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DEPARTMENT OF FISH AND WILDLIFE
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GAVIN NEWSOM, Governor
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CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (DEPARTMENT)
DECLARATION OF A DEPTH CONSTRAINT AND FLEET ADVISORY FOR
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 May 3, 2021, 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 April 27, 2021. Prior to this risk assessment and management response, I considered the Working Group's April 29, 2021 management recommendation, and other relevant information provided to my staff.

II

There are no Department approved marine life concentration survey data to inform the risk assessment in Fishing Zones 1, 2, 5, and 6. Pursuant to Section 132.8(c)(2)(B)(1), I must implement a protective management action.

III

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

IV

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. Starting at 12:00PM on May 10, 2021, a Depth Constraint limiting fishing activity to inside of 30-fathoms is issued for ocean waters for Fishing Zones 1 and 2 for the California commercial Dungeness crab fleet. All vessels must carry onboard an electronic monitoring system capable of recording the vessel's location while engaged in fishing activity using GPS coordinates at a frequency of no less than

once per minute during fishing operations. Electronic monitoring data must be made available to the Department upon request for the duration of the fishing period and 60 days thereafter.

2. Fishing Zones 1-6 remain under a Fleet Advisory. The Department encourages the fleet to implement fishing best practices (e.g., minimizing knots, line scope) and to immediately remove all gear when an operator no longer intends to fish. Vessels fishing in Zone 1 and 2 should pay particular attention to the location of set gear and foraging whales and minimize entanglement risk by adhering to the Best Practices Guide. Whales have been sighted in and around Reading Rock, north of Trinidad.

This management action is in effect until lifted or modified. The next risk assessment is expected to occur on or around May 14, 2021.

Updates and material regarding future entanglement risk evaluations in the commercial Dungeness crab fishery will be made available on the Department's web page: https://wildlife.ca.gov/Conservation/Marine/Whale-Safe-Fisheries

Charlton H. Bonham, Director

5/3/21 4:25pm

Date/Time

ATTACHMENT TO DIRECTOR'S MAY 3, 2021 DECLARATION OF A DEPTH CONSTRAINT AND FLEET ADVISORY FOR THE COMMERCIAL DUNGENESS CRAB FISHERY DUE TO RISK OF MARINE LIFE ENTANGLEMENT

Information referenced in this Attachment is further described in the Available Data compilation dated April 29, 2021, and located at the Department's Whale Safe Fisheries website (https://wildlife.ca.gov/Conservation/Marine/Whale-Safe-Fisheries), 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 1, 2, 5, and 6:** No current data are available for these Zones, which triggers management response under RAMP (c)(2)(B)(1).

Relevant Management Considerations Under Section 132.8(d)

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

   Some of the members of the Working Group supported a Depth Constraint limiting fishing to inside 30 fathoms, although fleet representation noted possible burden to the fleet from the electronic monitoring requirement. The Working Group also provided an alternative recommendation for Fishing Zones 1 and 2 of only continuing the Fleet Advisory, which received support from some members of the Working Group. The recommendation memo is available on the Department's web page: https://wildlife.ca.gov/Conservation/Marine/Whale-Safe-Fisheries. No other information was made available to the Department.

2. **Information from NOAA**

   No additional information was provided for this risk assessment.

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

   Given the low relative running average sightings of Humpback whales in Monterey Bay (Zone 4) which is an indication of migration timing, low sightings in Zone 3 and 5, and declining fishing activity, a Fleet Advisory remains an effective Management Action for Zones 3, 4, 5 and 6. A Depth Constraint limiting fishing activity to inside 30 fathoms for Zone 1 and 2 will minimize co-occurrence with Humpback whales, which were largely observed in depths greater than 30 fathoms. Based on bi-weekly reporting, most fishing gear is at depths between 13 and 31 fathoms, with some gear at deeper depths. Therefore, a Depth Constraint is not anticipated to significantly

increase overall gear concentrations but will bring deeper set gear into shallower waters away from observed Humpback aggregations.

4. Total Economic Impact to the Fleet and Fishing Communities

A Depth Constraint and Fleet Advisory are not anticipated to have significant economic impact on the fleet or fishing communities as it allows for continued fishing opportunity. Additionally, given fishing depth zones reported in the bi-weekly reporting for Zones 1 and 2, a constraint at 30 fathoms will allow the majority of current fishing activity (which is already inside of 30 fathoms) to continue.

5. Data Availability Within and Across Fishing Zones

Monterey Bay Whale Watch (MBWW) data are available for Fishing Zone 4. Cascadia Research vessel survey data are available for Zones 3 and 4. California Coast Crab Association (CCCA) and Point Blue Conservation Science (Point Blue) observation data are available for Zones 1, 3, 4, 5 and 6. The Habitat Compression Index and Whale Watch 2.0 habitat predictions are available for all Zones. No data is available for Zone 2 specific to whale or sea turtle presence. Given lack of data in Zone 2, the Department considered data available from Zone 1 in determining management response. For the remaining Fishing Zones, the Department considers the available data to adequately cover the full geographic extent of those Fishing Zones to inform the appropriate management response.

6. Known Historic Marine Life Migration Patterns

Presence of Humpback whales in typically high concentration areas in Fishing Zones 3 and 4 continue to be lower than average based on MBWW data and Cascadia Research vessel surveys. The same is true of humpback sightings provided by Point Blue observational data. Whales that are observed were located primarily offshore in those zones. However, observation data from CCCA and NOAA researchers indicated higher abundances of Humpback whales in Fishing Zone 1, although still largely located offshore with some whales in shallower water.

Continued relative absence of Blue whales is consistent with their overwintering at breeding areas outside of California.

Pacific Leatherback sea turtles typically do not begin to arrive in California waters until late June based on sea turtle tagging studies and historical surveys.

7. Fishing Season Dynamics

Season price negotiations delayed the actual start of fishing following the December 23, 2020 statewide opener. Most vessels began setting gear on Monday January 11, 2021.

Based on CDFW landings data, 358 vessels have participated in the fishery as of April 20, 2021. Week 5 had the highest number of potential traps deployed across all Fishing Zones, with an estimated total of 94,675 traps. Fishing Zone 3 had the highest total, followed by Zone 1. Although the most recent landings data from week 17 indicates a slightly increase in landings compared to prior weeks, overall landings numbers have decreased significantly from the highest landing periods in weeks 4 and 5. Additionally, total numbers of vessels participating in the fishery has continued to decline over the past few weeks. The estimated maximum number of traps is currently 28,975 which is another decrease from the last risk assessment when 39,550 traps were estimated. Average fishing depths statewide range from 13-18 fathoms, with Fishing Zones 1 and 2 averaging from 11 fathoms to 32 fathoms.

8. Known Distribution and Abundance of Key Forage

Krill abundance (higher offshore in the outer slope) is also anticipated to be closer to average yearly values while anchovy is still considered to be above average, given the historical record.

Cool ocean temperatures and strong spring upwelling conditions continued from February to March and the Habitat Compression Index (HCI) for both months indicates a low compression state. It is anticipated that cool conditions with expanded upwelling habitat will continue with no impact of habitat compression that would otherwise result in increased concentrations and aggregations forage (and therefore whales) nearshore.

9. Ocean Conditions

La Niña conditions persisted in March with a 80% chance of a transition from this condition to ENSO-neutral during May-July 2021.

The latest outlook of late winter/spring ocean ecosystem conditions shows that ocean conditions have cooled significantly over this past winter and conditions in spring are trending toward cool and productive conditions. It is anticipated that cool conditions will continue, with expanded upwelling habitat and no signs of impact of habitat compression that would otherwise result in increased concentrations and aggregations of whales and forage nearshore.

10. Current Impact Score Calculations

a. Fishing Season – 0.38 for Humpback whales; 0 for Blue whales and Pacific Leatherback sea turtles

b. Calendar Year – 0.38 for Humpback whales; 0 for Blue whales and Pacific Leatherback sea turtles

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

Based on Monterey Bay Whale Watch data, Cascadia Research vessel surveys, Point Blue Observation, and CCCA vessel surveys and multiple sources of observation data, significant migration into the Fishing Grounds has yet to occur in Fishing Zones 3-5. Whales that are present remain primarily offshore in deep water (70-200 meters, 38-109 fathoms) and outside the depth ranges where most fishing is occurring. In Fishing Zone 1, vessel surveys performed by the fishing industry as well as observations from a NOAA research cruise observed over 50 humpback whales in depths of 30-55 fathoms, with some animals deeper and shallower.

Chosen Management Action and Rationale

Based on the management considerations outlined above, the Director will implement a Depth Constraint in Fishing Zones 1 and 2 limiting fishing activity to inside 30 fathoms beginning on May 10, 2021 at 12:00PM. The Fleet Advisory put in place in Fishing Zones 1-6 by the Director's declaration on April 1, 2021 remains in place.

No current survey data was available for Fishing Zones 1, 2, 5, and 6, which requires 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. Section 132.8(d)(5) anticipated that if data is not available, data from adjacent Fishing Zones may be used. Specifics related to the two management decisions are provided below.

<u>Statewide Fleet Advisory</u>

A Fleet Advisory under section 132.8(e) is not necessarily limited to a single Fishing Zone, and compliance with best management practices throughout the state will ensure that entanglement risk remains low as Humpback and Blue whales migrate into the Fishing Grounds. The RAMP regulations indicate a Fleet Advisory is warranted if the level of risk is elevated and/or anticipated to increase but more restrictive management actions are not necessary at this time.

Although historic information indicates we are approaching the spring migration period, available data indicate the bulk of the migration has not arrived at this time in Fishing Zones 3-6. Monterey Bay Whale Watch Data and vessel surveys performed by Cascadia Research in Fishing Zones 3 and 4 observed whales at low densities; it is reasonable to use this data as a proxy for whale presence in Fishing Zones 5 and 6. Additionally, observation data from Point Blue Conservation Science and vessel survey data from CCCA covering Fishing Zones 5 and 6 supports low whale presence in the Fishing Grounds in those areas.

Furthermore, based on oceanographic and forage condition data, cool conditions persist, and compression of available forage which could increase co-occurrence of trap gear and whales as they begin to arrive to the Fishing Grounds in Fishing Zones 3-6 is not expected to occur. As expected with low compression conditions, Humpback whales were primarily observed feeding along the 200-m depth line in Fishing Zones 3 and 4. Statewide fleet

participation is low and decreasing compared to activity levels from previous years, and available biweekly reporting from the fleet indicates fishing activity is occurring at a maximum depth of 120 fathoms, and on average maximum depths are 40 fathoms and below. Given the above, paired with low presence of Humpback whales and Blues whales, risk is low across all management considerations at this time in Fishing Zones 3-6.

A Fleet Advisory provides notice to fishermen of possible whale presence, and encourages fishery participants to implement best fishing practices (e.g. minimizing knots, line scope) and to immediately remove all gear when an operator no longer intends to fish. Vessels fishing in Zone 1 and 2 should pay particular attention to the location of set gear and foraging whales and minimize entanglement risk by adhering to the Best Practices Guide. Whales have been sighted in and around Reading Rock, north of Trinidad.

30 Fathom Depth Constraint in Fishing Zones 1 and 2

Although there is no approved survey data for Fishing Zones 1 and 2 under section 132.8(c)(2), there is observational data for Fishing Zone 1 from CCCA vessel surveys and the NOAA research cruise indicating large aggregations of Humpback whales between the 30 and 45 fathom contour mark, with some whales closer to shore. Fleet participation in these Zones is decreasing based on Department landing data. Available biweekly reporting from the fleet indicates fishing activity in Fishing Zones 1 and 2 is occurring at a maximum depth of 65 and 75 fathoms, respectively, with average maximum depths of 27 fathoms and 31 fathoms. Although the majority of fishing activity is occurring in depths at which whales have not been observed, the large numbers of whales indicate a higher likelihood of co-occurrence with fishing activity. A Depth Constraint at 30 fathoms will minimize co-occurrence with the low and decreasing fishing activity that remains and is appropriately protective of Humpback whales given the most recent available data. Low habitat compression is also anticipated to prevent high whale concentrations inshore in Fishing Zones 1 and 2 given availability of forage offshore.

The Department will perform additional risk assessments throughout the spring and respond to changing entanglement risk as appropriate should new data indicate increased entanglement risk for Humpback whales, Blue whales, or Pacific leatherback sea turtles in the Fishing Grounds.

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

Date: May 3, 2021

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 April 28, 2021 and finalized at the conclusion of the Working Group meeting on April 29, 2021 based on discussions with the group.

A. Recommended Management Action

Fishing Zones 3, 4, 5 and 6: CDFW Marine Region staff's final recommendation is to maintain a Fleet Advisory based on the lack of recent RAMP approved survey data for Zones 5 and 6 and supported due to declining fishing effort in Zones 3-6. Based on the MBWW data for Zone 4 and Cascadia Research vessel surveys for Zones 3 and 4, relatively few Actionable Species were observed. In addition, observation data from Point Blue for Zones 3, 4 and 6 and observation data from CCCA for Zone 5 show few Actionable species. Although migration is expected to increase into all Zones based on known historic migration patterns, available data indicate the bulk of the migration has not begun to arrive in Zones 3-6.

In addition, based on favorable (low risk) oceanographic and forage condition data, cool conditions exist, resulting in low compression of available forage, decreasing the likelihood of co-occurrence of trap gear and whales as they continue arriving to California waters, particularly in Zones 3-6. This is supported by sightings of Humpback whales foraging in deep water (70-200 meters) north of Monterey Bay. Ocean and forage conditions do not warrant concern, and fleet participation is decreasing and expected to decrease further with the commercial salmon opener on May 1. Given the above, paired with continued low presence of Humpback whales and Blues whales, risk is low across all management considerations at this time for Zones 3-6.

The RAMP regulations indicate a Fleet Advisory is warranted if the level of risk is elevated and/or anticipated to increase but more restrictive management actions are not necessary at this time. The Director may issue an advisory notice to the Fleet to employ voluntary efforts and/or measures to reduce the risk of entanglements (i.e., fishing best practices) and to avoid triggering additional management actions. As a result, CDFW encourages the fleet to implement fishing best practices (e.g. minimizing knots, line scope, reducing gear) and to immediately remove all gear when an operator no longer intends to fish. Vessels fishing in all Zones should pay particular attention to the location of set gear and foraging whales and minimize entanglement risk by adhering to the Best Practices Guide

Fishing Zones 1 and 2: CDFW Marine Region staff's final recommendation is to maintain the Fleet Advisory and implement a Depth Constraint limiting fishing to only from 30 fathoms shoreward based on the lack of recent RAMP approved survey data for Zones 1 and 2. NOAA and CCCA observation data indicates large aggregations of Humpback whales between the 30 and 45-fathom contour, with some closer to shore. Constraining the fishery to Fishing Grounds shoreward of 30-fathoms will help minimize co-occurrence and risk of entanglement. This recommendation is based on declining fishing effort and the decreasing number of traps being fished across both zones. The final recommendation is to implement the Depth Constraint 7-days after the Declaration is made for Zones 1 and 2. Vessels fishing shoreward of 30-fathoms must carry onboard an electronic monitoring system capable of recording the vessel's location while engaged in fishing activity using GPS coordinates at a frequency of no less than once per minute during fishing operations. Electronic monitoring data must be made available to CDFW upon request for the duration of the fishing period and 60 days thereafter. This Management Action would remain in place until lifted by the Director or season closes.

CDFW will continue to monitor all available data until the next risk assessment (expected to occur on or around May 14, 2021). The Fleet should be vigilant and move or avoid setting gear in areas where whales are transiting or foraging. Particularly in areas around Reading Rock north of Trinidad. The Fleet should also be prepared to implement a change in Management Action which may include a Zone closure(s) in the coming weeks for all California waters.

Summary of RAMP triggers and Management Considerations analyzed during preparation of this Final Assessment and Management Recommendation.

B. Marine life entanglement risk, based on triggers in subsection (c)

Confirmed Entanglements in California Commercial Dungeness Crab Gear:

- During the current Fishing Season: 0
- During the current calendar year: 0

Confirmed Entanglements in Unknown Fishing Gear reported from California:

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

Marine Life Concentrations Surveys and/or Satellite Telemetry Observations:

- **Fishing Zone 1, 2, 5 and 6:** No current CDFW approved survey data are available for these Zones, which triggers management response under RAMP (c)(2)(B)(1).

C. Scope of 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

- Given the low relative running average sightings of Humpback whales in Monterey Bay (Zone 4) which is an indication of migration timing, low sightings in Zone 3 and 5, and declining fishing activity, a Fleet Advisory remains an effective Management Action for Zones 3, 4, 5 and 6. A Depth Constraint from 30 fathoms to deeper waters for Zone 1 and 2 will minimize co-occurrence with Humpback whales largely observed in depths greater than 30 fathoms. Based on bi-weekly reports, reported fishing gear is at depths ranging from 13-31 fathoms with some vessels fishing deeper depths. Adding a Depth Constraint is not anticipated to significantly increase overall gear concentration given the majority of gear is currently set within 30-fathoms. However, it will bring deeper set gear outside the 30-fathom contour, away from the observed Humpback aggregations.

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

- A Fleet Advisory and Depth Constraint are not anticipated to have significant economic impact on the fleet or fishing communities as it allows for continued fishing opportunity. The recommended Depth Constraint shoreward of 30 fathoms includes the depth zones currently being reported in bi-weekly reporting for Zone 1 and 2.

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

- Monterey Bay Whale Watch (MBWW) data are available for Fishing Zone 4. Cascadia Research vessel survey data are available for Zones 3 and 4. California Coast Crab Association (CCCA) and Point Blue Conservation Science (Point Blue) observation data are available for Zones 1, 3, 4, 5 and 6. The Habitat Compression Index and Whale Watch 2.0 habitat predictions are available for all Zones.

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

- Presence of Humpback whales are lower than average based on MBWW data. Humpback whale sightings from Cascadia Research were low to moderate from vessel-based surveys that were located primarily offshore. Observations of Humpback whales were also low from Point Blue. Observations from CCCA indicated high abundance of Humpback whales near Reading Rock in Zone 1. These observations were corroborated with information from a survey conducted by NOAA researchers on April 28, 2021 that observed 40-60 Humpback whales 5-7 miles SW of Crescent City in 90-100m (49-55 fathoms) of water and about 20 Humpback whales in 30-50m (16-27 fathoms) within areas of Dungeness crab gear.

- One Blue whale was sighted offshore near Monterey Bay.

- Pacific Leatherback sea turtles typically do not begin to arrive in California waters until late June based on sea turtle tagging studies. Those animals typically forage in an area extending from Monterey Bay to Point Reyes during the summer months.

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

- Season price negotiations delayed actual start of fishing following the December 23, 2020 statewide opener. Most vessels began setting gear on Monday January 11, 2021.

- Based on CDFW landings data, 358 vessels have participated in the fishery as of April 20, 2021, making at least one landing. Week 5 had the highest number of potential traps deployed across all Fishing Zones, with an estimated total of 94,675 traps. Fishing Zone 3 had the highest total (47%), followed by Zone 1 (40%). Based on the most recent landings data from week 17, overall vessel participation and subsequent landings activity has decreased from the start of the season with a 70% decline in daily statewide landings from the high in week 5. The estimated maximum number of traps is currently 28,975 which is another decrease from the last risk assessment when 39,550 traps were estimated. For the current season, Zone 3 has the highest estimated number of traps deployed at 16,100 with almost half of these originating from vessels landing in the port of Bodega Bay, estimated at 7,475.

- The most recent CDFW required bi-weekly trap reporting period of April 16 estimated a total of 24,821 (previously 37,945) traps fishing in minimum depths ranges that average 13 – 18 fathoms across the different Fishing Zones and maximum depths ranges that average 25 – 40 fathoms across the different Fishing Zones. Bi-weekly reports confirm Zone 3 has the highest number of deployed traps at 13,240. *Note: CDFW has not achieved 100% reporting by all active permits.*

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

- Krill abundance (higher offshore in the outer slope) is also anticipated to be closer to average yearly values while anchovy is still considered to be above average, given the historical record.

- Cool ocean temperatures and strong spring upwelling conditions continued from February to March and the Habitat Compression Index (HCI) for both months indicates a low compression state. It is anticipated that cool conditions with expanded upwelling habitat will continue with no impact of habitat compression that would otherwise result in increased concentrations and aggregations of whales and forage nearshore.

Section 132.8(d)(9): Ocean conditions

- The prediction of ENSO conditions was last updated on April 8, 2021. La Niña conditions persisted in March with an 80% chance of a transition from this condition to ENSO-neutral during May - July 2021.

- The latest outlook of late winter/spring ocean ecosystem conditions shows that ocean conditions have cooled significantly over this past winter and conditions in spring are trending toward cool and productive conditions. It is anticipated that cool conditions will continue, with expanded upwelling habitat and no signs of habitat compression that would otherwise result in increased concentrations and aggregations of whales and forage nearshore.

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

- Impact score calculation under RAMP began on January 1, 2021. The current impact score is 0.38 for Humpback whales and 0 for Blue whales and Pacific Leatherback sea turtles.

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

- Based on Monterey Bay Whale Watch data, Cascadia Research and California Coast Crab Association vessel surveys and Point Blue observation data, significant migration into the Fishing Grounds has yet to occur in Zones 3-5. Whales that are present remain primarily offshore in deep water (70-200 meters, 38-109 fathoms) and outside the depth ranges where most fishing is occurring (15-32 fathoms). Based on CCCA vessel surveys and NOAA observations, animals are beginning to migrate into Zone 1 with observations of over 50 Humpback whales in depths of 30 – 55 fathoms, with some animals deeper and shallower.

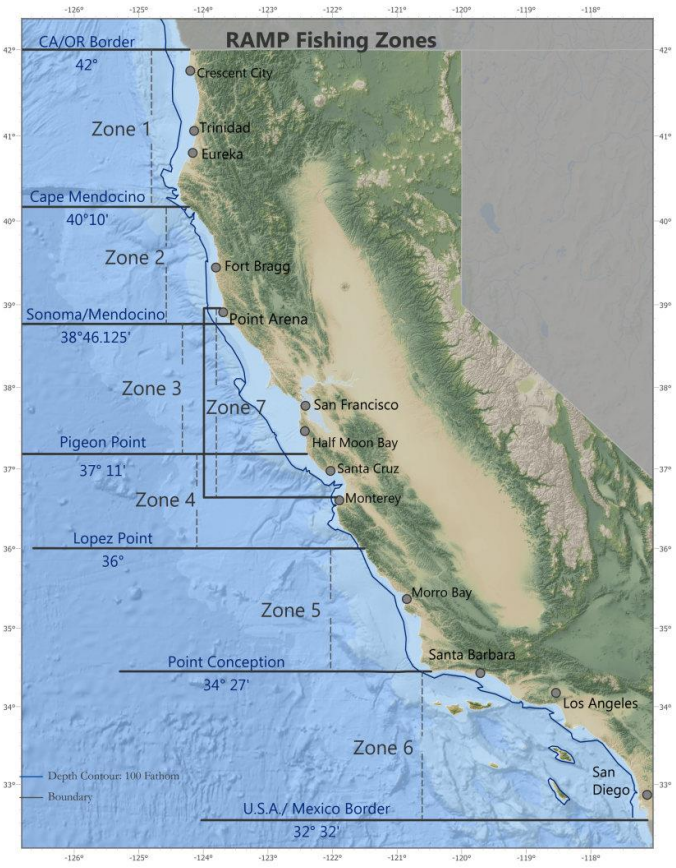

Figure 1. RAMP Fishing Zone boundaries.

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

Working Group Discussion Date: April 29, 2021

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 and scientific advisors, as well as an initial CDFW assessment and the preliminary Management Action recommendation.

Working Group Response to CDFW's Preliminary Management Action Recommendation

The Working Group provided broad support for CDFW's recommendation of a Fleet Advisory for Fishing Zones 3-6. The Working Group provided a mixed response for CDFW's recommendation of a Depth Constraint for Fishing Zones 1 and 2. Nine members of the Working Group supported the Depth Constraint based on the Management Considerations. Fleet representation did note that there was concern about the burden to the fleet. Two members opposed and the remaining Working Group members were neutral. The alternative Management Action was then put forward for consideration by the full Working Group (below). A subset of the group supporting the Depth Constraint also provided support for the Alternative recommendation.

Working Group Recommendation Option 1:

Management Action: **Fleet Advisory (which should include information to avoid areas and depths where Humpback whales have been observed, particularly areas of depths greater than 30 fathoms), with voluntary electronic monitoring use/pilot, voluntary Depth Constraint**

Fishing Zone(s): **1 and 2**

Implementation Date: **May 3, 2021**

Key Rationale based on Management Considerations: **Forage is located primarily offshore and reports indicate significant krill available. There are no known entanglements that involve commercial Dungeness crab gear this season. There is decreasing fishing effort in these Fishing Zones, which is expected to continue to decrease over the coming weeks. A Depth Constraint would put undue burden on the affected fleet because of the electronic monitoring requirement. Most fishery participants are already fishing inside 30 fathoms.**

Any Limitations/Concerns: **None raised**

Level of Support: **Six Working Group Members supported, two were opposed, the remaining eight members in attendance were neutral.**

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

Date: April 28, 2021

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 have 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. Recommended Management Action

Fishing Zones 3, 4, 5 and 6: CDFW Marine Region staff's preliminary recommendation is to maintain a Fleet Advisory based on the lack of recent RAMP approved survey data for Zones 5 and 6 and supported due to declining fishing effort in Zones 3-6. Based on the MBWW data for Zone 4 and Cascadia Research vessel surveys for Zones 3 and 4, relatively few Actionable Species were observed. In addition, observation data from Point Blue for Zones 3, 4 and 6 and observation data from CCCA for Zone 5 show few Actionable species. Although migration is expected to increase into all Zones based on known historic migration patterns, available data indicate the bulk of the migration has not begun to arrive in Zones 3-6.

In addition, based on favorable (low risk) oceanographic and forage condition data, cool conditions exist, resulting in low compression of available forage, decreasing the likelihood of co-occurrence of trap gear and whales as they continue arriving to California waters, particularly in Zones 3-6. This is supported by sightings of Humpback whales foraging in deep water (70-200 meters) north of Monterey Bay. Ocean and forage conditions do not warrant concern, and fleet participation is decreasing and expected to decrease further with the commercial salmon opener on May 1. Given the above, paired with continued low presence of Humpback whales and Blues whales, risk is low across all management considerations at this time for Zones 3-6.

The RAMP regulations indicate a Fleet Advisory is warranted if the level of risk is elevated and/or anticipated to increase but more restrictive management actions are not necessary at this time. The Director may issue an advisory notice to the Fleet to employ voluntary efforts and/or measures to reduce the risk of entanglements (i.e., fishing best practices) and to avoid triggering additional management actions. As a result, CDFW encourages the fleet to implement fishing best practices (e.g. minimizing knots, line scope, reducing gear) and to immediately remove all gear when an operator no longer intends to fish. Vessels fishing in all Zones should pay particular attention to the location of set gear and foraging whales and minimize entanglement risk by adhering to the Best Practices Guide

Fishing Zones 1 and 2: CDFW Marine Region staff's preliminary recommendation is to permit

fishing only from 30 fathoms shoreward based on the lack of recent RAMP approved survey data for Zones 1 and 2. CCCA observation data indicates large aggregations of Humpback whales between the 30 and 45-fathom contour. Constraining the fishery to Fishing Grounds shoreward of 30-fathoms will help minimize co-occurrence and risk of entanglement. The preliminary recommendation is to implement the Depth Constraint 7-days after the Declaration is made for Zones 1 and 2. All vessels must carry onboard an Electronic monitoring system capable of recording the vessel's location while engaged in fishing activity using GPS coordinates at a frequency of no less than once per minute. Electronic monitoring data must be made available to CDFW upon request and must be preserved for 60 days after season closes. This Management Action would remain in place until lifted by the Director or season closes.

CDFW will continue to monitor all available data until the next risk assessment (expected to occur on or around May 14, 2021). The Fleet should be vigilant and move or avoid setting gear in areas where whales are transiting or foraging. Particularly in areas around Reading Rock north of Trinidad. The Fleet should also be prepared to implement a change in Management Action which may include a Zone closure(s) in the coming weeks for all California waters.

Summary of RAMP triggers and Management Considerations analyzed during preparation of this Initial Assessment and Preliminary Recommendation.

B. Marine life entanglement risk, based on triggers in subsection (c)

Confirmed Entanglements in California Commercial Dungeness Crab Gear:

- During the current Fishing Season: 0
- During the current calendar year: 0

Confirmed Entanglements in Unknown Fishing Gear reported from California:

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

Marine Life Concentrations Surveys and/or Satellite Telemetry Observations:

- **Fishing Zone 1, 2, 5 and 6:** No current CDFW approved survey data are available for these Zones, which triggers management response under RAMP (c)(2)(B)(1).

C. Scope of 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

- Given the low relative running average sightings of Humpback whales in Monterey Bay (Zone 4) which is an indication of migration timing, low sightings in Zone 3 and 5, and declining fishing activity, a Fleet Advisory remains an effective Management Action for

Zones 3, 4, 5 and 6. A Depth Constraint from 30 fathoms to deeper waters for Zone 1 and 2 will minimize co-occurrence with Humpback whales observed in depths of 45 fathoms. Based on bi-weekly reports, reported fishing gear is at depths ranging from 13-31 fathoms with some vessels fishing deeper depths. Adding a Depth Constraint is not anticipated to significantly increase overall gear concentration given the majority of gear is currently set within 30-fathoms. However, it will bring deeper set gear inside the 30-fathom contour, away from the observed Humpback aggregations.

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

- A Fleet Advisory and Depth Constraint are not anticipated to have significant economic impact on the fleet or fishing communities as it allows for continued fishing opportunity. The recommended depth restriction shoreward of 30 fathoms includes the depth zones currently being reported in bi-weekly reporting for Zone 1 and 2.

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

- Monterey Bay Whale Watch (MBWW) data are available for Fishing Zone 4. Cascadia Research vessel survey data are available for Zones 3 and 4. California Coast Crab Association (CCCA) and Point Blue Conservation Science (Point Blue) observation data are available for Zones 1, 3, 4, 5 and 6. The Habitat Compression Index and Whale Watch 2.0 habitat predictions are available for all Zones.

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

- Presence of Humpback whales are lower than average based on MBWW data. Humpback whale sightings from Cascadia Research were low to moderate from vessel-based surveys that were located primarily offshore. Observations of Humpback whales were also low from Point Blue. Observations from CCCA indicated high abundance of Humpback whales near Reading Rock in Zone 1.

- One Blue whale was sighted off north Monterey Bay.

- Pacific Leatherback sea turtles typically do not begin to arrive in California waters until late June based on sea turtle tagging studies. Those animals typically forage in an area extending from Monterey Bay to Point Reyes during the summer months.

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

- Season price negotiations delayed actual start of fishing following the December 23, 2020 statewide opener. Most vessels began setting gear on Monday January 11, 2021.

- Based on CDFW landings data, 358 vessels have participated in the fishery as of April 20, 2021, making at least one landing. Week 5 had the highest number of potential traps deployed across all Fishing Zones, with an estimated total of 94,675 traps. Fishing Zone 3 had the highest total (47%), followed by Zone 1 (40%). Based on the most recent landings data from week 17, overall vessel participation and subsequent landings activity

has decreased from the start of the season with a 70% decline in daily statewide landings from the high in week 5. The estimated maximum number of traps is currently 28,975 which is another decrease from the last risk assessment when 39,550 traps were estimated. For the current season, Zone 3 has the highest estimated number of traps deployed at 16,100 with almost half of these originating from vessels landing in the port of Bodega Bay, estimated at 7,475.

- The most recent CDFW required bi-weekly trap reporting period of April 16 estimated a total of 24,821 (previously 37,945) traps fishing in average minimum depths of 13 – 18 fathoms and in average maximum depths of 25 – 40 fathoms across all Fishing Zones. Bi-weekly reports confirm Zone 3 has the highest number of deployed traps at 13,240. *Note: CDFW has not achieved 100% reporting by all active permits.*

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

- Krill abundance (higher offshore in the outer slope) is also anticipated to be closer to average yearly values while anchovy is still considered to be above average, given the historical record.

- Cool ocean temperatures and strong spring upwelling conditions continued from February to March and the Habitat Compression Index (HCI) for both months indicates a low compression state. It is anticipated that cool conditions with expanded upwelling habitat will continue with no impact of habitat compression that would otherwise result in increased concentrations and aggregations of whales and forage nearshore.

Section 132.8(d)(9): Ocean conditions

- The prediction of ENSO conditions was last updated on April 8, 2021. La Niña conditions persisted in March with an 80% chance of a transition from this condition to ENSO-neutral during May - July 2021.

- The latest outlook of late winter/spring ocean ecosystem conditions shows that ocean conditions have cooled significantly over this past winter and conditions in spring are trending toward cool and productive conditions. It is anticipated that cool conditions will continue, with expanded upwelling habitat and no signs of habitat compression that would otherwise result in increased concentrations and aggregations of whales and forage nearshore.

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

- Impact score calculation under RAMP began on January 1, 2021. The current impact score is 0.38 for Humpback whales and 0 for Blue whales and Pacific Leatherback sea turtles.

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

- Based on Monterey Bay Whale Watch data, Cascadia Research vessel surveys and

Point Blue observation data, significant migration into the Fishing Grounds has yet to occur in Zones 3-5. Whales that are present remain primarily offshore in deep water (70-200 meters, 38-109 fathoms) and outside the depth ranges where most fishing is occurring, 15-32 fathoms. Based on CCCA vessel surveys, animals are beginning to migrate into Zone 1 with observations of over 50 Humpback whales around the 45-fathom contour.

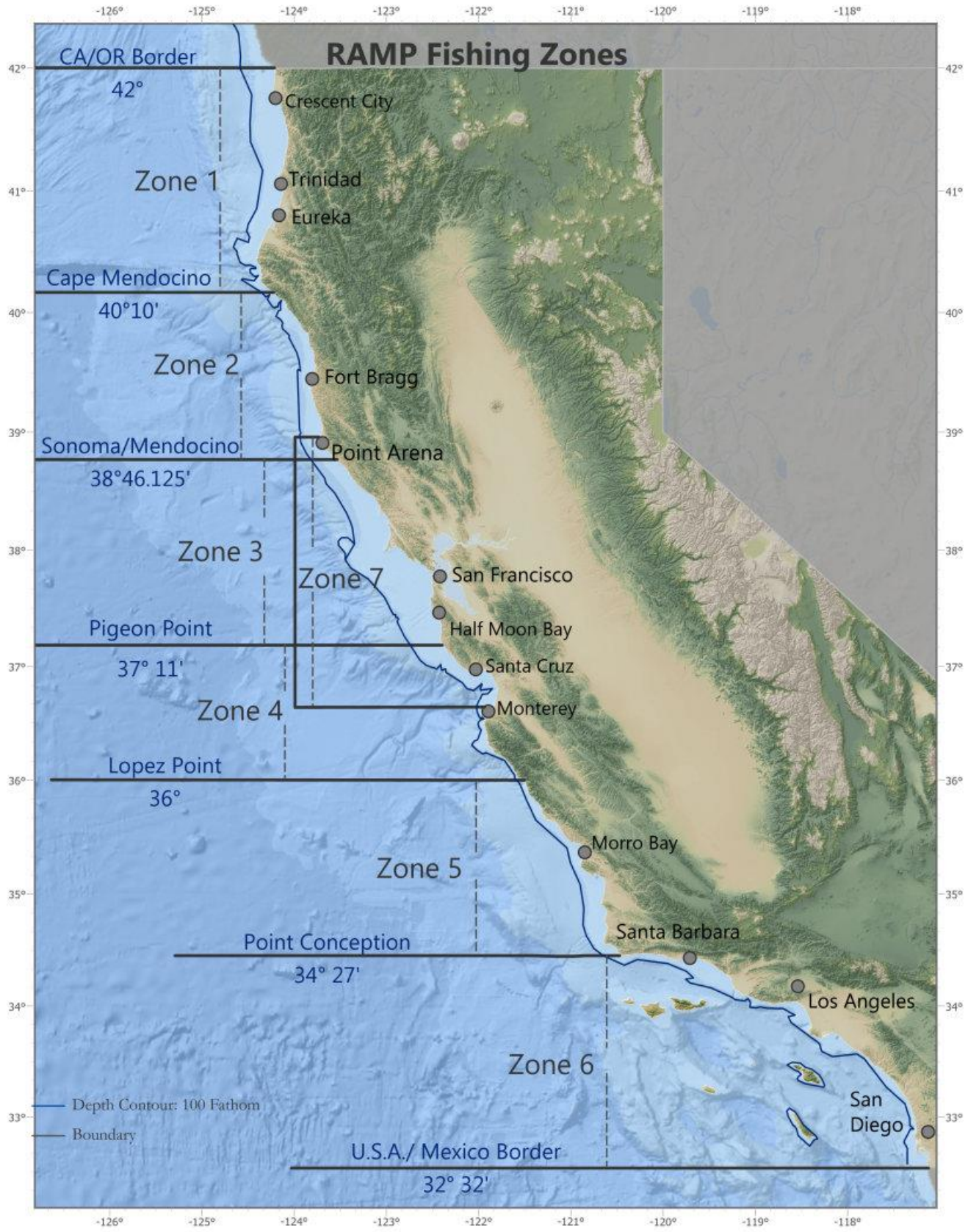

Figure 1. RAMP Fishing Zone boundaries.

2020-21 Risk Assessment Mitigation Program - Available Data

Last updated: April 29, 2021

TRIGGERS REQUIRING MANAGEMENT ACTION

Section 132.8(c)(1): Confirmed Entanglements

Data provided by: Lauren Saez and Dan Lawson, National Marine Fisheries Service (NMFS) and evaluated by the California Department of Fish and Wildlife (CDFW)

Summary of All West Coast Entanglements (by NMFS)

Fishing Zone: *All Zones*

- Humpback whales: 1 confirmed entanglement, unidentified gear (Fishing Zone 6)
- Blue whales: 0 confirmed entanglements
- Leatherback sea turtles: 0 confirmed entanglements

Total entanglements for calendar year 2021: 1 confirmed. *All entanglement reports are subject to further review.*

Supplemental Information:

- A Humpback whale entanglement on April 3, 2021 was reported entangled off Ventura (Fishing Zone 6). A photograph of entanglement shows dark line near the dorsal fin and was used to confirm the entanglement. There is a video of the whale that suggests there has been recent chaffing on the dorsal fin area, but the gear is not visible. The entanglement is confirmed, but in unidentified gear.
- Confirmed Gray whale entanglement reported on April 14, 2021 near San Francisco (Fishing Zone 3) with line and a single half-red and half-white buoy.
- Confirmed Minke whale entanglement report on April 16, 2021 north of San Diego (Fishing Zone 6) entangled with a single Oregon commercial Dungeness crab gear set with three buoys. Whale was fully disentangled.
- Confirmed Gray whale entanglement reported on April 19, 2021 off Orange County (Fishing Zone 6). Gray whale calf was entangled with a thin yellow line and trailing a small buoy (donut-shaped). Multiple resights and rescue efforts with partial gear removal.

Evaluation of Entanglement Triggers (by CDFW)

Total number of Confirmed Entanglements in California Commercial Dungeness Crab Gear

- During the current Fishing Season: 0
- During the current calendar year: 0

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

- During the current Fishing Season: 1
- During the current calendar year: 1

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

Data provided by: Monterey Bay Whale Watch (MBWW) (processed by Karin Forney, NMFS), John Calambokidis (Cascadia Research, SR3, and The Marine Mammal Center)

Monterey Bay Whale Watch *(Fishing Zone 4)*

- Monterey Bay Whale Watch (MBWW) was able to conduct trips on 13 of the last 14 days from April 11-24, 2021. A maximum of 15 Humpback whales was observed within a single trip on April 15, 2021. The 14-day average number of Humpback whales-per-half-day-trip (for April 11-24) was 1.8; the 7-day average (for April 18-24) was 1.0.
- No Blue whales have been observed by MBWW since December 24, when a single whale was seen.

Cascadia Research, SR3, and The Marine Mammal Center (Fishing Zones 3 and 4)

- Surveys covering transect lines along the 70-m and 200-m line were completed between April 12-16, 2021 from Monterey Bay to north of Point Reyes within Fishing Zones 3 and 4 (Figure 1) and on April 26, 2021 from Monterey Bay to Pigeon Point within Fishing Zone 4 (Figure 2).
- There was a high diversity of whale species with sightings of Humpback, Blue, Fin, and Gray whales on both sets of surveys.
- Four days of surveys conducted between April 12-16, 2021, sighted Humpback whales at low to medium densities with most of these along the 200-m line (only two sightings were on the 70-m line). A total of 16 sightings of 22 Humpback whales were observed across

Fishing Zones 3 and 4. Similar to findings in March 2021, Fin whales continue to be sighted (seven sightings of 12 whales).

- April 26, 2021, Humpback whales were sighted at low densities (six sightings of nine whales). A concentration of Humpback whales and Fin whales, and a single Blue whale were seen just offshore of the 70-m line north of Monterey Bay feeding on krill.

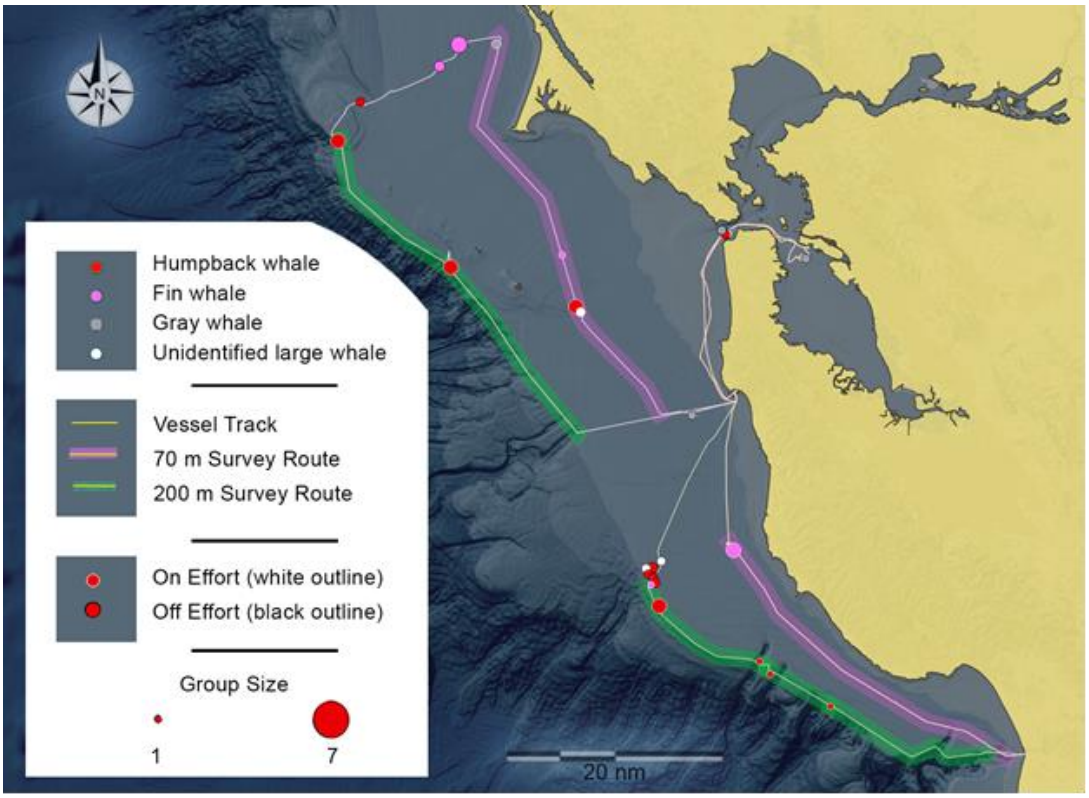

Figure 1. Vessel-based surveys from R/V Nova on April 12-16, 2021 showing vessel track and observations of large whales from Monterey Bay to north of Point Reyes.

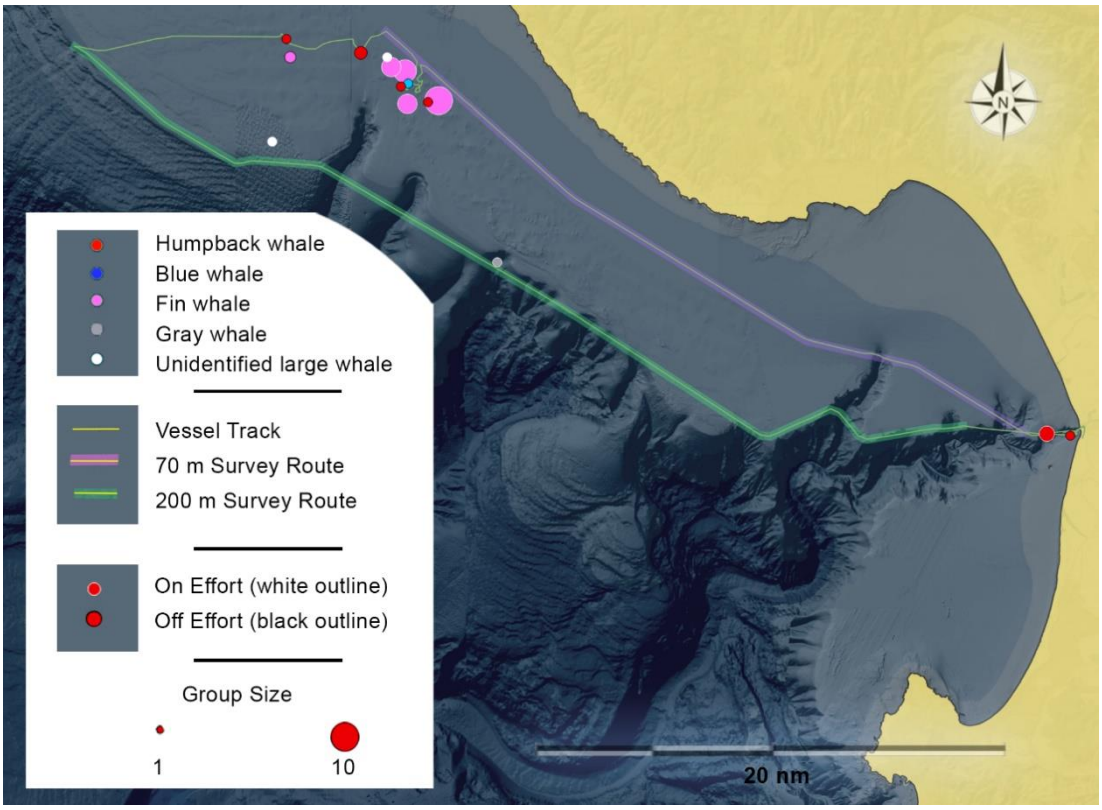

Figure 2. Vessel-based surveys from R/V Nova on April 26, 2021 showing vessel track and observations of large whales from Monterey Bay to Pigeon Point.

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

- Economic analysis currently available is reflected in the landings data. See management consideration (d)(7) for available information on fishing activity to date during the 2020-21 fishing season.

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

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

Monterey Bay Whale Watch *(Fishing Zone 4)*

- The 14-day average of 1.8 Humpback whales-per-half-day-trip is lower than the average historical patterns (Figure 3). Humpback whale abundance in the Monterey Bay region thus

appears to be lower than expected for this time of the year, when whale numbers typically are increasing as part of the seasonal migration pattern.

- The absence of Blue whales is consistent with their historical seasonal migration patterns (Figure 4).

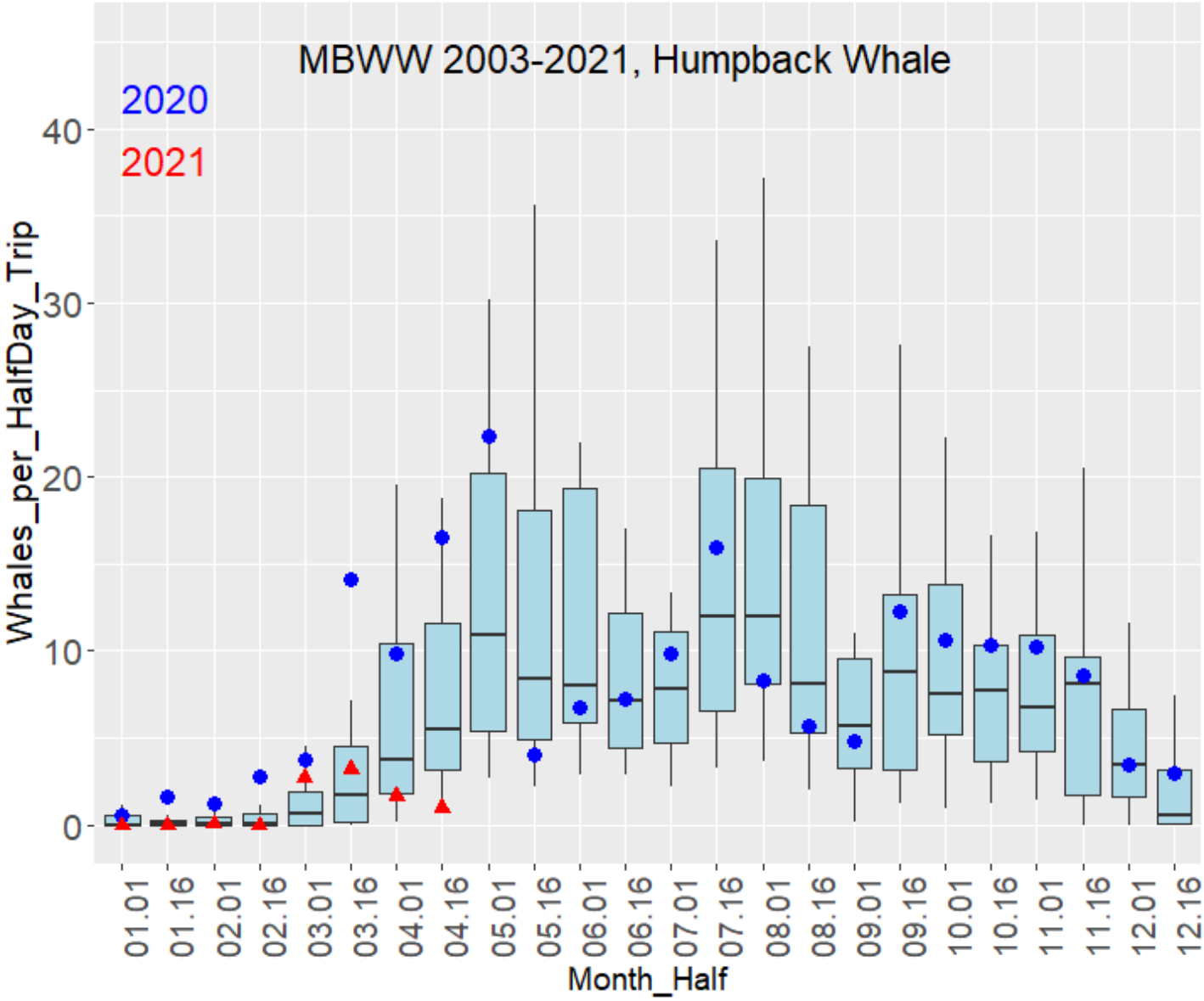

Figure 3. Historical Monterey Bay Whale Watch data for 2003-2021, summarizing the average and variation in the number of Humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the 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 2020 (large blue dots) and 2021 (red triangles) are provided for reference, placing recent whale numbers in a historical context.

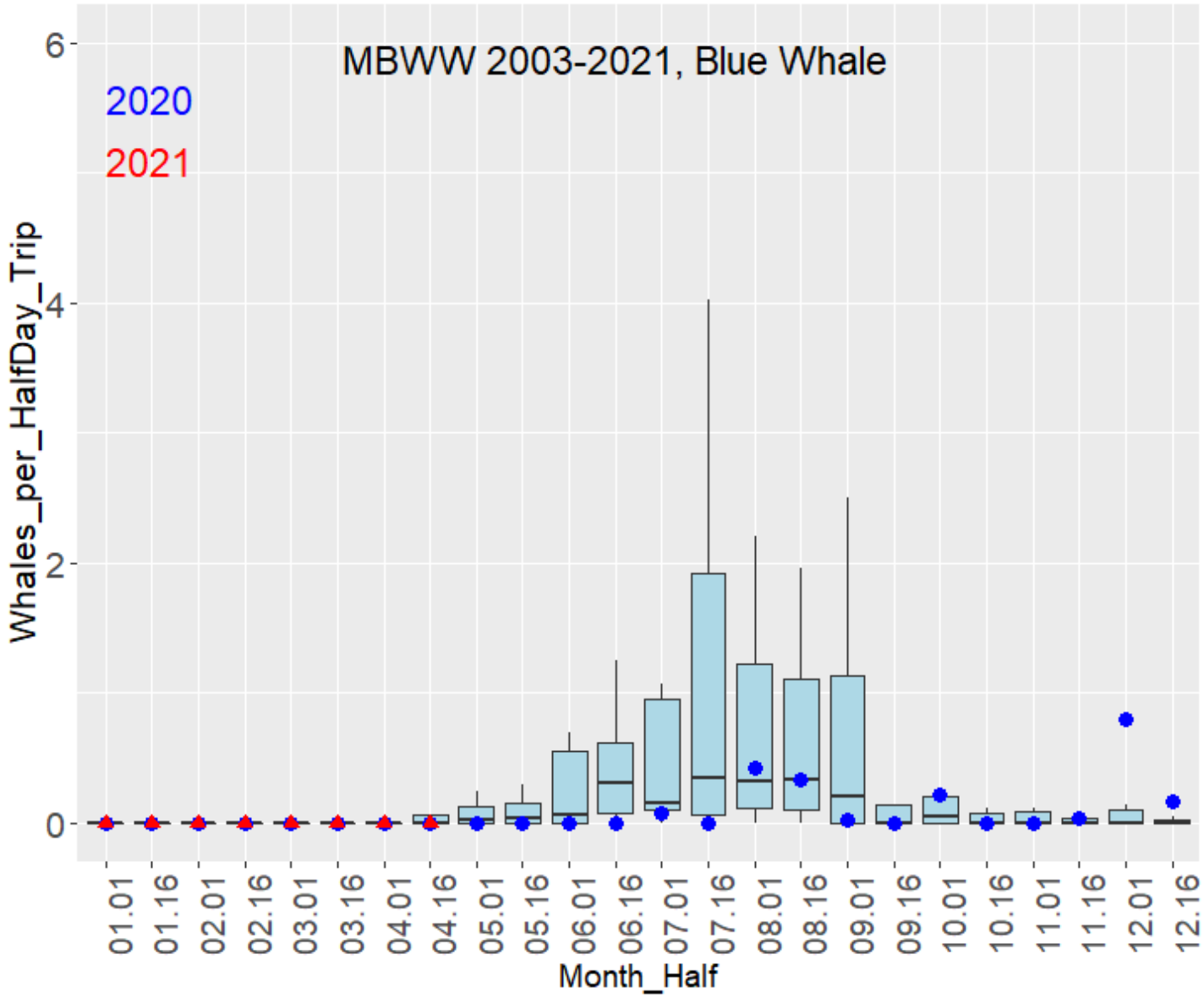

Figure 4. Historical Monterey Bay Whale Watch data for 2003-2021, summarizing the average and variation in the number of Blue whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the average 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 2020 (large blue dots) and 2021 (red triangles) are provided for reference, placing recent whale numbers in a historical context.

NOAA Research Cruise *(Zone 1)*

- NOAA researchers observed 40-60 Humpback whales 5-7 miles SW of Crescent City in 90-100m (49-55 fathoms) of water and about 20 Humpback whales in 30-50m (16-27 fathoms) within areas of Dungeness crab gear on April 28, 2021.

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

Data provided by: California Department of Fish and Wildlife; Accessed from CDFW's Marine Landings Data System (MLDS) on April 26, 2021, Automatic Licensing Data System (ALDS) on April 7, 2021, Bi-Weekly Reporting Database on April 26, 2021, and PowerBI landings report Database on April 5, 2021. Solar Logger Pilot Project provided by Kathi George (The Marine Mammal Center).

Marine Landings Data System *(All Fishing Zones)*

- **CDFW data presented in this section is preliminary and subject to revision.**
- The commercial Dungeness crab fishery opened statewide on December 23, 2020. Due to ongoing price negotiations, most vessels did not begin fishing until January 11, 2021.
- As of April 20, 2021, there have been 3,304 daily vessel landings of Dungeness crab with a total volume of 3,508,479 pounds and with a total Ex-Vessel Value of $18,094,428. Average unit price for these landings was $5.88 (excluding receipts with unit price of $0 reported). A total of 358 vessels have made at least one landing during the 2020-21 season.
- Cumulative daily landings by vessel each week by CDFW Fishing Zones (aggregated CDFW Fishing Blocks used to report catch location) are shown in Figure 5 with 17 complete weeks of landings to summarize from the start date of December 23, 2020 to April 20, 2021. The highest number of daily landings statewide occurred in week 5. The highest weekly landings for Fishing Zone 3, where the most activity originated, occurred in week 4. By week 17, total statewide daily landings represent a 70% decline from the high daily landings in week 5.
- Of the 358 vessels, 356 could be tied to a Dungeness crab vessel permit and are organized in the trap tiers as follows and represent a total of 117,525 traps:
    - Tier 1: 45 vessels
    - Tier 2: 44 vessels
    - Tier 3: 44 vessels
    - Tier 4: 39 vessels
    - Tier 5: 36 vessels
    - Tier 6: 97 vessels
    - Tier 7: 51 vessels

- The maximum potential traps, represented by the number of vessels that made at least one landing each week and the overall traps in their vessel permit tier, is summarized each week by CDFW Fishing Zones (Figure 6). Week 5 shows the highest number of aggregated maximum potential traps, estimated at a total of 94,675 traps deployed. Fishing Zone 3 shows the highest proportion (47%) of total maximum potential traps, followed by Zone 1 (40%). By week 17, the total maximum potential trap numbers decreased to an estimated 28,975 traps.
- For the past 3 weeks (Weeks 13-15), average weekly price per pound by port complex range between $5.00 and $10.23 each week (Figure 7). There is a demarcation in average price between the two management areas for this time period, with higher average price at the central ports ($7.12-$10.23) and lower average price at the northern ports ($5.00-$8.48).
- Two figures of graphs showing number of vessels (Figure 8) and the maximum potential trap number they represent (Figure 9) between the years of 2014 and 2021 are being provided to compare with the current low Dungeness crab season (2021 panel). This information is being summarized by port complex over five bi-weekly periods between March 1 and April 30. Data are current as of April 23, 2021 and will be populated as the current season progresses.
- For all time periods shown for 2021, the maximum potential traps for the port of Bodega Bay remains above the 2014-2020 (removing 2016) average, while Half Moon Bay is below this average by the March 28-April 11 period and San Francisco is below average by the April 12-25 period. Monterey is near average for these two periods. This number remains below average for all other port complexes within Fishing Zones 1, 2, and 5. Data is still incomplete for the April 12-25 period and will be updated.
- For the current season (2021), the following maximum potential traps for the latest period of April 12-25 by port complex is as follows:
    - Crescent City: 2,875
    - Trinidad: 2,425
    - Eureka: 3,175
    - Fort Bragg: 3,025
    - Bodega Bay: 7,475
    - San Francisco: 4,025

- Half Moon Bay: 4,600
- Monterey: 4,500
- Morro Bay: 1,575

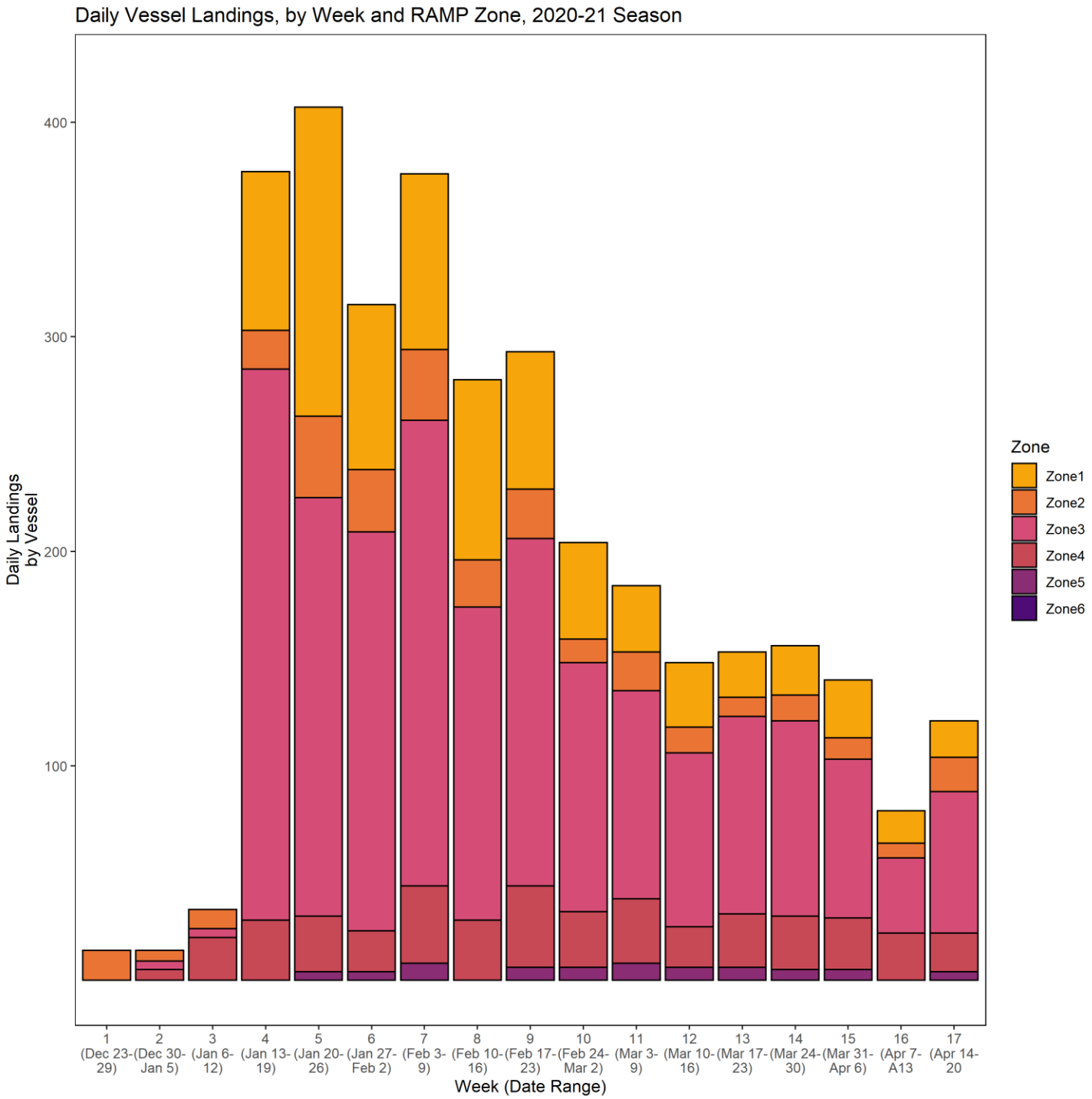

Figure 5. Dungeness crab daily vessel landings by week and Fishing Zone. Accessed from CDFW's MLDS on April 26, 2021. All data are preliminary and subject to change.

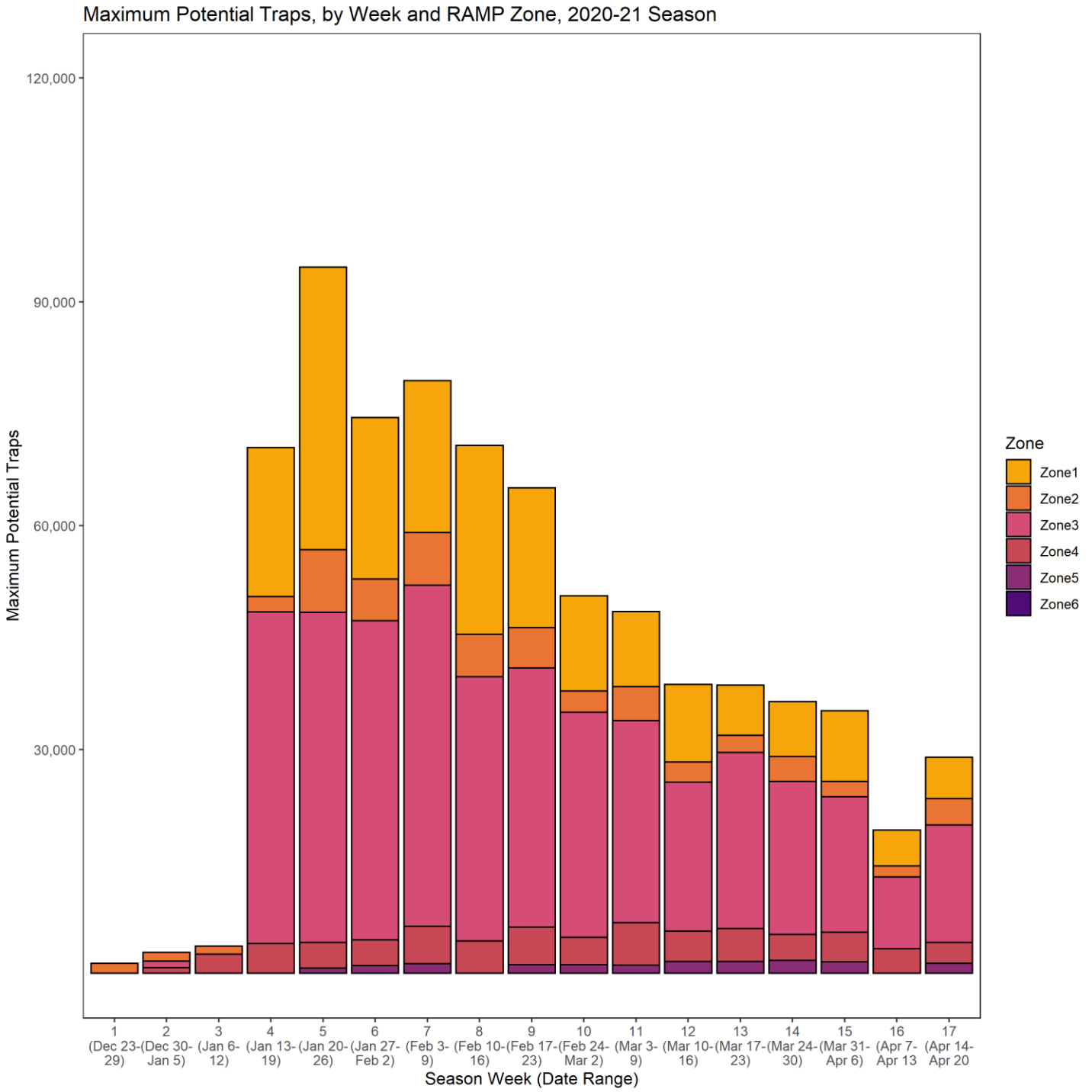

Figure 6. Maximum potential traps by week and Fishing Zone, based on landings data and Dungeness crab vessel permit tier information. Accessed from CDFW's MLDS on April 26, 2021 and CDFW's ALDS on April 7, 2021. All data are preliminary and subject to change.

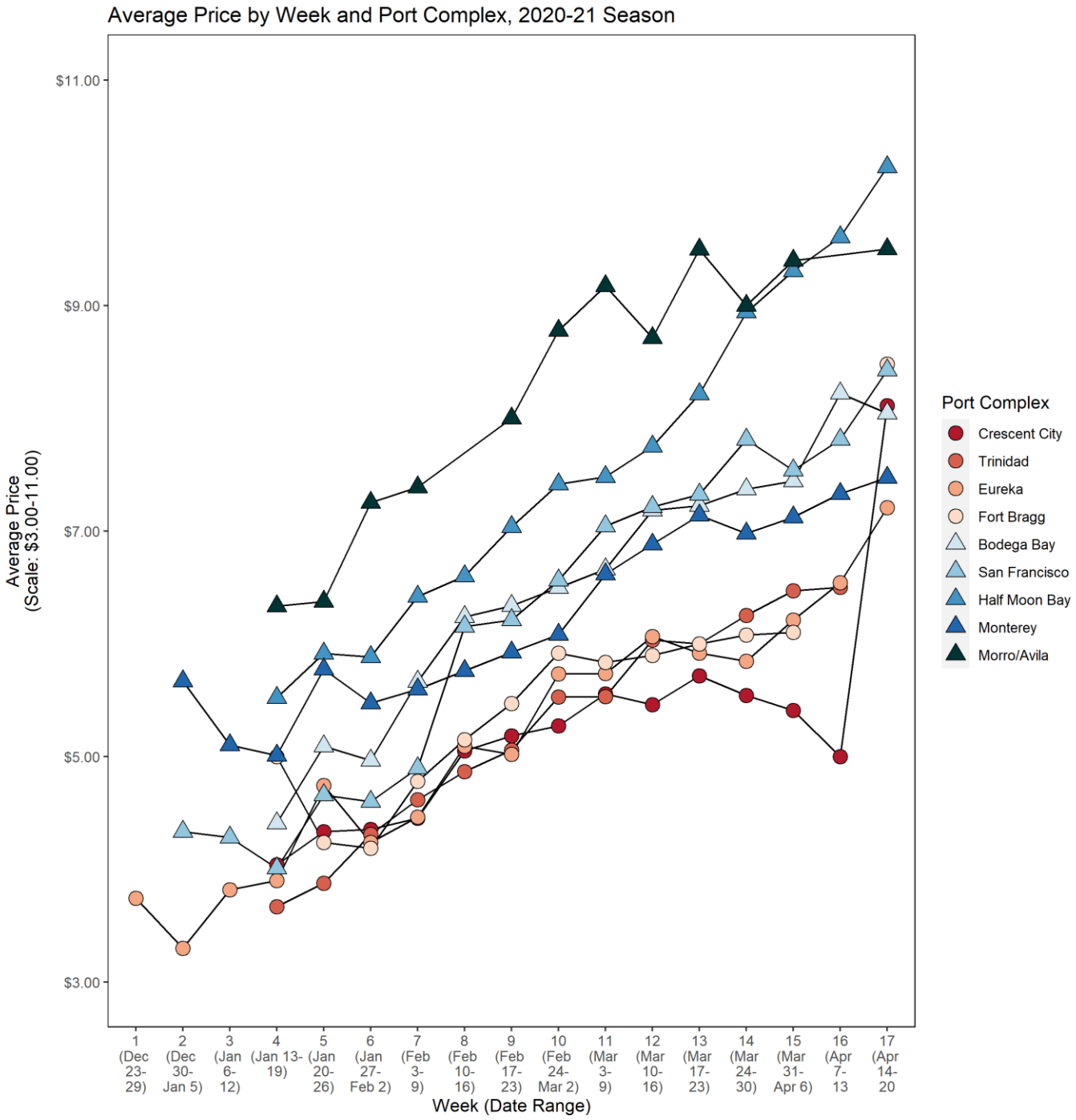

Figure 7. Average price per pound by week and port complex (removing receipts that reported $0 unit price). Northern management area ports are designated by circles while central management area ports are designated by triangles. Accessed from CDFW's MLDS on April 26, 2021. All data are preliminary and subject to change.

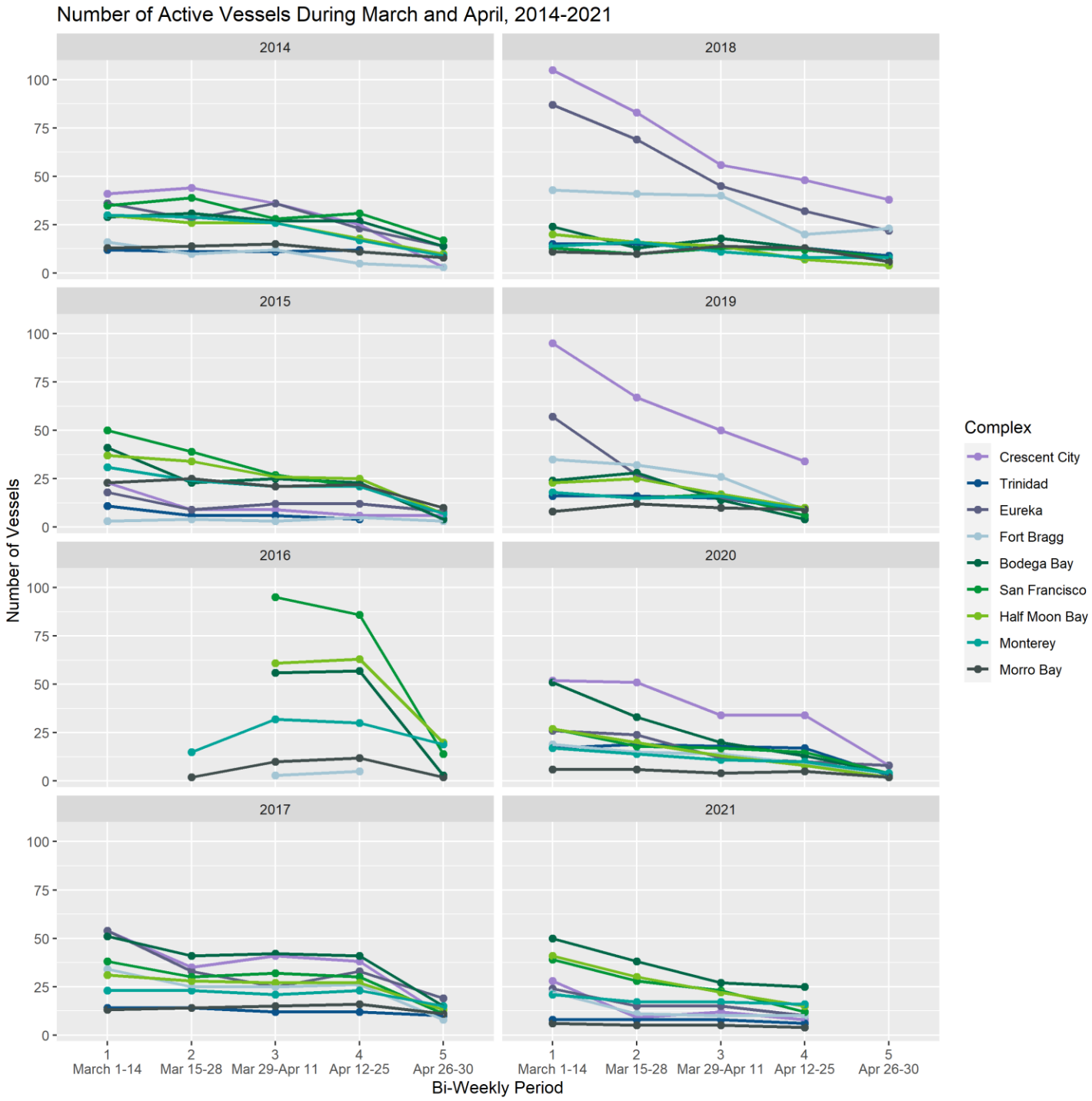

Figure 8. Panels showing number of active Dungeness crab vessels each year between 2014 to 2021 by port complex over each bi-weekly period between March 1 and April 30. Accessed from CDFW's custom PowerBi report with last data refresh on April 23, 2021. All data are preliminary and subject to change.

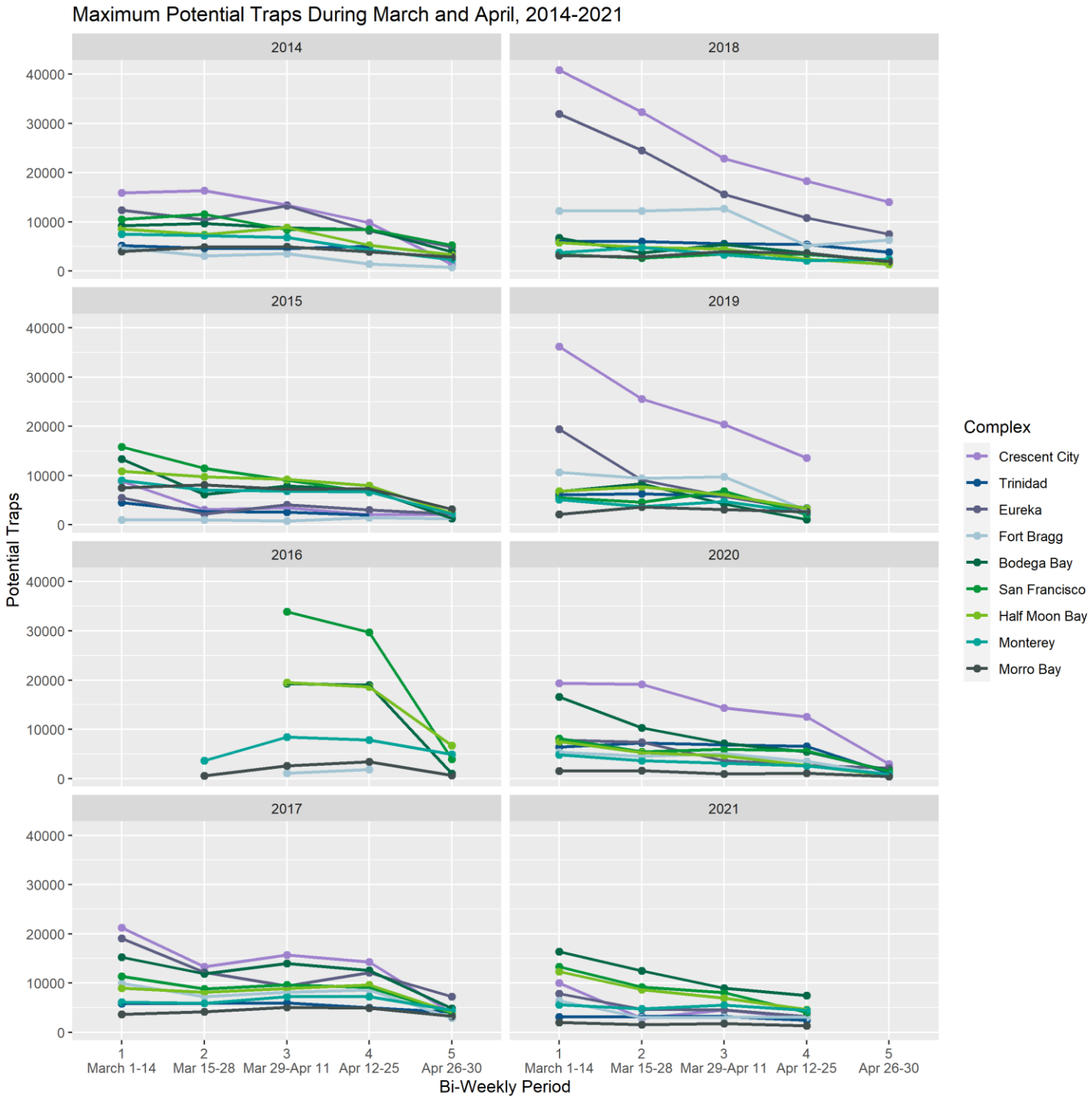

Figure 9. Panels showing number of maximum potential traps based on active Dungeness crab vessels each year between 2014 to 2021 by port complex over each bi-weekly period between March 1 and April 30. Accessed from CDFW's custom PowerBi report with last data refresh on April 23, 2021. All data are preliminary and subject to change.

Bi-Weekly Fishing Activity Reports *(All Fishing Zones)*

- ***CDFW data presented in this section is preliminary and subject to revision.***
- CDFW has received bi-weekly reports since the first reporting period of January 1, 2021 through the most recent reporting period of April 16, 2021. Although total reports for each period may not reflect all permitted vessels participating in the fishery, summaries are being provided for the following periods: April 1, 2021 (Table 1) and April 16, 2021 (Table 2).
- For the April 16 reporting period, covers fishery participation from April 1-15, about 24,821 traps are estimated to be deployed statewide with just over half of these located within Fishing Zone 3. Between April 1 and April 16, just over 7,700 traps have been removed from Fishing Zone 3.

Table 1. Summary of information provided for the April 1, 2021 bi-weekly reporting period by Fishing Zone (1-6). Accessed from CDFW's Bi-Weekly Reporting database on April 26, 2021. NR-C refers to data withheld due to confidentiality and all data are preliminary and subject to change.

Fishing Zone	Permits Reporting	Average Trap Number	Total Traps	Average Min. Depth (fathoms)	Average Max. Depth (fathoms)	Max. Reported Depth (fathoms)	Final Report	Number of Lost Traps
Zone 1	37	267	9,894	11	23	65	8	15
Zone 2	17	218	3,704	14	32	75	2	0
Zone 3	104	204	21,226	17	36	80	24	96
Zone 4	9	201	1,806	21	41	60	0	0
Zone 5	6	219	1,315	29	53	60	1	2
Zone 6	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C
Totals	173		37,945				35	113

Table 2. Summary of information provided for the April 16, 2021 bi-weekly reporting period by Fishing Zone (1-6). Accessed from CDFW's Bi-Weekly Reporting database on April 26, 2021. NR-C refers to data withheld due to confidentiality and all data are preliminary and subject to change.

Fishing Zone	Permits Reporting	Average Trap Number	Total Traps	Average Min. Depth (fathoms)	Average Max. Depth (fathoms)	Max. Reported Depth (fathoms)	Final Report	Number of Lost Traps
Zone 1	24	279	6,701	13	27	65	2	5
Zone 2	16	194	3,110	15	31	75	1	3
Zone 3	71	186	13,240	16	35	120	16	154
Zone 4	6	162	970	14	25	60	2	0
Zone 5	5	160	800	18	40	55	1	1
Zone 6	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C
Totals	122		24,821				22	163

Solar Loggers *(Fishing Zones 1, 3, and 5)*

- The vessel track data provided by the solar logger pilot project is shown for the April 8-25, 2021 period. The following maps show vessel activity in 1) entire coast of California (Figure 10) and 2) Fishing Zones 1, 3 and 5 (Figure 11). From vessel participation in the project (and not necessarily representative of the entire fishery), Fishing Zone 3 showed the most activity. Some vessels participating in the pilot with track lines shown may no longer be participating in the fishery or have vessel tracks included from participation in other fisheries, also vessel tracks are not shown for those that are fishing outside of California this season. A summary of cumulative fishing trips every one to two weeks since January 1, 2021 is provided in Table 3.

Table 3. Summary of individual fishing trips based on data provided by the solar logger project (and not necessarily representative of the entire fishery) between different time periods since January 1, 2021 until April 25, 2021.

Date Ranges	Fishing Trips
April 8-25, 2021	59
March 29 – April 7, 2021	28
March 10-28, 2021	81
March 1-9, 2021	50
February 10-28, 2021	78
February 1-9, 2021	50
January 16-31, 2021	81
January 1-15, 2021	58

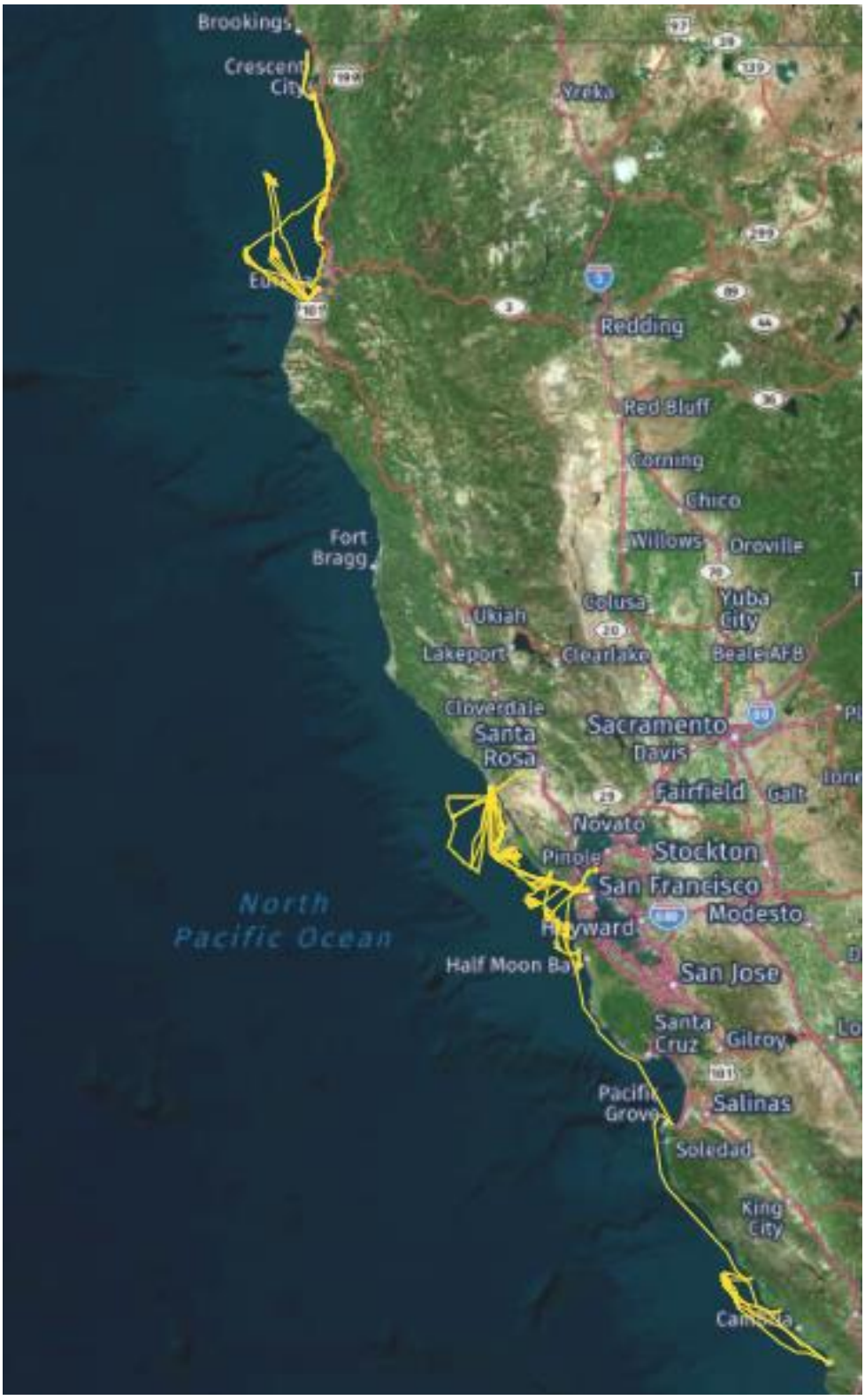

Figure 10. Fishing trips from April 8 – 25, 2021 for the entire California coast where vessels may be participating.

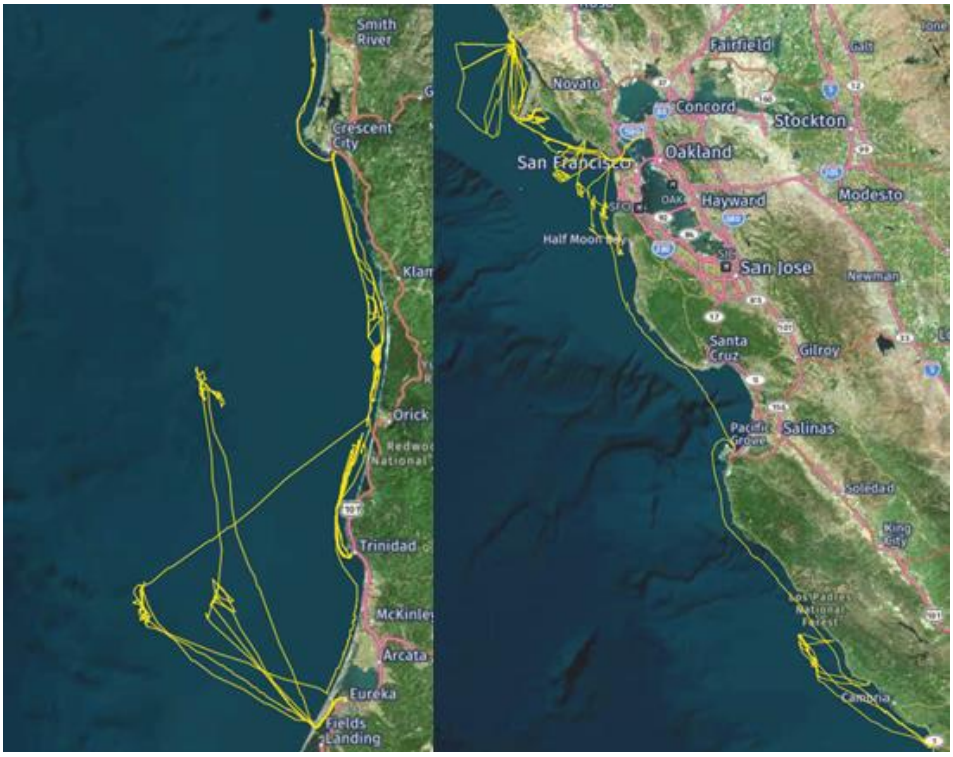

Figure 11. Fishing trips where vessels may be participating in the fishery from April 8 – 25, 2021. The map on the left shows vessel activity in Fishing Zone 1 while the map on the right shows vessel activity in Fishing Zones 3 and 5.

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

Data provided by: Jarrod Santora and Isaac Schroeder (NMFS SWFSC and UC Santa Cruz)
https://www.integratedecosystemassessment.noaa.gov/regions/california-current/cc-projects-whale-entanglement

Forage Indices (*All Fishing Zones*)

- Krill abundance (higher offshore in the outer slope) is also anticipated to be closer to average while anchovy is still considered to be above average, given the historical record.

Section 132.8(d)(9): Ocean conditions

ENSO prediction accessed from NOAA's Climate Prediction Center website *on April 26, 2021,*
Data provided by: Jarrod Santora and Isaac Schroeder (NMFS SWFSC and UC Santa Cruz)

El Nino/Southern Oscillation (ENSO) Alert System Status (*All Fishing Zones*)

- The prediction of ENSO conditions were last updated on April 8, 2021. La Niña conditions persisted in March with an 80% chance of a transition from this condition to ENSO-neutral during May - July 2021.

Habitat Compression Index (*All Fishing Zones*)

- Please refer to the April 13, 2021 Available Data package for the latest information on the Habitat Compression Index.

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

Data provided by: California Department of Fish and Wildlife

- Pursuant to the Risk Assessment and Mitigation Program (Section 132.8, Title 14, CCR), Impact Score Calculations will be assigned beginning with the 2021 calendar year based on confirmed entanglements of Actionable Species (Humpback whales, Blue whales, or Leatherback Sea Turtles) reported to CDFW by NOAA. As described in Section 132.8(c)(1) above, one confirmed entanglement of a Humpback whale in unidentified gear has been reported for the current calendar year. Therefore, the Impact Score Calculation for Humpback whales is 0.38 and 0 for both Blue whales and Pacific Leatherback sea turtles.

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), Cascadia Research, SR3, The Marine Mammal Center, Kathi George (The Marine Mammal Center), Karen Grimmer (Monterey Bay National Marine Sanctuary) and Jaime Jahncke (Point Blue Conservation Science), Jon Gonzalez (California Coast Crab Association), NOAA

WhaleWatch 2.0 *(All Fishing Zones)*

- WhaleWatch habitat predictions for April 25, 2021 indicate that probability of Blue whale - presence is low in Fishing Zones 1-5 and medium-high in Fishing Zone 6 (Figure 12).

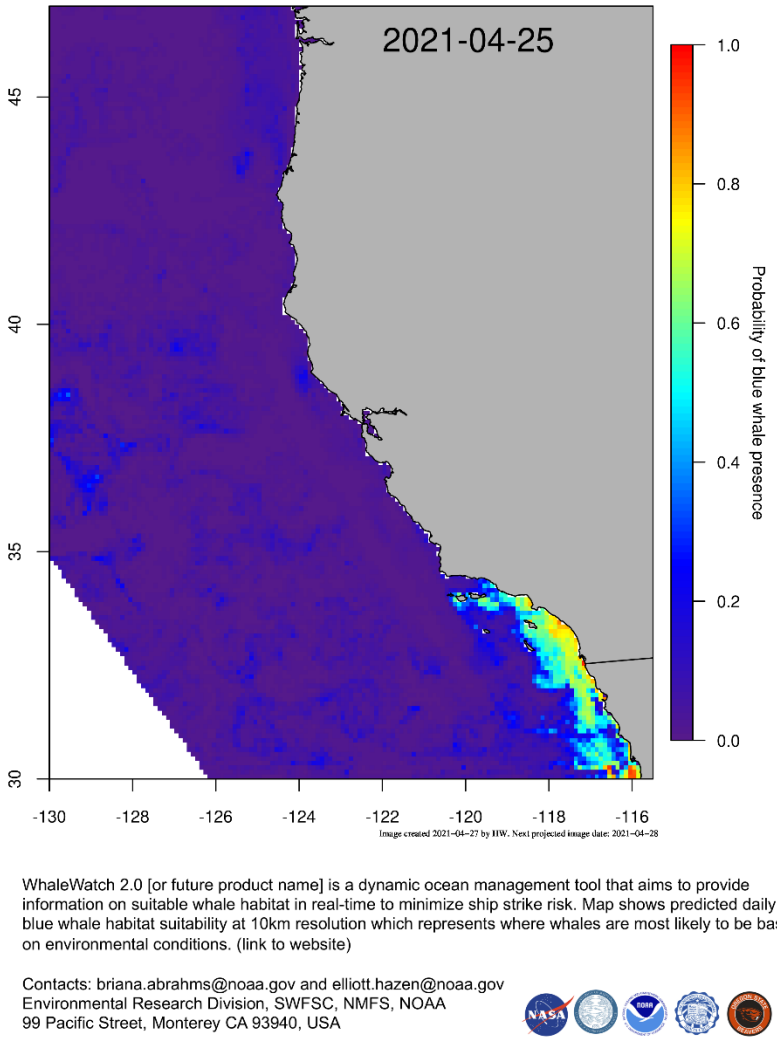

Figure 12. WhaleWatch 2.0 map for April 25, 2021. View a current map.

Cascadia Research, SR3, The Marine Mammal Center *(Fishing Zones 3 and 4)*

- A total of twenty-two animals observed over 4 survey days conducted between April 12-16, 2021 across Fishing Zones 3 and 4 and mostly along the deeper transect line, suggest that animals are beginning to arrive.
- A total of nine Humpback whales was observed on April 26, 2021 in Fishing Zone 4. A concentration of some of these animals along with a Blue whale and Fin whales were observed feeding on krill just off the 70-m line.

Solar Loggers *(Fishing Zone 4)*

- Track lines from whale watching vessels participating in the solar logger pilot project (Figure 13) indicate more widespread effort across Monterey Bay during 78 trips conducted between April 8-25, 2021. A summary of cumulative whale watching trips every one and two weeks since January 1, 2021 is provided in Table 4.

Table 4. Summary of whale watching trips based on data provided by the solar logger project between different time periods from January 1, 2021 until April 7, 2021.

Time Periods	Whale Watching Trips
April 8-25, 2021	78
March 29 – April 7, 2021	6
March 10-28, 2021	46
March 1-9, 2021	21
February 10-28, 2021	38
February 1-9, 2021	15
January 16-31, 2021	19
January 1-15, 2021	28

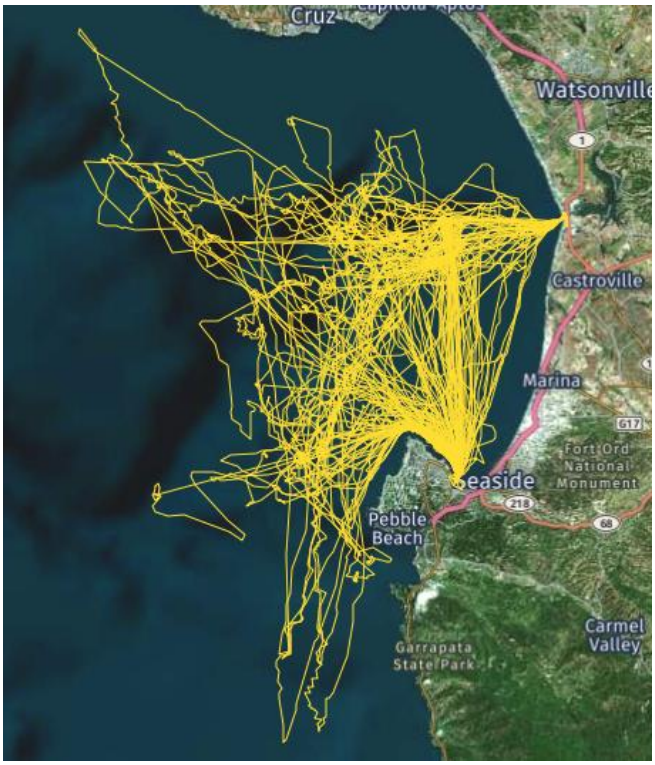

Figure 13. Track lines for 78 whale watch trips in Monterey Bay from April 8-25, 2021. Sightings, numbers and species are not reflected on this map.

Point Blue Conservation Science Data Portal *(Fishing Zones 3, 4 and 6)*

- The Greater Farallones National Marine Sanctuary (through the Spotter/Whale Alert app) has observed five Humpback whales in Fishing Zone 3 from April 19-26, 2021 (Figure 14). No Blue whales have been observed. Observations were recorded by trained observers on the Farallon Islands.
- Monterey Bay National Marine Sanctuary has observed seven Humpback whales from April 19-26, 2021 (Figure 15). No Blue whales have been sighted during the past month. Observations were reported from trained naturalists aboard Monterey Bay Whale Watch and Secret Harbors Charter.
- Channel Islands National Marine Sanctuary observed 23 Humpback whales from April 19-26, 2021, and no Blue whales in Fishing Zone 6 (Figure 16). These observations are conducted by trained naturalists from the Channel Islands National Marine Sanctuary and National Park Service.

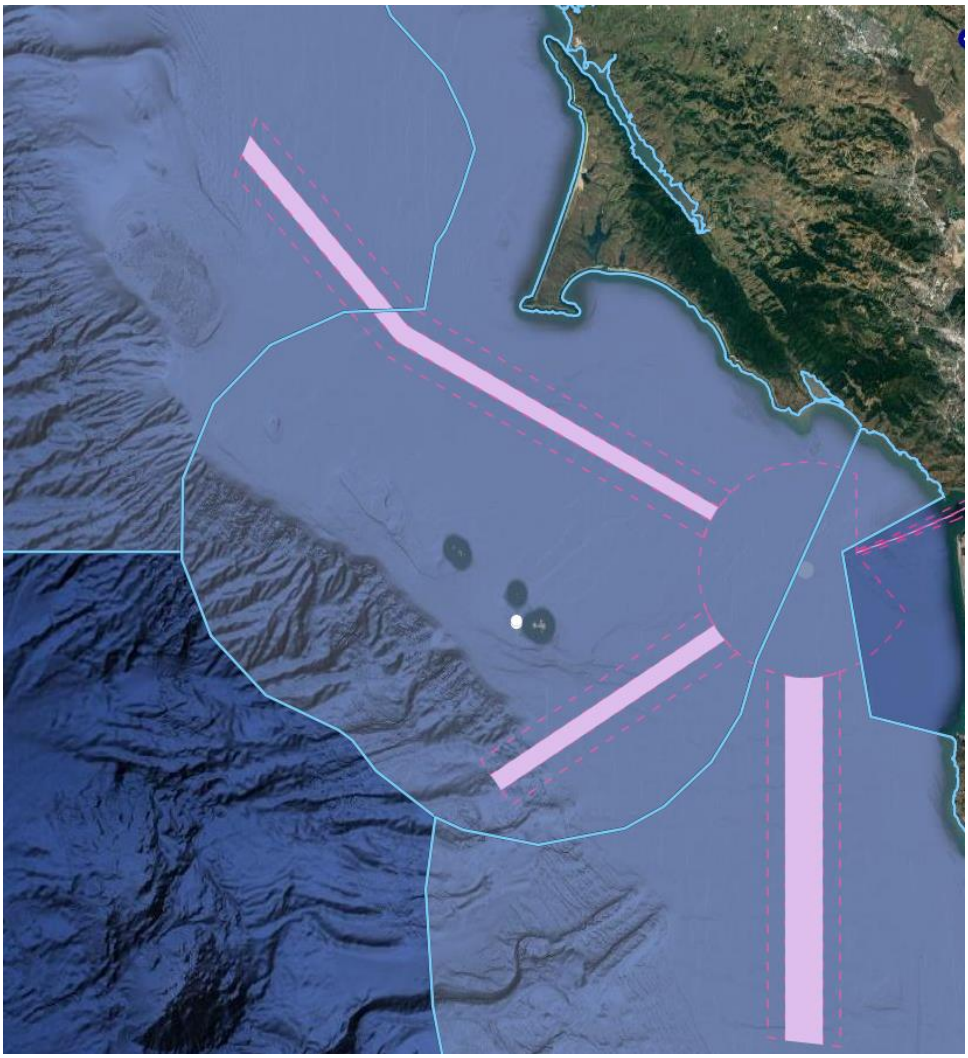

Figure 14. Location of five Humpback whale sightings in Fishing Zone 3 from April 19-26, 2021. Reporting locations are represented by white circles. A given report may or may not represent multiple individuals.

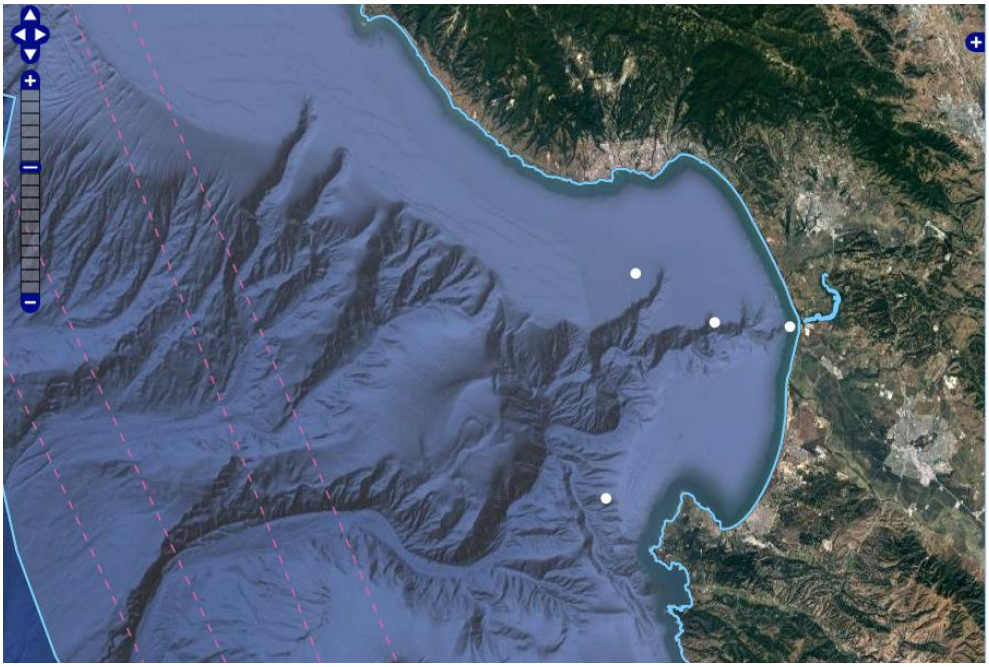

Figure 15. Location of seven Humpback whale sightings in Fishing Zone 4 from April 19-26, 2021. Reporting locations are represented by white circles. A given report may or may not represent multiple individuals.

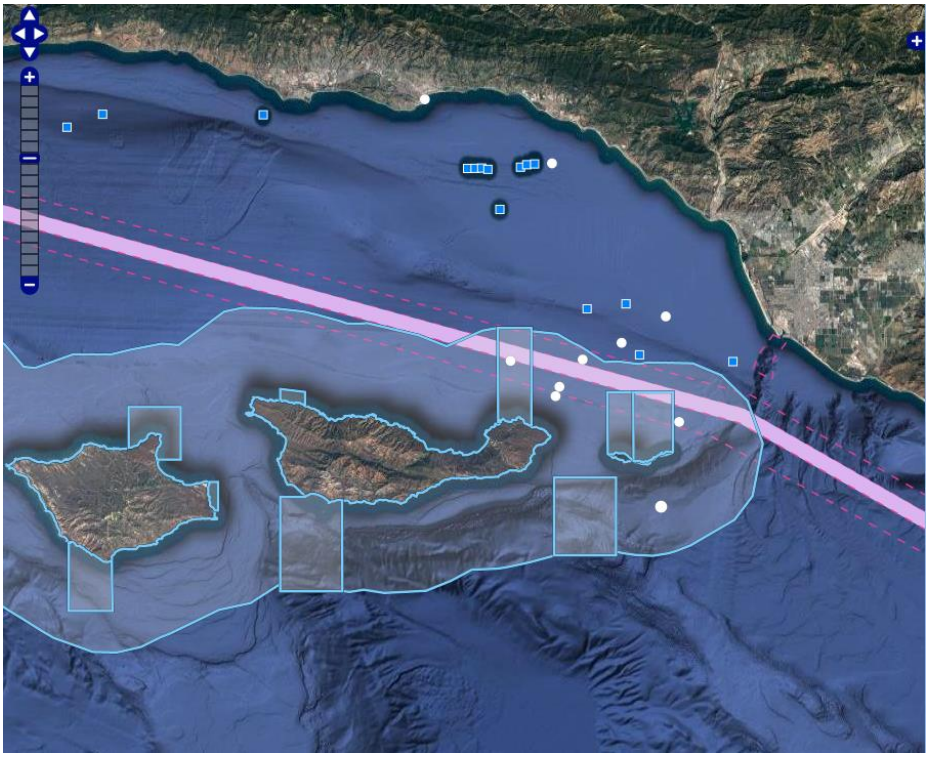

Figure 16. Location of 23 Humpback whale sightings in Fishing Zone 6 from April 19-26, 2021. Reporting locations are represented by white circles. A given report may or may not represent multiple individuals.

California Coast Crab Association *(Fishing Zones 1 and 5)*

- Vessel-based surveys conducted in Fishing Zone 1 from Dungeness crab commercial vessels occurred on April 26, 2021 (Figure 17). Weather conditions were amenable with 6 miles to unlimited miles of visibility and 3- to 5-foot swells. Fifty-one Humpback whales were sighted with large numbers observed near Reading Rock breaching and blowing as far as you could see and mostly heading north. The depth range of these observations occurred between the 30- to 45-fathom contour. It was difficult to count all animals in that area. Four Gray whales and 16 unknown whales were also observed.
- Vessel-based surveys conducted in Fishing Zone 5 from Dungeness crab commercial vessels occurred on April 23, 2021 (Figure 18). Weather conditions were amenable with 5-10 miles of visibility and 2- to 4-foot swells. A group of six Humpback whales were observed feeding out in front of Morro Bay in 45 fathoms on the way to the first transect waypoint. Two sightings of unidentified whales were also observed with no other marine life or forage around.

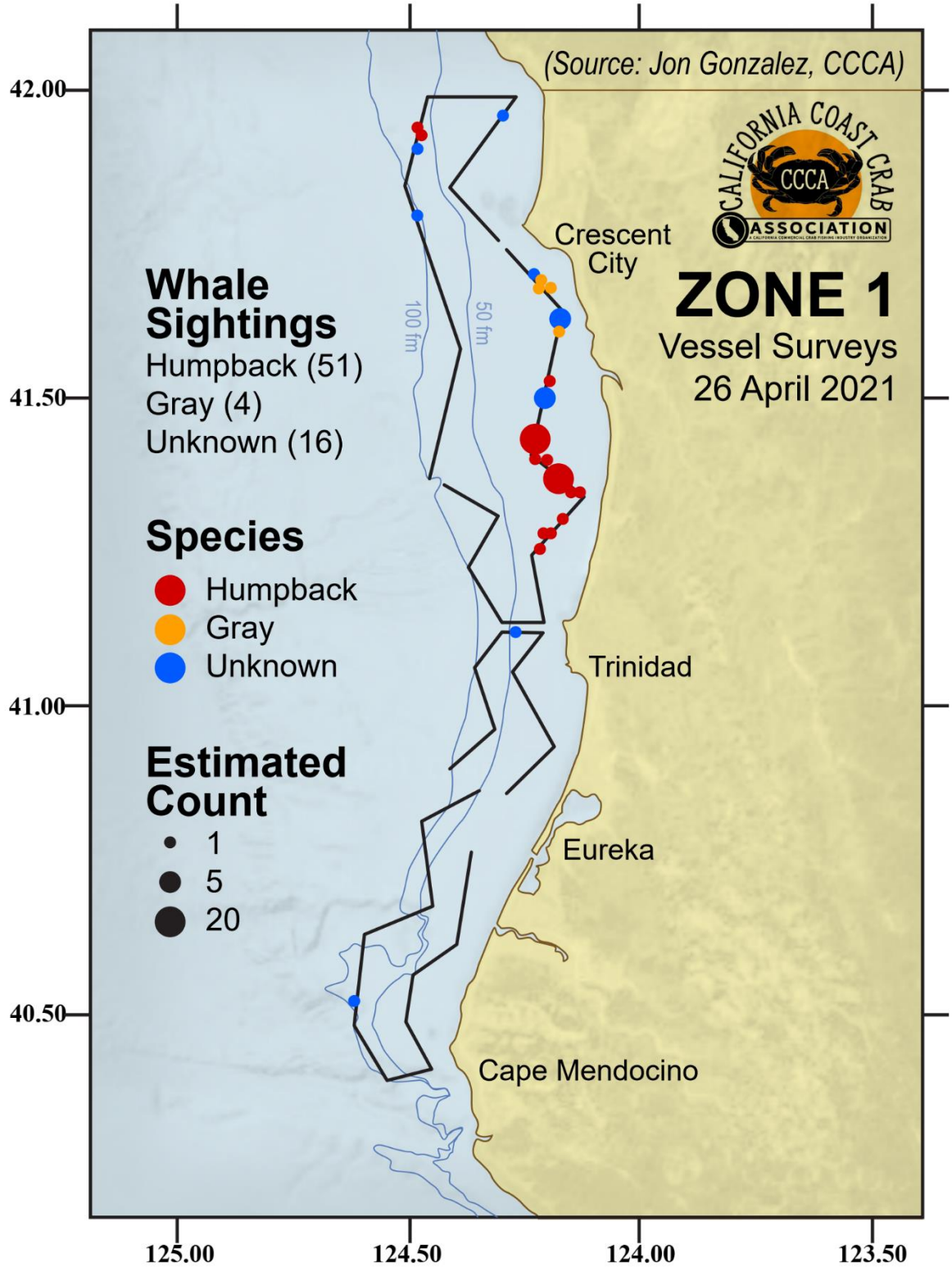

Figure 17. Vessel-based surveys conducted in Fishing Zone 1 on April 26, 2021 showing vessel path and whale observations.

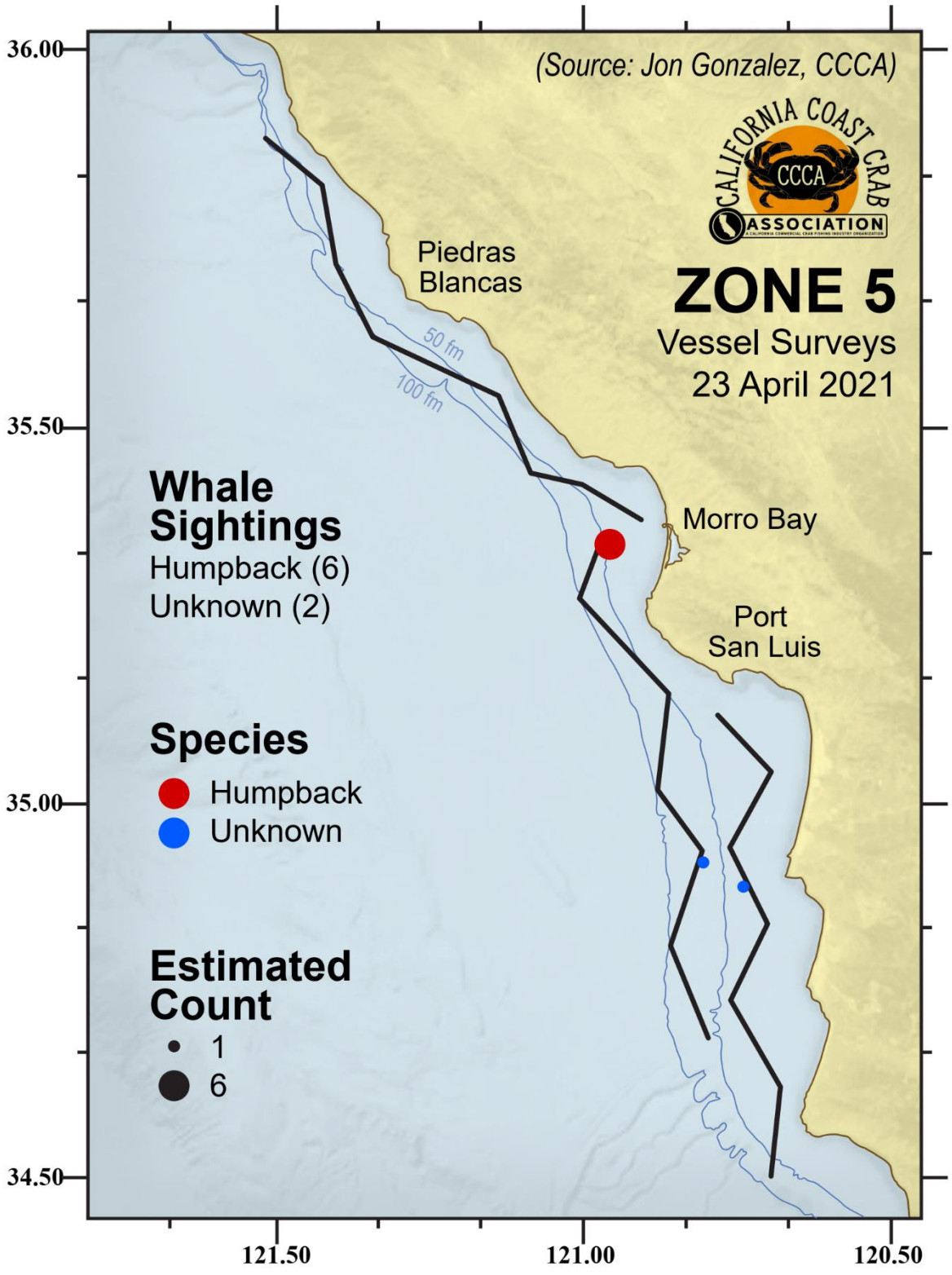

Figure 18. Vessel-based surveys conducted in Fishing Zone 5 on April 23, 2021 showing vessel path and whale observations.

NOAA Research Cruise *(Fishing Zone 1)*

- NOAA observed over 50 Humpback whales in depths of 30 – 55 fathoms, with some animals deeper and shallower.