

2023-2024 Risk Assessment Preliminary Assessment and Available Data for Risk Assessment Mitigation Program

Last updated: May 13, 2024

PRELIMINARY ASSESSMENT

This Preliminary Assessment and Management Recommendation has 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 and recreational Dungeness crab fishery. CDFW will prepare a Final Assessment and Management Recommendation after review of the Working Group Recommendation and other relevant data.

Recommended Management Actions

Commercial Fishery:

- Fishing Zones 1 and 2: Continue Depth Constraint (30-Fathom) and Fleet Advisory

Recreational Fishery:

- Fishing Zones 3, 4, and 5: Continue Crab Trap Prohibition
- All Fishing Zones: Continue Fleet Advisory

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Table 1. Fishing Zones and current management status in the California commercial and recreational Dungeness crab fishery.

Fishing Zone	Commercial Fishery: Current Management Status	Commercial Fishery: Proposed Management Status	Recreational Fishery: Current Management Status	Recreational Fishery: Proposed Management Status
1	30-Fathom Depth Constraint; Fleet Advisory	30-Fathom Depth Constraint; Fleet Advisory	Fleet Advisory	Fleet Advisory
2	30-Fathom Depth Constraint; Fleet Advisory	30-Fathom Depth Constraint; Fleet Advisory	Fleet Advisory	Fleet Advisory
3	Season Closure	Season Closure	Crab Trap Prohibition; Fleet Advisory	Crab Trap Prohibition; Fleet Advisory
4	Season Closure	Season Closure	Crab Trap Prohibition; Fleet Advisory	Crab Trap Prohibition; Fleet Advisory
5	Season Closure	Season Closure	Crab Trap Prohibition; Fleet Advisory	Crab Trap Prohibition; Fleet Advisory
6	Season Closure	Season Closure	Fleet Advisory	Fleet Advisory

I. Management Recommendation Summary Rationale

Entanglements: No new entanglements of Actionable Species have been reported since the last Risk Assessment on May 2, 2024. Confirmed humpback whale entanglements in California commercial Dungeness crab fishing gear and Unknown Fishing Gear bring the three-year rolling average Impact Score to 3.39. Additionally, the three-year rolling average Impact Score for leatherback sea turtles is 0.33. For more information, please see the [RAMP Entanglement History](#) document.

Marine Life Concentrations: CDFW conducted an aerial survey on May 6, 2024, in Fishing Zones 1 and 2 and observed no Actionable Species. CCCA vessel surveys were conducted in Fishing Zone 1 on May 10, 2024, and observed four humpback whales. Monterey Bay Whale Watch data observed a weekly average of 4.9 whales per half-day trip, and a peak of 11 whales observed during half-day trips on May 3, 2024, in Fishing Zone 4.

Marine Region's preliminary recommendation is for the Director to continue the Management Actions currently in place for both the commercial and recreational fisheries, including the 30-fathom Depth Constraint in Fishing Zones 1-2 for the commercial fishery and the Crab Trap Prohibition in Fishing Zones 3, 4 and 5 for the recreational fishery. The Depth Constraint and Crab Trap Prohibition went into effect on April 8, 2024, at

6:00pm. A Fleet Advisory would also be maintained for all open Fishing Zones for both the commercial and recreational fisheries.

Humpback whale observations remain low in Fishing Zones 1 and 2. However at this time, Marine Region staff do not recommend additional Management Actions for Fishing Zones 1 and 2 for the commercial or recreational fisheries. Humpback whale sightings are expected to increase in all Fishing Zones over the coming weeks. The 30-fathom Depth Constraint for the commercial fishery will continue to minimize overlap with foraging humpback whales and limited recreational trap fishing in Fishing Zones 1 and 2 does not present an elevated risk at this time. The total number of commercial traps in Fishing Zones 1 and 2 continues to decrease as the season progresses. Since the last Risk Assessment, Fishing Zones 1 and 2 reported 24,709 traps on April 16, 2024, which decreased to 18,526 traps as of the last bi-weekly reporting period. The number of reporting permits also decreased from 155 active permits on April 16, 2024, to 75 permits as of the last bi-weekly reporting period. In addition, the Depth Constraint will also help mitigate entanglement risk due to high habitat compression, as modeled by the Habitat Compression Index, by limiting fishing activity to nearshore, shallower depths.

Extending the current Management Actions will allow for continued fishing opportunities in Fishing Zones 1 and 2 while mitigating entanglement risk until the next Risk Assessment at the end of May. This preliminary recommendation is based on the historical migration patterns, current Entanglement Impact Score and observed Marine Life Concentrations.

For additional details, see the Entanglement and Marine Life Concentration sections of this Available Data document.

II. Alternative Management Actions for the Commercial Fishery

Alternatives Considered but Rejected

- Alternative Gear- can be authorized after April 1st, but no gear is currently authorized for the commercial Dungeness crab fishery.
- Gear Reduction – considered for Fishing Zones 1 and 2 but not recommended at this time due to declining fishing effort (based on bi-weekly reporting) but will be evaluated again at the next Risk Assessment.

AVAILABLE DATA

III. Triggers Requiring Management Action

I. Confirmed Entanglements: §132.8(c)(1)

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

No entanglements have been reported in 2024. For recent entanglement information please see the CDFW [RAMP Entanglement History](#) document. See "[FAQ: Impact Scoring for the Risk Assessment and Mitigation Program](#)" for information about the RAMP 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 (2023-24)	Current Calendar Year Impact Score (2024)	3-Year Rolling Average
Humpback whales	0	0	3.39
Leatherback sea turtle	0	0	0.33

As of May 13, 2024, there have been zero Confirmed Entanglements of humpback whales, blue whales, or leatherback sea turtles during the 2023-2024 season.

II. Marine Life Concentrations: §132.8(c)(2)

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

Aerial and vessel survey data from May 4-10, 2024 available online with the [Arc Map Viewer](#). Past Risk Assessment survey data have been combined in a [2023-2024 Season RAMP Survey Map](#).

For assistance with using Arc Map Viewer, please see the [How to Guide](#).

According to the RAMP regulations for the period of March 1 until the Fishing Season closes statewide a trigger has been met when:

- The number of humpback whales is greater than or equal to 10, or there is a running average of five or more animals over a one-week period within a single Fishing Zone.
- The number of blue whales is greater than or equal to three, or there is a running average of three or more animals over a one-week period within a single Fishing Zone

- The number of Pacific leatherback sea turtle is greater than or equal to one within any Fishing Zone

Table 31. 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	CDFW Aerial Survey	No
Zone 2	CDFW Aerial Survey	No
Zone 3*	None	Season closed
Zone 4*	MBWW	Season closed
Zone 5*	None	Season closed
Zone 6*	None	Season closed

*Fishing Zone is closed for the commercial fishery for the remainder of the statutory season

A. CDFW Surveys (Fishing Zones 1-2)

CDFW conducted an aerial survey on May 6, 2024, covering Fishing Zones 1 and 2. CDFW flew between the coast and the 100-fathom line between the Sonoma/Mendocino County Line (Fishing Zone 2) and the CA/OR border (Fishing Zone 1). Conditions in Fishing Zones 1 and 2 were generally good, with a survey altitude of 800-1,000 feet and Beaufort states between 1 and 3. No Actionable Species were observed.

Note that an additional CDFW aerial survey was conducted to look for lost and abandoned fishing gear in Fishing Zones 3 and 4 on May 9, 2024.

CDFW aerial survey data is available online with the [Arc Map Viewer](#). For assistance with using Arc Map Viewer, please see the [How to Guide](#).

Table 4. Counts of Actionable Species seen by CDFW aerial survey conducted on May 6, 2024.

Fishing Zone	Humpback whales	Unidentified whales
Zone 1	0	0
Zone 2	0	0

B. Monterey Bay Whale Watch Surveys (Fishing Zone 4)

Monterey Bay Whale Watch conducted whale watching trips in southern Monterey Bay every day during the week of May 1-7, 2024. The 7-day average number of humpback whales per half day trip during May 1-7, 2024, was 4.9 (Figure 1), with a peak of 11 humpback whales observed during an all-day trip on May 3, 2024. No blue whales have been observed since July 2023.

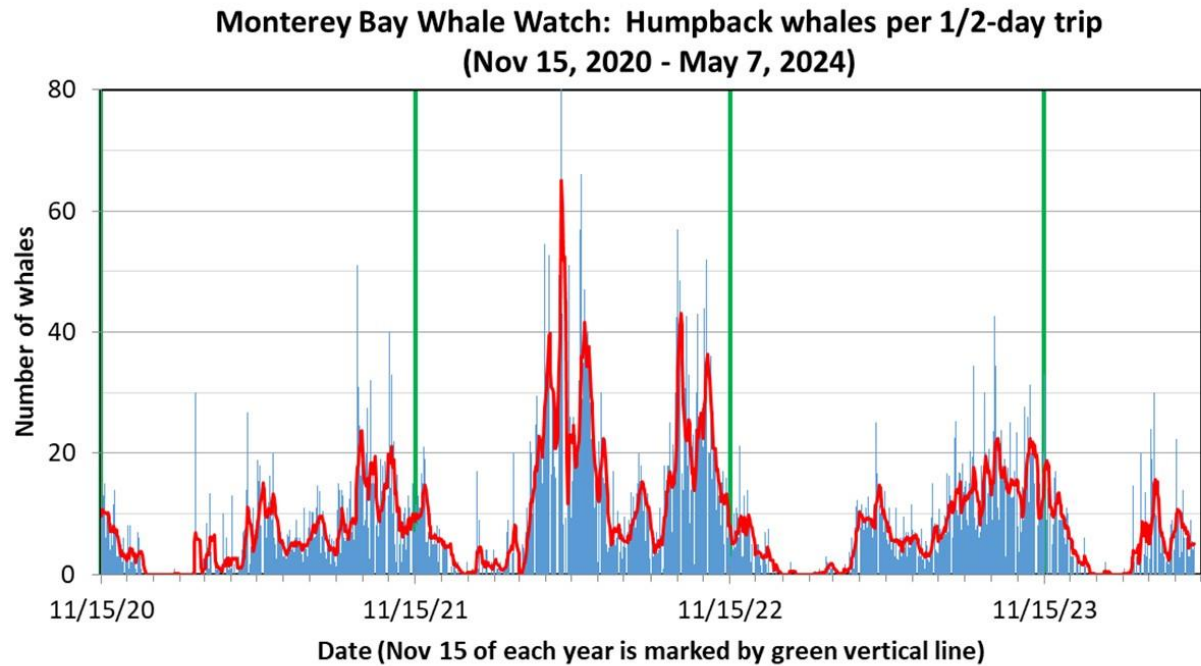


Figure 1. Standardized number of humpback whale sightings for Monterey Bay Whale Watch from 15 November 2020 –7 May 2024. The y-axis is the number of whales per half-day trip; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.

IV. Management Considerations

I. Information from NOAA: § 132.8(d)(2)

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

No entanglements for Actionable Species have been reported since the Risk Assessment on May 2, 2024. For more entanglement information please see the CDFW [RAMP Entanglement History](#) document.

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

Data provided by: Point Blue Conservation Science and Monterey Bay Whale Watch (processed by Karin Forney NOAA SWFSC), California Coast Crab Association

A. Point Blue Conservation Science (Fishing Zones 3, 4, and 6)

For current observation data please see the [Point Blue Whale Alert map](#).

Table 5. Summary of available humpback and blue whale recorded reported via Point Blue Conservation Science in Fishing Zones 3, 4, and 6 during the seven-day period ending May 10, 2024.

Fishing Zone	Number of humpback whales sighted	Number of blue whales sighted
Zone 3	4	0
Zone 4	0	0
Zone 6	19	5

A. California Coast Crab Association (Fishing Zone 1)

Four vessel surveys were conducted on May 10, 2024 (Table 6). Two industry vessels departed from Crescent City (F/V Sea Hunter, F/V Viking) and two vessels departed out of Eureka (F/V Seaila, F/V Sally Kay). Three of four vessels had independent observers (F/V Sea Hunter, F/V Seaila, and F/V Sally Kay). Visibility was 8-10 nmi, with clear skies, and the swell shifting between 2-7 ft. A total of 12 whales, including four humpbacks, two grays, and six unidentified whales were observed. No whales were sighted off of the Eureka (South Zone 1) transect. Three humpback whales were sighted off the Eureka (North Zone 1) transect at 84-89 fathoms, and one humpback whale was sighted off of Crescent City (South Zone 1) transect at 65 fathoms. Two gray whales were sighted off Crescent City (North and South Zone 1) transects, both inshore, with one in water depths of 20.4 fathoms. Six unidentified whales were sighted, with all being on the offshore side of the vessels between 40-85 fathoms. Other notable marine mammals observed were three Dall's porpoises sighted off of Eureka (North Zone 1) at 78 fathoms and six Risso's dolphins sighted off of Crescent City (South Zone 1) at 44 fathoms.

Table 6. Summary counts of Actionable Species seen on CCCA vessel surveys conducted on May 10, 2024.

Fishing Zone	Humpback whales	Gray Whales	Unidentified whales
Zone 1	4	2	6

B. Monterey Bay Whale Watch (Fishing Zone 4)

The semi-monthly average number of humpback whales per half day trip in southern Monterey Bay has been lower than the historical average since early April 2024 (Figure 2).

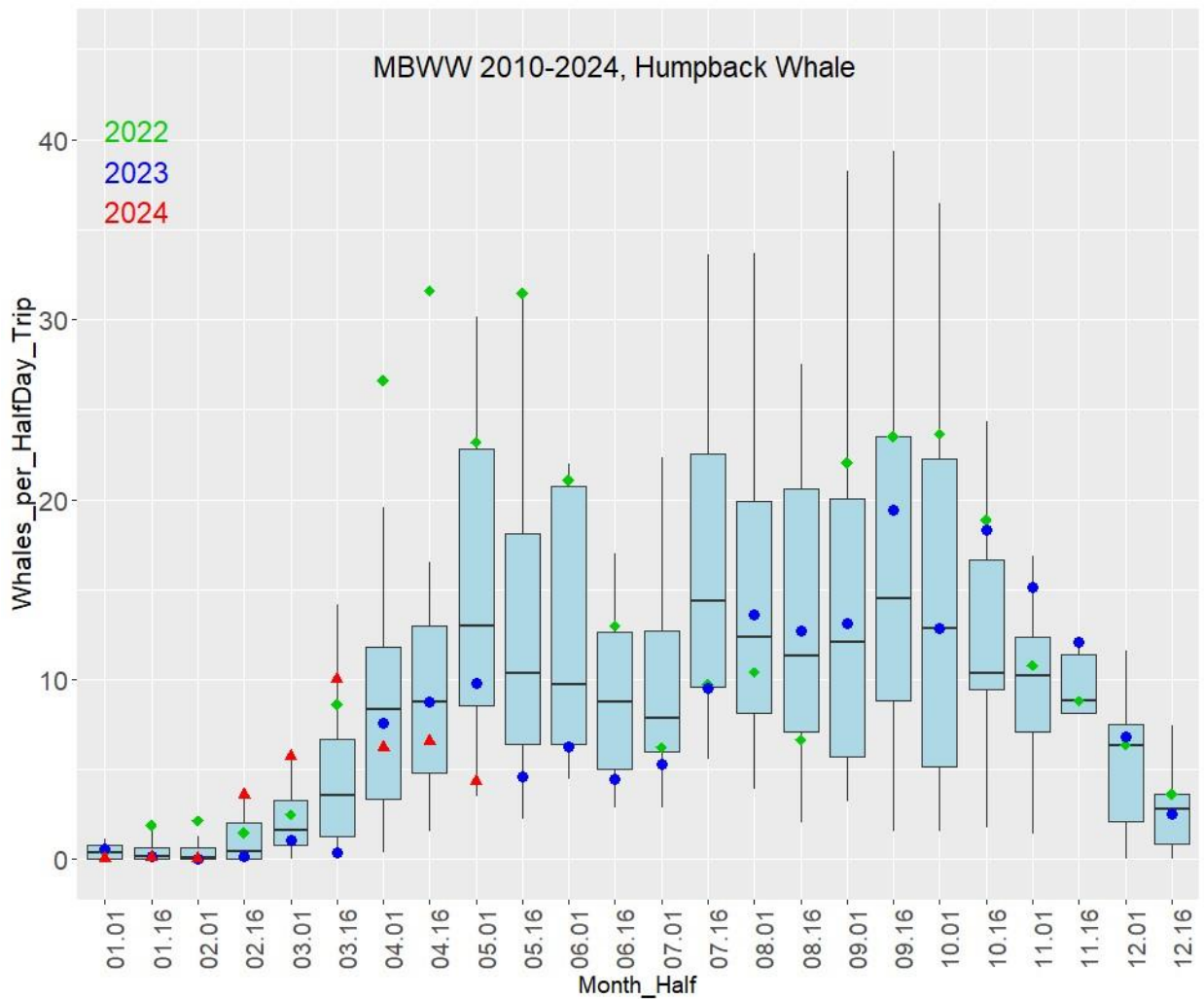


Figure 2. Historical Monterey Bay Whale Watch data for 2010-2024, summarizing the average and variation in the number of humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th-end of month). This boxplot follows standard statistical practice in that the black horizontal line is the 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 2022 (green diamonds), 2023 (blue dots) and 2024 (red triangles) and are provided for reference, placing recent whale numbers in a historical context.

C. Whale Watch 2.0 (All Fishing Zones)

Blue whale habitat predictions for April 17th, 2024, show low habitat suitability along most of the California coast. A small amount of suitable habitat exists near the US-Mexico border. Current habitat suitability can be accessed at the [NOAA Coastwatch Habitat Suitability webpage](#).

III. 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.

A. Marine Landings Data System (All Fishing Zones)

The commercial fishery is currently open in Fishing Zones 1 and 2 and under a 30-Fathom Depth Constraint and all other Fishing Zones are closed. A summary of landings from all Fishing Zones is provided below (Table 7).

Table 7. Summary of fishing season dynamics information for the commercial fishery, as of May 10, 2024.

Metric	Value	Additional Info
Season status	NA	Fishing Zones 3-6 are closed
Number of daily landings	5,621	NA
Total volume (pounds)	13,767,693	NA
Total Ex-Vessel Value	\$47,429,007	NA
Average unit price	\$3.76	NA
Maximum number of active permits to date	346	NA
Maximum potential traps (based on maximum active permits to date)	8,2075 *Note: estimated maximum potential traps reflects the 50% Gear Reduction in Fishing Zones 3-6	Estimates are also provided in the Bi-Weekly Fishing Activity Reports Subsection

Total volume (pounds) peaked during the week of January 19, 2024, at just over 4 million pounds and has since been decreasing (Figure 3). Fishing Zone 3 shows the highest landings over the course of the season at 8.4 million pounds, followed by Fishing Zone 1 at 4.7 million pounds.

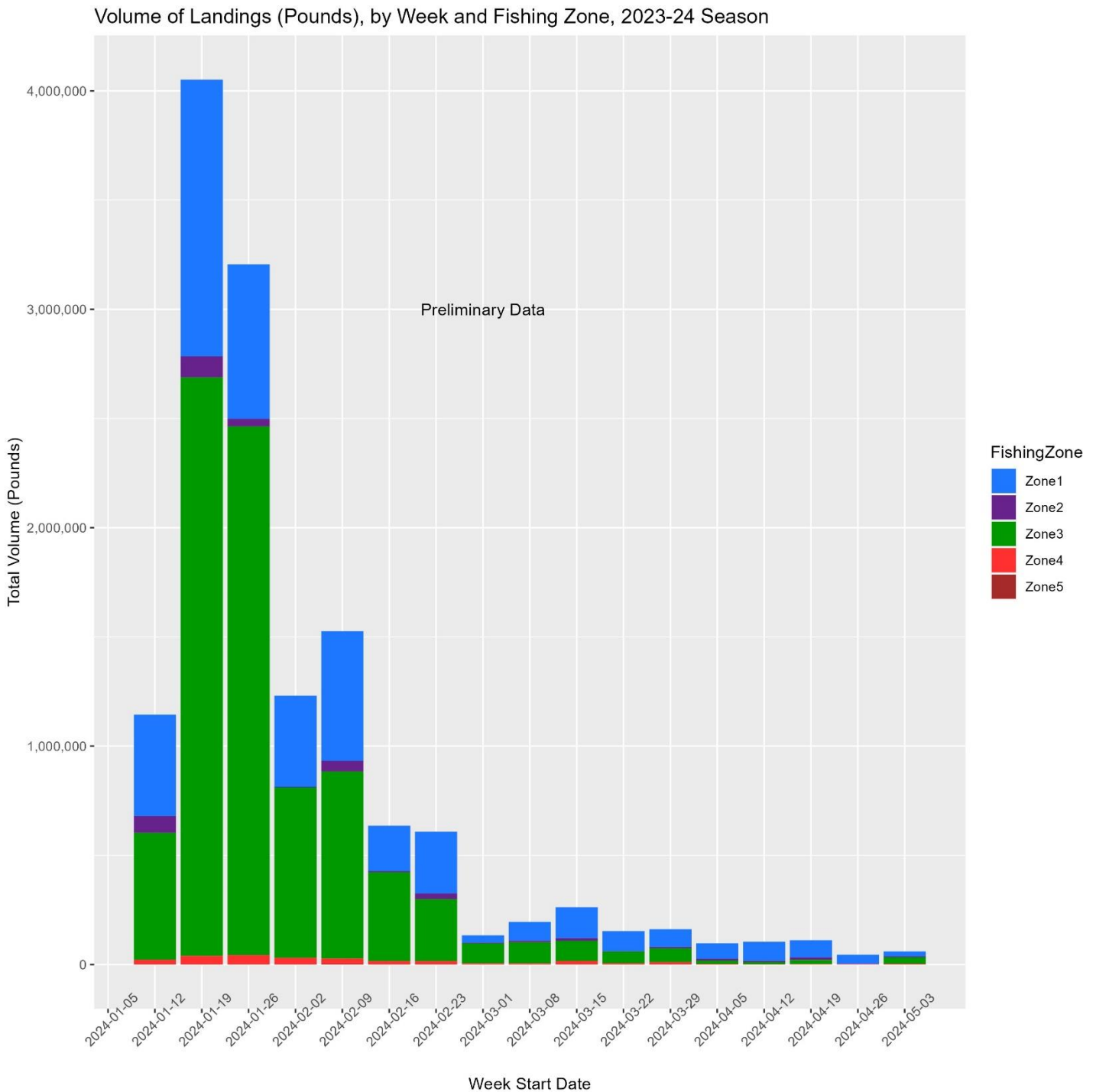


Figure 3. Cumulative volume (pounds) landed by week and Fishing Zone. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, January 5, 2024. All data are preliminary and subject to change. Certain week-Fishing Zone combinations are withheld due to confidentiality constraints.

Fishing Zone 3 shows the highest number of active vessels throughout the majority of the fishing season to date with a high of 170 active vessels, followed by Fishing Zone 1 with a high of 116 vessels (Figure 4). The number of active vessels peaked in late January and has been trending downward since the opening. Note that fishing activity in Fishing Zones 3-6 that occurred after the closure on April 8, 2024, is due to Experimental Fishing Permit landings.

Number of Active Vessels, by Week and Fishing Zone, 2023-24 Season

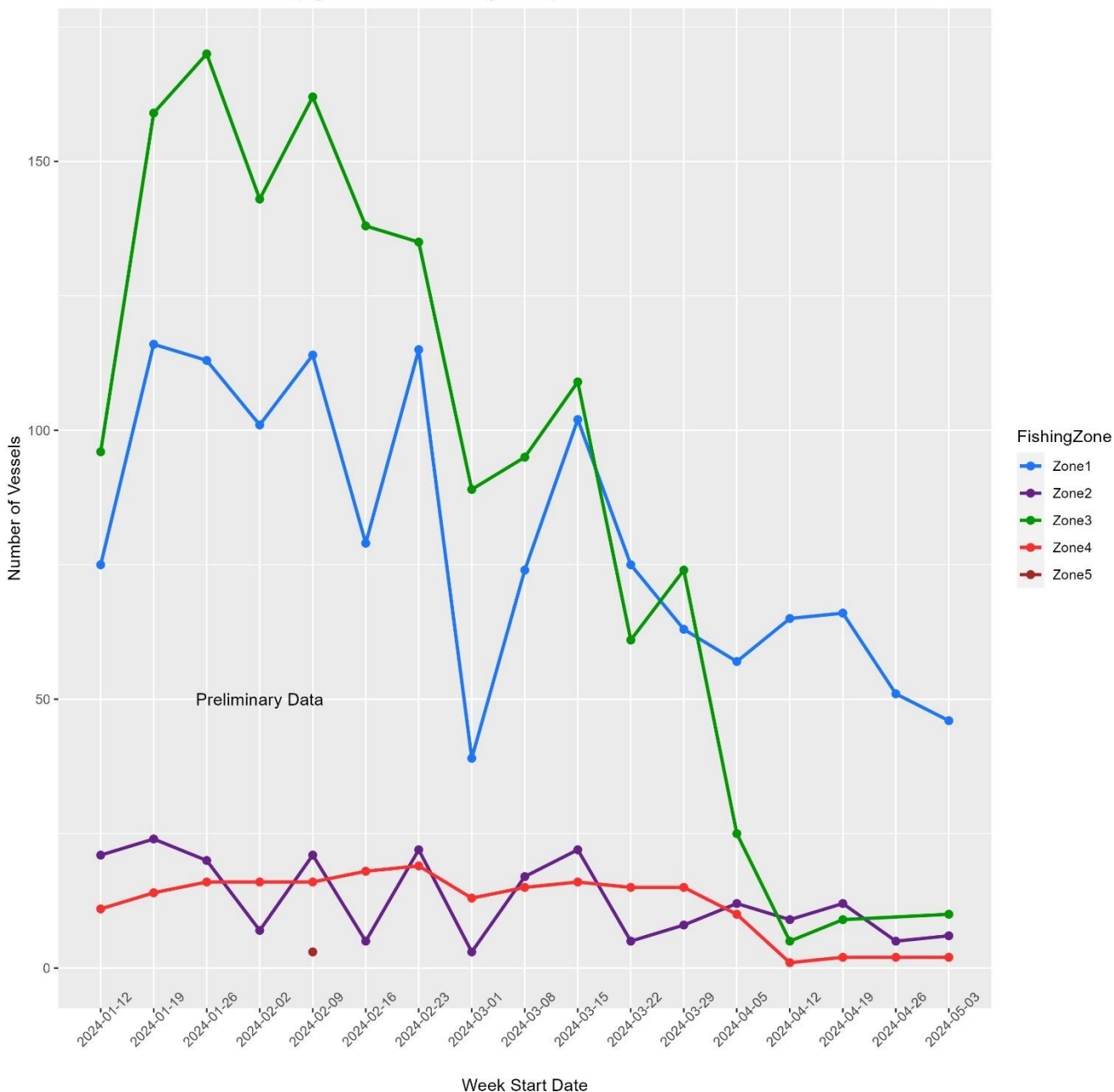


Figure 4. Number of active vessels by week and Fishing Zone. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, January 5, 2024. All data are preliminary and subject to change. Some week- Fishing Zone combinations are withheld due to confidentiality constraints. Note that fishing activity in Fishing Zones 3-6 that occurred after the closure on April 8, 2024, is due to Experimental Fishing Permit landings.

B. Bi-Weekly Fishing Activity Reports (All Fishing Zones)

CDFW has received bi-weekly reports since the first reporting period on January 16, 2024, through the most recent reporting period of May 1, 2024. A summary of reports received for May 1, 2024, is provided in Table 8; note this summary may not reflect all permitted vessels participating in the fishery due to compliance issues. In addition, Table 9 shows the summary of total traps by Fishing Zone for the five most recent reporting periods.

Table 8. Summary of information provided for the May 1, 2024, bi-weekly reporting period by Fishing Zone (1-6). Accessed from CDFW's Bi-Weekly Reporting database on May 8, 2024. NR-C 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	62	307	16,935	9	21	47	11	47
Zone 2	13	133	1,591	13	24	30	2	11
Zone 3	0	0	0	0	0	0	0	0
Zone 4	0	0	0	0	0	0	0	0
Zone 5	0	0	0	0	0	0	0	0
Zone 6	0	0	0	0	0	0	0	0
Totals	75	NA	18,526	NA	NA	NA	13	58

Table 9. Total reported traps deployed in each Fishing Zone for the five most recent bi-weekly reporting periods. NR-C refers to data withheld due to confidentiality and all data is preliminary and subject to change.

Fishing Zone	Mar 1 – Total Traps	Mar 16 – Total Traps	Apr 1 – Total Traps	Apr 16 - Total Traps	May 1 - Total Traps
Zone 1	39,532	30,578	27,708	26,313	16,935
Zone 2	4,720	4,102	3,435	2,988	1,591
Zone 3	21,389	16,786	11,706	5,478	0
Zone 4	2,721	2,523	1,513	540	0
Zone 5	NR-C	NR-C	NR-C	0	0
Zone 6	0	0	0	0	0
Totals	68,362	53,989	44,362	35,319	18,526

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

A. MBARI Krill Model

Modeled zooplankton conditions for April 2024 indicate slightly above average conditions from Point Arena to the US-Mexico border and average to below average from Point Arena to the CA/OR border. Current data can be accessed from the [MBARI website](#).

V. Ocean conditions: §132.8(d)(9)

A. El Niño/Southern Oscillation (ENSO) Diagnostic

As of May 9, 2024, a transition from El Niño to ENSO-neutral is likely in the next month. La Niña may develop in June-August (49% chance) or July-September (69% chance). Please visit the [NOAA ENSO Diagnostic webpage](#) for more information.

B. Large Marine Heatwave Tracker

No new data. Please see the [April 12th Available Data and Preliminary Assessment document](#) for latest information. Information can also be accessed from the [NOAA Marine Heatwave Tracker webpage](#) for more information.

C. Habitat Compression Index

For the month of April, Regions 2 and 3, which include the north and central coast of California, show high habitat compression (Figure 5). Please visit the [NOAA Habitat Compression Index webpage](#) for more information.

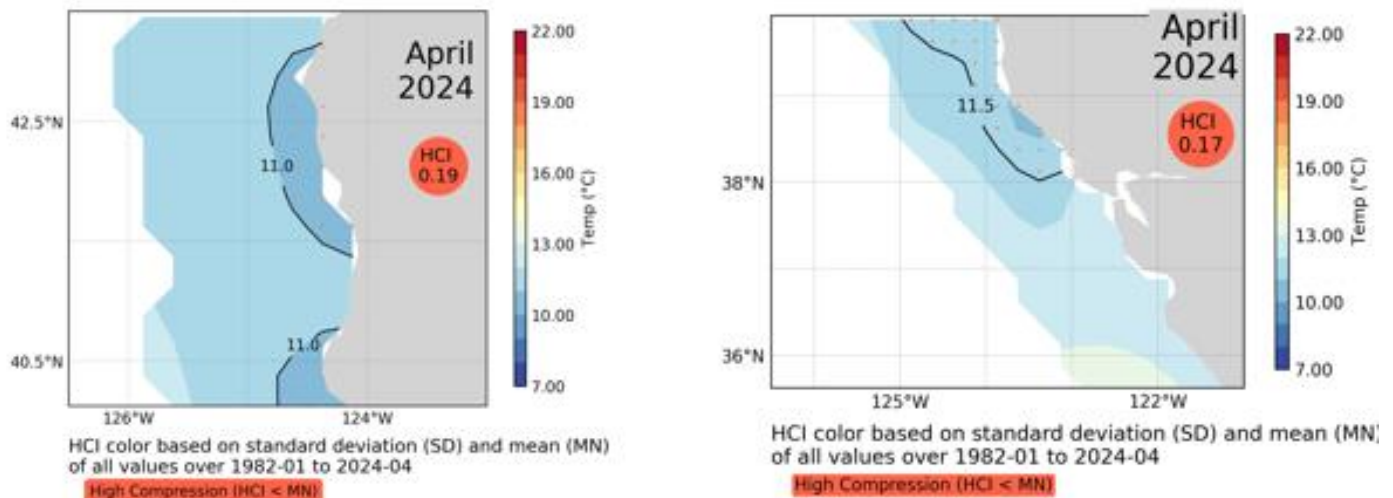


Figure 5. Spatial Structure of the Habitat Compression index for Region 2 (40 to 43.5 °N: left side) and Region 3 (35.5 – 40 °N: right side).

VI. 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) are provided above in the Initial Assessment.

VII. 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.

Available Data, May 13, 2024

VIII. Current Impact Score Calculation: §132.8(d)(10)

Data provided by: California Department of Fish and Wildlife

See Table 2. for the current fishing season and calendar year Impact Score. For more information about Impact scoring, please review the [Impact Score FAQ](#).