2024-2025 Risk Assessment
Preliminary Assessment and Available Data for Risk Assessment Mitigation Program

Last updated: December 16, 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: Season Opener with a 25% Gear Reduction on January 5, 2025, at 12:01am (gear setting period to begin January 2, 2025, at 8:01am).
  - *Note: Fishing Zones 1 and 2 may be further due to quality testing results (Fish and Game Code Section 8276.2).*

- Fishing Zones 3, 4, 5 and 6: Season Opener with a 50% Gear Reduction on January 5, 2025, at 12:01am (gear setting period to begin January 2, 2025, at 8:01am).

- All Fishing Zones: Fleet Advisory

Recreational Fishery:

- Fishing Zones 3 and 4: Lift Crab Trap Prohibition

- All Fishing Zones: Continue Fleet Advisory

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I. Management Recommendation Summary Rationale

The Marine Region's preliminary recommendation is for the Director to open the Fishing Season in all Fishing Zones (1,2,3,4,5 and 6) on January 5, 2025, at 12:01am. Fishing Zones 1 and 2 would be subject to a 25% Gear Reduction and Fishing Zones 3, 4, 5 and 6 would be subject to a 50% Gear Reduction. A gear setting period for all Fishing Zones would begin on January 2, 2025, at 8:01am. A Fleet Advisory is also recommended for all Fishing Zones and the commercial fleet should avoid setting traps where whales are present.

The Marine Region also recommends lifting the trap prohibition for recreational crab traps in Fishing Zones 3 and 4 on January 2, 2025, at 8:01am and a continuation of the Fleet Advisory for all Fishing Zones (1-6) until the next Risk Assessment. The recreational fleet should also avoid setting gear in areas where whales are present.

These recommendations are supported by the high number of entanglements that occurred during the current 2024 calendar year and 3-year average Impact Score for the commercial fishery. Given the elevated Impact Score of 5.66 for humpback whales, a Vertical Line/Gear Reduction must be considered to minimize the number of vertical lines/traps for the commercial fishery. As further described below, Marine Life Concentrations are decreasing across all Fishing Zones but there remains a risk of entanglement and precautionary Management Actions should be employed to reduce that risk. All Management Actions would be reevaluated at the next Risk Assessment, which is expected to occur on or around January 15, 2025.

Entanglements: Numerous humpback whale entanglements have been reported since the close of the 2023-24 fishing season. Table 2 in this Preliminary Assessment describes confirmed Actionable Species entanglements in 2024 that have been reported by the National Marine Fisheries Service (NMFS) as of Dec. 12, 2024. Humpback whale entanglements in California commercial Dungeness crab fishing gear and Unknown Fishing Gear bring the three-year rolling average Impact Score to 5.66 (subject to revision), which exceeds the trigger as defined in RAMP of two entanglements, requiring Management Action to reduce entanglement risk in the commercial Dungeness crab fishery.

Marine Life Concentrations: Marine Life Concentration (MLC) surveys in Fishing Zones 1 and 2 had zero sightings of humpback or blue whales. In Fishing Zones 3 and 4, humpback whale sightings have decreased but remain elevated. A NOAA aerial survey observed 27 humpbacks whales and 3 blue whales in Fishing Zone 3 and 28 humpbacks in Fishing Zone 4. Monterey Bay Whale Watch data indicated an average number of humpback whales-per-half-daytrip during the last seven days of 17.7 (a decrease from 35.5), with a peak of 31 (a decrease from 67) whales observed during a half-day trip on Dec. 3, 2024. The decreased sightings are an indication that the migration to winter breeding grounds is well underway, and the recommended opening date and lifting of the prohibition will allow even more time for whales to depart, thereby further reducing entanglement risk. The sightings data reported during the November 21, 2024 risk assessment supports this analysis and recommendation.

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

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	Season Delay	Season Opener with 25% Gear Reduction	Fleet Advisory	Fleet Advisory
2	Season Delay	Season Opener with 25% Gear Reduction	Fleet Advisory	Fleet Advisory
3	Season Delay	Season Opener with 50% Gear Reduction	Crab Trap Prohibition; Fleet Advisory	Fleet Advisory
4	Season Delay	Season Opener with 50% Gear Reduction	Crab Trap Prohibition; Fleet Advisory	Fleet Advisory
5	Season Delay	Season Opener with 50% Gear Reduction	Fleet Advisory	Fleet Advisory
6	Season Delay	Season Opener with 50% Gear Reduction	Fleet Advisory	Fleet Advisory

II. Alternative Management Actions for the Commercial Fishery

Alternatives Considered but Rejected

- Season Delay - due to no whale observations in Fishing Zones 1 and 2 and lower concentrations of humpback whales in Fishing Zones 3 and 4, this was not the recommended Management Action.
- Depth Restriction - given the current distribution of humpback whales across depths, a depth restriction may inadvertently concentrate trap gear, thereby increasing entanglement risk.
- Alternative Gear - can only be authorized after April 1st.

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)

The table below outlines the confirmed entanglements under RAMP and their associated Impact Score for the year 2024. See "FAQ: Impact Scoring for the Risk Assessment and Mitigation Program" for information about the RAMP Impact Score. More information and definitions, please see the RAMP Entanglement History document.

Table 2. Actionable Species Entanglements during 2024 pursuant to RAMP regulations.

Entanglement ID	Date	Species	Fishery	Impact Score
20241202Mn	12/02/24	Humpback whale	Unknown Fishing Gear	0.38
20241122Mn	11/22/24	Humpback whale	Unknown Fishing Gear	0.38
20241022Mn	10/22/24	Humpback whale	Unknown Fishing Gear	0.38
20241020Mn	10/20/24	Humpback whale	Unknown Fishing Gear	0.38
20241019Mn	10/19/24	Humpback whale	Unknown Fishing Gear	0.38
20241011Mn	10/11/24	Humpback whale	CA commercial Dungeness crab	0.75
20241009Mn	10/09/24	Humpback whale	Unknown Fishing Gear	0.38
20240928Mn	09/28/24	Humpback whale	CA commercial Dungeness crab	0.75
20240927Mn_2	09/28/24	Humpback whale	CA commercial Dungeness crab	0.75
20240921Mn	09/21/24	Humpback whale	Unknown Fishing Gear	0.38
20240905Mn	09/05/24	Humpback whale	Unknown Fishing Gear	0.38
20240902Mn	09/02/24	Humpback whale	Unknown Fishing Gear	0.38
20240517Mn2	05/17/24	Humpback whale	Unknown Fishing Gear	0.38
20240517Mn1	05/17/24	Humpback whale	CA commercial Dungeness crab	0.75

Table 3. 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 (2024-25)	Current Calendar Year Impact Score (2024)	3-Year Rolling Average
Humpback whales	0	6.80	5.66
Leatherback sea turtle	0	1	0.33

As of December 13, 2024, there have been zero Confirmed Entanglements of blue whales or leatherback sea turtles during the 2024-2025 period.

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

Data provided by: California Department of Fish and Wildlife, John Calambokidis (Cascadia Research Collective), Scott Benson and Karin Forney (NOAA SWFSC), Monterey Bay Whale Watch (processed by Karin Forney, NOAA SWFSC)

For the period of November 1 until the Fishing Season opens statewide a RAMP Marine Life Concentration trigger has been met when:

- The number of humpback whales is greater than or equal to 20, 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
- A Pacific leatherback sea turtle is seen in any Fishing Zone

Table 41. 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, NMFS Aerial Survey	No
Zone 2	CDFW Aerial Survey, NMFS Aerial Survey	No
Zone 3	CDFW Aerial Survey, NMFS Aerial Survey	Yes
Zone 4	CDFW Aerial Survey, NMFS Aerial Survey, MBWW	Yes
Zone 5	CDFW Aerial Survey	No
Zone 6	None	N/A

A. CDFW Surveys (Fishing Zones 1-5)

CDFW conducted an aerial survey on December 10, 2024, covering Fishing Zones 1 and 2 (Figure 1). CDFW flew between the coast and the 100-fathom line at an altitude between 700 and 1000 ft starting at Bodega Bay and heading north to the Oregon border. Conditions were generally favorable with no cloud cover but hazy skies and Beaufort states ranging from less than 1 to 2.

Figure 1. Flight path and observations from CDFW aerial survey on December 10, 2024.

Additionally, CDFW conducted an aerial survey on December 11, 2024, in Fishing Zones 3, 4, and 5 (Figure 2). CDFW flew between the coast and the 100-fathom line at an altitude of 1500 ft starting at Bodega Bay heading south to San Simeon. North of San Francisco, conditions were generally favorable with no cloud cover but hazy skies and Beaufort states of 1 and 2. Conditions improved south of San Francisco with clear skies and Beaufort states of 1 and less than 1.

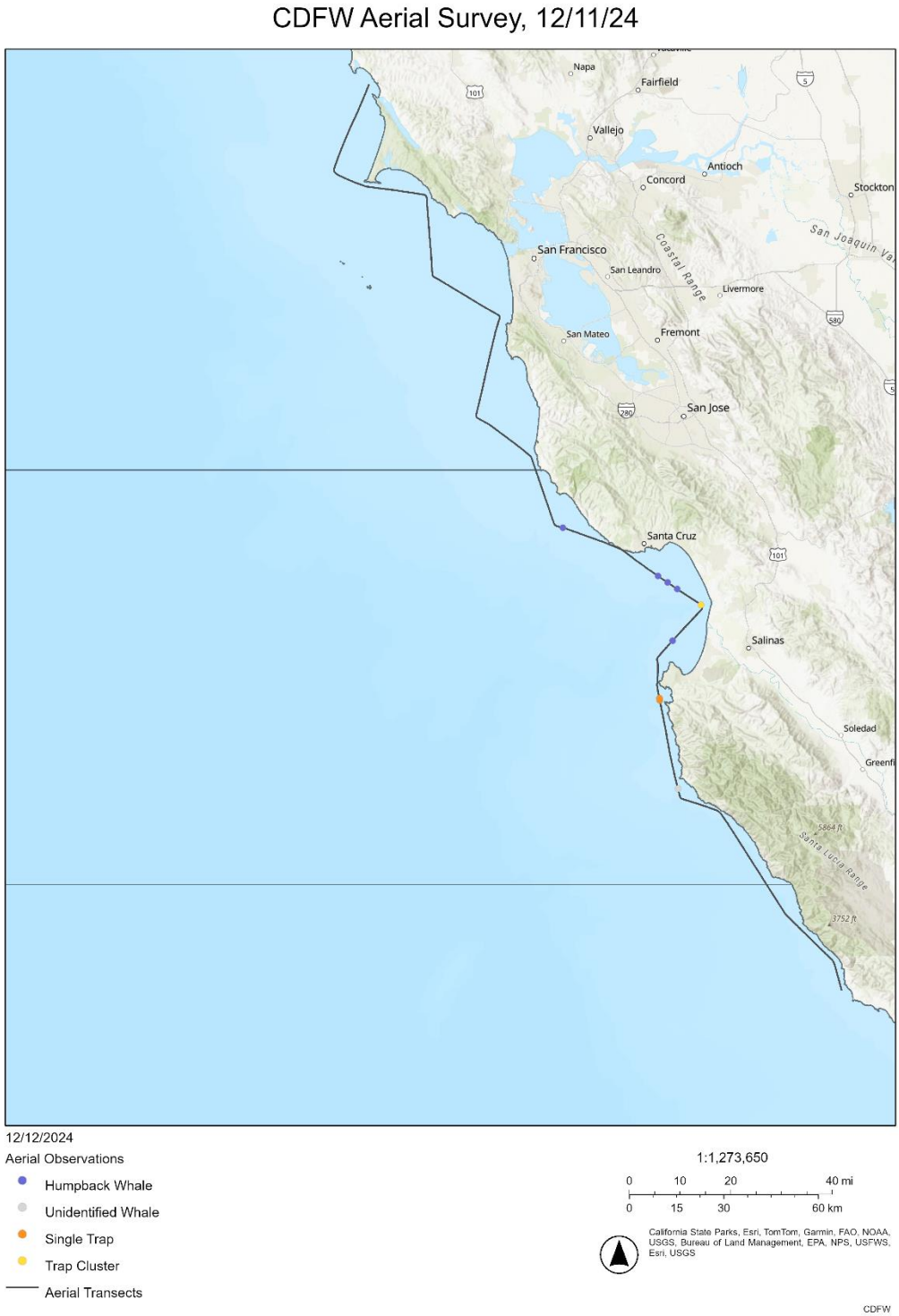

Figure 2. Flight path and observations from CDFW aerial survey on December 11, 2024.

Table 5. Counts of Actionable Species seen by CDFW aerial survey conducted on December 10 and 11, 2024.

Date	Fishing Zone	Humpback whales	Unidentified whales
12/10/2024	Zone 1	0	0
12/10/2024	Zone 2	0	0
12/11/2024	Zone 3	0	0
12/11/2024	Zone 4	6	1
12/11/2024	Zone 5	0	0

B. Cascadia Research Collective

Cascadia Research Collective provided an update on the UCSC satellite tagged humpback whales. The whales were tagged in October in Monterey Bay. Five of the six tagged whales are now in Mexico or stopped transmitting after having reached Mexico. The remaining whale stopped transmitting off California in early November and has not been heard from since, which indicates it could be in Mexico as well.

C. NMFS Aerial Surveys (Fishing Zones 1– 4)

Aerial surveys were conducted December 9 – 11, 2024 within RAMP Fishing Zones 1-4 (Figure 3). Within Fishing Zones 1 and 2, the surveys covered a zig-zag pattern from the coast to the 50-fm (92-m) isobath. Within Fishing Zones 3 and 4, the surveys covered east-west transects, spaced every 6 nautical miles, from shore to about the 110-fm (200-m) isobath. Additional E-W transect lines were surveyed from shore to just past the offshore extent of Humboldt Wind Energy Area as part of a separately funded study for the Bureau of Ocean Energy Management. During the surveys, all observations of marine mammals and sea turtles were systematically recorded. The team also noted the presence of ecosystem indicator species (jellies, schooling fish, krill, and ocean sunfish).

During the aerial survey, 31 sightings of 55 individual humpback whales were documented in a variety of water depths (Figure 3). None were observed in Fishing Zones 1 or 2. In Fishing Zone 3, the team documented 17 sightings of 27 humpback whales. In Fishing Zone 4, the team documented 14 sightings of 28 humpback whales. No leatherback turtles were observed. Three blue whales were observed near the shelf break (100 fm) in Fishing Zone 3 (Figure 3).

Several schools of small fish were observed in Fishing Zones 3 and 4, and scattered ocean sunfish were observed in all zones, but no dense aggregations of these species were seen. Piscivorous (fish-eating) seabirds were abundant in Fishing Zone 3 and several feeding flocks were observed, suggesting the presence of schooling fish, such as anchovies. No jellies or krill were observed.

Table 6. Counts of whales seen on NOAA aerial survey conducted from December 9-11, 2024.

Fishing Zone	Number of sightings	Number of humpback whales	Number of Blue Whales
1	0	0	0
2	0	0	0
3	17	27	3
4	14	28	0

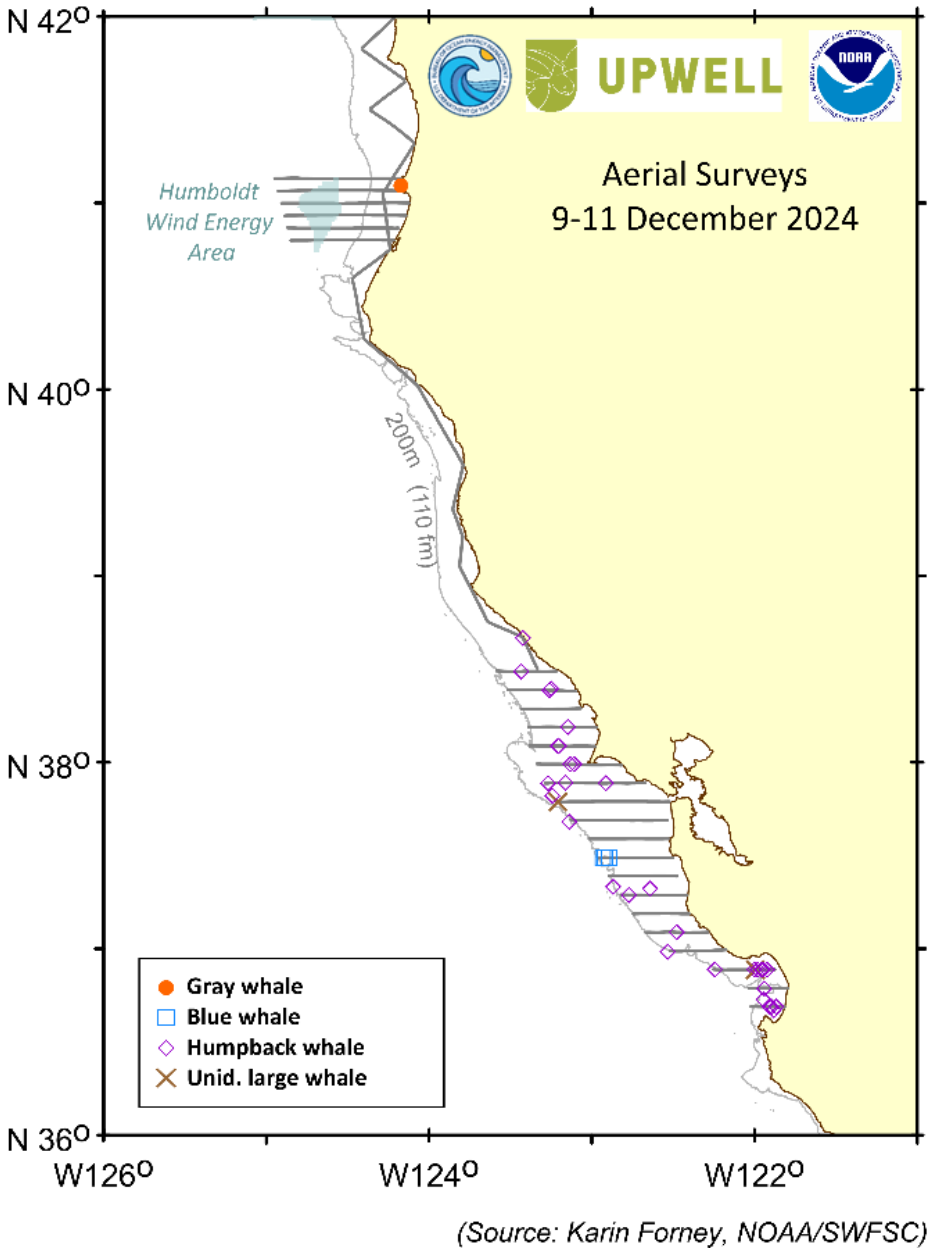

Figure 3. Aerial survey track lines and observations of large whales seen on the NOAA SWFSC aerial survey, December 9 -11, 2024.

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

Monterey Bay Whale Watch conducted whale-watching trips in southern Monterey Bay on five of seven days during the week of December 2 – 8, 2024. The 7-day average number of humpback whales-per-half-day-trip was 17.7 with a peak of 31 humpback whales observed on a half-day trip on December 3, 2024 (Figure 4).

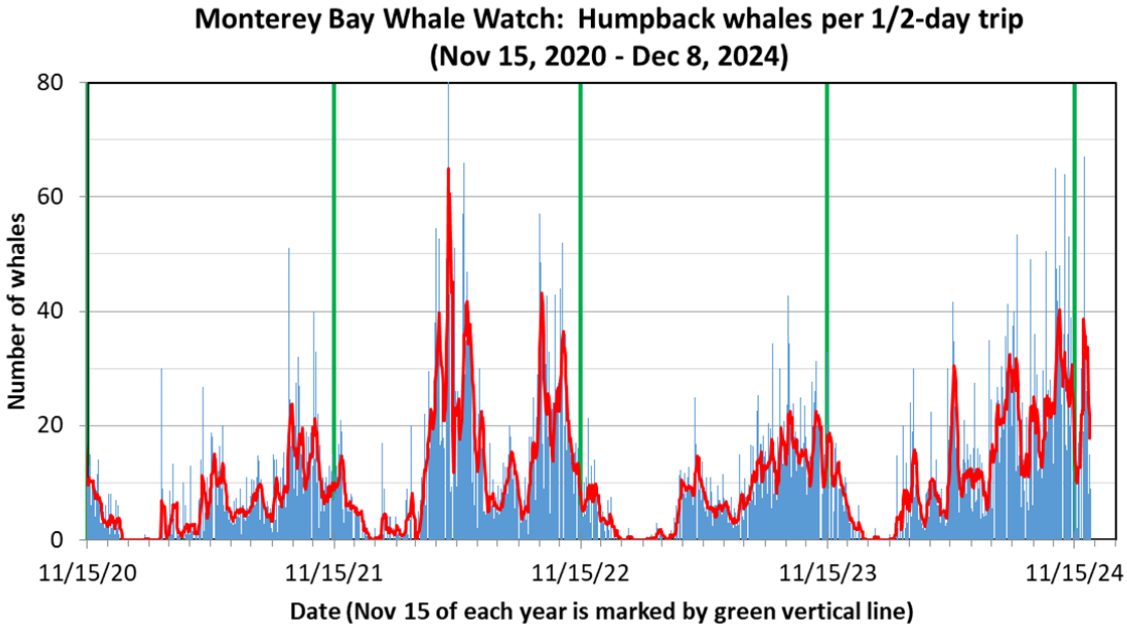

Figure 4. Standardized number of humpback whale sightings for Monterey Bay Whale Watch from November 15, 2020 – December 8, 2024. The y-axis is the number of whales per half-day trip; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns 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 (NMFS)

The humpback whale that was reported on December 2, 2024 has been resighted multiple times off Orange County over the weekend of December 7-8. Rescue efforts are unlikely given the lack of trailing line and animal behavior. No buoys have been seen, only line.

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

Data provided by: Point Blue Conservation Science, Monterey Bay Whale Watch (processed by Karin Forney NOAA SWFSC, and NOAA Coastwatch

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

For current observation data please see the Point Blue Whale Alert map.

Table 7. 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 December 12, 2024.

Fishing Zone	Number of humpback whales sighted	Number of blue whales sighted
Zone 3	4	0
Zone 4	15	0
Zone 6	45	0

B. Monterey Bay Whale Watch (Fishing Zone 4)

The semi-monthly average number of humpback whales-per-half-day-trip in southern Monterey Bay is greater than the historical average for this time of year (Figure 5).

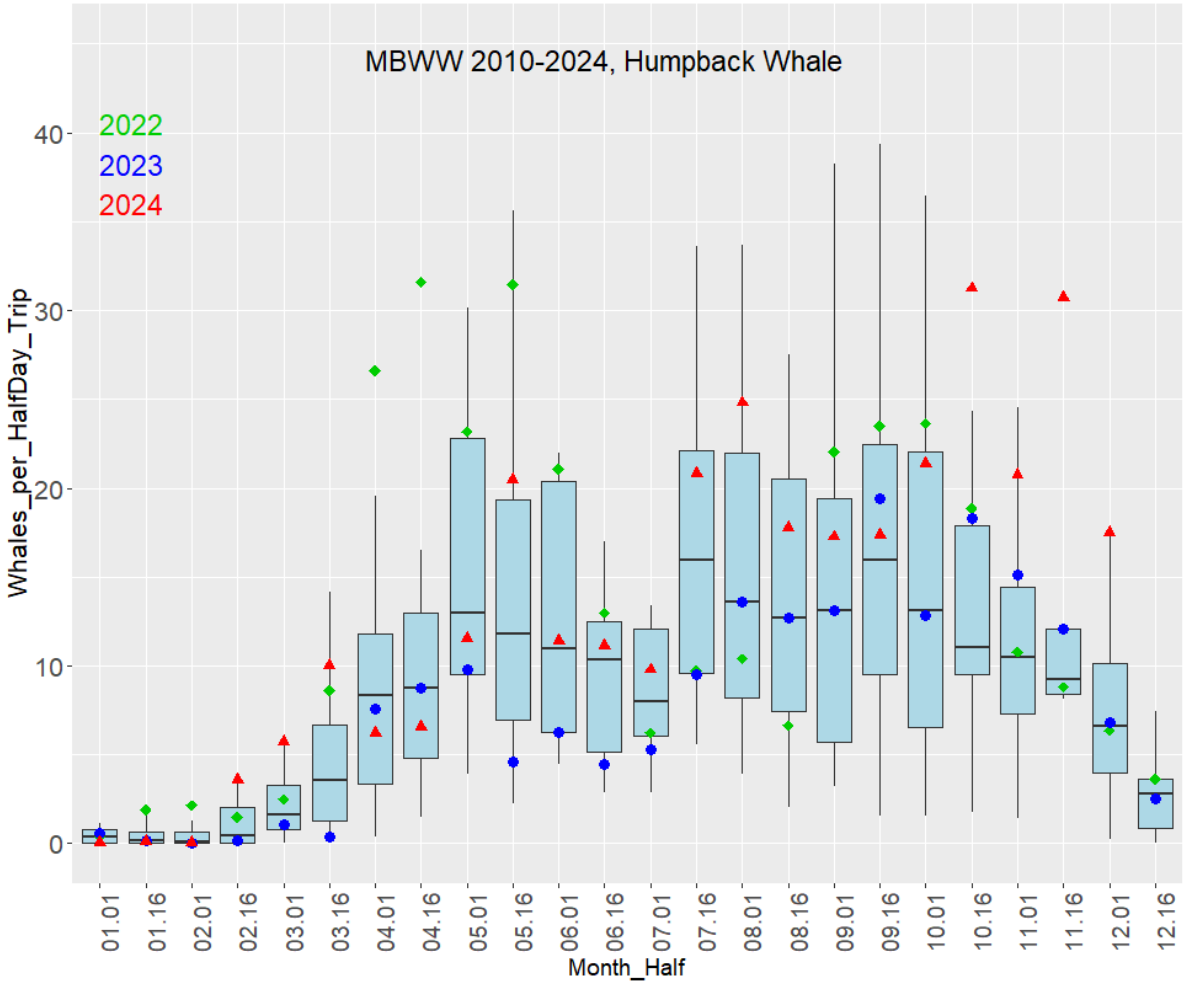

Figure 5. Historical Monterey Bay Whale Watch data for 2010-2024, summarizing the average and variation in the number of humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the 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) 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 November 24, 2024 show low habitat suitability in Fishing Zones 1-6, with only a small amount of suitable habitat near the US-Mexico border. Current habitat suitability can be accessed at NOAA Coastwatch Habitat Suitability Map.

III. Fishing Season dynamics: §132.8(d)(7)

A. Domoic Acid and Quality Testing

Data provided by: California Department of Public Health (CDPH), California Department of Fish and Wildlife

- Based on test results from two sites that required retesting in Crescent City, the recreational Dungeness crab fishery opened December 9, 2024 in northern California from the southern boundary of Reading Rock State Marine Reserve (41° 17.600' N. lat.) north to the California and Oregon border (42° 0.000' N. lat.).
- As of 12/11/24, domoic acid results for all port areas indicate crab are below federal action level. No additional domoic testing is planned for the 2024-25 season.
- A quality test is currently scheduled for the week of 12/16/24 with results expected on or before 12/20/24.

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

A. MBARI Krill Model

No new available data. Please see the November 15, 2024 Available Data document for latest data or visit the MBARI website.

V. Ocean conditions: §132.8(d)(9)

A. El Niño/Southern Oscillation (ENSO) Diagnostic

As of December 12, 2024, La Niña conditions are most likely to emerge in November 2024-January 2025 (59% chance), with a transition to ENSO neutral most likely by March-May 2025 (61% chance). Please visit the NOAA ENSO Diagnostic webpage for more information.

B. Large Marine Heatwave Tracker

As of December 3, 2024, the marine heatwave has decreased in the nearshore environment and the main body of the heatwave has remained further offshore. The current forecast suggests the marine heatwave will continue to decline in size and strength over the fall. Please visit the NOAA Marine Heatwave Tracker webpage for more information.

C. Habitat Compression Index

As of November 2024, Region 2, which includes the north coast of California, shows high habitat compression. Region 3, which includes the central coast of California, shows moderate habitat compression (Figure 6). Please visit the NOAA Habitat Compression Index webpage for more information.

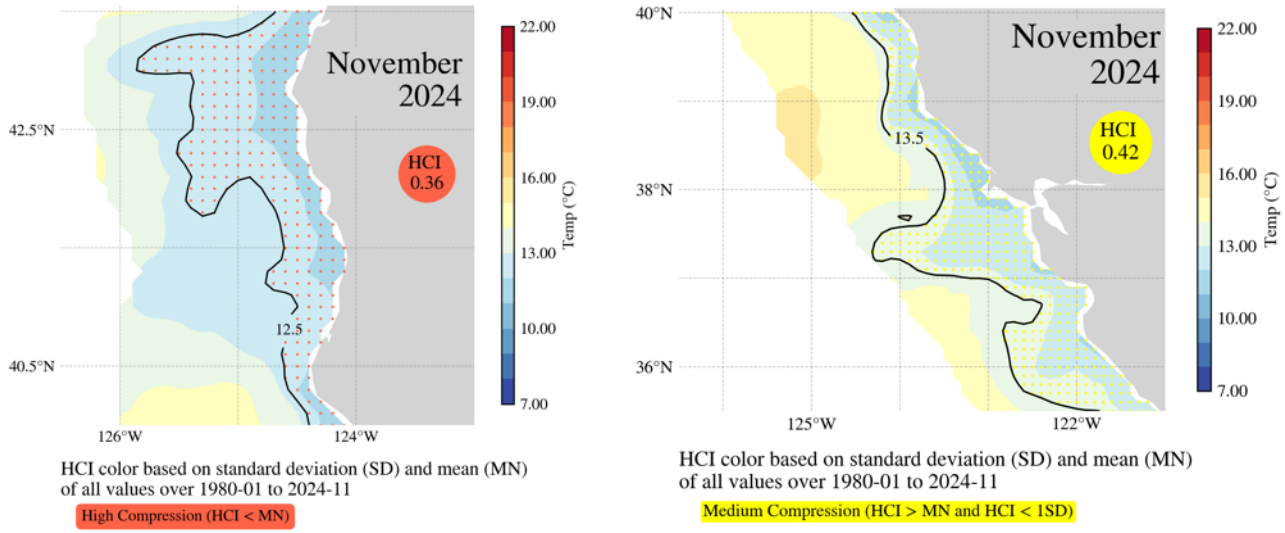

Figure 6. Spatial structure of the Habitat Compression Index for Region 2 (40 to 43.5° N: left side). And Region 3 (35 to 40° N: right side).

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.

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

Data provided by: California Department of Fish and Wildlife

See Table 3 for the current fishing season and calendar year Impact Score. For more information about Impact scoring, please review the Impact Score FAQ.