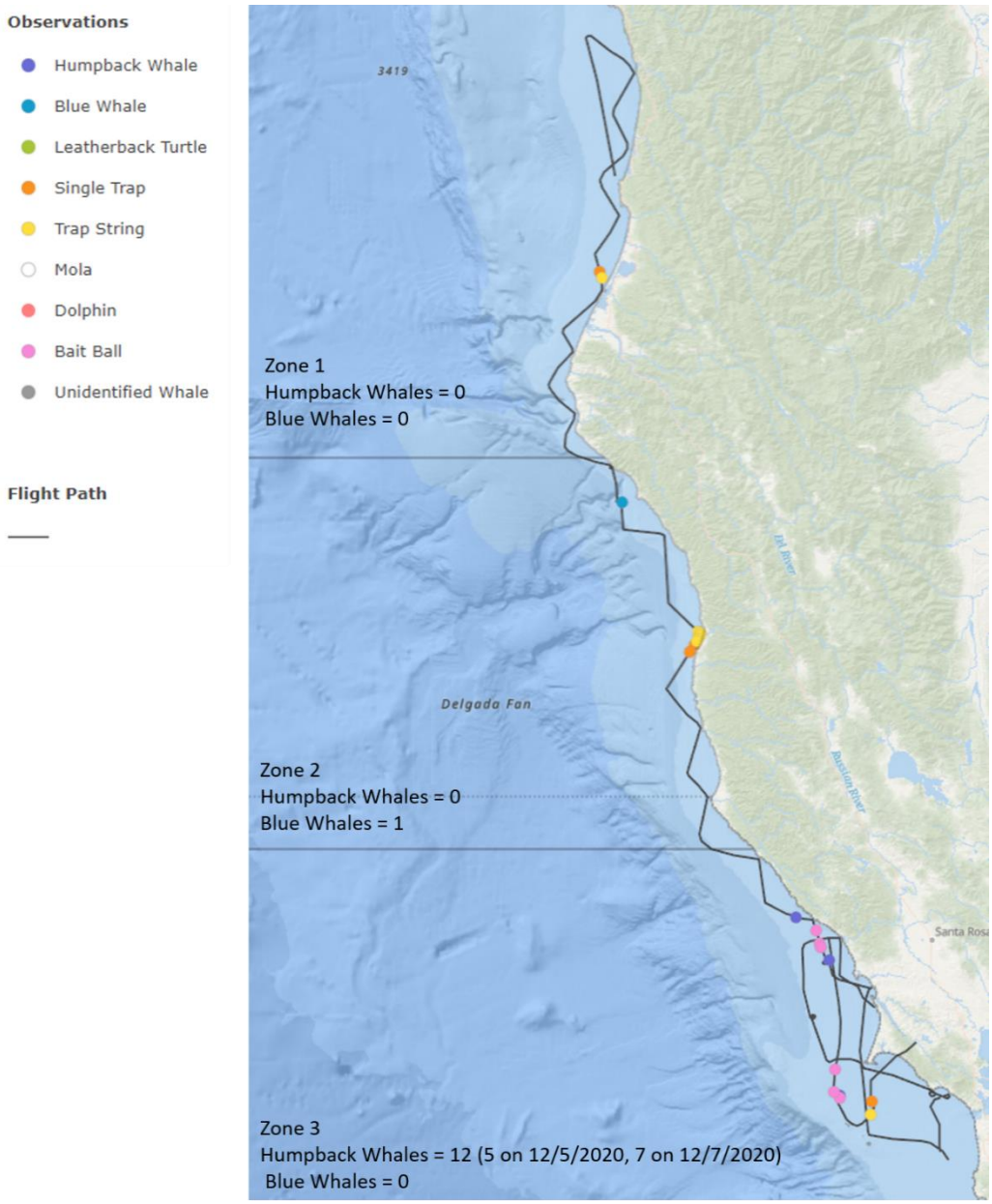

Figure 3. Flight path and observations during CDFW aerial survey in Fishing Zones 1-3 on December 5 and 7, 2020. Track lines from the two days overlap in the region between Half Moon Bay and Point Arena.

MANAGEMENT CONSIDERATIONS

Section 132.8(d)(2): Information from NOAA

No additional information was shared.

Section 132.8(d)(4): Total economic impact to the fleet

Data provided by: California Department of Fish and Wildlife

See analysis provided in the November 24, 2020 Available Data document.

Section 132.8(d)(6): Known historic marine life migration patterns

Data provided by: Monterey Bay Whale Watch (processed by Karin Forney, NOAA)

Monterey Bay Whale Watch

- Compared to historical patterns (Figure 4), the most recent Humpback whale numbers are slightly above average for this time of year.
- Compared to historical patterns (Figure 5), the most recent Blue whale numbers are markedly above average for this time of year, suggesting a late-season influx of blue whales into the Monterey Bay area. The whales were observed feeding on krill.

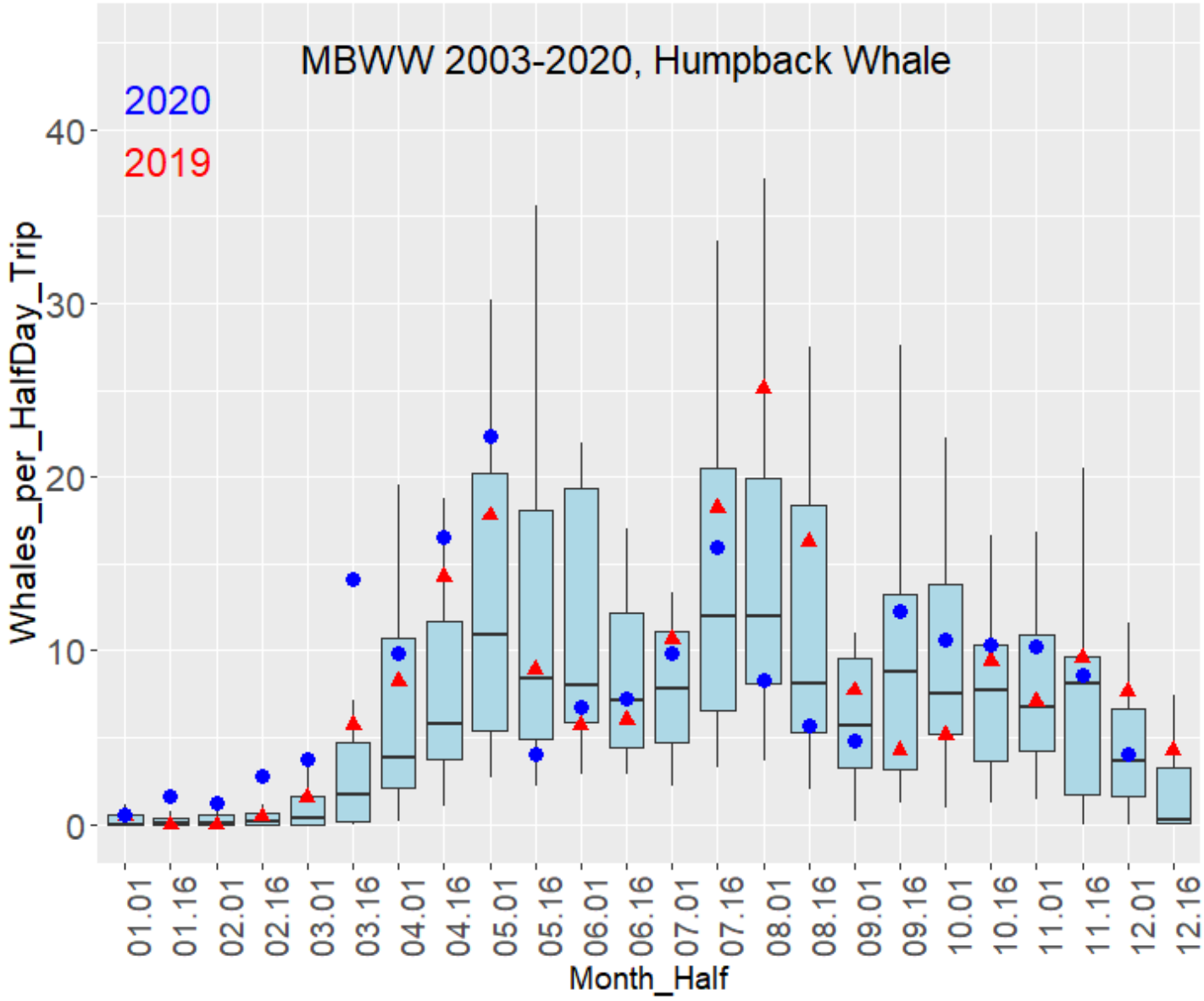

Figure 4. Historical Monterey Bay Whale Watch data for 2003-2020, summarizing the average and variation in the number of Humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the average number of whales; the blue box shows the 25th -75th percentiles (i.e., half of all past whale numbers are within the blue box); the vertical lines show the range of

whale numbers excluding outliers, and outliers are shown as small black dots. Values for 2019 (red triangles) and 2020 (large blue dots) are provided for reference, placing recent whale numbers in a historical context.

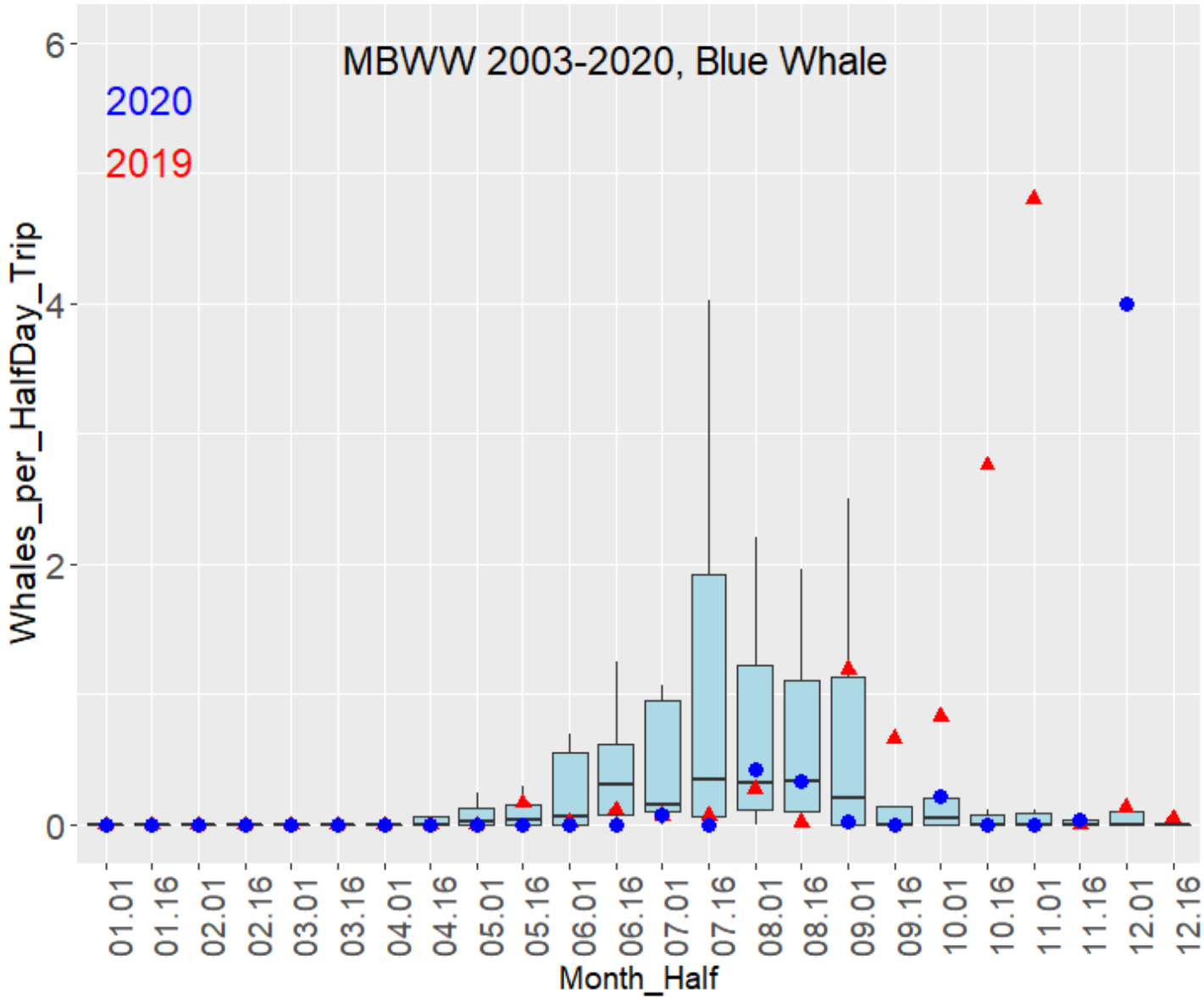

Figure 5. Historical Monterey Bay Whale Watch data for 2003-2020, summarizing the average and variation in the number of Blue whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the average number of whales; the blue box shows the 25th -75th percentiles (i.e., half of all past whale numbers are within the blue box); the vertical lines show the range of whale numbers excluding outliers, and outliers are shown as small black dots. Values for 2019 (red triangles) and 2020 (large blue dots) are provided for reference, placing recent whale numbers in a historical context.

Section 132.8(d)(7): Fishing Season dynamics

Data provided by: California Department of Fish and Wildlife

For previous testing results, see Available Data from 11/3 and Available Data from 11/24.

An additional test occurred on November 29 with an additional day of soak time and increased trap numbers. The number of test pots was increased by 1.5 from the original number. All 3 sites met the minimum volume of crab needed and were above the minimum meat quality criteria

(Figure 6). Tri-State managers met on Monday, December 7 and decided not to further delay the northern management area in California (Fishing Zones 1 and 2) beyond December 16 due to quality testing. All sites in Oregon and Washington have passed, with no additional quality delays needed. However, pending domoic acid testing results in Washington may further delay their season, and Oregon would like to align commercial openers with those in California and Washington.

2020 Preseason Coastal Dungeness crab Test Fishery Results for WA, OR and CA

* Date is the date the pots were pulled

		Optional Early Round		Round 1		Round 2		Round 3	
Test Area	Number of pots	Date*	Meat Recovery %	Date*	Meat Recovery %	Date*	Meat Recovery %	Date*	Meat Recovery %
Washington									
Northern		no test	no test	no test	no test	no test	no test		
Westport		10/22/20	19.6%	11/9/20	21.8%	11/29/20	24.0%		
Long Beach		10/23/20	18.7%	11/9/20	21.8%	11/29/20	24.0%		
Oregon									
Astoria (50-A)	18	no test	no test	11/9/20	21.6%	11/29/20	25.8%		
Garibaldi (50-B)	18	no test	no test	11/9/20 **~	24.8%	no test	no test		
Newport North (50-C and 50-D)	36	no test	no test	11/9/20	25.1%	no test	no test		
Newport South (50-E and 50-F)	36	no test	no test	11/10/20	23.5%	11/29/20	26.5%		
Coos Bay North (50-G and 50-H)	36	no test	no test	11/9/20 ~	26.4%	no test	no test		
Coos Bay South (50-I and 50-J)	36	no test	no test	11/12/20 ~	24.9%	no test	no test		
Port Orford (50-K)	18 /45	no test	no test	11/9/20 **	23.9%	11/29/20	24.0%		
Brookings (50-L)	18	11/9/20 ^	25.6%	11/12/20 ^**	25.3%	no test	no test		
California									
Crescent City	36/60/90	10/27/20 **	25.1%	11/12/20 **	26.8%	11/29/20	27.9%		
Trinidad	36/90	10/27/20 **	25.2%	no test	no test	11/29/20	26.0%		
Eureka	36/60/90	10/27/20 **	25.6%	11/12/20 **	24.8%	11/29/20	27.0%		
District 10 (not bound by Tri-State)									
Bodega Bay	no test	no test	no test	no test	no test	no test	no test		
San Francisco	no test	no test	no test	no test	no test	no test	no test		

**below 300lb minimum poundage

^ The first test (reported above in the early round column) was significantly below 150lbs allowed for a test area with 18 pots. In the re-do of this test area 45 pots were set due to the significantly low poundage.

~ less than a 24hr soak time

Figure 6. Quality testing results for Dungeness crab as of December 7, 2020. See updated results.

Section 132.8(d)(8): Known distribution and abundance of key forage

Data provided by: Jarrod Santora and Isaac Schroeder (NOAA Fisheries, Southwest Fisheries Science Center and University of California Santa Cruz)

No information was provided.

Section 132.8(d)(9): Ocean conditions

Data provided by: Jarrod Santora and Isaac Schroeder (NOAA Fisheries, Southwest Fisheries Science Center and University of California Santa Cruz)

Outlook for November, December 2020 and winter 2021:

- NOAA climate prediction center indicates La Niña conditions are expected for winter/spring 2021. Conditions may favor increase krill concentrations, depending on regional upwelling conditions during January and February 2021.
- The monthly Habitat compression Index in November 2020 indicates a medium compression state with increased cool habitat area since October (Figures 7-9). Habitat compression conditions (area and temperature) in November 2020 are improved compared to previous years and not extreme as during the previous large marine heatwave of 2014-16 (Figures 8-9). The November HCI is greater than the long-term average and nearing a low compression state.

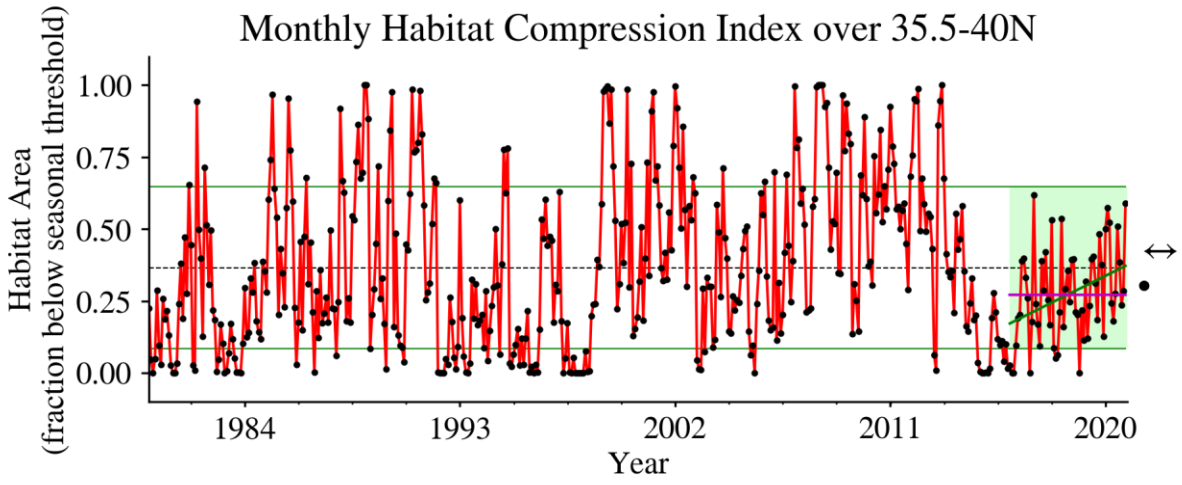

Figure 7. Seasonal standardized Habitat Compression Index (monthly); high compression ranges below the mean (dashed line) and indicates reduced cool upwelling habitat area on the shelf; low compression is above the mean and indicates increased cool habitat area. High compression may result in increased entanglement risk as per Santora et al. 2020 (Nature Communications). Updated through November 2020.

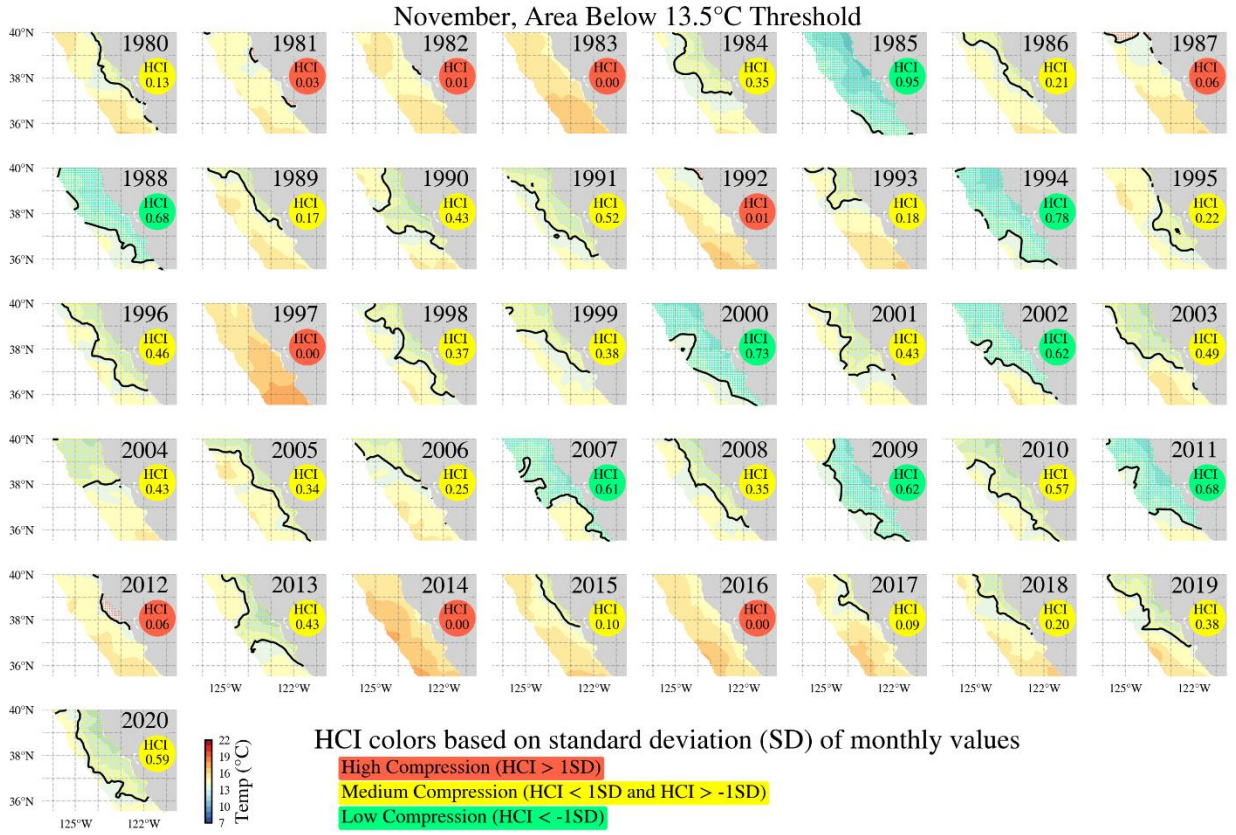

Figure 8. Habitat Compression Index (HCI): November temperature maps depicting the area of cool temperature habitat off California (40N to 35N; thin black line indicates the areal extent of cool habitat), indicating medium compression and entanglement risk as per Santora et al. 2020 (Nature Communications).

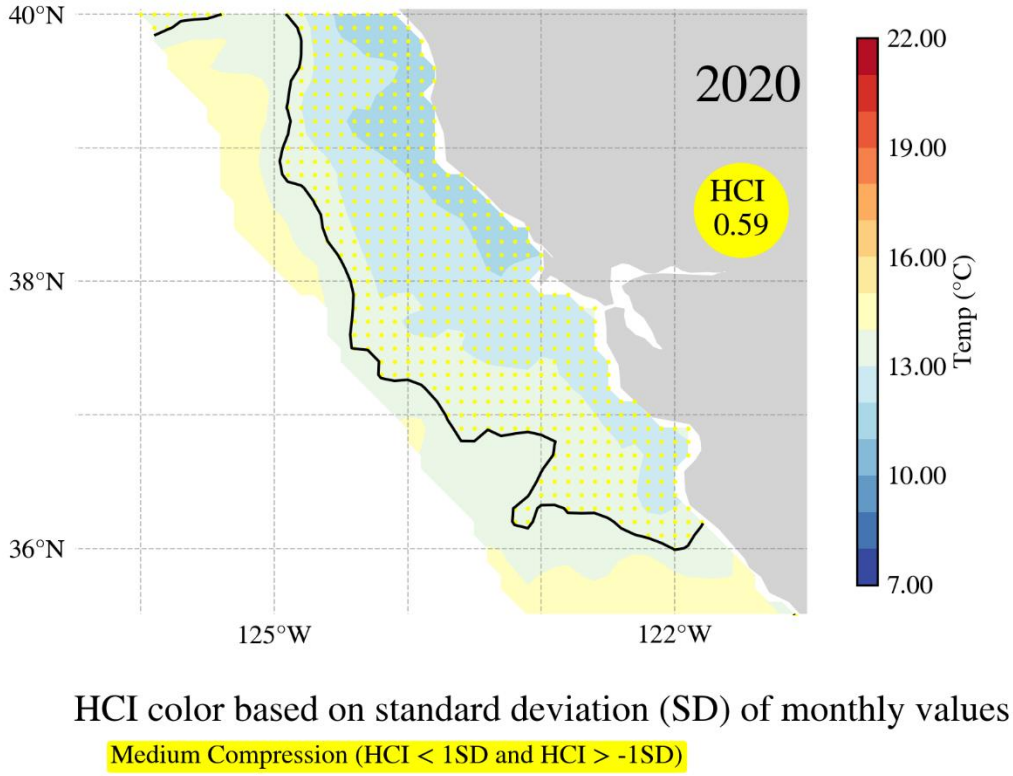

Figure 9. Habitat Compression Index (HCI): November temperature map depicting the area of cool temperature habitat off California (40N to 35N; thin black line indicates the areal extent of cool habitat) as per Santora et al. 2020 (Nature Communications).

Section 132.8(d)(10): Current Impact Score Calculation

Data provided by: California Department of Fish and Wildlife

All Confirmed Entanglements reported above occurred prior to the November 1, 2020 effective date of the Risk Assessment and Mitigation Program regulations (Section 132.8, Title 14, California Code of Regulations). Impact Score Calculations for each Calendar Year will be assigned for Confirmed Entanglements beginning with the 2021 calendar year.

Section 132.8(d)(11): Actionable Species migration into or out of Fishing Grounds and across Fishing Zones

Data provided by: Briana Abrahms (University of Washington), Karen Grimmer (Monterey Bay National Marine Sanctuary) and Jaime Jahncke (Point Blue Conservation Science), Kathi George (The Marine Mammal Center), John Calambokidis (Cascadia Research)

WhaleWatch 2.0 – *All Fishing Zones*

The best Blue whale habitat predictions for November 29, 2020 indicate that probability of blue whale presence is low in Fishing Zones 1-5, and is low-moderate in parts of Fishing Zone 6 (Figure 10).

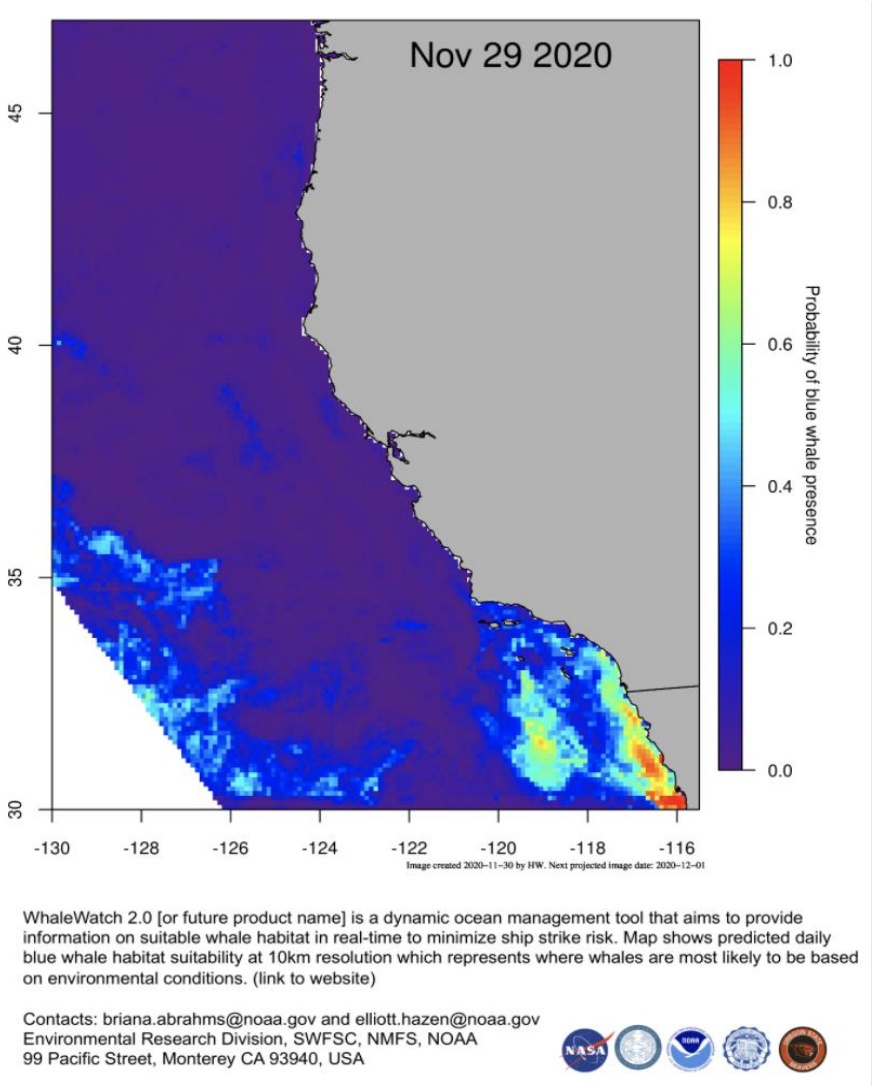

Figure 10. WhaleWatch 2.0 map for November 29, 2020. View a current map.

Point Blue Conservation Science Data Portal

Greater Farallones – *Fishing Zone 3*

Over the 7-day period ending December 4, 2020, a total of 81 Humpback whales were reported by trained biologists at the Farallon Islands through the Spotter/WhaleAlert app (Figure 11). Zero Blue whales were reported during this period.

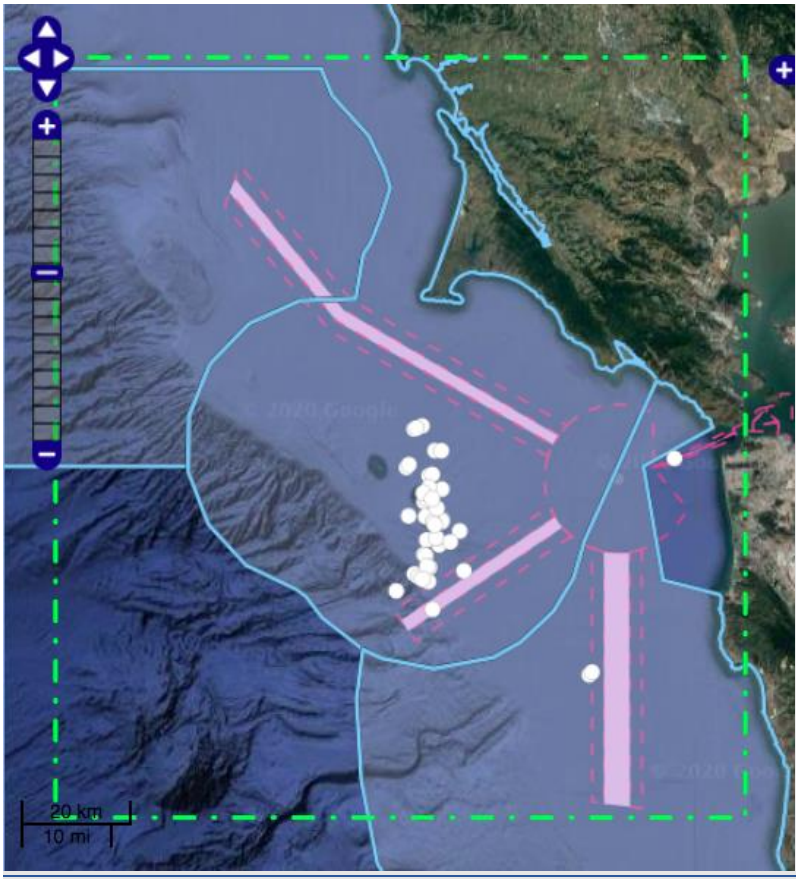

Figure 11. 81 humpback sightings in Fishing Zone 3 from November 28-December 4, 2020. Reporting locations are represented by white circles. A given report may represent multiple individuals.

Monterey Bay -- *Fishing Zone 4*

In the Monterey Bay region, 10 Humpback whale sightings were reported through the Spotter/WhaleAlert app over the seven-day period ending on December 4, 2020 (Figure 12). 15 Blue whales were reported during this period (all on Dec 3; Figure 13). Blue whales were sighted both inside and out and at the edge of the canyon foraging on krill.

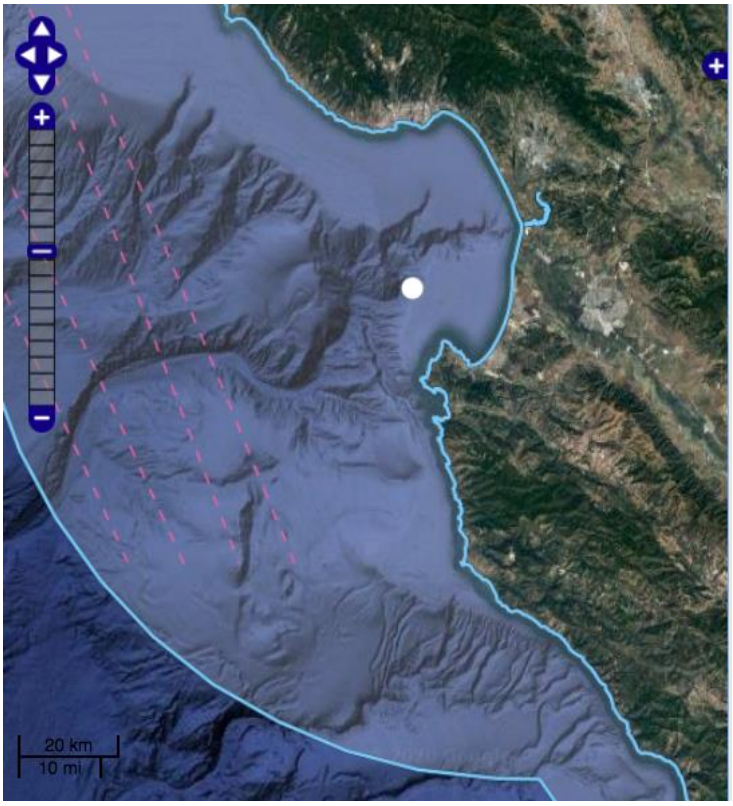

Figure 12. 10 Humpback whale sightings in Fishing Zone 4 from November 28-December 4, 2020. Reporting locations are represented by white circles. A given report may represent multiple individuals.

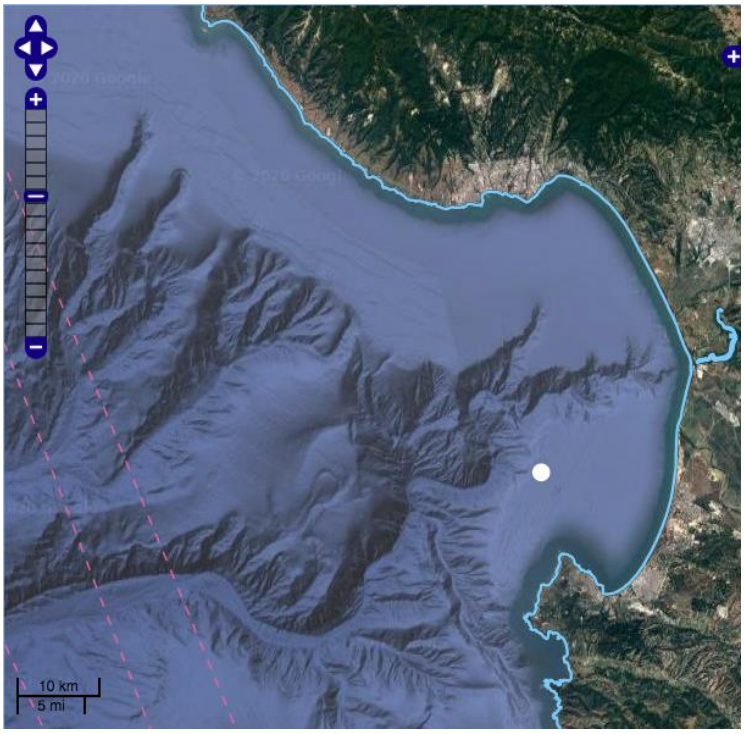

Figure 13. 15 Blue whale sightings in Fishing Zone 4 from November 28-December 4, 2020. Reporting locations are represented by white circles. A given report may represent multiple individuals.

Santa Barbara Channel -- *Fishing Zone 6*

Trained naturalists from Channel Islands National Marine Sanctuary and the National Park Service reported one Humpback whale (Figure 14) and 18 Blue whales (Figure 15) over the seven-day period ending December 4, 2020.

Figure 14. 1 Humpback whale sighting in Fishing Zone 6 from November 28-December 4, 2020. Reporting locations are represented by white circles. A given report may represent multiple individuals.

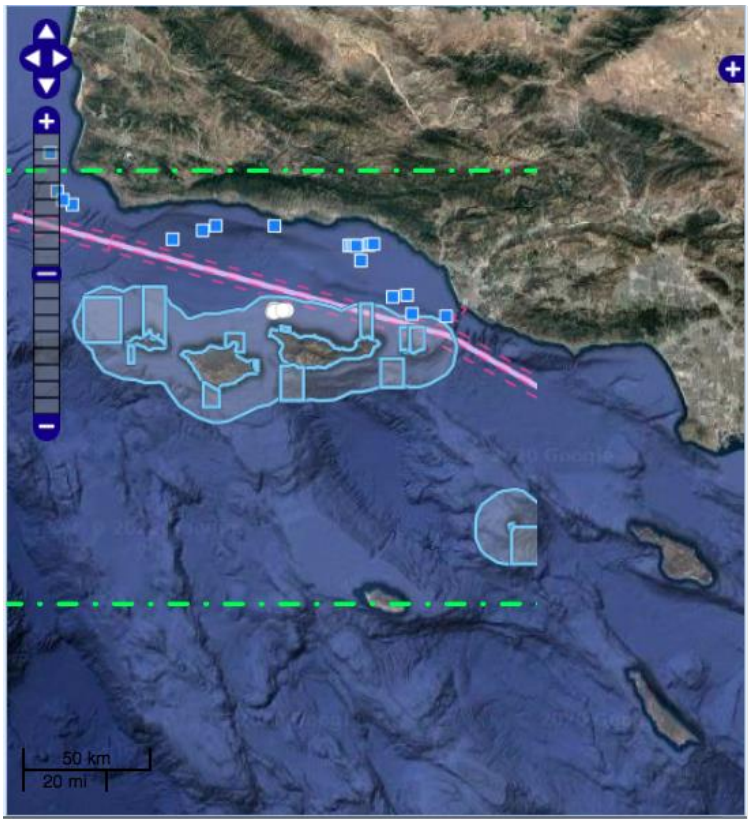

Figure 15. 18 Blue whale sightings in Fishing Zone 6 from November 28-December 4, 2020. Reporting locations are represented by white circles. A given report may represent multiple individuals.

Solar Loggers – *Fishing Zones 3 and 4*

Track lines from whale watching vessels participating in the solar logger pilot project indicate a high amount of effort out of Monterey and some effort out of Moss Landing (Figure 16) and limited effort out of San Francisco (Figure 17) during 17 trips between November 17 and December 4, 2020.

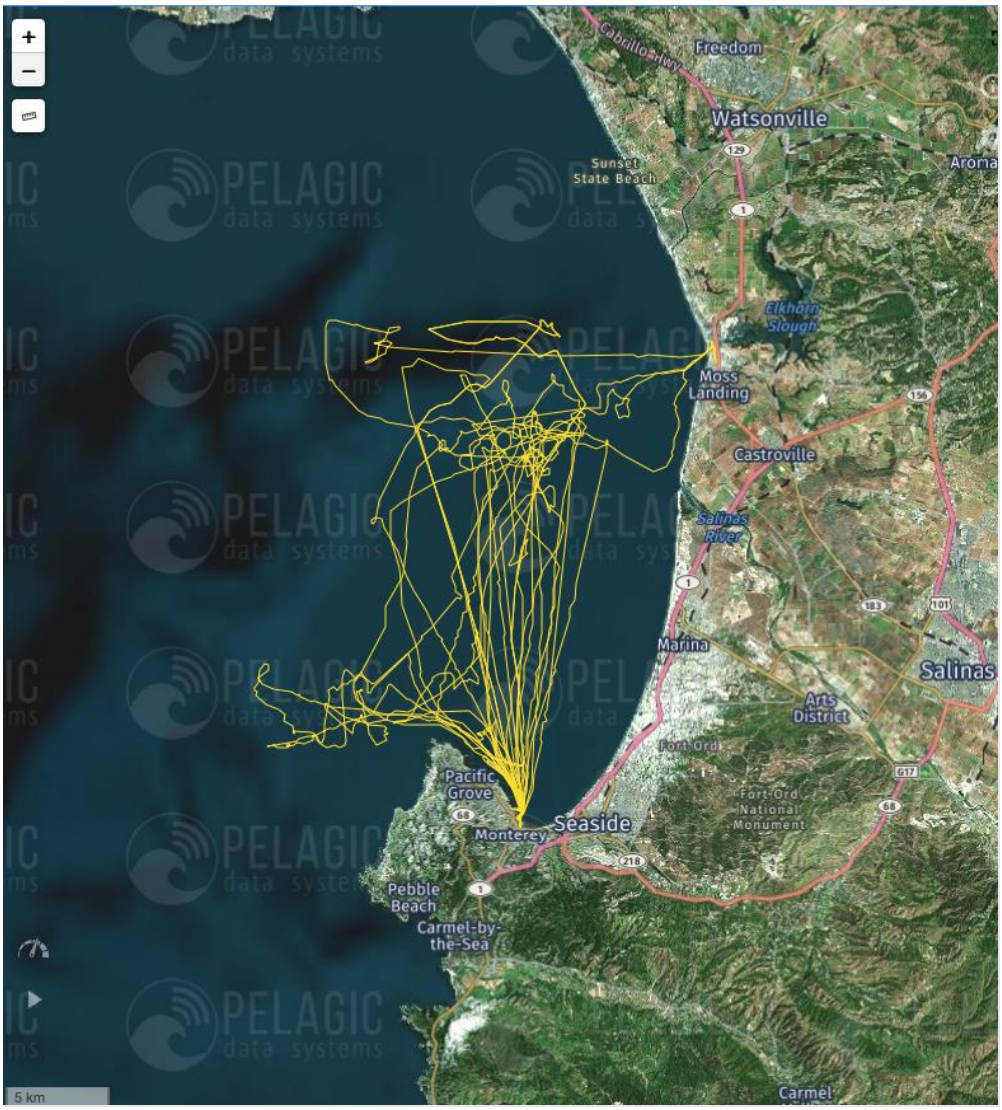

Figure 16. Track lines for all whale watch trips from November 17 – December 4, 2020 in the Monterey Bay area.

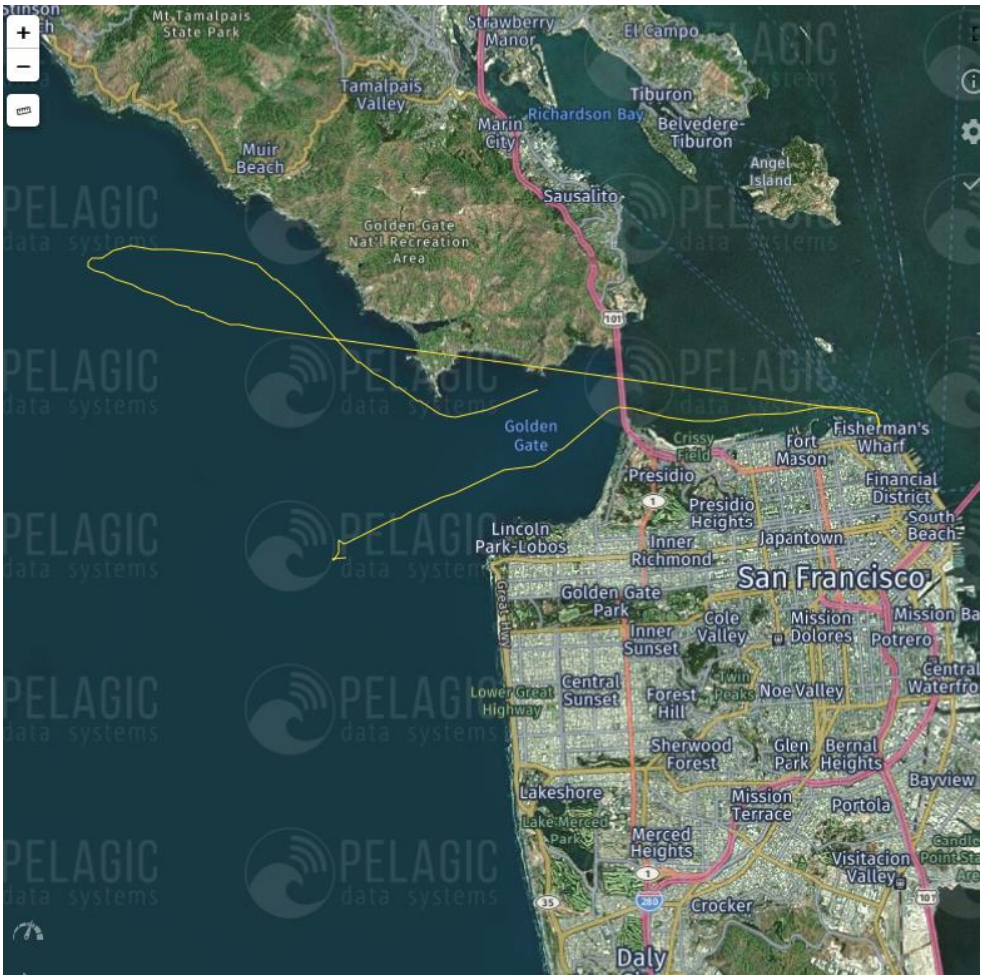

Figure 17. Track lines for all whale watch trips from November 17 – December 4, 2020 in the San Francisco Bay area.

Migration Report by Cascadia Research, SR3, The Marine Mammal Center, and Happywhale – *All Fishing Zones*

- There have been no additional small boat surveys since those described in the November 24, 2020 Available Data document, because researchers had already conducted more than the budgeted number for this period and did not have an ideal low wind/low swell opening. Working with Happywhale, continued examination of previously collected survey data provides new information on known California Humpback whale movements/migration timing.
- 2 identified Humpback whales encountered during recent surveys near Monterey Bay, CRC-10943 (October 17, 2020) and CRC-12049 (November 1, 2020), have now been confirmed on their mainland Mexico breeding ground as of November 25, 2020. This is out of a total of approximately 187 whales identified during our recent surveys.
- An additional 8 known historical California Humpback whales have also been confirmed on their mainland Mexico breeding ground.

- 11 of 12 identified migrating Humpback whales off central and northern Baja encountered November 20-25, 2020 were known whales that feed off California.
- At least 18 different identified Humpback whales have been IDed off California from December 1-7, 2020 confirming some of the individuals that had not yet started their migrations.