# 2019-20 Risk Assessments: Available Data

Last updated: March 23, 2020

## FACTOR: ENTANGLEMENTS

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

- There have been no confirmed entanglements with California commercial Dungeness crab gear during the 2019-20 fishing season.
- There have been no confirmed entanglement reports since the 3/9 Working Group meeting.

## FACTOR: MARINE LIFE CONCENTRATIONS

*Data provided by: Monterey Bay Whale Watch (compiled by Karin Forney, NOAA SWFSC), Scott Benson (NOAA SWFSC), California Department of Fish and Wildlife*

### Monterey Bay Whale Watch

- The average number of Humpback Whales per half-day trip during the last 7 days (3/11-3/17) is 5.6 (daily range 0-15, Figure 1), compared to the previous two weekly averages of 2.4 and 2.5 whales per half day trip.
- Based on historical patterns that show Humpback Whales arriving during March/April (Figure 2), this doubling of the weekly average whale numbers suggests that whale numbers will continue to increase during the coming weeks.
- No Blue Whales have been observed since mid-December 2019, consistent with their southward winter migration (Figure 3).
- Blue Whales are expected to start arriving off California during late May/June (Figure 4), and their distribution will depend on the availability of krill.
- Gray Whales are currently migrating northbound (from their breeding grounds in Mexico to their feeding areas in Alaska), with an average of 7.7 Gray Whales observed during the last week (3/11-3/17; Figure 5).
- Based on historical patterns, Gray Whale numbers are expected to gradually decrease to near-zero during late March and April (Figure 6), as animals move along California's coast heading north.
- Note: MBWW data are expected to be unavailable after 3/17 because of Monterey County's shelter-in-place order to mitigate the spread of COVID-19.

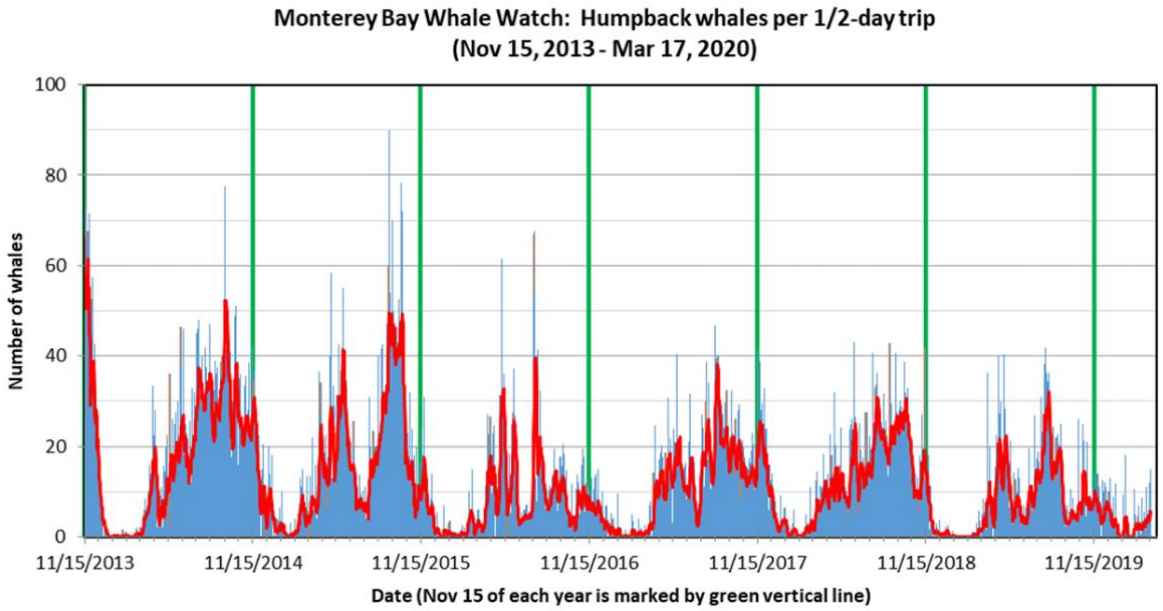


**Figure 1. Number of Humpback Whale sightings from 15 November 2013 – 17 Mar 2020 for Monterey Bay Whale Watch. The y-axis is the number of whales; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.**

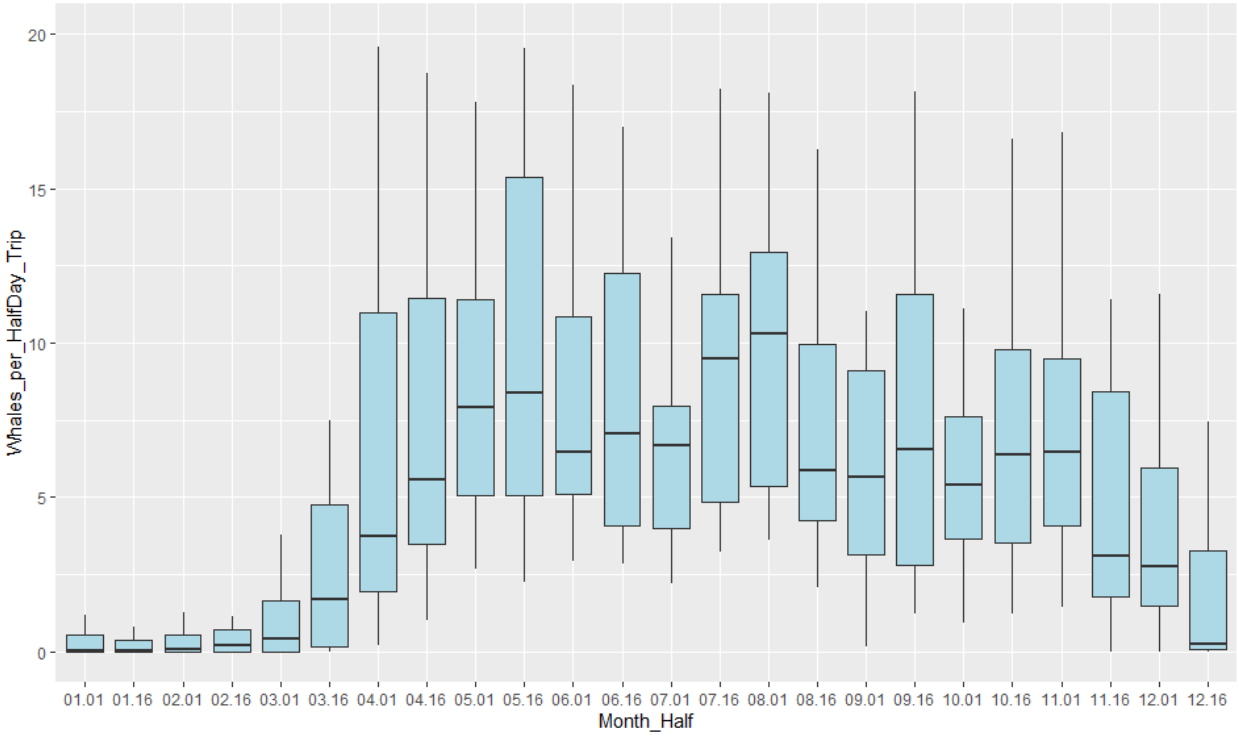


**Figure 2. Historical Monterey Bay Whale Watch data for 2003-2020, summarizing the average and variation in the number of Humpback Whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). The black horizontal line is the average number of whales; the blue box shows the 25th -75th percentiles (i.e., half of all past whale numbers are within the blue box); and the vertical lines show the full range of whale numbers.**

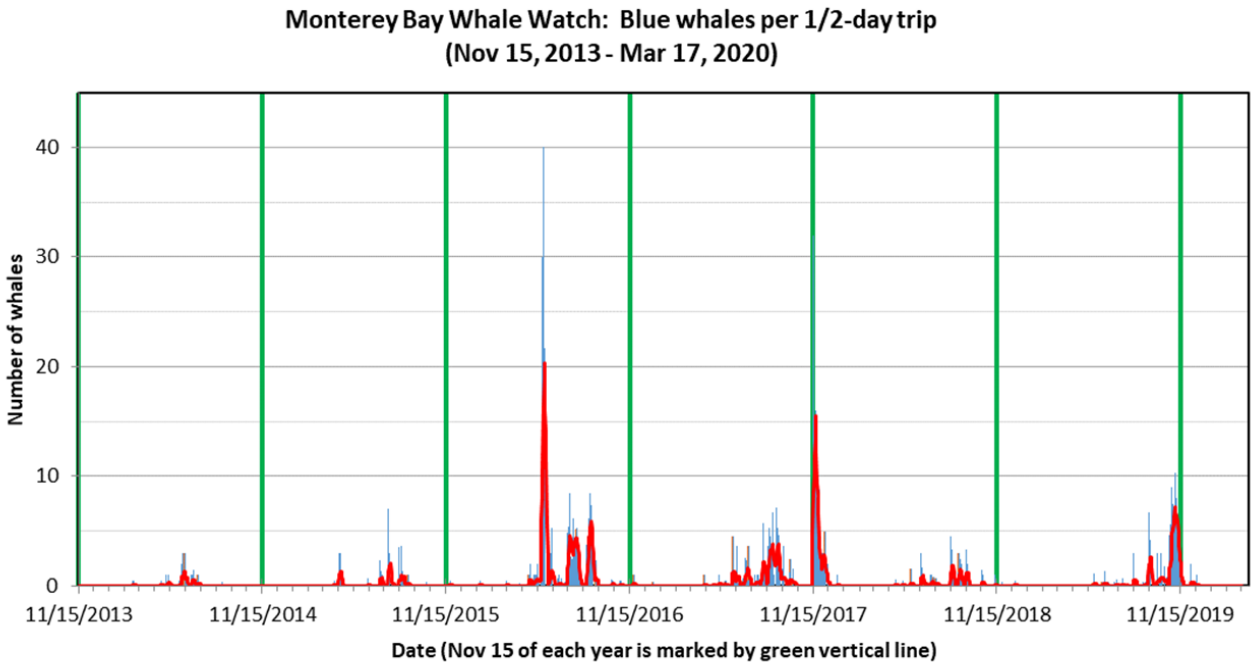


**Figure 3. Number of Blue Whale sightings from 15 November 2013 – 17 Mar 2020 for Monterey Bay Whale Watch. The y-axis is the number of whales; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.**

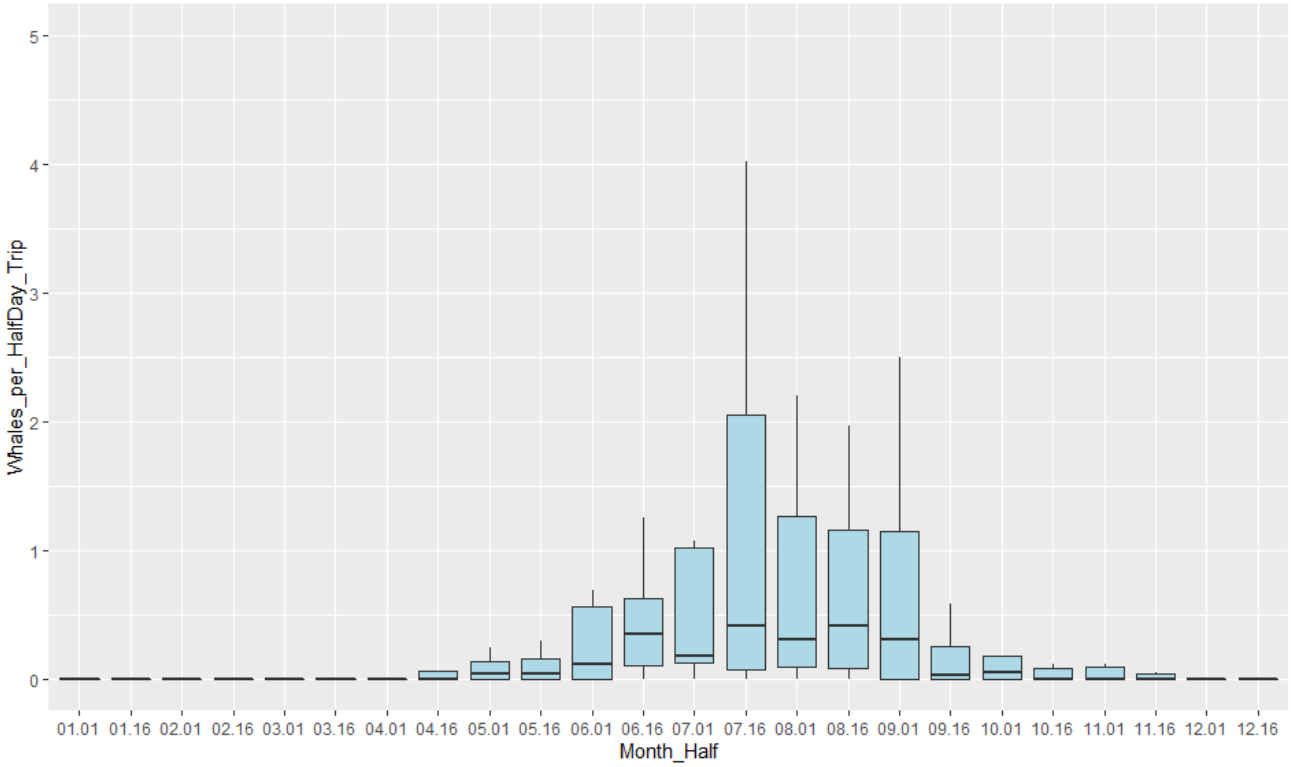


**Figure 4. Historical Monterey Bay Whale Watch data for 2003-2020, summarizing the average and variation in the number of Blue Whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). The black horizontal line is the average number of whales; the blue box shows the 25th -75th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

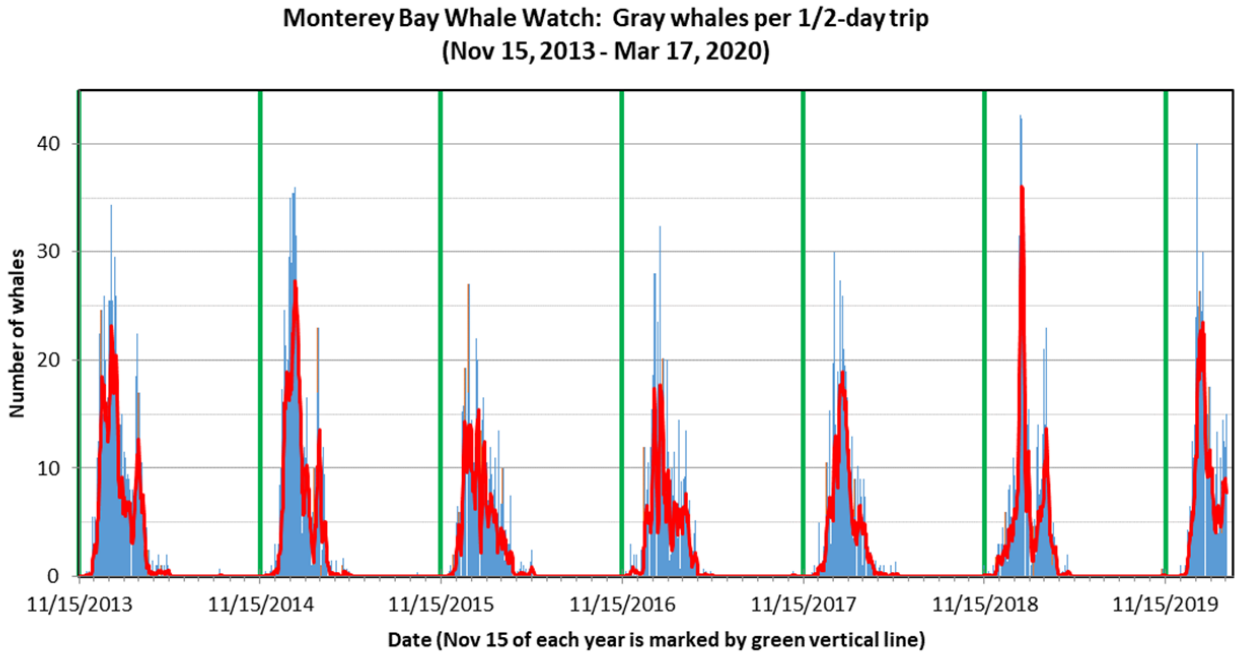


**Figure 5. Number of Gray Whale sightings from 15 November 2013 – 17 Mar 2020 for Monterey Bay Whale Watch. The y-axis is the number of whales; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.**

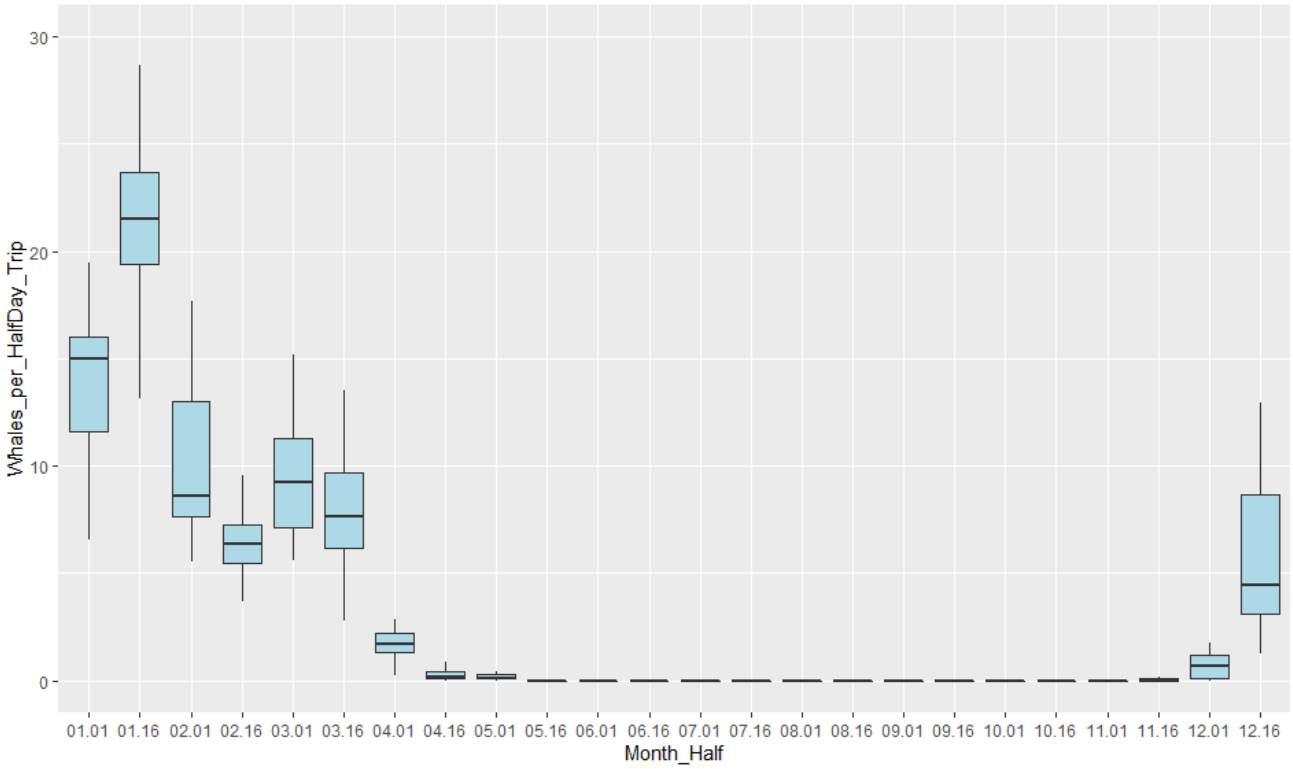


**Figure 6. Historical Monterey Bay Whale Watch data for 2003-2020, summarizing the average and variation in the number of Gray Whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). The black horizontal line is the average number of whales; the blue box shows the 25th -75th percentiles (i.e., half of all past whale numbers are within the blue box); and the vertical lines show the full range of whale numbers.**

## Leatherback Sea Turtle Tagging Data

The four Leatherback Sea Turtles that still have active transmitters (out of the six tagged during September-October 2019) continue to remain outside of the California Current and none appear to be moving toward the California coast at this time.

## CDFW Aerial Survey

- An aerial survey on March 21, 2020 documented 2 Humpback Whales, 18 Grey Whales, and at least 150 dolphins along transect lines from Point Reyes to Monterey Bay (Figure 7).
- Over 550 traps were sighted, mostly outside the Golden Gate (Pacifica to Drakes Bay).
- Large forage fish schools were observed (including krill) around the Farallon Islands.

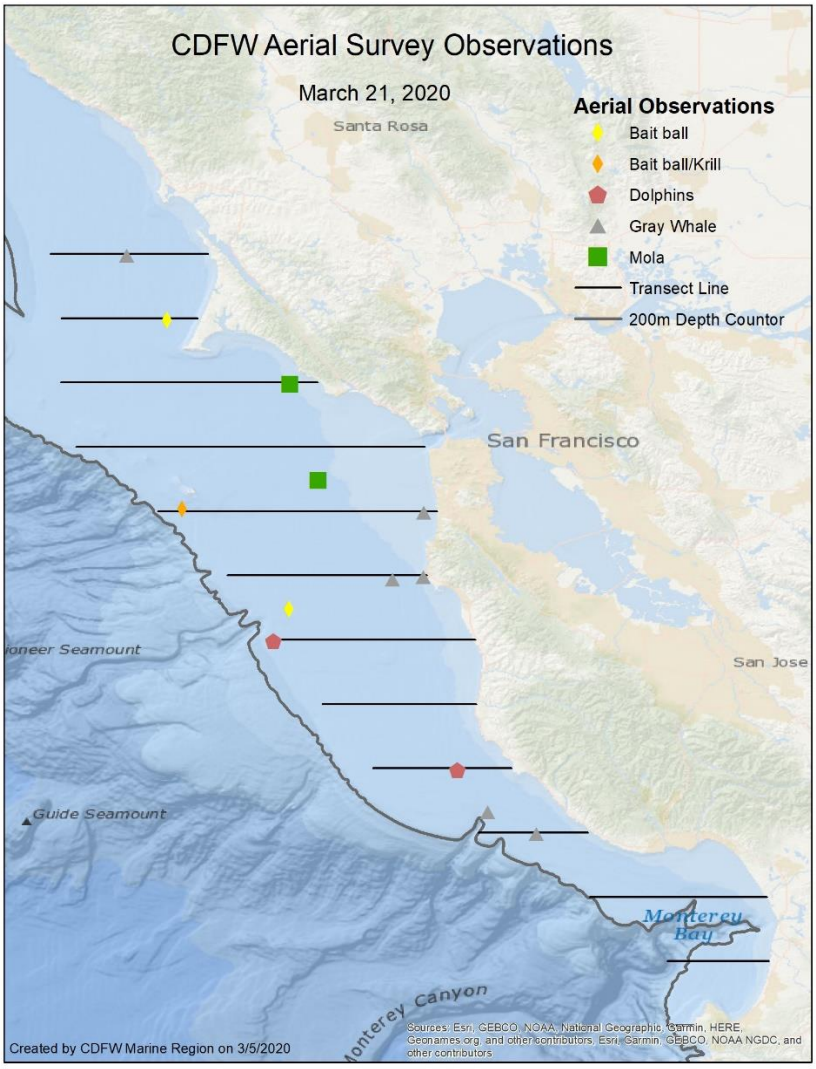


**Figure 7. Observations (non-trap gear) and transect lines from March 21, 2020 aerial survey. Two Humpback Whales observed off Point Pinos were off effort and not shown.**

## FACTOR: FISHING DYNAMICS

*Data provided by: California Department of Fish and Wildlife*

### Marine Landings Data System and Automated License Data System

- As of March 19, there have been 5,733 landings of Dungeness crab (12,698,492 pounds and $43,175,388 in Ex-Vessel Value) by 448 vessels during the 2019-20 season.
- CDFW MacroBlocks (aggregated CDFW Fishing Blocks used to report catch location) are shown in Figure 8.
- Landings have continued to decline since the December 15 opener in the Central Management Area and the December 31 opener in the Northern Management Area, with March landings highest in Crescent City and Bodega Bay (Figure 9) and MacroBlock 1038 had the highest volume (Figure 10).
- Vessel activity continues to decline in all port complexes, although activity was still relatively high in Crescent City and Bodega Bay during Week 13 (3/8-3/14; Figure 11). Vessels which made landings at some point during the 2019-20 season are as follows:
    - Tier 1: 53 vessels
    - Tier 2: 51 vessels
    - Tier 3: 49 vessels
    - Tier 4: 43 vessels
    - Tier 5: 44 vessels
    - Tier 6: 117 vessels
    - Tier 7: 61 vessels
- Recent landings (Week 13) indicate most traps are deployed in MacroBlock 1038, followed by MacroBlocks 1041 and 1042 (Table 1).
- Mean Unit Price has recently dropped in most ports (Figure 12).

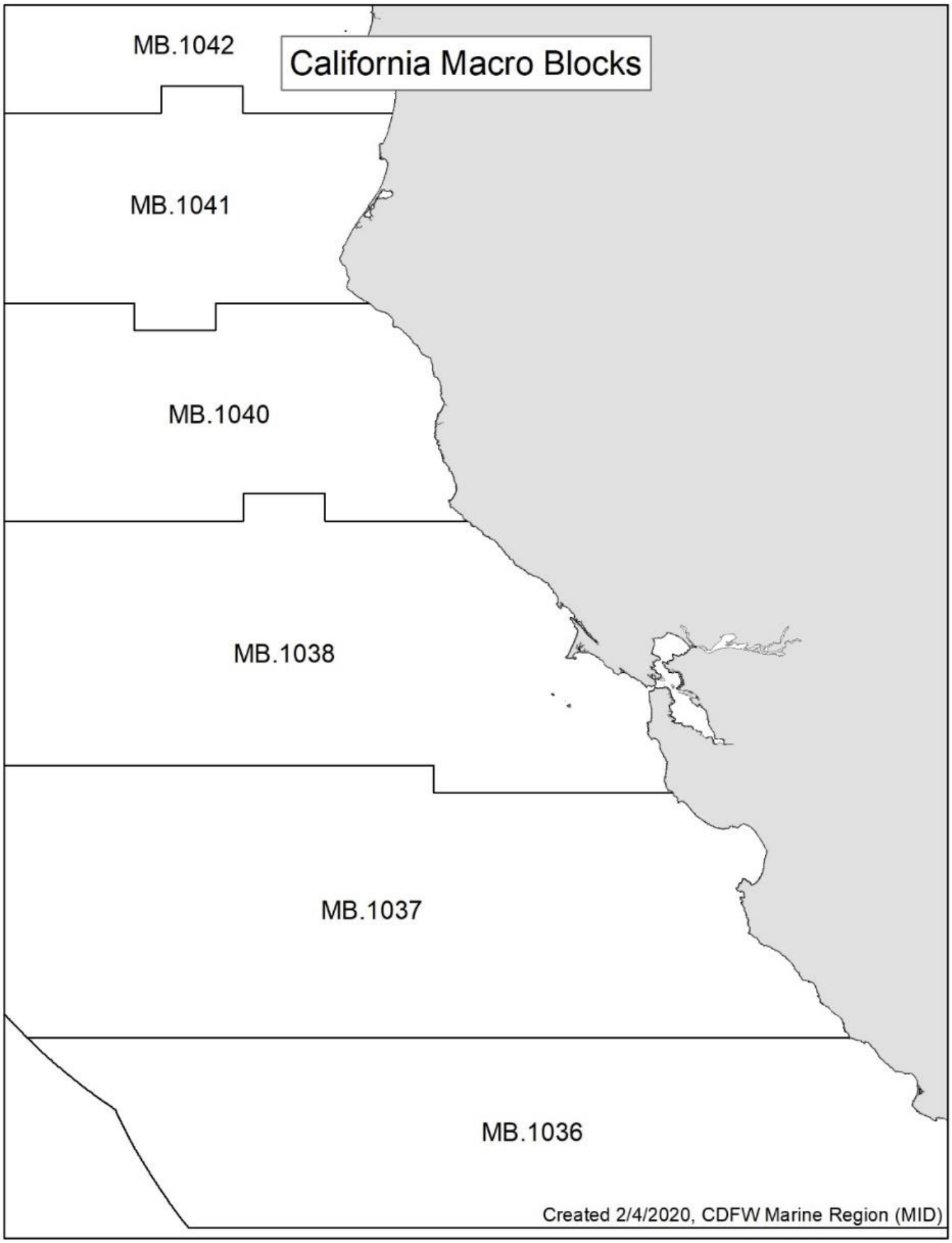


**Figure 8. Map showing spatial extent of MacroBlocks used for summarizing landings analysis.**

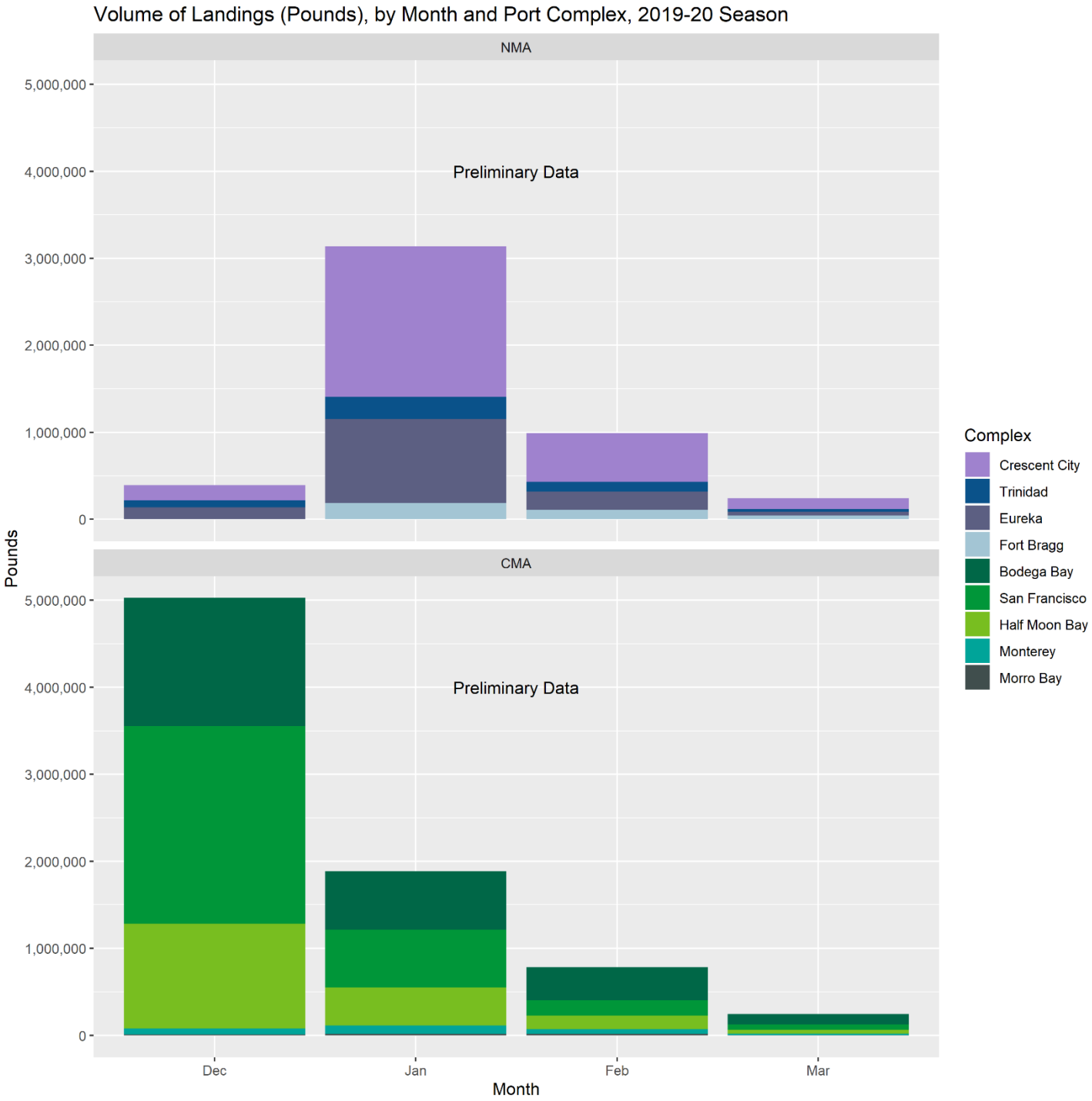


**Figure 9. Dungeness crab landings (pounds) by month and port complex. Accessed from CDFW's Marine Landings Data System on March 19, 2020. All data is preliminary and subject to change.**

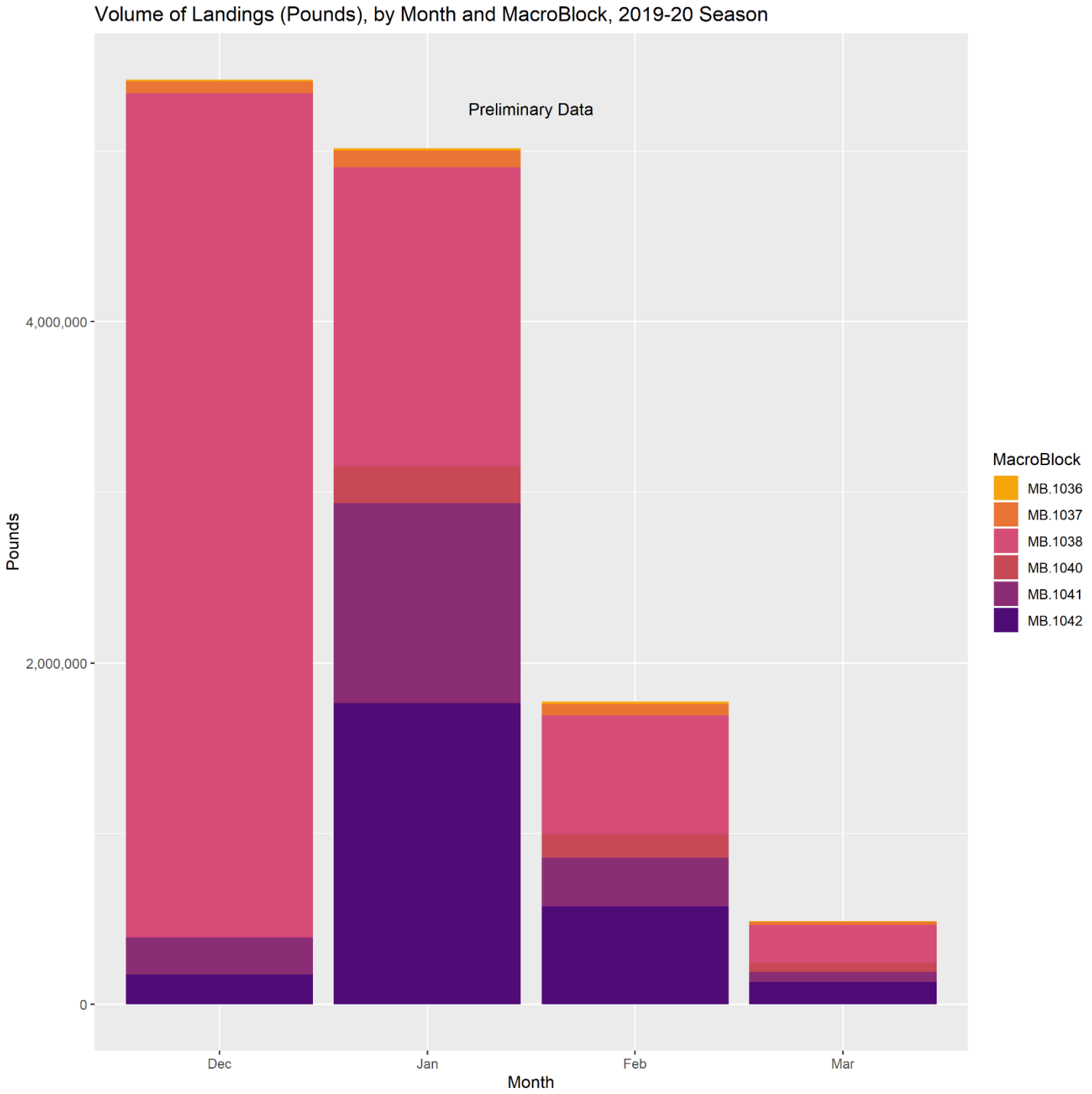


**Figure 10. Dungeness crab landings (pounds) by month and MacroBlock. Accessed from CDFW's Marine Landings Data System on March 19, 2020. All data is preliminary and subject to change.**

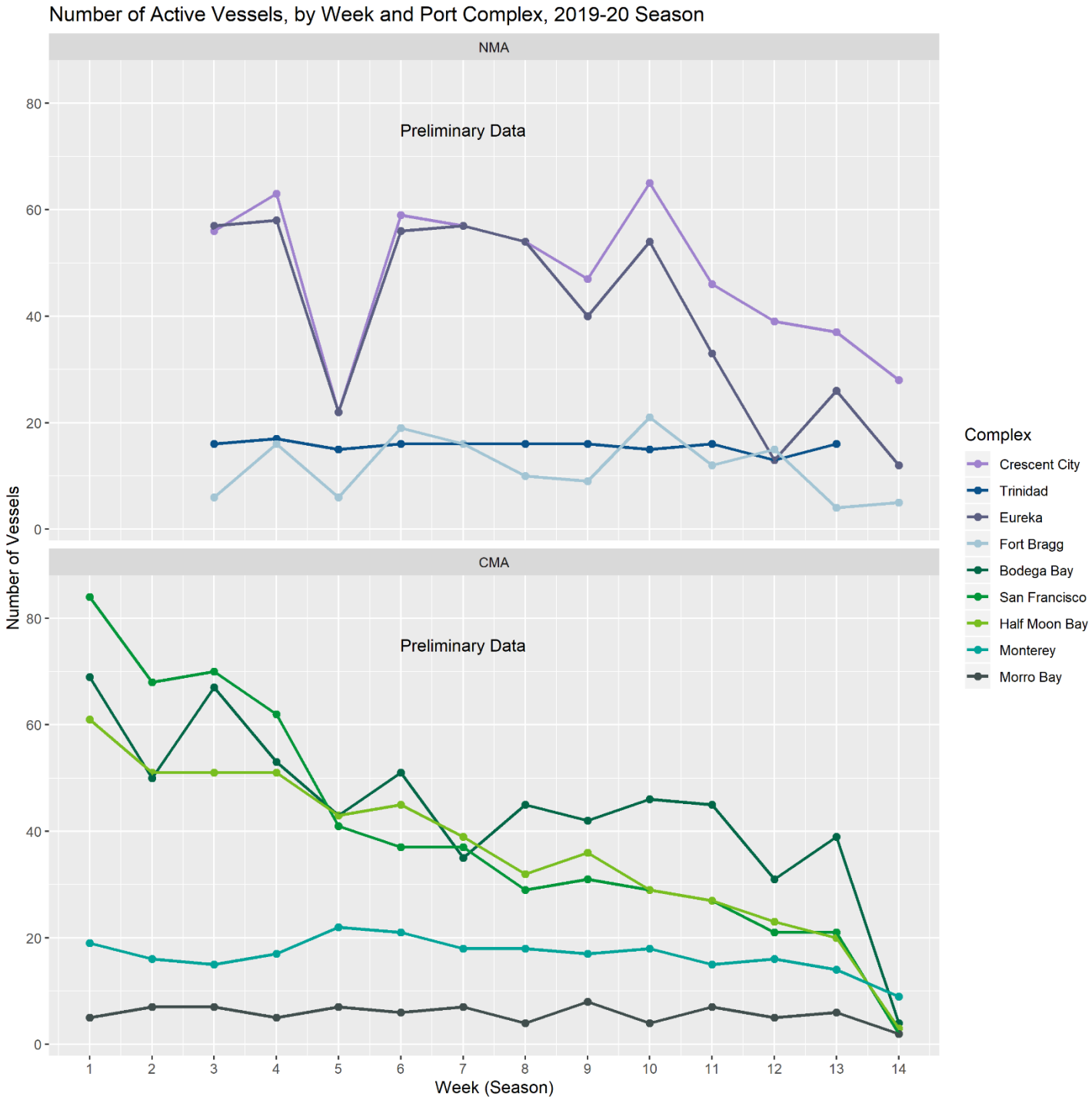


**Figure 11. Number of vessels making Dungeness crab landings by week and port complex. Accessed from CDFW's Marine Landings Data System on March 19, 2020. All data is preliminary and subject to change.**

**Table 1. Maximum number of potential Dungeness crab traps deployed in each MacroBlock by Week. Accessed from CDFW's Marine Landings Data System and CDFW's Automated License Data System on March 19, 2020. All data is preliminary and subject to change.**

| Season Week | MB.1036 | MB.1037 | MB.1038 | MB.1040 | MB.1041 | MB.1042 |
|---|---|---|---|---|---|---|
| Week 1 | 1,100 | 5,425 | 65,900 | *season not open | *season not open | *season not open |
| Week 2 | 1,725 | 4,350 | 53,700 | *season not open | *season not open | *season not open |
| Week 3 | 1,725 | 4,400 | 60,325 | 2,175 | 24,225 | 20,875 |
| Week 4 | 1,300 | 5,100 | 52,075 | 5,175 | 23,875 | 24,175 |
| Week 5 | 1,300 | 5,000 | 37,600 | 1,600 | 14,350 | 9,550 |
| Week 6 | 1,550 | 5,300 | 39,900 | 5,425 | 22,600 | 23,400 |
| Week 7 | 1,725 | 4,175 | 33,700 | 5,125 | 24,250 | 20,075 |
| Week 8 | 1,050 | 5,150 | 31,875 | 3,675 | 22,300 | 19,575 |
| Week 9 | 1,725 | 4,575 | 32,100 | 2,975 | 18,600 | 19,325 |
| Week 10 | 1,050 | 5,400 | 31,600 | 6,075 | 22,350 | 23,500 |
| Week 11 | 1,625 | 3,975 | 28,525 | 4,150 | 14,100 | 17,750 |
| Week 12 | 1,475 | 3,850 | 21,550 | 4,250 | 8,400 | 14,775 |
| Week 13 | 1,550 | 3,950 | 24,675 | 2,225 | 11,250 | 13,800 |
| Week 14 | *withheld for confidentiality | 2,125 | 2,675 | 1,025 | 3,325 | 10,650 |

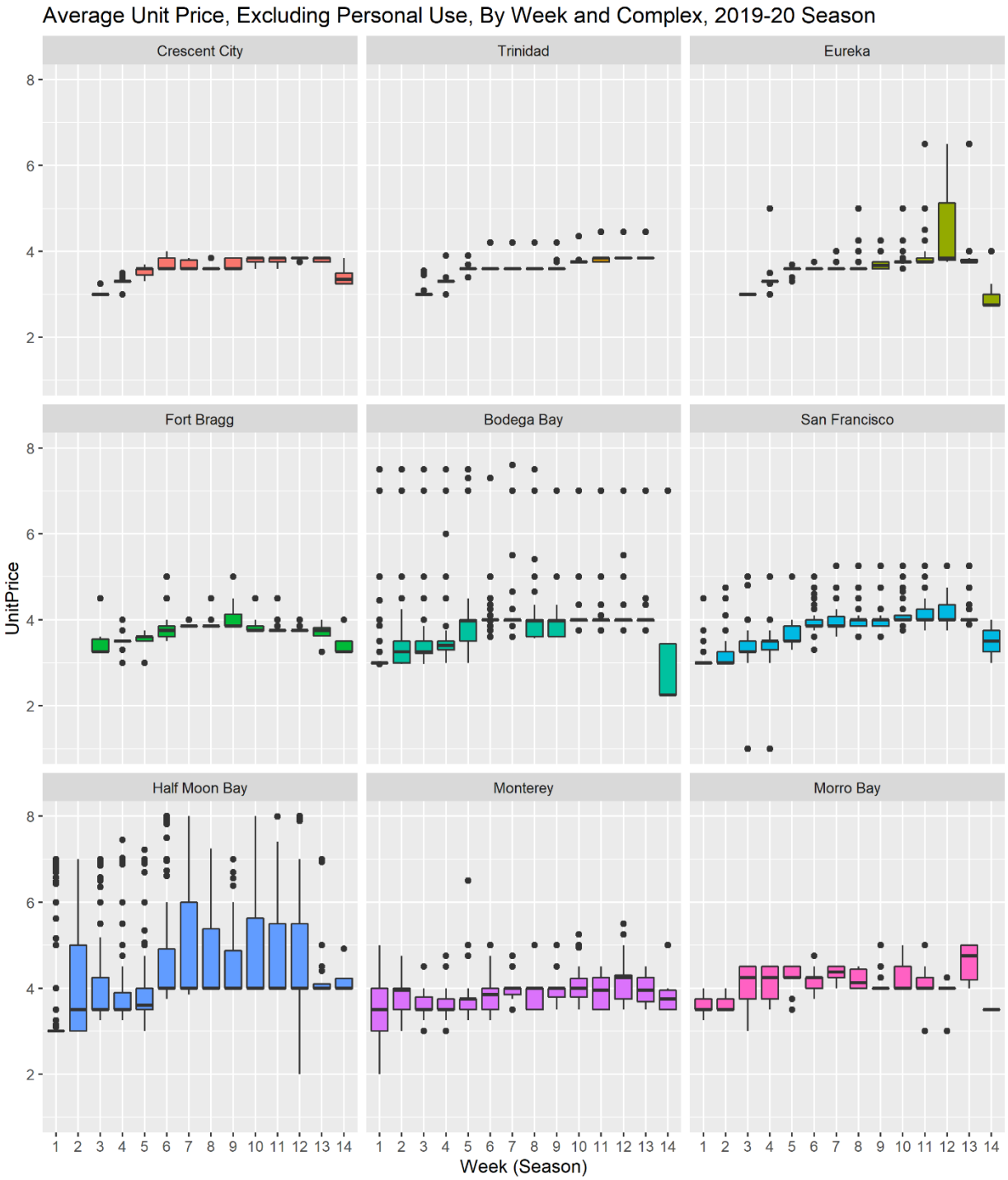


**Figure 12. Boxplots showing mean, spread (25% - 75%), and outlier values for unit price (dollars per pound) of Dungeness crab by week and port complex. Records where unit price was $0 (usually indicating personal use) were suppressed. Accessed from CDFW's Marine Landings Data System on March 19, 2020. All data is preliminary and subject to change.**

## FACTOR: OCEAN AND FORAGE CONDITIONS

*No new information was provided for this factor. Information provided by Jarrod Santora and Isaac Schroeder (NMFS SWFSC and UC Santa Cruz) for the March 9 Working Group Risk Assessment (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=177681&inline) is still relevant for the March 25 discussion.*