



**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (DEPARTMENT)
DECLARATION OF FISHERY MANAGEMENT ACTION MODIFICATION IN THE
COMMERCIAL AND RECREATIONAL DUNGENESS CRAB FISHERY**

Pursuant to Fish and Game Code Section 8276.1(b) and California Code of Regulations, Title 14, Section 132.8 ("Section 132.8") and Section 29.80(c)(7) ("Section 29.80(c)"), I find and declare that:

I

On January 11, 2023, I evaluated entanglement risk for the commercial Dungeness crab fishery pursuant to Section 132.8(b). I provided the California Dungeness Crab Fishing Gear Working Group (Working Group) and the Whale Safe Fisheries email listserv with notice of the risk assessment and all non-confidential data under consideration on January 9, 2023. Prior to this risk assessment and management response, Department staff consulted with the Working Group and reviewed all relevant data provided to my staff.

II

At this time, marine life concentration data does not require a management response pursuant to Section 132.8(c). Available data can be found at the [Department's Whale Safe Fisheries website](#).

III

Entanglement triggers for humpback whales have been reached for the total annual Impact Score running three-year average. Pursuant to Section 132.8(c)(1)(C)(1), I must implement a protective management action in the commercial Dungeness crab fishery.

IV

Upon evaluation of the management considerations pursuant to Section 132.8(d), I have determined that the management actions listed below protects humpback whales based on the best available science. Additional information on the relevant management considerations is provided in the attachment to this declaration.

V

THEREFORE, under the authority granted by Fish and Game Code Section 8276.1(b) and Sections 132.8 and 29.80 of Title 14 of the California Code of Regulations, I am implementing the following management actions:

1. Lift the temporary recreational crab trap prohibition in Fishing Zone 3, 4, 5 and 6 and issue a Fleet Advisory. This action will be in effect at 8:01am on January 14, 2023. The current trap prohibition will remain in place until that time.
2. Lift the 50% Gear Reduction (trap reduction) in Fishing Zones 3-6. This action will be in effect at 8:01am on January 15, 2023. The Gear Reduction and requirements as described in the [December 22, 2022, Declaration](#) will remain in place until that time.
3. Continue a Fleet Advisory for the commercial fishery and implement a Fleet Advisory for the recreational fishery in Fishing Zones 3-6. Both fishing fleets should remain vigilant and move or avoid setting gear in areas where whales are transiting or foraging to further minimize risk of entanglement.

This management action is in effect until modified. The next risk assessment is expected to occur in mid-February 2023.

Updates and material regarding future entanglement risk evaluations in the commercial Dungeness crab fishery will be made available on the [Department's Whale Safe Fisheries web page](#).



Charlton H. Bonham, Director

1/11/23 4:30 PM PST
Date/Time

ATTACHMENT TO DIRECTOR JANUARY 11, 2023 DECLARATION FOR MODIFICATION OF
THE MANAGEMENT ACTIONS IN THE COMMERCIAL AND RECREATIONAL DUNGENESS
CRAB FISHERIES

Information referenced in this Attachment is further described in the Final Assessment of Marine Life Entanglement Risk and Management Recommendation dated January 11, 2023, and the Available Data document dated January 9, 2023, and located at the [Department's Whale Safe Fisheries website](#) which to the Department's knowledge represents the best available science informing this risk assessment.

Based on the management considerations identified in the Available Data document and contained in the Final Assessment of Marine Life Entanglement and Management Recommendation dated January 11, 2023, the Director will lift the temporary crab trap prohibition and issue a Fleet Advisory in the recreational Dungeness crab fishery in Fishing Zones 3-6 on January 14, 2023 at 8:01a.m. The Director will lift the 50% Gear Reduction (trap reduction) and continue the Fleet Advisory in the commercial fishery January 15, 2023 at 8:01a.m.

Based on available data marine life concentration triggers requiring management action are no longer met and the Department has analyzed all management considerations provided in Section 132.8(d) and considered appropriate management responses pursuant to Section 132.8(e). Those sections anticipate a broader analysis of the factors impacting entanglement risk statewide, including accounting of the annual entanglement Impact Score.

Monterey Bay Whale Watch data indicate near average low seasonal abundance of humpback whales. This is further supported by known historic migration patterns and confirmed arrival of humpbacks from California to winter breeding grounds. All previously available data showed a continued decline of humpback whales across all Fishing Zones and based on this trend and historical migration patterns, the Department concludes that risk of entanglement has abated sufficiently to allow the lifting of the trap restrictions for the recreational and commercial trap fisheries. In addition, given the totality of Management Considerations and the previously restricted fishing effort for the commercial and recreational fisheries, entanglement risk is anticipated to be low for Fishing Zones 3-6. Of note, ocean conditions due to severe storms impacting California during the past two weeks are projected to continue into the extended forecast period and will likely affect vessel operations and the potential to set additional traps for the near term for both the commercial and recreational fisheries. This will further reduce entanglement risk from additional vertical lines within Fishing Zones 3-6.



California Department of Fish and Wildlife Final Assessment and Management Recommendation for the Risk Assessment Mitigation Program

Date: January 11, 2023

An initial assessment and a preliminary recommendation were 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 as well as Section 29.80, Title 14, California Code of Regulations (Gear Restrictions for Recreational Take of Saltwater Crustaceans). The initial assessment was shared with the Working Group on January 9, 2023 and finalized at the conclusion of the Working Group meeting which was held on January 10, 2023.

A. Confirmed Entanglements and Marine Life Concentrations Triggers for Management Action, RAMP subsection (c)

Entanglements:

In-season Confirmed Entanglement impact score is currently zero. The Impact Score for the calendar year 2022 was 4.53 for humpback whales (subject to revision based on review and verification with NOAA). The Impact Score for calendar year 2021 was 1.89 for humpback whales. As a result, the current running 3-year average Impact Score is 2.14 for humpback whales for the start of 2023.

Marine Life Concentrations:

Fishing Zones 1, 2, 3, 5 & 6

- No new data are currently available

Fishing Zone 4

- Monterey Bay Whale Watch data did not exceed triggers

For additional details, see the Available Data document prepared for this Risk Assessment.

B. Recommended Management Actions from options identified in subsection (e)

Recreational Fishery:

- **Lift trap prohibition in Fishing Zones 3, 4, 5 and 6 and issue a Fleet Advisory**

The recreational Dungeness crab fishery is currently open in all Fishing Zones (statewide) although use of traps has been temporarily prohibited in Fishing Zones 3-6. CDFW Marine Region's final recommendation is to lift the trap prohibition for Fishing Zones 3, 4, 5 and 6. Marine Life Concentrations for humpback whales in Fishing Zone 4 are near seasonal lows, which is a strong indication that most humpback whales have migrated to their southern breeding grounds from California waters. Based on previously available data, known historic migration patterns and supported by the totality of Management Considerations entanglement risk is therefore low for Fishing Zones 3-6. The recommendation is to lift the recreational trap restriction on January 14, 2023, at 8:01am in Fishing Zones 3-6 and issue a Fleet Advisory.

Commercial Fishery:

- **Lift 50% Gear Reduction (trap reduction) for Fishing Zone 3, 4, 5 and 6 and continue Fleet Advisory**

The commercial Dungeness crab fishery is currently open in all Fishing Zones (statewide). CDFW Marine Region's final recommendation is to lift the 50% Gear Reduction for Fishing Zones 3, 4, 5 and 6. Marine Life Concentrations for humpback whales in Fishing Zone 4 are near seasonal lows, which is a strong indication that most humpback whales have migrated to their southern breeding grounds from California waters. Based on previously available data, known historic migration patterns and supported by the totality of Management Considerations entanglement risk is therefore low for Fishing Zones 3-6. The recommendation is to lift the 50% commercial trap reduction restriction on January 15, 2023, at 8:01am in Fishing Zones 3-6 and continue a Fleet Advisory.

Management Recommendation Summary Rationale:

During the previous risk assessment (December 22, 2023), aggregations of humpback whales remained in Fishing Zones 3 and 4, particularly in waters west and south of Point Reyes (Gulf of the Farallones). Due to a series of severe storms impacting California in early 2023, no aerial or vessel-based surveys could be safely conducted to evaluate the Marine Life Concentrations under RAMP for those Fishing Zones. However, Monterey Bay Whale Watch weekly average observations declined from 4.5 humpback whales in mid-December to 2.4 humpback whales as of this risk

assessment. All previously available data showed a continued decline of humpback whales across all Fishing Zones and based on this trend and historical migration patterns, CDFW anticipates risk of entanglement has abated sufficiently to allow the lifting of trap restrictions for the recreational and commercial trap fisheries. In addition, given the totality of Management Considerations and previously restricted fishing effort for the commercial and recreational fisheries entanglement risk is anticipated to be low for Fishing Zones 3-6. Of note, ocean conditions due to severe storms impacting California during the past two weeks will likely affect vessel operations and the potential to set additional traps for the near term for both the commercial and recreational fisheries. This will further reduce entanglement risk from additional vertical lines within Fishing Zones 3-6.

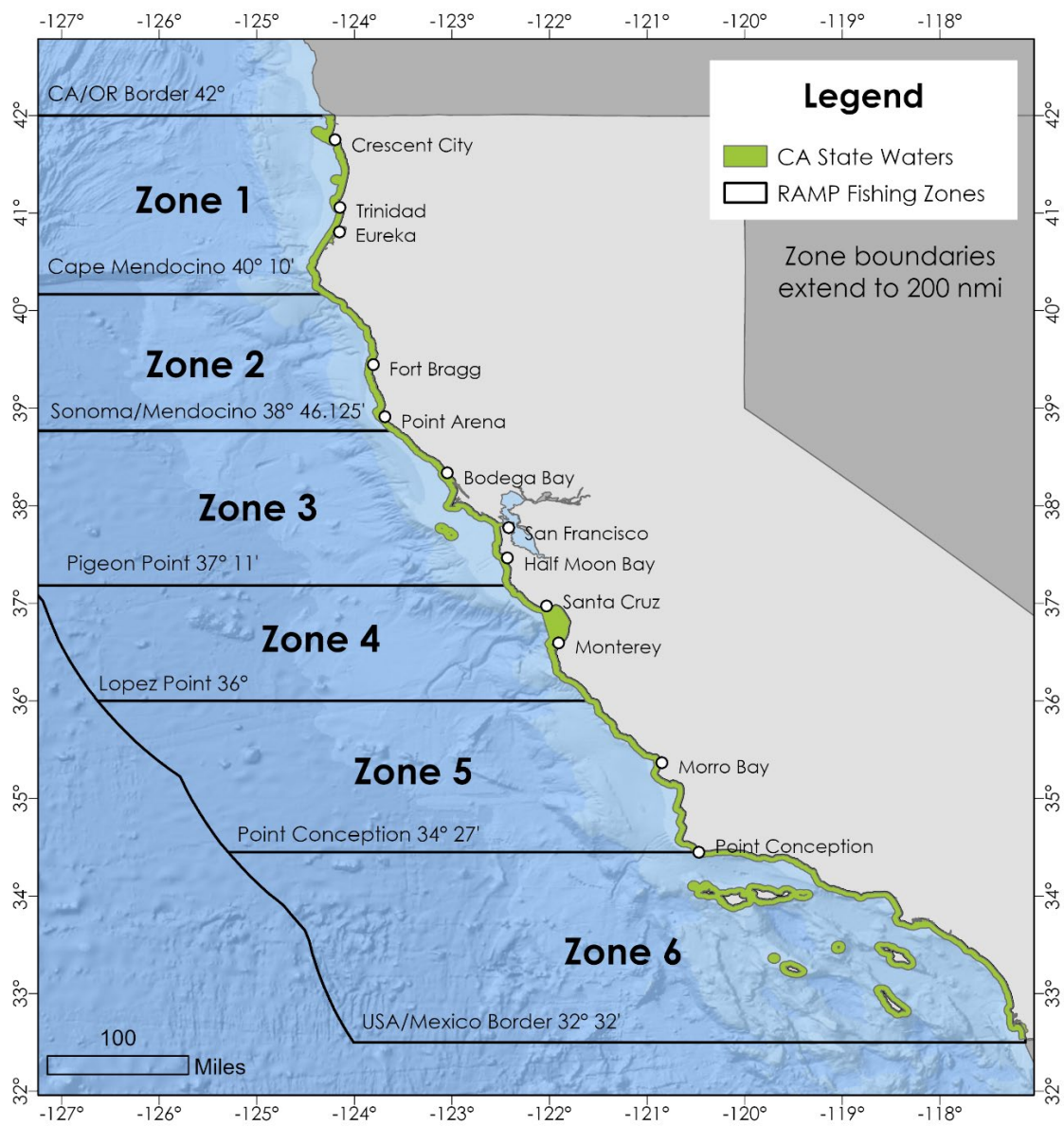
Therefore, staff's final recommendation is to lift the existing recreational trap prohibition and commercial gear reduction in Fishing Zones 3-6. However, to further minimize risk of entanglement a Fleet Advisory should be implemented for the recreational fishery and continued for the commercial fishery in Fishing Zones 3-6. Statewide, both the commercial and recreational fishing fleet should remain vigilant and move or avoid setting gear in areas where whales are transiting or foraging to further minimize risk of entanglement. This is especially important given the current entanglement Impact Score for the commercial fishery.

The next risk assessment is expected to occur in mid-February 2023 by the CDFW Director.

C. Alternative Management Actions considered from options identified in subsection (e)

Alternatives Considered but Rejected

- Fishery Closure – based on available data and historic migration patterns this management action is not required.
- Depth restriction – no data are available to inform implementation of a depth restriction.
- Alternative Gear - can only be authorized after April 1st.



California Dungeness Crab Fishing Gear Working Group (Working Group) Management Recommendation to inform the Risk Assessment and Mitigation Program for the California Department of Fish and Wildlife

Working Group Discussion Date: January 10, 2023

Working Group Recommendation

There was broad support from the Working Group for the Department's preliminary management recommendation. However, the Working Group elected to submit a formal recommendation to the Department regarding the effective date of the proposed management action.

The Working Group recommends the Department lift the recreational trap restriction and commercial gear reductions currently in place immediately (or as quickly as possible). The storm systems currently impacting California create safety concerns for vessels and crews out on the water. Lifting the management actions currently in place prior to 8:01am on January 16, 2023 would provide greater flexibility for vessels to deploy gear during good weather windows between storm cycles, therefore increasing crew and vessel safety.

From the Working Group's perspective, the 72-hour notification requirement in advance notice of RAMP management actions is most meaningful during the opening of the commercial fishery in a given Fishing Zone, in order to provide participating vessels and buyers time to prepare. Since the commercial fishery is already open statewide, advance notification is not necessary.



California Department of Fish and Wildlife Preliminary Assessment and Management Recommendation for the Risk Assessment Mitigation Program

Date: January 9, 2023

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.

A. Confirmed Entanglements and Marine Life Concentrations Triggers for Management Action, RAMP subsection (c)

Entanglements:

In-season Confirmed Entanglement impact score is currently zero. The Impact Score for the calendar year 2022 was 4.53 for humpback whales (subject to revision). The Impact Score for calendar year 2021 was 1.89 for humpback whales. As a result, the current running 3-year average Impact Score is 2.14 for humpback whales for the start of 2023.

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- **Lift the 50% Gear Reduction (trap reduction) for Fishing Zone 3, 4, 5 and 6 and continue the Fleet Advisory**

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Management Recommendation Summary Rationale:

During the previous risk assessment, aggregations of humpback whales remained in Fishing Zones 3 and 4, particularly in waters west and south of Point Reyes (Gulf of the Farallones). Due to a series of severe storms impacting California in early 2023, no aerial or vessel-based surveys could be safely conducted to evaluate the Marine Life Concentrations under RAMP for those Fishing Zones. Monterey Bay Whale Watch weekly average observations declined however from 4.5 humpback whales in mid-December to 2.4 humpback whales as of this risk assessment. All previously available data showed a continued decline of humpback whales across all Fishing Zones and based on this trend and historical migration patterns, CDFW anticipates risk of entanglement has abated sufficiently to allow the lifting of the trap restrictions for the recreational and commercial trap fisheries. In addition, given the totality of Management Considerations and previously restricted fishing effort for the commercial and recreational fisheries entanglement risk is anticipated to be low for Fishing Zones 3-6. Of note, ocean conditions due to severe storms impacting California

during the past two weeks will likely affect vessel operations and the potential to set additional traps for the near term for both the commercial and recreational fisheries. This will further reduce entanglement risk from additional vertical lines within Fishing Zones 3-6.

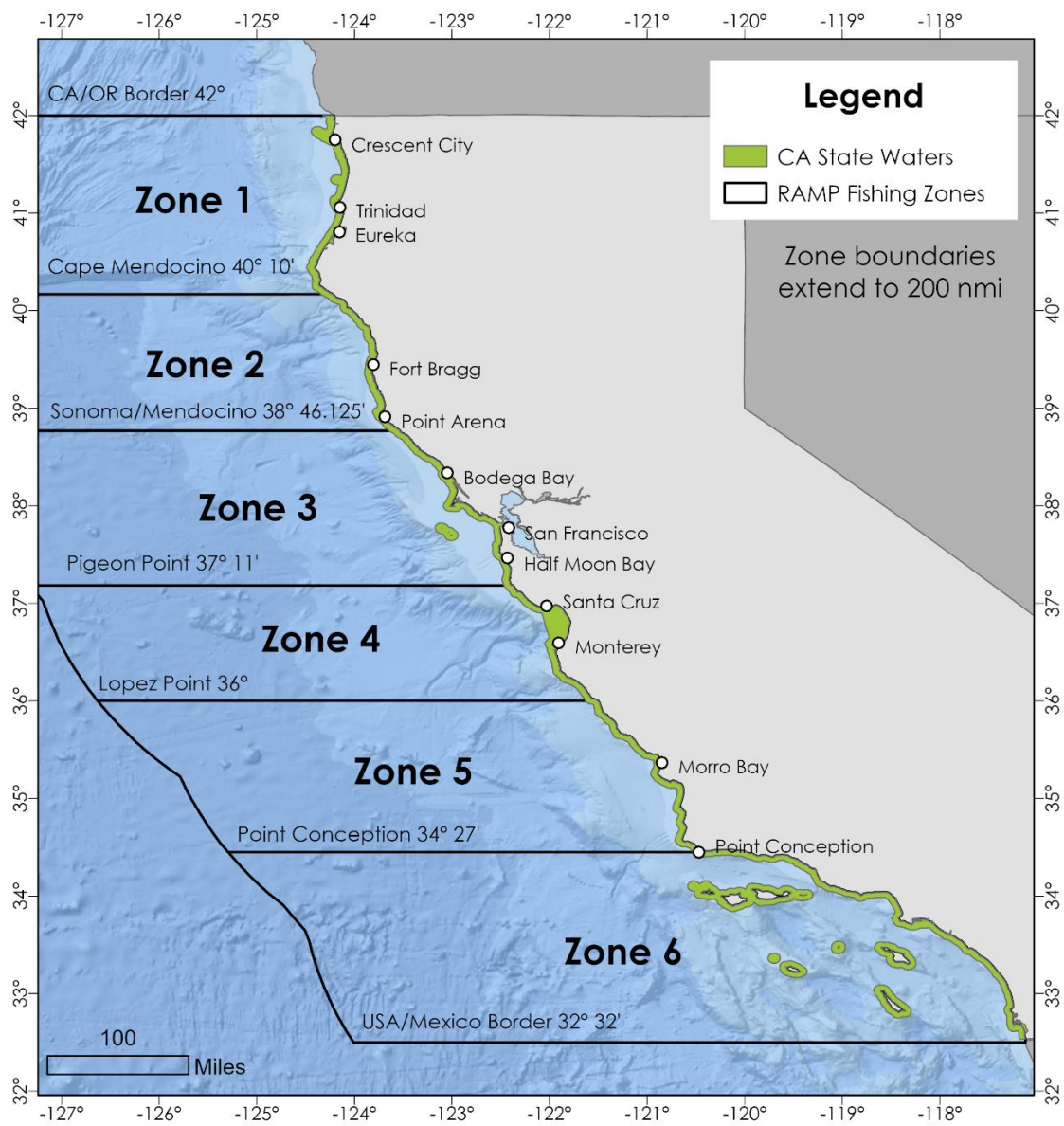
Therefore, staff's preliminary recommendation is to lift the existing recreational trap prohibition and commercial gear reduction in Zones 3-6. However, to further minimize risk of entanglement a Fleet Advisory for the commercial fishery in Fishing Zones 3-6 should be continued and implemented for the recreational fishery. Statewide, both the commercial and recreational fishing fleet should remain vigilant and move or avoid setting gear in areas where whales are transiting or foraging to further minimize risk of entanglement. This is especially important given the current entanglement Impact Score for the commercial fishery.

The next risk assessment is expected to occur in mid-February 2023 by the CDFW Director.

C. Alternative Management Actions considered from options identified in subsection (e)

Alternatives Considered but Rejected

- Fishery Closure – based on available data and historic migration patterns this management action is not required.
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2022-23 Risk Assessment: Available Data

Last updated: January 9, 2022

Contents

Items with updated information are followed by an *.

2022-23 Risk Assessment: Available Data	- 1 -
Triggers requiring management action	- 1 -
Confirmed Entanglements: § 132.8(c)(1)	- 1 -
Marine Life Concentrations: § 132.8(c)(1)	- 3 -
Management considerations	- 4 -
Information from NOAA: § 132.8(d)(2)	- 4 -
Effectiveness of management measures: § 132.8(d)(3)	- 4 -
Total economic impact to the fleet: § 132.8(d)(4)	- 5 -
Historic patterns and current Actionable Species migration: § 132.8(d)(6) and (11) ..	- 5 -
Fishing Season dynamics: § 132.8(d)(7)	- 8 -
Distribution and abundance of key forage: § 132.8(d)(8)	- 10 -
Ocean conditions: § 132.8(d)(9)*	- 12 -
Current Impact Score Calculation: § 132.8(d)(10)	- 13 -

TRIGGERS REQUIRING MANAGEMENT ACTION

Confirmed Entanglements: §132.8(c)(1)

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

There have been no additional confirmed reports of entangled humpback whales, blue whales, or leatherback sea turtles since the last risk assessment. Therefore, the [December 7, 2022](#) Available Data document still represents the best available information regarding current entanglements in the 2022 and 2023 calendar years. The only exception is that 202220526Mn has now been classified as a confirmed entanglement with unidentified gear by NFMS. Current totals for the calendar year of 2023 are 0 and 16 for the previous

calendar year, 2022. In 2022, there were 16 confirmed humpback whale entanglements reported off California (seven in known gear types and nine in unidentified gear types), with 12 reports originating in Fishing Zone 4, two reports in Fishing Zone 6, and one in Fishing Zones 1 and 3 (Table 1). This data is available for review in the [December 16, 2022 Available Data](#) document.

Table 1. Actionable Species Entanglements 2023, prepared by West Coast Region.

Actionable Species	Number Confirmed Entanglements in California Commercial Dungeness Crab Gear	Number Confirmed Entanglements in Unknown Fishing Gear Reported off California
Humpback whales	0	0
Blue whales	0	0
Leatherback sea turtles	0	0

There have been no reported entanglements in the 2023 calendar year in Dungeness crab or unidentified gear.

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 (2022-23)	Current Calendar Year Impact Score (2023)
Humpback whales	0	0
Blue whales	0	0
Leatherback sea turtles	0	0

The total calendar year impact score for 2021 was 1.89 for humpback whales and 0 for blue whales and leatherback sea turtles. The total calendar year impact score for 2022 was 4.53 for humpback whales and 0 for blue whales and leatherback sea turtles. The total calendar year impact score for 2023 is 0 for humpback whales, blue whales, and leatherback sea turtles.

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 underlying calculation of a 3-year rolling average.

Actionable Species	2021 Calendar Year Impact Score	2022 Calendar Year Impact Score	2023 Calendar Year Impact Score	3-Year Rolling Average
Humpback whales	1.89	4.53	0	2.14
Blue whales	0	0	0	0
Leatherback sea turtles	0	0	0	0

Marine Life Concentrations: §132.8(c)(1)

Data provided by: Monterey Bay Whale Watch (processed by Karin Forney, NOAA SWFSC).

Table 4. 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	NA; pre-season risk assessments complete	NA
Zone 2	NA; pre-season risk assessments complete	NA
Zone 3	None: No surveys conducted due to poor weather	NA
Zone 4	MBWW	No
Zone 5	None: No surveys conducted due to poor weather	NA
Zone 6	None: pre-season risk assessments complete	NA

Monterey Bay Whale Watch (Fishing Zone 4)

- Monterey Bay Whale Watch conducted whale-watching trips in southern Monterey Bay on four of seven days during the week of December 27 2022- January 2, 2023.
- The average number of humpback whales-per-trip during the four days that had trips within the last seven days (27 December 2022 – 2 January 2023) was 2.4, with a peak of 11 whales observed on a single half-day trip on 28 December 2022.
- The semi-monthly average number of whales-per-half-day-trip is above the average historical value at this time of the year (Figure 1), but near seasonal lows. The 7-day running average has continued to decrease during the last two weeks (Figure 2) as more whales have migrated south to their breeding grounds.
- One blue whale was observed by Monterey Bay Whale Watch on 18 December 2022, but none have been observed since that date.

Monterey Bay Whale Watch: Humpback whales per 1/2-day trip (Nov 15, 2016 - Jan 2, 2023)

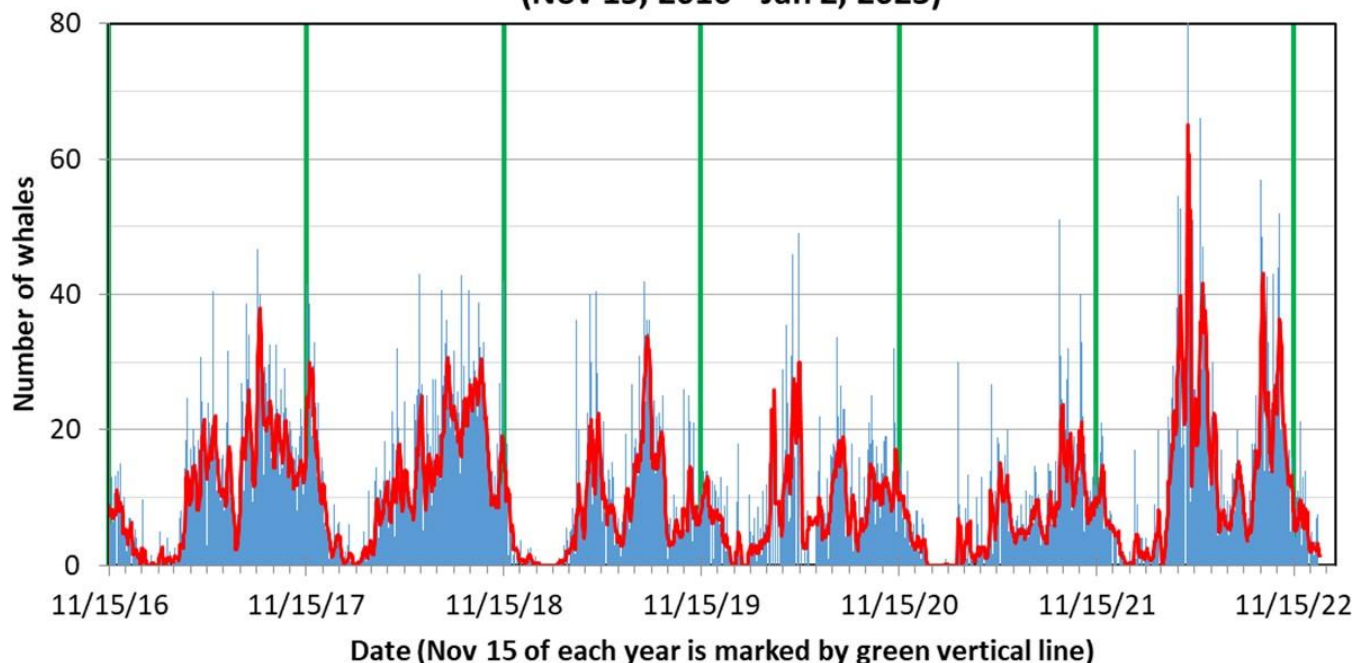


Figure 1. Standardized number of humpback whale sightings for Monterey Bay Whale Watch from 15 November 2016 – 02 January 2023. The y-axis is the number of whales per half-day trip; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added on November 15 of each year for reference. Each tick mark is one month.

NMFS Aerial Survey

No surveys were performed during this risk assessment period due to inclement weather. Please reference the [December 16, 2022](#) Available Data document for the most recent surveys.

Cascadia Small Vessel Surveys

No surveys were performed during this risk assessment period due to inclement weather. Please reference the [December 16, 2022](#) Available Data document for the most recent surveys.

MANAGEMENT CONSIDERATIONS

Information from NOAA: §132.8(d)(2)

No additional information was provided for this Risk Assessment.

Effectiveness of management measures: §132.8(d)(3)

Data provided by: California Department of Fish and Wildlife

The 2023 calendar year does not currently have any reported entanglements and the 2022 calendar year saw a high number of confirmed entanglements. Avoidance of any

additional entanglement is a priority for CDFW. The recommended management measure must limit the potential for interactions between the humpback whales and commercial Dungeness crab gear to minimize risk of additional entanglements. CDFW will put forward it's recommended approach in the January 9, 2023, Initial Assessment.

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. CDFW will provide this evaluation in the January 9, 2023 Initial Assessment.

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

Data provided by: Monterey Bay Whale Watch (processed by Karin Forney, NFMS) Point Blue Conservation Science, NOAA Coast Watch.

Monterey Bay Whale Watch (Fishing Zone 4)

The semi-monthly average number of whales-per-half-day-trip is above the average historical value at this time of the year (Figure 2), but near seasonal lows. The 7-day running average has continued to decrease during the last two weeks.

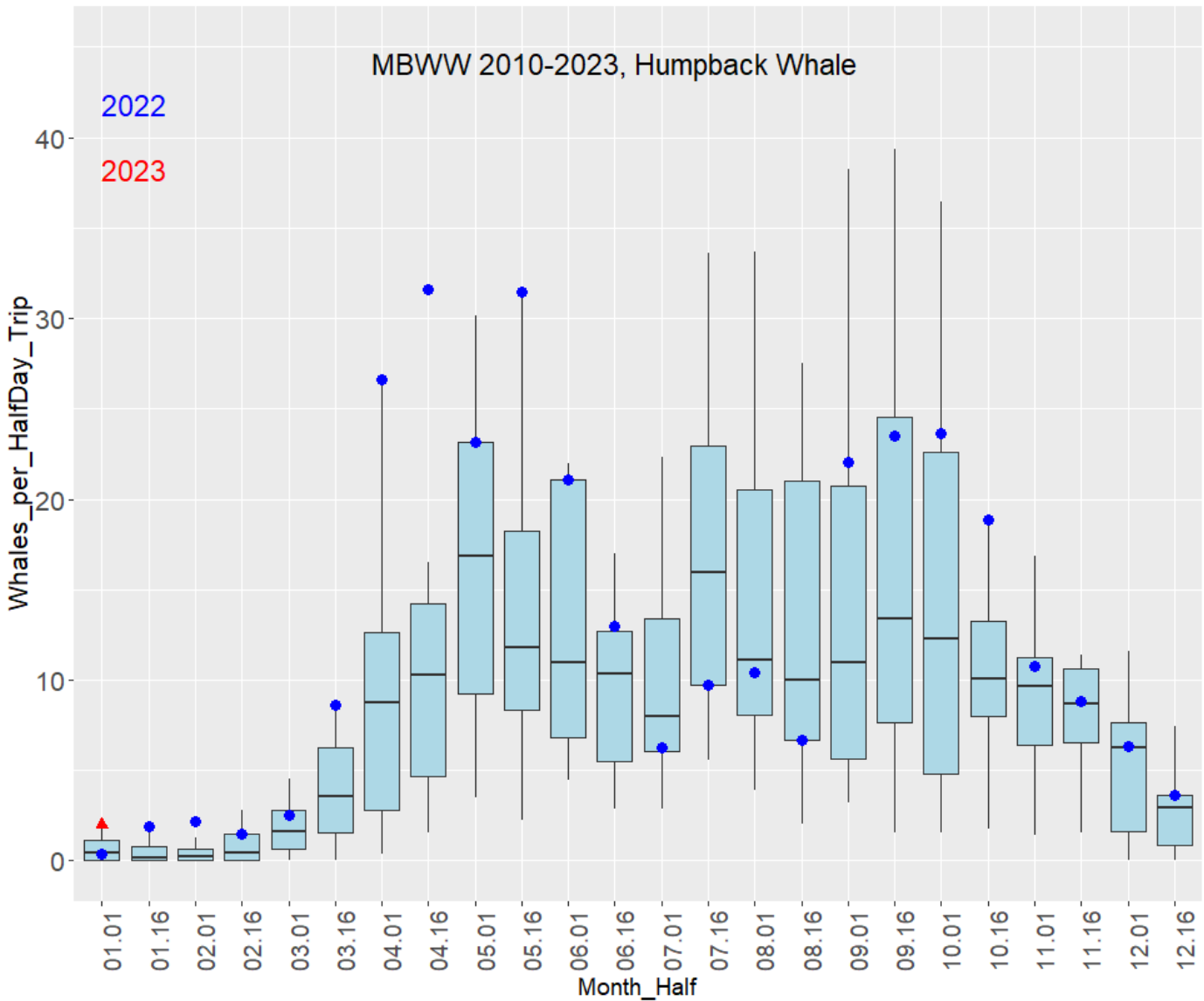


Figure 2. Historical Monterey Bay Whale Watch data for 2010-2023, summarizing the average and variation in the number of humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the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

Point Blue Conservation Science Data Portal (Fishing Zone 6)

During the seven-day period ending January 6, 2022, trained observers from the Channel Islands National Marine Sanctuary and National Park Service reported three humpback whales in Fishing Zone 6 (Figure 3).

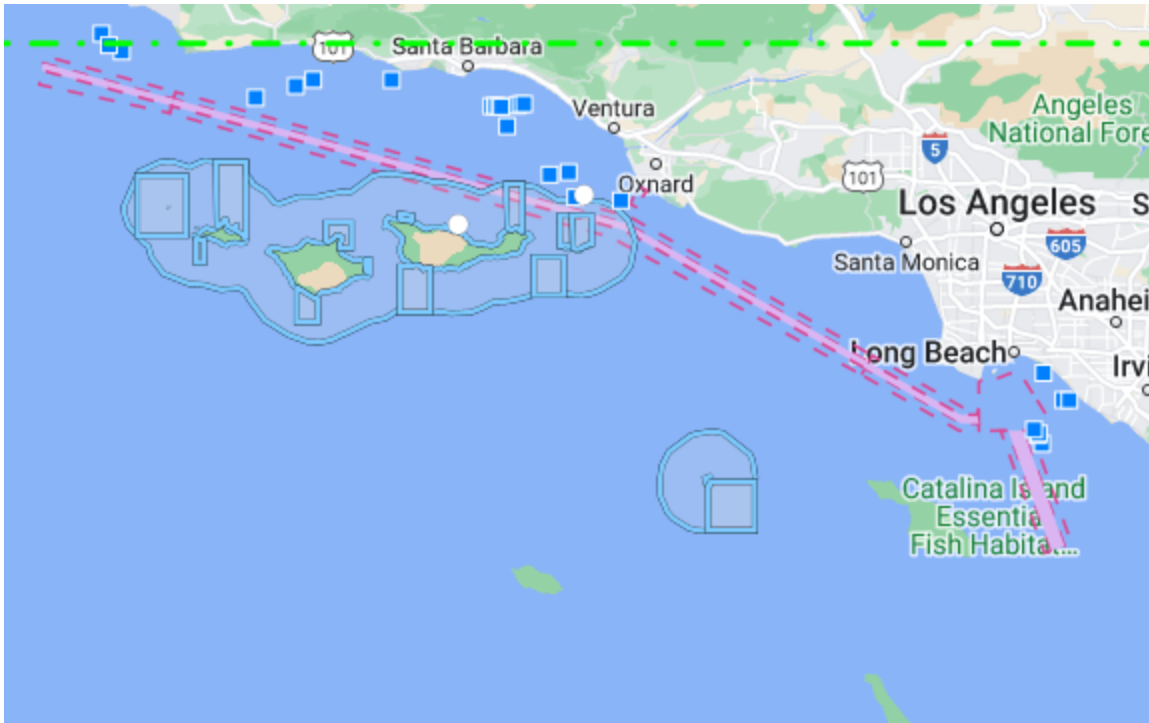


Figure 3. Locations of humpback whale sightings within Fishing Zones 3 and 6. Reporting locations are represented by white circles. A given report may or may not represent multiple individuals. Fishing Zone boundaries are represented by the dashed lines.

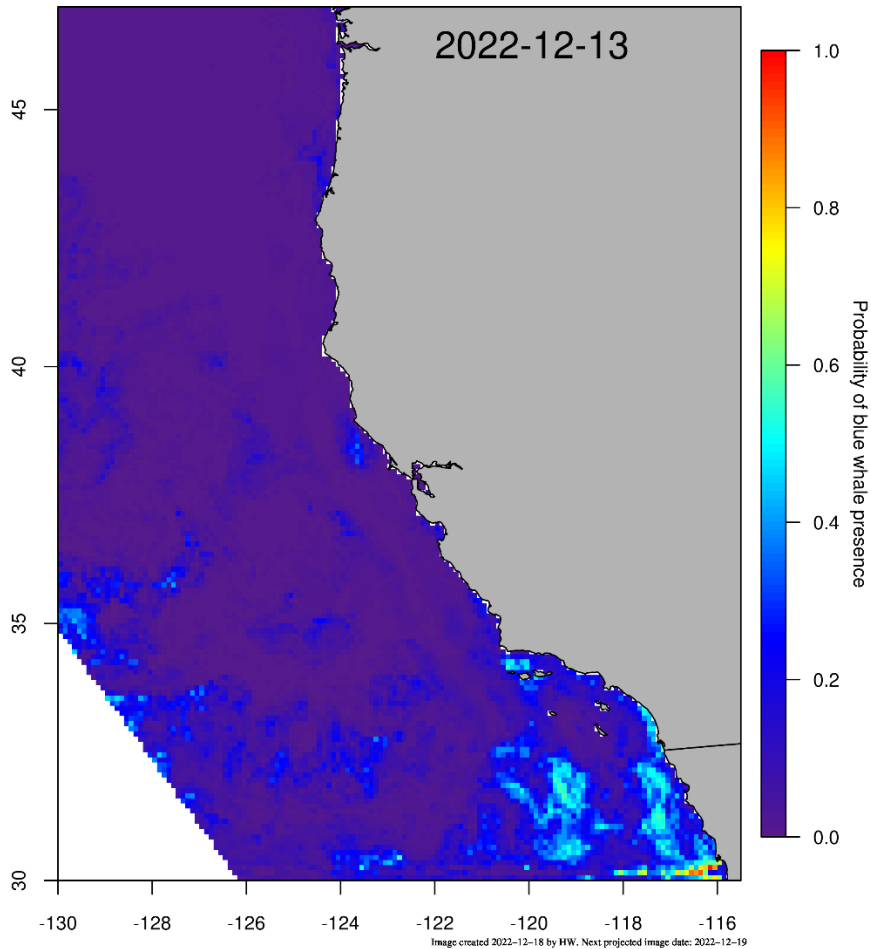
WhaleWatch 2.0 (All Fishing Zones)

Blue whale habitat predictions for December 12, 2022, show low habitat suitability in Fishing Zones 1-6(Figure 4).

WhaleWatch 2.0



Experimental Product



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 4. WhaleWatch 2.0 map for December 13, 2022. [View a current map.](#)

Fishing Season dynamics: §132.8(d)(7)

Data provided by: California Department of Fish and Wildlife

All Fishing Zones are open as of December 31, 2022 and are not subject to any additional delays due to domoic acid or quality.

CDFW data presented in this section is preliminary and subject to revision.

Marine Landings Data System (Zones 3-6)

All Fishing Zones are open as of December 31, 2022 and Fishing Zones 3 through 6 opened under a 50% gear reduction. No ongoing fishing activity is recorded from Fishing Zones 1 and 2, so a summary of landings from Fishing Zones 3-6 is provided (Table 5).

Table 5. Summary of fleet dynamics information for Zones 3-6 as of January 6, 2023. Accessed from CDFW's Marine Landings Data System database on January 6, 2023.

Metric	Value	Additional Info
Season status	Open	All Fishing Zones are open only Fishing Zones 3-6 have ongoing activity since season opened.
Number of daily landings	177	NA
Total volume (pounds)	555,833	NA
Total Ex-Vessel Value	\$1,789,878	NA
Average unit price	\$3.69	NA
Total number of active vessels	93	NA
Maximum potential traps at 50% (based on active permits)	13,982	Estimates are also provided in the Bi-Weekly Fishing Activity Reports subsection.

Bi-Weekly Fishing Activity Reports (Fishing Zones 3-6)

- CDFW has received bi-weekly reports for the first and only reporting period of January 1, 2023. Although total reports for each period may not reflect all permitted vessels participating in the fishery, a summary of this report period is provided (Table 6).
- The January 1, 2023 reporting period covers fishery participation from December 28-31, 2022, and about 7,080 traps are estimated to be deployed with the majority of these located within Fishing Zone 3 and none reported in Fishing Zones 1 and 2.

Table 6. Summary of information for the January 1, 2023 bi-weekly reporting period by Fishing Zones (1-6). Accessed from CDFW's Bi-Weekly Reporting database on January 6, 2023. 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								
Zone 2								
Zone 3	43	147	6,312	21	34	80	0	
Zone 4	7	110	768	22	47	75	0	
Zone 5								
Zone 6								
Totals	50		7,080				0	

Recreational Crab Fishery

See the [December 7, 2022 Available Data](#) document.

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

Data provided by: Monterey Bay Aquarium Research Institute

MBARI Krill Model

Modeled zooplankton conditions for December 2022 indicate expected concentrations from the CA/OR border to Point Arena, expected to higher than expected concentrations to Point Sur, higher than expected concentrations between Point Sur and Point Conception, and average or below average concentrations south of Point Conception (Figure 5).

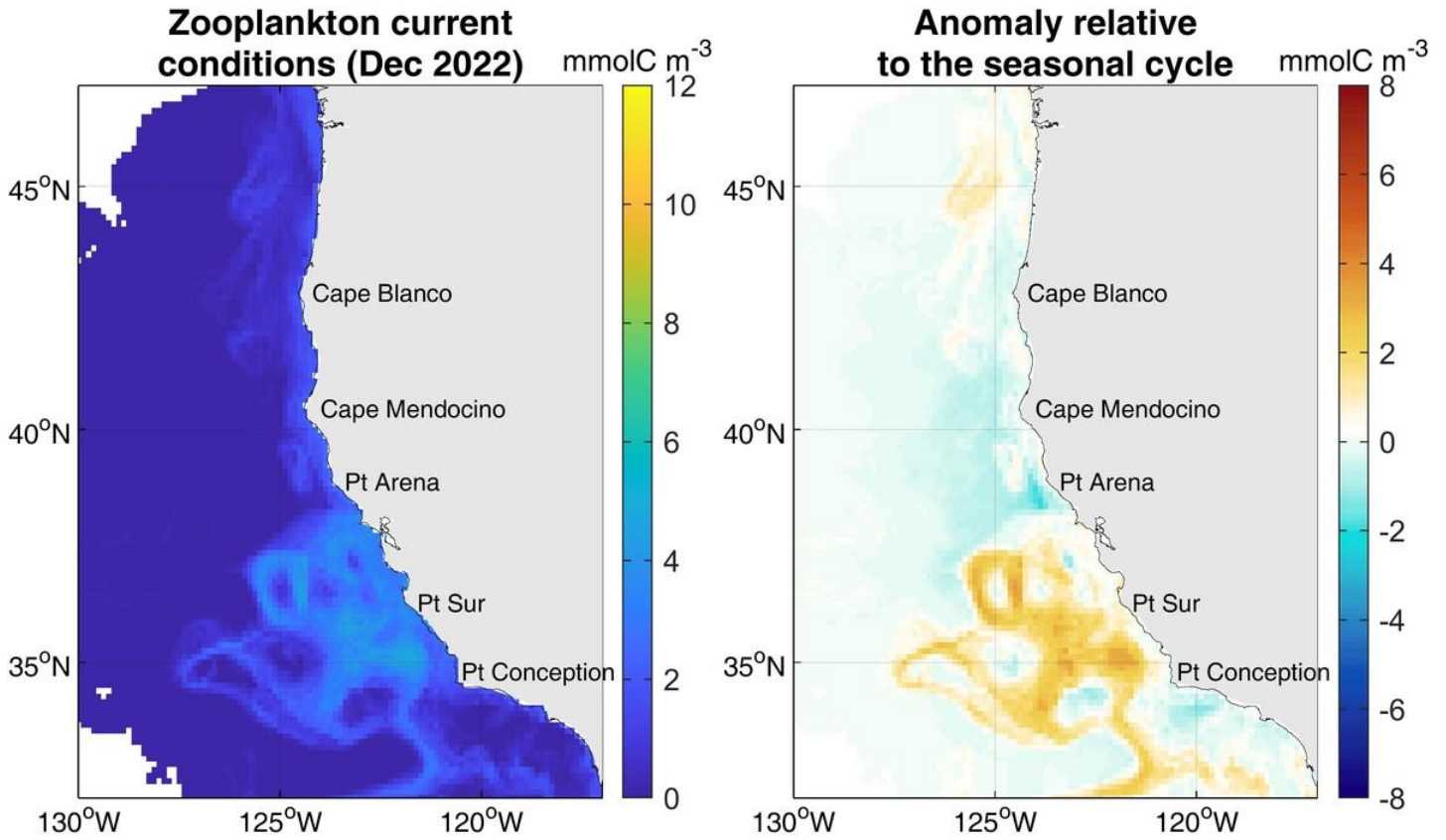


Figure 51. Latest modeled zooplankton concentrations in the California Current (left) and corresponding anomaly relative to the 1993-2018 seasonal cycle (right). Accessed from the [MBARI website](#) on January 6, 2022.

The MBARI model identified four zooplankton hotspots within the model's spatial domain, three of which are present within California (Figure 6). The southernmost hotspot (north of Point Conception, 34.5 to 36° N) is most productive between May and July. The central hotspot (which extends from Point Sur to Point Arena, 36.3 to 38.9° N) is most productive during June and July, and the northern hotspot (which extends from Cape Mendocino to Cape Blanco, 40.4 to 42.8° N) is most productive during July and August.

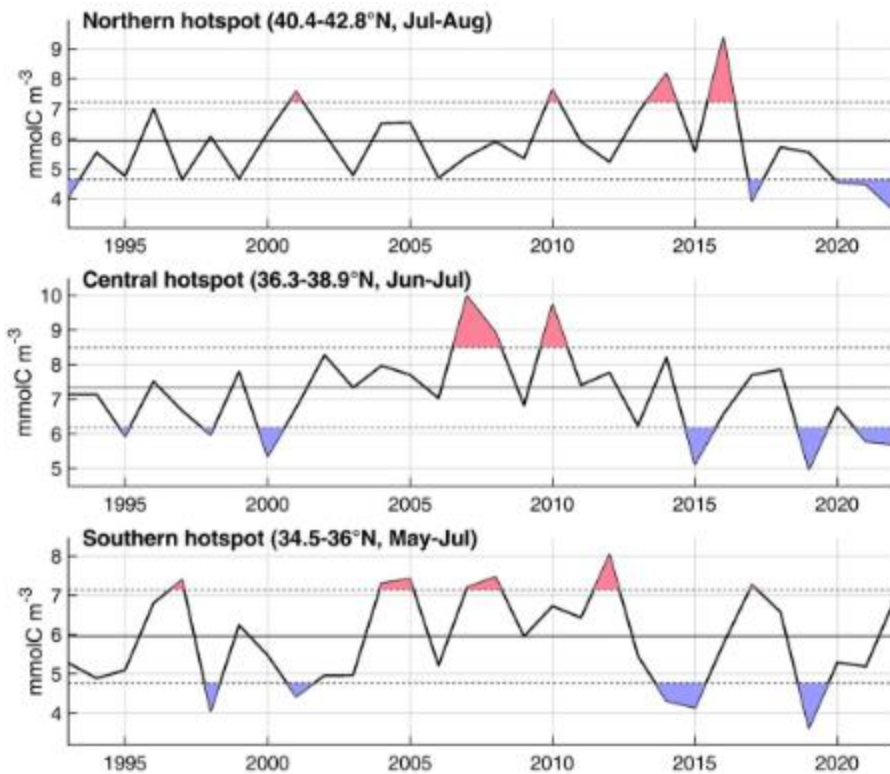


Figure 62. Time series of zooplankton concentration within three hotspots off California, averaged each year over their peak months. Horizontal lines display the mean and standard deviation over the 1993-2018 time period. Ocean conditions: §132.8(d)(9).

Ocean conditions: §132.8(d)(9)*

Data provided by: California Current Integrated Ecosystem Assessment Program.

El Niño/Southern Oscillation (ENSO) Diagnostic

La Niña is expected to continue into the winter, with equal chances of La Niña and ENSO-neutral during January-March 2023. In February-April 2023, there is a 71% chance of ENSO-neutral.

Large Marine Heatwave Tracker

As of December 12, 2022 the heatwave has receded from nearshore coastal waters, returning to normal or slightly colder-than normal temperatures (Figure 7).

Dec-16-2022

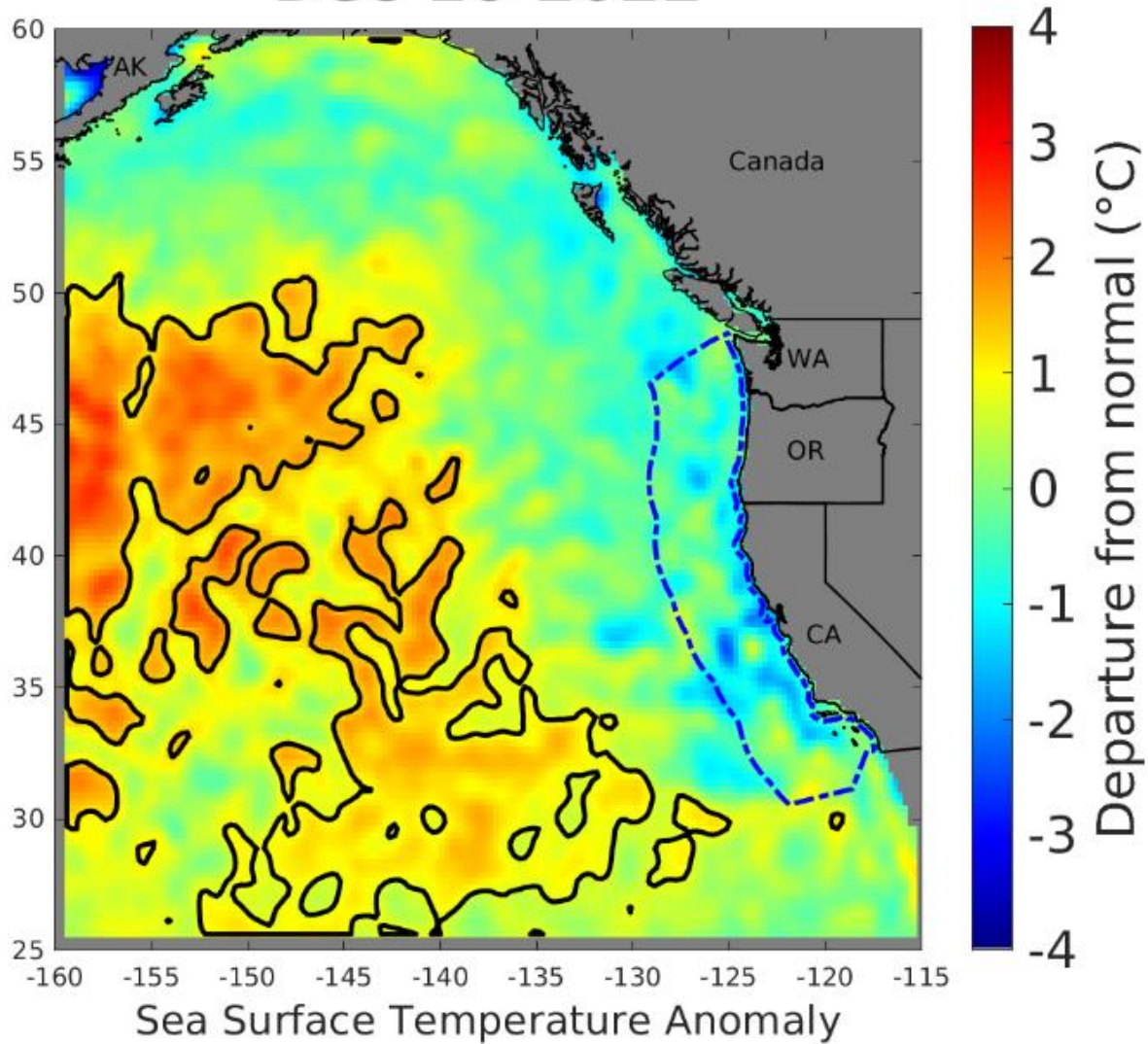


Figure 73. Science-quality (delayed 3-weeks), daily interpolated standardized sea surface temperature anomalies (SSTa) in the California Current ecosystem available for analysis of MHW presence. Dark outline shows the current extent of MHW conditions, as delineated by values of the normalized SST + 1.29 SD from normal. Blue dashed line represents the US West Coast EEZ. SST data from [NOAA's Optimum interpolation Sea Surface Temperature analysis](#), with the SST anomaly calculated using climatology from NOAA's AVHRR-only OISST dataset.

Habitat Compression Index

See the [December 7, 2022, Available Data](#) document.

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

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. Impact Score totals for the current fishing season (2022-23) and calendar year (2023) are provided in Table 2 above. Impact Score totals for calendar year 2021-2023 are provided in Table 3 above.