



CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE DECLARATION OF CRAB TRAP PROHIBITION IN THE RECREATIONAL DUNGENESS CRAB FISHERY AND DEPTH CONSTRAINT FOR THE COMMERCIAL DUNGENESS CRAB FISHERY DUE TO RISK OF MARINE LIFE ENTANGLEMENT

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 May 2, 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 April 26, 2023. Prior to this risk assessment and management response, Department staff consulted with the Working Group, I considered all relevant information provided to the Department and my designee consulted with the President of the Fish and Game Commission.

II

Impact Score Calculation has exceeded a running average of two humpback whale entanglements over a three-year period. Pursuant to Section 132.8(c)(1)(C), I must implement a Fishing Zone closure or other protective management action.

III

Oregon State University vessel surveys indicated a total of 27 humpbacks whales within Fishing Zone 1. NOAA-standardized data from commercial whale-watching trips in Fishing Zone 4 show increasing presence of Humpback whales, with the most recent weekly running average of 9.2 and 25 humpbacks sighted on a single trip. Pursuant to Section 29.80(c)(7)(A)(1), I must implement a protective management action in the recreational crab fishery.

IV

Pursuant to Section 132.8(e)(5), I must allow use of any authorized Alternative Gear during a closure on April 1 or later.

V

Section 29.80(c)(7) requires evaluation of the information outlined in California Code of Regulations, Title 14, Sections 132.8 ("Section 132.8"). Upon evaluation of the management considerations pursuant to Section 132.8(d), I have determined that the management action listed below protects humpback whales based on the best available science. Additional information on relevant management considerations is provided in the attachment to this declaration.

VI

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

1. Effective May 15, 2023, at 12:00pm (noon), the deployment and use of recreational crab traps is prohibited in Fishing Zones 3-6.
2. Effective May 15, 2023, at 12:00pm (noon) in Fishing Zones 1 and 2, a Depth Constraint limiting fishing activity to inside of 30-fathoms is issued for ocean waters for the California commercial Dungeness crab fleet. Traps used in the commercial fishery are thereby prohibited in waters seaward of the 30-fathom contour as defined in Title 50 of the Federal Codes of Regulations, Part 660, Section 660.71. All vessels must carry onboard an electronic monitoring system capable of recording the vessel's location using GPS coordinates at a frequency of no less than once per minute during fishing operations. Electronic monitoring data must be made available to the Department upon request for the duration of the fishing period and 60 days thereafter.
3. All Fishing Zones (1-6) remain under a Fleet Advisory until the close of the season.
4. Authorized Alternative Gear may be used in all closed Fishing Zones. Currently there are no authorized Alternative Gear types. If an Alternative Gear type is authorized before the statutory season closure dates, it may be used for take of Dungeness crab.

This management action is in effect until modified or through the end of the statutory season pursuant to Fish and Game Code Section 8276 for the commercial fishery and is in effect until the normal end of the Dungeness crab season as specified in California Code of Regulations, Title 14, Section 29.85(b)(2). The next risk assessment is expected to occur in mid-May 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

5/2/23 11:45 AM DT
Date/Time

ATTACHMENT TO DIRECTOR May 2, 2023, DECLARATION OF A TRAP PROHIBITION IN
THE RECREATIONAL FISHERY AND A DEPTH CONSTRAINT IN THE COMMERCIAL
DUNGENESS CRAB FISHERY DUE TO RISK OF MARINE LIFE ENTANGLEMENT

Information referenced in this Attachment is further described in the Final Assessment of Marine Life Entanglement Risk and Management Recommendation dated April 28, 2023 and the Available Data document dated April 28, 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 April 28, 2023, the Director will prohibit the use of recreational crab traps in Fishing Zones 3-6, implement a 30-fathom Depth Constraint in Zones 1 and 2, and continue a statewide Fleet Advisory until the close of the season. This decision was informed by analysis of the management considerations under Section 132.8(d) and appropriate management response under 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.

Based on historical migration patterns, it is anticipated that humpback whales will continue returning from their winter breeding grounds over the coming weeks. In addition, the three-year running average Impact Score has exceeded two humpbacks whales between 2021 and the present. Monterey Bay Whale Watch data indicates numerous humpback whales within Fishing Zone 4. Observation data from Oregon State University vessel surveys also indicate several aggregations of humpbacks whales in Fishing Zone 1. Fishing effort by the commercial Dungeness crab fishery in these Zones presents a risk of entanglement as humpbacks return from their winter breeding grounds to forage. In addition, though not confirmed to be commercial Dungeness crab gear, there have been two unidentified gear entanglements that occurred in mid-April in Monterey Bay. Entanglement risk is expected to increase over the coming weeks across the Fishing Grounds. In anticipation of this, the Director is taking protective action by implementing the Depth Constraint in Fishing Zones 1 and 2 and prohibiting the use of recreational crab traps in Fishing Zones 3-6. The commercial Dungeness crab fishery was closed in Fishing Zones 3-6 on April 15, 2023.



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

Date: April 28, 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 (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 April 26, 2023 and finalized at the conclusion of the Working Group meeting which was held on April 28, 2023.

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

Entanglements:

As of April 24, 2023, two entanglements have been reported to CDFW by NOAA for the 2022-23 season that involved unidentified gear that is of the type that is used in the commercial Dungeness crab fishery resulting in an in-season Confirmed Entanglement Impact Score of 0.76. The Impact Score for calendar year 2021 is 1.89 for humpback whales. The total Impact Score for the calendar year 2022 is 5.28 for humpback whales. Therefore, the current running 3-year average Impact Score is 2.64 for humpback whales for the years 2021-2023, which exceeds the triggers in Section 132.8(c)(1)(C)(1). Note: Entanglement data are subject to revision based on review and verification by NOAA.

Marine Life Concentrations:

CDFW and USCG aerial surveys for Fishing Zones 1, 2 and 3 did not observe humpback whales, blue whales, or leatherback sea turtles. Surveys conducted by Oregon State University across Fishing Zones 1 and 2 observed 28 humpback whales in depths ranging from 42 to 546 fathoms; a majority of those sightings occurred in Zone 1 (27 humpbacks). Monterey Bay Whale Watch data documented 25 humpback whales during a single trip and an average of 9.2 humpback whales per trip during the most recent seven-day period in Fishing Zone 4. In addition, two blue whales were observed during one of those trips on April 21, 2023. Based on historical migration patterns, blue and humpback whale migration arrivals will increase over the coming weeks and remain across California waters through at least November.

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

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

Recreational Fishery:

- **Continue statewide Fleet Advisory**
- **Effective May 15, 2023 at 12:00pm, prohibit the use of recreational traps in Fishing Zones 3-6**

Commercial Fishery:

- **Continue Fleet Advisory for Fishing Zones 1 and 2**
- **Depth Constraint of 30 fathoms effective May 15, 2023 at 12:00pm (noon)**

Management Recommendation Summary Rationale:

Two recent entanglements involving humpback whales with unknown fishing gear bring the total three-year average Impact Score to 2.64 which exceeds the Calendar Year Impact Score trigger as defined in RAMP for the commercial Dungeness crab fishery. In addition, based on recent Marine Life Concentration surveys for Fishing Zone 1, 2, 4, and 5, humpback whale sightings continue to increase and humpback whales are expected to continue to migrate into all Fishing Zones over the coming weeks. The increasing numbers of migrating whales and recent entanglements support additional management actions across the California Fishing Grounds to reduce the overall risk of entanglement.

The implementation of further management action is particularly important for the commercial fishery in Fishing Zones 1 and 2 because fishing effort remains high based on the most recent bi-weekly reporting period. As of April 16, 2023, 80 permits were active with more than 24,000 traps reported in Fishing Zone 1 and 16 permits were active reporting more than 3,000 traps in Fishing Zone 2. It should also be noted that bi-weekly reporting has not achieved 100% compliance from permitted vessels, so trap numbers are likely underestimated (bi-weekly reporting period through April 16, 2023 only achieved a 54% compliance rate). Without further restrictions in the commercial and recreational fishery, entanglement risk will increase as well as the potential for additional in-season entanglements of Actionable Species.

Therefore, CDFW Marine Region staff's final recommendation is to prohibit the use of recreational traps in Fishing Zones 3-5 effective May 15, 2023 at 12:00pm (noon). Staff also recommend implementing a 30-fathom Depth Constraint for Fishing Zones 1 and 2 effective May 15, 2023. Traps used in the commercial fishery would thereby be prohibited in waters seaward of the 30-fathom contour as defined in Title 50 of the Federal Codes of Regulations, Part 660, Section 660.71. Humpback whales are known to

migrate across a broad range of depths as they forage in the Fishing Grounds. Therefore, it is necessary to implement a Depth Constraint to limit areas where foraging humpback whales may be present. Based on historical data, humpbacks are often observed in all depths, including areas inside the 40-fathom depth contour which is often fished by the commercial fleet in the spring months. Moving gear inside the 30-fathom contour will also support a more rapid removal of gear if additional entanglements occur or if Marine Life Concentrations triggers are reached in the coming weeks. The recommendation is to also continue the Fleet Advisory for both the recreational and commercial fishery in all Fishing Zones until Fishing Zone closures/trap prohibitions are in effect statewide.

Effective May 15, 2023, at 12:00pm (noon), any commercial Dungeness Crab vessel fishing in or transiting Fishing Zones 1-2, is subject to the 30 fathom Depth Constraint. Vessels fishing shoreward of 30-fathoms as defined in Title 50 of the Federal Codes of Regulations, Part 660, Section 660.71 must carry onboard an electronic monitoring system capable of recording the vessel's location using GPS coordinates at a frequency of no less than once per minute during fishing operations. Electronic monitoring data must be made available to CDFW upon request for the duration of the fishing period and 60 days thereafter.

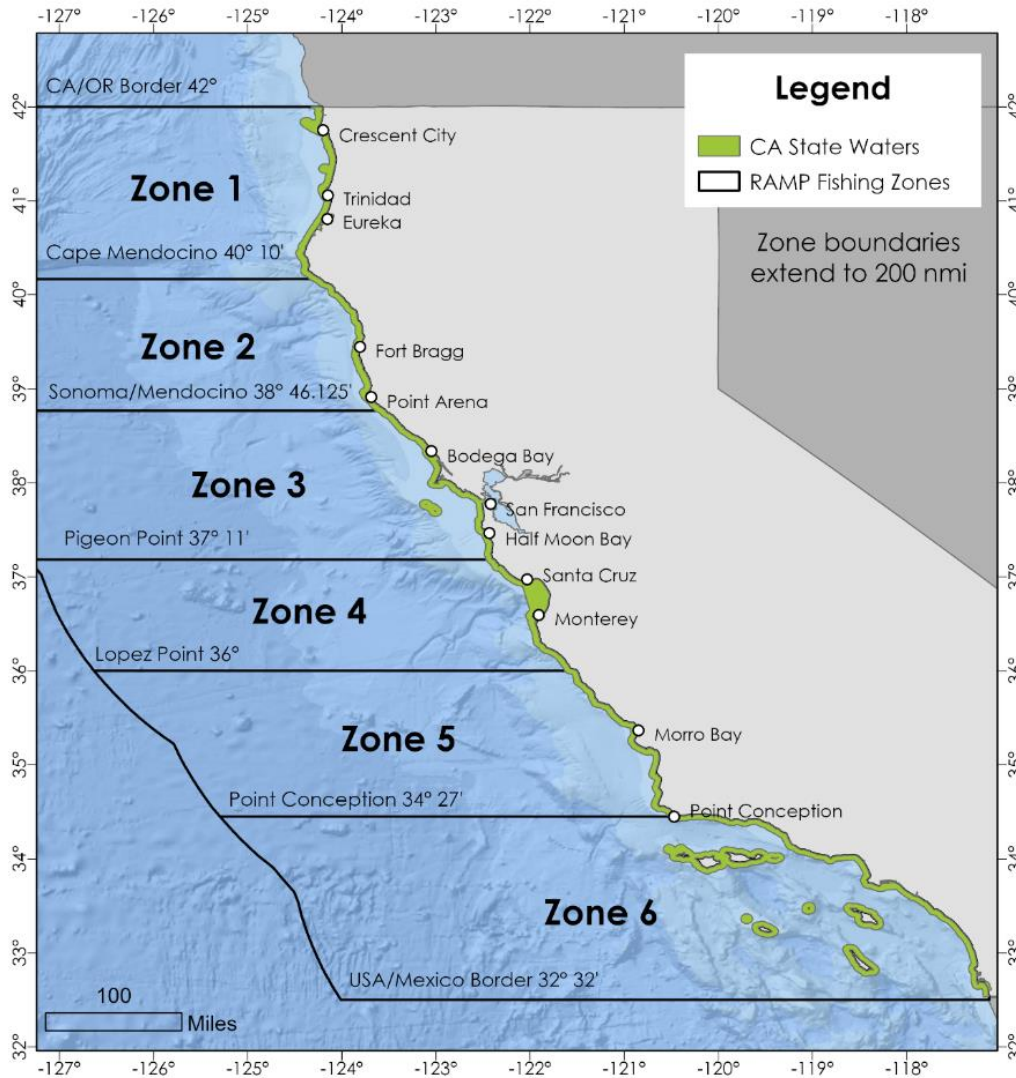
The above recommendations are informed by input from the Working Group, historical migration patterns, recent entanglements, and exceedance of the running three-year average entanglement Impact Score for humpback whales which requires CDFW to implement precautionary management actions to avoid additional entanglements. Both commercial and recreational fleets should be prepared to modify fishing operations to minimize risk of entanglement. Currently, the recreational crab fishery is not subject to any additional management actions in Fishing Zones 1 and 2 as recreational effort is low, as reported by CDFW enforcement. However, staff will continue to monitor whale presence and entanglement risk, and it should be noted that the Director may implement a trap prohibition for the recreational fishery at a future date to further reduce the risk of entanglement.

While not subject to RAMP regulations, there was a recent grey whale entanglement in unidentified trap gear (likely commercial Dungeness crab trap) near Shelter Cove and a spot prawn trap gear entanglement involving a humpback whale near Moss Landing. As a result, CDFW reminds all fisherman to use best fishing practices to minimize risk of entanglement as whales begin to arrive in Fishing Zones that remain open to fishing, regardless of fishery or gear type.

Alternatives Considered but Rejected

- Gear Reduction – CDFW recommended a 50% trap reduction in its preliminary recommendation to provide additional risk reduction; the trap gear recommendation was modified after receiving input from the Working Group.

- Fishery Closure – based on available data this is not currently the recommended Management Action but based on historical migration patterns CDFW anticipates this action will likely be required in the coming weeks.
- Alternative Gear - can be authorized after April 1st, but no gear currently is authorized for the commercial Dungeness crab fishery.



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: April 28, 2023

Working Group Recommendation: Commercial and Recreational (Fishing Zones 1-2)

The Working Group discussed two recommendations for the commercial and recreational Dungeness crab fishery. The Working Group's first recommendation was to implement a Depth Constraint of 30 fathoms in the commercial fishery in Fishing Zones 1 and 2. The recommendation relied on survey data from Working Group Advisors and the [April 26th, 2023, Available Data document](#) indicating Marine Life Concentrations in Fishing Zones 1 and 2 are low and offshore. The members suggested that moving the remaining gear inshore would reduce entanglement risk and facilitate quick removal if a closure becomes necessary. In addition, members stated that historical migration patterns and forage data indicate entanglement risk is low. The Working Group members noted that this management action would be less economically detrimental to the fleet than a gear reduction or closure. This first recommendation had broad support from the Working Group.

Alternatively, some members of the Working Group proposed a closure of the recreational and commercial fishery in Fishing Zones 1 and 2 by May 15, 2023. The recommendation relied on the rationale that the 3-year rolling average Impact Score was exceeded and any other action was insufficient to protect Actionable Species. The members who supported this proposal stated that recent entanglements indicate increasing levels of entanglement risk and differed in their interpretation of the historical migration patterns and forage data. This recommendation had very limited support from Working Group Members.

Note: The Working Group discussed CDFW's preliminary recommendations and there was only limited support for the trap prohibition in Fishing Zones 3-6 for the recreational fishery. The Working Group was largely opposed to CDFW's recommendation to implement a 50% Gear Reduction but supported the 30-fathom Depth Constraint.



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

Date: April 26, 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 (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 Concentration Triggers for Management Action, RAMP subsection (c)

Entanglements:

As of April 24, 2023, two entanglements have been reported to CDFW by NOAA for the 2022-23 season that involved unidentified gear that is of the type that is used in the commercial Dungeness crab fishery resulting in an in-season Confirmed Entanglement Impact Score of 0.76. The Impact Score for calendar year 2021 is 1.89 for humpback whales. The total Impact Score for the calendar year 2022 is 5.28 for humpback whales. Therefore, the current running 3-year average Impact Score is 2.64 for humpback whales for the years 2021-2023, which exceeds the triggers in Section 132.8(c)(1)(C)(1). Note: Entanglement data are subject to revision based on review and verification by NOAA.

Marine Life Concentrations:

CDFW and USCG aerial surveys for Fishing Zones 1, 2 and 3 did not observe humpback whales, blue whales, or leatherback sea turtles. Surveys conducted by Oregon State University across Fishing Zones 1 and 2 observed 28 humpback whales in depths ranging from 42 to 546 fathoms. This survey is not used to inform triggers in RAMP but informative as an indicator of humpback presence in Fishing Zones 1 and 2. Monterey Bay Whale Watch data documented 25 humpback whales during a single trip and an average of 9.2 humpback whales per trip during the most recent seven-day period in Fishing Zone 4. In addition, two blue whales were observed during one of those trips on April 21, 2023. Based on historical migration patterns, blue

and humpback whale migration arrivals will increase over the coming weeks and remain across California waters through at least November.

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

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

Recreational Fishery:

- **Continue statewide Fleet Advisory**
- **Effective May 15, 2023 at 12:00pm, prohibit the use of recreational traps in Fishing Zones 3-5**

Commercial Fishery:

- **Continue Fleet Advisory for Fishing Zones 1 and 2**
- **Depth Constraint of 30 fathoms and 50% Gear Reduction (trap reduction) for Fishing Zones 1 and 2 effective May 15, 2023 at 12:00pm (noon)**

Management Recommendation Summary Rationale:

Two recent entanglements involving humpback whales with unknown fishing gear bring the total three-year average Impact Score to 2.64 which exceeds the Calendar Year Impact Score trigger as defined in RAMP for the commercial Dungeness crab fishery. In addition, based on recent Marine Life Concentration surveys for Fishing Zone 4, humpback whale sightings continue to increase and are expected to continue to migrate into all Fishing Zones over the coming weeks. The increasing numbers of migrating whales and recent entanglements support additional management actions across the California Fishing Grounds to reduce the overall risk of entanglement. This is particularly important for the commercial fishery in Fishing Zones 1 and 2 because fishing effort remains high based on the most recent bi-weekly reporting period. As of April 16, 2023, 80 permits were active with more than 24,000 traps reported in Fishing Zone 1 and 16 permits were active reporting more than 3,000 traps in Fishing Zone 2. It should also be noted that bi-weekly reporting has not achieved 100% compliance from permitted vessels, so trap numbers are underestimated. Without further restrictions in the commercial and recreational fishery, entanglement risk will increase as well as the potential for additional in-season entanglements of Actionable Species. Therefore, CDFW Marine Region staff's preliminary recommendation is to prohibit the use of recreational traps in Fishing Zones 3-5 effective May 15, 2023 at 12:00pm (noon). Staff also recommend implementing a 30-fathom Depth Constraint and a 50% Gear Reduction (trap reduction) for Fishing Zones 1 and 2 effective May 15, 2023. Traps used in the commercial fishery would thereby be prohibited in waters seaward of the 30-fathom contour as defined in Title 50 of the Federal Codes of Regulations, Part 660, Section 660.71. Humpback whales are known to migrate across a broad range of

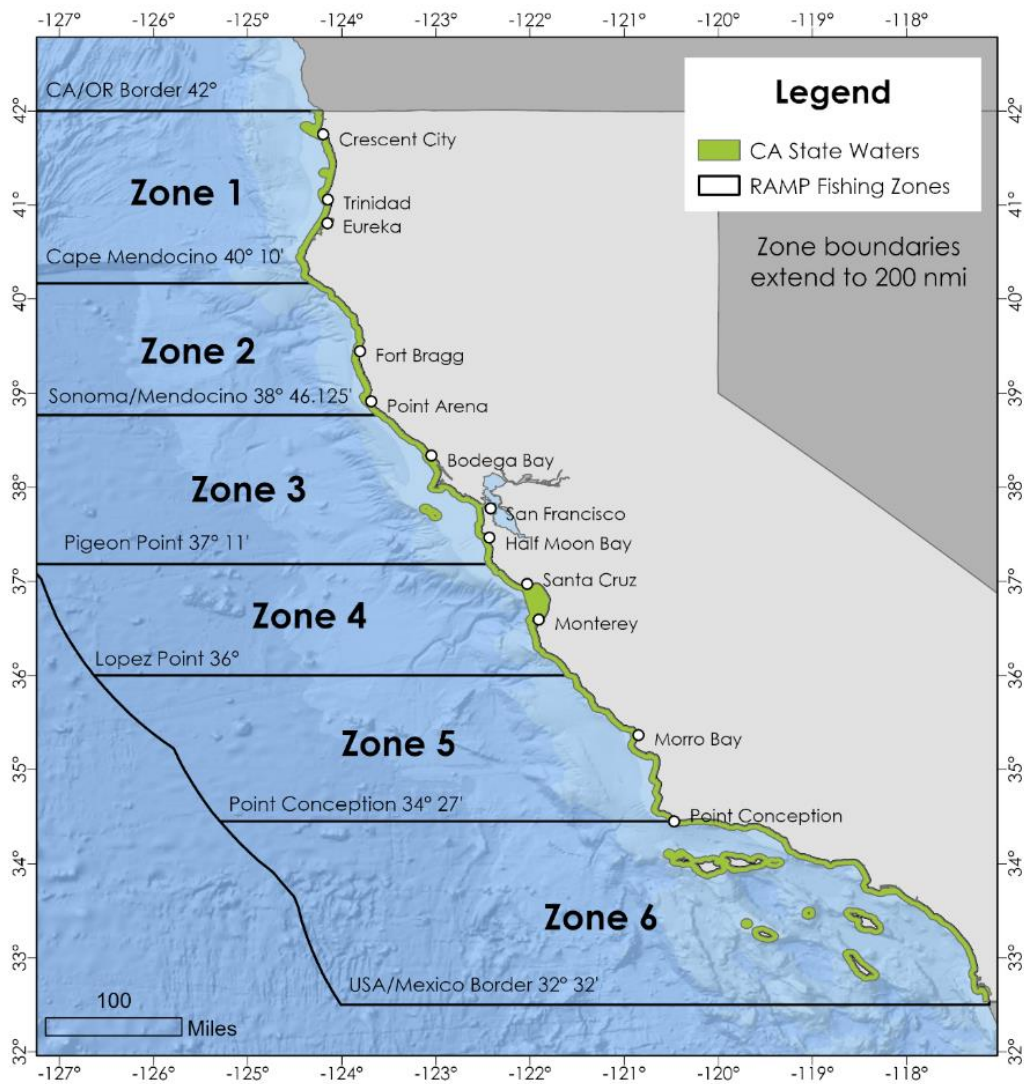
depths as they forage in the Fishing Grounds. Therefore, it is necessary to implement both a Depth Constraint and Gear Reduction to avoid concentrating traps in areas where foraging humpback whales may be present. Based on historical data, humpbacks are often observed in all depths, including areas inside the 40-fathom depth contour which is often fished by the commercial fleet in the spring months. In addition, moving gear inside the 30-fathom contour and reducing the total number of traps will also support a more rapid removal of gear if additional entanglements occur or if Marine Life Concentrations triggers are reached in the coming weeks. The recommendation is to also continue the Fleet Advisory for both the recreational and commercial fishery in all Fishing Zones until Fishing Zone closures/trap prohibitions are in effect statewide.

Effective May 15, 2023, at 12:00pm (noon), any commercial Dungeness Crab vessel fishing in or transiting Fishing Zones 1-2, is subject to the 30 fathom Depth Constraint and 50% trap reduction. All permitted vessels must have at least half of their valid buoy tags for the current fishing season onboard and available for inspection by CDFW at all times. All permitted vessels must comply by that date and consistent with the Director's declaration all unused buoy tags shall be onboard the permitted vessel and made available for inspection by the department upon request, pursuant to Section 132.8 (e)(3) Title 14, CCR.

The above recommendations are informed by historical migration patterns, recent entanglements, and exceedance of the running three-year average entanglement Impact Score for humpback whales which requires CDFW to implement precautionary management actions to avoid additional entanglements. Both commercial and recreational fleets should be prepared to modify fishing operations to minimize risk of entanglement. Currently, the recreational crab fishery is not subject to any additional management actions in Fishing Zones 1 and 2 because Marine Life Concentration triggers have not been reached. However, if Marine Life Concentration triggers are reached during a future risk assessment, the Director may implement a trap prohibition for the recreational fishery either by Fishing Zone or statewide. While not actionable under RAMP regulations, there was also a recent grey whale entanglement in unidentified trap gear (likely commercial Dungeness crab trap) near Shelter Cove and a spot prawn trap gear entanglement involving a humpback whale near Moss Landing. As a result, CDFW reminds all fisherman to use best fishing practices to minimize risk of entanglement as whales begin to arrive in Fishing Zones that remain open to fishing, regardless of fishery or gear type.

Alternatives Considered but Rejected

- Fishery Closure – based on available data this is not currently the recommended Management Action but based on historical migration patterns CDFW anticipates this action will likely be required in the coming weeks.
- Alternative Gear - can be authorized after April 1st, but no gear currently is authorized for the commercial Dungeness crab fishery.



2022-23 Risk Assessment: Available Data

Last updated: ~~April 26, 2023~~ April 28, 2023.

See updated information on Marine Life Concentrations and Habitat Compression Index.

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TRIGGERS REQUIRING MANAGEMENT ACTION

Confirmed Entanglements: §132.8(c)(1)*

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

As of April 26, 2023, there have been a total of two confirmed humpback whale entanglements, zero confirmed blue whale entanglements, and zero confirmed leatherback sea turtle entanglements reported to the West Coast Region during 2023. Note: Other entanglements have occurred in California during 2023 but are not actionable under RAMP.

On April 17th, 2023, a confirmed humpback whale entanglement (20230417Mn) with Unknown Fishing Gear was reported in Monterey Bay. The whale was first reported on April 17th and while no gear was seen on the whale at the time it exhibited behavior that was consistent with being anchored by trap gear. On April 18th the whale was sighted again, having freed itself from the downline. Drone footage showed line wrapped around the peduncle and trailing line above and below the fluke.

On April 20th, 2023, a response team confirmed a second humpback whale entanglement (20230420Mn) in Unknown Fishing Gear in Monterey Bay. Response teams reported multiple wraps of line at the base of the peduncle and a small amount of trailing line.

Table 1. Actionable Species Entanglements during 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	2
Blue whales	0	0
Leatherback sea turtles	0	0

As a result CDFW has assigned an Impact Score of 0.38 to each of the April 17, 2023 and April 20, 2023, humpback whale entanglements bringing the 2023 calendar year impact score to 0.76. CDFW considers both humpback whale entanglements (20230417Mn and 20230420Mn) in Fishing Zone 4 to be confirmed entanglements in unidentified fishing gear.

During 2022 and 2023, there were no confirmed entanglements of either blue whales or leatherback sea turtles in California commercial Dungeness crab gear (reported from any location) or Unknown Fishing Gear (reported from California). Therefore, the cumulative Impact Score for 2023 and the current fishing season is 0 for these two species.

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	0.76	0.76
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 Impact Score for 2022 was 5.28 for

humpback whales and 0 for blue whales and leatherback sea turtles. The 2023 calendar year Impact Score is 0.76. Therefore, the 3-year Rolling Average Impact Score is now 2.64.

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	5.28	0.76	2.64
Blue whales	0	0	NA	NA
Leatherback sea turtles	0	0	NA	NA

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

Data provided by: United States Coast Guard (USCG), California Department of Fish and Wildlife (CDFW), Cascadia Research Collective, and 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	USCG, CDFW Aerial Survey, Cascadia Research Collective	Yes
Zone 2	CDFW Aerial Survey,	No
Zone 3	CDFW Aerial Survey, Cascadia Research Collective	No
Zone 4	MBWW, Cascadia Research Collective	Yes
Zone 5	Cascadia Research Collective	Yes
Zone 6	None	NA

USCG (Fishing Zone 1)

On April 24, 2023, the US Coast Guard flew a portion of Fishing Zone 1 from Cape Mendocino to the Oregon border (Figure 1). No whales were observed.



Figure 1. Map showing track lines and observations from USCG aerial survey of Fishing Zone 1 on April 24, 2022.

CDFW Aerial Survey (Fishing Zones 1, 2, 3)

CDFW staff conducted an aerial survey on April 18, 2023 between Half Moon Bay and Cape Mendocino. Weather conditions were good to Cape Mendocino, and no humpback or blue whales were observed in the areas surveyed for Fishing Zones 1, 2, or 3 (Figure 2).

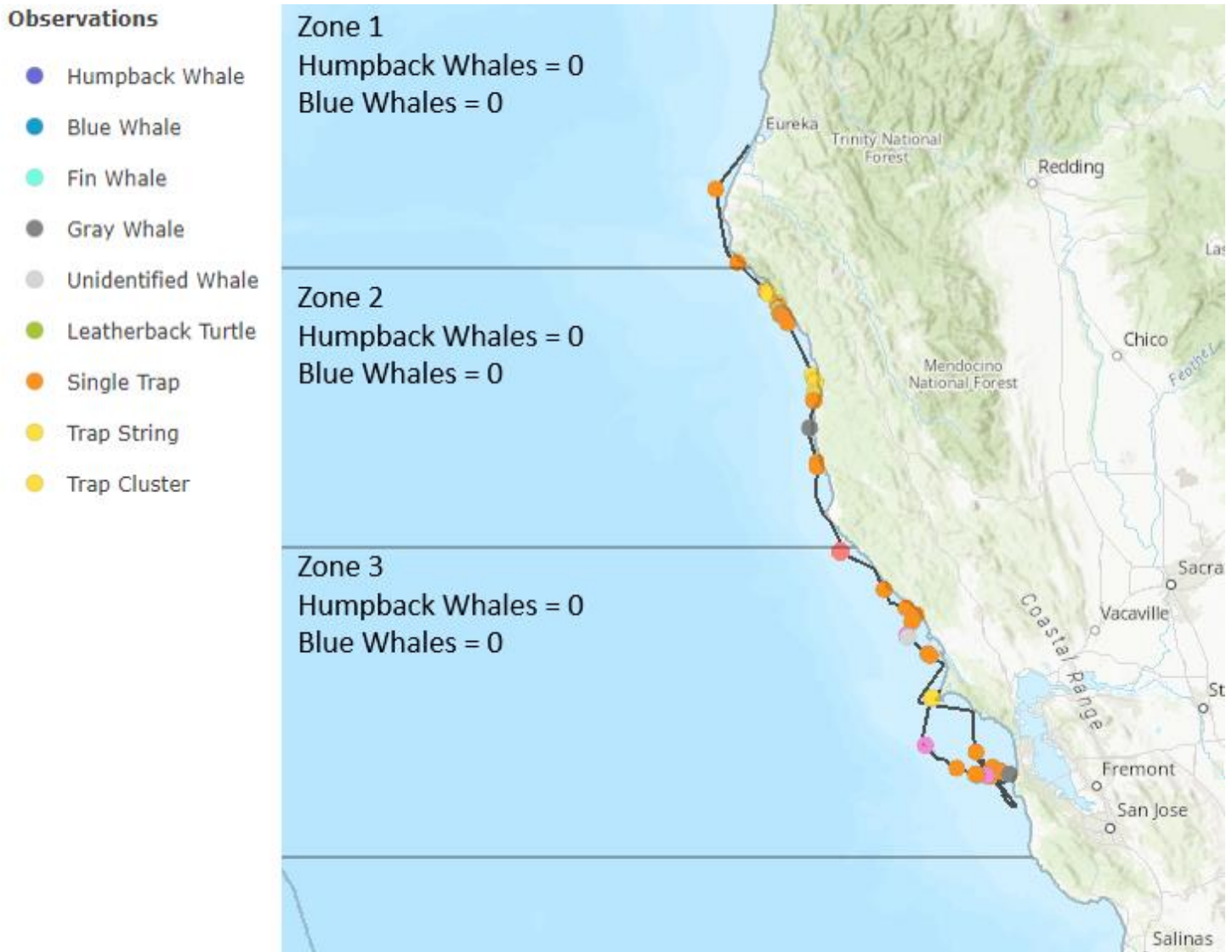


Figure 2. Map showing track lines and observations from CDFW aerial survey of Fishing Zones 1, 2, and 3 on April 18, 2023.

Cascadia Research Collective (Fishing Zones 1,3,4 and 5)

On March 31, 2023, Cascadia Research conducted two surveys out of Half Moon Bay. Five humpback whales were sighted on the survey of the 70-meter contour, and ten humpback whales were sighted on the survey of the 200-meter contour. The second survey was conducted out of San Francisco Bay and covered 140 nautical miles around the Southeastern Farallon Islands. Five humpback whales were sighted on the second survey, largely concentrated around the Farallon Islands.

In coordination with The Marine Mammal Center, Oregon State University, and industry partners, Cascadia Research Collective conducted vessel surveys throughout April.

Activities by Cascadia personnel included responses to three humpback whale entanglements in the Monterey Bay area. All appeared to involve smaller juvenile animals and in the single case with a good fluke identification photograph, no match was found to existing catalogs at Cascadia or in Happywhale. One of these whales is currently being tracked for a potential disentanglement effort this week. These included:

1. 20230417Mn: Juvenile in Monterey Bay, response on 18 April, 2023 no ID. Originally reported as anchored.
2. 20230420Mn: Juvenile in Monterey Bay, response and survey by CRC on 20 April, 2023 initially to search for previous entangled whale. Good ID but no match.
3. 20230424Mn: Juvenile in Monterey Bay, entangled in spot prawn gear, no ID. Tracking buoy attached and whale has moved north to offshore of Bodega Bay.

Results of the surveys are summarized below in Table 5 and Figures (3-8).

Table 5. Summary of vessel surveys in April 2023 in Zones 1, 3, 4, and 5 by Cascadia Research, The Marine Mammal Center, Oregon State University and organized by the industry.

Date	Vessel	Zone	Survey Area	Number of sightings of humpback whales	Number of humpback whales observed	Comments
April 14-15	OSU Pacific Storm	1	OR Border to Cape Mendocino	18	27	Line transect survey as part of MOSAIC project.
April 26	TMMC RHIB	3	San Francisco Bay Area	NA	NA	Fog prevented coverage of other than most coastal area, only gray whales.
April 9	MUS	4	Monterey Bay and north	11	16	62 nmi, also 4 gray whales.
April 20	MUS	4	Monterey Bay area	4	12	53 nmi, including documenting entangled whale.
April 7	MUS	5	Morro Bay area	6	16	109 nmi, humpbacks were feeding on fish, also 3 gray whales seen.
April 26	Sky	5	Port San Luis and south	8	10	Industry survey by Captain and one crew member
April 27	Sky	5	Port San Luis and south	9	27	Industry survey with Cascadia observer, fog in south

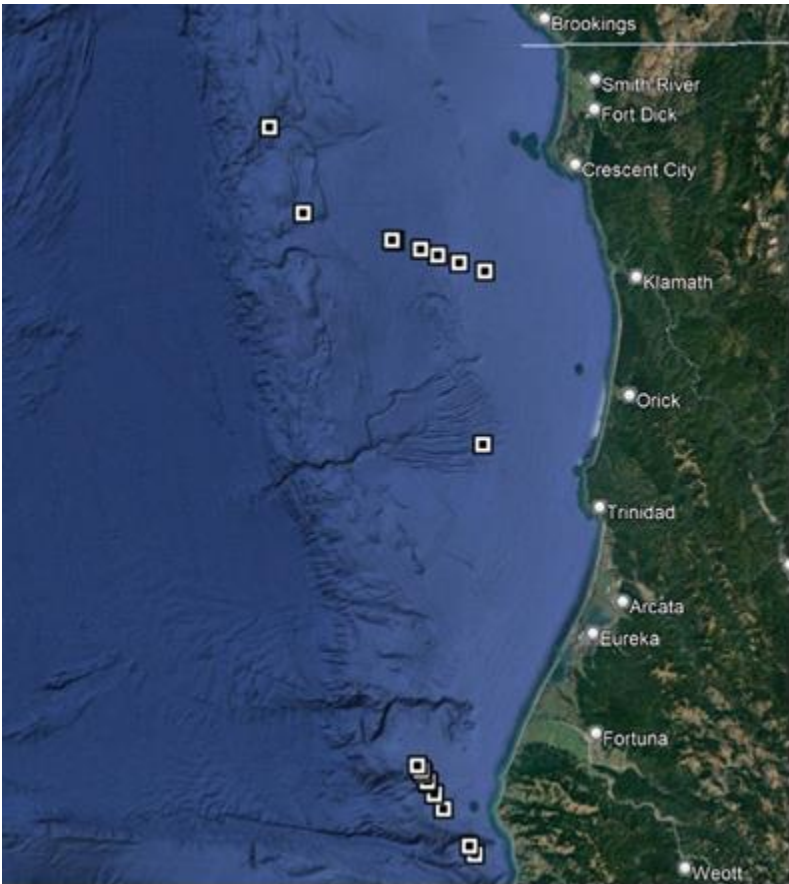


Figure 3. Locations of sightings of humpback whales in Fishing Zone 1 from Oregon State University's MOSAIC cruise conducted aboard the Pacific Storm on April 14 and 15, 2023. Sightings in Zone 1 included 18 sightings of 27 humpback whales (shown above). All sightings and effort occurred north of the Fishing Zone 2 border.

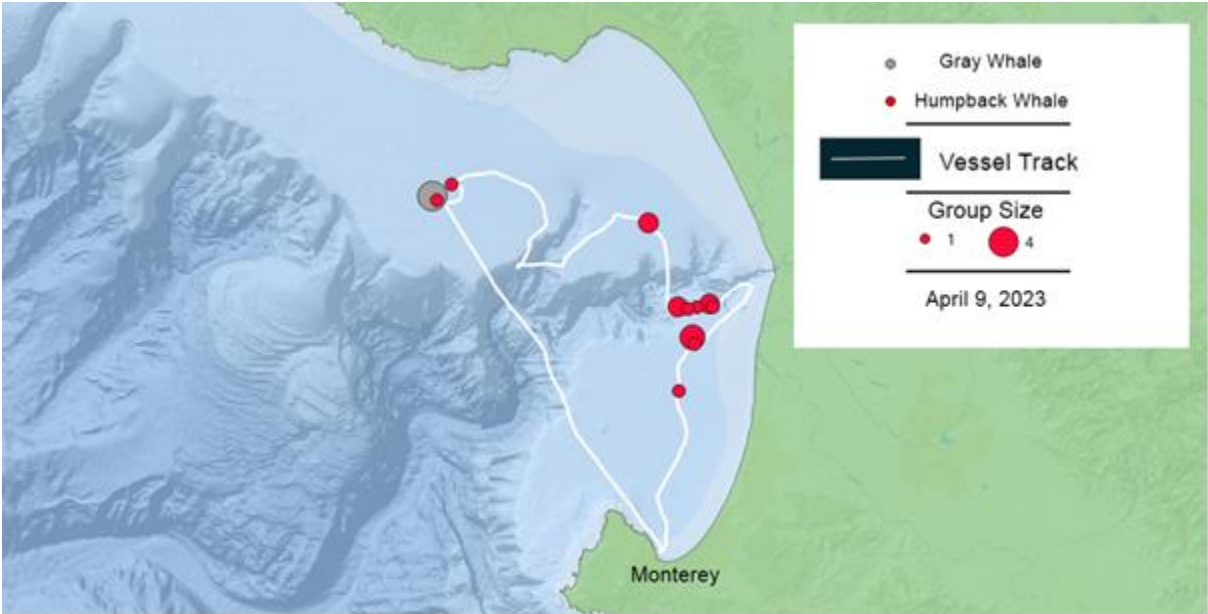


Figure 4. Track and sightings from survey by Cascadia Research vessel MUS in Monterey Bay (Fishing Zone 4) on April 9, 2023.

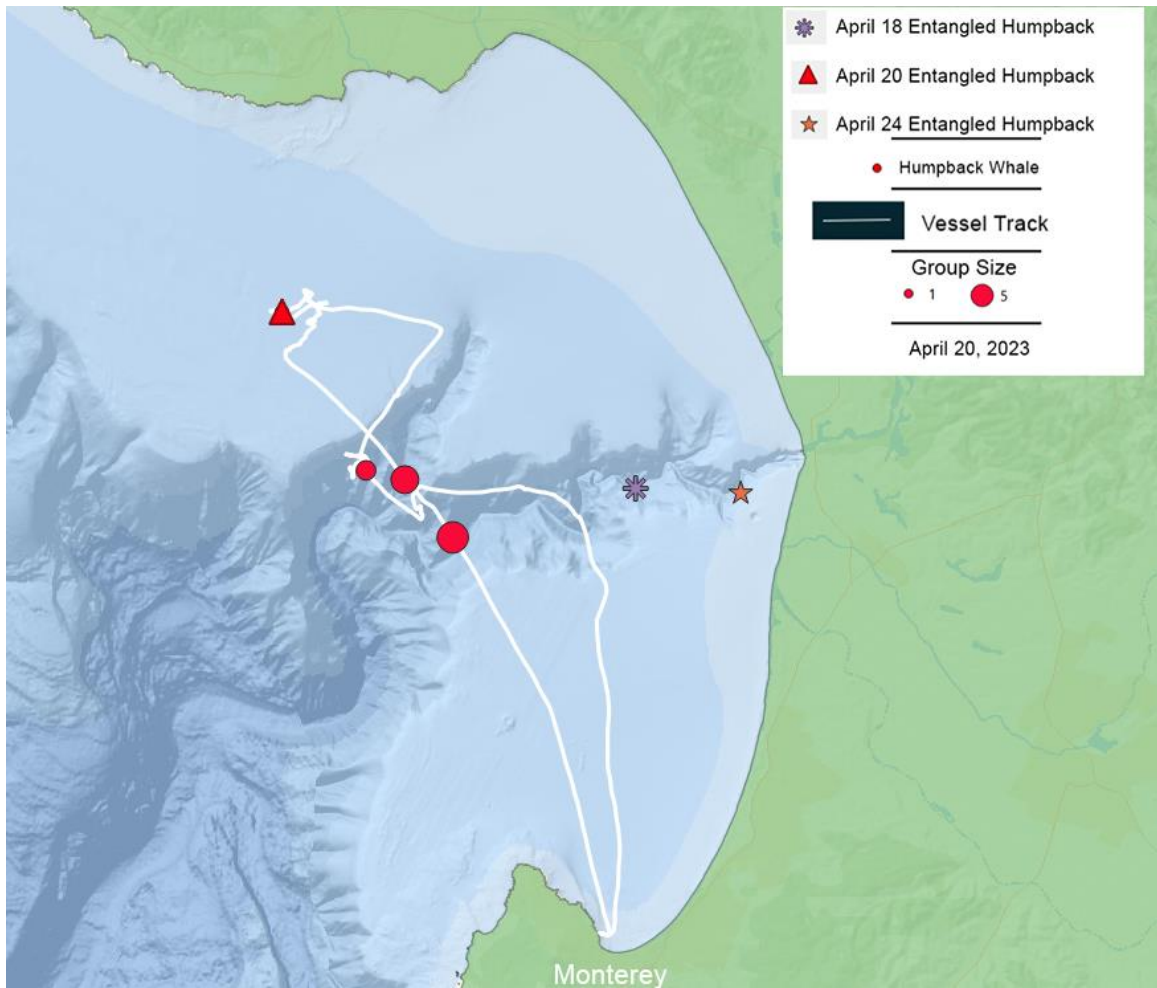


Figure 5. Track and sighting from survey by Cascadia Research vessel MUS and locations of entangled whales in Monterey Bay (Fishing Zone 4) on April 20, 2023.

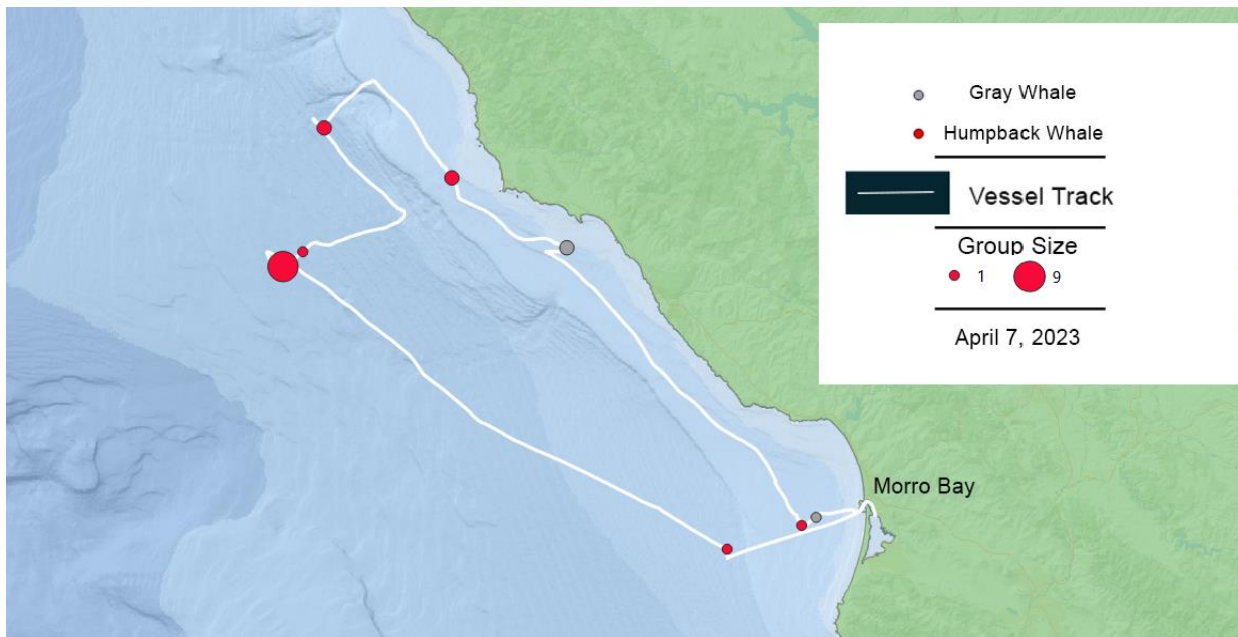


Figure 6. Track and sightings from survey in Cascadia Research vessel MUS in the Morro Bay Area (Fishing Zone 5) on April 7, 2023.

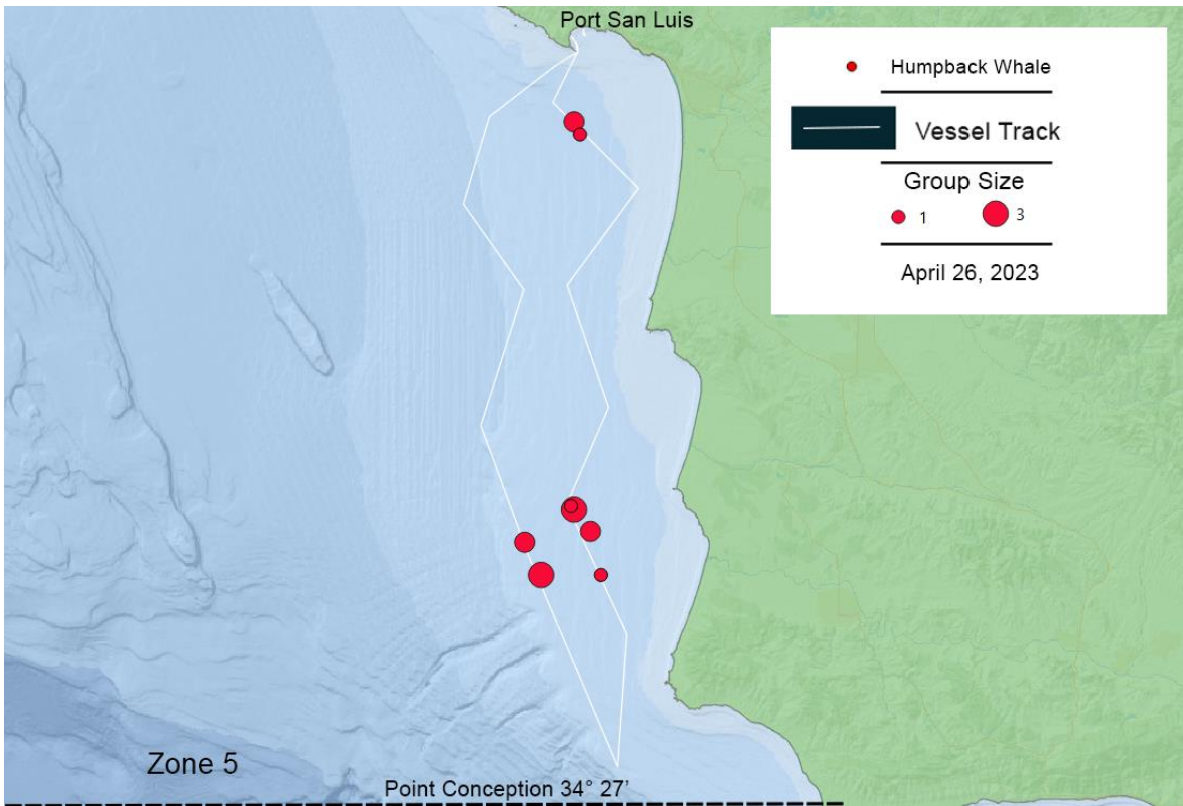


Figure 7. Track and sightings from Cascadia Research survey aboard Industry F/V Sky in Port San Luis area on April 26, 2023.

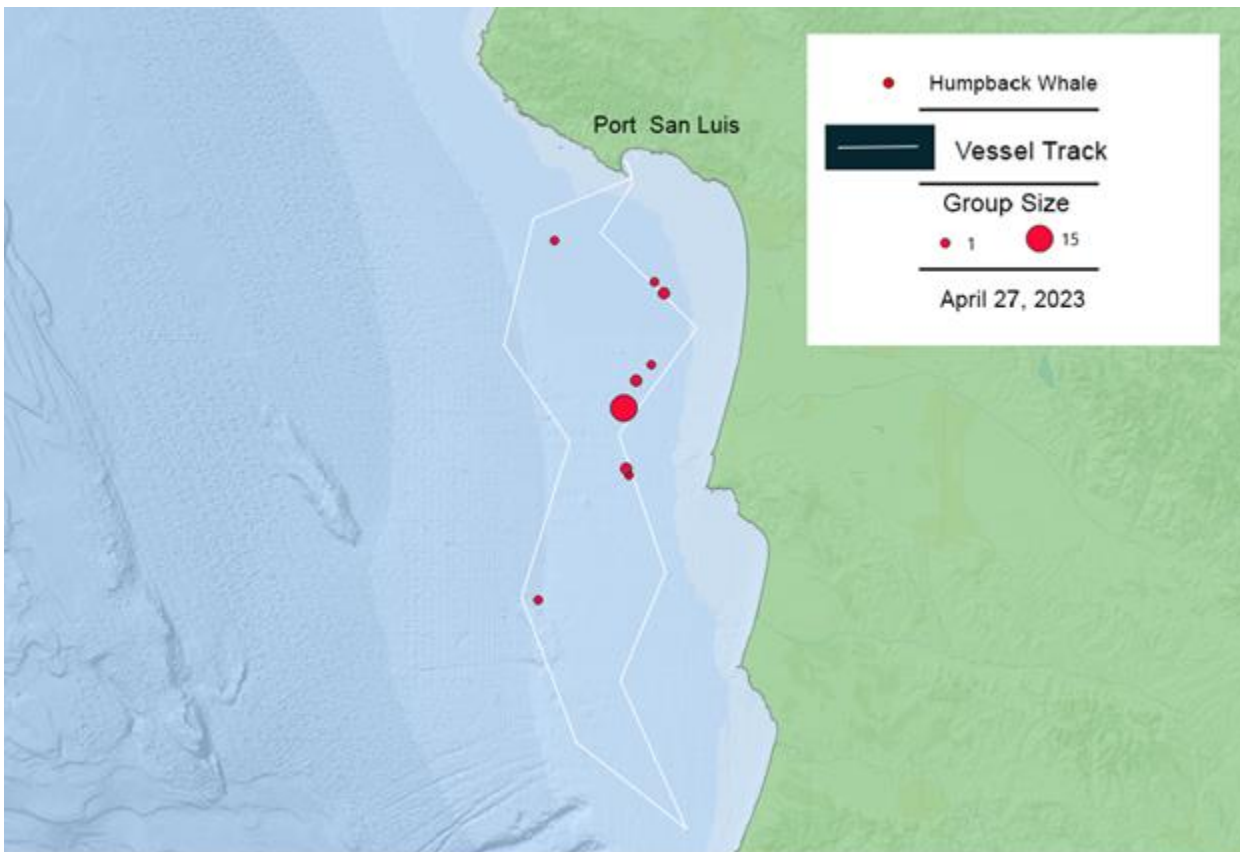


Figure 8. Track and sightings from Cascadia Research survey aboard Industry F/V Sky in Port San Luis area on April 27, 2023.

Monterey Bay Whale Watch (Fishing Zone 4)

- Monterey Bay Whale Watch conducted whale-watching trips in southern Monterey Bay on all seven days during the week of April 15-21, 2023.
- The average number of humpback whales per half-day trip during the week of April 15-21, 2023, was 9.2, with a peak of 25 humpback whales observed during an all-day trip on April 16, 2023.
- Two blue whales were observed during an all-day trip on April 21, 2023.

MANAGEMENT CONSIDERATIONS

Information from NOAA: §132.8(d)(2)*

Data provided by: Lauren Saez and Dan Lawson, National Marine Fisheries Service, NMFS

Two humpback whale entanglements in Unknown Fishing Gear were reported on April 17, 2023 (20230417Mn) and April 20, 2023 (20230420Mn) in Monterey Bay (Fishing Zone 4).

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) will be provided in the April 26, 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 April 26, 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, NOAA SWFSC), Point Blue Conservation Science Data Portal, and Cascadia Research Collective

Monterey Bay Whale Watch (Fishing Zone 4)

For humpback whales, the semi-monthly average of whales per half-day trip has continued to increase and is now close to the average historical value of about 10 whales at this time of year (Figure 9). Based on historical patterns, the number of humpback whales will likely continue to increase during the next few weeks and remain elevated through at least November (Figures 9 and 10).

Two blue whales were observed on April 21, 2023. This is the first 2023 observation of blue whales by MBWW, consistent with historical data showing the seasonal presence of blue whales near Monterey Bay from about April through November (Figure 11).

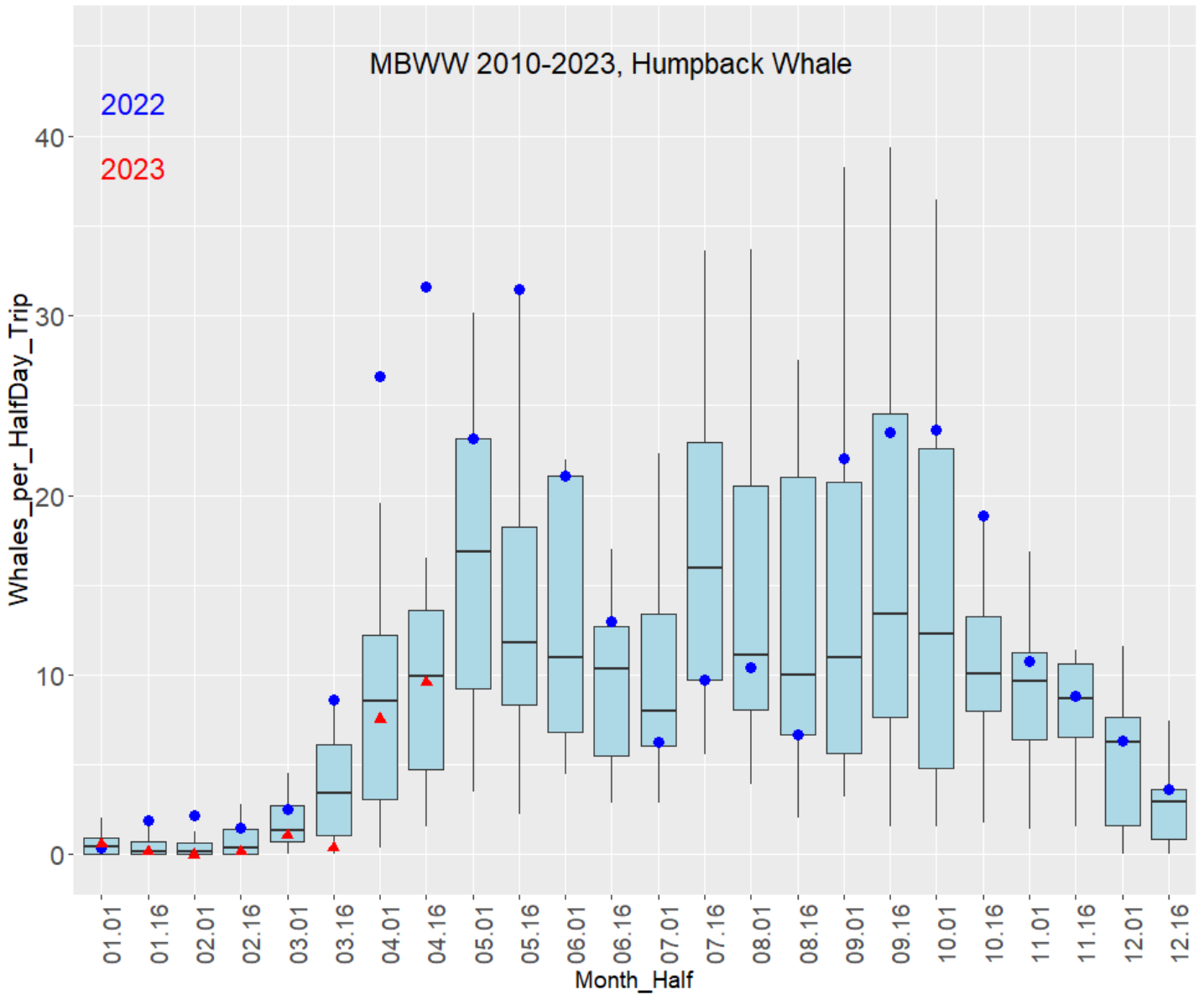


Figure 9. Historical Monterey Bay Whale Watch data for 2010-2023, summarizing the average and variation in the number of humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the 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.

**Monterey Bay Whale Watch: Humpback whales per 1/2-day trip
(Nov 15, 2016 - April 21, 2023)**

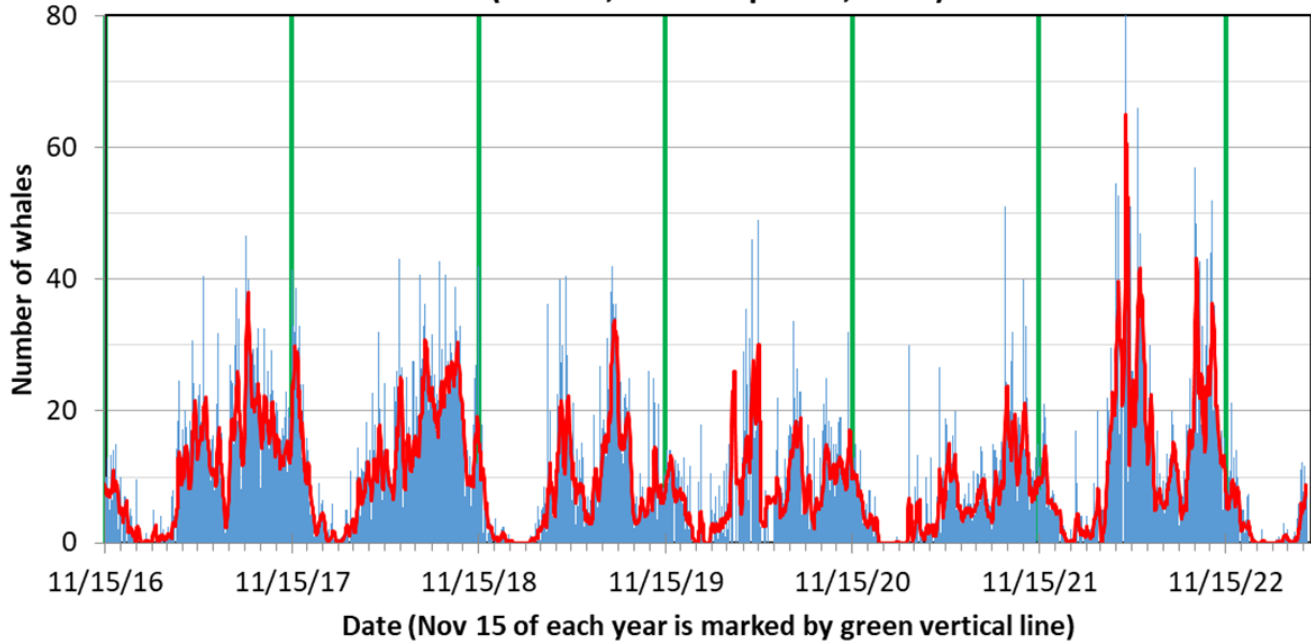


Figure 10. Standardized number of humpback whale sightings for Monterey Bay Whale Watch from 15 November 2016 – 21 April 2023. The y-axis is the number of whales per half-day trip; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns a bit easier to see. A vertical green line has been added at November 15 of each year for reference. Each tick mark is one month.

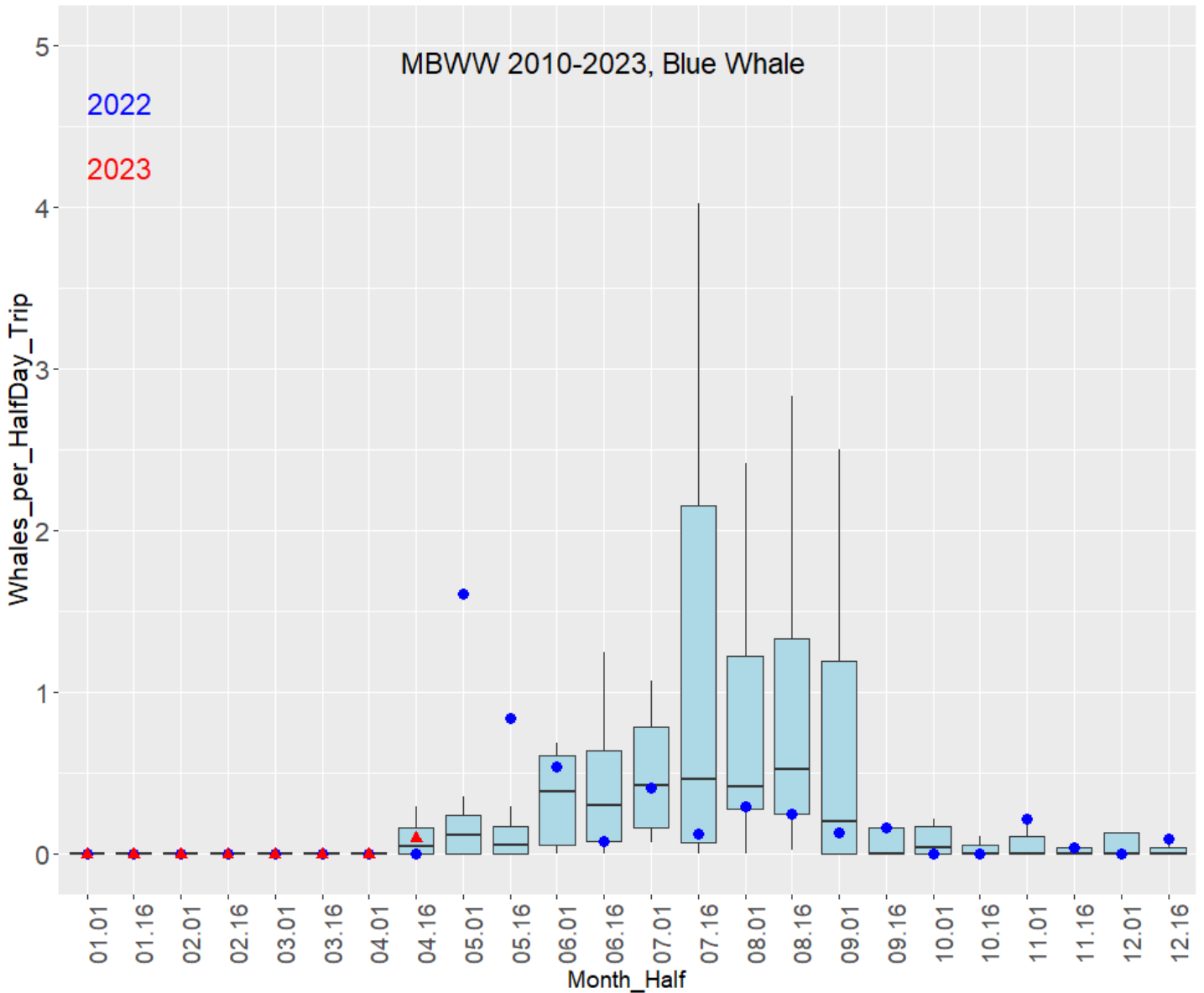


Figure 11. Historical Monterey Bay Whale Watch data for 2010-2023, summarizing the average and variation in the number of blue whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the 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 April 25, 2023, trained naturalists from the Channel Islands National Marine Sanctuary and National Park Service reported 86 humpback whales in Fishing Zone 6 (Figure 12). No blue whales were observed in any Fishing Zone during this period.

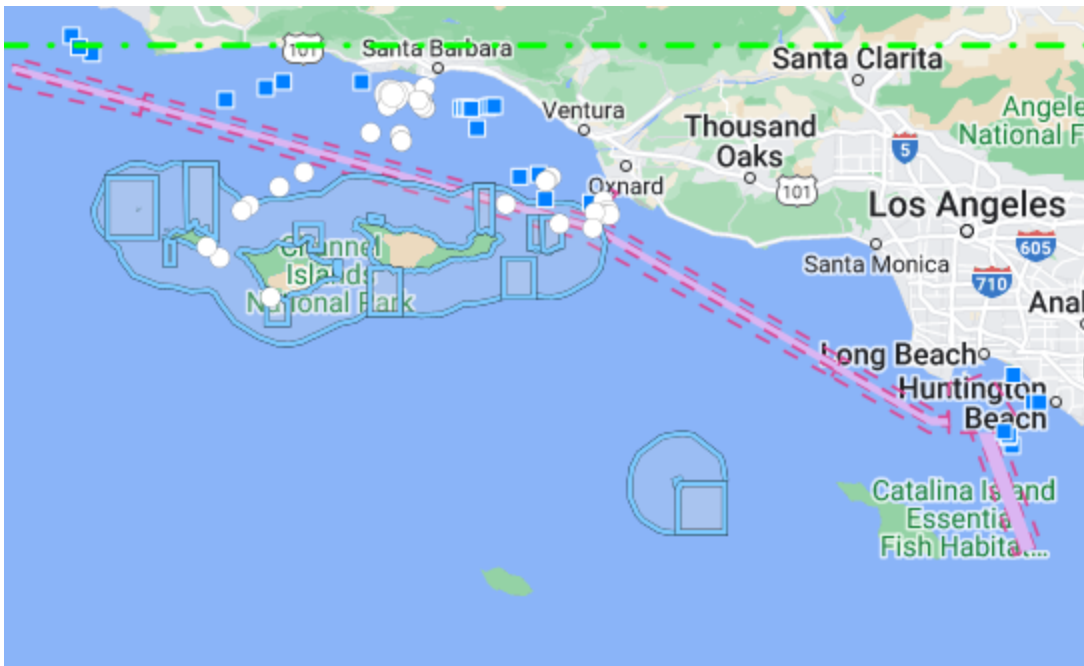


Figure 12. Locations of humpback whale sightings within Fishing Zone 6. Reporting locations are reported by white circles. A given report may or may not represent multiple individuals. Fishing Zone boundaries are represented by dashed lines.

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.

Marine Landings Data System (All Fishing Zones)

Fishing Zones 1 and 2 are open as of April 25, 2023, and all other Fishing Zones are closed, a summary of landings from all Fishing Zones is provided below (Table 5).

Weekly total landings volume has decreased since the beginning of January, with the highest harvest coming from Fishing Zone 1, followed by Fishing Zone 3 (Figure 13). So far, 74% of the total volume harvested for this season has been from Fishing Zone 1, with 19% from Fishing Zone 3, six percent from Fishing Zone 2 and the remaining percent coming from the other Fishing Zones. Vessel activity by Fishing Zone follows the same pattern, with the highest activity in Fishing Zones 1 and 3 and less activity in the remaining Fishing Zones (Figure 14). All Fishing Zones have had a continued decrease in vessel activity since mid-February.

Weekly landings by port have declined since the beginning of January with the highest activity in Crescent City, Eureka, Bodega Bay, Half Moon Bay, and San Francisco (Figures 15). Overall, 47% of the total volume harvested for this season has been landed into Crescent City, 22% landed in Eureka, seven percent landed into Bodega Bay, six percent landed in Half Moon Bay, Trinidad, and San Francisco, and five percent or less landed into Fort Bragg, Monterey, and Morro Bay.

Looking at vessel activity by port, over the course of the season, the highest activity has been in Crescent City (98 vessels) and Eureka (72 vessels), followed by Half Moon Bay (35 vessels), San Francisco (34 vessels), and Bodega Bay (32 vessels; Figure 16). Vessels have

also made landings into Fort Bragg (25), Trinidad (14), Monterey (13), and Morro Bay (withheld due to confidentiality; Figure 16). However, vessel activity by Fishing Zone has significantly decreased since the beginning of April with most Fishing Zones showing less than half of their highest active vessels count active over the last few weeks.

Table 5. Summary of fleet dynamics information, as of April 25, 2023.

Metric	Value	Additional Info
Season status	Partial Closure	Fishing Zones 1 and 2 Open
Number of daily landings	5,851	NA
Total volume (pounds)	20,298,491	NA
Total Ex-Vessel Value	\$50,598,255	NA
Average unit price	\$2.76	NA
Total number of active vessels	371	NA
Maximum potential traps (based on active permits)	120,525	Estimates are also provided in the Bi-Weekly Fishing Activity Reports subsection

Volume of Landings (Pounds), by Week and Fishing Zone, 2022-23 Season

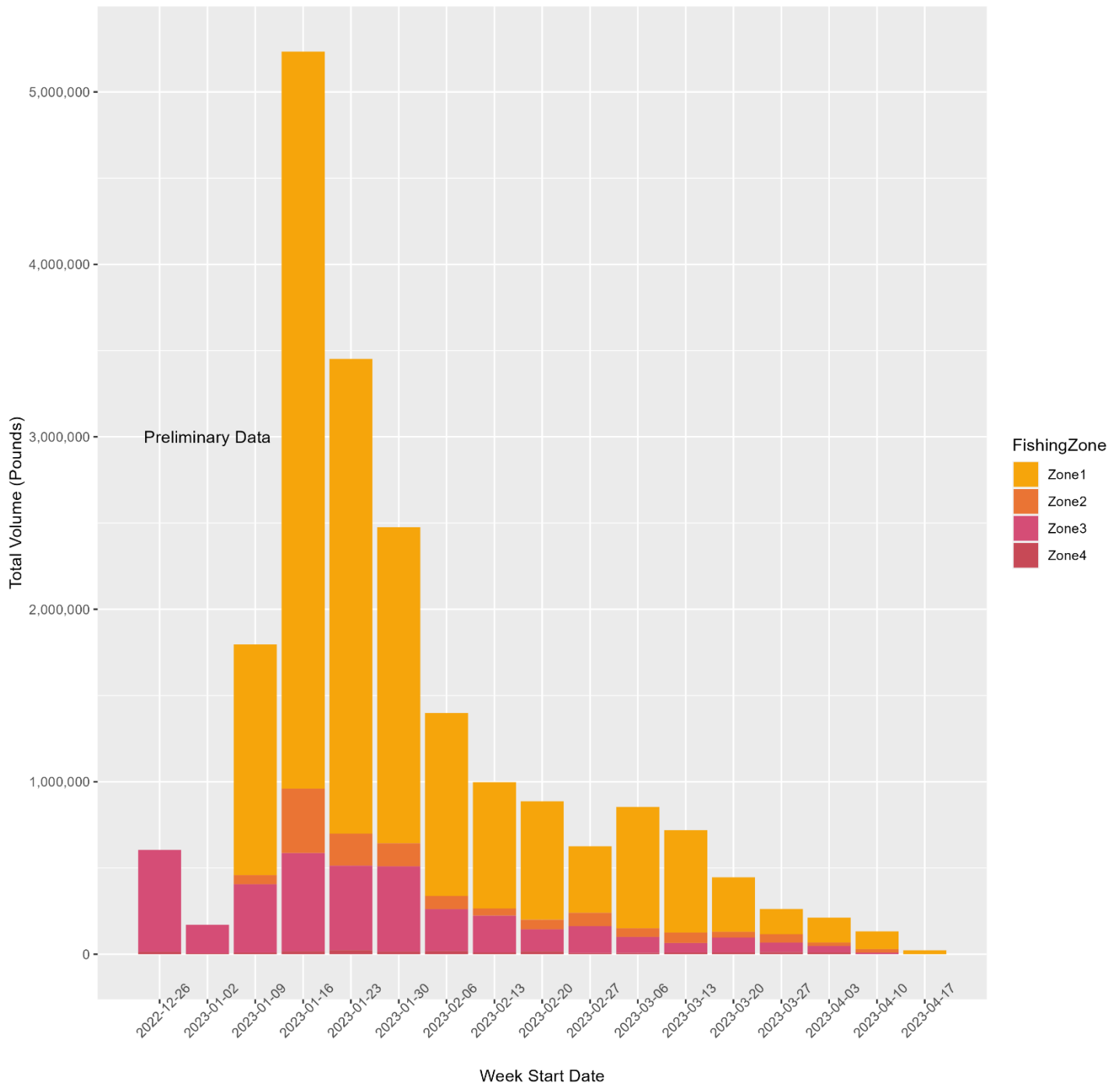


Figure 13. Cumulative volume (pounds) harvest by week and Fishing Zone. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, December 31, 2022. All data are preliminary and subject to change.

Number of Active Vessels, by Week and Fishing Zone, 2022-23 Season

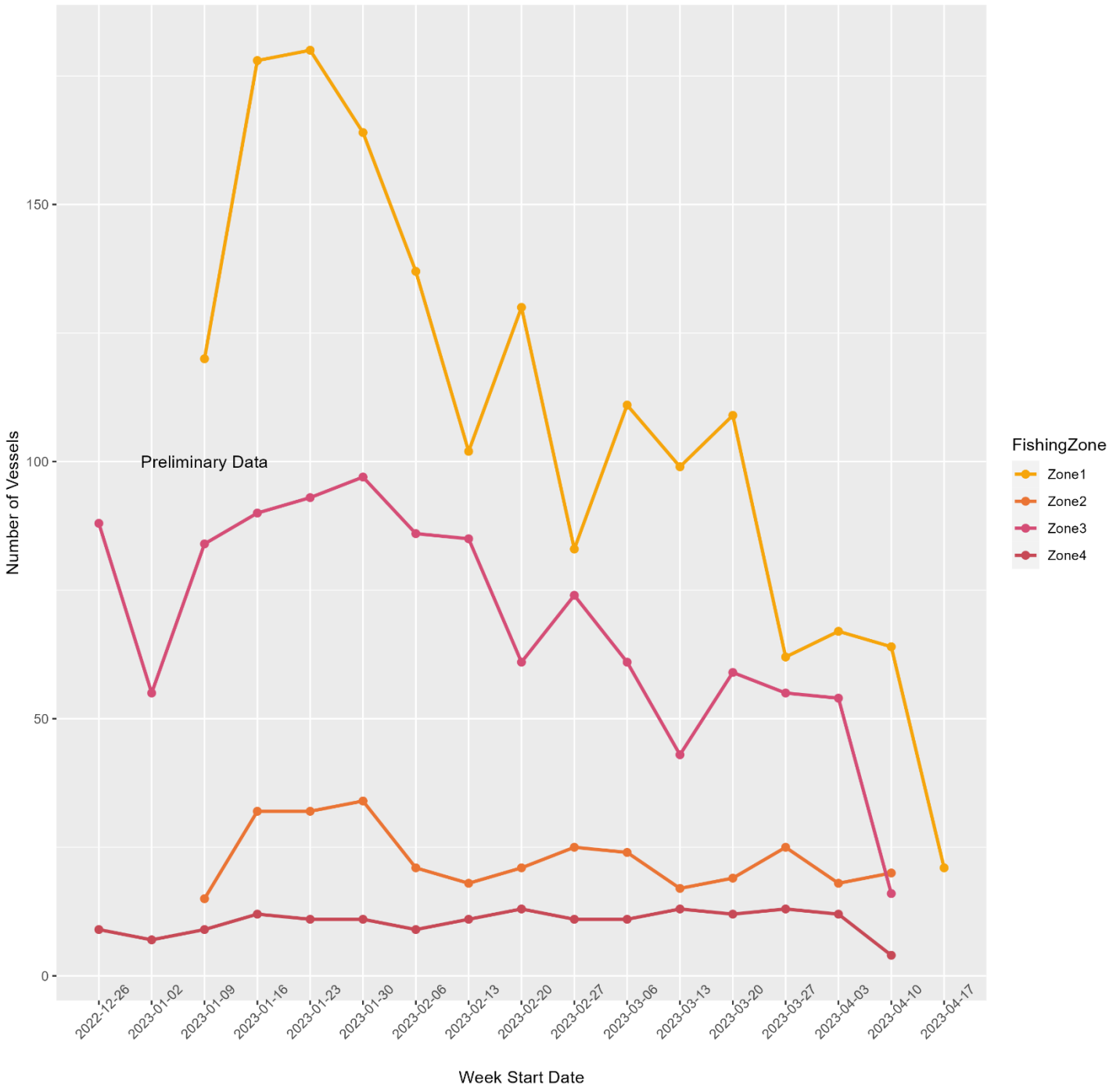


Figure 14. Number of active vessels by week and Fishing Zone. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, December 31, 2022. All data are preliminary and subject to change. Some week*port complex combinations are withheld due to confidentiality constraints.

Volume of Landings (Pounds), by Week and Port Complex, 2022-23 Season

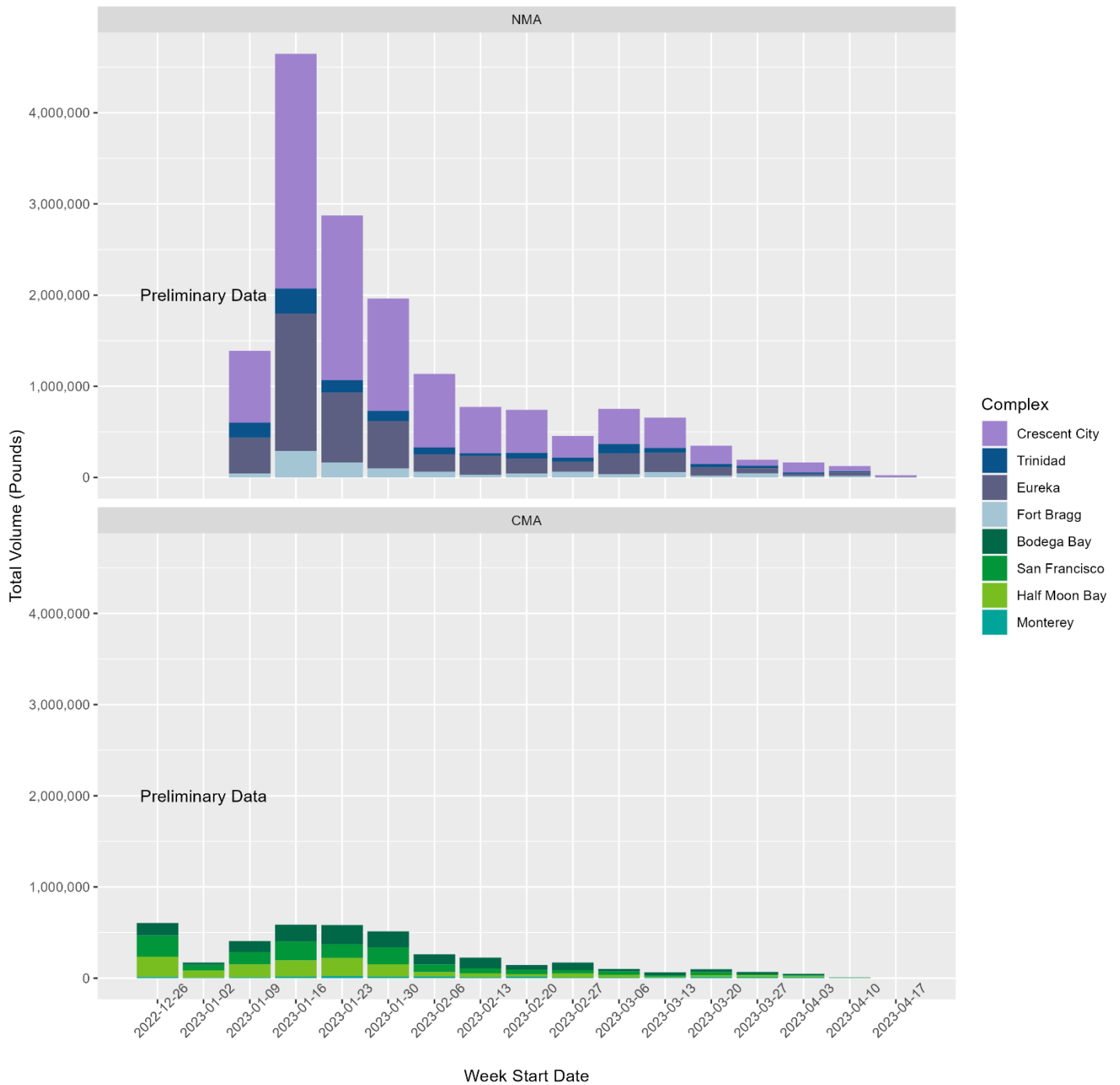


Figure 15. Cumulative volume (pounds) landed by week and port complex. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, December 31, 2022. All data are preliminary and subject to change. Certain week*port complex combinations are withheld due to confidentiality constraints.

Number of Active Vessels, by Week and Port Complex, 2022-23 Season

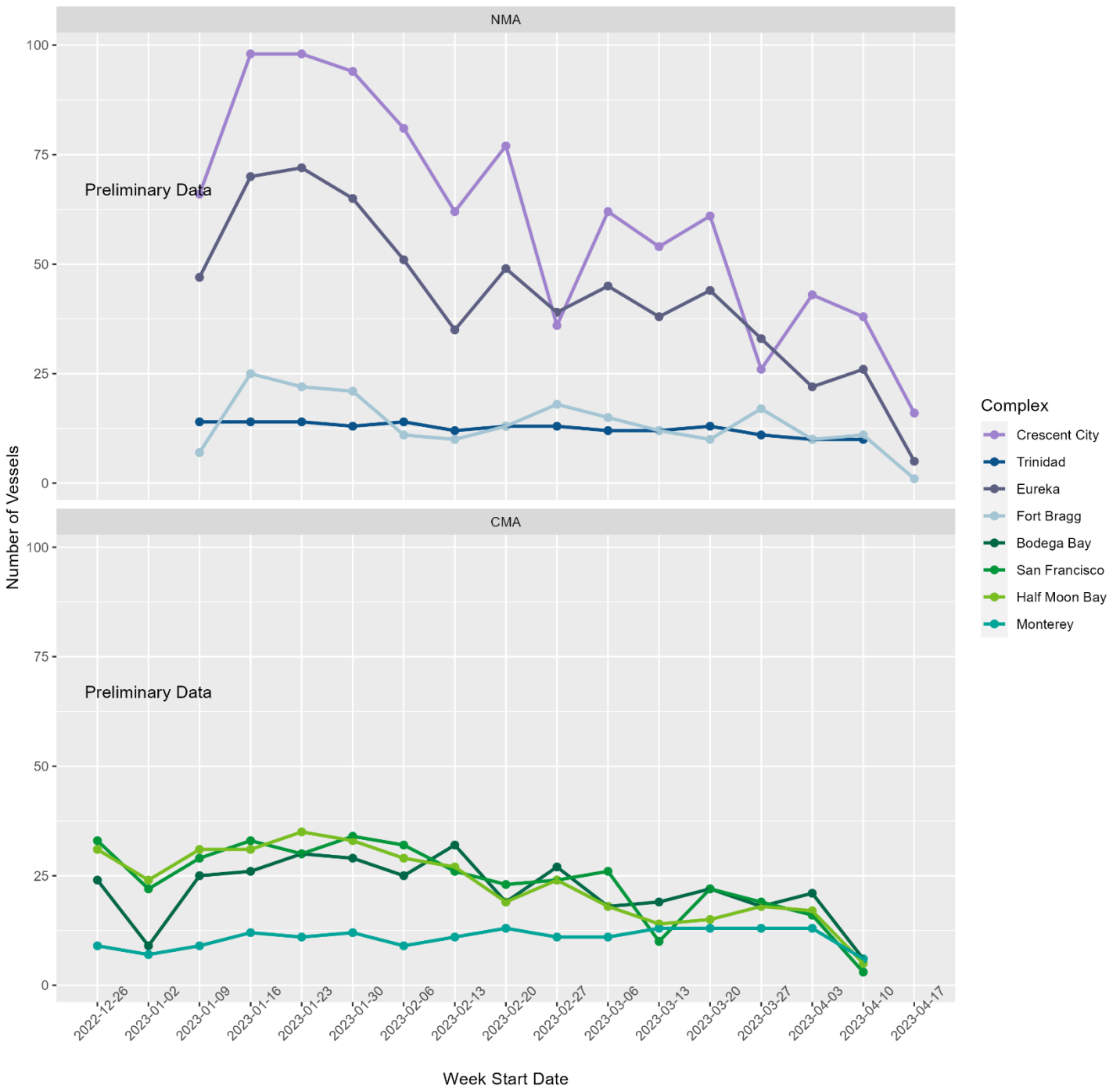


Figure 16. Number of active vessels by week and port complex. Week 1 starts with the first day the commercial Dungeness crab fishery was open in any area, December 31, 2022. All data are preliminary and subject to change. Some week*port complex combinations are withheld due to confidentiality concerns.

Bi-Weekly Fishing Activity Reports (All Fishing Zones)

CDFW has received bi-weekly reports since the first reporting period of January 1, 2023 through the most recent reporting period of April 16, 2023. A summary of reports received for April 1, 2023, is provided in Table 7 and those received for April 16, 2023, are provided in Table 8; note these summaries may not reflect all permitted vessels participating in the fishery. In addition, Table 9 shows the summary of total traps by Fishing Zone for the five most recent reporting periods. Based on these overall reported totals, total traps in Zone 1 have consistently been between 60% and 65% of total traps deployed each period until Available Data, April-26-2023

the most recent period that covers when the season closed in Zones 3, 4, 5, and 6, number of traps in Zone 1 are over 70% of total.

Table 7. Summary of information provided for the April 1, 2023 bi-weekly reporting period by Fishing Zone (1-6). Accessed from CDFW's Bi-Weekly Reporting database on April 25, 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	97	332	31,511	12	28	53	9	56
Zone 2	20	243	4,852	14	27	60	0	
Zone 3	65	217	13,191	19	33	80	14	229
Zone 4	15	167	2,493	20	36	60	2	29
Zone 5	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C
Zone 6	NA	NA	NA	NA	NA	NA	NA	NA
Totals	197		52,047				25	314

Table 8. Summary of information provided for the April 16, 2023 bi-weekly reporting period by Fishing Zone (1-6). Accessed from CDFW's Bi-Weekly Reporting database on April 25, 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	80	328	24,255	12	27	53	13	139
Zone 2	16	213	3,394	14	30	85	0	
Zone 3	38	188	5,075	20	35	80	36	301
Zone 4	10	105	735	17	37	60	9	166
Zone 5	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C	NR-C
Zone 6	NA	NA	NA	NA	NA	NA	NA	NA
Totals	144		33,459				58	606

Table 9. Total reported traps deployed in each Fishing Zone for the most recent five bi-weekly reporting periods. All data is preliminary and subject to change.

Fishing Zone	Feb 16 - Total Traps	Mar 1 - Total Traps	Mar 16 - Total Traps	Apr 1 - Total Traps	Apr 16 - Total Traps
Zone 1	56,936	50,263	43,063	31,511	24,255
Zone 2	6,068	5,624	5,740	4,852	3,394
Zone 3	24,345	23,136	20,281	13,191	5,075
Zone 4	2,055	2,209	2,395	2,493	735
Zone 5	NR-C	NR-C	NR-C	NR-C	NR-C
Zone 6	NA	NA	NA	NA	NA
Totals	89,404	81,232	71,479	52,047	33,459

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 April 2023 indicate below average conditions from the CA/OR border to Point Arena, higher than expected concentrations from Point Arena to Point Sur, and below average expected conditions from Point Sur south to the Mexico/California border (Figure 17).

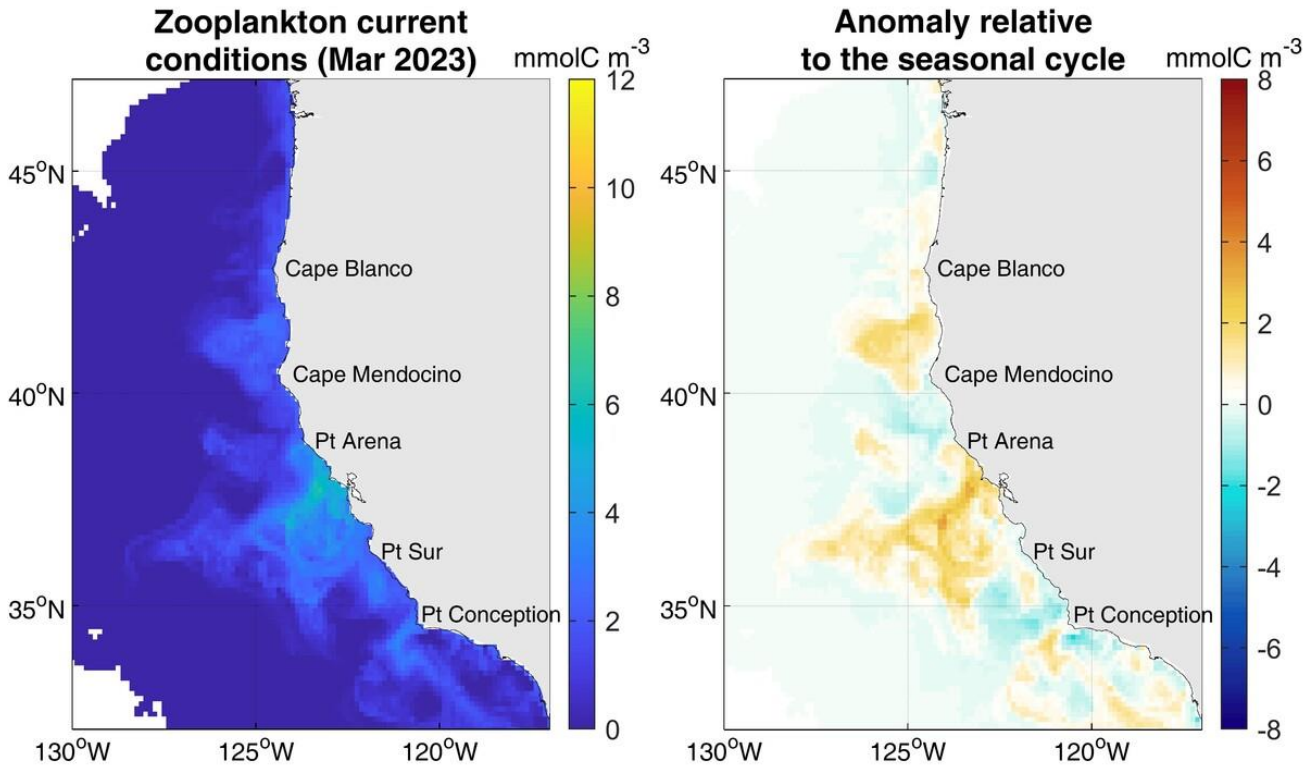


Figure 17. Latest modeled zooplankton concentrations in the California Current (left) and the corresponding anomaly relative to the 1993-2018 seasonal cycle (right), Derived from the operational krill hotspot model from February 2023 accessible on the [MBARI website](#).

Ocean conditions: §132.8(d)(9)*

Data provided by: Jarrod Santora (NMFS SWFSC), National Weather Service Climate Prediction Center, California Current Integrated Ecosystem Assessment Program

Habitat Compression Index

The most recent Habitat Compression Index values are for March 2023 (Figure 18). Compression was high in March from 2014-2017, moderate to high from 2018-2020, and low from 2021-2023. Additionally, waters are cold and likely fueling a surge in the spring krill population.

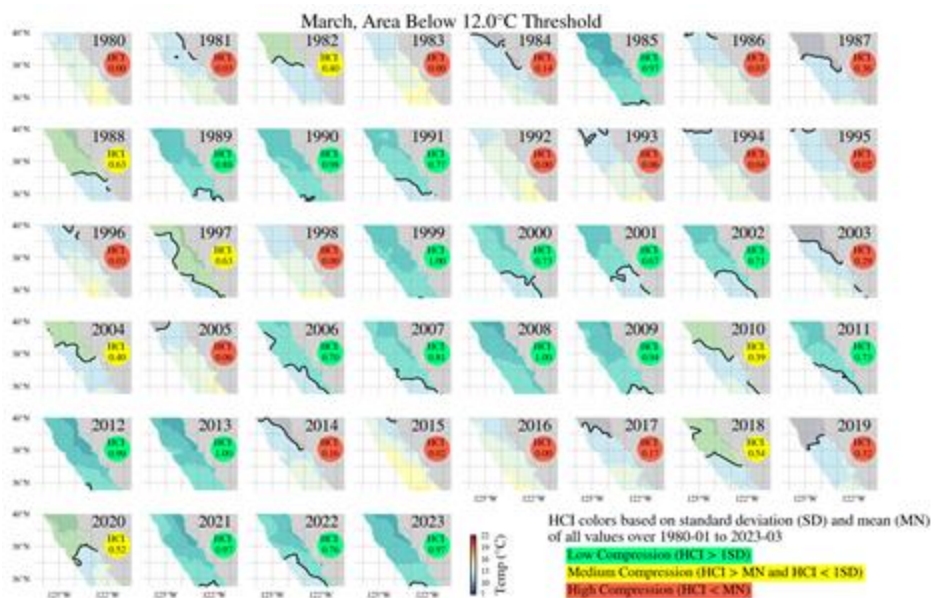


Figure 18. Maps of historical March sea surface temperature and location of the Habitat Compression Index Boundary (thin black line) between 1980 and 2023.

El Niño/Southern Oscillation (ENSO) Diagnostic

As of April 13, 2023, La Niña conditions have ended, and ENSO-neutral conditions are present. ENSO-neutral conditions are likely to continue until May-July when there is a strong chance of a transition to El Niño conditions.

Large Marine Heatwave Tracker

As of March 7, 2023, there are no new Large Marine Heatwaves (LMHs), and nearshore coastal waters are slightly colder-than the average temperatures (Figure 19). The heatwave that developed in January 2022, receded, and shrank from nearshore coastal waters in November of 2022.

Apr-07-2023

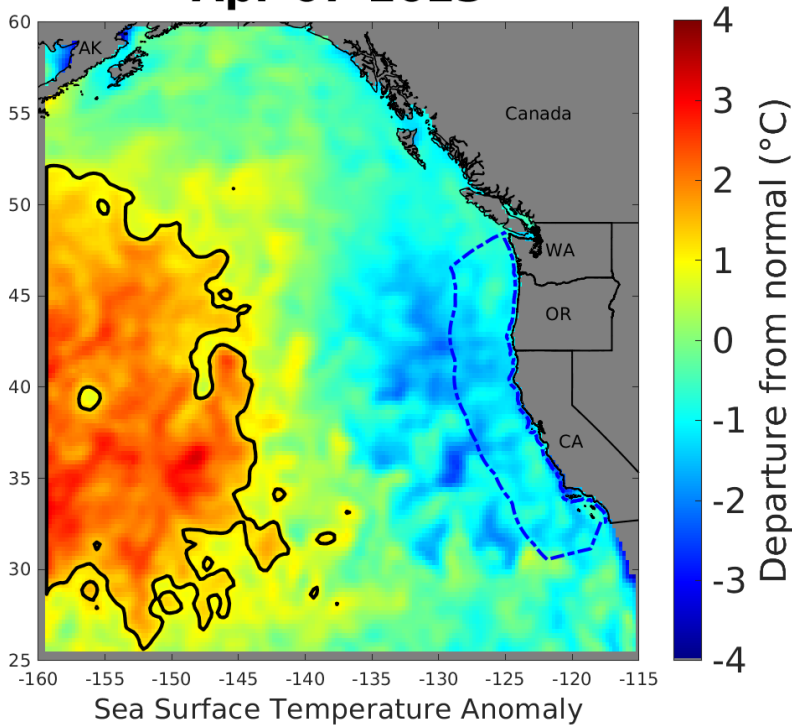


Figure 19. Science-quality (delayed 3-weeks), daily interpolated standardized sea surface temperature anomalies (SSTa) in the California Current ecosystem available for analysis of MHW presence. Dark outline shows the current extent of MHW conditions, as delineated by values of the normalized SST + 1.29 SD from normal. Blue dashed line represents the US West Coast EEZ. SST data from [NOAA's Optimum interpolation Sea Surface Temperature analysis \(OISST\)](#), with the SST anomaly calculated using climatology from NOAA's AVHRR-only OISST dataset.

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

Data provided by California Department of Fish and Wildlife

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 and 2022 are provided in Table 3 above.