



**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (DEPARTMENT)
DECLARATION OF GEAR REDUCTION FOR
THE COMMERCIAL DUNGENESS CRAB FISHERY AND CONTINUATION OF THE
TEMPORARY CRAB TRAP PROHIBITION FOR THE RECREATIONAL 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 December 22, 2022, 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 December 16, 2022. 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

Aerial surveys undertaken by the NOAA on December 13, 2022, observed 29 humpback whales and small vessel surveys on December 14, 2022, observed 24 humpback whales in Fishing Zone 3. Pursuant to 132.8(c)(2)(A)(4)(a) I must implement a Fishing Zone delay or other protective management action.

III

Numerical triggers for marine life concentrations have been reached in Fishing Zone 3 for humpback whales. Pursuant to Section 29.80(c)(7), I must implement a protective management action in the recreational Dungeness crab fishery. Section 29.80(c) requires that any temporary prohibition on the use of crab traps extend the general crab trap prohibition outlined in Section 29.80(c)(4).

IV

Entanglement triggers for humpback whales have been reached for the current Calendar Year. Pursuant to Section 132.8(c)(1)(C)(1), I must implement a protective management action in the commercial Dungeness crab fishery.

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 action:

1. Continuation of the temporary recreational crab trap prohibition in Fishing Zone 3, 4, 5 and 6. The deployment and use of crab traps in any recreational fishery is temporarily prohibited in those Fishing Zones due to entanglement risk.
2. Lift the Fishery Closure in Fishing Zones 3-6 and limit the use of crab traps in the commercial fishery to 50% of a permitted vessel's trap tier. Buoy tags issued pursuant to Fish and Game Code 8276.5 shall be reduced consistent with this Declaration and 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. Vessels must have at least one half (50%) of valid buoy tags for the current fishing season onboard and available for inspection by the Department at all times while operating under this Management Action. Vessels placing traps in a Fishing Zone open under a Gear Reduction will be limited to the 50% trap tier reduction even when fishing in other Fishing Zones. Any Dungeness Crab vessel transiting Fishing Zones 3-6, regardless of where fishing occurs, is subject to the 50% reduction and must have at least one half (50%) of the valid buoy tags for the current fishing season onboard and available for inspection by the Department at all times. This action will be in effect beginning December 31, 2022, preceded by 64-hour with a gear setting period that will begin at 8:01am on December 28, 2022.
3. Issue a Fleet Advisory for the commercial fishery in Fishing Zones 3-6. The commercial 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, particularly in Zone 3 around Point Reyes and the Farallon Islands. Vessels operating and setting gear in this area should review Available Data document dated December 16, 2022 for specific location information.

This management action is in effect until modified. The next risk assessment is expected to occur on or before January 18, 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

12/22/22
1:30 pm PT

Date/Time

ATTACHMENT TO DIRECTOR DECEMBER 22, 2022 DECLARATION OF GEAR REDUCTION
IN THE COMMERCIAL DUNGENESS CRAB FISHERY AND CONTINUATION OF THE
RECREATIONAL CRAB TRAP PROHIBITION 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 December 21, 2022, and the Available Data document dated December 16, 2022, 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 December 21, 2022, the Director will continue the temporary crab trap prohibition in the recreational Dungeness crab fishery in Fishing Zones 3-6. Use of crab traps in other recreational fisheries is also temporarily prohibited pursuant to Section 29.80(c)(4) of Title 14 of the California Code of Regulations. The Director will lift the season delay in Fishing Zones 3-6 for the commercial fishery and implement a Fleet Advisory and 50% Gear Reduction (trap reduction) based on a vessel's permitted trap tier.

Fishing Zone 3 reached a marine life concentration trigger for management action, and subsequent 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.

Importantly, aerial survey data and small vessel survey data showed numerous, though declining, aggregations of humpback whales that could be at risk of entanglement with recreational and commercial crab traps in Fishing Zone 3. Distribution of humpback whales change based on foraging behavior so a depth restriction on fishing activity would likely be ineffective in reducing entanglement risk as whales migrate to their winter breeding grounds. A trap reduction and Fleet Advisory in the commercial fishery and trap restriction in the recreational fishery will minimize entanglement risk as humpbacks continue to migrate from California waters to winter breeding grounds.

At this time, the only management response available for the recreational fishery is a trap prohibition in Fishing Zones 3 -6 while entanglement risk remains elevated in those areas. The combined trap reduction and trap restriction will provide additional protections until the next risk assessment can evaluate entanglement risk.



California Department of Fish and Wildlife Final Assessment of Marine Life Entanglement Risk and Management Recommendation

Date: December 21, 2022

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 December 16, 2022 and finalized at the conclusion of the Working Group meeting on December 21, 2022 based on discussions with the group.

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

Entanglements:

In-season Confirmed Entanglement accounting is not available because the fishery is not currently open. The current Impact Score for calendar year 2022 is 4.53 for humpback whales. The Impact Score for calendar year 2021 was 1.89 for humpback whales. As a result, CDFW anticipates a running 3-year average Impact Score of at least 2.14 for humpback whales at the start of 2023 which exceeds the Entanglement Impact Score Calculation under RAMP.

All Fishing Zones

- Confirmed Entanglements in California Commercial Dungeness Crab Gear during the current calendar year equal three humpback whales.
- Confirmed Entanglements in Unknown Fishing Gear reported from California during the current calendar year that could be commercial Dungeness crab gear equal six humpback whales.

Marine Life Concentrations:

Fishing Zone 3

- NMFS Aerial Survey = 29 humpback whales (in addition, 21 unidentified whales were also observed with an unknown proportion that could be humpback whales)
- Cascadia Research Small Vessel Survey = 24 humpback whales

Fishing Zone 4

- Surveys did not exceed triggers

Fishing Zone 5

- Previous surveys did not exceed triggers

Fishing Zone 6

- Data availability triggers no longer applicable

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:

- **Continue the Crab Trap Prohibition for Fishing Zones 3, 4, 5 and 6**

The recreational Dungeness crab fishery is currently open statewide in all Fishing Zones (see CCR Title 14, section 29.80(e)), although use of traps is temporarily restricted in Fishing Zones 3-6. CDFW Marine Region's final recommendation is for the Director to continue the restriction in Fishing Zones 3-6 until it can be evaluated at the next risk assessment.

Commercial Fishery:

- **Season opener with Gear 50% Gear Reduction (trap reduction) and Fleet Advisory for Fishing Zones 3, 4, 5 and 6**

The commercial Dungeness crab fishery is currently delayed in all Fishing Zones due to crab meat quality or elevated entanglement risk. Fishing Zones 1 and 2 were evaluated during the November 21, 2022 risk assessment under RAMP and CDFW [Marine Region staff's final recommendation](#) for the commercial fishery was to allow the season to open in these Fishing Zones due to reduced entanglement risk. However, the commercial fishery opener in Fishing Zones 1 and 2 was further delayed pursuant to Fish and Game Code Section 8672.2 (due to quality testing results) until at least December 31, 2022.

CDFW Marine Region's final recommendation is for the Director to open Fishing Zones 3-6 under a Gear Reduction of 50% of allotted traps by permit tier for each permitted vessel and issue a Fleet Advisory on December 31, 2022. Buoy tags issued pursuant to Fish and Game Code 8276.5 shall be reduced consistent with the Director's declaration and 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. Specific information on recent humpback whale sighting locations will be included in the Fleet Advisory. The 64-hour pre-soak would begin for the commercial fishery at 8:01am on December 28, 2022.

Management Recommendation Summary Rationale:

Survey data for Fishing Zones 1, 2, 3, 4 and 5 were available prior to this risk assessment. For Fishing Zone 6, RAMP regulations require a season delay until December 31 when data are unavailable. Therefore, the no data scenarios under RAMP are no longer applicable, and Fishing Zones can be evaluated based on the totality of the management considerations and previous survey data. Based on available data, and in consideration of the current entanglement Impact Score additional precaution is warranted when choosing between Management Actions under RAMP.

Aggregations of humpback whales remain in Fishing Zones 3 and 4, particularly in waters west and south of Point Reyes (Gulf of the Farallones). However, aerial and vessel-based surveys have shown a steady decline in humpback whale observations since the first risk assessment in October. NOAA aerial surveys documented a decline from 78 humpback whales to 29 humpback whales over a two-week period in Fishing Zone 3 (early December to mid-December). Cascadia vessel surveys in Fishing Zone 3 documented a decline from 64 humpback whales to 24 humpback whales along the Bodega Bay/Point Reyes transect and 28 humpback whales to zero along the Gulf of the Farallones transect over one-week period based on the latest data contribution (early December to mid-December). Monterey Bay Whale Watch weekly average observations have also declined from 8.9 humpback whales in early December to 4.5 humpback whales as of this risk assessment. All available data show a continued decline and based on this trend, CDFW anticipates risk of entanglement has abated sufficiently to allow the opening of Fishing Zones 3-6 for the commercial trap fishery.

In addition, based on previous data indicating arrivals of humpback whales to the winter breeding grounds, entanglement risk is reduced compared to previous risk assessments, as observations on the winter breeding grounds confirm humpback whales from California continue to arrive. However, to further minimize risk of entanglement, a 50% Gear Reduction and a Fleet Advisory for the commercial fishery in Fishing Zones 3-6 is prudent as whales continue their migration out of California waters. Both the recreational and commercial crab fleets should use precaution when setting trap gear because humpback whales may still be present. 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. Ocean waters off Point Reyes have shown persistent aggregations of humpbacks during most surveys. Staff's recommendation

is for the 50% Gear Reduction and Fleet Advisory to remain in place until it can be reevaluated at the next risk assessment (expected to occur on or around January 18, 2023) by the CDFW Director.

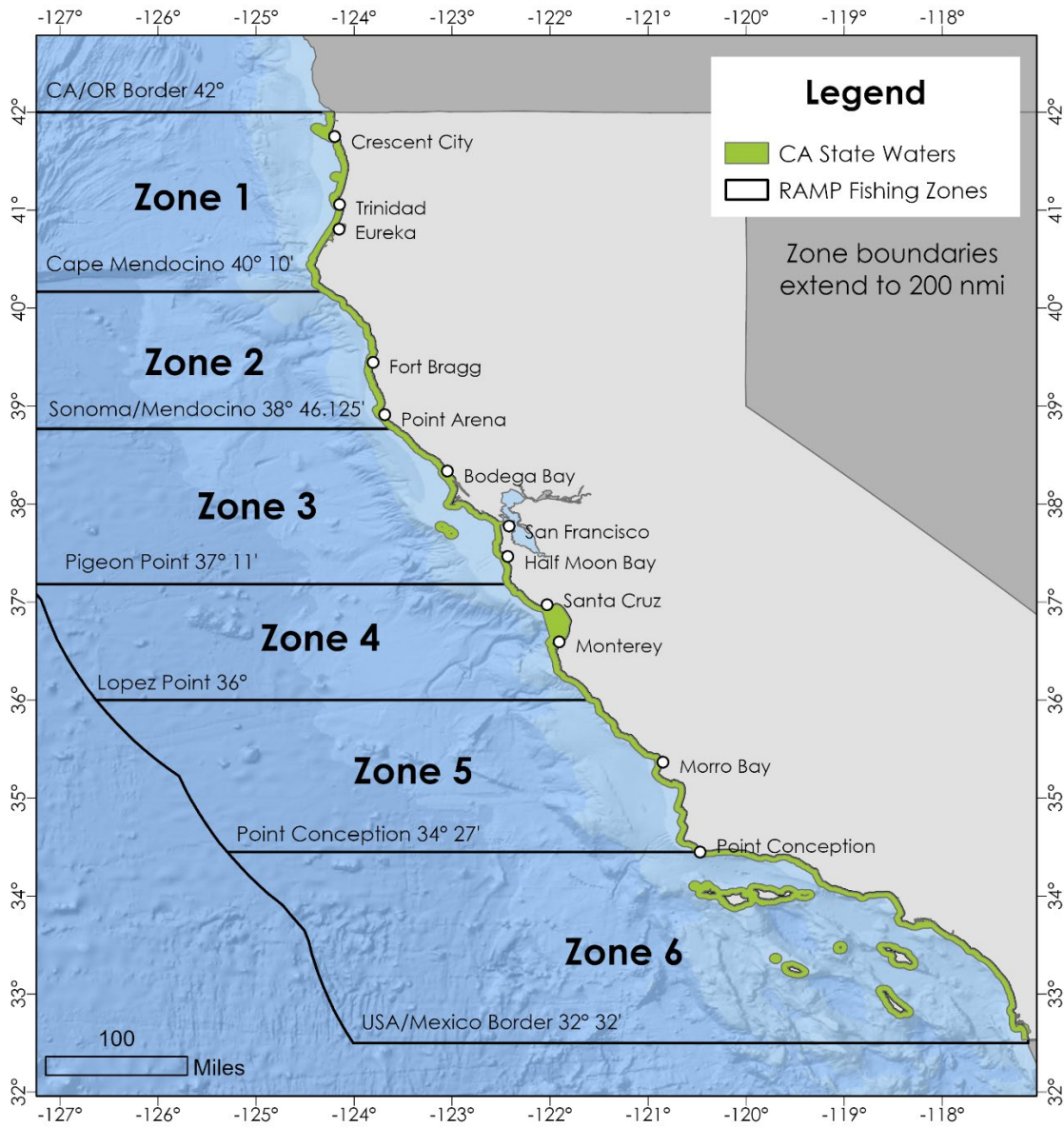
C. Alternative Management Actions considered from options identified in subsection (e)

Alternative Recommendation

- Fishery Closure – most protective but in consideration of lowered risk, continued migration departures and economic impacts to the fleet it was not the recommended management option.

Alternatives Considered but Rejected

- Depth restriction – will not sufficiently provide protections due to distribution of humpback whales across depths and may concentrate trap gear thereby increasing entanglement risk.
- 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: December 20, 2022

Working Group Recommendation: Commercial Fishery

The Working Group had an extensive discussion regarding the current level of marine life entanglement risk and appropriate management action. Working Group members expressed mixed support for the two options identified in the [December 16, 2022 Preliminary Assessment and Management Recommendation](#), with no clear consensus recommendation or majority/minority position. As a whole, the Working Group acknowledged that both options would be protective of humpback whales, although a continued delay would provide stronger protections.

Working Group members who supported a December 31, 2022 opener under a 50% vertical line reduction and Fleet Advisory concurred with the analysis presented in the [December 16, 2022 Preliminary Assessment and Management Recommendation](#); that risk has declined to the point where some level of fishing activity should be allowed.

Working Group members who supported a continued delay noted that the areas within Fishing Zone 3 where humpback whales have continued to persist overlap with the primary fishing grounds of the Bodega Bay fleet. Even under a 50% vertical line reduction, they anticipate a substantial amount of gear would be deployed in that area. Some Working Group members also expressed support for a continued delay until risk has declined sufficiently to allow full deployment of permitted allotments, rather than the 50% proposed.

The Working Group discussed the potential implications for fair start if the quality delay for Fishing Zones 1-2 lifts to allow a December 31st opener. The Working Group also discussed the potential for a continued delay in Fishing Zone 3 and allowing Fishing Zones 4-6 to open on December 31st under a 50% vertical line reduction and Fleet Advisory, but no formal recommendation was advanced.

During the discussion several Working Group members also shared outcomes from port association and fishery sector (e.g., CPFV) meetings. Specifically, Half Moon Bay, San Francisco, Monterey Bay, and recreational representatives

support the December 31st opener, while Bodega Bay, CCCA, and San Luis Obispo/Morro Bay supported a continued delay.

Working Group Recommendation: Recreational Fishery

If the commercial fishery in Fishing Zones 3-6 were subject to a vertical line reduction, some Working Group members supported a continuation of the trap restriction currently in place. This was due to the potential for a high number of additional lines to be deployed in the recreational sector, during a period where CDFW Marine Region staff have recommended the commercial fishery be subject to a 50% vertical line reduction. Since CDFW is not able to require reductions in trap usage in the recreational sector, a continuation of the trap restriction would be prudent. Recreational representatives clarified that the number of recreational trap validations sold is not a reliable indicator of anticipated trap effort in the recreational sector. This recommendation received limited support from the Working Group.



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

Date: December 16, 2022

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 accounting is not available because the fishery is not currently open. The current Impact Score for calendar year 2022 is 4.53 for humpback whales. The Impact Score for calendar year 2021 was 1.89 for humpback whales. As a result, CDFW anticipates a running 3-year average Impact Score of at least 2.14 for humpback whales at the start of 2023.

All Fishing Zones

- Confirmed Entanglements in California Commercial Dungeness Crab Gear during the current calendar year equal three humpback whales.
- Confirmed Entanglements in Unknown Fishing Gear reported from California during the current calendar year that could be commercial Dungeness crab gear equal six humpback whales.

Marine Life Concentrations:

Fishing Zone 3

- NMFS Aerial Survey = 29 humpback whales (21 unidentified whales were also observed with an unknown proportion that could be humpback whales)
- Cascadia Research Small Vessel Survey of Fishing Zone 3 = 24 humpback whales

Fishing Zone 4

- Surveys did not exceed triggers

Fishing Zone 5

- Previous surveys did not exceed triggers

Fishing Zone 6

- Data availability triggers no longer applicable

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 Crab Trap Prohibition and Issue a Fleet Advisory for Fishing Zones 3, 4, 5 and 6**
- ***Alternative Management Action for consideration by the Working Group is to continue the trap restriction until the next risk assessment (see Section C)***

The recreational Dungeness crab fishery is currently open statewide in all Fishing Zones (see CCR Title 14, section 29.80(e)), although use of traps is temporarily restricted in Fishing Zones 3-6. CDFW Marine Region's preliminary recommendation is for the Director to lift the trap restriction in Fishing Zones 3-6 and issue a Fleet Advisory, with specific information on recent humpback whale sighting locations. The recommendation is that the recreational trap restriction be lifted on December 28, 2022, at 8:01am in Fishing Zones 3-6 and a Fleet Advisory issued.

Commercial Fishery:

- **Season opener with Gear 50% Gear Reduction (trap reduction) and Fleet Advisory for Fishing Zones 3, 4, 5 and 6**
- ***Alternative Management Action for consideration by the Working Group is to continue the season delay until the next risk assessment (see Section C)***

The commercial Dungeness crab fishery is currently delayed in all Fishing Zones due to crab meat quality or elevated entanglement risk. Fishing Zones 1 and 2 were evaluated during the November 21, 2022 risk assessment under RAMP and CDFW [Marine Region staff's final recommendation](#) for the commercial fishery was to allow the season to open in these Fishing Zones due to reduced entanglement risk. However, the commercial fishery opener in Fishing Zones 1 and 2 was further delayed pursuant to Fish

and Game Code Section 8672.2 (due to quality testing results) until at least December 31, 2022.

CDFW Marine Region's preliminary recommendation is for the Director to open Fishing Zones 3-6 under a Gear Reduction of 50% of allotted traps by permit tier for each permitted vessel and issue a Fleet Advisory on December 31, 2022. Buoy tags issued pursuant to Fish and Game Code 8276.5 shall be reduced consistent with the Director's declaration and 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. Specific information on recent humpback whale sighting locations will be included in the Fleet Advisory. The 64-hour pre-soak would begin for the commercial fishery at 8:01am on December 28, 2022.

Management Recommendation Summary Rationale:

Survey data for Fishing Zones 1, 2, 3, 4 and 5 were available prior to this risk assessment. For Fishing Zone 6, RAMP regulations require a season delay until December 31 when data are unavailable. Therefore, the no data scenarios under RAMP are no longer applicable, and Fishing Zones can be evaluated based on the totality of the management considerations and previous survey data. Based on available data, and in consideration of the current entanglement Impact Score additional precaution is warranted when choosing between Management Actions under RAMP.

Aggregations of humpback whales remain in Fishing Zones 3 and 4, particularly in waters west and south of Point Reyes (Gulf of the Farallones). However, aerial and vessel-based surveys have shown a steady decline in humpback whale observations since the first risk assessment in October. NOAA aerial surveys documented a decline from 78 humpback whales to 29 humpback whales over a two-week period in Fishing Zone 3 (early December to mid-December). Cascadia vessel surveys in Fishing Zone 3 documented a decline from 64 humpback whales to 24 humpback whales along the Bodega Bay/Point Reyes transect and 28 to zero along the Gulf of the Farallones transect over one-week period based on the latest data contribution (early December to mid-December). Monterey Bay Whale Watch weekly average observations have also declined from 8.9 humpback whales in early December to 4.5 humpback whales as of this risk assessment. All available data show a continued decline and based on this trend, CDFW anticipates risk of entanglement has abated sufficiently to allow the opening of all Fishing Grounds including Fishing Zones 3-6 to the recreational and commercial trap fisheries.

In addition, based on previous data indicating arrivals of humpback whales to the winter breeding grounds, entanglement risk is significantly reduced compared to previous risk assessments, as observations on the winter breeding grounds confirm

humpback whales from California continue to arrive. However, to further minimize risk of entanglement, a 50% Gear Reduction for the commercial fishery and a Fleet Advisory for all fisheries operating in Fishing Zones 3-6 is prudent as whales continue their migration out of California waters. Therefore, the recreational and commercial crab fleets should use precaution when setting trap gear because humpback whales may still be present. 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. Ocean waters off Point Reyes have shown persistent aggregations of humpbacks during most surveys. Staff's recommendation is for the 50% Gear Reduction and Fleet Advisory to remain in place until it can be reevaluated at the next risk assessment (expected to occur in mid-January 2023) by the CDFW Director.

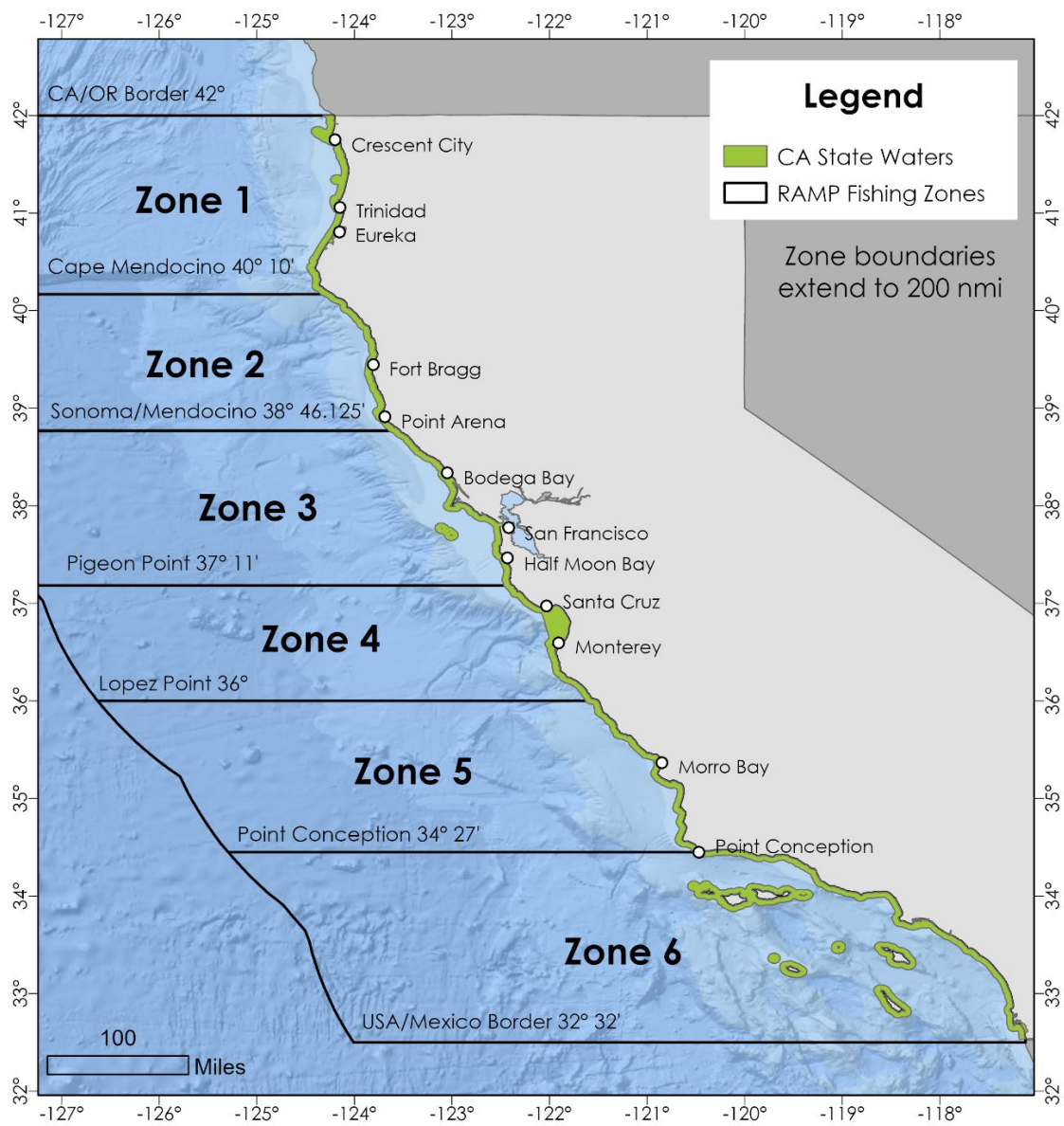
C. Alternative Management Actions considered from options identified in subsection (e)

Alternative Recommendation

- Fishery Closure/Trap Restriction – most protective but in consideration of lowered risk, continued migration departures and economic impacts to the fleet it was not the recommended management option. However, CDFW will bring this option to the Working Group as an alternate recommendation for consideration to inform the CDFW Director's assessment of entanglement risk.

Alternatives Considered but Rejected

- Depth restriction – will not sufficiently provide protections due to distribution of humpback whales across depths and may concentrate trap gear thereby increasing entanglement risk.
- Alternative Gear - can only be authorized after April 1st.



2022-23 Risk Assessment: Available Data

Last updated: December 16, 2022

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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)

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](#) represents the best available information regarding current entanglements, with one exception. Upon further consideration, NMFS has determined that 20220526Mn should be classified as an unconfirmed entanglement with unidentified gear. Available documentation will be reviewed in January 2023, after which NMFS will make a final determination regarding classification of this entanglement.

Therefore, current totals for calendar year 2022 are 15 confirmed humpback whale entanglements reported off California (seven in known gear types and eight in unidentified gear types), with 11 reports originating in Fishing Zone 4, two reports from Fishing Zone 6, and one report each in Fishing Zones 1 and 3 (Table 1).

Table 1. Actionable Species Entanglements during 2022, 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	3	8
Blue whales	0	0
Leatherback sea turtles	0	0

After review of available information (see the [October 25, 2022 Available Data document](#) and [December 7, 2022 Available Document](#)) CDFW has assigned the following Impact Scores:

- 20221008Mn: 0.38
- 20221010Mn: 0
- 20221125Mn: 0

CDFW had previously assigned an Impact Score of 0 to 20220526Mn (see the [October 25, 2022 Available Data document](#)), so the reclassification as an unconfirmed entanglement does not affect the current Impact Score Calculation (Table 2).

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 (2022)
Humpback whales	0	4.53
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 current total calendar year impact score for 2022 is 4.53 for humpback whales and 0 for blue whales and leatherback sea turtles. Beginning in 2023, CDFW will also evaluate risk based on a 3-year rolling average impact score.

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	NA	NA
Blue whales	0	0	NA	NA
Leatherback sea turtles	0	0	NA	NA

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

Data provided by: Monterey Bay Whale Watch (processed by Karin Forney, NOAA SWFSC), Scott Benson and Karin Forney (NOAA SWFSC and Upwell), John Calambokidis (Cascadia Research Collective, in collaboration with The Marine Mammal Center).

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	NMFS Aerial Survey, Cascadia Vessel Survey	Yes
Zone 4	MBWW, NMFS Aerial Survey, Cascadia Vessel Survey	No
Zone 5	None	NA
Zone 6	None	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 7-13, 2022.
- The average number of humpback whales-per-trip during the last seven days (December 7-13, 2022) was 4.5, with a peak of eight whales observed on a single half-day trip on December 7, 2022.
- No blue whales have been observed since November 16, 2022.

Monterey Bay Whale Watch: Humpback whales per 1/2-day trip (Nov 15, 2016 - Dec 13, 2022)

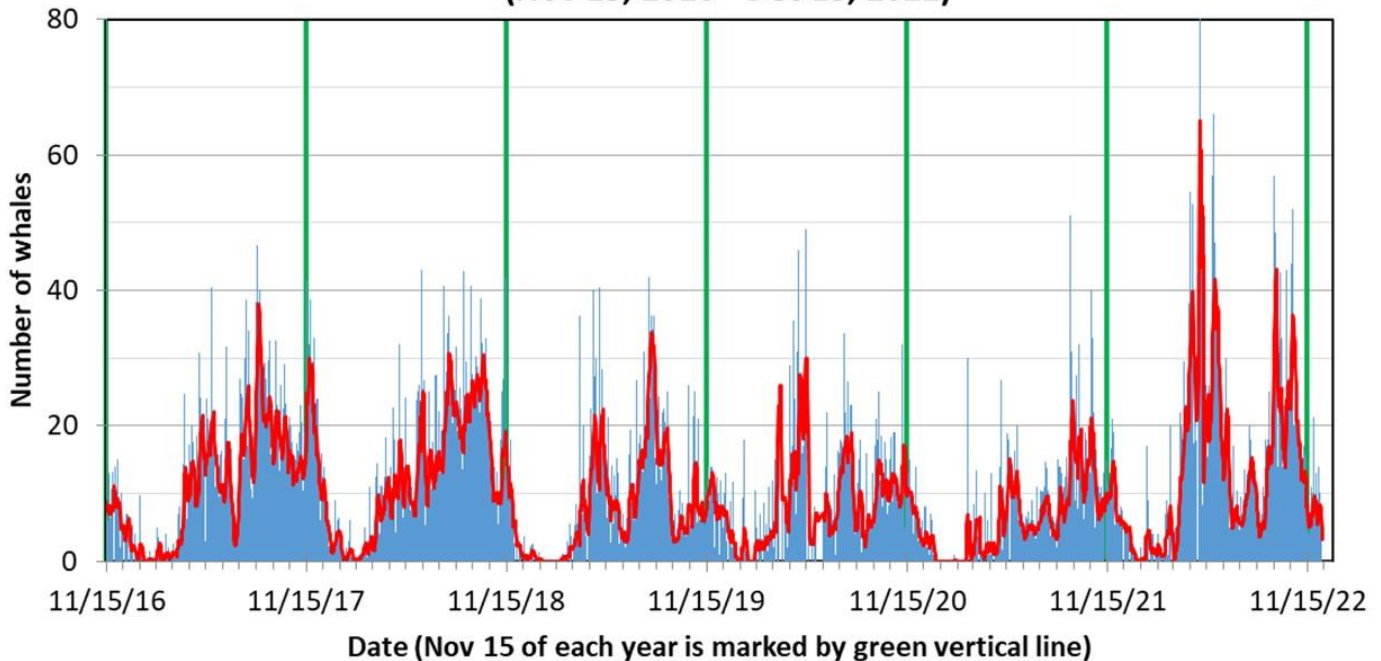
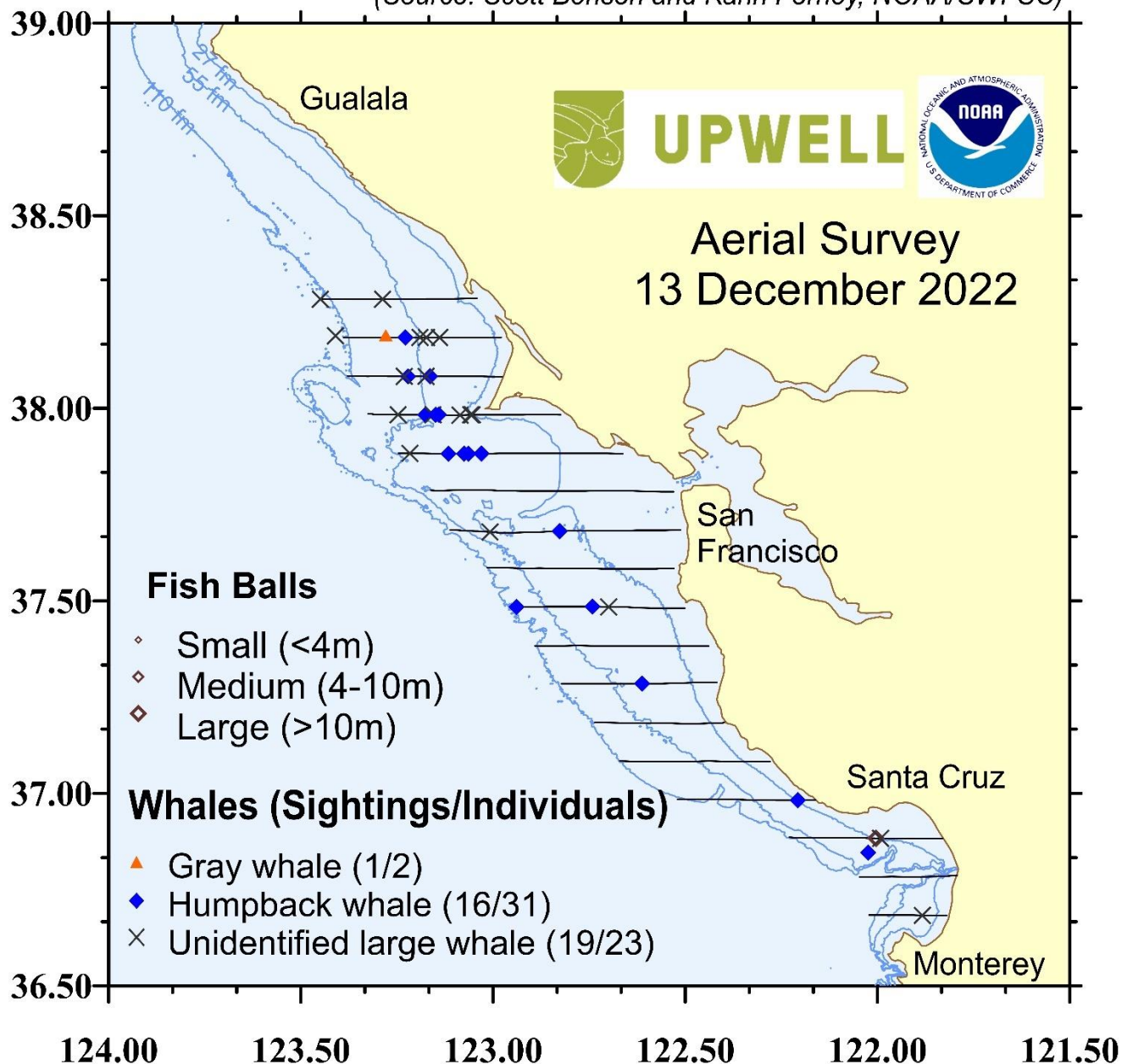


Figure 1. Standardized number of humpback whale sightings for Monterey Bay Whale Watch from November 15, 2016 – December 13, 2022. The y-axis is the number of whales per half-day trip; the thin blue bars are the average daily whale numbers, and the red line is a 7-day running average to make the patterns 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.

NMFS Aerial Survey (Fishing Zones 3 and 4)

- An aerial survey was conducted on December 13, 2022 within Fishing Zones 3 and 4, covering east-west transect lines spaced 6 nmi apart from Bodega Bay to Monterey (Figure 2). The observation team consisted of two observers (Morgan Ivens-Duran, Vicky Vasquez) who searched through bubble windows, plus a data recorder (Scott Benson). Standardized survey methods were applied from a chartered Partenavia P-68 Observer aircraft to record whales, turtles, and ecosystem indicator species such as forage fish, sea nettles and moon jellies (leatherback prey), and ocean sunfish (which are found in the same habitat as leatherback turtles and also feed on jellies). Weather was sunny with light to moderate winds (Beaufort sea states 2-4).
- A total of 31 humpback whales were observed in 16 sightings, including 15 sightings of 29 individuals in Fishing Zone 3, and one sighting of 2 individuals in Fishing Zone 4. In addition, 23 unidentified large whales that were probably humpback whales were documented in 19 sightings (17 sightings of 21 individuals in Fishing Zone 3, and 2 sightings of 2 individuals in Fishing Zone 4).
- The whales were most concentrated in an area off Pt. Reyes in water depths ranging from about 30 – 110 fathoms, with some additional whales documented off the San Mateo County coastline in similar water depths. The whales appeared to be feeding on schooling fish (based on their co-occurrence with fish-eating seabirds).
- No blue whales or leatherback sea turtles were observed.

(Source: Scott Benson and Karin Forney, NOAA/SWFSC)



Zone 3: 15 sightings of 29 humpback whales
+ 17 sightings of 21 unidentified large whales

Zone 4: 1 sighting of 2 humpback whales
+ 2 sighting of 2 unidentified large whales

Figure 2. Plot for the aerial survey conducted on December 13, 2022, showing transects lines flown (black lines) and sighting locations of humpback whales, gray whales, unidentified large whales, and schooling fish balls. The depth contours shown are 50 m (~27 fathoms), 100 m (~55 fathoms), and 200 m (~110 fathoms). Symbols plotted off the transect lines represent sightings made while transiting between transects.

Cascadia Small Vessel Surveys (Fishing Zones 3 and 4)

Since the last risk assessment, Cascadia conducted additional small-vessel surveys in Fishing Zones 3 and 4. Surveys were conducted on December 6-7 and 14, 2022 in Fishing Zone 3 and December 5 and 13, 2022 in Fishing Zone 4 (Table 5).

In Fishing Zone 3, along the Gulf of the Farallones transect humpback whale sightings have continued to decline from the 49 individuals observed on November 30, 2022 (see the [December 7, 2022 Available Data document](#)) to 28 individuals on December 7 (Figure 4) and no individuals on December 14, 2022 (Figure 5). Along the Bodega Bay/Point Reyes transect, sightings declined substantially between the December 6, 2022 survey (64 individuals; Figure 3) and the December 14, 2022 survey (24 individuals; Figure 5). However, sightings remain above the RAMP trigger of 20 individuals on a given survey.

In Fishing Zone 4, humpback whale sightings along the Monterey Bay/North transect have continued to decline from surveys conducted in mid/late November (59 and 64 sightings; see the [December 7, 2022 Available Data document](#)), with 18 individuals seen on the December 5, 2022 survey (Figure 6) and eight individuals seen on the December 13, 2022 survey (Figure 7). Sightings from the most recent survey are now below the RAMP trigger of 20 individuals on a given survey.

Table 5. Summary of vessel surveys conducted in early and mid-December 2022 in Fishing Zones 3 and 4 by Cascadia Research and The Marine Mammal Center.

Date	Vessel	Zone	Area	Hump. Whales (Total)	Unid. Whales (Total)	Comments
5-Dec	MUS	4	Monterey Bay & N	18	1	102 nmi
6-Dec	MUS	3	Bodega - Pt Reyes	64	7	84 nmi
7-Dec	TMMC RHIB	3	Gulf of the Faral.	28	0	104 nmi
13-Dec	MUS	4	Monterey Bay & N	8	0	86 nmi
14-Dec	MUS	3	Bodega - Pt Reyes	24	1	108 nmi
14-Dec	TMMC RHIB	3	Gulf of the Faral.	0	0	86 nmi

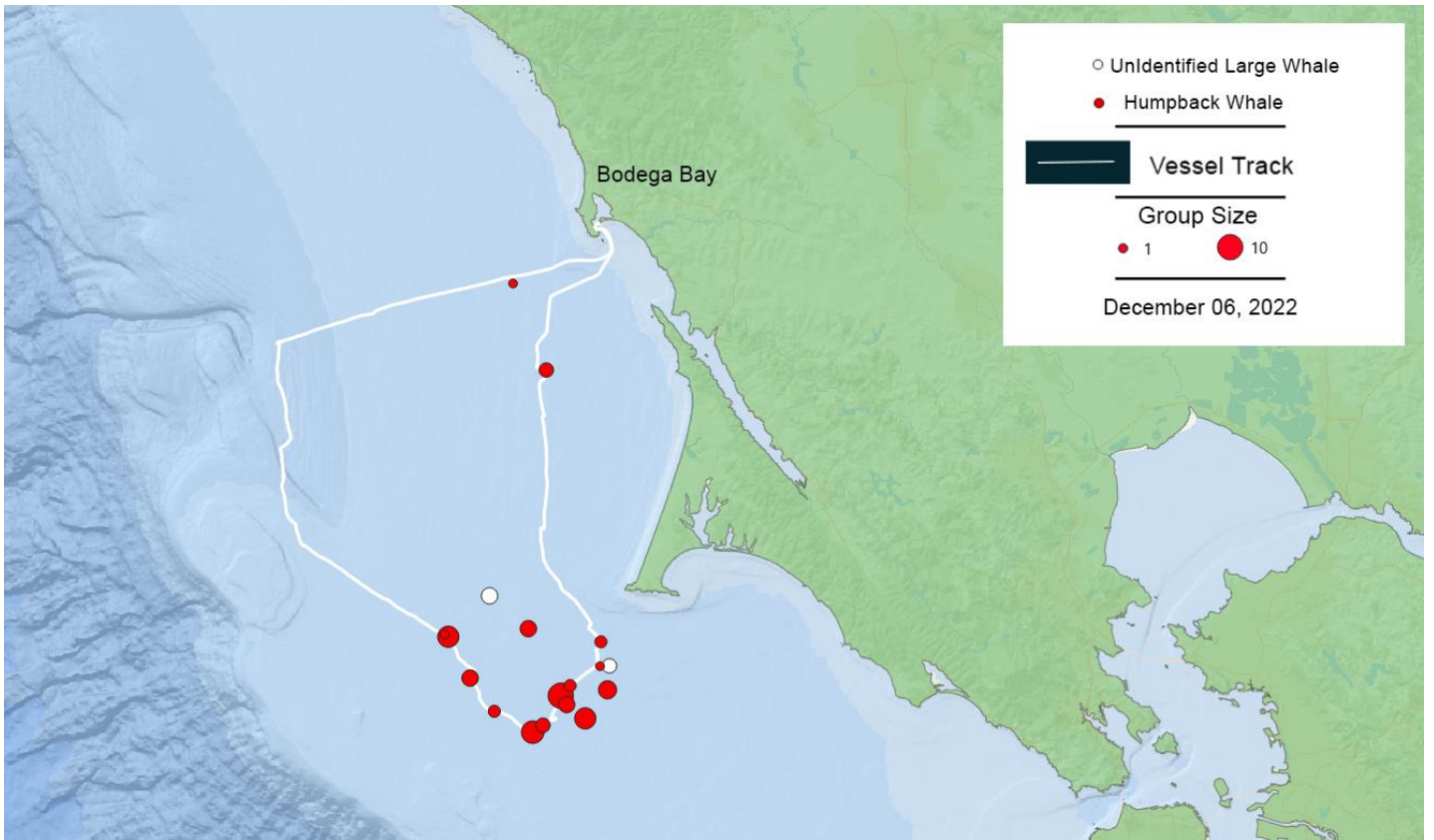


Figure 3. Track and sightings from survey out of Bodega Bay (Fishing Zone 3) on December 6, 2022.



Figure 4. Track and sightings from survey out of San Francisco (Fishing Zone 3) on December 7, 2022.

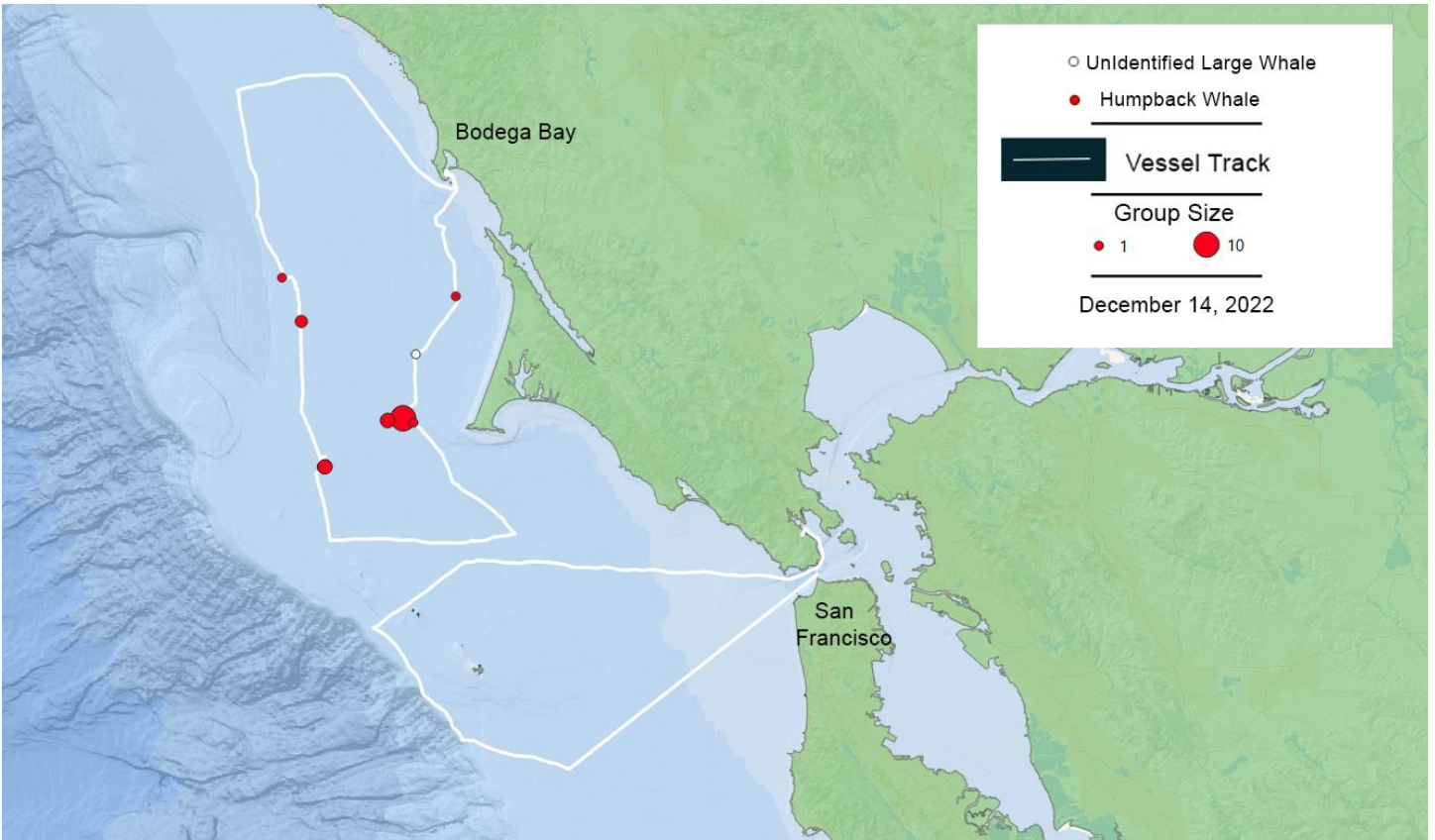


Figure 5. Track and sightings from surveys out of Bodega Bay and San Francisco (Fishing Zone 3) on December 14, 2022.

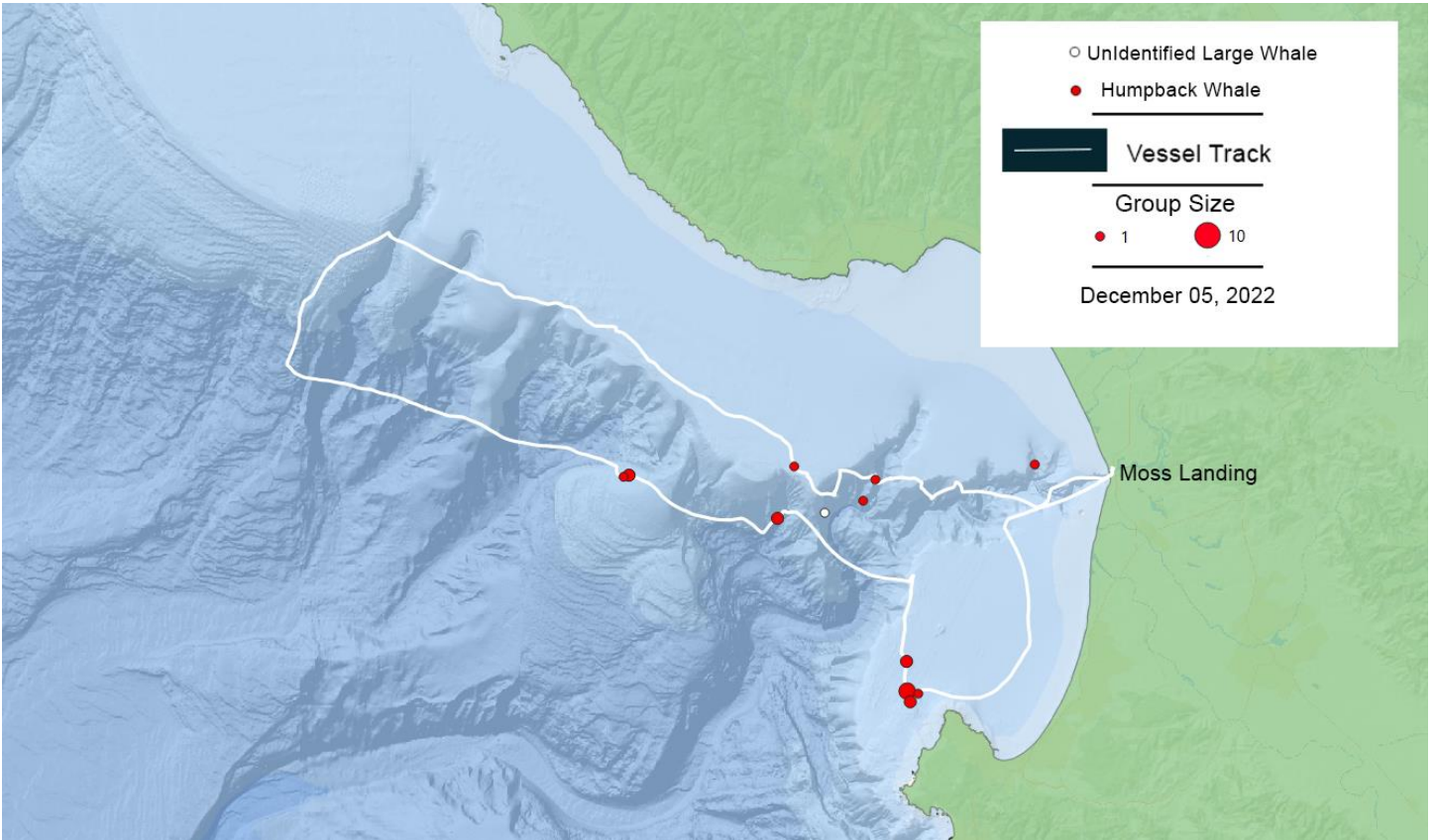


Figure 6. Track and sightings from survey out of Moss Landing (Fishing Zone 4) on December 5, 2022.

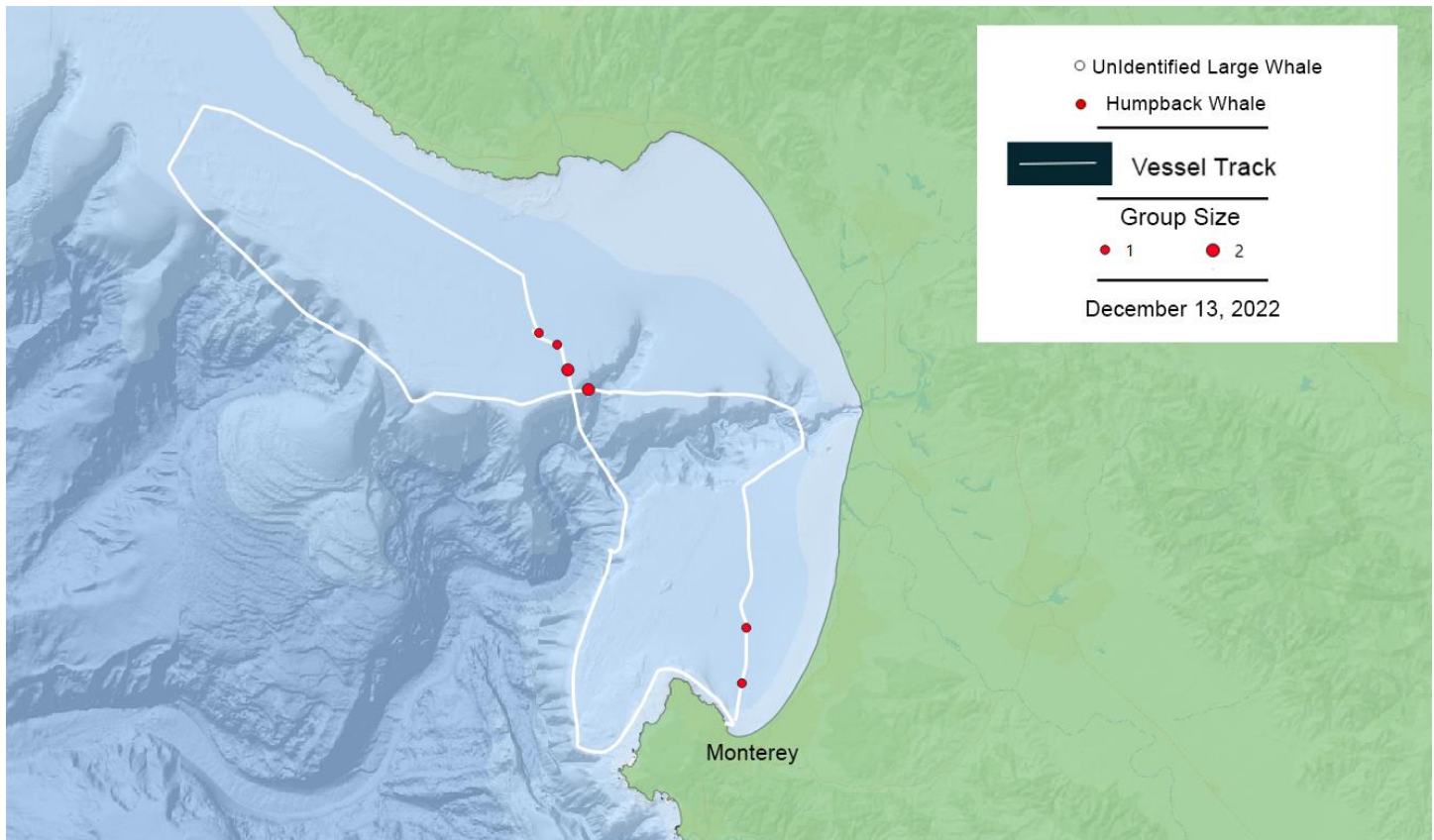


Figure 7. Track and sightings from survey out of Monterey (Fishing Zone 4) on December 13, 2022.

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

Given the high number of confirmed entanglements which have occurred during 2022, avoidance of any additional entanglements is a priority for CDFW. The recommended management measure must limit the potential for interactions between humpback whales and commercial Dungeness crab gear to minimize risk of additional entanglements. CDFW will put forward it's recommended approach in the December 16, 2022 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 consider economic impacts when developing a management recommendation for the December 16, 2022 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, NMFS), Point Blue Conservation Science, NOAA CoastWatch

Monterey Bay Whale Watch (Fishing Zone 4)

The semi-monthly average number of whales-per-half-day-trip is similar to the average historical value at this time of the year (Figure 8). The 7-day running average has decreased during the last two weeks (Figure 1) as more whales head south to their breeding grounds.

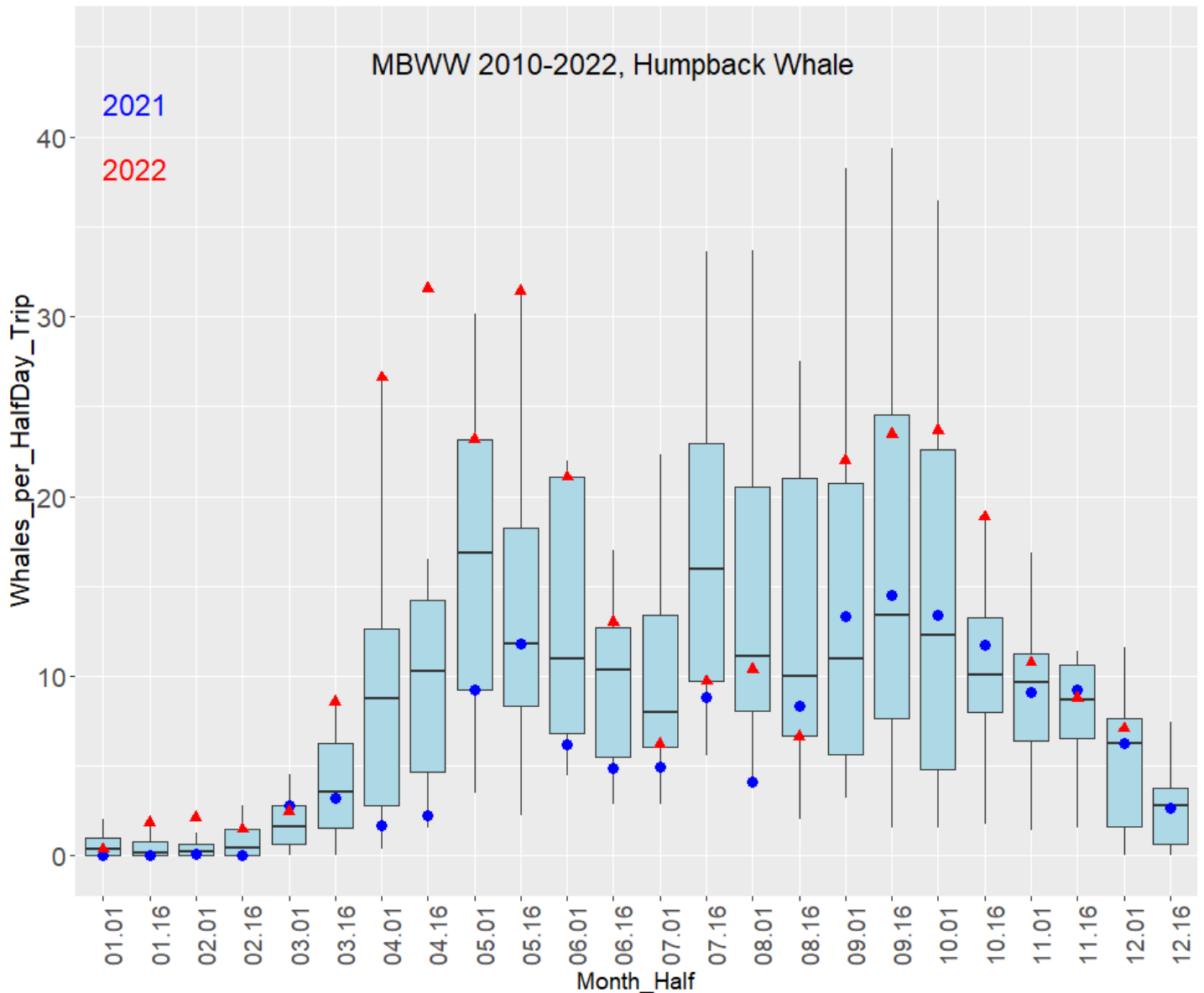


Figure 8. Historical Monterey Bay Whale Watch data for 2010-2022, summarizing the average and variation in the number of humpback whales per half-day trip on a semi-monthly basis (1st- 15th, 16th- end of month). This boxplot follows standard statistical practice in that the black horizontal line is the 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 2021 (large blue dots) and 2022 (red triangles) and are provided for reference, placing recent whale numbers in a historical context. [NOTE: To account for population growth of these recovering whale populations, the historical reference period includes only the more recent period of 2010-2022, rather than 2003-2022 as in plots provided during previous fishing seasons. This provides a more relevant comparison to the current conditions].

Point Blue Conservation Science Data Portal (*Fishing Zones 3 and 6*)

During the seven-day period ending December 15, 2022 trained observers at the Farallon Islands reported 11 humpback whales in Fishing Zone 3 and trained naturalists from the Channel Islands National Marine Sanctuary and National Park Service reported six humpback whales within Fishing Zone 6 (Figure 9).

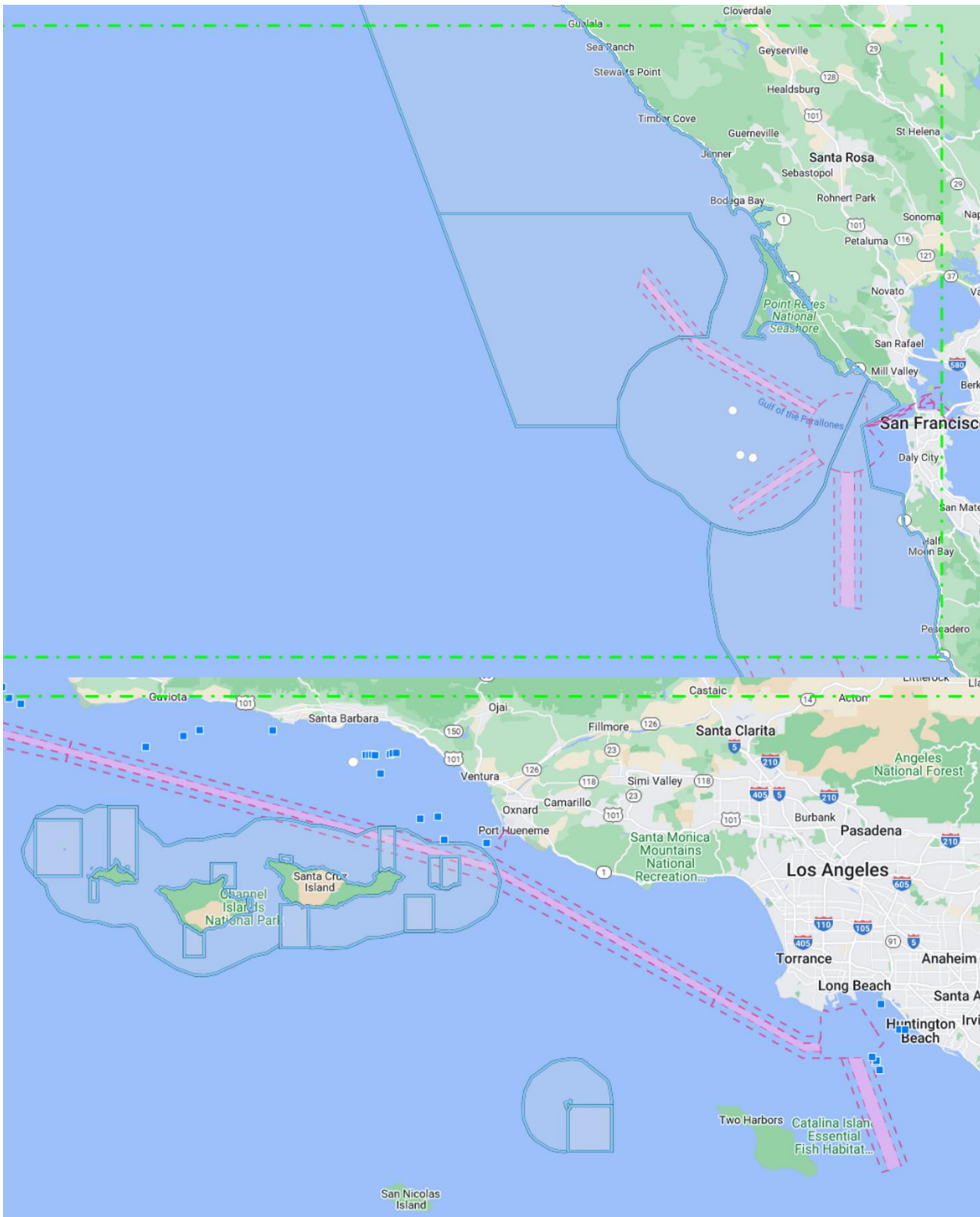


Figure 9. Locations of humpback whale sightings within Fishing Zones 3 (top panel) and 6 (bottom panel). Reporting locations are represented by white circles. A given report may or may not represent multiple individuals. Fishing Zone boundaries are represented by the dashed lines.

WhaleWatch 2.0 (All Fishing Zones)

Blue whale habitat predictions for December 9, 2022 show low habitat suitability in Fishing Zones 1-5, with some suitable habitat remaining within Fishing Zone 6 (Figure 10).

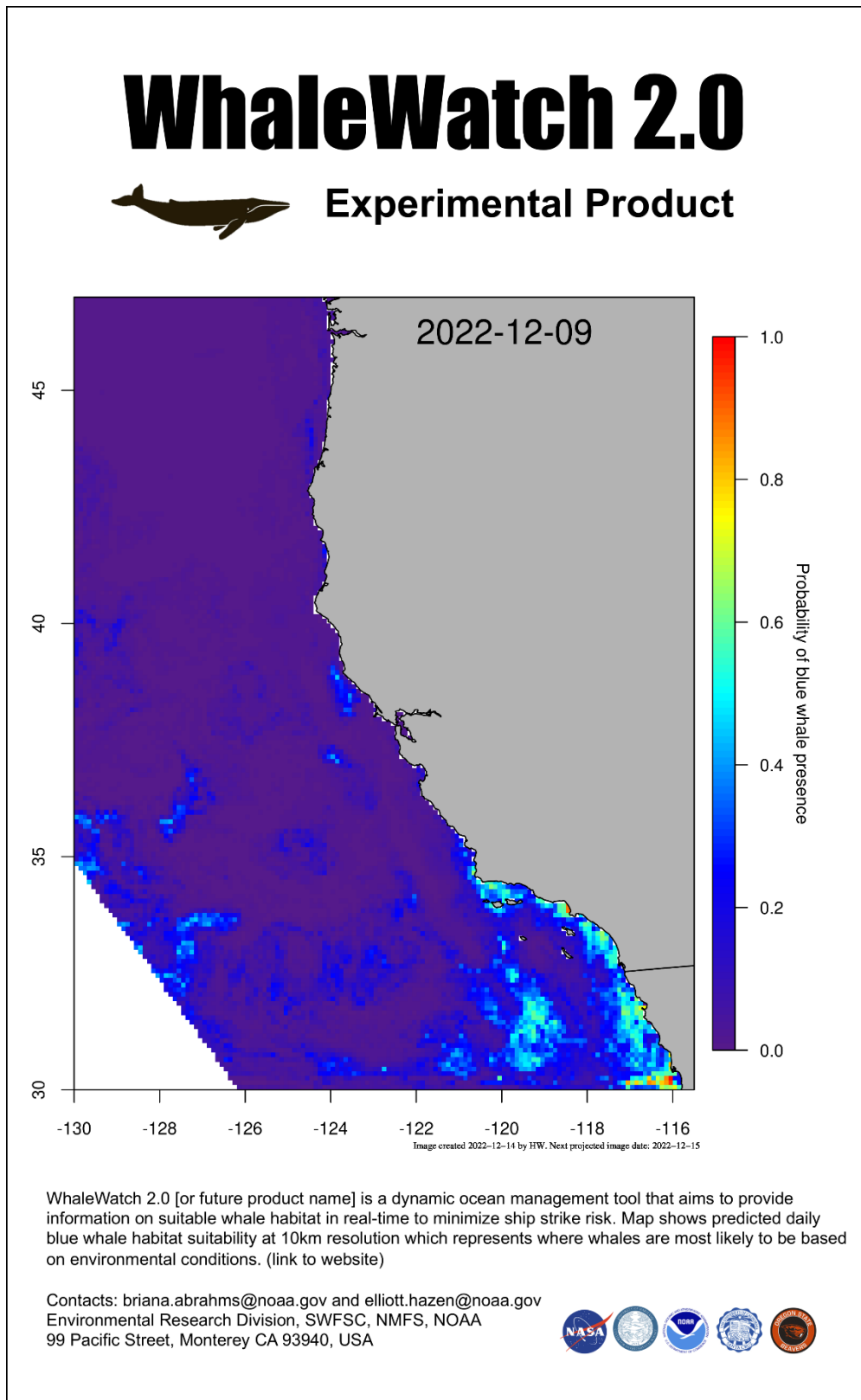


Figure 10. WhaleWatch 2.0 map for December 1, 2022. [View a current map.](#)

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.

Domoic Acid and Quality Testing

Fishing Zones 1 and 2 are currently subject to a quality delay, and will open no sooner than December 31, 2022. Samples to inform a third round of quality testing will be collected on December 16 and 17, 2022. Managers from California, Oregon, and Washington will confer regarding the need for further delays under the Tri-State Agreement on December 22, 2022.

Recreational Crab Fishery

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

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

Data Provided By: Scott Benson and Karin Forney (NOAA SWFSC and Upwell)

NMFS Aerial Survey (Fishing Zones 3 and 4)

- Several moderate aggregations of jellyfish (brown sea nettles and moon jellies) were documented during the survey.
- Two large ocean sunfish (*Mola mola*) were observed during the survey, which represents a large decrease in the abundance of this species since summer/fall.
- One medium-sized ball of schooling fish (likely anchovies) and a few feeding flocks of fish-eating seabirds were observed near areas where humpback whales were documented (see Figure 2).

Ocean conditions: §132.8(d)(9)

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

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

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 (2022) are provided in Table 2 above. Impact Score totals for calendar year 2021 are provided in Table 3 above.