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DEPARTMENT OF FISH AND WILDLIFE
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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
DECLARATION OF FLEET ADVISORY
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 February 17, 2022, 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 February 11, 2022. Prior to this risk assessment and management response, I considered relevant information provided to my staff. The Working Group met on February 15, 2022 to discuss the risk assessment but did not provide a written recommendation.

II

On January 27, 2022, a humpback whale was confirmed entangled in unidentified fishing gear off Cypress Point in Monterey. Pursuant to Section 132.8(c)(1)(B) I must implement a Fishing Zone closure or other 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 [Actionable Species] 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:

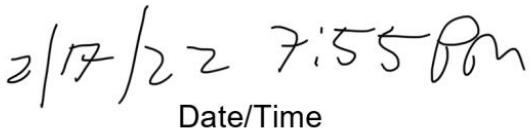
1. Fleet Advisory for the commercial Dungeness crab fishery in all Fishing Zones (Zones 1-6). The fishery is encouraged to report entangled whales to the United States Coast Guard or 1-877-SOS-WHALE and to review the Best Practices Guide during the season and when moving gear to a new Fishing Grounds.

This management action is in effect until lifted or modified. The next risk assessment is expected to occur on or around March 17, 2022.

Updates and material regarding future entanglement risk evaluations in the commercial Dungeness crab fishery will be made available on the Department's Whale Safe Fisheries web page.

web page.

Charlton H. Bonham, Director



Date/Time

ATTACHMENT TO DIRECTOR FEBRUARY 17, 2022, DECLARATION OF FISHERY FLEET 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 February 15, 2022, 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)

Confirmed Entanglements:

- **Fishing Zone 4:** January 27, 2021 – confirmed entanglement of humpback whale in unknown fishing gear off Cypress Point in Monterey

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 did not provide an alternative management recommendation.

2. **Information from NOAA**

   No additional information was made available for this risk assessment.

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

   Given the low abundance of humpback whales in the Fishing Grounds, it is not possible to identify an appropriate depth-based closure to reduce what is an already low co-occurrence risk. Similarly, a fishery closure or vertical line reduction is unnecessary given the low abundance of humpback whales and over all low entanglement risk. A Fleet Advisory is sufficiently protective of Actionable Species within the Fishing Grounds.

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. A Fleet Advisory will have the minimal to no impact on the fleet and fishing communities when compared to a Fishing Zone closure or a Depth Restriction.

5. **Data Availability Within and Across Fishing Zones**

Department aerial survey data are available for Fishing Zones 3 and 4, and Monterey Bay Whale Watch (MBWW) data are available for Fishing Zone 4.

6. Known Historic Marine Life Migration Patterns

Based on historic migration patterns, the Department expects a majority of humpback whales to still be located on breeding grounds off the coast off Mexico and Central America. This aligns with the available data from aerial surveys and MBWW.

7. Fishing Season Dynamics

Weekly total landing volume has decreased since the beginning of January, with the highest harvest coming from Fishing Zone 3, followed by Fishing Zone 1. So far, 67% of the total volume harvested for this season has been from Fishing Zone 1, with 29% from Fishing Zone 3 and less than five percent coming from each of the other Fishing Zones. Weekly vessel activity and number of landings has also declined since the beginning of January, with the highest activity in Bodega Bay, San Francisco, Crescent City, and Trinidad (Figure 4). Overall, 42% of the total volume harvested for this season has been landed into Crescent City, with 20% landed into Eureka, 11% each landed into San Francisco and Half Moon Bay, seven percent landed into Bodega Bay, six percent landed into Trinidad, and less than five percent landed into Fort Bragg, Monterey, and Morro Bay. Looking at vessel activity by port over the course of the season, the highest activity has been in Crescent City (82 vessels) and Eureka (67 vessels), followed by San Francisco (53 vessels), Half Moon Bay (53 vessels), and Bodega Bay (51 vessels; Figure 5). Vessels have also made landings into Fort Bragg (30), Trinidad (22), Monterey (14), and Morro Bay (3).

8. Known Distribution and Abundance of Key Forage

Numerous bait balls presumed to be schooling fish were observed during the Department's aerial survey.

9. Ocean Conditions

As of February 10, 2022 La Niña conditions are expected to continue into the Northern Hemisphere spring (77% change during March-May) and then transition to ENSO neutral (56% change during May-July). Due to cool SST conditions, the HCI is above average in the north and average in the central region (increasing thermal habitat area and low impact of compression nearshore). This trend is anticipated to continue through February and early March.

10. Current Impact Score Calculations

a. Fishing Season – 0.38

b. Calendar Year – 0.38

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

Based on Department aerial surveys and MBWW data, few whales are observed on the Fishing Grounds.

Chosen Management Action and Rationale

Based on the management considerations outlined above, the Director will implement a Fleet Advisory statewide (Fishing Zones 1-6).

The confirmed entanglement in unidentified fishing gear requires the Department to evaluate entanglement risk and take an appropriate management response. Based on the available information, a Fleet Advisory is protective of Humpback whales. Both aerial surveys and MBWW data show low numbers of humpback whales in the Fishing Grounds, which is consistent with historic migration patterns. Furthermore, fishery participation is decreasing, and it is anticipated that fishing effort will continue to decline into the spring months, reducing the likelihood of co-occurrence between commercial crab traps and Actionable Species. A Fleet Advisory will also alert fishery participants and other mariners to increase entanglement detection and the potential for an entanglement response team to disentangle the animal

Fishing Zone 4 reached a confirmed entanglement 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. Although no triggers for management action were met in Fishing Zones 1, 2, 3, 5, and 6, commercial fleets should still use caution when setting gear in those areas. 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 continues to remain low for any remaining Humpback whales in those Fishing Zones. The Department will also issue a press release to alert all fisheries and mariners to be on the look out for entangles whales and report them as quickly as possible.

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

Date: February 15, 2022

An initial assessment and preliminary recommendation were 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 February 14, 2022 and finalized at the conclusion of the Working Group meeting on February 15, 2022 based on discussions with the group.

A. Recommended Management Action(s)

Commercial Fishery
Fleet Advisory: Fishing Zones 1, 2, 3, 4, 5 and 6

CDFW Marine Region staff's final recommendation is that the Director issue a state-wide commercial Dungeness crab fishery Fleet Advisory for Fishing Zones 1-6 due to a confirmed entanglement of a humpback whale in unknown fishing gear off Cypress Point in Monterey on January 27, 2022 (Fishing Zone 4). Gear set type and location are unknown, but line type is consistent with gear used in the Dungeness crab trap fishery. The advisory would apply to the commercial fishery. However, the commercial fishing fleet and other vessels are encouraged to report any entangled whales so that a disentanglement response team can be mobilized to remove the gear. Reports can be made to 1-877-SOS-WHALE or contact the United Stated Coast Guard on VHF Channel 16. CDFW continues to encourage all fisheries to implement fishing best practices (e.g. by minimizing knots and line scope) and to review the Best Practices Guide during the season and when moving gear to new Fishing Grounds particularly given the entanglement event as noted above. A press release will also be issued to alert all fisheries and mariners to be on the lookout for entangled whales and report to the United States Coast Guard as quickly as possible.

Rationale: Based on available information on the entanglement event (reporting location and unidentified gear), it is appropriate to issue a state-wide Fleet Advisory due to risk of entanglement from Dungeness crab traps from the commercial fishery. Given historic migration patterns and low number of observed humpback whales, a Fleet Advisory will provide sufficient protection for Actionable Species given the time of year. This Fleet Advisory will also alert all mariners so that entanglement detection is increased, and an entanglement response can be coordinated to remove any gear from the entangled humpback whale and positively identify the responsible fishery. Monterey Bay Whale Watch observations show a weekly running average of 1.6 humpback whales and the CDFW aerial survey in Fishing Zones 3 and 4 only observed one humpback whale. In addition, it is anticipated that fishing effort will continue to decline into the spring months. Based on few observed whales, known

historic migration patterns and lower fishing effort a Fleet Advisory will be sufficiently protective of Actionable Species under RAMP.

CDFW will continue to monitor all available data to inform the next risk assessment (expected to occur on or around March 17, 2022).

Summary of RAMP triggers and Management Considerations analyzed during preparation of this Final Assessment and Final 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
- During the 2021 calendar year: 1 humpback whale

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
- During the 2021 calendar year: 3 humpback whales

Marine Life Concentration Surveys and/or Satellite Telemetry Observations:

- **Fishing Zone 1-6:** No Management Action triggers reached

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

- Fleet Advisory: given the unknown gear type involved in the entanglement, the reporting location and relatively low fishing effort by the commercial fishery within Fishing Zone 4 (where the entanglement was reported), a Fleet Advisory will sufficiently protect Actionable Species within the Fishing Grounds.

- Fishing Depth Constraint: given the low abundance of humpback whales in the Fishing Grounds, it is not possible to identify an appropriate depth-based closure which would reduce co-occurrence. Therefore, implementing a depth constraint would not be an effective management measure.

- Fishery Closures or Vertical Line Reductions: given the low abundance of humpback whales, would be overly restrictive given the low risk of entanglement. Historic migration patterns suggest most humpback whales have departed the fishing grounds and remain in their winter breeding areas. Combined with declining fishing effort, this

indicates low co-occurrence, and therefore low entanglement risk.

- Alternative Gear: cannot be authorized prior to April 1 and no gear is currently authorized for use.

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

- A Zone closure or Depth Restriction would have higher economic costs to the commercial fishery and given the overall entanglement risk is not warranted at this time.

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

- CDFW aerial survey data are available for Fishing Zones 3 and 4. MBWW data are available for Fishing Zone 4.

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

- Aerial surveys and MBWW indicate few humpbacks whales, which aligns with known historic migration patterns.

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

- Weekly total landing volume has decreased since the beginning of January, with the highest harvest coming from Fishing Zone 3, followed by Fishing Zone 1 (Available Data, Figure 3). So far, 67% of the total volume harvested for this season has been from Fishing Zone 1, with 29% from Fishing Zone 3 and less than five percent coming from each of the other Fishing Zones.

- Weekly vessel activity and number of landings has also declined since the beginning of January, with the highest activity in Bodega Bay, San Francisco, Crescent City, and Trinidad (Available Data, Figure 4). Overall, 42% of the total volume harvested for this season has been landed into Crescent City, with 20% landed into Eureka, 11% each landed into San Francisco and Half Moon Bay, seven percent landed into Bodega Bay, six percent landed into Trinidad, and less than five percent landed into Fort Bragg, Monterey, and Morro Bay.

- Looking at vessel activity by port over the course of the season, the highest activity has been in Crescent City (82 vessels) and Eureka (67 vessels), followed by San Francisco (53 vessels), Half Moon Bay (53 vessels), and Bodega Bay (51 vessels; Available Data, Figure 5). Vessels have also made landings into Fort Bragg (30), Trinidad (22), Monterey (14), and Morro Bay (3).

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

- Numerous bait balls (presumed to be schooling fish) were observed during the aerial survey.

- Current values and trends of the Habitat Compression Index (HCI) and North Pacific High (NPH) suggest an increase in cool thermal habitat area and an increase in krill abundance offshore (along the continental shelf). This translates into a lower likelihood of scarcity of krill for large whales. However, based on surveys conducted in 2021, the size of the anchovy population continues to be very high.

Section 132.8(d)(9): Ocean conditions

- As of February 10, 2022 La Niña conditions are expected to continue into the Northern Hemisphere spring (77% change during March-May) and then transition to ENSO-neutral (56% change during May-July).

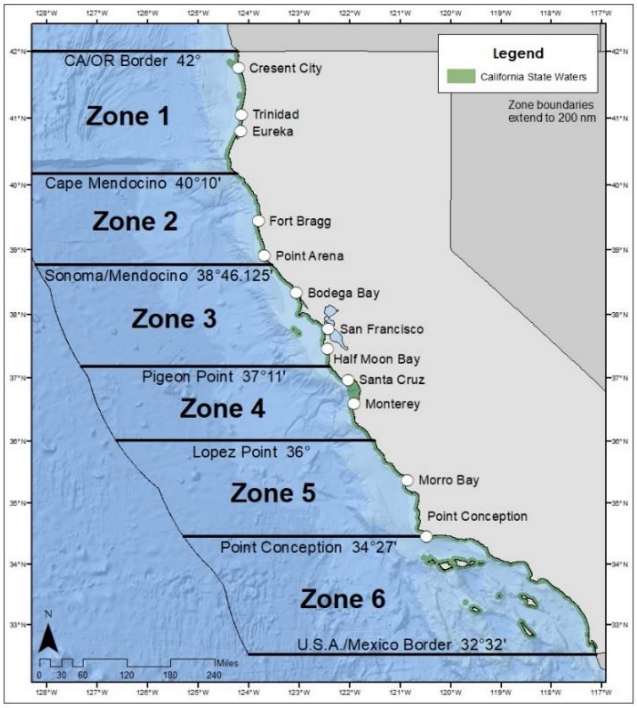
- Due to cool SST conditions, the HCI is above average in the north and average in the central region (increasing thermal habitat area and low impact of compression nearshore). This trend is anticipated to continue through February and early March.

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

- Impact score calculation under RAMP began on January 1, 2021. The 2021 calendar year impact score is 1.89 for humpback whales and 0 for blue whales and leatherback sea turtles. The current impact scores for 2022 are 0.38 for humpback whales and 0 for blue whales and leatherback sea turtles.

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

- Based on aerial survey data and MBWW data, few whales were observed on the Fishing Grounds.



RAMP Fishing Zone Boundaries

2021-22 Risk Assessment: Available Data

Last updated: ~~February 11, 2022~~ ~~February 14, 2022~~ February 15, 2022 (see Addendum)

Contents

Items with updated information are followed by an *.

TRIGGERS REQUIRING MANAGEMENT ACTION

Confirmed Entanglements: §132.8(c)(1)*

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

As of February 9, there has been one confirmed humpback whale entanglement, 0 confirmed blue whale entanglements, and 0 confirmed leatherback sea turtle entanglements reported to West Coast Region during 2022. The single confirmed humpback whale entanglement was reported 5 miles off Cypress Point in Monterey (Fishing Zone 4) in unidentified gear consisting of a red colored line and no visible buoy.

For Actionable Species entanglements reported to NMFS West Coast Region in 2021, see the January 12, 2022 Available Data document.

Table 1. Actionable Species Entanglements in 2022, prepared by West Coast Region.

Actionable Species	Number Confirmed Entanglements in California Commercial Dungeness Crab Gear	Number Confirmed Entanglements in Unknown Fishing Gear Reported off California
Humpback whales	0	1
Blue whales	0	0
Leatherback sea turtles	0	0

During 2021, there were no confirmed entanglements of either blue whales or leatherback sea turtles in California commercial Dungeness crab gear (reported from any location) or Unknown Fishing Gear (reported from California) during the current calendar year, so the cumulative Impact Score was 0 for these two species. There was a total of four confirmed humpback whale entanglements which CDFW reviewed and assigned an Impact Score (see the Current Impact Score Calculation section). All of these were reported prior to the start of the 2021-22 Dungeness crab season, and therefore do not count towards the current season Impact Score.

During 2022, there have been no confirmed entanglements of either blue whales or leatherback sea turtles in California commercial Dungeness crab gear (reported from any location) or Unknown Fishing Gear (reported from California), so the cumulative Impact Score for the current calendar year is 0 for these two species. CDFW will consider assigning an Impact Score after further review of available documentation. CDFW will also seek input from the Working Group prior to assigning an Impact Score.

Table 2. Impact Score Calculations based on Confirmed Entanglements in California commercial Dungeness crab gear and confirmed entanglements in Unknown Fishing Gear reported off California.

Actionable Species	Current Fishing Season Impact Score (2021-22)	Current Calendar Year Impact Score (2022)
Humpback whales	0	0 **but see above*
Blue whales	0	0
Leatherback sea turtles	0	0

Marine Life Concentrations: §132.8(c)(1)

Data provided by: Monterey Bay Whale Watch; processed by Karin Forney (NOAA Southwest Fisheries Science Center), California Department of Fish and Wildlife, Scott Benson (NOAA Southwest Fisheries Science Center, in collaboration with Upwell.org)

Table 3. Summary of available CDFW-approved survey data for marine life concentrations for each Fishing Zone, and whether the triggers established in Section 132.8(c)(2) have been met for any Fishing Zone.

Fishing Zone	CDFW-approved survey data	Triggers attained?
Zone 1	NA	No
Zone 2	NA	No
Zone 3	NA	No
Zone 4	MBWW	No
Zone 5	NA	No
Zone 6	NA	No

Monterey Bay Whale Watch *(Fishing Zone 4)**

- MBWW conducted whale-watching trips in southern Monterey Bay on five of seven days during the week of February 1 - 7, 2022.
- The average number of humpback whales-per-trip during the last seven days (February 1-7) was 1.6, with a peak of five whales observed on a single trip on February 5, 2022.
- No blue whales have been observed by MBWW since Nov 13, 2021, when one whale was documented.

CDFW Aerial Survey *(Fishing Zones TBD)*

CDFW intends to conduct an aerial survey on February 12, 2022. Survey findings will be shared during the Working Group meeting on February 15, 2022 and incorporated into an updated version of this document.

Leatherback Sea Turtle Telemetry *(All Fishing Zones)**

The adult male leatherback turtle that was captured approximately 3 miles northwest of Pillar Point (Half Moon Bay, CA) and tagged with a satellite-linked transmitter on October 16, 2021 is approximately 560 miles southeast of Hawaii. The turtle continues to move in a southwest direction.

MANAGEMENT CONSIDERATIONS

Information from NOAA: §132.8(d)(2)

No additional information was shared

Effectiveness of management measures: §132.8(d)(3)

Data provided by: California Department of Fish and Wildlife

CDFW's effectiveness evaluation for the management actions specified in §132.8(e) will be provided in the February 14, 2022 Initial Assessment.

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

Data provided by: California Department of Fish and Wildlife

The RAMP regulations specify that, when deciding amongst multiple management measures which would equivalently reduce entanglement risk, CDFW shall consider total economic impact to the fleet and fishing communities. CDFW will provide this evaluation in the February 14, 2022 Initial Assessment.

Historic patterns and current Actionable Species migration: §132.8(d)(6) and (11)*

Data provided by: Monterey Bay Whale Watch, processed by Karin Forney (NOAA Southwest Fisheries Science Center); Point Blue Conservation Science, NOAA Environmental Research Division

Monterey Bay Whale Watch *(Fishing Zone 4)*

- The semi-monthly average number of whales-per-half-day-trip during the first week of February is low, but slightly higher than historical patterns for this time of the year (Figure 1).
- The absence of blue whales since mid-November is consistent with their historical seasonal migration patterns to lower latitudes during winter.

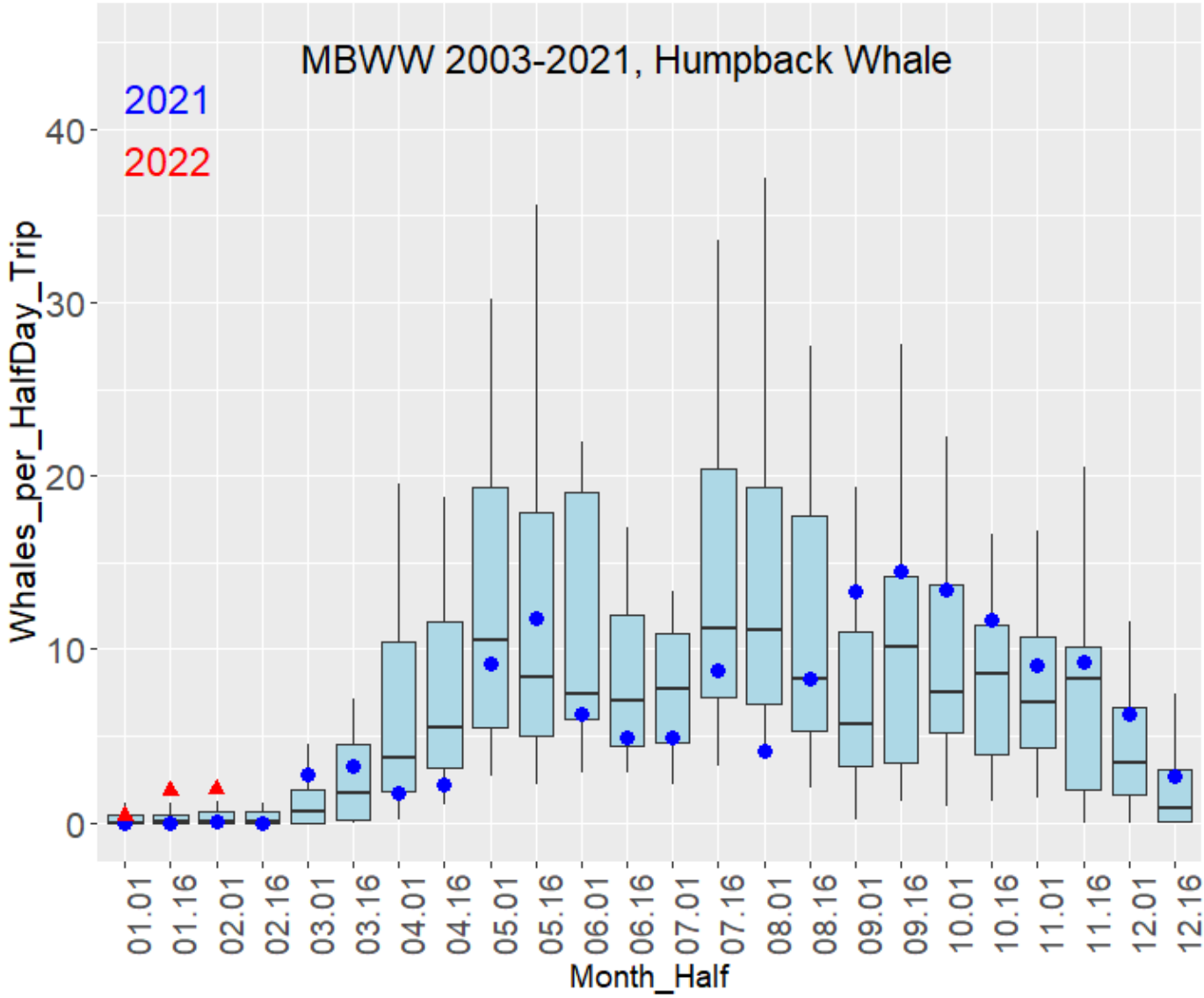


Figure 1. Historical Monterey Bay Whale Watch data for 2003-2022, summarizing the average and variation in the number of humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows

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 2021 (large blue dots) and 2022 (red triangles) and are provided for reference, placing recent whale numbers in a historical context.

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

During the seven-day period ending February 10, 2022 trained observers at the Farallon Islands did not report any humpback or blue whales within Fishing Zone 3, and trained naturalists aboard Monterey Bay Whale Watch and Marine Life Studies did not report any humpback or blue whales within Fishing Zone 4. 20 humpback whale sightings were reported within Fishing Zone 6 by trained naturalists from the Channel Islands National Marine Sanctuary and National Park Service. All sightings were reported between Santa Barbara/Ventura and the Channel Islands (Figure 2).

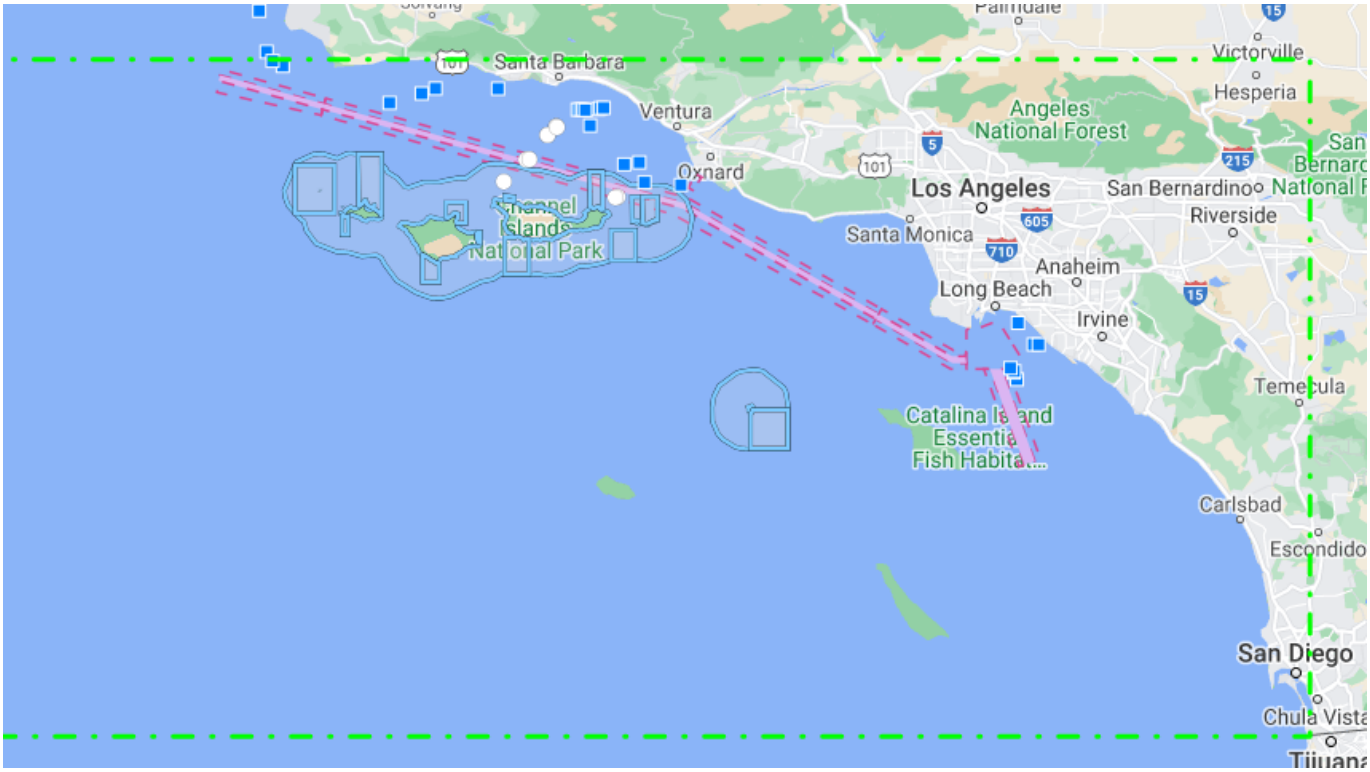


Figure 2. Locations of 20 humpback whale sightings within Fishing Zone 6. Reporting locations are represented by white circles. A given report may or may not represent multiple individuals. Fishing Zone boundaries are represented by the dashed green line.

Fishing Season dynamics: §132.8(d)(7)*

Data provided by: California Department of Fish and Wildlife

CDFW data presented in this section is preliminary and subject to revision.

Marine Landings Data System *(All Fishing Zones)*

Weekly total landing volume has decreased since the beginning of January, with the highest harvest coming from Fishing Zone 3, followed by Fishing Zone 1 (Figure 3). So far, 67% of the total volume harvested for this season has been from Fishing Zone 1, with 29% from Fishing Zone 3 and less than five percent coming from each of the other Fishing Zones.

Weekly vessel activity and number of landings has also declined since the beginning of January, with the highest activity in Bodega Bay, San Francisco, Crescent City, and Trinidad (Figure 4).

Overall, 42% of the total volume harvested for this season has been landed into Crescent City, with 20% landed into Eureka, 11% each landed into San Francisco and Half Moon Bay, seven percent landed into Bodega Bay, six percent landed into Trinidad, and less than five percent landed into Fort Bragg, Monterey, and Morro Bay.

Looking at vessel activity by port over the course of the season, the highest activity has been in Crescent City (82 vessels) and Eureka (67 vessels), followed by San Francisco (53 vessels), Half Moon Bay (53 vessels), and Bodega Bay (51 vessels; Figure 5). Vessels have also made landings into Fort Bragg (30), Trinidad (22), Monterey (14), and Morro Bay (3).

Unit price (price per pound) is generally trending upwards for Crescent City, Trinidad, Eureka, Bodega Bay, San Francisco, and Half Moon Bay, with more mixed trends in Fort Bragg and Monterey (Figure 6). The most variable pricing has been in Half Moon Bay, with high prices (> $10/lb) paid for some of the landings into Bodega Bay, San Francisco, Half Moon Bay, and Monterey.

Table 4. Summary of fleet dynamics information, as of February 10, 2022.

Metric	Value	Additional Info
Season status	Open statewide	Fleet Advisory was lifted for all Fishing Zones on January 18, 2022.
Number of daily landings	3,910	NA
Total volume (pounds)	9,462,403	NA
Total Ex-Vessel Value	$48,426,971	NA
Average unit price	$5.25	NA
Total number of active vessels	352	NA
Maximum potential traps (based on active permits)	117,075	Estimates are also provided in the Bi-Weekly Fishing Activity Reports subsection.

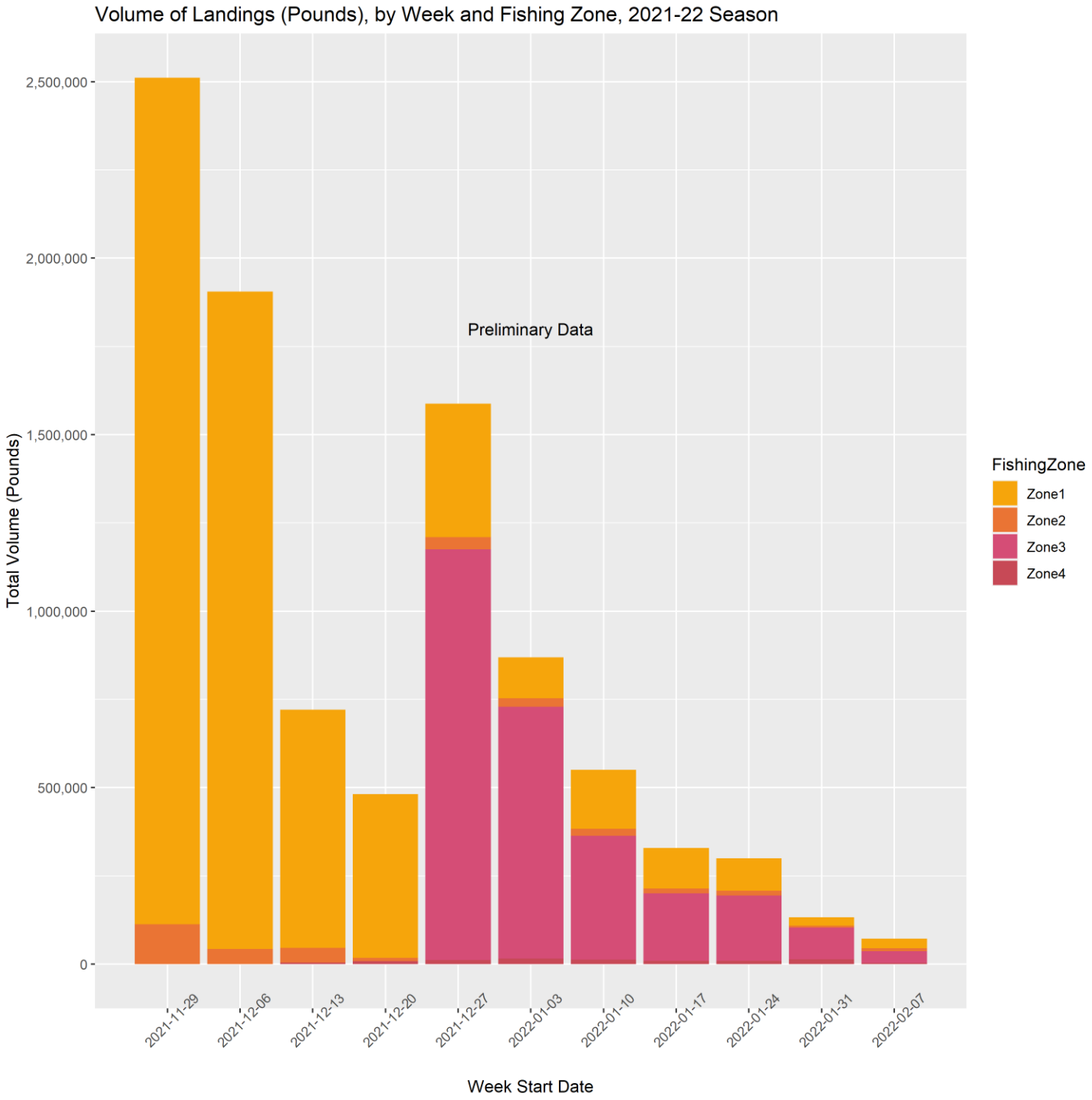


Figure 3. Cumulative volume (pounds) harvested by week and Fishing Zone. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, November 15, 2021. All data are preliminary and subject to change. Certain week*Fishing Zone combinations are withheld due to confidentiality constraints.

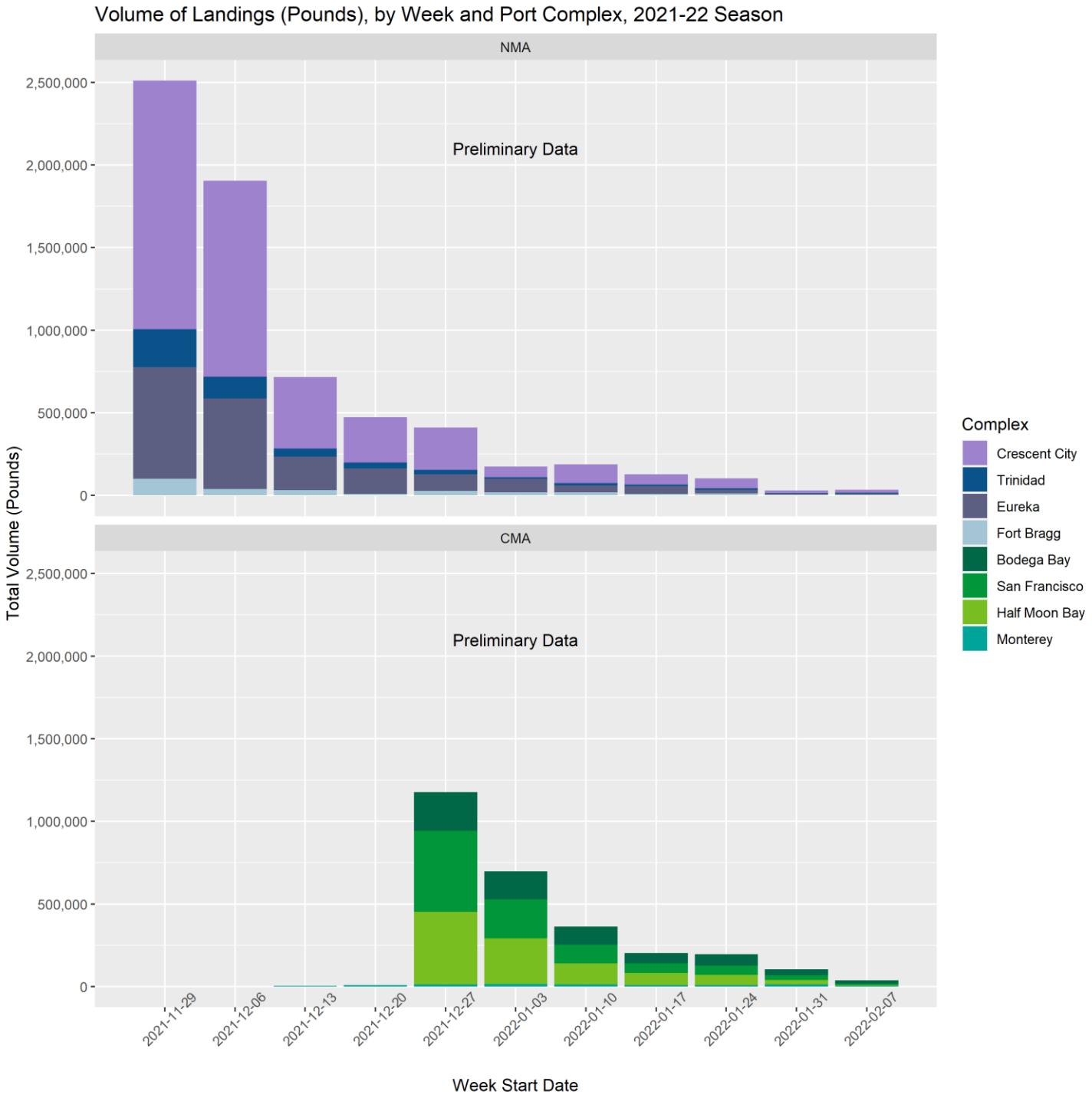


Figure 4. Cumulative volume (pounds) landed by week and port complex. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, November 15, 2021. All data are preliminary and subject to change. Certain week*port complex combinations are withheld due to confidentiality constraints.

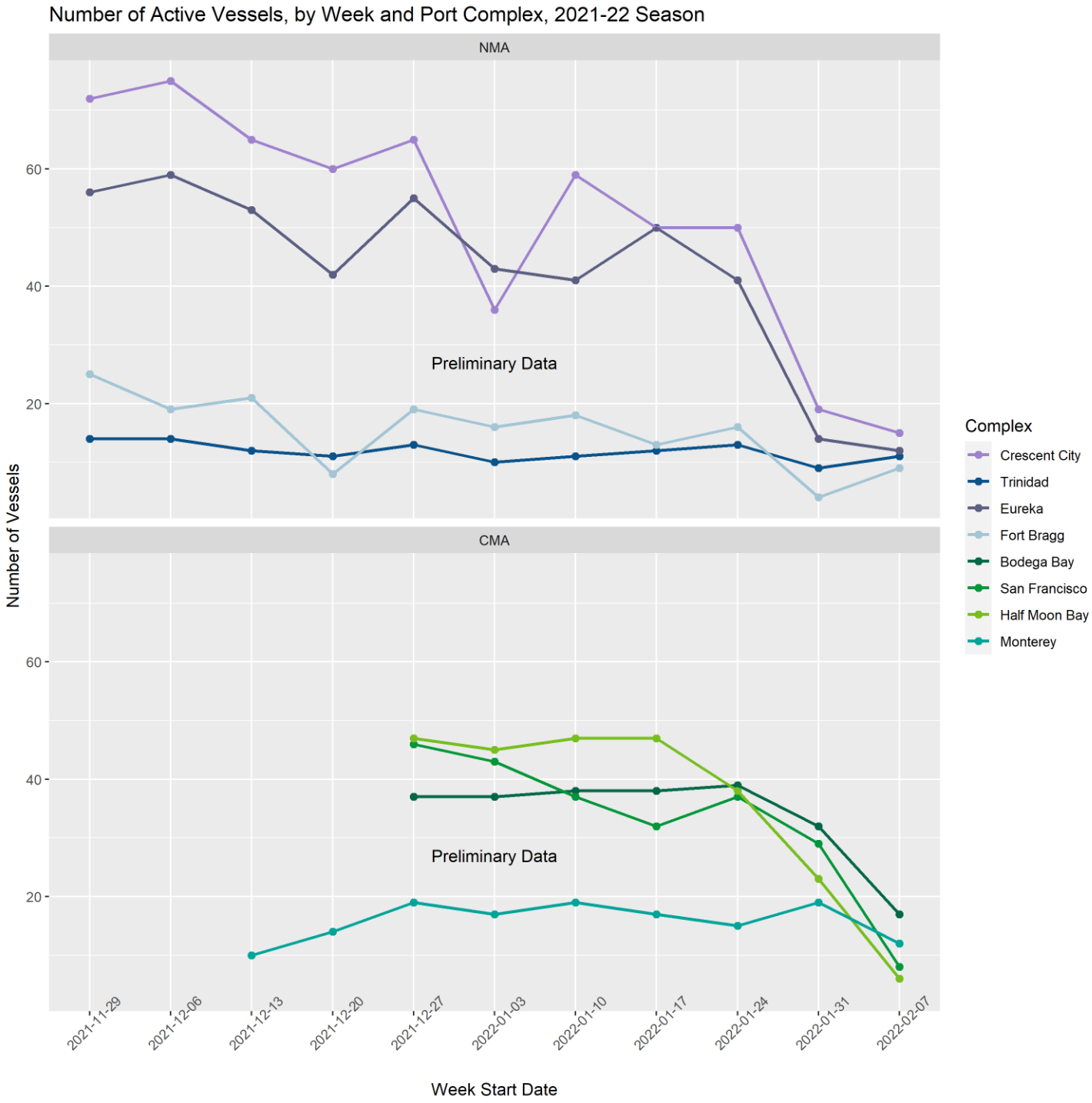


Figure 5. Number of active vessels by week and port complex. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, November 15, 2021. All data are preliminary and subject to change. Certain week*port complex combinations are withheld due to confidentiality constraints.

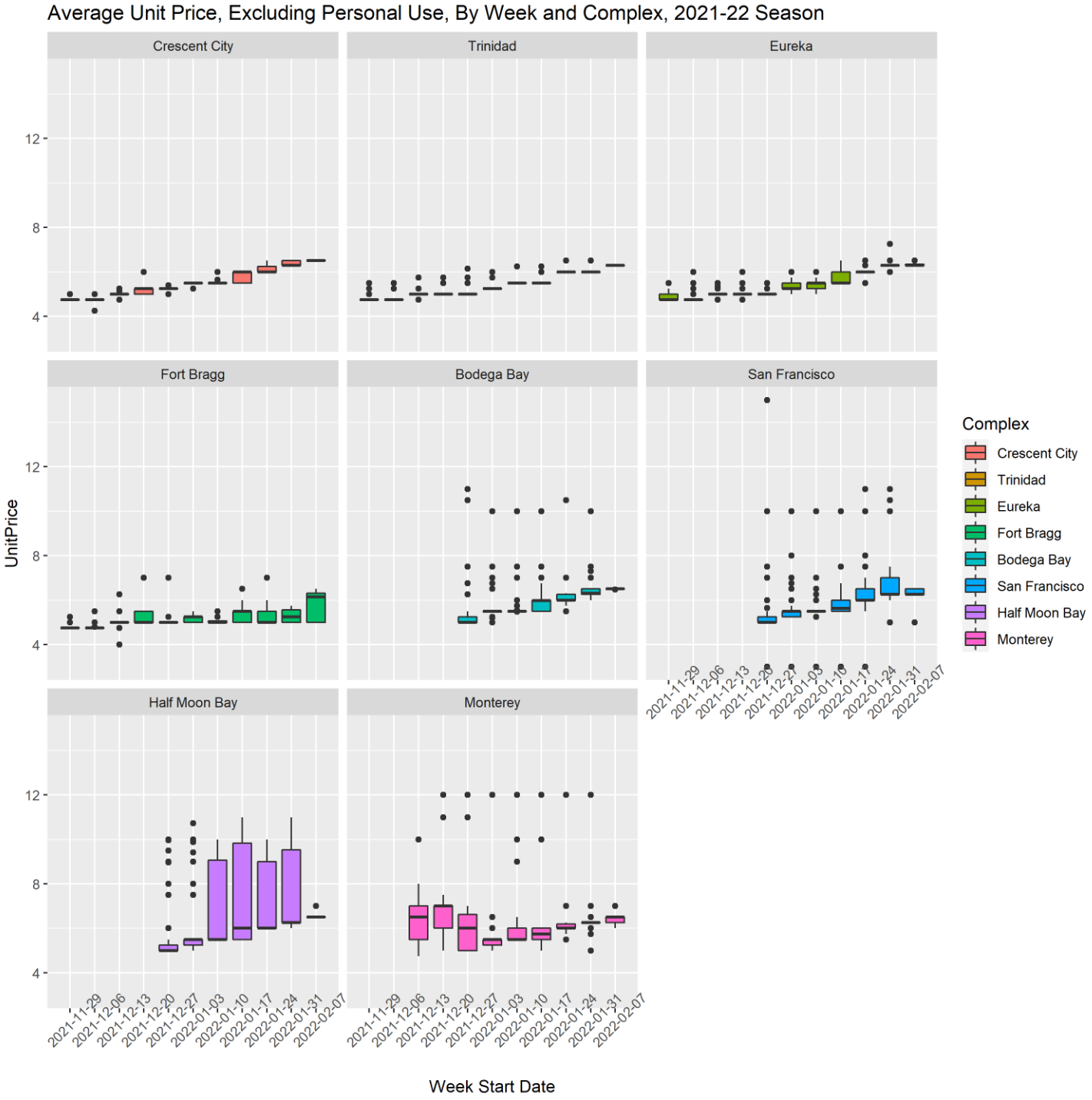


Figure 6. Mean unit price by week and port complex. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, November 15, 2021. All data are preliminary and subject to change. Certain week*port complex combinations are withheld due to confidentiality constraints.

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

- CDFW has received bi-weekly reports since the first reporting period of November 16, 2021 through the most recent reporting period of February 1, 2022. A summary of reports received for February 1, 2022 period is provided in Table 6; note this summary may not

reflect all permitted vessels participating in the fishery. In addition, a summary of traps by RAMP Zone over the five most recent reporting periods is provided in Table 7.

- The February 1, 2022 reporting period covers fishery participation from January 16-31, 2022. About 65,320 traps are estimated to be deployed statewide, with 47% of these located within Fishing Zone 3 and 43% of these located within Fishing Zone 1 (Table 5).

- Estimated deployed traps during the February 1, 2022 reporting period represents a decline of more than 25,000 since the season high which occurred during the January 1, 2022 reporting period (Table 6). The majority of gear removal has been from Fishing Zone 1.

Table 5. Summary of information provided for the January 16, 2022 bi-weekly reporting period by Fishing Zone (1-6). Accessed from CDFW's Bi-Weekly Reporting database on February 8, 2022. CONFID refers to data withheld due to confidentiality and all data are preliminary and subject to change.

Fishing Zone	Permits Reporting	Avg. Trap Number	Total Traps	Avg. Min. Depth (fa.)	Avg. Max. Depth (fa.)	Max. Depth (fa.)	Final Report	Number of Lost Traps
Zone 1	129	359	45,898	13	33	68	11	77
Zone 2	32	222	6,215	14	30	55	5	39
Zone 3	120	281	33,139	21	42	83	5	13
Zone 4	21	182	3,828	24	51	90	0	NA
Zone 5	0	0	0	0	0	0	0	0
Zone 6	0	0	0	0	0	0	0	0
Totals	302	NA	89,080	NA	NA	NA	21	129

Table 6. Summary of information provided for the February 1, 2022 bi-weekly reporting period by Fishing Zone (1-6). Accessed from CDFW's Bi-Weekly Reporting database on February 8, 2022. CONFID refers to data withheld due to confidentiality and all data are preliminary and subject to change.

Fishing Zone	Permits Reporting	Avg. Trap Number	Total Traps	Avg. Min. Depth (fa.)	Avg. Max. Depth (fa.)	Max. Depth (fa.)	Final Report	Number of Lost Traps
Zone 1	99	326	28,361	12	31	68	28	133
Zone 2	21	202	3,652	14	31	60	5	20
Zone 3	108	292	30,616	20	43	80	11	94
Zone 4	15	179	2,691	21	50	90	1	1
Zone 5	CONFID	CONFID	CONFID	CONFID	CONFID	CONFID	CONFID	CONFID
Zone 6	CONFID	CONFID	CONFID	CONFID	CONFID	CONFID	CONFID	CONFID
Totals	243	NA	65,320	NA	NA	NA	45	252

Table 7. Total reported traps deployed in each Fishing Zone for the most recent five bi-weekly reporting periods. CONFID refers to data withheld due to confidentiality and all data are preliminary and subject to change.

Fishing Zone	Dec 1 -Total Traps	Dec 16 -Total Traps	Jan 1 -Total Traps	Jan 16 -Total Traps	Feb 1 -Total Traps
Zone 1	30,074	48,625	46,736	45,898	28,361
Zone 2	3,763	7,294	6,606	6,215	3,652
Zone 3	Not open	Not open	33,664	33,139	30,616
Zone 4	Not open	544	3,529	3,828	2,691
Zone 5	CONFID	CONFID	0	0	CONFID
Zone 6	CONFID	0	0	0	CONFID
Totals	> 31,966	> 56,463	> 90,535	> 89,080	> 65,320

CDFW Aerial Survey

CDFW intends to conduct an aerial survey on February 12, 2022. Survey findings will be shared during the Working Group meeting on February 15, 2022 and incorporated into an updated version of this document.

Distribution and abundance of key forage: §132.8(d)(8)

Data provided by: California Department of Fish and Wildlife

CDFW Aerial Survey

CDFW intends to conduct an aerial survey on February 12, 2022. Survey findings will be shared during the Working Group meeting on February 15, 2022 and incorporated into an updated version of this document.

Ocean conditions: §132.8(d)(9)*

Data provided by: National Weather Service Climate Prediction Center, California Current Integrated Ecosystem Assessment Program

El Niño/Southern Oscillation Diagnostic Discussion

As of February 10, 2022 La Niña conditions are expected to continue into the Northern Hemisphere spring (77% change during March-May) and then transition to ENSO-neutral (56% change during May-July).

Habitat Compression Index

The most recent Habitat Compression Index values are for November 2021 (see the January 12, 2022 Available Data document). Compression was high in February from 2014-2019, but has been low or moderate during the last two years (Figure 7).

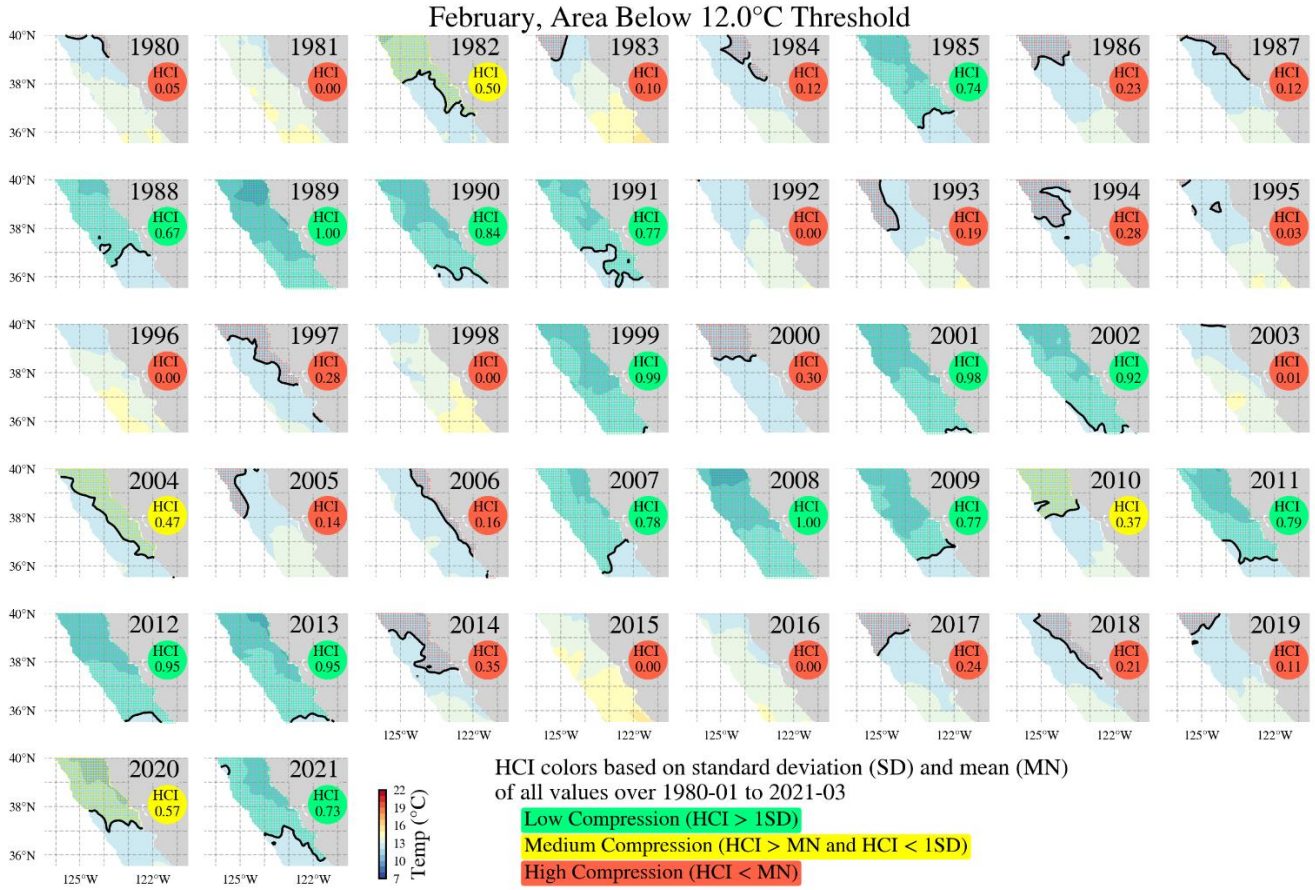


Figure 7. Maps of historical February sea surface temperature and location of the Habitat Compression Index boundary (thin black line) between 1980 and 2021.

Large Marine Heatwave Tracker

There has been little change in the position or intensity of the NEP21 large marine heatwave since the information shared in the January 12, 2022 Available Data document. Recent satellite imagery shows the heatwave remains offshore, with normal conditions present near the coast (Figure 8).

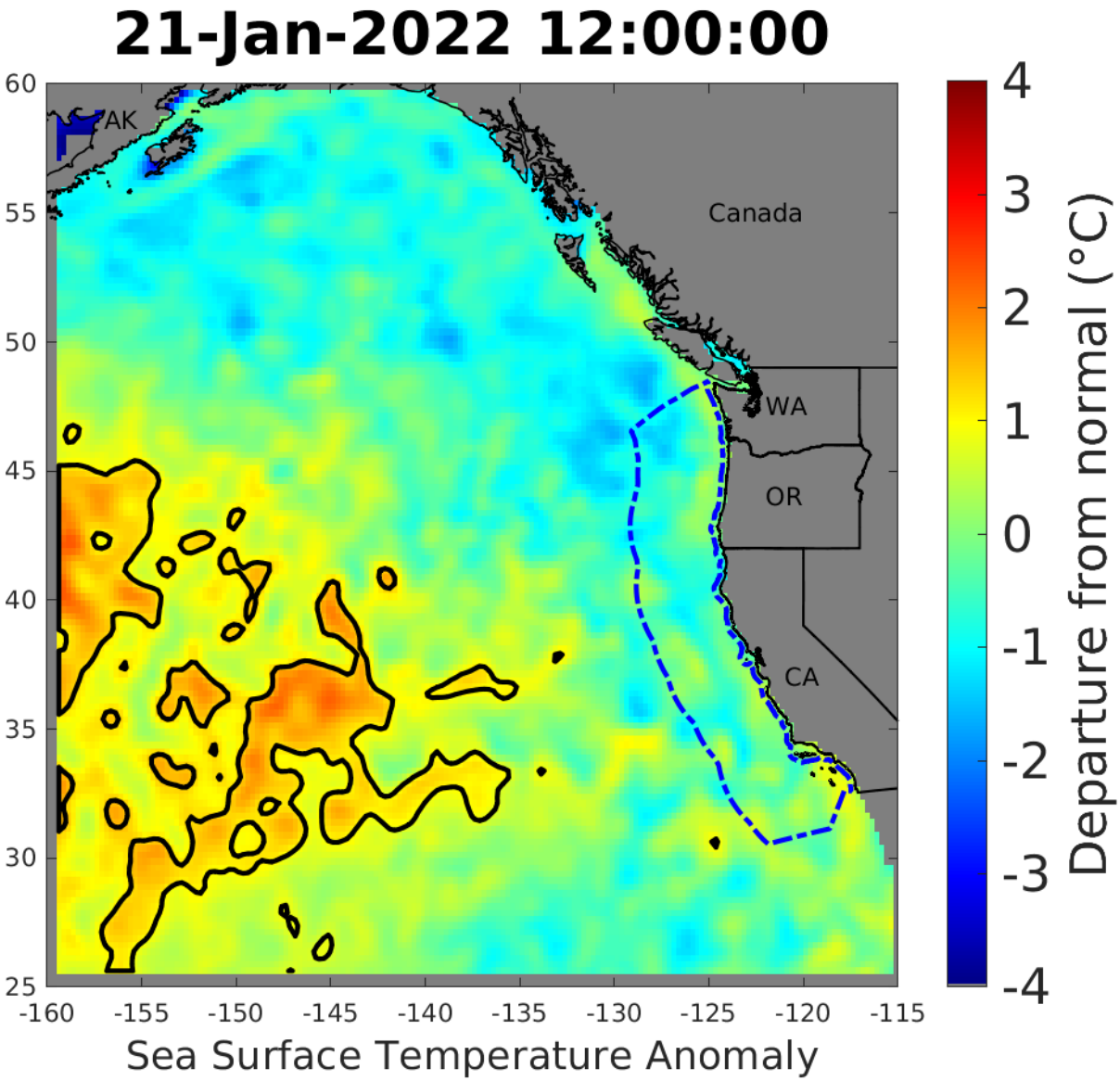


Figure 8. Science-quality (delayed 3-weeks), daily interpolated standardized sea surface temperature anomalies (SSTa) in the California Current ecosystem available for analysis of MHW presence. Dark outline shows the current extent of MHW conditions, as delineated by values of the normalized SST + 1.29 SD from normal. Blue dashed line represents the US West Coast EEZ. SST data from NOAA's Optimum interpolation Sea Surface Temperature analysis (OISST), with the SST anomaly calculated using climatology from NOAA's AVHRR-only OISST dataset.

Current Impact Score Calculation: §132.8(d)(10)*

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. Impact Score totals for the current fishing season (2021-22) and calendar year (2022) are provided in Table 2 (see above).

For 2021, after considering available information provided by NMFS and following discussion with the Working Group on April 13, 2021 and January 14, 2022, CDFW has made the following Impact Score assignments

- 20210403Mn: Unknown Fishing Gear, reported from Fishing Zone 6; Impact Score = 0.38
- 20210609Mn: California commercial Dungeness crab gear, reported from Mexico, gear from Fishing Zone 3; Impact Score = 0.75
- 20210713Mn: Unknown Fishing Gear, reported from Fishing Zone 6; Impact Score = 0.38
- 20210828Mn: Unknown Fishing Gear, reported from Fishing Zone 6; Impact Score = 0.38

This results in a total Impact Score of 1.89 for 2021.

Addendum: February 14, 2022

TRIGGERS REQUIRING MANAGEMENT ACTION

Marine Life Concentrations: §132.8(c)(1)

Data provided by: California Department of Fish and Wildlife

CDFW Aerial Survey *(Fishing Zones 3 and 4)*

On February 12, 2022 CDFW conducted an aerial survey along east-west transect lines between Point Pinos and Tomales Point covering nearshore waters out to 50 fathoms/100 m (with the exception of the Gulf of the Farallones, where transects go out to 30 fathoms/60 m; Figure 9). One humpback whale, three gray whales, and two unidentified whales were observed in Fishing Zone 3. No large whales were observed in Fishing Zone 4.

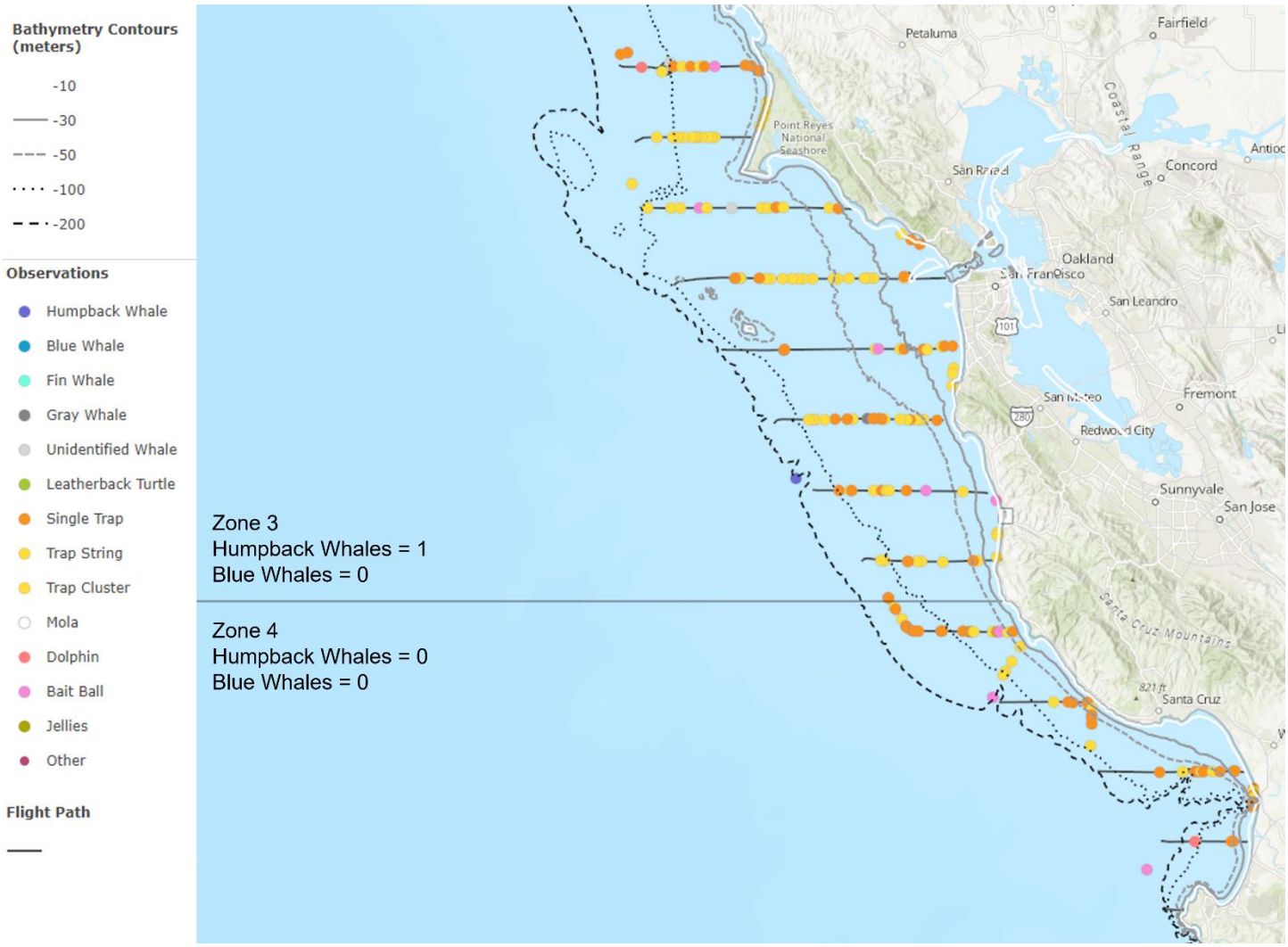


Figure 9. Map showing track lines and observations from CDFW aerial survey of Fishing Zones 3 and 4 on February 12, 2022. Survey information is overlaid onto contours showing the 10m, 30m, 50m, 100m, and 200m bathymetry line.

Fishing Season dynamics: §132.8(d)(7)*

Data provided by: California Department of Fish and Wildlife

CDFW Aerial Survey *(Fishing Zones 3 and 4)*

A total of 860 traps were observed throughout the study area (Figure 9), with an estimated total of 723 traps in Fishing Zone 3 and 137 traps in Fishing Zone 4. This is not an estimate of total traps deployed, only an observation of areas of high trap deployment. Areas of high deployment included Moss Landing, Half Moon Bay, Outer Golden Gate and around Point Reyes. Furthermore, it is not possible to determine how many of the observed traps are from the Dungeness crab fishery.

Distribution and abundance of key forage: §132.8(d)(8)

Data provided by: California Department of Fish and Wildlife

CDFW Aerial Survey *(Fishing Zones 3 and 4)*

Seven bait balls were observed in Fishing Zone 3, and 3 bait balls were observed in Fishing Zone 4 (Figure 9). Bait balls were observed across a broad range of depths in both Fishing Zones.

Addendum: February 15, 2022

TRIGGERS REQUIRING MANAGEMENT ACTION

Confirmed Entanglements: §132.8(c)(1)*

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

As of this risk assessment, CDFW considers the confirmed humpback whale entanglement reported in unidentified gear from Fishing Zone 4 (20220127Mn) to be an entanglement in Unknown Fishing Gear and has assigned an Impact Score of 0.38. CDFW will consider revising this Impact Score if additional information becomes available, including input from the Working Group.

Table 8. Impact Score Calculations based on Confirmed Entanglements in California commercial Dungeness crab gear and confirmed entanglements in Unknown Fishing Gear reported off California.

Actionable Species	Current Fishing Season Impact Score (2021-22)	Current Calendar Year Impact Score (2022)
Humpback whales	0.38	0.38
Blue whales	0	0
Leatherback sea turtles	0	0

MANAGEMENT CONSIDERATIONS

Distribution and abundance of key forage: §132.8(d)(8)

Data provided by: Jarrod Santora (NMFS Southwest Fisheries Science Center)

Current values and trends of the Habitat Compression Index (HCI) and North Pacific High (NPH) suggest an increase in cool thermal habitat area and an increase in krill abundance offshore (along the continental shelf). This translates into a lower likelihood of scarcity of krill for large whales. However, based on surveys conducted in 2021, the size of the anchovy population continues to be very high.

Ocean conditions: §132.8(d)(9)*

Data provided by: Jarrod Santora (NMFS Southwest Fisheries Science Center)

Habitat Compression Index

Due to cool SST conditions, the HCI is above average in the north and average in the central region (increasing thermal habitat area and low impact of compression nearshore). This trend is anticipated to continue through February and early March.

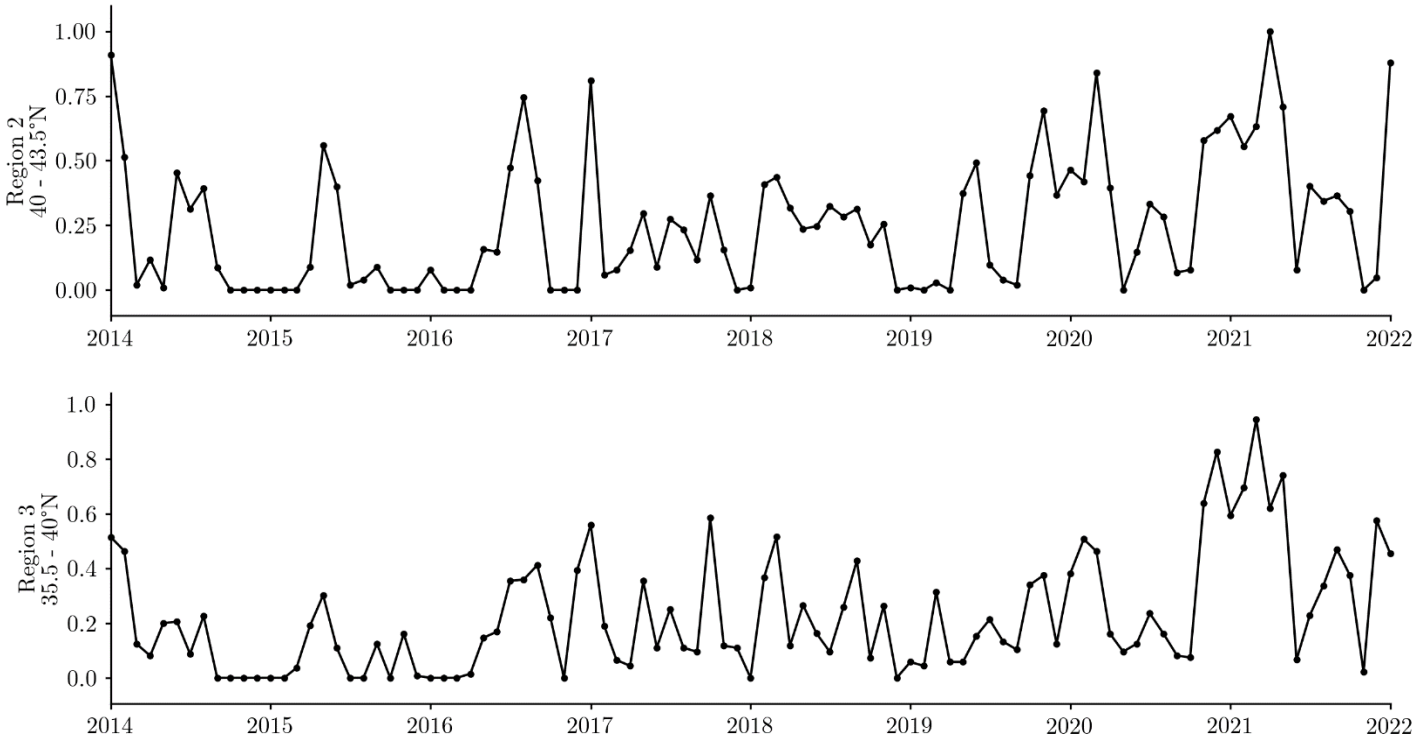


Figure 10. Time series of Habitat Compression Index values for Region 2 (40-43.5°N) and Region 3 (35.5-40 °N), 2014 - 2022.

North Pacific High

The January 2022 value for the NPH is average, but given recent atmospheric conditions, the NPH is likely to increase to above average through the end of February and early March.

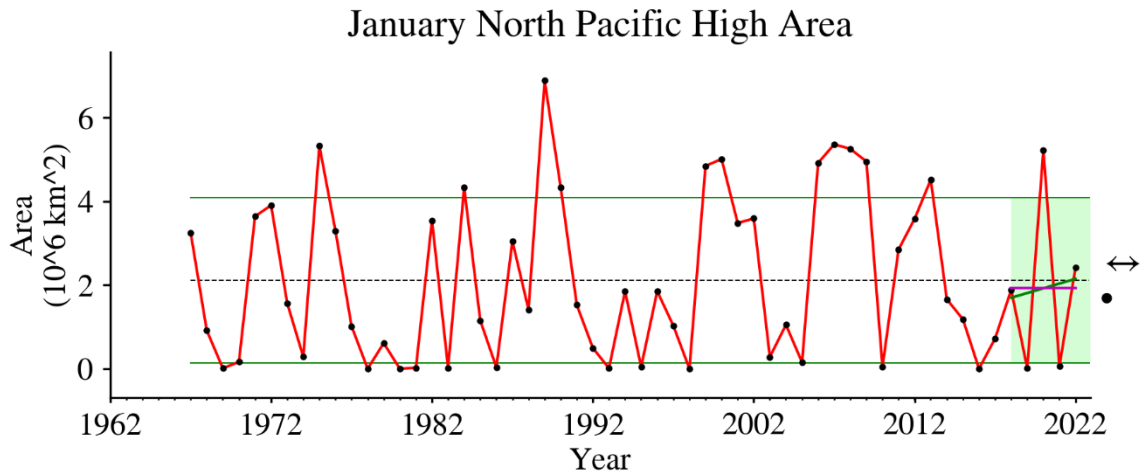


Figure 11. Time series of January North Pacific High values, 1967 - 2022.

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

Date: February 14, 2022

This initial assessment and preliminary management recommendation have been developed by California Department of Fish and Wildlife (CDFW) Marine Region staff based on the most recently available data 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. These data will also facilitate discussion regarding potential management actions the Director may take pursuant to Section 29.80, Title 14, CCR to address marine life entanglement risk in the recreational Dungeness crab fishery.

A. Recommended Management Action(s)

Commercial Fishery
Fleet Advisory: Fishing Zones 1, 2, 3, 4, 5 and 6

CDFW Marine Region staff's preliminary recommendation is that the Director issue a state-wide commercial Dungeness crab fishery Fleet Advisory for Fishing Zones 1-6 due to a confirmed entanglement of a humpback whale in unidentified fishing gear off Cypress Point in Monterey on January 27, 2022 (Zone 4). Gear set type and location are unknown, but line type is consistent with gear used in the Dungeness crab trap fishery. The advisory would apply to the commercial fishery. The commercial fishing fleet and other vessels are encouraged to report any entangled whales so that a disentanglement response team can be mobilized to remove the gear. Reports can be made to 1-877-SOS-WHALE or contact the United Stated Coast Guard on VHF Channel 16. CDFW continues to encourage all fisheries to implement fishing best practices (e.g. by minimizing knots and line scope) and to review the Best Practices Guide during the season and when moving gear to new Fishing Grounds particularly given the entanglement event as noted above. It is recommended that a press release be used to alert all fisheries and mariners to be on the look out for entangled whales and report to the United States Coast Guard as quickly as possible

Rationale: Based on available information on the entanglement event (reporting location and unidentified gear), it is appropriate to issue a state-wide Fleet Advisory due to risk of entanglement from Dungeness crab traps from the commercial fishery. Given historic migration patterns and low number of observed humpback whales a Fleet Advisory will provide sufficient protection for Actionable Species given the time of year. This Fleet Advisory will also alert all mariners so that entanglement detection is increased, and an entanglement response can be coordinated to remove any gear from the entangled humpback whale and positively identify the responsible fishery. Monterey Bay Whale Watch observations show a weekly running average of 1.6 humpback whales and the aerial survey in Zones 3 and 4 only observed one humpback whale. In addition, it is anticipated that fishing effort will continue to decline into the spring

months. Based on few observed whales, known historic migration patterns and lower fishing effort a Fleet Advisory will be sufficiently protective of Actionable Species under RAMP. CDFW will continue to monitor all available data to inform the next risk assessment (expected to occur on or around March 17, 2022).

Summary of RAMP triggers and Management Considerations analyzed during preparation of this Final Assessment and Final 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
- During the 2021 calendar year: 1 humpback whale

Confirmed Entanglements in Unknown Fishing Gear reported from California:

- During the current Fishing Season: 1 humpback whale (pending review)
- During the current calendar year: 1 humpback whale (pending review)
- During the 2021 calendar year: 3 humpback whales

Marine Life Concentration Surveys and/or Satellite Telemetry Observations:

- **Fishing Zone 1-6:** No Management Action triggers reached

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 unknown gear type involved in the entanglement, the reporting location and relatively low fishing effort by the commercial fishery within Zone 4 (where the entanglement was reported), a Fleet Advisory will be sufficiently protect Actionable Species within the Fishing Grounds.

- Fishing Depth Constraints: given the low abundance of humpback whales in the Fishing Grounds, it is not possible to identify an appropriate depth-based closure which would reduce co-occurrence. Therefore, implementing a depth constraint would not be an effective management measure.

- Fishery Closures or Vertical Line Reductions: given the low abundance of humpback whales, would be overly restrictive given the low risk of entanglement. Historic migration patterns suggest most humpback whales have departed the fishing grounds and remain in their winter breeding areas. Combined with declining fishing effort, this indicates low co-occurrence, and therefore low entanglement risk.

- Use of Alternative Gear cannot be authorized prior to April 1 and no gear is currently authorized for use.

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

- A Zone closure or Depth Restriction would have higher economic costs to the commercial fishery and given the overall entanglement risk is not warranted at this time.

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

- CDFW aerial survey data are available for Fishing Zones 3 and 4. MBWW data are available for Fishing Zone 4.

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

- Aerial surveys and MBWW indicate few humpbacks whales, which aligns with known historic migration patterns.

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

- Weekly total landing volume has decreased since the beginning of January, with the highest harvest coming from Fishing Zone 3, followed by Fishing Zone 1. So far, 67% of the total volume harvested for this season has been from Fishing Zone 1, with 29% from Fishing Zone 3 and less than five percent coming from each of the other Fishing Zones.

- Weekly vessel activity and number of landings has also declined since the beginning of January, with the highest activity in Bodega Bay, San Francisco, Crescent City, and Trinidad (Figure 4). Overall, 42% of the total volume harvested for this season has been landed into Crescent City, with 20% landed into Eureka, 11% each landed into San Francisco and Half Moon Bay, seven percent landed into Bodega Bay, six percent landed into Trinidad, and less than five percent landed into Fort Bragg, Monterey, and Morro Bay.

- Looking at vessel activity by port over the course of the season, the highest activity has been in Crescent City (82 vessels) and Eureka (67 vessels), followed by San Francisco (53 vessels), Half Moon Bay (53 vessels), and Bodega Bay (51 vessels; Figure 5). Vessels have also made landings into Fort Bragg (30), Trinidad (22), Monterey (14), and Morro Bay (3).

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

- Numerous bait balls (presumed to be schooling fish) were observed during the aerial survey.

Section 132.8(d)(9): Ocean conditions

- As of February 10, 2022 La Niña conditions are expected to continue into the Northern

Hemisphere spring (77% change during March-May) and then transition to ENSO-neutral (56% change during May-July).

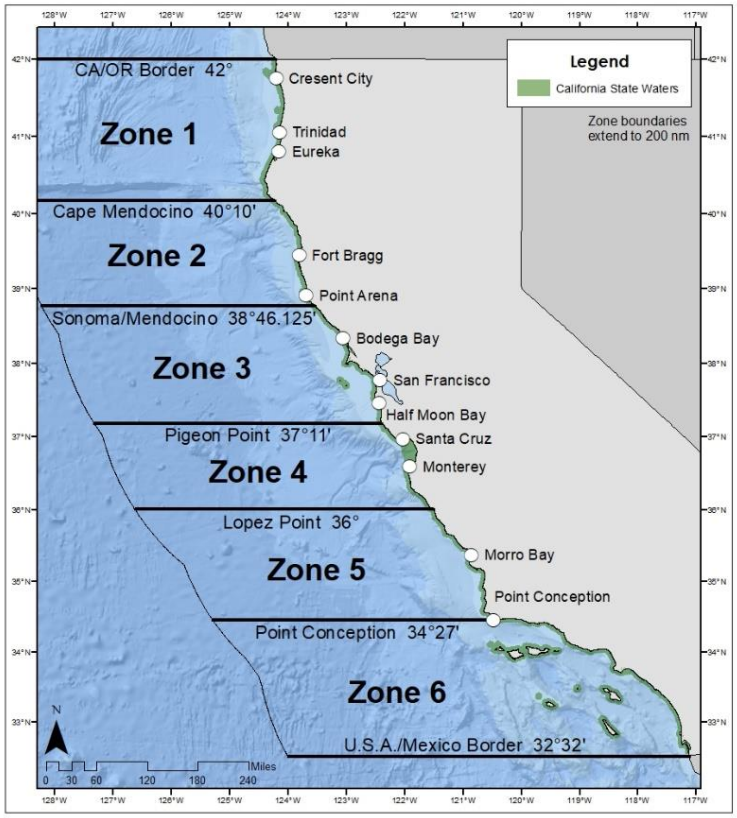
- The most recent Habitat Compression Index values are for November 2021 (see the January 12, 2022 Available Data document). Compression was high in February from 2014-2019, but has been low or moderate during the last two years.

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

- Impact score calculation under RAMP began on January 1, 2021. The 2021 calendar year impact score is 1.89 for humpback whales and 0 for blue whales and leatherback sea turtles. Impact scores for 2022 have not been updated as of this assessment.

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

- Based on aerial survey data and MBWW data, few whales were observed on the Fishing Grounds.



RAMP Fishing Zone Boundaries

2021-22 Risk Assessment: Available Data

Last updated: ~~February 11, 2022~~ February 14, 2022 (see Addendum)

Contents

Items with updated information are followed by an *.

TRIGGERS REQUIRING MANAGEMENT ACTION

Confirmed Entanglements: §132.8(c)(1)*

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

As of February 9, there has been one confirmed humpback whale entanglement, 0 confirmed blue whale entanglements, and 0 confirmed leatherback sea turtle entanglements reported to West Coast Region during 2022. The single confirmed humpback whale entanglement was reported 5 miles off Cypress Point in Monterey (Fishing Zone 4) in unidentified gear consisting of a red colored line and no visible buoy.

For Actionable Species entanglements reported to NMFS West Coast Region in 2021, see the January 12, 2022 Available Data document.

Table 1. Actionable Species Entanglements in 2022, prepared by West Coast Region.

Actionable Species	Number Confirmed Entanglements in California Commercial Dungeness Crab Gear	Number Confirmed Entanglements in Unknown Fishing Gear Reported off California
Humpback whales	0	1
Blue whales	0	0
Leatherback sea turtles	0	0

During 2021, there were no confirmed entanglements of either blue whales or leatherback sea turtles in California commercial Dungeness crab gear (reported from any location) or Unknown Fishing Gear (reported from California) during the current calendar year, so the cumulative Impact Score was 0 for these two species. There was a total of four confirmed humpback whale entanglements which CDFW reviewed and assigned an Impact Score (see the Current Impact Score Calculation section). All of these were reported prior to the start of the 2021-22 Dungeness crab season, and therefore do not count towards the current season Impact Score.

During 2022, there have been no confirmed entanglements of either blue whales or leatherback sea turtles in California commercial Dungeness crab gear (reported from any location) or Unknown Fishing Gear (reported from California), so the cumulative Impact Score for the current calendar year is 0 for these two species. There has been a single confirmed humpback whale entanglement reported in unidentified gear from Fishing Zone 4 (20220127Mn). CDFW will consider assigning an Impact Score after further review of available documentation. CDFW will also seek input from the Working Group prior to assigning an Impact Score.

Table 2. Impact Score Calculations based on Confirmed Entanglements in California commercial Dungeness crab gear and confirmed entanglements in Unknown Fishing Gear reported off California.

Actionable Species	Current Fishing Season Impact Score (2021-22)	Current Calendar Year Impact Score (2022)
Humpback whales	0	0 **but see above*
Blue whales	0	0
Leatherback sea turtles	0	0

Marine Life Concentrations: §132.8(c)(1)

Data provided by: Monterey Bay Whale Watch; processed by Karin Forney (NOAA Southwest Fisheries Science Center), California Department of Fish and Wildlife, Scott Benson (NOAA Southwest Fisheries Science Center, in collaboration with Upwell.org)

Table 3. Summary of available CDFW-approved survey data for marine life concentrations for each Fishing Zone, and whether the triggers established in Section 132.8(c)(2) have been met for any Fishing Zone.

Fishing Zone	CDFW-approved survey data	Triggers attained?
Zone 1	NA	No
Zone 2	NA	No
Zone 3	NA	No
Zone 4	MBWW	No
Zone 5	NA	No
Zone 6	NA	No

Monterey Bay Whale Watch *(Fishing Zone 4)**

- MBWW conducted whale-watching trips in southern Monterey Bay on five of seven days during the week of February 1 - 7, 2022.
- The average number of humpback whales-per-trip during the last seven days (February 1-7) was 1.6, with a peak of five whales observed on a single trip on February 5, 2022.
- No blue whales have been observed by MBWW since Nov 13, 2021, when one whale was documented.

CDFW Aerial Survey *(Fishing Zones TBD)*

CDFW intends to conduct an aerial survey on February 12, 2022. Survey findings will be shared during the Working Group meeting on February 15, 2022 and incorporated into an updated version of this document.

Leatherback Sea Turtle Telemetry *(All Fishing Zones)**

The adult male leatherback turtle that was captured approximately 3 miles northwest of Pillar Point (Half Moon Bay, CA) and tagged with a satellite-linked transmitter on October 16, 2021 is approximately 560 miles southeast of Hawaii. The turtle continues to move in a southwest direction.

MANAGEMENT CONSIDERATIONS

Information from NOAA: §132.8(d)(2)

No additional information was shared

Effectiveness of management measures: §132.8(d)(3)

Data provided by: California Department of Fish and Wildlife

CDFW's effectiveness evaluation for the management actions specified in §132.8(e) will be provided in the February 14, 2022 Initial Assessment.

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

Data provided by: California Department of Fish and Wildlife

The RAMP regulations specify that, when deciding amongst multiple management measures which would equivalently reduce entanglement risk, CDFW shall consider total economic impact to the fleet and fishing communities. CDFW will provide this evaluation in the February 14, 2022 Initial Assessment.

Historic patterns and current Actionable Species migration: §132.8(d)(6) and (11)*

Data provided by: Monterey Bay Whale Watch, processed by Karin Forney (NOAA Southwest Fisheries Science Center); Point Blue Conservation Science, NOAA Environmental Research Division

Monterey Bay Whale Watch *(Fishing Zone 4)*

- The semi-monthly average number of whales-per-half-day-trip during the first week of February is low, but slightly higher than historical patterns for this time of the year (Figure 1).
- The absence of blue whales since mid-November is consistent with their historical seasonal migration patterns to lower latitudes during winter.

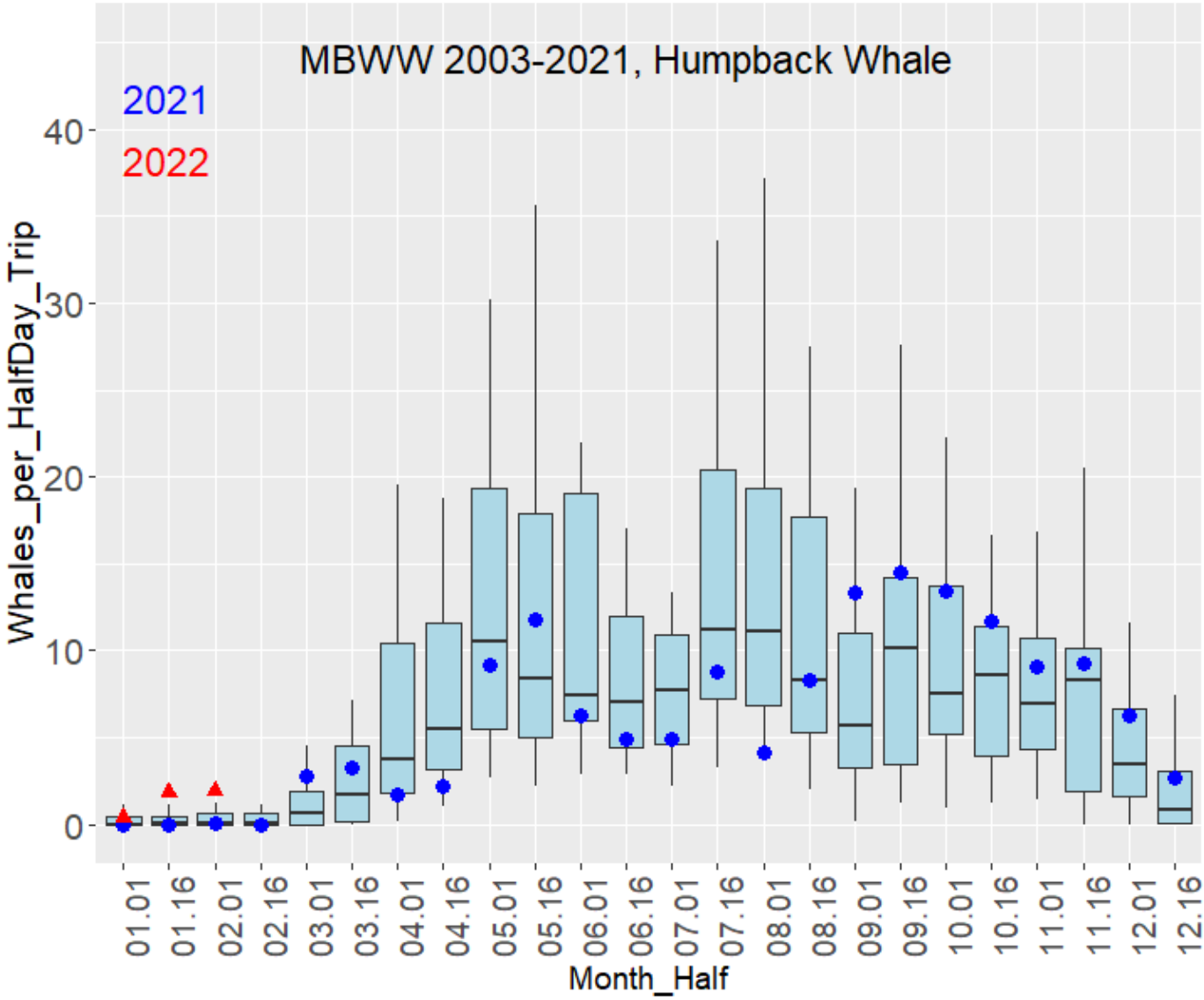


Figure 1. Historical Monterey Bay Whale Watch data for 2003-2022, summarizing the average and variation in the number of humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the 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 2021 (large blue dots) and 2022 (red triangles) and are provided for reference, placing recent whale numbers in a historical context.

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

During the seven-day period ending February 10, 2022 trained observers at the Farallon Islands did not report any humpback or blue whales within Fishing Zone 3, and trained naturalists aboard Monterey Bay Whale Watch and Marine Life Studies did not report any humpback or blue whales within Fishing Zone 4. 20 humpback whale sightings were reported within Fishing Zone 6 by trained naturalists from the Channel Islands National Marine Sanctuary and National Park Service. All sightings were reported between Santa Barbara/Ventura and the Channel Islands (Figure 2).

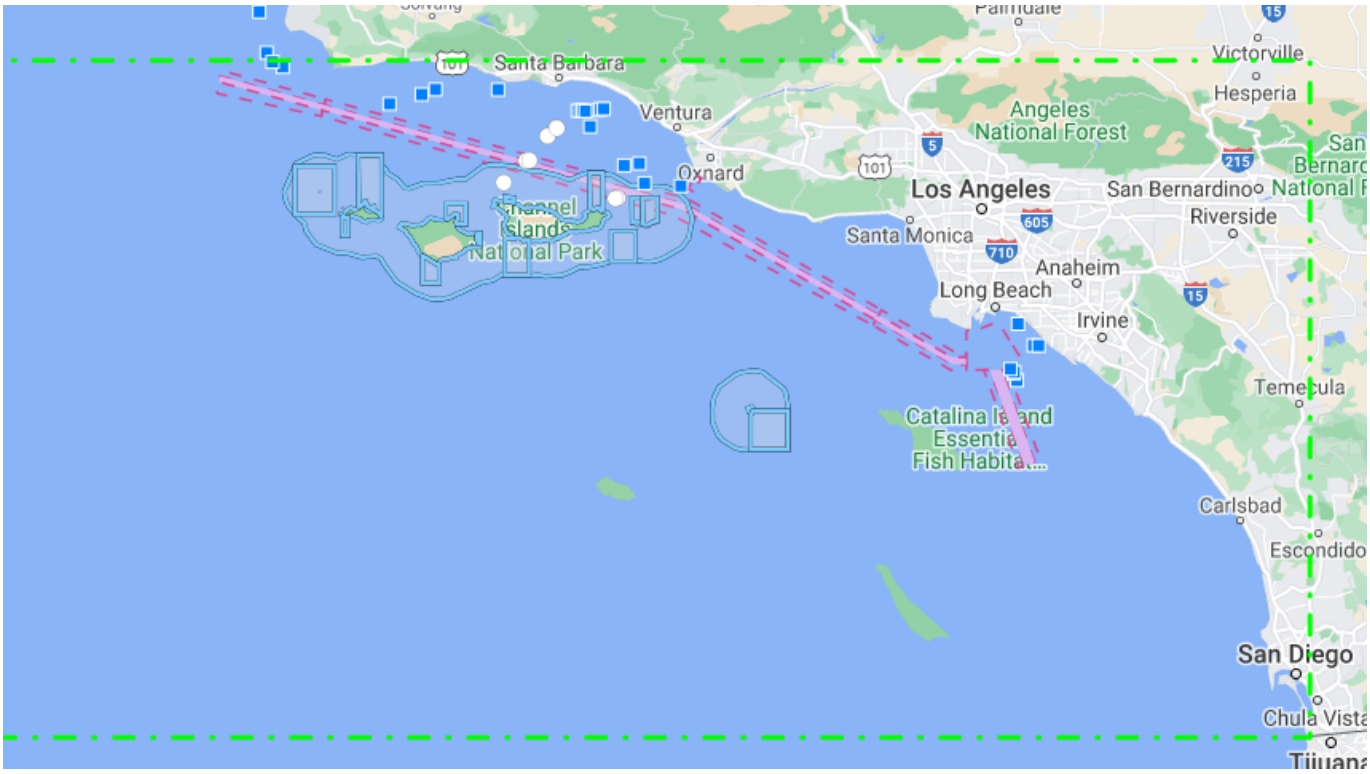


Figure 2. Locations of 20 humpback whale sightings within Fishing Zone 6. Reporting locations are represented by white circles. A given report may or may not represent multiple individuals. Fishing Zone boundaries are represented by the dashed green line.

Fishing Season dynamics: §132.8(d)(7)*

Data provided by: California Department of Fish and Wildlife

CDFW data presented in this section is preliminary and subject to revision.

Marine Landings Data System *(All Fishing Zones)*

Weekly total landing volume has decreased since the beginning of January, with the highest harvest coming from Fishing Zone 3, followed by Fishing Zone 1 (Figure 3). So far, 67% of the total volume harvested for this season has been from Fishing Zone 1, with 29% from Fishing Zone 3 and less than five percent coming from each of the other Fishing Zones.

Weekly vessel activity and number of landings has also declined since the beginning of January, with the highest activity in Bodega Bay, San Francisco, Crescent City, and Trinidad (Figure 4). Overall, 42% of the total volume harvested for this season has been landed into Crescent City, with 20% landed into Eureka, 11% each landed into San Francisco and Half Moon Bay, seven percent landed into Bodega Bay, six percent landed into Trinidad, and less than five percent landed into Fort Bragg, Monterey, and Morro Bay.

Looking at vessel activity by port over the course of the season, the highest activity has been in Crescent City (82 vessels) and Eureka (67 vessels), followed by San Francisco (53 vessels), Half Moon Bay (53 vessels), and Bodega Bay (51 vessels; Figure 5). Vessels have also made landings into Fort Bragg (30), Trinidad (22), Monterey (14), and Morro Bay (3).

Unit price (price per pound) is generally trending upwards for Crescent City, Trinidad, Eureka, Bodega Bay, San Francisco, and Half Moon Bay, with more mixed trends in Fort Bragg and

Monterey (Figure 6). The most variable pricing has been in Half Moon Bay, with high prices (> $10/lb) paid for some of the landings into Bodega Bay, San Francisco, Half Moon Bay, and Monterey.

Table 4. Summary of fleet dynamics information, as of February 10, 2022.

Metric	Value	Additional Info
Season status	Open statewide	Fleet Advisory was lifted for all Fishing Zones on January 18, 2022.
Number of daily landings	3,910	NA
Total volume (pounds)	9,462,403	NA
Total Ex-Vessel Value	$48,426,971	NA
Average unit price	$5.25	NA
Total number of active vessels	352	NA
Maximum potential traps (based on active permits)	117,075	Estimates are also provided in the Bi-Weekly Fishing Activity Reports subsection.

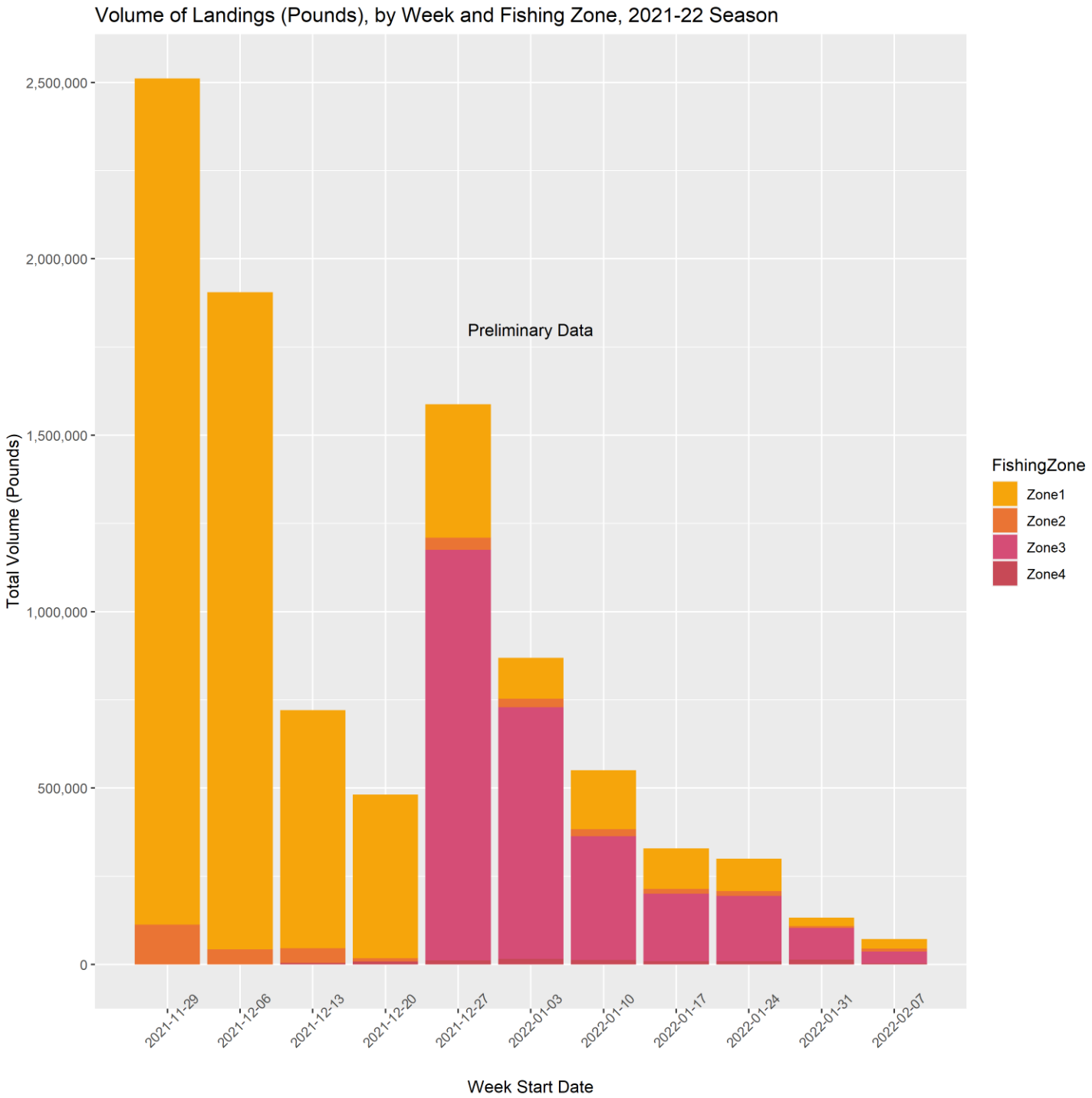


Figure 3. Cumulative volume (pounds) harvested by week and Fishing Zone. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, November 15, 2021. All data are preliminary and subject to change. Certain week*Fishing Zone combinations are withheld due to confidentiality constraints.

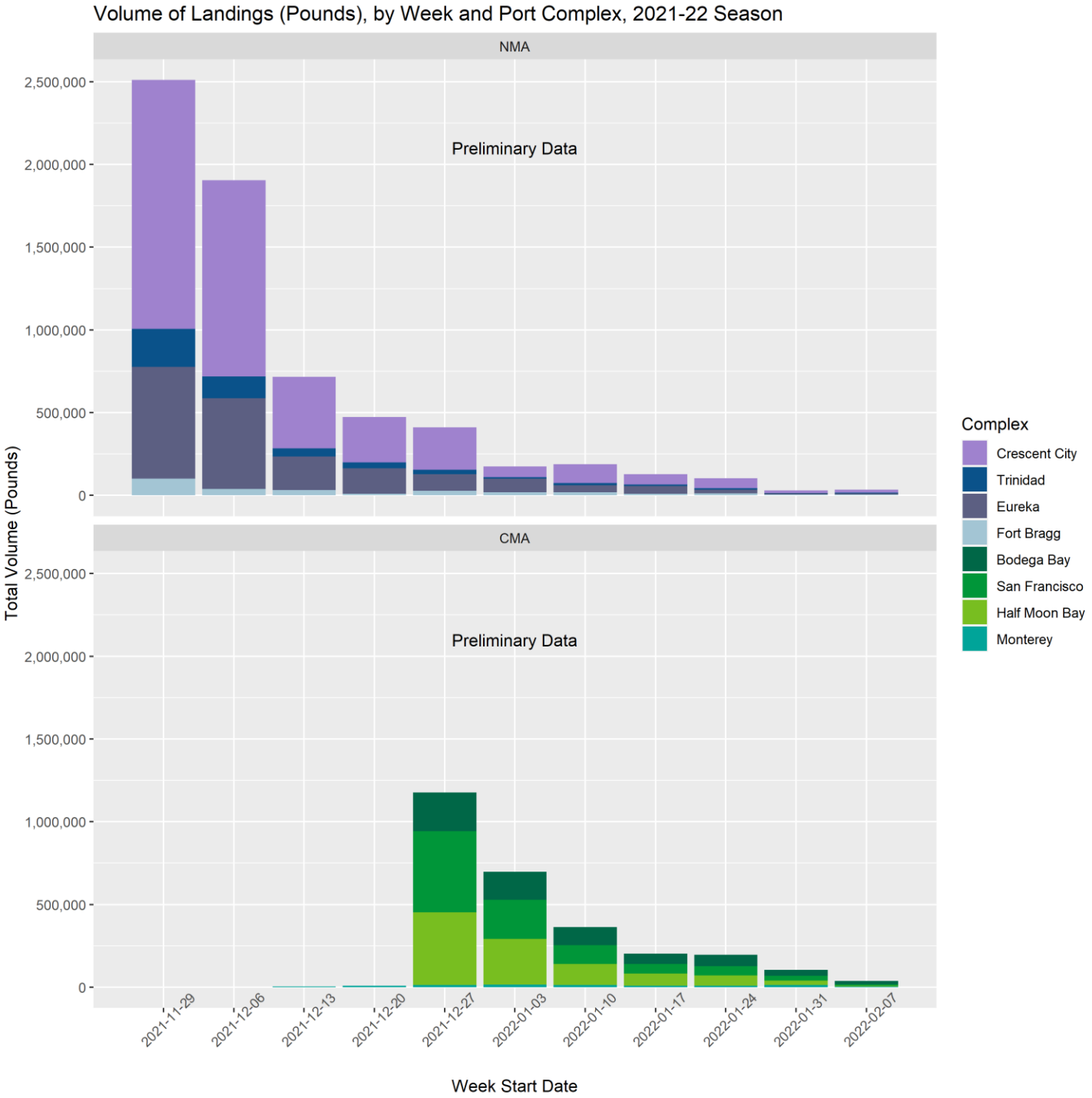
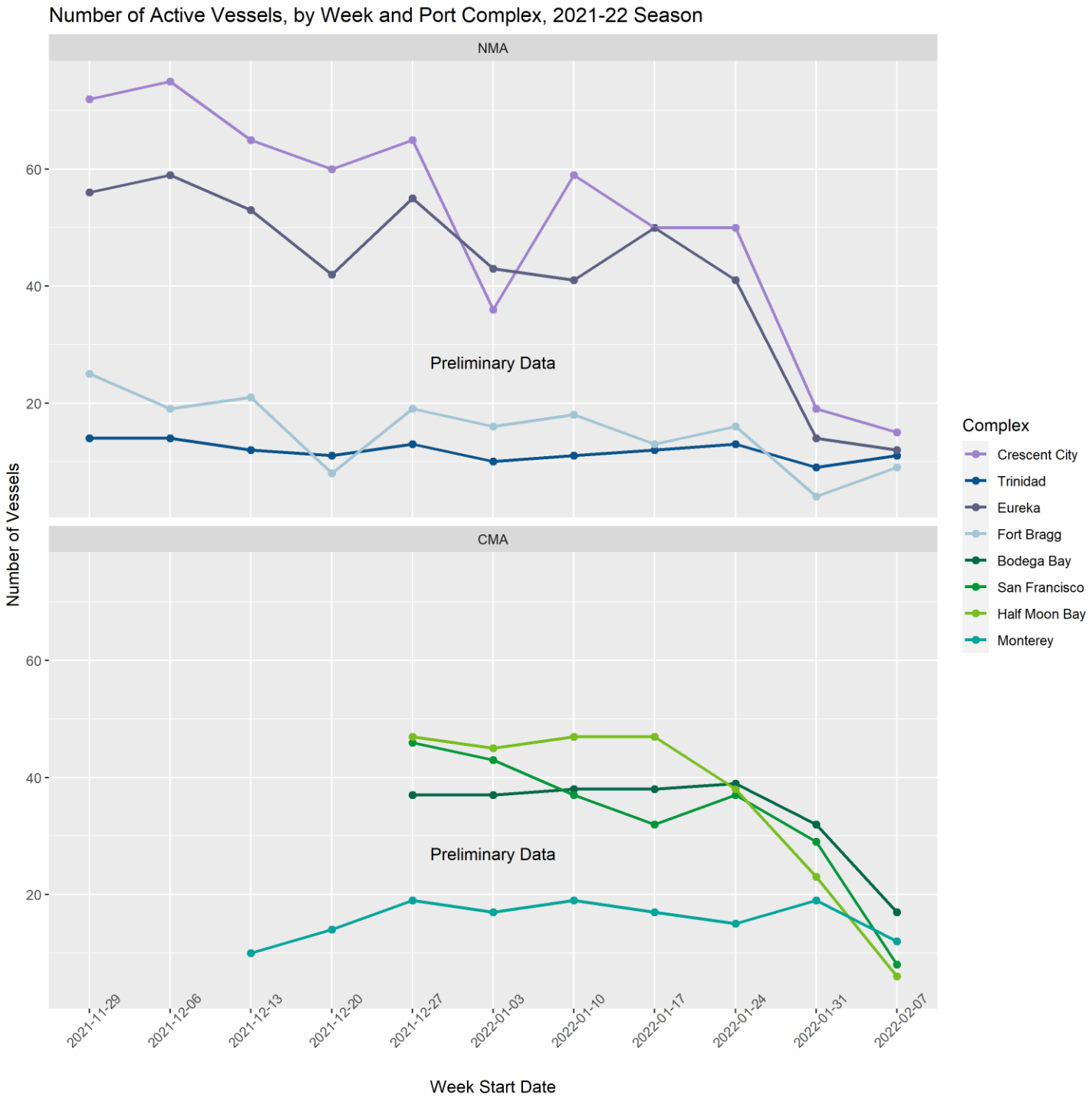


Figure 4. Cumulative volume (pounds) landed by week and port complex. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, November 15, 2021. All data are preliminary and subject to change. Certain week*port complex combinations are withheld due to confidentiality constraints.



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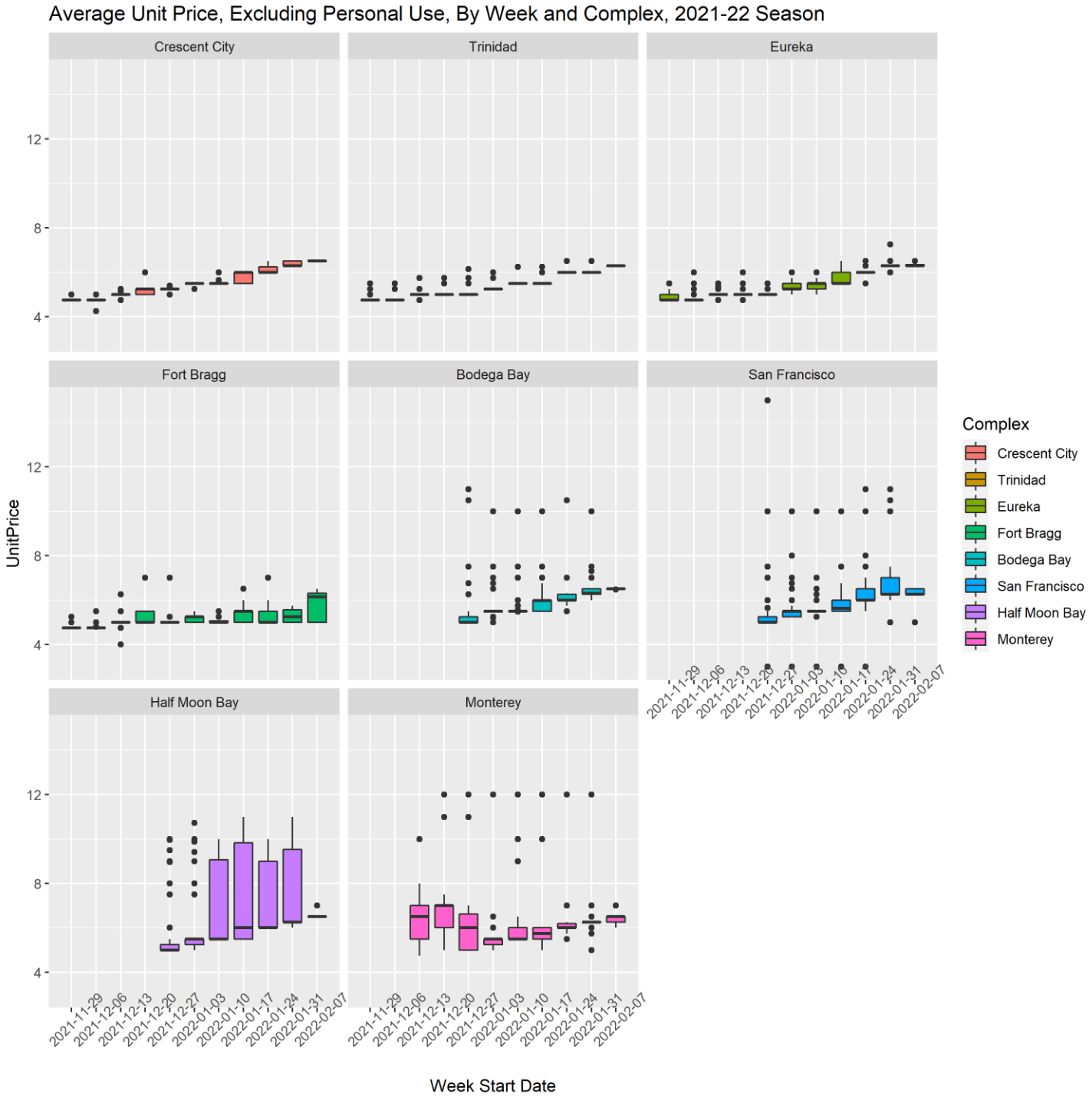

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Totals	243	NA	65,320	NA	NA	NA	45	252

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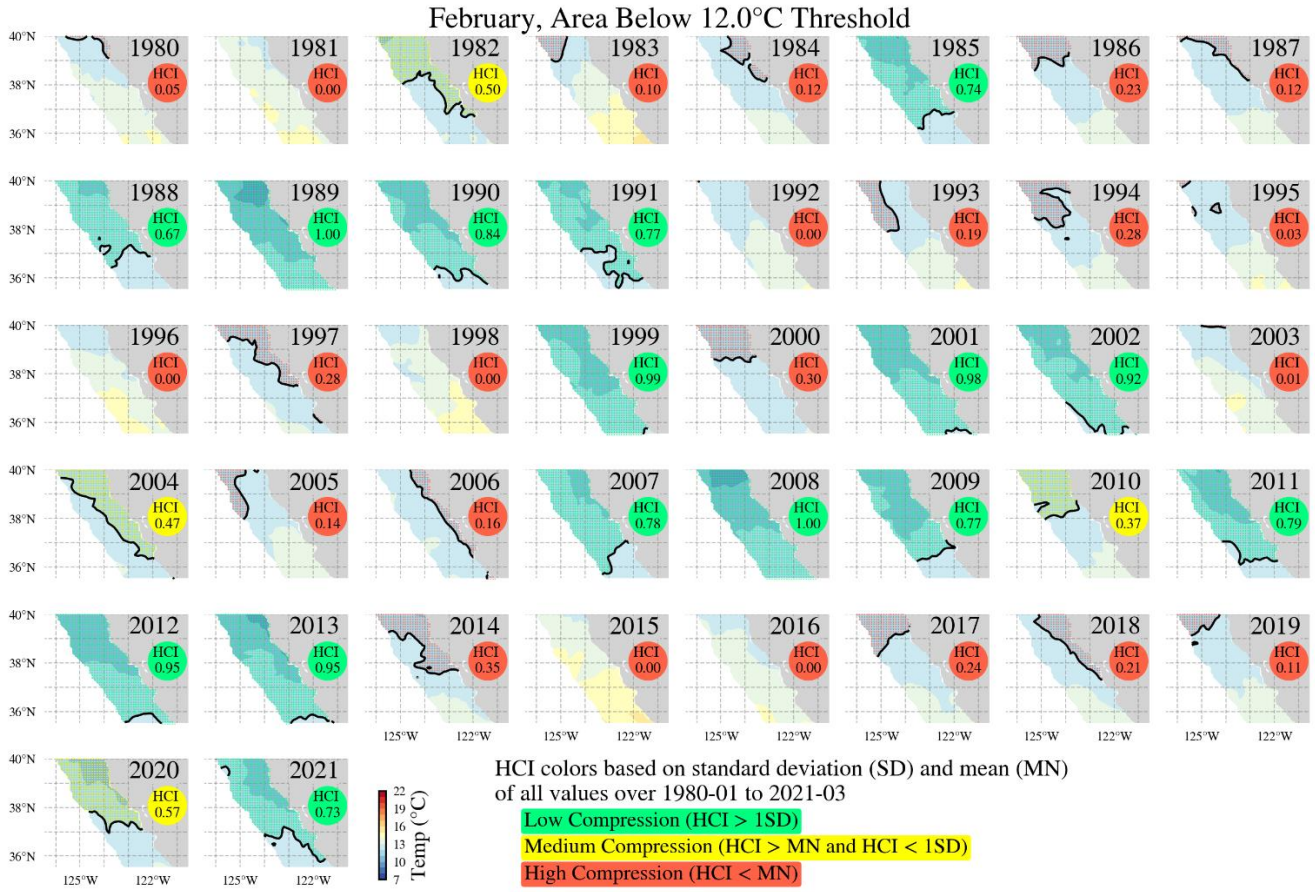


Figure 7. Maps of historical February sea surface temperature and location of the Habitat Compression Index boundary (thin black line) between 1980 and 2021.

Large Marine Heatwave Tracker

There has been little change in the position or intensity of the NEP21 large marine heatwave since the information shared in the January 12, 2022 Available Data document. Recent satellite imagery shows the heatwave remains offshore, with normal conditions present near the coast (Figure 8).

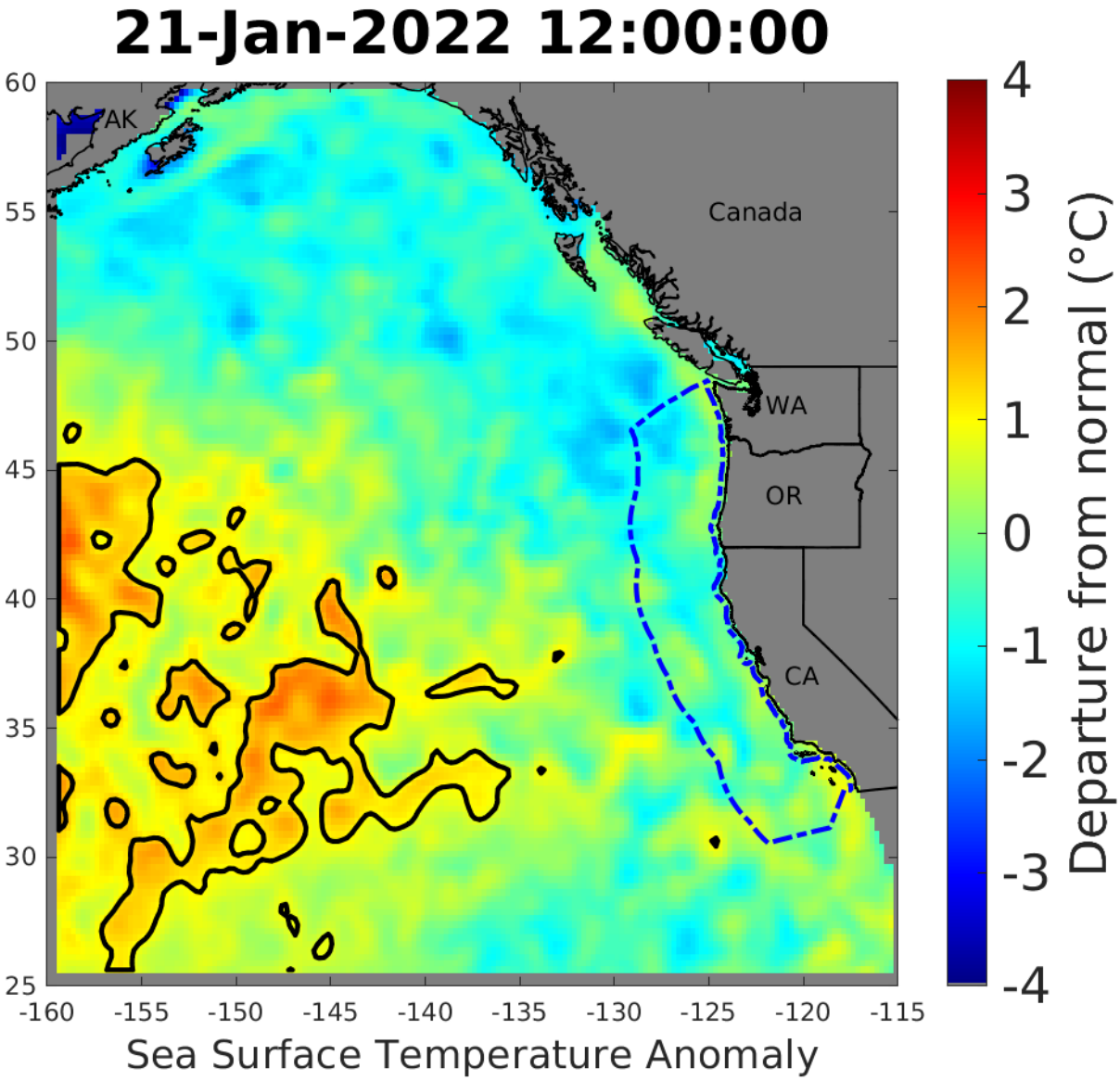


Figure 8. Science-quality (delayed 3-weeks), daily interpolated standardized sea surface temperature anomalies (SSTa) in the California Current ecosystem available for analysis of MHW presence. Dark outline shows the current extent of MHW conditions, as delineated by values of the normalized SST + 1.29 SD from normal. Blue dashed line represents the US West Coast EEZ. SST data from NOAA's Optimum interpolation Sea Surface Temperature analysis (OISST), with the SST anomaly calculated using climatology from NOAA's AVHRR-only OISST dataset.

Current Impact Score Calculation: §132.8(d)(10)*

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. Impact Score totals for the current fishing season (2021-22) and calendar year (2022) are provided in Table 3 (see above).

For 2021, after considering available information provided by NMFS and following discussion with the Working Group on April 13, 2021 and January 14, 2022, CDFW has made the following Impact Score assignments

- 20210403Mn: Unknown Fishing Gear, reported from Fishing Zone 6; Impact Score = 0.38
- 20210609Mn: California commercial Dungeness crab gear, reported from Mexico, gear from Fishing Zone 3; Impact Score = 0.75
- 20210713Mn: Unknown Fishing Gear, reported from Fishing Zone 6; Impact Score = 0.38
- 20210828Mn: Unknown Fishing Gear, reported from Fishing Zone 6; Impact Score = 0.38

This results in a total Impact Score of 1.89 for 2021.

Addendum: February 14, 2022

TRIGGERS REQUIRING MANAGEMENT ACTION

Marine Life Concentrations: §132.8(c)(1)

Data provided by: California Department of Fish and Wildlife

CDFW Aerial Survey *(Fishing Zones 3 and 4)*

On February 12, 2022 CDFW conducted an aerial survey along east-west transect lines between Point Pinos and Tomales Point covering nearshore waters out to 50 fathoms/100 m (with the exception of the Gulf of the Farallones, where transects go out to 30 fathoms/60 m; Figure 9). One humpback whale, three gray whales, and two unidentified whales were observed in Fishing Zone 3. No large whales were observed in Fishing Zone 4.

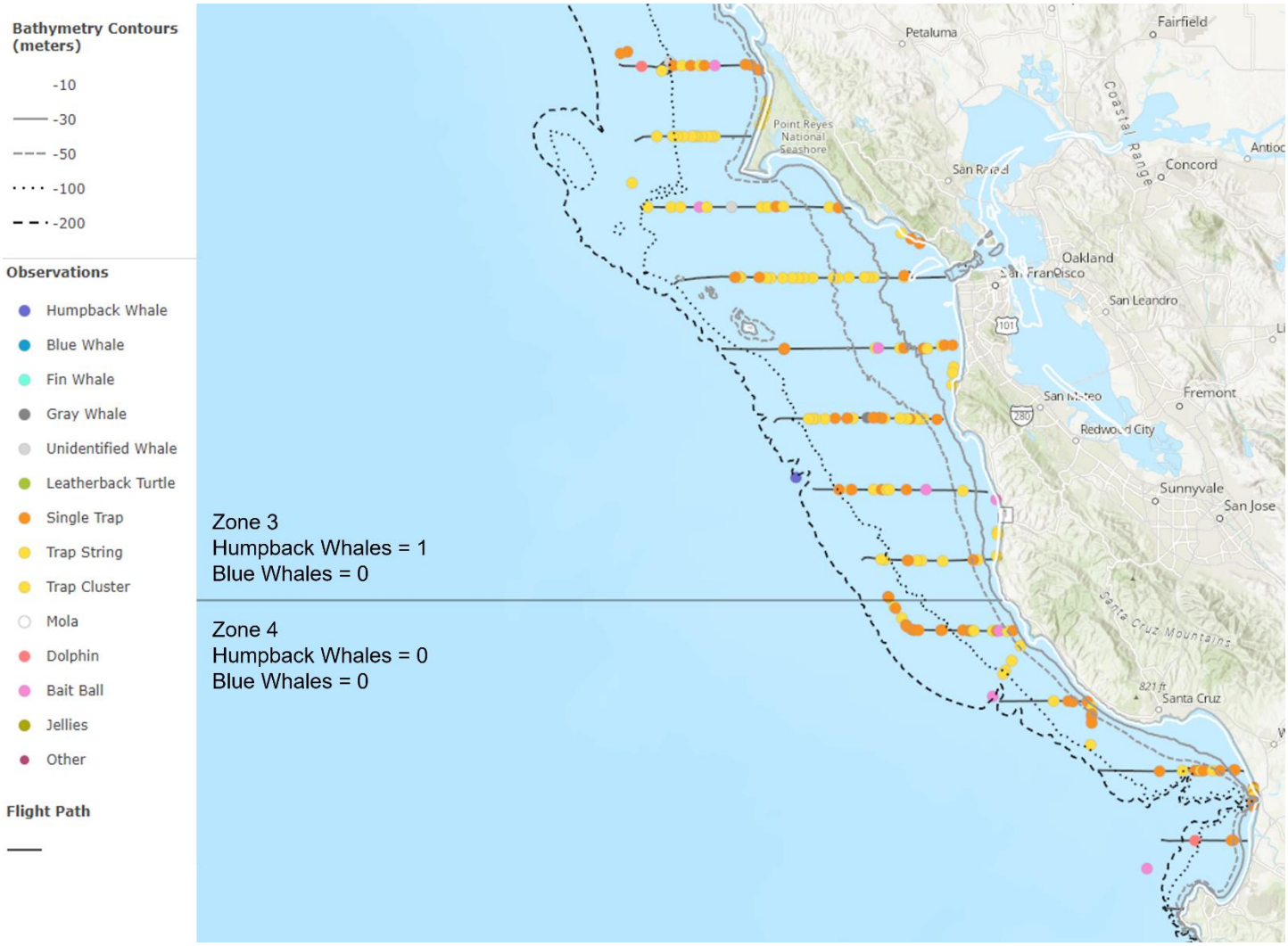


Figure 9. Map showing track lines and observations from CDFW aerial survey of Fishing Zones 3 and 4 on February 12, 2022. Survey information is overlaid onto contours showing the 10m, 30m, 50m, 100m, and 200m bathymetry line.

Fishing Season dynamics: §132.8(d)(7)*

Data provided by: California Department of Fish and Wildlife

CDFW Aerial Survey *(Fishing Zones 3 and 4)*

A total of 860 traps were observed throughout the study area (Figure 9), with an estimated total of 723 traps in Fishing Zone 3 and 137 traps in Fishing Zone 4. This is not an estimate of total traps deployed, only an observation of areas of high trap deployment. Areas of high deployment included Moss Landing, Half Moon Bay, Outer Golden Gate and around Point Reyes. Furthermore, it is not possible to determine how many of the observed traps are from the Dungeness crab fishery.

Distribution and abundance of key forage: §132.8(d)(8)

Data provided by: California Department of Fish and Wildlife

CDFW Aerial Survey *(Fishing Zones 3 and 4)*

Seven bait balls were observed in Fishing Zone 3, and 3 bait balls were observed in Fishing Zone 4 (Figure 9). Bait balls were observed across a broad range of depths in both Fishing Zones.

2021-22 Risk Assessment: Available Data

Last updated: February 11, 2022

Contents

Items with updated information are followed by an *.

TRIGGERS REQUIRING MANAGEMENT ACTION

Confirmed Entanglements: §132.8(c)(1)*

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

As of February 9, there has been one confirmed humpback whale entanglement, 0 confirmed blue whale entanglements, and 0 confirmed leatherback sea turtle entanglements reported to West Coast Region during 2022. The single confirmed humpback whale entanglement was reported 5 miles off Cypress Point in Monterey (Fishing Zone 4) in unidentified gear consisting of a red colored line and no visible buoy.

For Actionable Species entanglements reported to NMFS West Coast Region in 2021, see the January 12, 2022 Available Data document.

Table 1. Actionable Species Entanglements in 2022, prepared by West Coast Region.

Actionable Species	Number Confirmed Entanglements in California Commercial Dungeness Crab Gear	Number Confirmed Entanglements in Unknown Fishing Gear Reported off California
Humpback whales	0	1
Blue whales	0	0
Leatherback sea turtles	0	0

During 2021, there were no confirmed entanglements of either blue whales or leatherback sea turtles in California commercial Dungeness crab gear (reported from any location) or Unknown Fishing Gear (reported from California) during the current calendar year, so the cumulative Impact Score was 0 for these two species. There was a total of four confirmed humpback whale entanglements which CDFW reviewed and assigned an Impact Score (see the Current Impact Score Calculation section). All of these were reported prior to the start of the 2021-22 Dungeness crab season, and therefore do not count towards the current season Impact Score.

During 2022, there have been no confirmed entanglements of either blue whales or leatherback sea turtles in California commercial Dungeness crab gear (reported from any location) or Unknown Fishing Gear (reported from California), so the cumulative Impact Score for the current calendar year is 0 for these two species. There has been a single confirmed humpback whale entanglement reported in unidentified gear from Fishing Zone 4 (20220127Mn). CDFW will consider assigning an Impact Score after further review of available documentation. CDFW will also seek input from the Working Group prior to assigning an Impact Score.

Table 2. Impact Score Calculations based on Confirmed Entanglements in California commercial Dungeness crab gear and confirmed entanglements in Unknown Fishing Gear reported off California.

Actionable Species	Current Fishing Season Impact Score (2021-22)	Current Calendar Year Impact Score (2022)
Humpback whales	0	0 **but see above*
Blue whales	0	0
Leatherback sea turtles	0	0

Marine Life Concentrations: §132.8(c)(1)

Data provided by: Monterey Bay Whale Watch; processed by Karin Forney (NOAA Southwest Fisheries Science Center), California Department of Fish and Wildlife, Scott Benson (NOAA Southwest Fisheries Science Center, in collaboration with Upwell.org)

Table 3. Summary of available CDFW-approved survey data for marine life concentrations for each Fishing Zone, and whether the triggers established in Section 132.8(c)(2) have been met for any Fishing Zone.

Fishing Zone	CDFW-approved survey data	Triggers attained?
Zone 1	NA	No
Zone 2	NA	No
Zone 3	NA	No
Zone 4	MBWW	No
Zone 5	NA	No
Zone 6	NA	No

Monterey Bay Whale Watch *(Fishing Zone 4)**

- MBWW conducted whale-watching trips in southern Monterey Bay on five of seven days during the week of February 1 - 7, 2022.
- The average number of humpback whales-per-trip during the last seven days (February 1-7) was 1.6, with a peak of five whales observed on a single trip on February 5, 2022.
- No blue whales have been observed by MBWW since Nov 13, 2021, when one whale was documented.

CDFW Aerial Survey *(Fishing Zones TBD)*

CDFW intends to conduct an aerial survey on February 12, 2022. Survey findings will be shared during the Working Group meeting on February 15, 2022 and incorporated into an updated version of this document.

Leatherback Sea Turtle Telemetry *(All Fishing Zones)**

The adult male leatherback turtle that was captured approximately 3 miles northwest of Pillar Point (Half Moon Bay, CA) and tagged with a satellite-linked transmitter on October 16, 2021 is approximately 560 miles southeast of Hawaii. The turtle continues to move in a southwest direction.

MANAGEMENT CONSIDERATIONS

Information from NOAA: §132.8(d)(2)

No additional information was shared

Effectiveness of management measures: §132.8(d)(3)

Data provided by: California Department of Fish and Wildlife

CDFW's effectiveness evaluation for the management actions specified in §132.8(e) will be provided in the February 14, 2022 Initial Assessment.

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

Data provided by: California Department of Fish and Wildlife

The RAMP regulations specify that, when deciding amongst multiple management measures which would equivalently reduce entanglement risk, CDFW shall consider total economic impact to the fleet and fishing communities. CDFW will provide this evaluation in the February 14, 2022 Initial Assessment.

Historic patterns and current Actionable Species migration: §132.8(d)(6) and (11)*

Data provided by: Monterey Bay Whale Watch, processed by Karin Forney (NOAA Southwest Fisheries Science Center); Point Blue Conservation Science, NOAA Environmental Research Division

Monterey Bay Whale Watch *(Fishing Zone 4)*

- The semi-monthly average number of whales-per-half-day-trip during the first week of February is low, but slightly higher than historical patterns for this time of the year (Figure 1).
- The absence of blue whales since mid-November is consistent with their historical seasonal migration patterns to lower latitudes during winter.

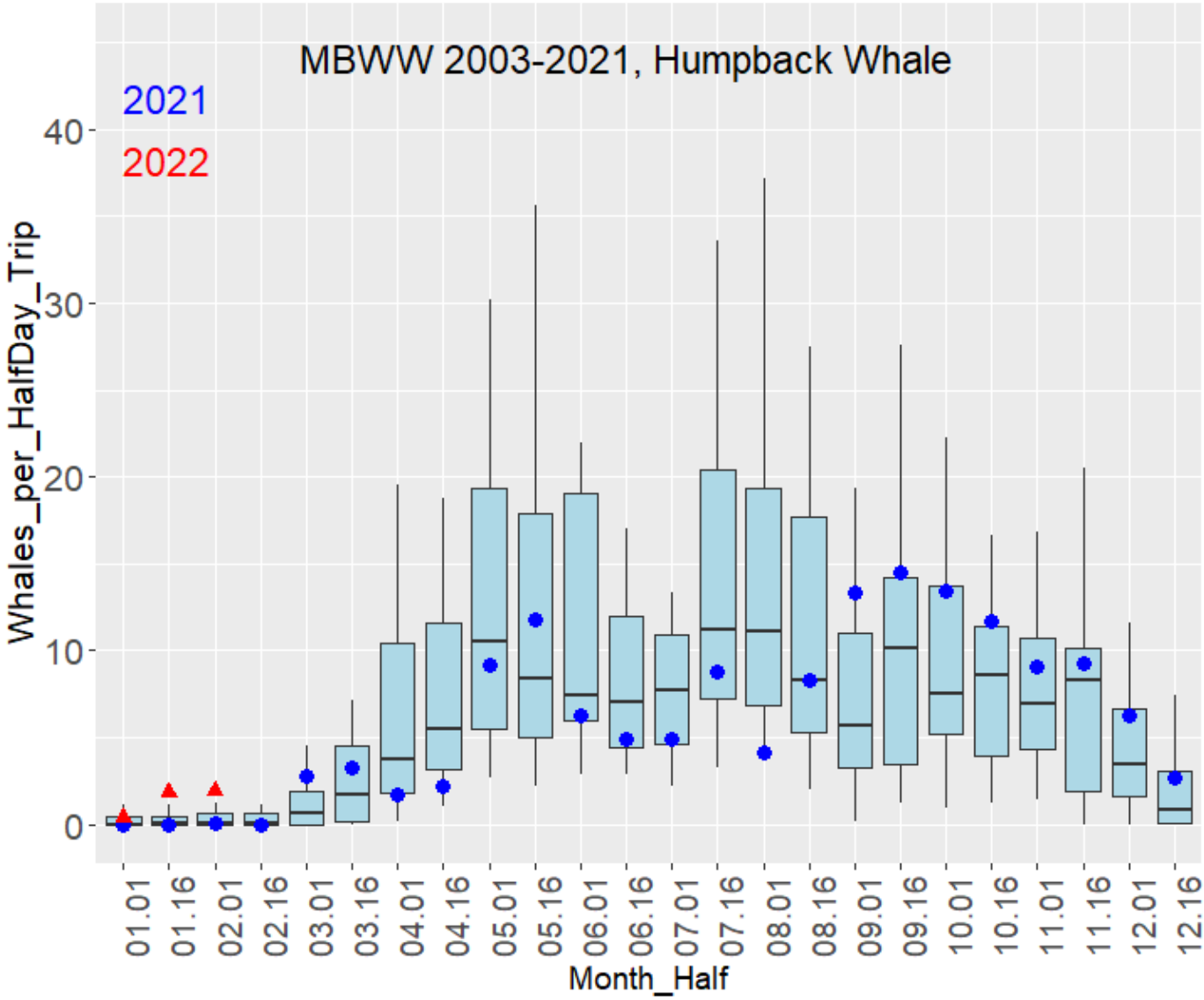


Figure 1. Historical Monterey Bay Whale Watch data for 2003-2022, summarizing the average and variation in the number of humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the 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 2021 (large blue dots) and 2022 (red triangles) and are provided for reference, placing recent whale numbers in a historical context.

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

During the seven-day period ending February 10, 2022 trained observers at the Farallon Islands did not report any humpback or blue whales within Fishing Zone 3, and trained naturalists aboard Monterey Bay Whale Watch and Marine Life Studies did not report any humpback or blue whales within Fishing Zone 4. 20 humpback whale sightings were reported within Fishing Zone 6 by trained naturalists from the Channel Islands National Marine Sanctuary and National Park Service. All sightings were reported between Santa Barbara/Ventura and the Channel Islands (Figure 2).

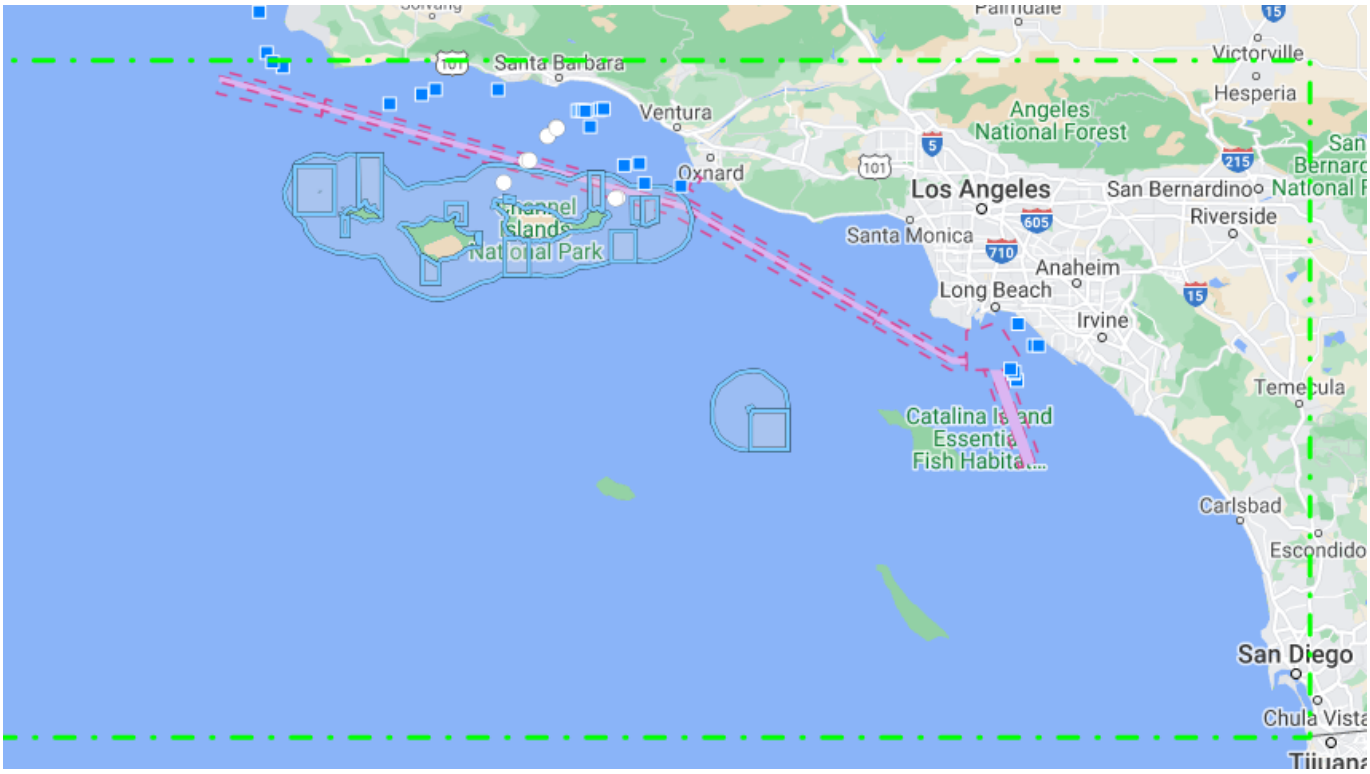


Figure 2. Locations of 20 humpback whale sightings within Fishing Zone 6. Reporting locations are represented by white circles. A given report may or may not represent multiple individuals. Fishing Zone boundaries are represented by the dashed green line.

Fishing Season dynamics: §132.8(d)(7)*

Data provided by: California Department of Fish and Wildlife

CDFW data presented in this section is preliminary and subject to revision.

Marine Landings Data System *(All Fishing Zones)*

Weekly total landing volume has decreased since the beginning of January, with the highest harvest coming from Fishing Zone 3, followed by Fishing Zone 1 (Figure 3). So far, 67% of the total volume harvested for this season has been from Fishing Zone 1, with 29% from Fishing Zone 3 and less than five percent coming from each of the other Fishing Zones.

Weekly vessel activity and number of landings has also declined since the beginning of January, with the highest activity in Bodega Bay, San Francisco, Crescent City, and Trinidad (Figure 4). Overall, 42% of the total volume harvested for this season has been landed into Crescent City, with 20% landed into Eureka, 11% each landed into San Francisco and Half Moon Bay, seven percent landed into Bodega Bay, six percent landed into Trinidad, and less than five percent landed into Fort Bragg, Monterey, and Morro Bay.

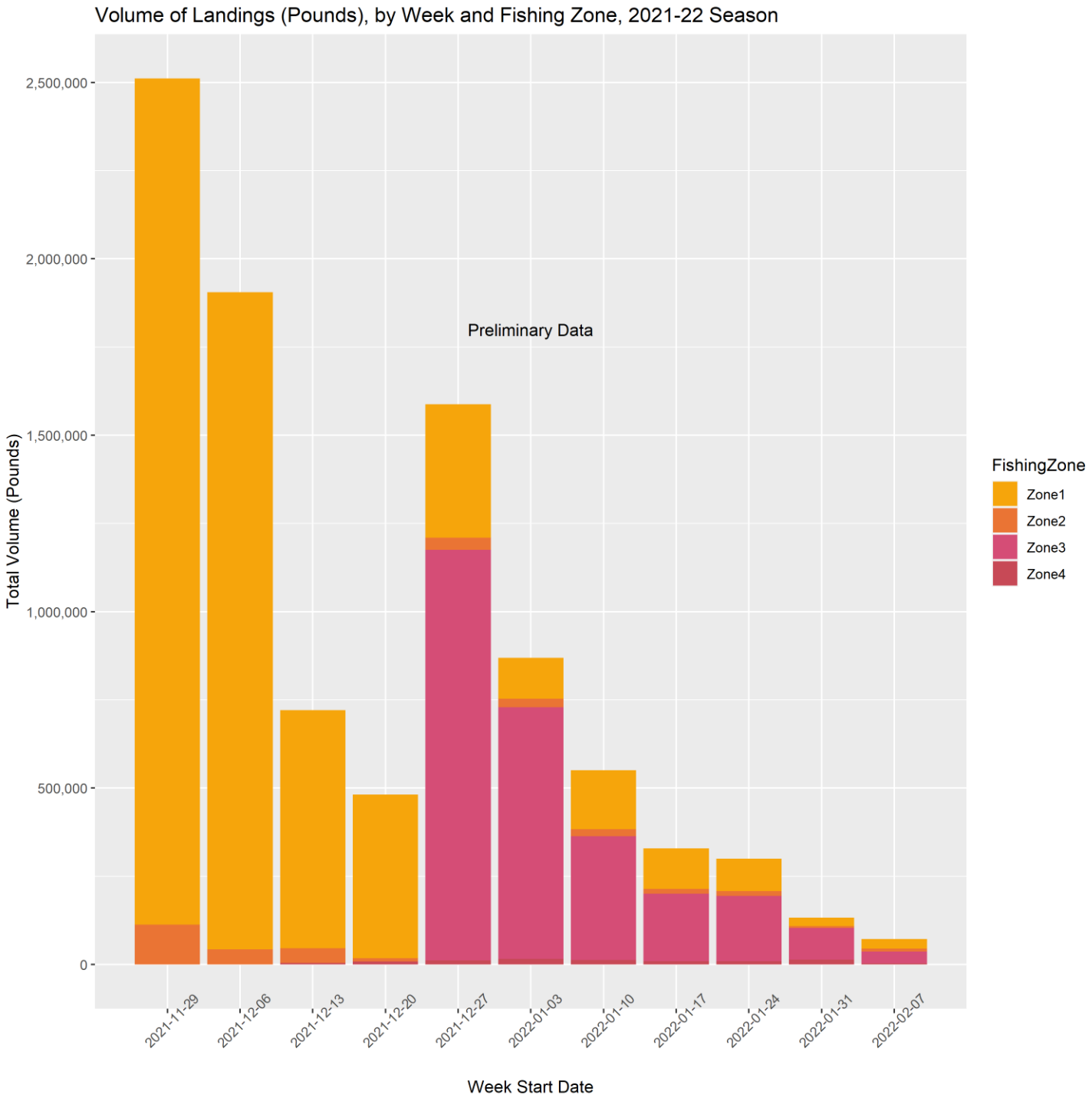
Looking at vessel activity by port over the course of the season, the highest activity has been in Crescent City (82 vessels) and Eureka (67 vessels), followed by San Francisco (53 vessels), Half Moon Bay (53 vessels), and Bodega Bay (51 vessels; Figure 5). Vessels have also made landings into Fort Bragg (30), Trinidad (22), Monterey (14), and Morro Bay (3).

Unit price (price per pound) is generally trending upwards for Crescent City, Trinidad, Eureka, Bodega Bay, San Francisco, and Half Moon Bay, with more mixed trends in Fort Bragg and

Monterey (Figure 6). The most variable pricing has been in Half Moon Bay, with high prices (> $10/lb) paid for some of the landings into Bodega Bay, San Francisco, Half Moon Bay, and Monterey.

Table 4. Summary of fleet dynamics information, as of February 10, 2022.

Metric	Value	Additional Info
Season status	Open statewide	Fleet Advisory was lifted for all Fishing Zones on January 18, 2022.
Number of daily landings	3,910	NA
Total volume (pounds)	9,462,403	NA
Total Ex-Vessel Value	$48,426,971	NA
Average unit price	$5.25	NA
Total number of active vessels	352	NA
Maximum potential traps (based on active permits)	117,075	Estimates are also provided in the Bi-Weekly Fishing Activity Reports subsection.



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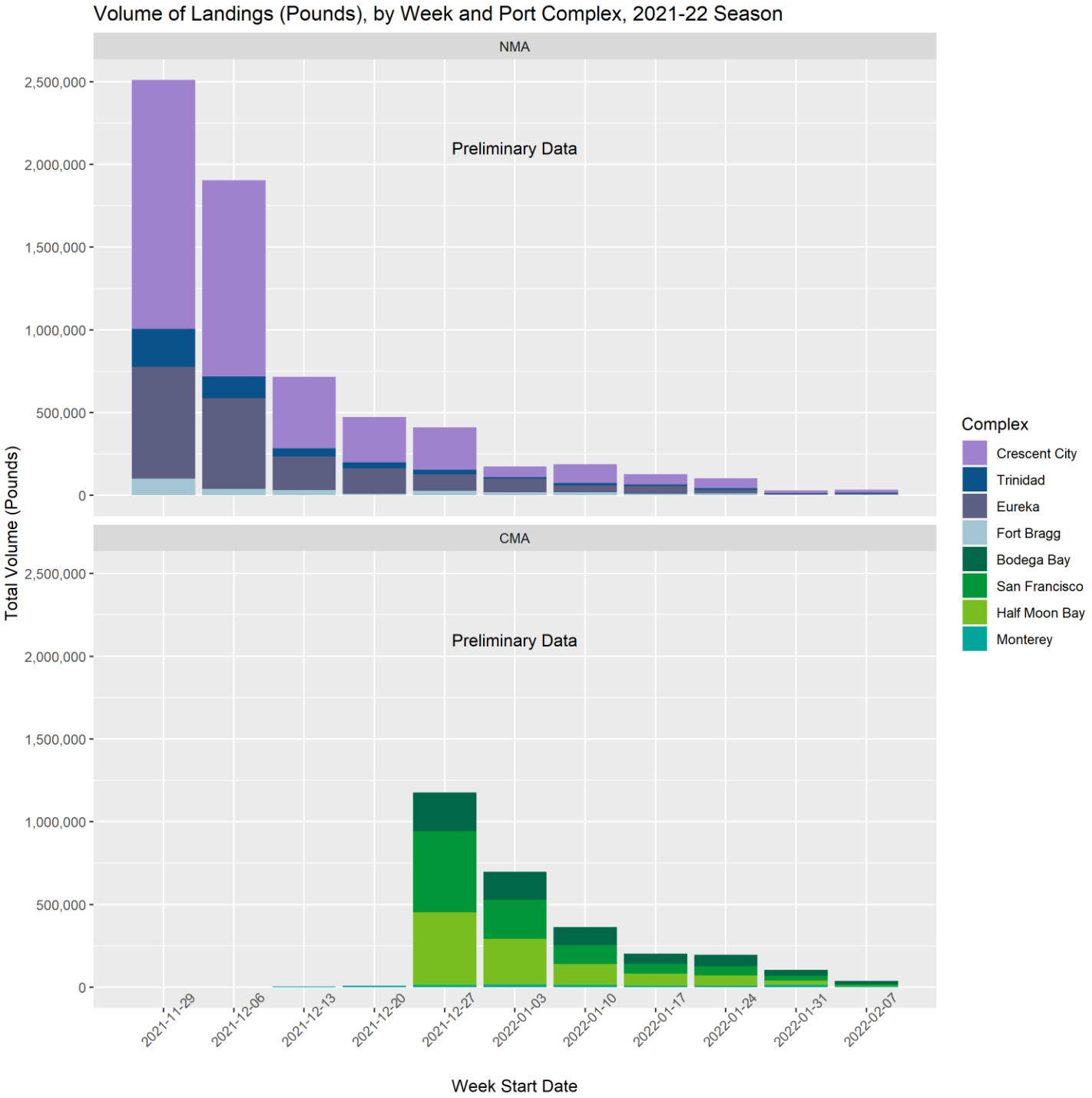

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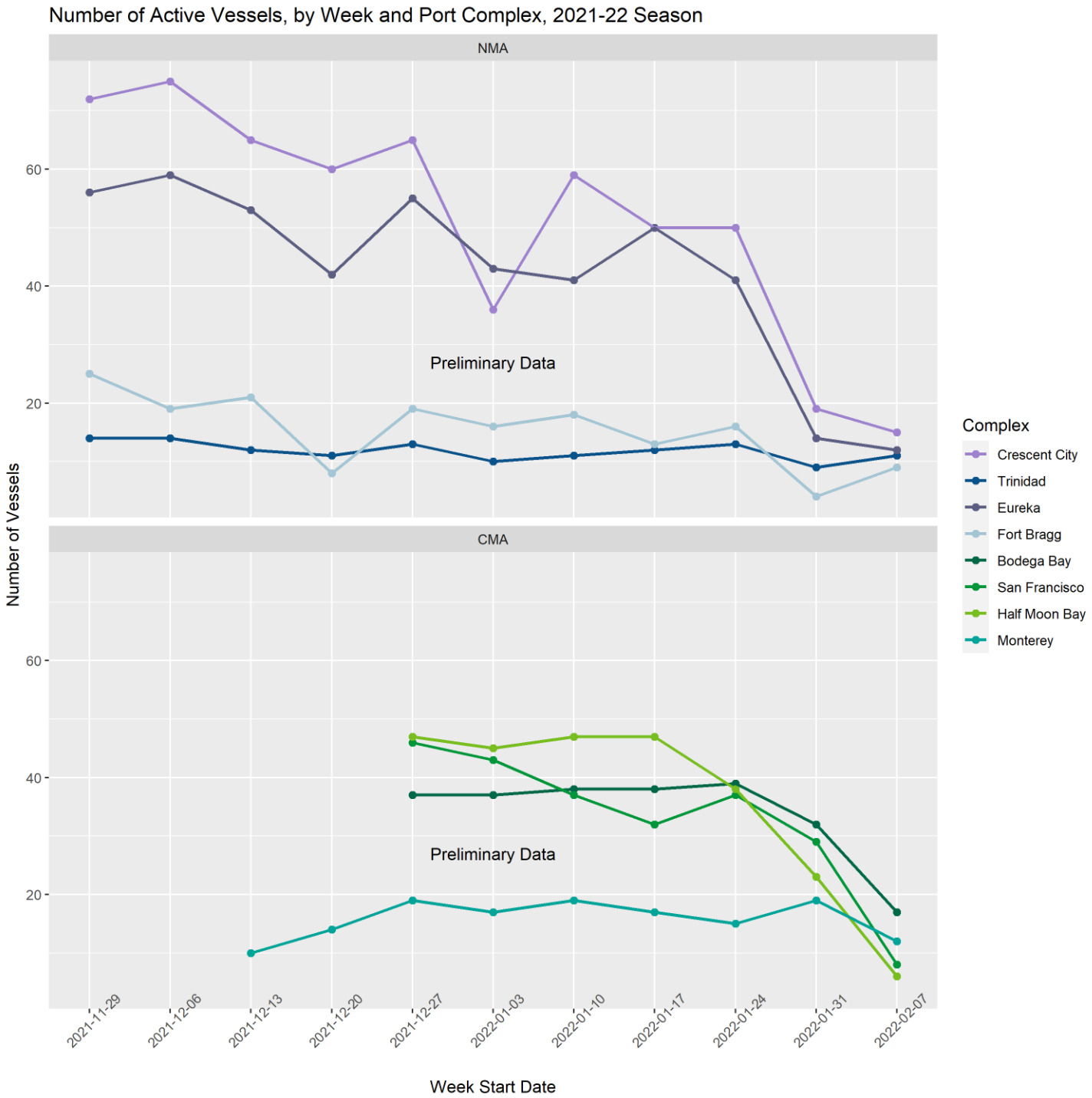

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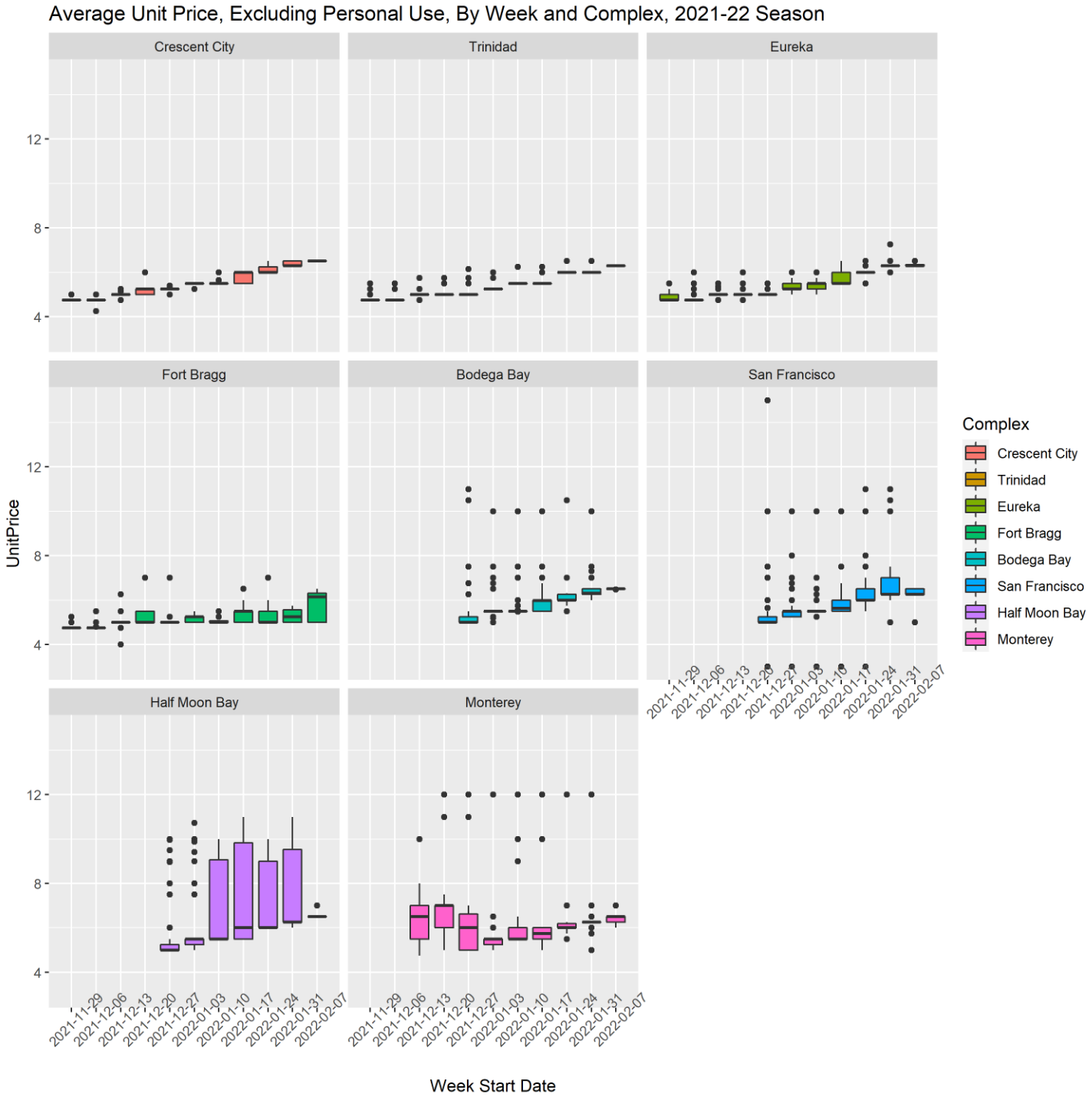

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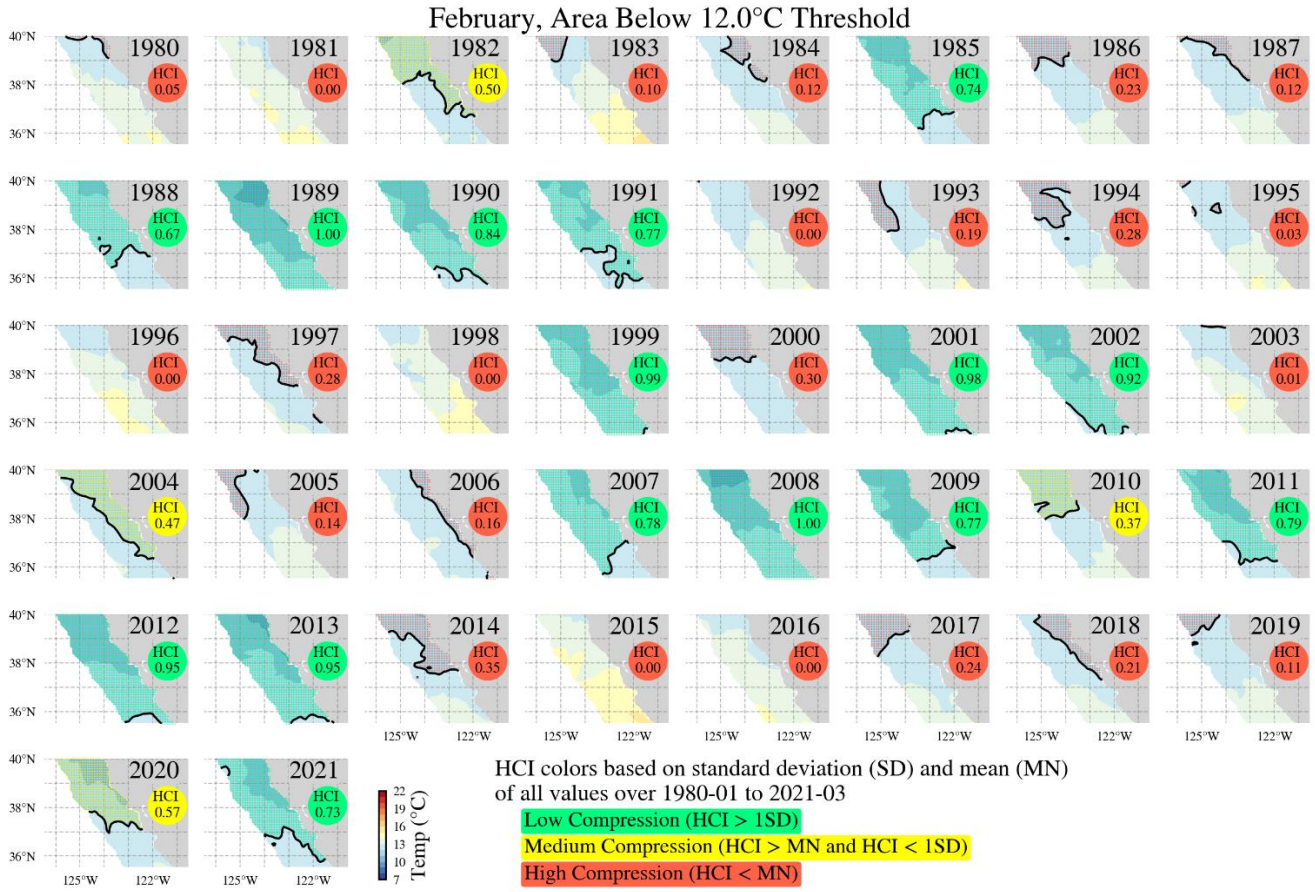

Figure 7. Maps of historical February sea surface temperature and location of the Habitat Compression Index boundary (thin black line) between 1980 and 2021.

Large Marine Heatwave Tracker

There has been little change in the position or intensity of the NEP21 large marine heatwave since the information shared in the January 12, 2022 Available Data document. Recent satellite imagery shows the heatwave remains offshore, with normal conditions present near the coast (Figure 8).

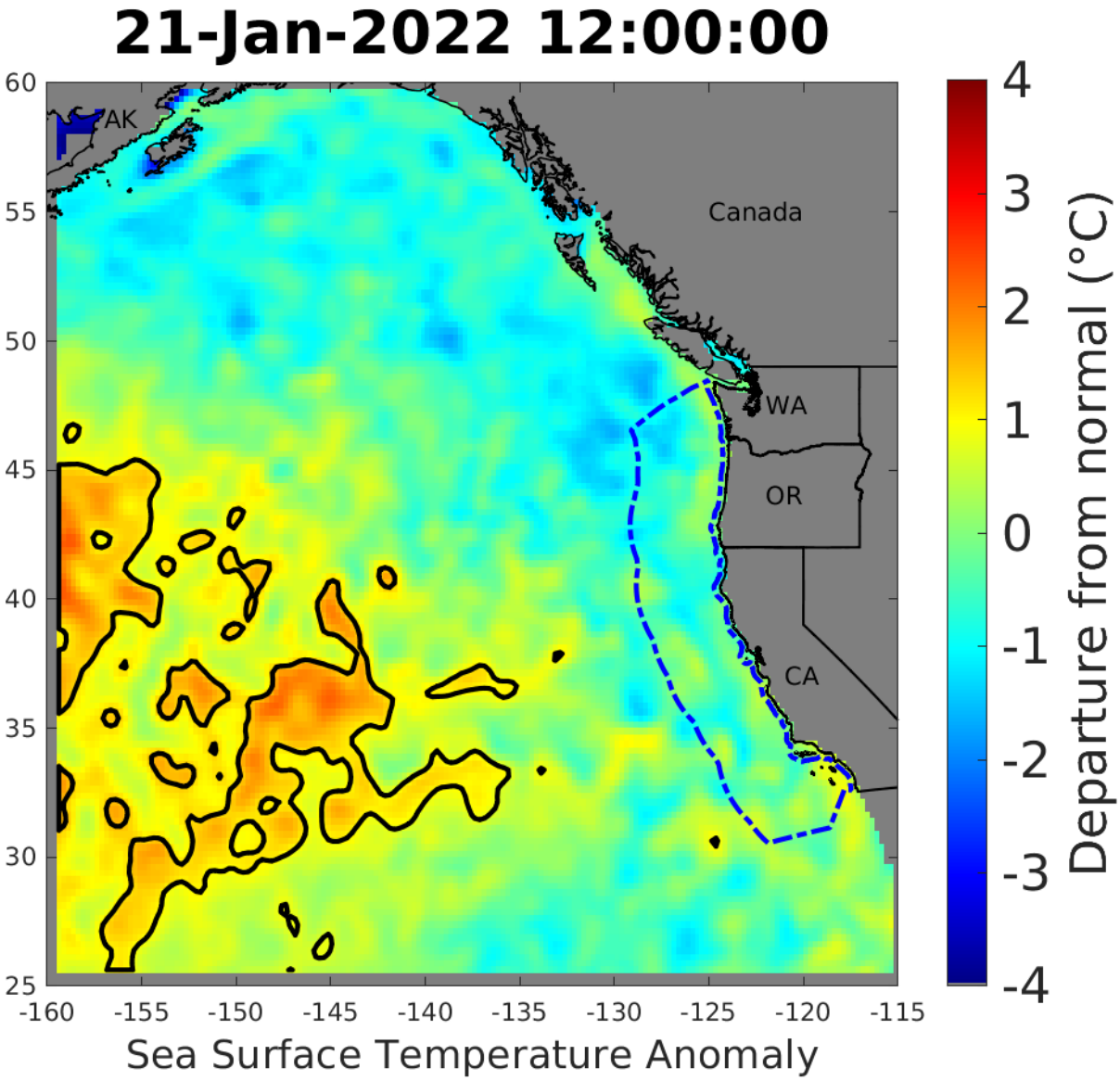

Figure 8. Science-quality (delayed 3-weeks), daily interpolated standardized sea surface temperature anomalies (SSTa) in the California Current ecosystem available for analysis of MHW presence. Dark outline shows the current extent of MHW conditions, as delineated by values of the normalized SST + 1.29 SD from normal. Blue dashed line represents the US West Coast EEZ. SST data from NOAA's Optimum interpolation Sea Surface Temperature analysis (OISST), with the SST anomaly calculated using climatology from NOAA's AVHRR-only OISST dataset.

Current Impact Score Calculation: §132.8(d)(10)*

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. Impact Score totals for the current fishing season (2021-22) and calendar year (2022) are provided in Table 3 (see above).

For 2021, after considering available information provided by NMFS and following discussion with the Working Group on April 13, 2021 and January 14, 2022, CDFW has made the following Impact Score assignments

- 20210403Mn: Unknown Fishing Gear, reported from Fishing Zone 6; Impact Score = 0.38
- 20210609Mn: California commercial Dungeness crab gear, reported from Mexico, gear from Fishing Zone 3; Impact Score = 0.75
- 20210713Mn: Unknown Fishing Gear, reported from Fishing Zone 6; Impact Score = 0.38
- 20210828Mn: Unknown Fishing Gear, reported from Fishing Zone 6; Impact Score = 0.38

This results in a total Impact Score of 1.89 for 2021.