

2019-20 Risk Assessments: Available Data

Last updated: March 5, 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
- Entanglements in other or unknown gear during 2020
 - Humpback Whales: 2 confirmed entanglements
 - February 14: entangled with gillnet, reported off San Diego
 - February 28: entangled with unidentified gear (dark colored line), reported off Monterey
 - Blue Whales: 0 reported entanglements
 - Leatherback Sea Turtles: 0 reported entanglements
 - Gray Whales: 1 confirmed, 1 unconfirmed entanglement
 - 1 confirmed entanglement with gillnet reported off San Diego (January 20)
 - 1 unconfirmed entanglement with unidentified gear reported off Oxnard (January 12)

FACTOR: MARINE LIFE CONCENTRATIONS

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

Leatherback Turtle Tagging Data

As of March 1, the four leatherback turtles that still have active transmitters (out of the six tagged during September-October 2019) remain outside of the California Current and none appear to be moving toward the California coast at this time.

Monterey Bay Whale Watch Data

- Humpback Whale sightings (Figure 1) have remained low during February and early March, with an average of 2.4 humpback whales per half-day trip (range 0-9) during the last 7 days (2/27-3/4). This is similar to the 2-week average of 2.5 whales per half day trip, suggesting

a stable, low-level presence during the winter months. Humpback Whale observations are expected to increase during the coming weeks as whales return from the breeding areas to their summer feeding grounds.

- No Blue Whales have been observed since mid-December, consistent with their southward winter migration (Figure 2).
- The number of Gray Whales migrating southward past Monterey has decreased since the mid-January peak of about 30 whales per half day trip (Figure 3). The first northbound whales were documented mid-February, and a second peak of northbound whales is expected by late March. During the past two weeks, the average number of gray whales seen per half-day trip has been 5.9.

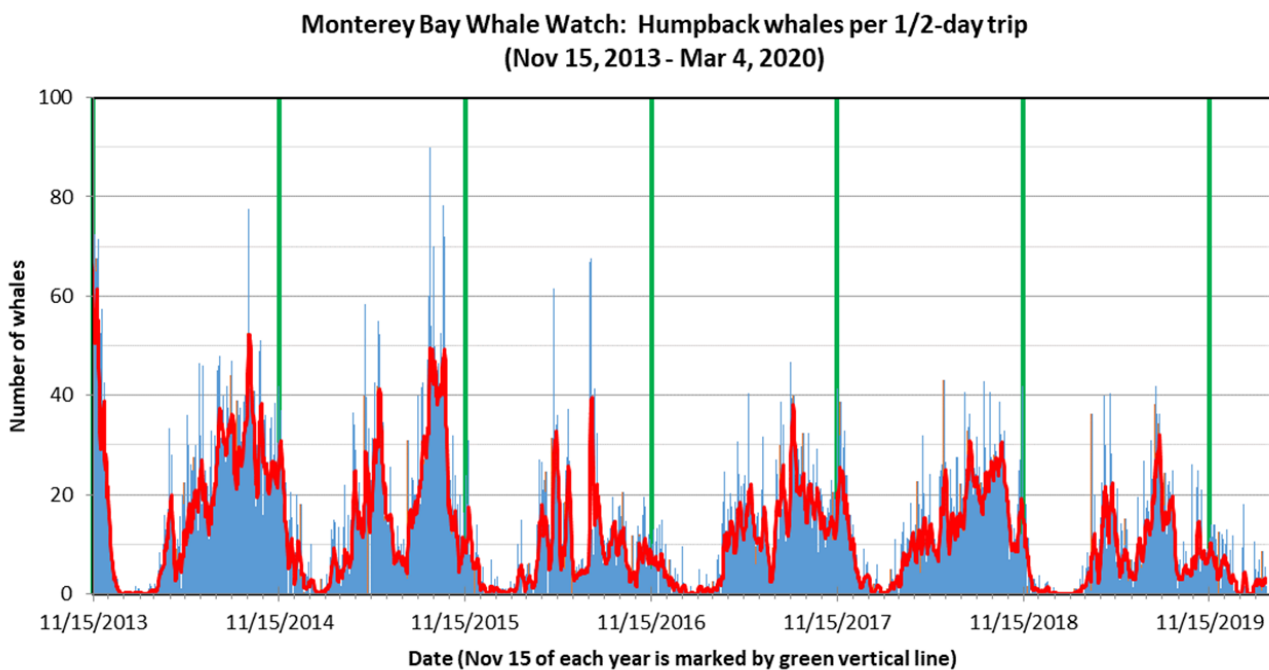


Figure 1. Number of Humpback Whale sightings from 15 November 2013 – 4 Mar 2020 for Monterey Bay Whale Watch. The y-axis is the number of whales; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.

Monterey Bay Whale Watch: Blue whales per 1/2-day trip
(Nov 15, 2013 - Mar 4, 2020)

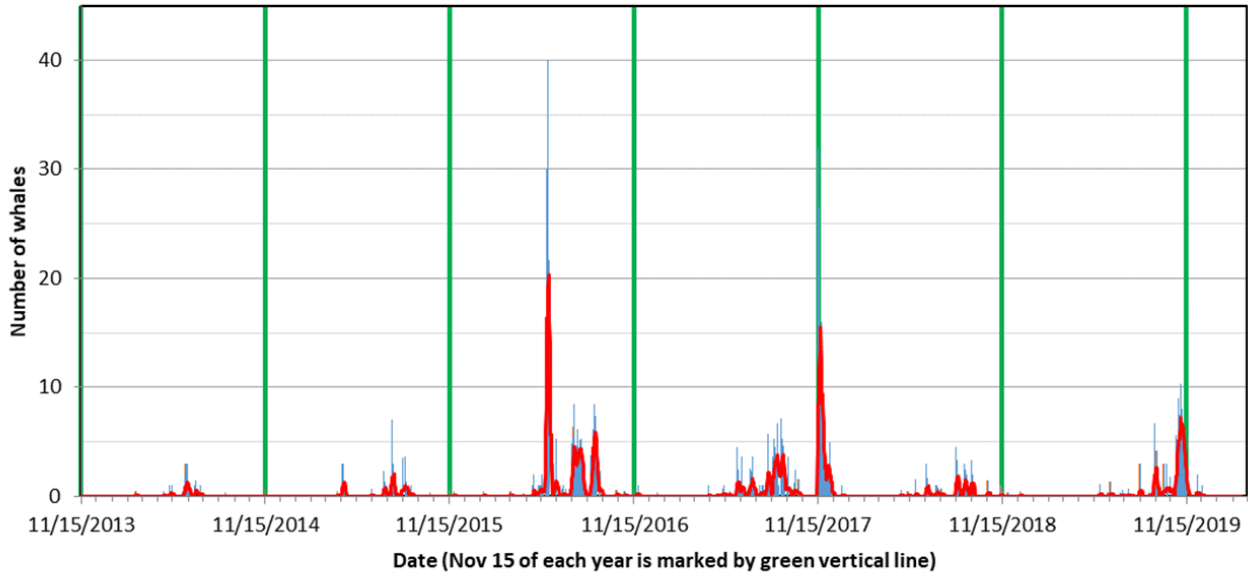


Figure 2. Number of Blue Whale sightings from 15 November 2013 – 4 Mar 2020 for Monterey Bay Whale Watch. The y-axis is the number of whales; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.

Monterey Bay Whale Watch: Gray whales per 1/2-day trip
(Nov 15, 2013 - Mar 4, 2020)

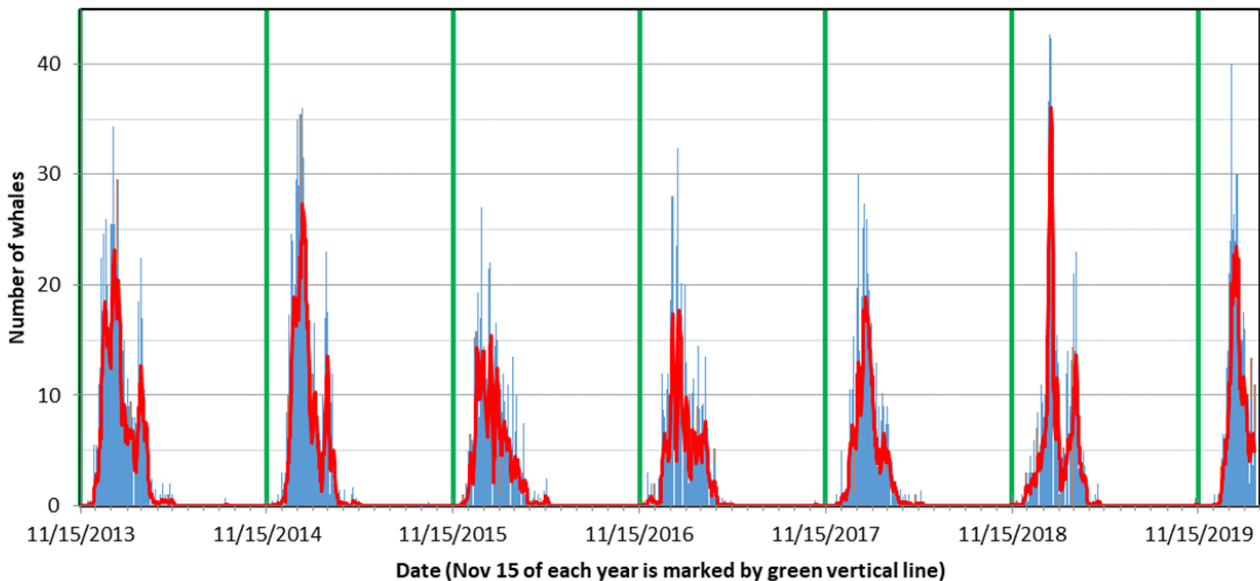


Figure 3. Number of Gray Whale sightings from 15 November 2013 – 4 Mar 2020 for Monterey Bay Whale Watch. The y-axis is the number of whales; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.

CDFW Aerial Survey

- An aerial survey on March 4, 2020 documented 1 Humpback Whale, 7 Gray Whales, 7 Killer Whales, and 2 unidentified large whales along transect lines from Point Reyes to Moss Landing (Figure 4).
- 130 observations of trap gear totaling 408 traps were broadly distributed amongst all transect lines.
- Bait balls and molas were documented as viewing conditions allowed.

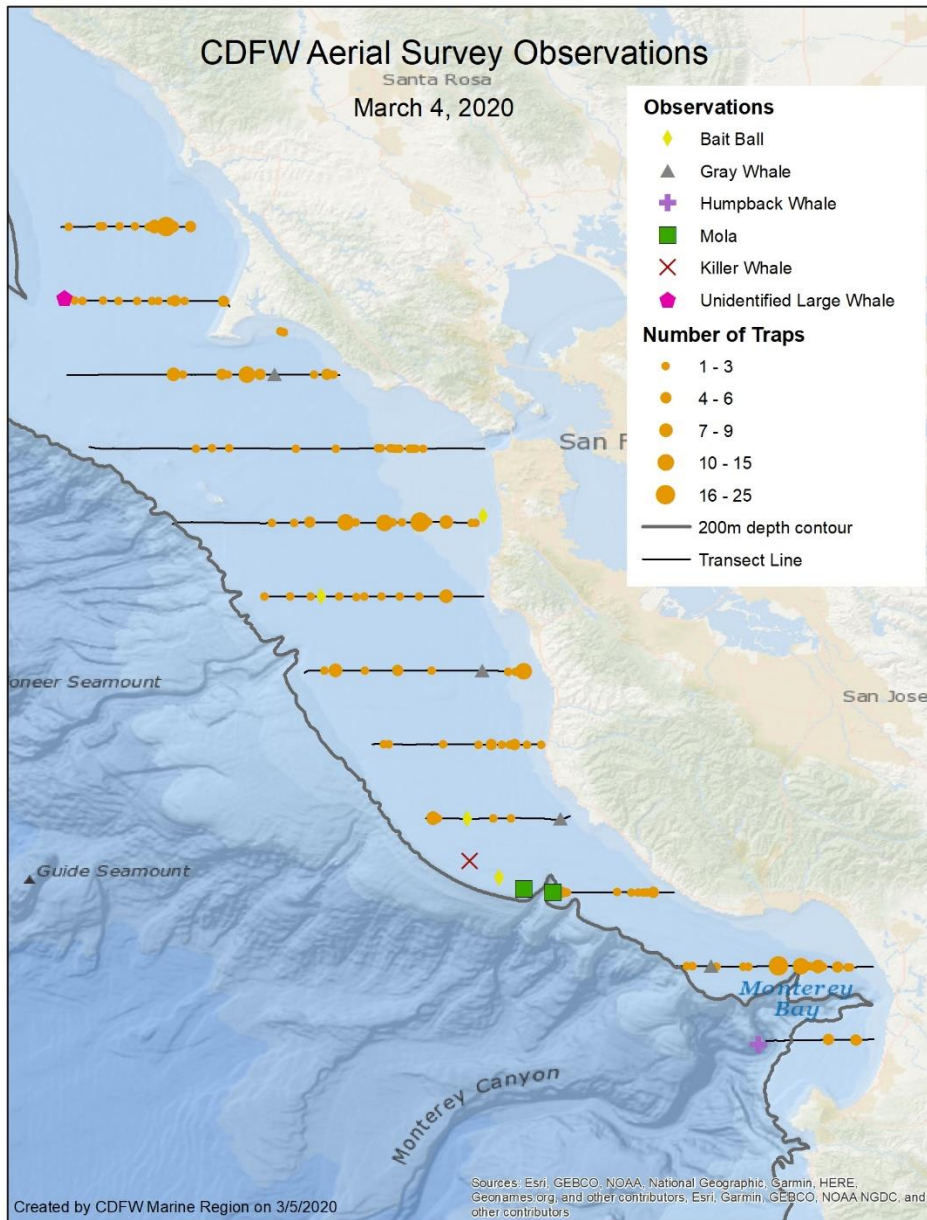


Figure 4. Observations and aerial survey transect lines from March 4, 2020 aerial survey.

FACTOR: FISHING DYNAMICS

Data provided by: California Department of Fish and Wildlife

Marine Landings Data System

- As of March 5, there have been 5,224 landings of Dungeness crab by 444 vessels during the 2019-20 season.
- CDFW MacroBlocks (aggregated CDFW Fishing Blocks used to report catch location) are shown in Figure 5.
- Total landings to date: 12,243,177 lbs (Figure 6) and \$41,419,250 in Ex-Vessel Value. Recent harvest is primarily from MacroBlocks 1038 and 1042 (Figure 7).
- Active vessels (compared to issued permits) for the 2019-20 season are as follows:
 - Tier 1: 53/58 vessels
 - Tier 2: 51/53 vessels
 - Tier 3: 49/57 vessels
 - Tier 4: 43/55 vessels
 - Tier 5: 44/55 vessels
 - Tier 6: 113/164 vessels
 - Tier 7: 61/112 vessels
- Recent activity (number of unique vessels making Dungeness crab landings) is highest for Crescent City and Trinidad, followed by Bodega Bay, San Francisco, and Half Moon Bay (Figure 8).
- Recent landings suggest ~ 136,000 traps are being fished statewide, with most deployed in MacroBlock 1038, followed by 1040 and 1041 (Figure 9).

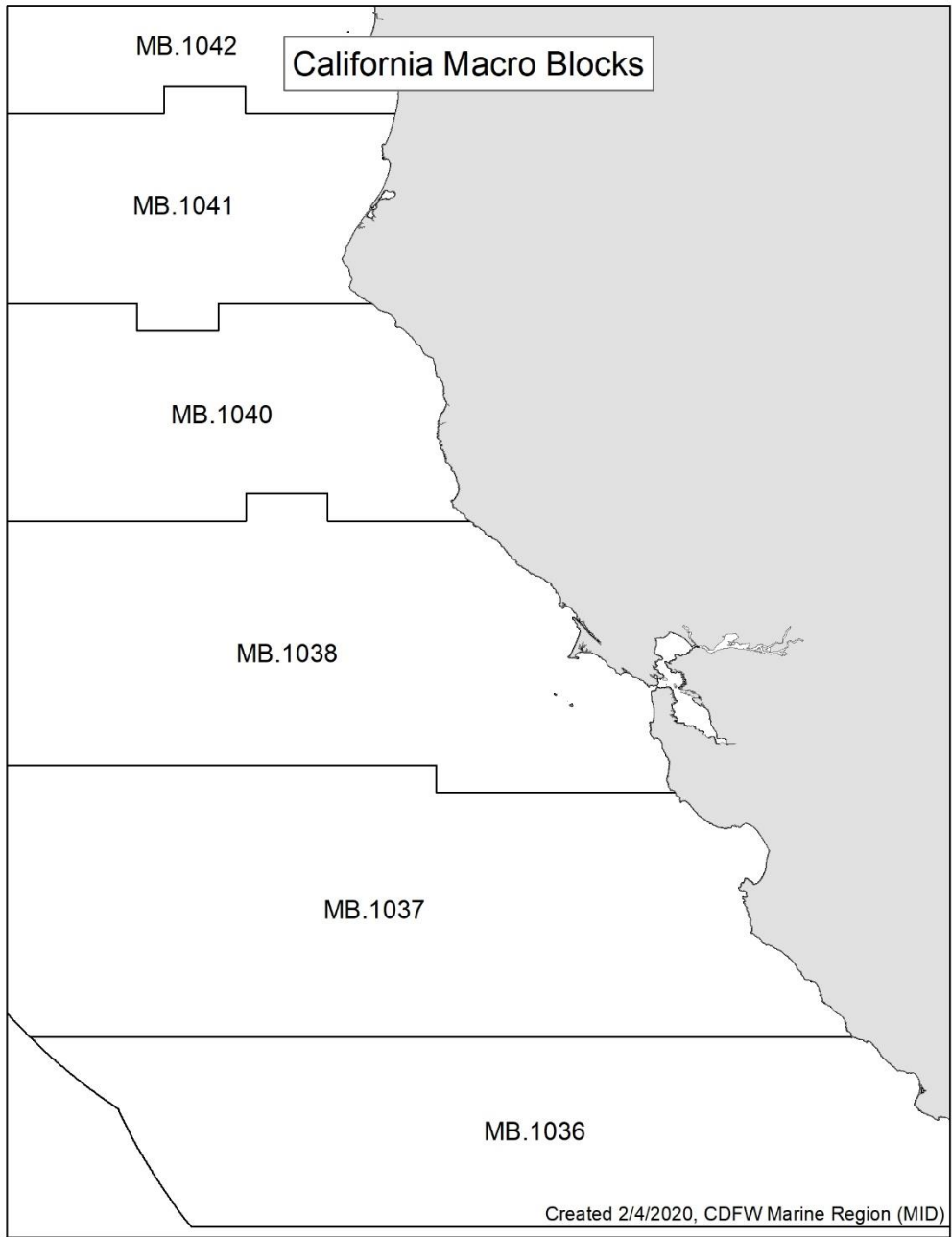


Figure 5. Map showing spatial extent of MacroBlocks used for summarizing landings analysis.

Volume of Landings (Pounds), by Week and Port Complex, 2019-20 Season

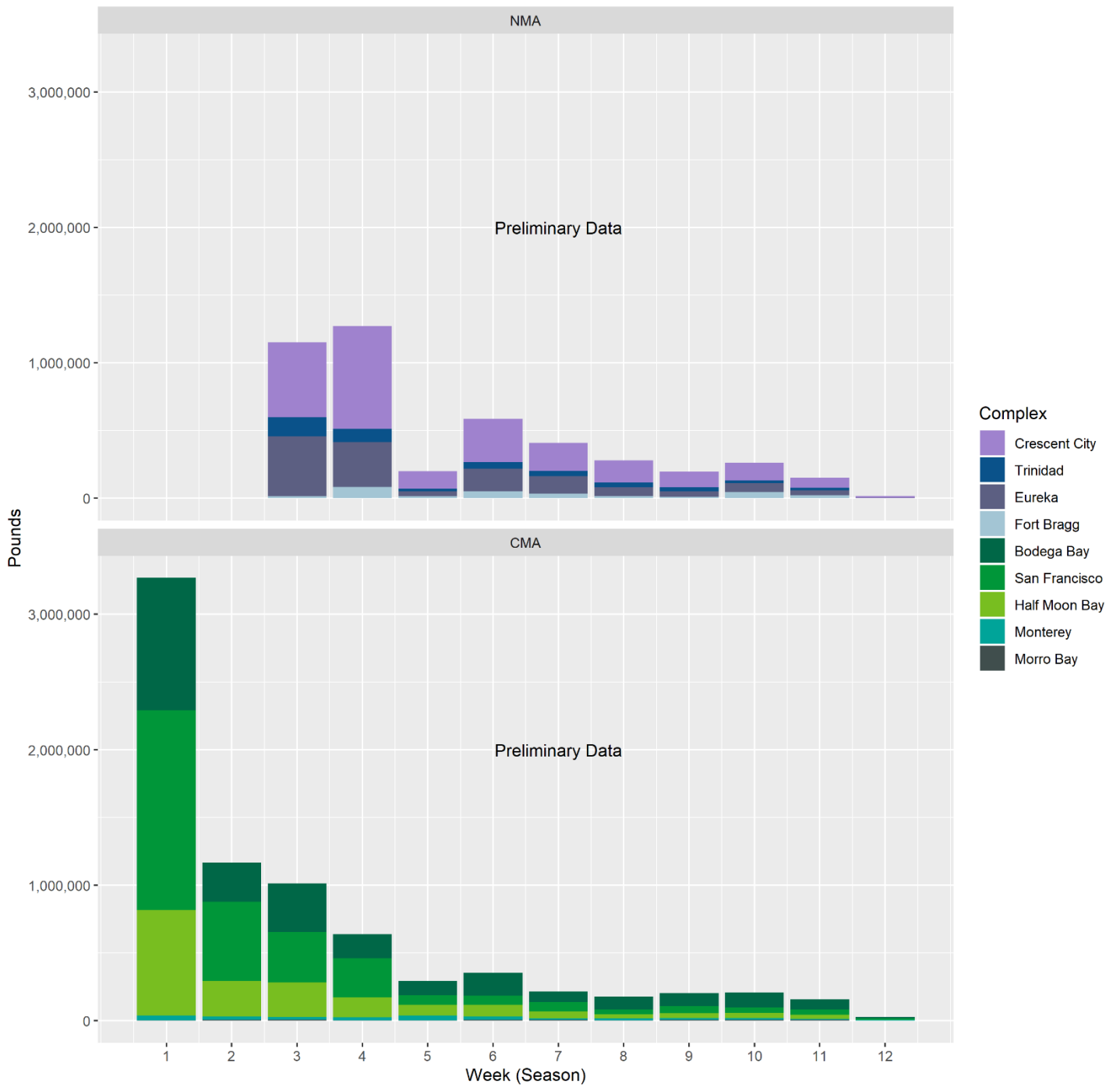


Figure 6. Dungeness crab landings (pounds) by week and port complex. Accessed from CDFW's Marine Landings Data System on March 5, 2020. All data is preliminary and subject to change.

Volume of Landings (Pounds), by Week and MacroBlock, 2019-20 Season

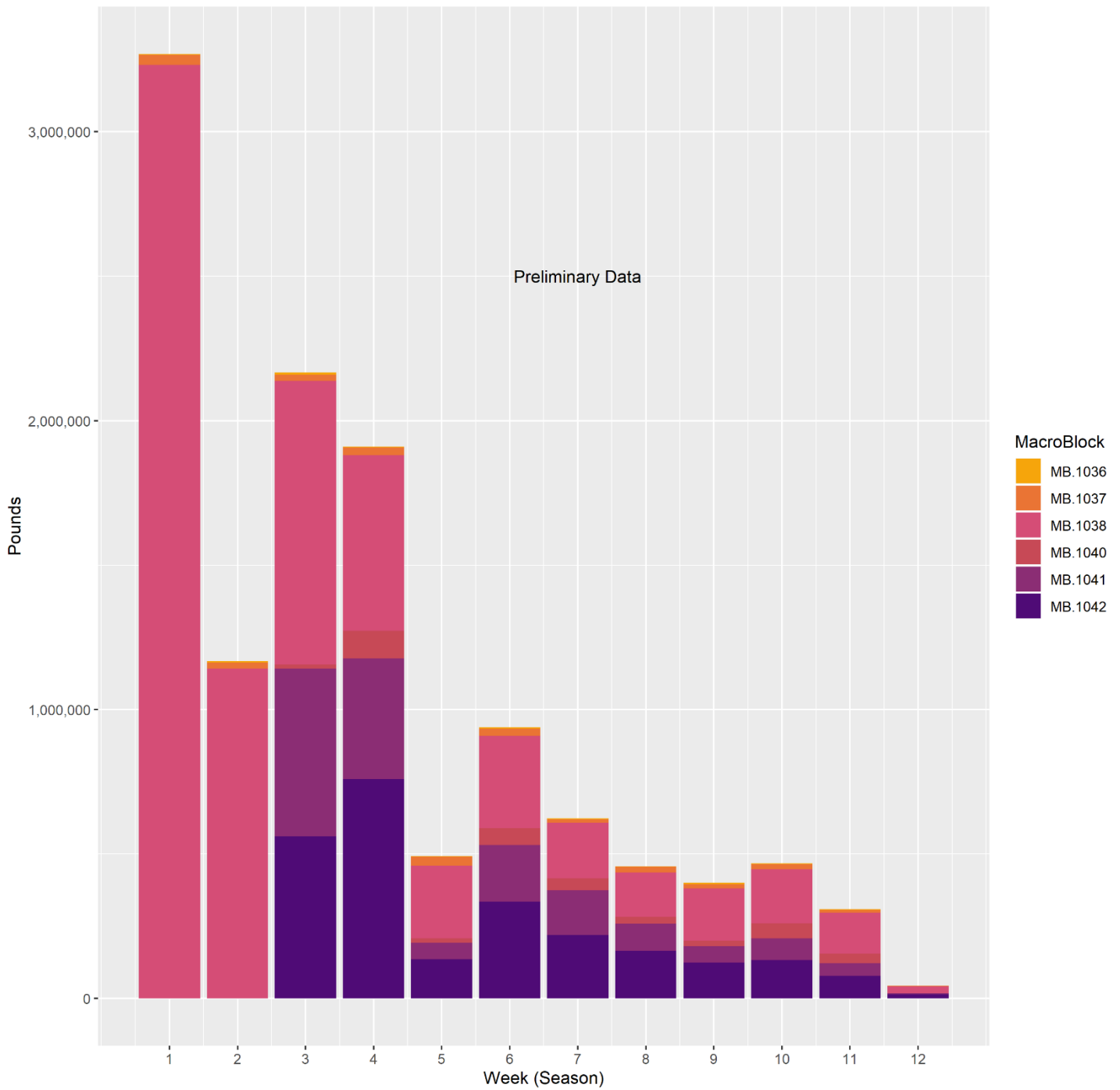


Figure 7. Dungeness crab landings (pounds) by week and MacroBlock. Accessed from CDFW's Marine Landings Data System on March 5, 2020. All data is preliminary and subject to change.

Number of Active Vessels, by Week and Port Complex, 2019-20 Season

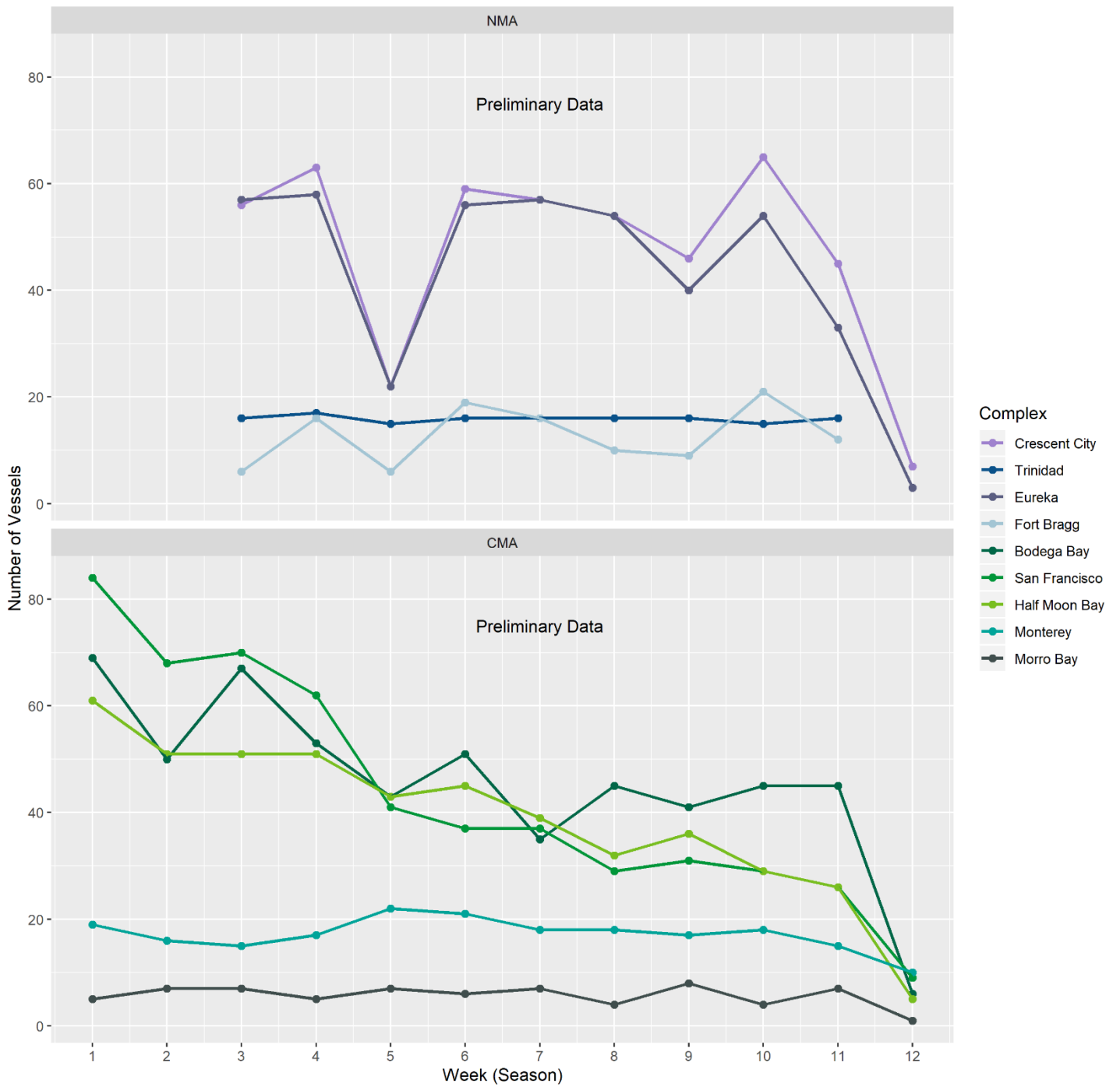


Figure 8. Number of vessels making Dungeness crab landings by week and port complex. Accessed from CDFW's Marine Landings Data System on March 5, 2020. All data is preliminary and subject to change.

Maximum Potential Traps, by Week and MacroBlock, 2019-20 Season

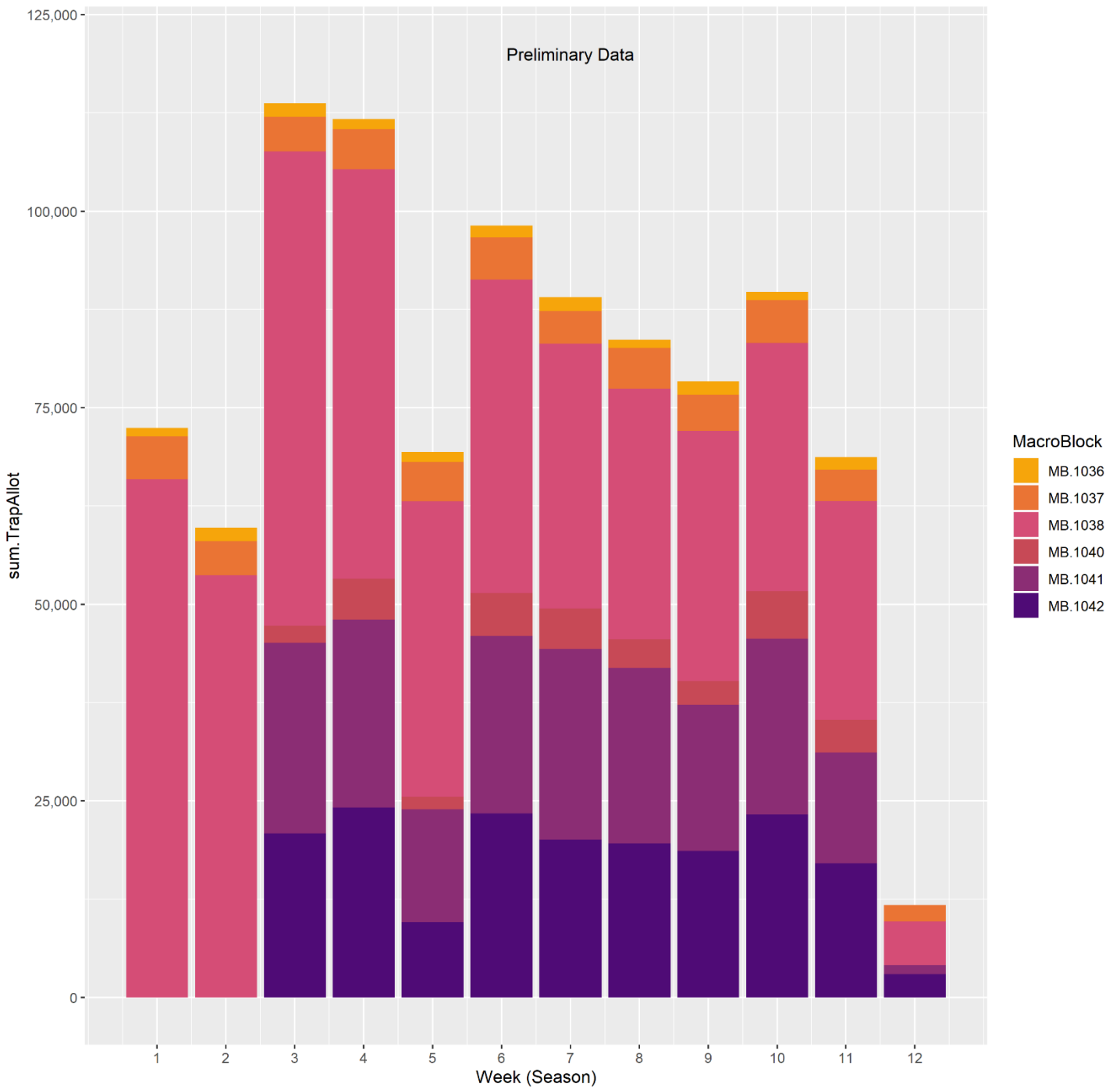


Figure 9. Maximum potential traps by week and MacroBlock, based on landings data and Dungeness Crab Vessel Permit tier information. Accessed from CDFW's Marine Landings Data System on March 5, 2020 and CDFW's Automatic License Data System on November 18, 2019. All data is preliminary and subject to change.

FACTOR: OCEAN AND FORAGE CONDITIONS

Data provided by: Jarrod Santora and Isaac Schroeder (NMFS SWFSC and UC Santa Cruz)

Oceanographic Indices

- The most recent Oceanic Niño Index value, from December 2019, shows neutral El Niño conditions (Figure 10). It's expected to remain neutral during this spring and summer.
- Upwelling indices from January 2020 are slightly above average and larger than any value of the last 5 years (Figure 10).
- The area of the North Pacific High continued to be strong in February and the January-February mean is one of the largest on record (Figure 10). This indicates productive, cool spring upwelling conditions and an increased likelihood of offshore krill concentrations (especially along the outer shelf break).
- The Habitat Compression Index (HCI) from February 2020 indicates expanding cool temperatures to the north, but is still warmer in the south (Figure 11). The winter values of the seasonal HCI are typically based on Jan-Mar averages, but the January-February average shows increased cool water compared to the previous 4 years.
- Collectively, these conditions suggest a typical spring upwelling ecosystem, favoring expanded cool habitat and increased concentration of krill abundance. Winter ocean climate observations indicate an overall lower risk of whale entanglement compared to previous years. However, anchovy abundance continues to remain high throughout the central California Current Ecosystem and aggregations of feeding whales associated with anchovy is anticipated.

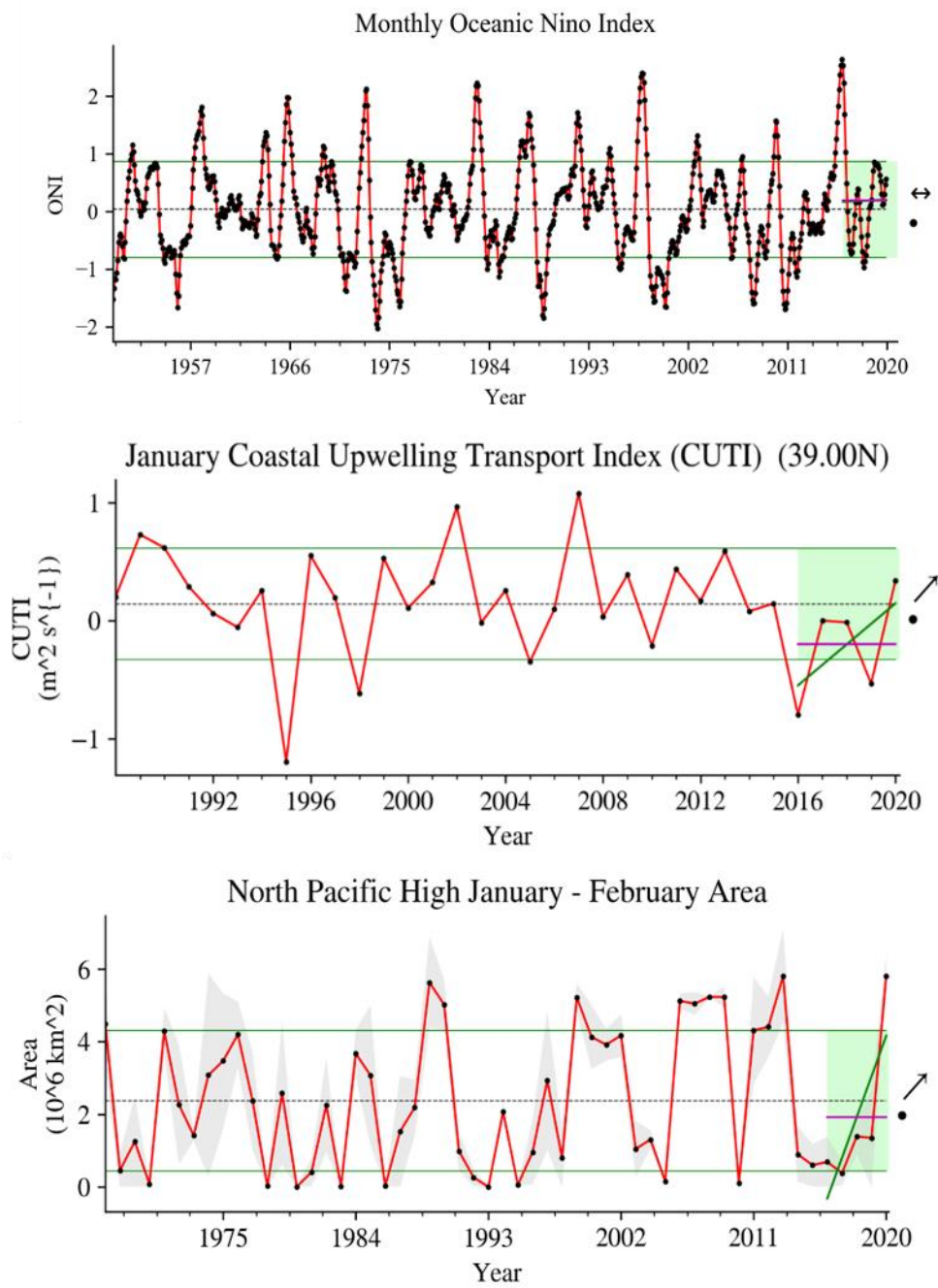


Figure 10. Monthly Oceanic Nino Index (ONI; top), January Coastal Upwelling Transport Index (vertical velocity) at 39°N (middle), and area of the North Pacific High (bottom). In all figures, the dashed line is the long-term mean, green lines are +/- Standard Deviation, and arrows indicate presence of increasing, decreasing or no trend over past 5 years.

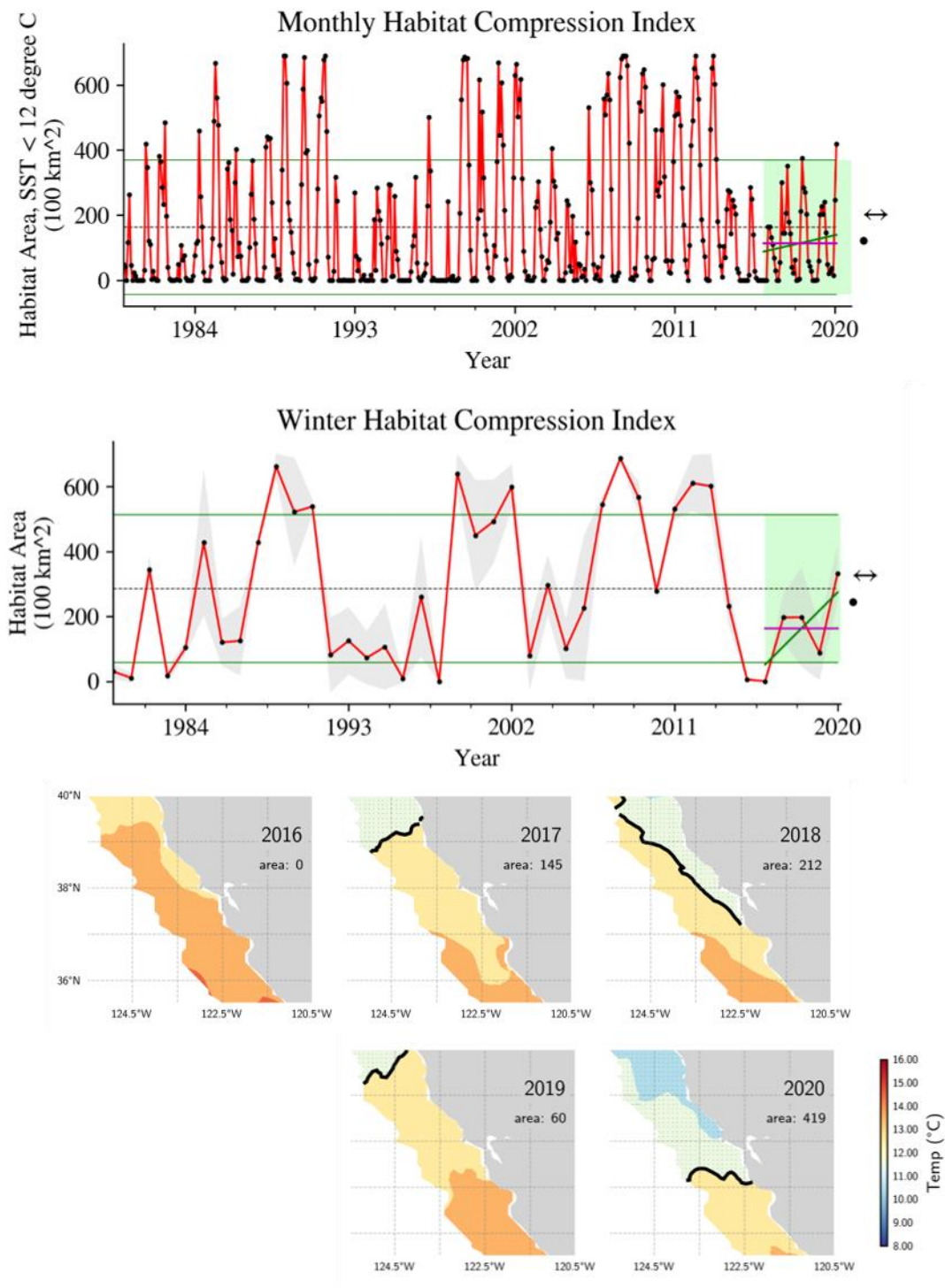


Figure 11. Monthly Habitat Compression Index (HCI; top), Winter HCI averaged from December-February (middle), and February sea surface temperature values and HCI (bottom).