



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

Date: February 17, 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 February 12, 2021 and finalized at the conclusion of the Working Group meeting on February 17, 2021 based on discussions with the group.

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

Confirmed Entanglements in California Commercial Dungeness Crab Gear

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

Confirmed Entanglements in Unknown Fishing Gear reported from California:

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

Marine Life Concentrations Surveys and/or Satellite Telemetry Observations:

- Fishing Zones 1-7: No Triggers reached

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

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

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

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

- No management measure(s) recommended under this initial assessment.

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

- No additional information was made available for this risk assessment and no management measure(s) were recommended for this initial assessment.

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

- Monterey Bay Whale Watch (MBWW) data was available for Fishing Zone 4. Additional observational data were contributed for Fishing Zones 3, 4 and 6 and Blue whale habitat predictions are available for all Fishing Zones.

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

- Absence of Humpback whales is consistent with average historical winter-time patterns that show few or no Humpback whale sightings during January and early February when whales are mostly at their breeding areas off Mexico and Central America.
- A recent NOAA funded photo ID project at the breeding grounds off Mexico and Central America showed high numbers of Humpback whales with no indication of departures or declines from those breeding areas.
- Absence of Blue whales is consistent with their known southward migration to breeding areas during winter.

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, 331 vessels have participated in the fishery as of February 2, 2021. Week 5 had the highest number of potential traps deployed across all Fishing Zones, with an estimated total of 94,250 traps. Fishing Zone 3 had the highest total, followed by Zone 1.

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

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

Section 132.8(d)(9): Ocean conditions

- La Niña conditions persisted in January with a 60% chance of a transition from this condition to ENSO-neutral in the northern hemisphere by the spring months of April, May and June.
- See [Available Data](#) from December 10, 2020.

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

- Impact score calculation under RAMP began on January 1, 2021. Current impact score is 0 for all three species.

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

- Based on previous aerial survey work and MBWW data, the bulk of the migration appears to have occurred out of the Fishing Grounds.

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

Fishing Zones 1-6: CDFW Marine Region staff's final recommendation is that no Management Action is required in any of the Fishing Zones (1-6). Based on prior CDFW aerial survey data and as indicated by Monterey Bay Whale Watch data, Actionable Species appear to have migrated out of the Fishing Grounds. As a result, co-occurrence of commercial Dungeness crab trap gear and Humpback whales, Blue whales and Leatherback sea turtles is expected to be very low, which results in lowered entanglement risk. CDFW continues to encourage the fleet 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.

CDFW Marine Region shared the Initial assessment with Working Group representatives and advisors on February 17, 2021. There was no opposition to the recommendation by Marine Region staff.

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

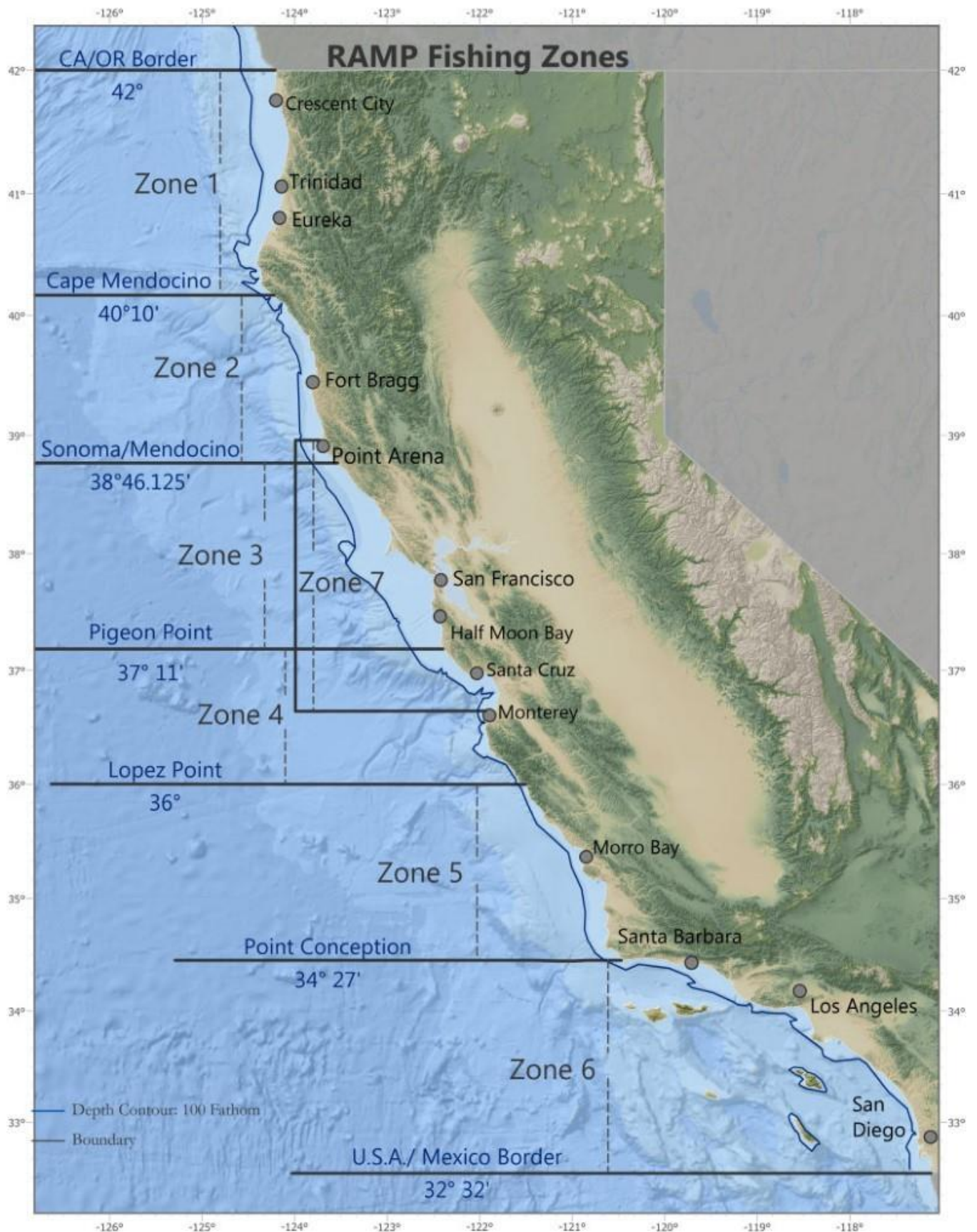


Figure 1. RAMP Fishing Zone boundaries.

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

Date: February 11, 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.

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

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management measure(s) were recommended for this initial assessment.

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

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- La Niña conditions persisted in January with a 60% chance of a transition from this condition to ENSO-neutral in the northern hemisphere by the spring months of April, May and June.
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CDFW will continue to monitor all available data to inform the next risk assessment (expected to occur on or around March 15, 2021).

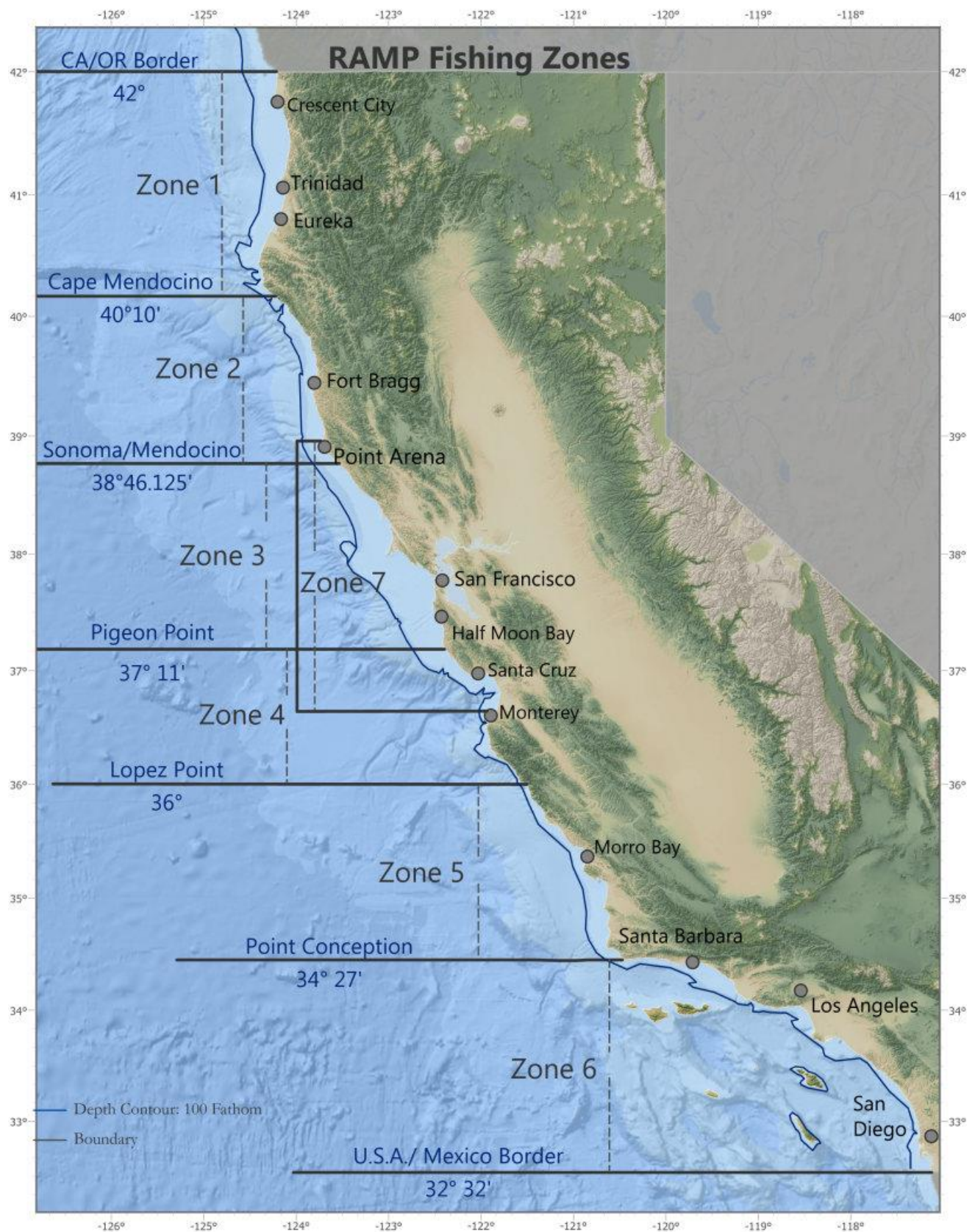


Figure 1. RAMP Fishing Zone boundaries.

2020-21 Risk Assessment: Available Data

Last updated: February 11, 2021

TRIGGERS REQUIRING MANAGEMENT ACTION

Section 132.8(c)(1): Confirmed Entanglements

Data provided by: Lauren Saez and Dan Lawson (NMFS)

Summary of All West Coast Entanglements (by NMFS)

Fishing Zone: All Zones

Total entanglements for calendar year 2021: none

- Humpback whales: 0 confirmed entanglements
- Blue whales: 0 confirmed entanglements
- Leatherback sea turtles: 0 confirmed entanglements

Supplemental Information:

- All entanglement reports are subject to further review.

Evaluation of RAMP 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: 0
- During the current calendar year: 0

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

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

Monterey Bay Whale Watch (Fishing Zone 4)

- No Humpback whales have been observed by MBWW since December 30, 2020.

- No Blue whales have been observed by MBWW since December 24, when a single whale was seen.

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

No additional information was provided to CDFW. 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)

Monterey Bay Whale Watch (*Fishing Zone 4*)

- The absence of Humpback whales is consistent with average historical winter-time patterns (Figure 1) that show few or no Humpback whale sightings during January and early February when whales are mostly at their breeding areas off Mexico and central America.

- The absence of Blue whales is consistent with their known southward migration to breeding areas during winter.

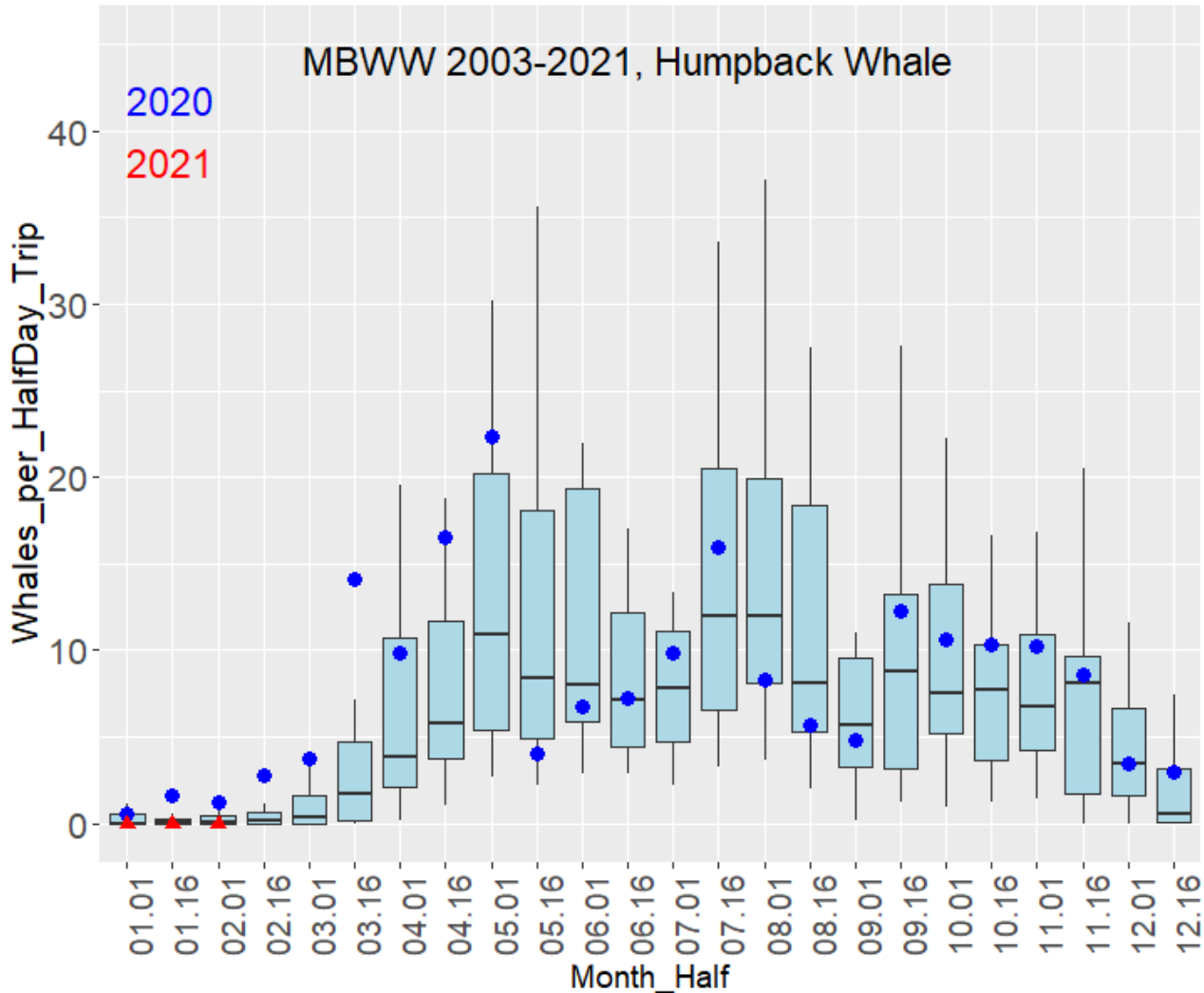


Figure 1. Historical Monterey Bay Whale Watch data for 2003-2021, summarizing the average and variation in the number of Humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the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

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

Data provided by: California Department of Fish and Wildlife; Accessed from CDFW's Marine Landings Data System (MLDS) on February 9, 2021 and Automatic Licensing Data System (ALDS) on February 2, 2021, Solar Logger Pilot Project provided by Kathi George (The Marine Mammal Center)

Marine Landings Data System *(All Fishing Zones)*

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 February 2, 2021, there have been 1,151 landings of Dungeness crab with a total volume of 1,985,552 pounds and with a total Ex-Vessel Value of \$8,884,871. Average unit price for these landings was \$4.74 (excluding receipts with unit price of \$0 reported). A total of 331 vessels have made at least one landing during the 2020-21 season.

- CDFW Fishing Zones (aggregated CDFW Fishing Blocks used to report catch location) are shown in Figure 9 with only 6 complete weeks of landings to analyze. The highest volume came from Fishing Zone 3.
- Of the 331 vessels, 329 could be tied to a Dungeness crab vessel permit and are organized in the trap tiers as follows:
 - Tier 1: 42 vessels
 - Tier 2: 42 vessels
 - Tier 3: 43 vessels
 - Tier 4: 38 vessels
 - Tier 5: 34 vessels
 - Tier 6: 87 vessels
 - Tier 7: 43 vessels
- Week 5 shows the highest number of aggregated maximum potential traps represented by the number of vessels that made at least one landing and the overall traps represented by their vessel permit tier, with an estimated total of 94,250 traps deployed. Overall the highest number of these maximum potential traps are deployed in Fishing Zone 3, followed by Zone 1 (Figure 10).
- Average landings by week and port complex are hovering between \$3 and \$7 (Figure 11).

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

CDFW has received bi-weekly reports since the first reporting period of January 1, 2021 through the most recent reporting period of February 1, 2021. A low number of reports were submitted for the first time period and late submission of reports for the most recent time period have prevented summaries from being completed. As a result, CDFW is only providing a summary of January 16, 2021 reports (Table 1).

Table 1. Summary of information provided in January 16,2021 bi-weekly reporting period by Fishing Zone (1-6). Accessed from CDFW's Bi-Weekly Reporting database on February 9, 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 | 49 | 332 | 16,254 | 15 | 35 | 83 | 1 | 0 |
| Zone 2 | 7 | 183 | 1,280 | 14 | 23 | 35 | 0 | |
| Zone 3 | 105 | 298 | 31,321 | 23 | 47 | 80 | 0 | |
| Zone 4 | NR-C | NR-C | NR-C | NR-C | NR-C | NR-C | 0 | |
| Zone 5 | NR-C | NR-C | NR-C | NR-C | NR-C | NR-C | 0 | |
| Zone 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Totals | 161 | | 48,855 | | | | 1 | 0 |

Solar Loggers (Fishing Zone 1, 3, & 4)

The vessel track data provided by the solar logger pilot project was divided into three separate report periods to show movement of the fishing activity over time between: 1) January 1 – 15, 2021 (Figure 2), 2) January 16 – 31, 2021 (Figure 3) and 3) February 1 - 9, 2021 (Figure 4). From vessel participation in the project (and not necessarily representative of the entire fishery), Fishing Zone 3 showed the most activity. Several vessels participating in the pilot are fishing outside of California this season.

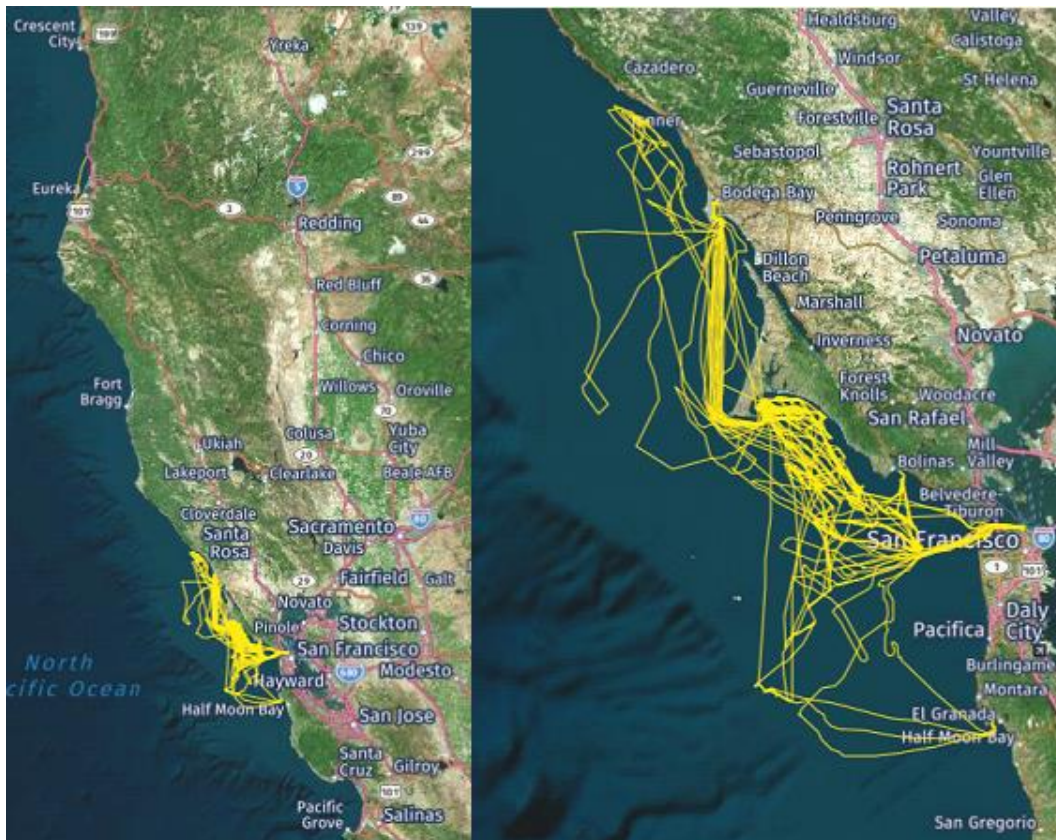


Figure 2. Figure 2. Fishing trips from January 1 - 15, 2021 (58 trips). The figure on the left represents the entire coast where vessels may be participating while the figure on the right focuses in on the only area where fishing activity occurred within Fishing Zone 3.

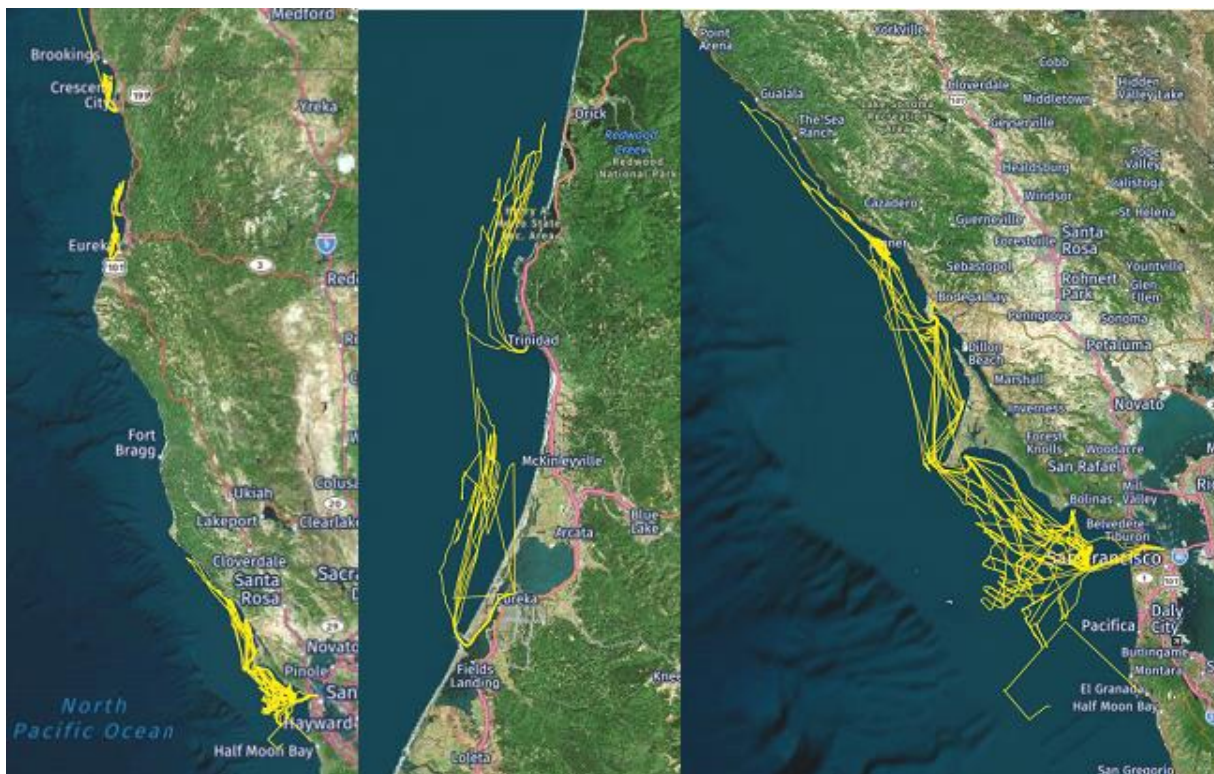


Figure 3. Figure 3. Fishing trips from January 16 – 31, 2021 (81 trips). The figure on the left represents the entire coast where vessels may be participating. The center figure focuses on fishing activity in the middle of Fishing Zone 1 while the figure on the right focuses in on fishing activity within Fishing Zone 3.

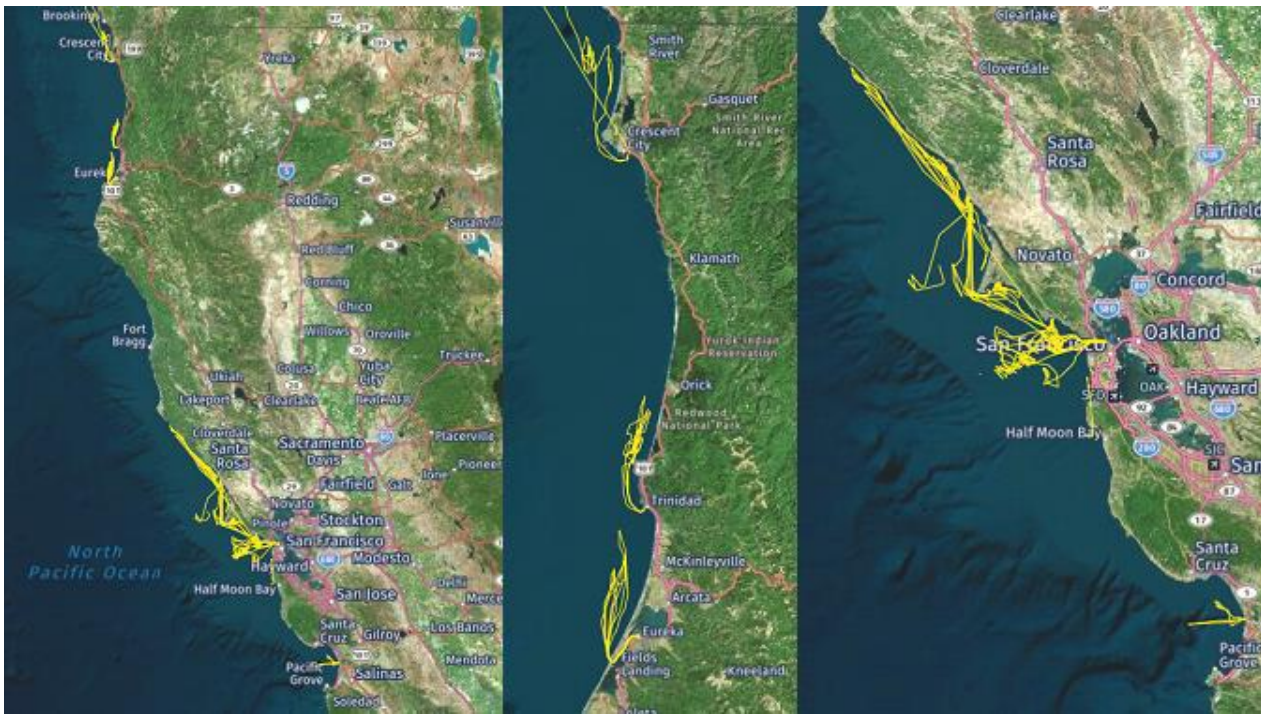


Figure 4. Fishing trips from February 1 – 9, 2021 (50 trips). The figure on the left represents the entire coast where vessels may be participating. The center figure focuses on fishing activity within Fishing Zone 1 while the figure on the right focuses in on fishing activity within Fishing Zones 3 and 4.

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

No information was provided.

Section 132.8(d)(9): Ocean conditions

Accessed from [NOAA's Climate Prediction Center website](https://climatepredictioncenter.noaa.gov/) on February 11, 2021

La Niña conditions persisted in January with a 60% chance of a transition from this condition to ENSO-neutral in the northern hemisphere by the spring months of April, May and June.

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

Data provided by: California Department of Fish and Wildlife

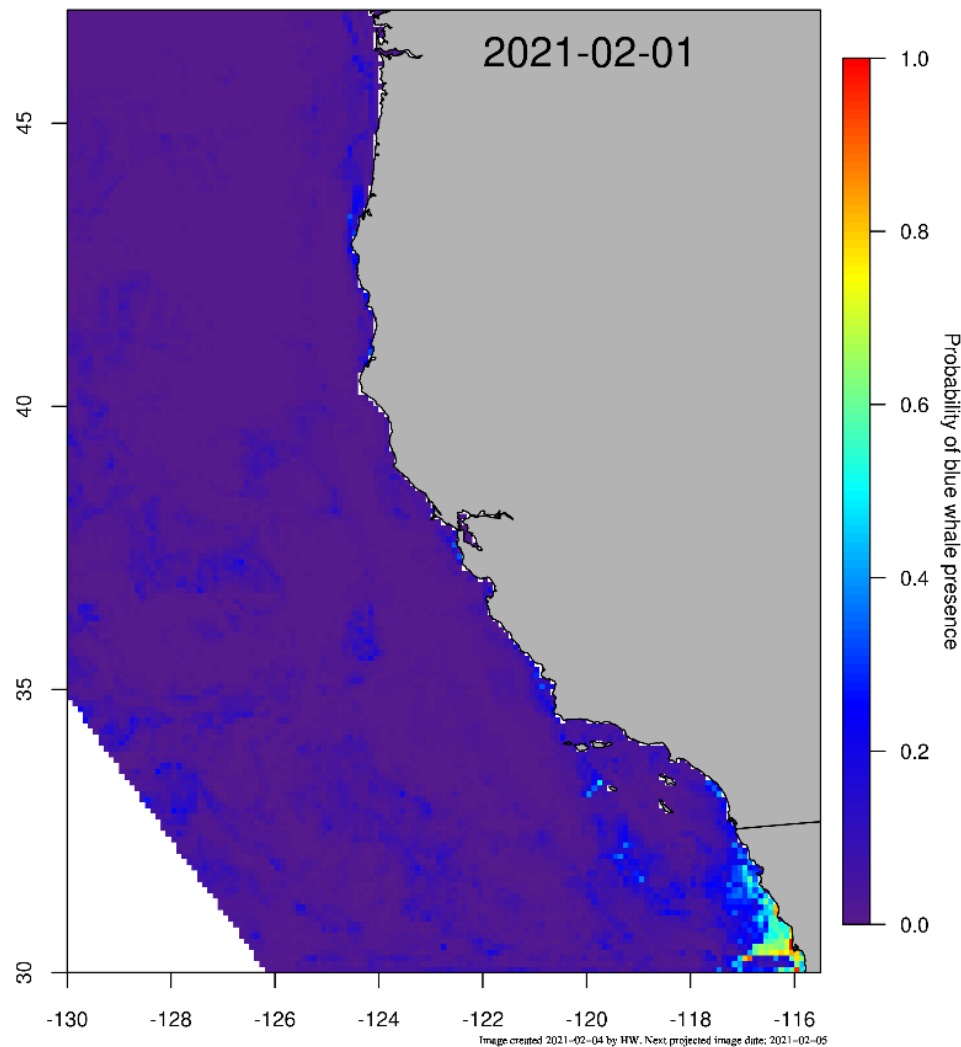
Pursuant to the Risk Assessment and Mitigation Program (Section 132.8, Title 14, CCR), Impact Score Calculations will be assigned beginning with the 2021 calendar year based on confirmed entanglements of Actionable Species (Humpback whales, Blue whales, or Leatherback Sea Turtles) reported to CDFW by NOAA. As described in Section 132.8(c)(1) above, no confirmed entanglements of Actionable Species have been reported for the current calendar year. Therefore, the Impact Score Calculation is 0 for all three species.

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), Kathi George (The Marine Mammal Center), Point Blue Conservation Science

WhaleWatch 2.0 (All Fishing Zones)

The best whale habitat predictions for February 1, 2021 indicate that probability of Blue whale presence is low in Fishing Zones 1-6 (Figure 5).



WhaleWatch 2.0 [or future product name] is a dynamic ocean management tool that aims to provide information on suitable whale habitat in real-time to minimize ship strike risk. Map shows predicted daily blue whale habitat suitability at 10km resolution which represents where whales are most likely to be based on environmental conditions. ([link to website](#))

Contacts: briana.abrahms@noaa.gov and elliott.hazen@noaa.gov
Environmental Research Division, SWFSC, NMFS, NOAA
99 Pacific Street, Monterey CA 93940, USA



Figure 5. WhaleWatch 2.0 map for February 1, 2021. [View a current map.](#)

Solar Loggers (*Fishing Zone 4*)

Track lines from whale watching vessels participating in the solar logger pilot project (Figures 6 & 7) indicate a high amount of effort in the southern half of Monterey Bay during 47 trips between January 1 – 31, 2021.

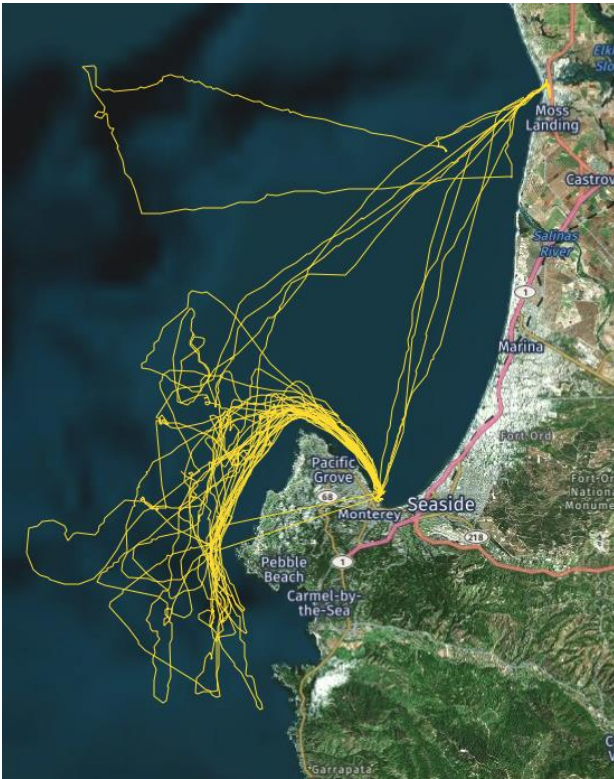


Figure 6. Track lines for 28 whale watch trips in Monterey Bay from January 1 - 15, 2021. Sightings, numbers and species are not reflected on this map.



Figure 7. Track lines for 19 whale watch trips in Monterey Bay from January 16 - 31, 2021. Sightings, numbers and species are not reflected on this map.

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

Over the 7-day period ending February 11, 2021, no whale sightings have been reported for the Gulf of the Farallones (GFNMS) and Monterey Bay National Marine Sanctuaries (through the Spotter/Whale Alert app) or the Santa Barbara Channel (by trained naturalists from the Channel Islands National Marine Sanctuary and National Park Service). However, one Blue whale was

sighted on January 19, 2021 in the GFNMS (Figure 8).



Figure 8. One Blue whale sighting in Fishing Zone 3 on January 19, 2021. Reporting locations are represented by white circles. A given report may or may represent multiple individuals.

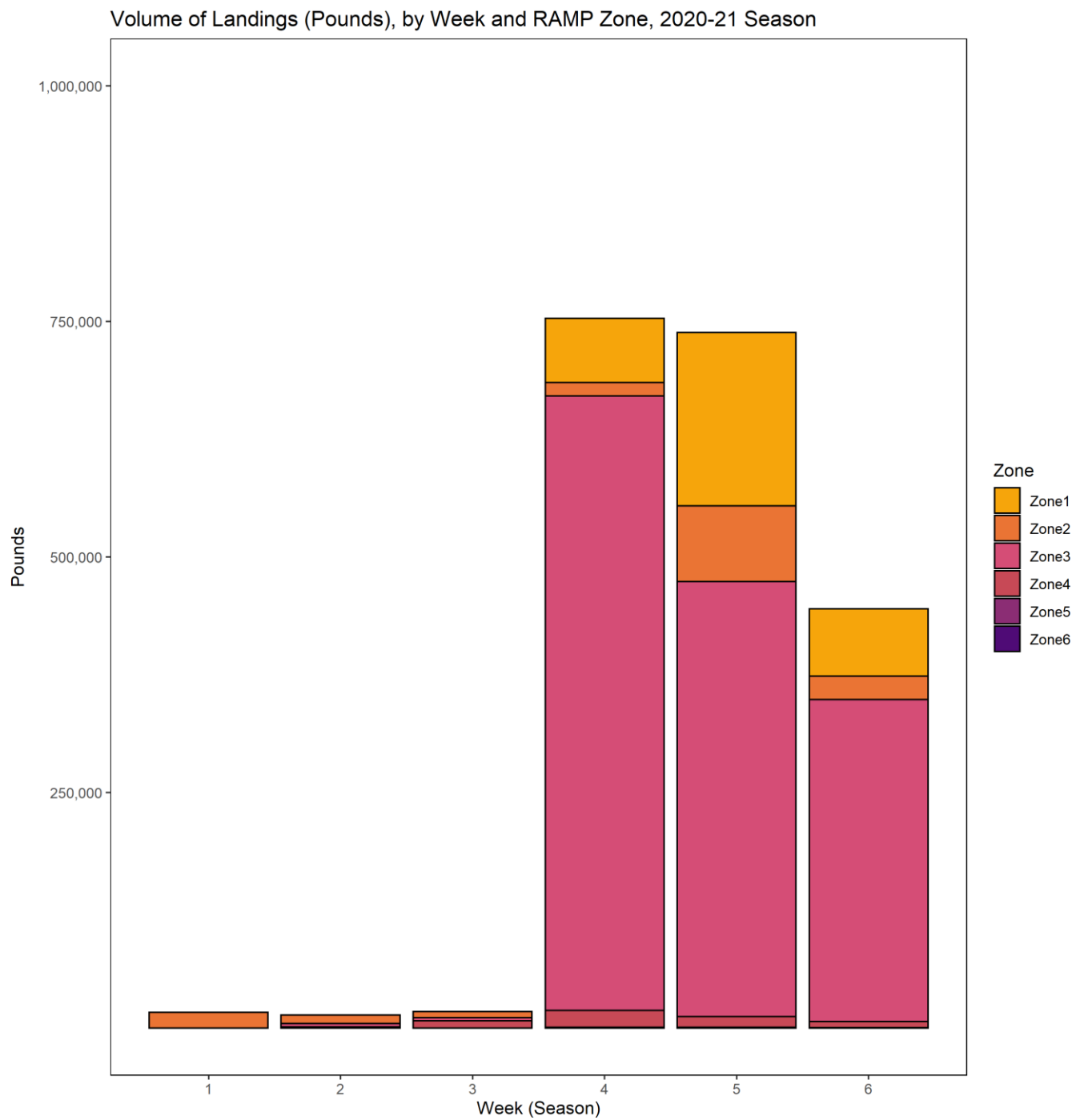


Figure 9. Dungeness crab landings (pounds) by week and Fishing Zone. Accessed from CDFW's MLDS on February 9, 2021. All data are preliminary and subject to change.

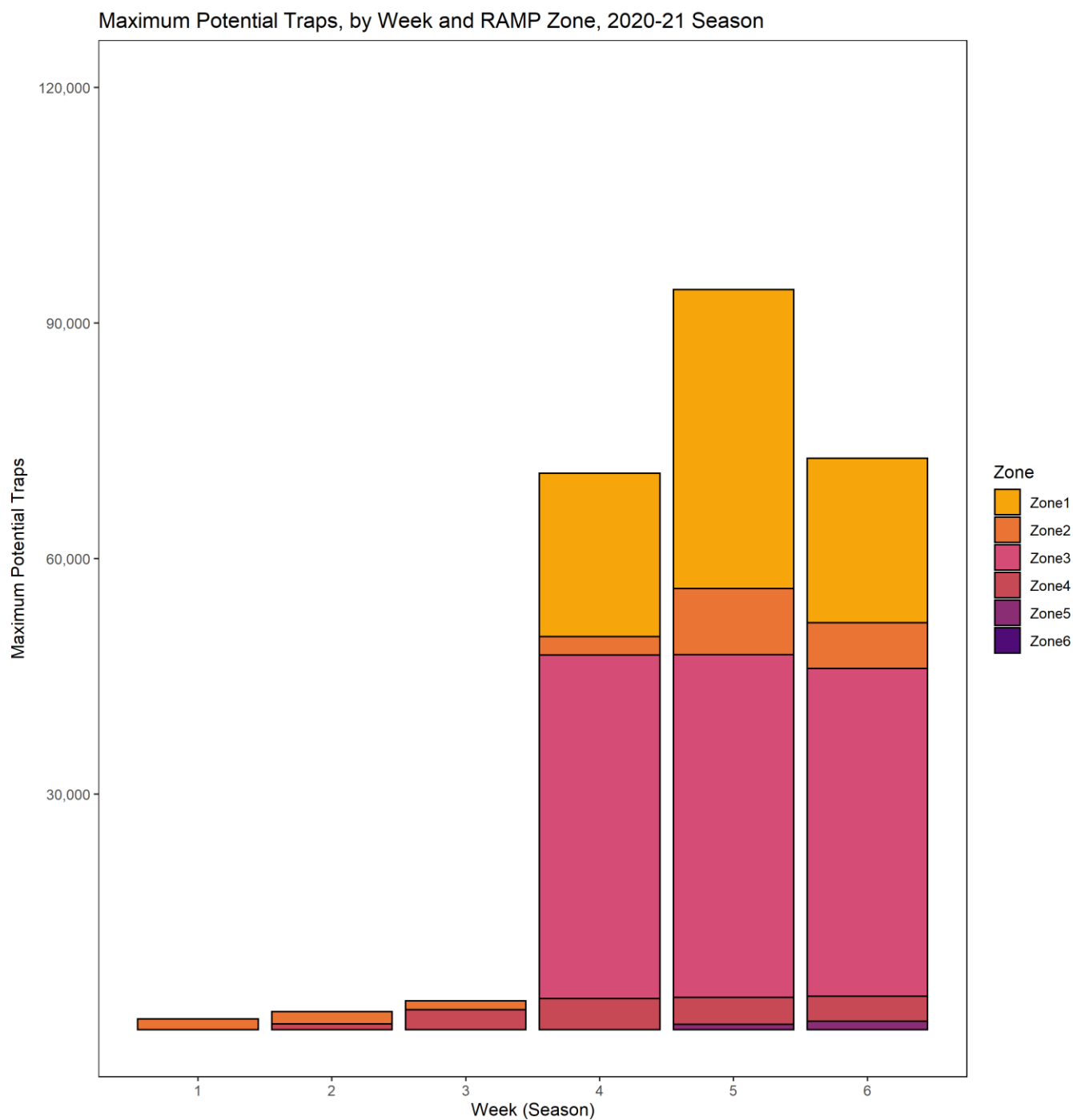


Figure 10. Maximum potential traps by week and Fishing Zone, based on landings data and Dungeness crab vessel permit tier information. Accessed from CDFW's MLDS on February 9, 2021 and CDFW's ALDS on February 2, 2021. All data are preliminary and subject to change.

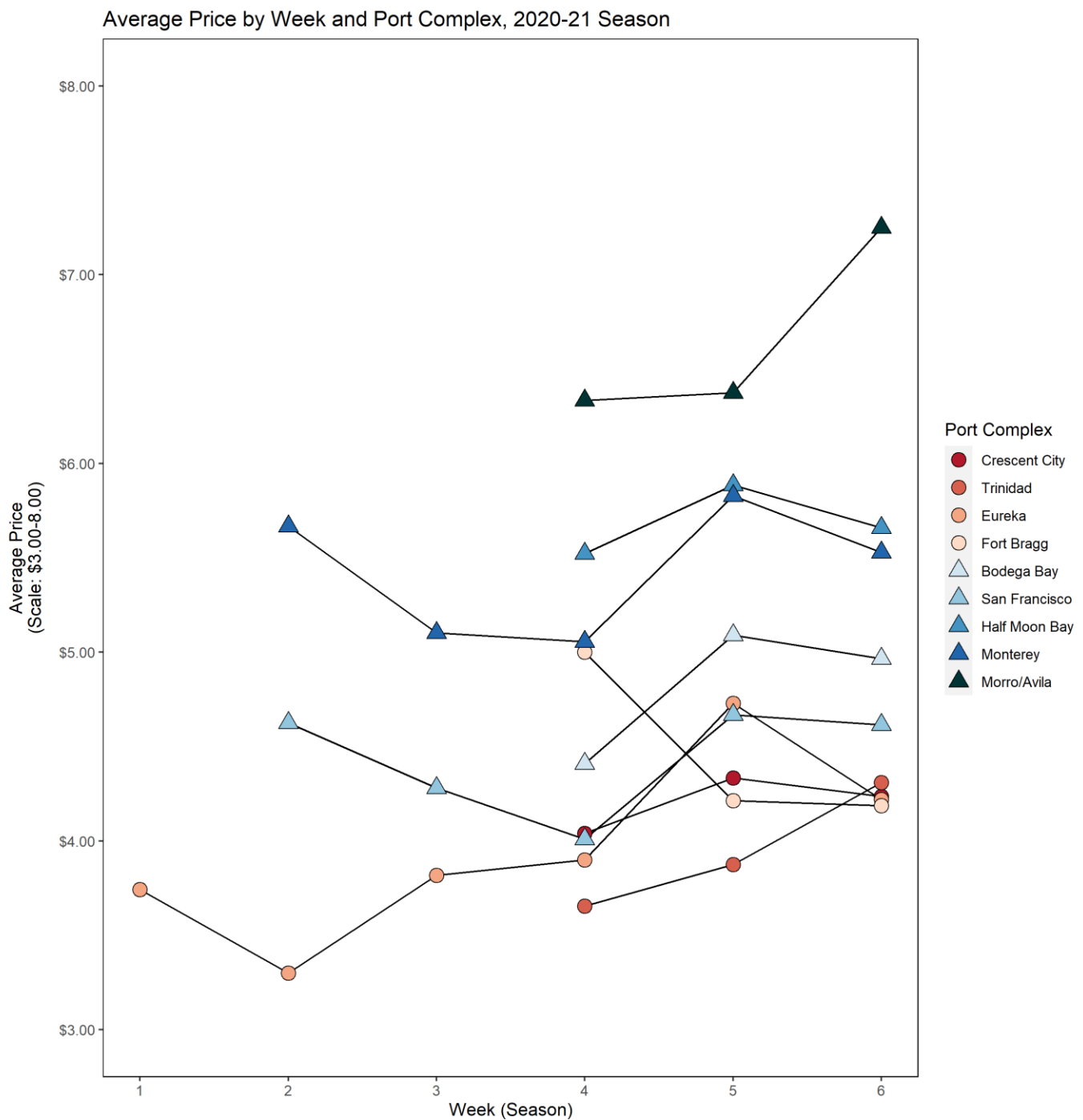


Figure 11. Average price per pound by week and port complex (removing receipts that reported \$0 unit price). Accessed from CDFW's MLDS on February 9, 2021. All data are preliminary and subject to change.