Session 3

# Reducing Risk of Whale Entanglements in Oregon Dungeness Crab Gear

CaseID: 20150703Mn
NMFS MMHSRP Permit #: 18786

# Overview

**West Coast Information – Framing the problem**

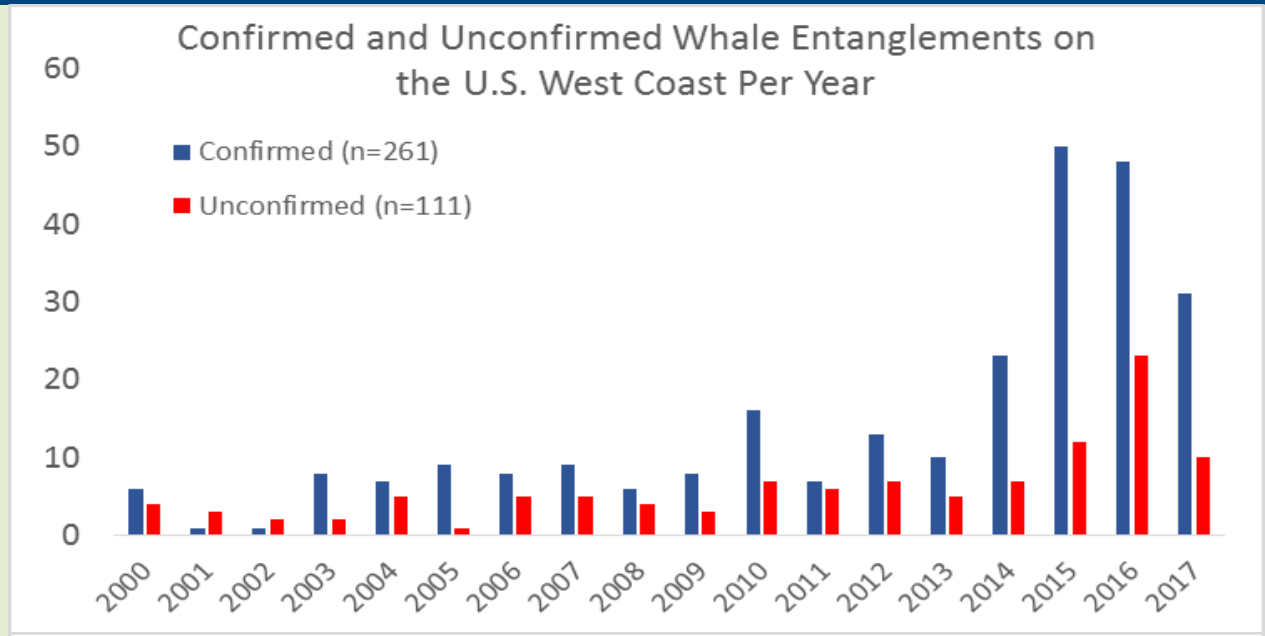
- Summary of West Coast large whale entanglements in fishing gear
- What we know and don't know about entanglements
- NMFS efforts to address increase of entanglements

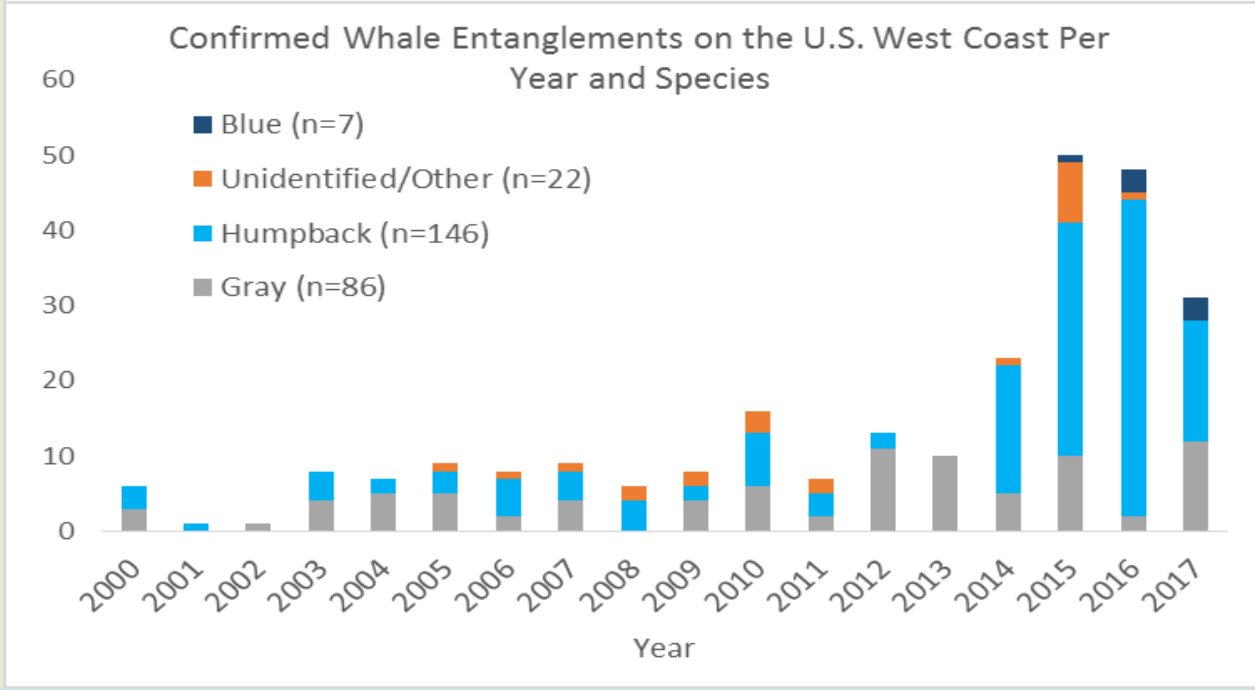
**Oregon's recent efforts to address increasing entanglements**

- Summary of working group efforts
- Whales and crab fishing effort off Oregon
- Options to increase what we know about entanglements in fishing gear
- Management options to reduce risk

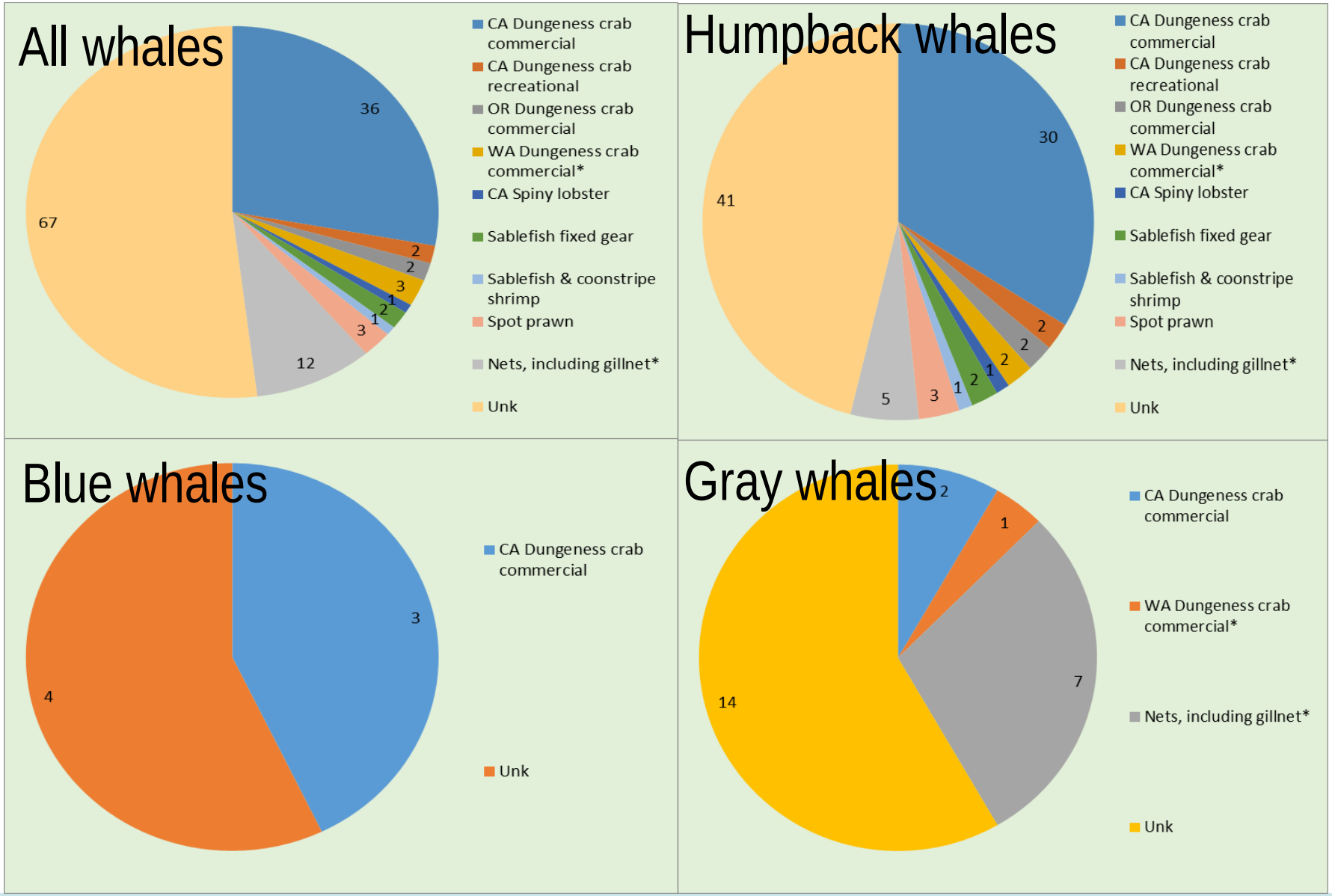
# WCR Whale Entanglements

- Dramatic increase in reports since 2014
- Driven by humpback whales, but now including blue whales
- High demand for updates and evaluation of incoming data
- Quality of reporting improving



# Sources of Confirmed Whale Entanglements 2015-2017



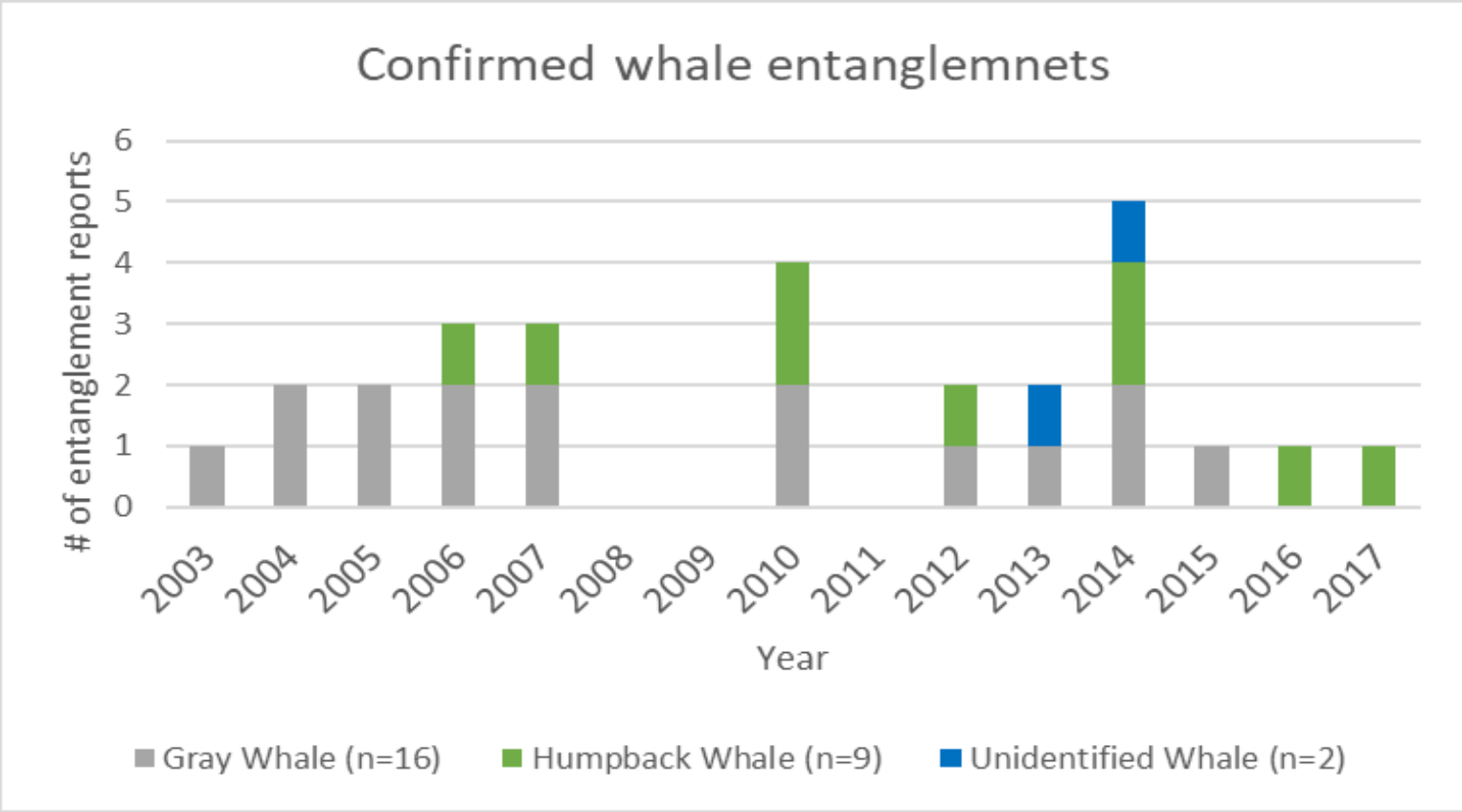
# 2018 summary

****considered preliminary, data through 9/27/2018****

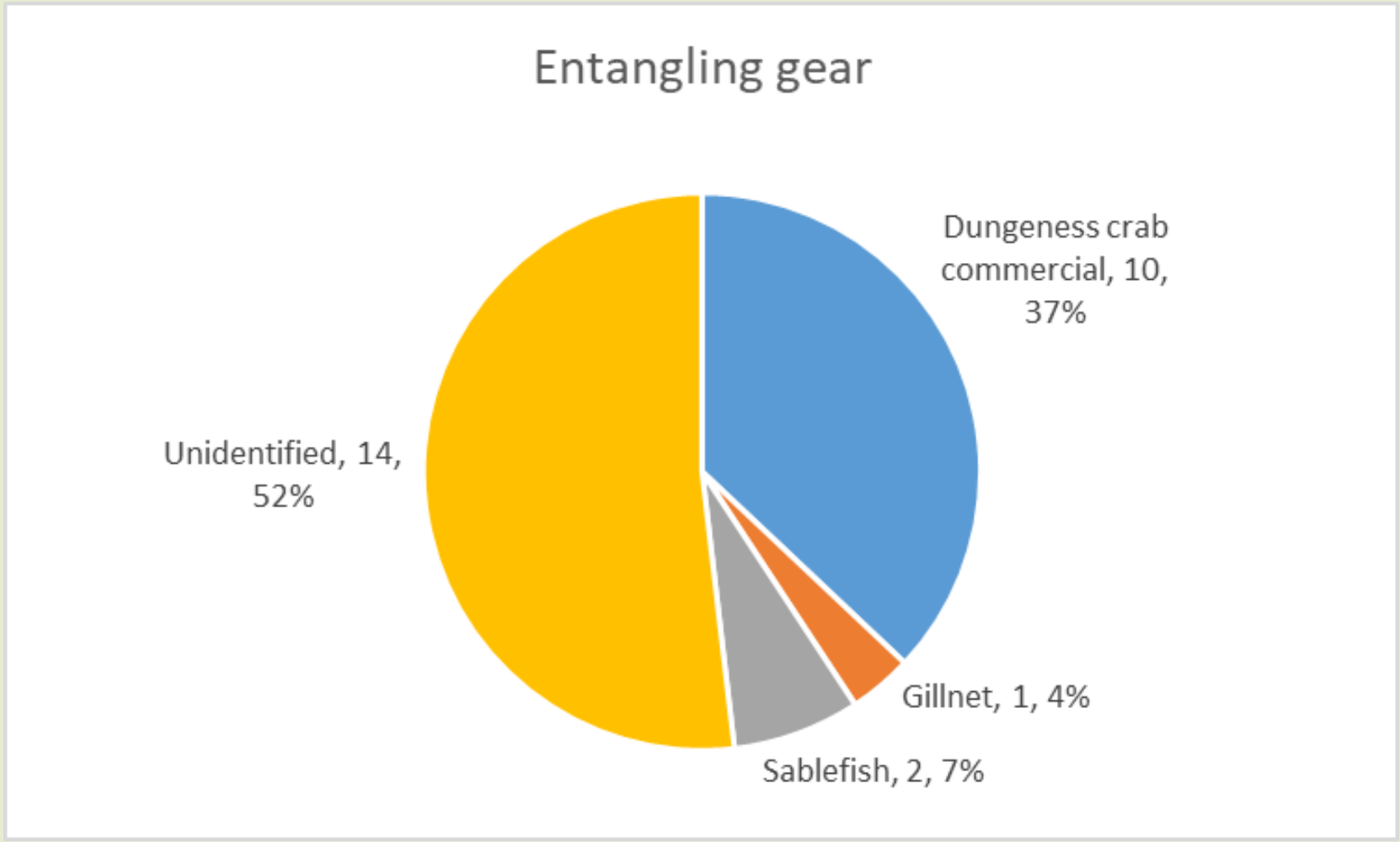
- **37 confirmed entangled whales, 45 total reports**
  - Gray whales: 11 confirmed, 13 total
  - Humpback whales: 25 confirmed, 28 total
  - Fin whale: 1 confirmed, 1 total
  - Unidentified: 0 confirmed, 2 total
  - Blue: 0 confirmed, 1 total
- **Confirmed fisheries associated with entanglements: 20 reports**
  - Commercial Dungeness crab: 12 total
    - 5 CDFW (5 humpback)
    - 4 WDFW (3 gray whales, 1 humpback whale)
    - 1 ODFW (1 gray whale)
    - 1 WA tribal (1 humpback whale)
    - 1 tag seen, undetermined shape (color consistent with CA and WA, on 1 humpback whale)
  - CA recreational spot prawn (1 humpback whale)
  - Gillnet: 7 (3 gray whales, 4 humpback whale)
- **Reporting location**
  - California: 21 confirmed reports, 4 unconfirmed reports, 25 total reports
  - Washington: 12 confirmed reports, 2 unconfirmed, 14 total reports
  - Oregon: 3 confirmed reports, 2 unconfirmed reports, 5 total reports
  - Mexico: 1 confirmed report (dead humpback with gear from CA)

# Whale Entanglement Reports in Oregon

- 1995-2017: 31 total reports, 27 confirmed
- First report: 2003
- Primarily gray (16) and humpback (9) whales



# Confirmed Gear Types on Entanglements Reported in Oregon since 2003

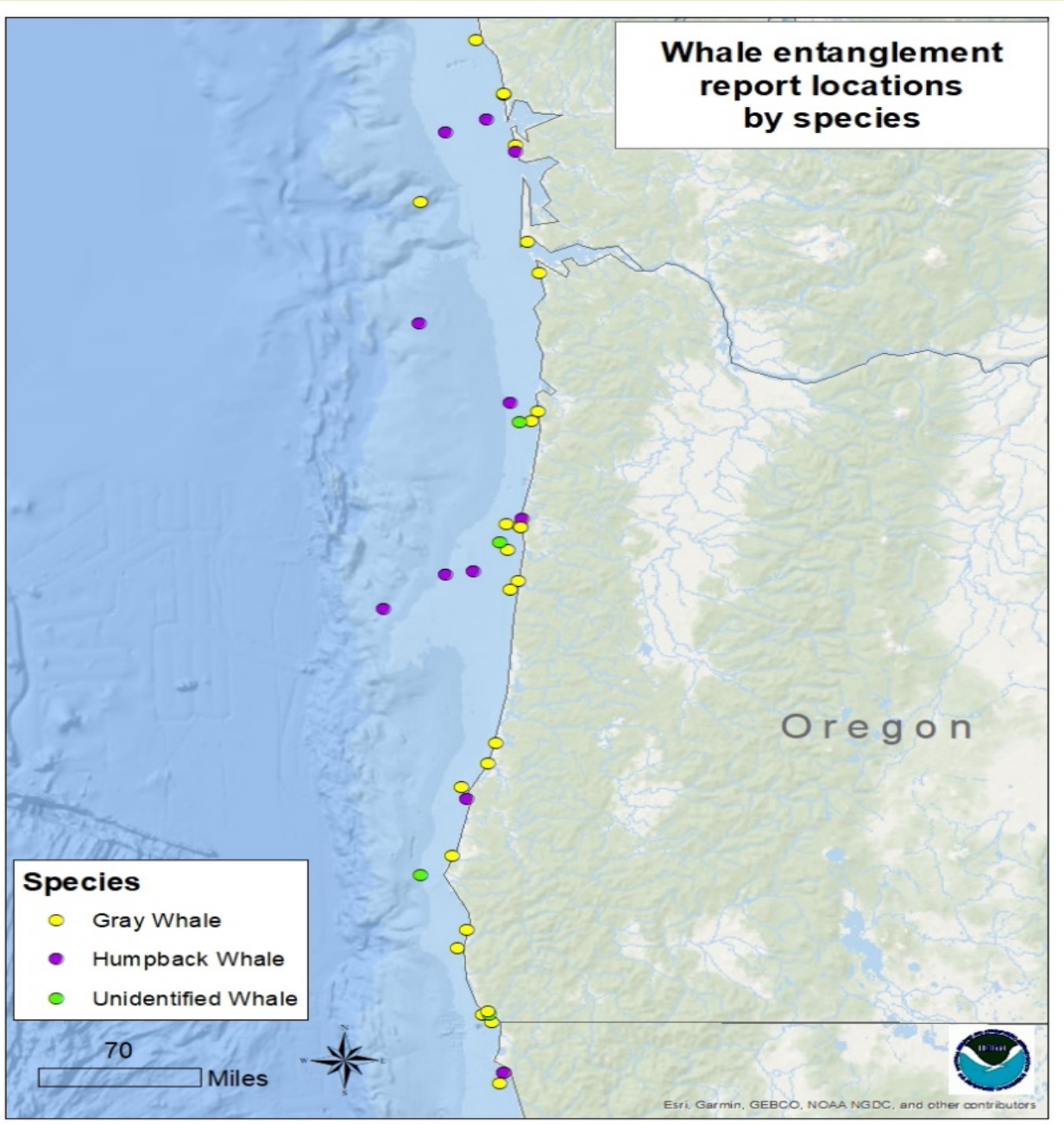


# Entanglements Confirmed in Oregon Dungeness Crab Gear

| Date | Species | Report location |
|---|---|---|
| April 20, 2003 | Gray whale | Oregon |
| May 14, 2006 | Gray whale | Oregon |
| August 17, 2010 | Gray whale | Northern CA |
| August 31, 2010 | Humpback whale | Oregon (OR + WA gear) |
| May 11, 2012 | Gray whale | Central CA (OR + CA gear) |
| May 19, 2012 | Gray whale | Oregon |
| May 6, 2014 | Humpback whale | Washington |
| July 3, 2015 | Humpback whale | Central CA |
| September 25, 2015 | Humpback whale | Southern CA |
| April 13, 2018 | Gray whale | Washington |

# Distribution of Entanglement Reports in Oregon and Surrounding Area by Species

1995-2017



# What we think is going on

- Complex relationship between whale distribution/abundance/behavior, environmental variability/prey distribution, fishing effort distribution, public awareness
- Better documentation and increasing response has **increased ability to identify gear (along with trap tags)**, but still limited
- **Trap/pot fisheries** identified as the majority entangling gear (when known); Dungeness crab fishery = large co-occurrence
- Whales are getting entangled every way possible, in all types/colors/arrangements of gear – not likely to be easy fix

# Priorities for Addressing Information Needs

Entanglement Data

- Knowing the total # of entanglements that occur (unobserved)
- Identifying entanglement origins (fishery, locations, timing)

Whale data

- Precise understanding of seasonal/annual variability in whale presence and abundance along the west coast, including factors that influence that variability

Fishery Data

- Precisely where and when (spatial and temporal) crab gear is distributed across the west coast, along with factors that influence variability
- Knowledge of how crab gear is configured across the west coast
- General knowledge of recreational crab fishery

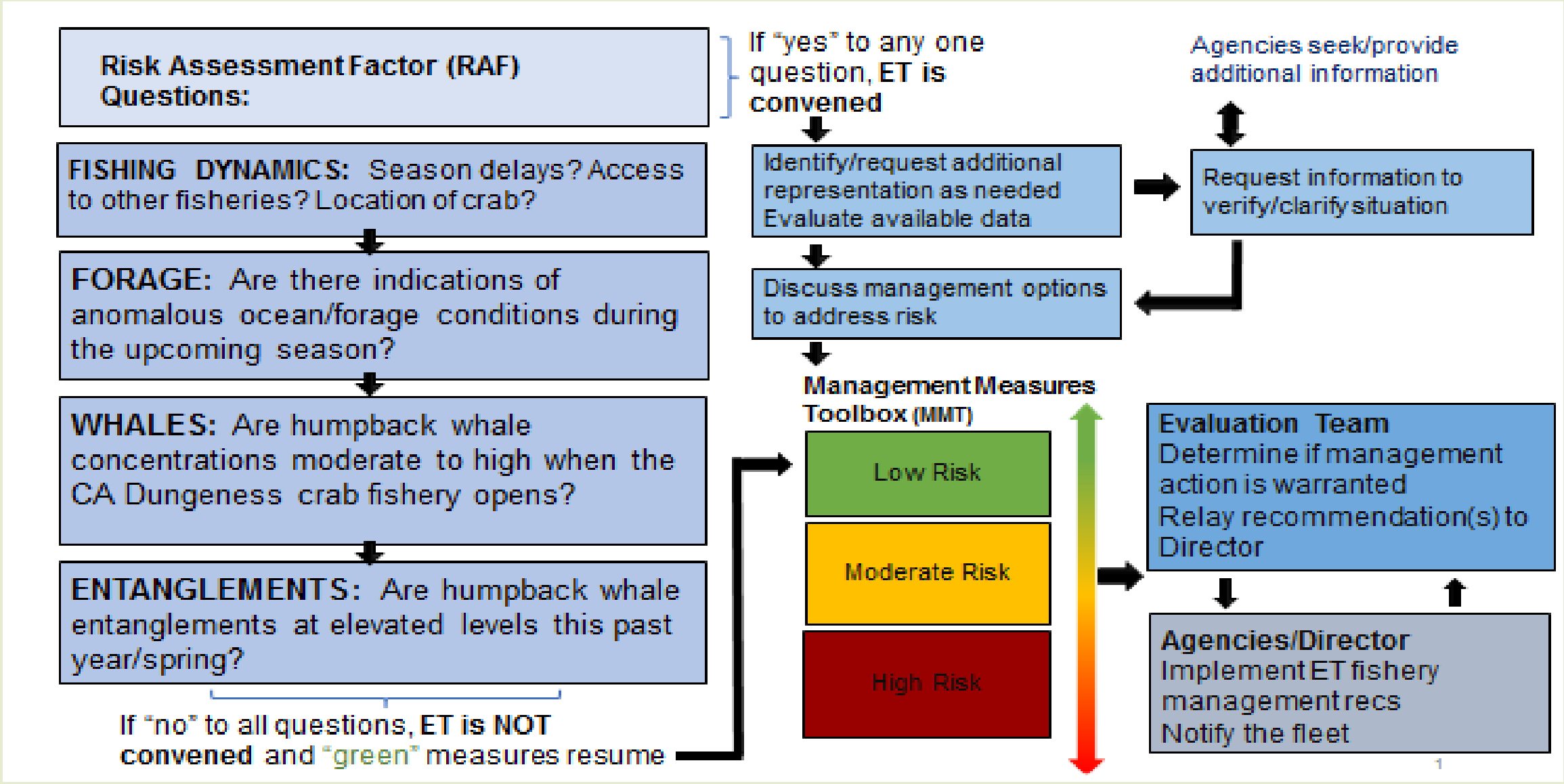
# What Other Issues Are Entanglements Creating?

- Management under MMPA – Potential Biological Removal
  - for CA/OR/WA humpback whales is 16.7 seriously injured or killed per year (entanglements alone essentially = PBR);
  - CA/OR/WA blue whales is 2.3 seriously injured or killed per year (entanglements = 0.96);
  - Pacific Coast Feeding Group gray whales is 3.5 seriously injured or killed (entanglements = .95)
- Humpback and blue whales are protected by the ESA
- Public perception of entanglements and associated fisheries is unpopular – market concerns
- Increased pressure on disentanglement response – inherently dangerous and not a solution

# What are we doing?

- **Extensive outreach** on the entanglement issue across the west coast; entanglement response trainings
- **Supporting initiatives** such as the California Dungeness crab Whale Entanglement Working Group (started in 2015)
  - Develop recommendations for industry and management (e.g. Best Practices Guide)
  - RAMP
- **Review/analysis of whale entanglement documentation**
  - Enhanced data collection and  analysis of entanglement reports
  - Forensic Review Workshop
- Working to **provide/facilitate scientific expertise and developing tools** that can be used by industry, States, others, to help understand and address this issue
- **Funding** (BREP, ESA Section 6 grants)

# CA Risk Assessment and Mitigation Program



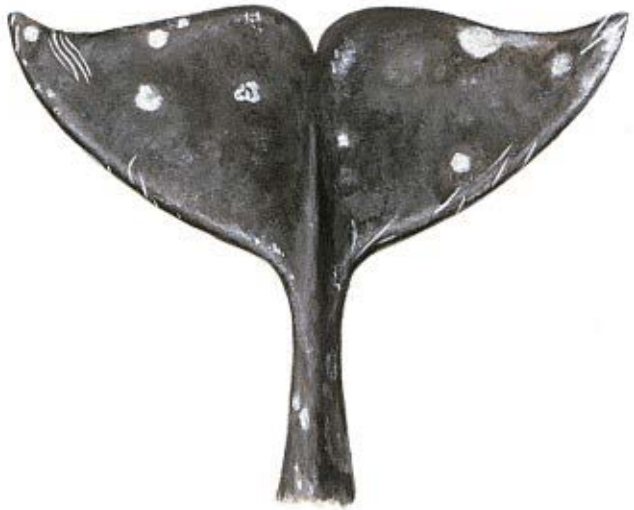
# Oregon Whale Working Group

**Initiated** – requested by Oregon fishermen and convened by Oregon Sea Grant in May 2017.

**Participants** – 2 facilitators, 10 fishermen, marine mammal, disentanglement response and fishing gear experts, ODCC, WCSPA, NGO's, ODFW

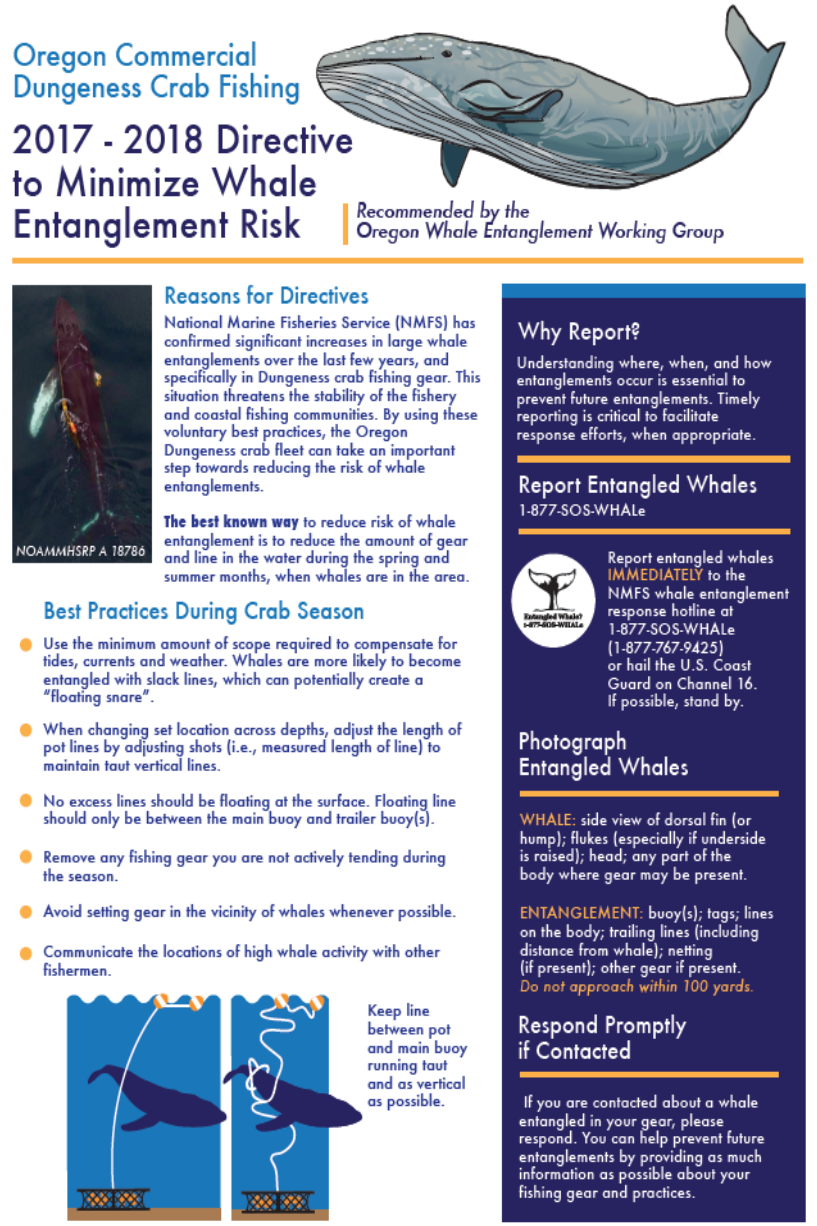
**Meetings** – 8 to-date, held in Coos Bay and Newport

**Primary goal** - develop short- and long-term options for reducing the risk of whale entanglements in Dungeness crab and other fixed gear to ensure thriving and resilient fisheries in Oregon and along the entire west coast.



# Oregon Whale Working Group

- Gained a better understanding of the issue and identified information gaps;
- Developed an Oregon Dungeness Crab Best Practices Directive to provide industry with best known Dungeness crab fishing practices to reduce interactions with whales;
- Helped distribute information on who to call to report entangled whales (1-877-SOS-WHALe);
- Developed range of management options to reduce risk of whale and gear interactions;
- Surveyed OR fleet for input on knowledge and concern for whale entanglement issue, Best Practices Directive and possible management options to reduce entanglement risk;
- **Developing recommendations for more research and enhanced gear markings to learn more about entanglements and recommendations for management options to reduce risk.**



Oregon Commercial Dungeness Crab Fishing

2017 - 2018 Directive to Minimize Whale Entanglement Risk

*Recommended by the Oregon Whale Entanglement Working Group*

NOAAMMHSRP A 18786

**Reasons for Directives**

National Marine Fisheries Service (NMFS) has confirmed significant increases in large whale entanglements over the last few years, and specifically in Dungeness crab fishing gear. This situation threatens the stability of the fishery and coastal fishing communities. By using these voluntary best practices, the Oregon Dungeness crab fleet can take an important step towards reducing the risk of whale entanglements.

**The best known way** to reduce risk of whale entanglement is to reduce the amount of gear and line in the water during the spring and summer months, when whales are in the area.

**Best Practices During Crab Season**

- Use the minimum amount of scope required to compensate for tides, currents and weather. Whales are more likely to become entangled with slack lines, which can potentially create a "floating snare".
- When changing set location across depths, adjust the length of pot lines by adjusting shots (i.e., measured length of line) to maintain taut vertical lines.
- No excess lines should be floating at the surface. Floating line should only be between the main buoy and trailer buoy(s).
- Remove any fishing gear you are not actively tending during the season.
- Avoid setting gear in the vicinity of whales whenever possible.
- Communicate the locations of high whale activity with other fishermen.

Keep line between pot and main buoy running taut and as vertical as possible.

**Why Report?**

Understanding where, when, and how entanglements occur is essential to prevent future entanglements. Timely reporting is critical to facilitate response efforts, when appropriate.

**Report Entangled Whales**

1-877-SOS-WHALe

Report entangled whales IMMEDIATELY to the NMFS whale entanglement response hotline at 1-877-SOS-WHALe (1-877-767-9425) or hail the U.S. Coast Guard on Channel 16. If possible, stand by.

**Photograph Entangled Whales**

WHALE: side view of dorsal fin (or hump); flukes (especially if underside is raised); head; any part of the body where gear may be present.

ENTANGLEMENT: buoy(s); tags; lines on the body; trailing lines (including distance from whale); netting (if present); other gear if present. *Do not approach within 100 yards.*

**Respond Promptly if Contacted**

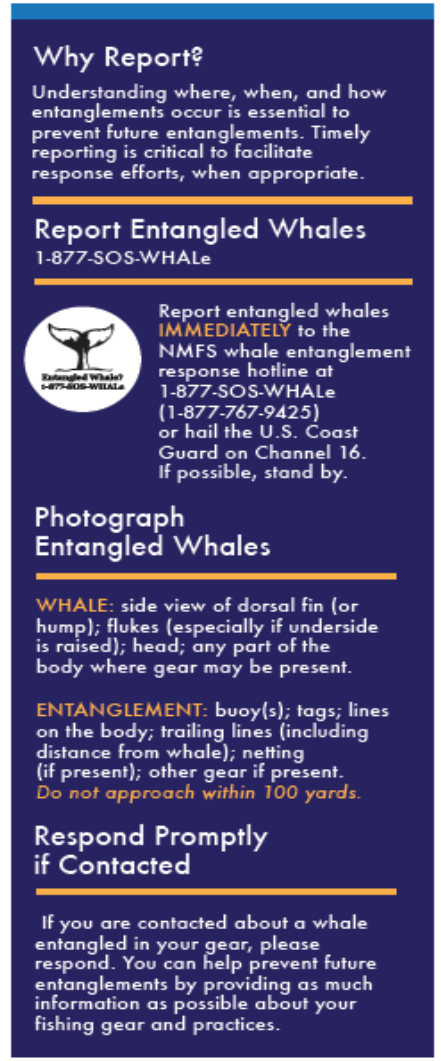
If you are contacted about a whale entangled in your gear, please respond. You can help prevent future entanglements by providing as much information as possible about your fishing gear and practices.

# Options to increase what we know about entanglements and whales off Oregon

1. **Improve gear markings**
- Double sided buoy tags
- Registration of buoy color patterns
- Recreational crab gear marking requirement
- Line markings – coordinated across states and federal fisheries

2. **Increase awareness to report entanglements and what information to report**
- Distribute during hold inspections and with new logbooks

3. **Increase finer scale whale distribution information off OR**
- Identify hotspots for more adaptive management



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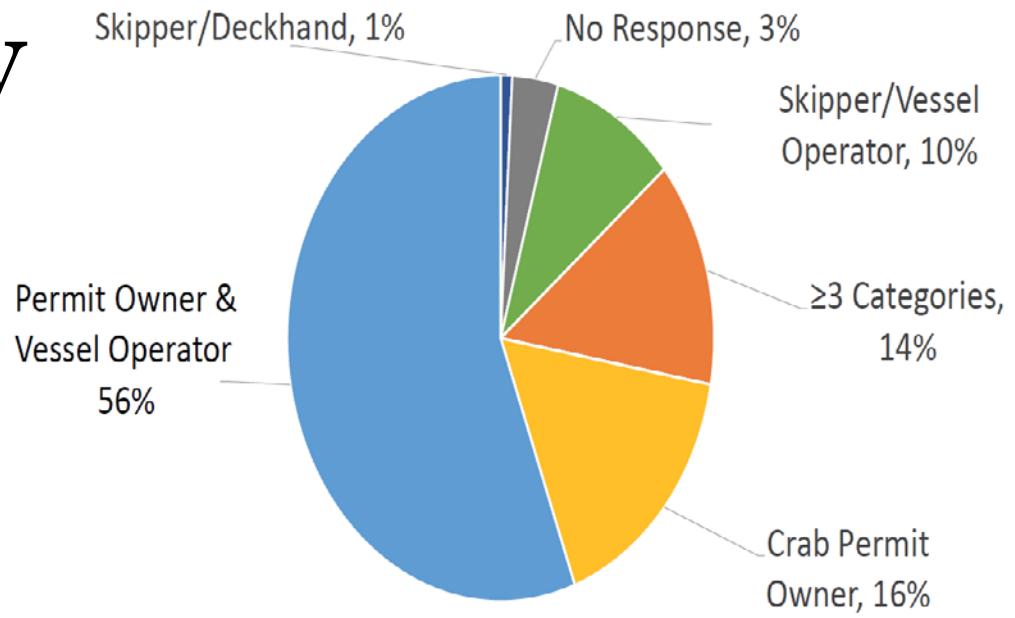
# Working Group Survey

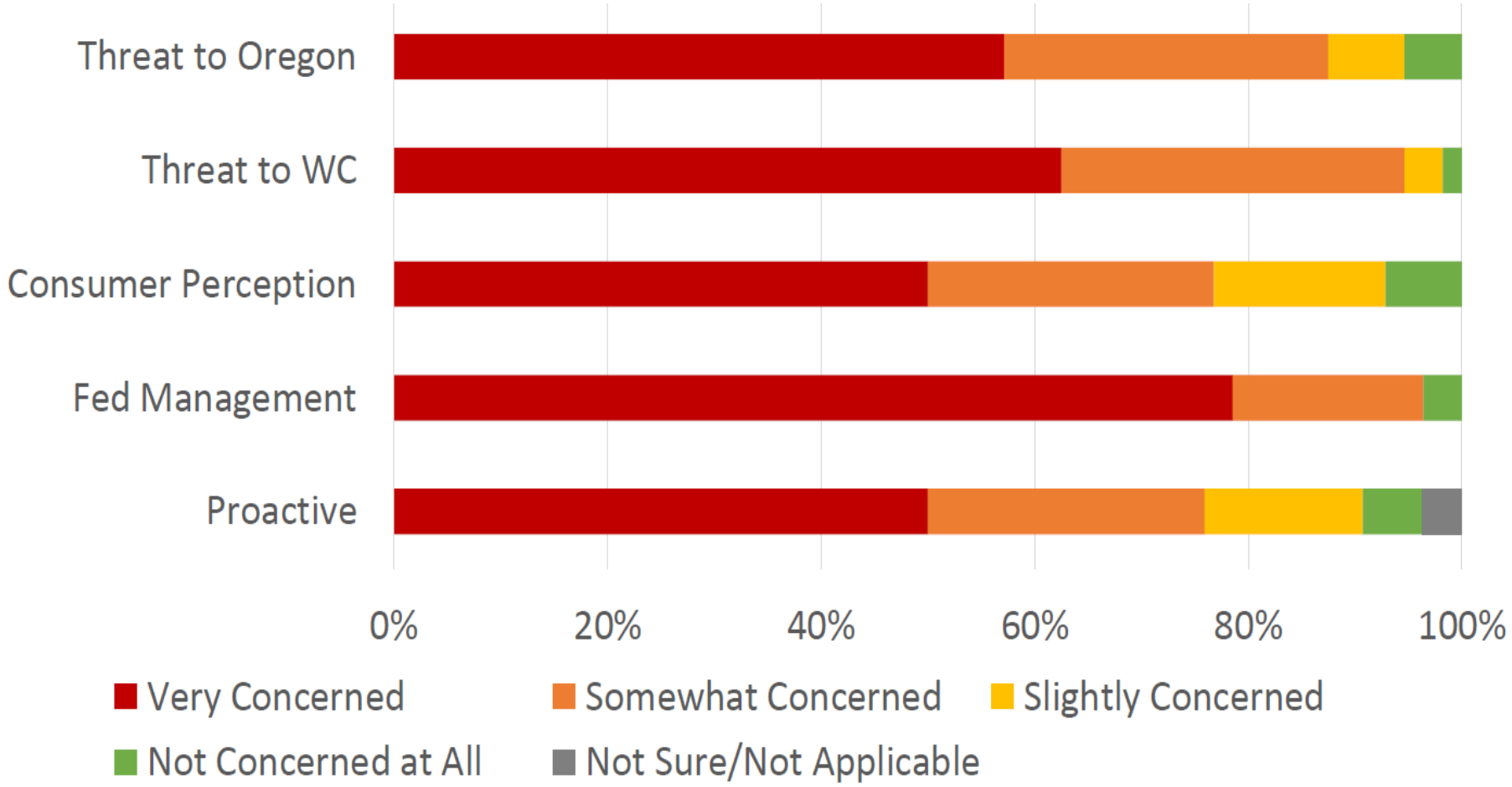
## Gathered input from the fleet on:

1. Concern about entanglements
2. Best Practices Directive
3. Management options to reduce risk

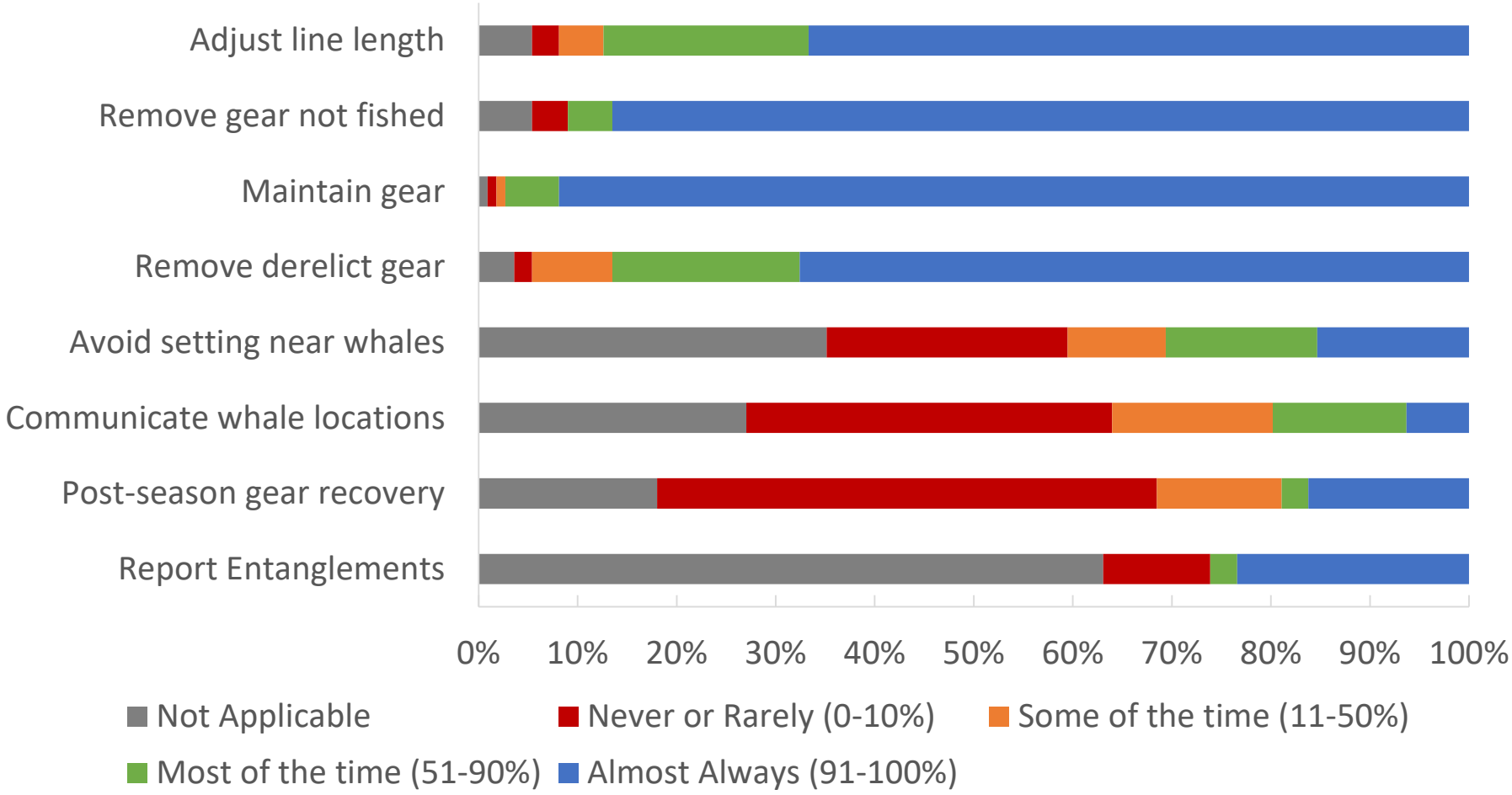



- Mailed 424 (Dec) and 344 (May) surveys
- Received 111 responses
- Response rate = 26.2% (of 424 permits)
- 151 permits represented (36% of permits)
- Good representative sample of the fleet by pot limit, vessel size, months fished

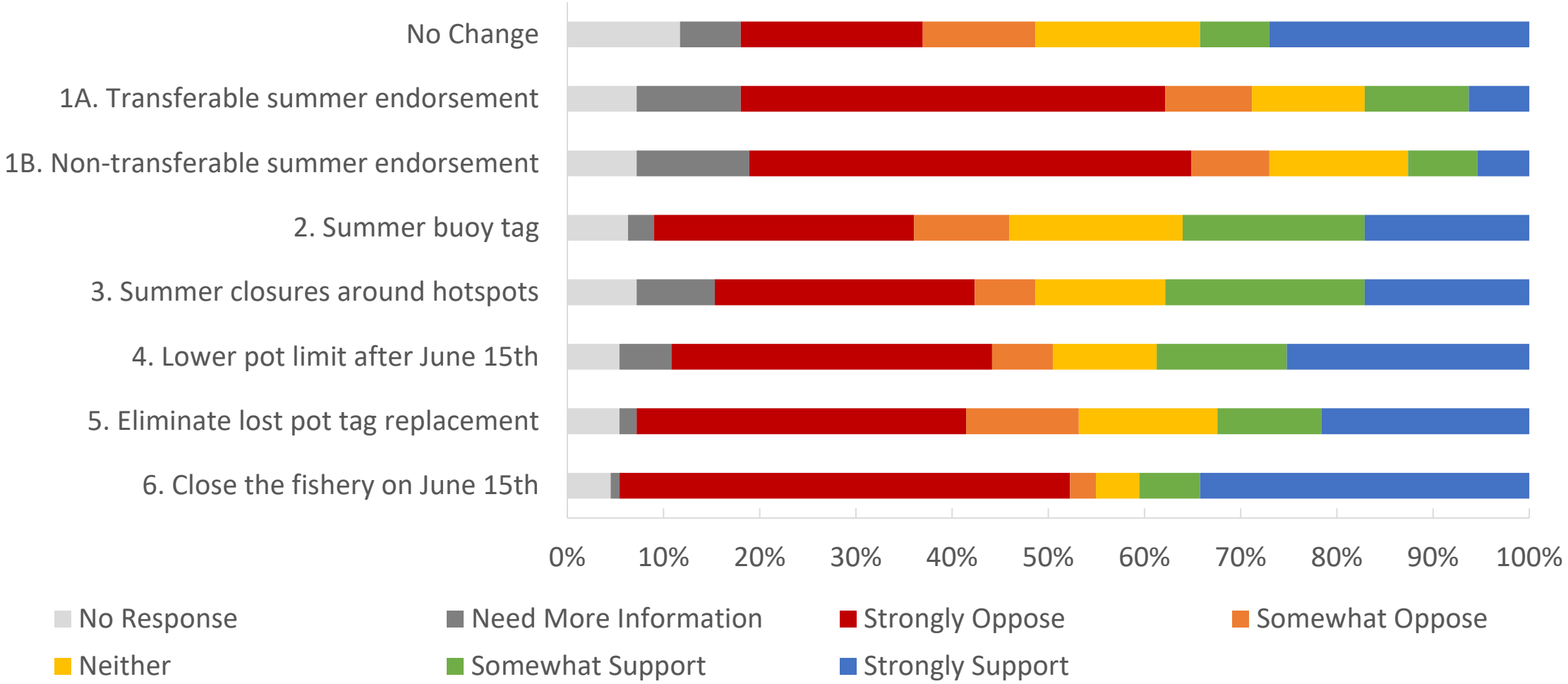
# Survey result - Lots of concern about entanglements in Oregon!



# Survey result - The fleet is following many best practices to help avoid entanglements! Some areas for improvement and clarification.



# Survey Result - The fleet is very divided on many of the proposed options. WE need more input!



# Whales off Oregon

| | Gray Whale Eastern North Pacific Stock | Gray Whale Pacific Coast Feeding Group | Humpback WA/OR/CA Stock | Blue Eastern North Pacific Stock |
|---|---|---|---|---|
| **Population trend** | increasing* | increasing* | leveling off* | stable |
| **Population status** | delisted 1994 | No formal status | **Endangered/ Threatened** | **Endangered** |
| **Primary activity** | migrating | feeding | feeding | feeding |
| **Known hotspots** | migratory corridors by distance from shore coastwide | coastal reef habitats off central and southern regions | Stonewall and Heceta Banks | none identified |
| **Peak timing** | **Northbound -** late Jan-Jul, peak Apr-Jul<br><br>**Southbound** - Oct-Dec, peak in Dec-Mar | Jun-Nov | May-Nov | Jun-Nov |
| **Area utilized** | frequently within 2.5-5nm from shore | frequently within 2 nm of shore | most commonly inside 100 fa | typically on shelf |
| **Prey** | na | epibenthic zooplankton, benthic crustaceans | krill and anchovy | krill |

# Management Options to Reduce Risk

| | | Reduce Risk | Minimize economic impact | Equitable fleet wide | Logistics | Industry survey support |
|---|---|---|---|---|---|---|
| 1A | Transferrable summer endorsement | | | | | |
| 1B | Non-transferrable summer endorsement | | | | | |
| 2 | Summer buoy tags | | | | | |
| 3 | Summer closures around hotspots | | | | | |
| 4 | Lower pot limit after June 15th | | | | | |
| 5 | Eliminate lost pot tag replacement | | | | | |
| 6 | Close fishery on June 15th | | | | | |
| 7 | Minimize surface gear | | | | | |
| 8 | Longline | | | | | |

low/poor/unlikely | medium/fair/likely | high/good/highly likely

# 1. Summer Fishery Endorsement

**Potential to reduce risk**

- Limits permits/amount of gear able to participate in the highest risk part of the season (i.e. caps potential effort);
- Non-transferrable - reduce future participation through attrition

**Tradeoffs**

- Immediate future status quo gear lines in the water;
- If transferable, could increase immediate effort in the higher risk times of the season to 'qualify' for endorsement or future effort if there were measures added to require landings to maintain endorsement.

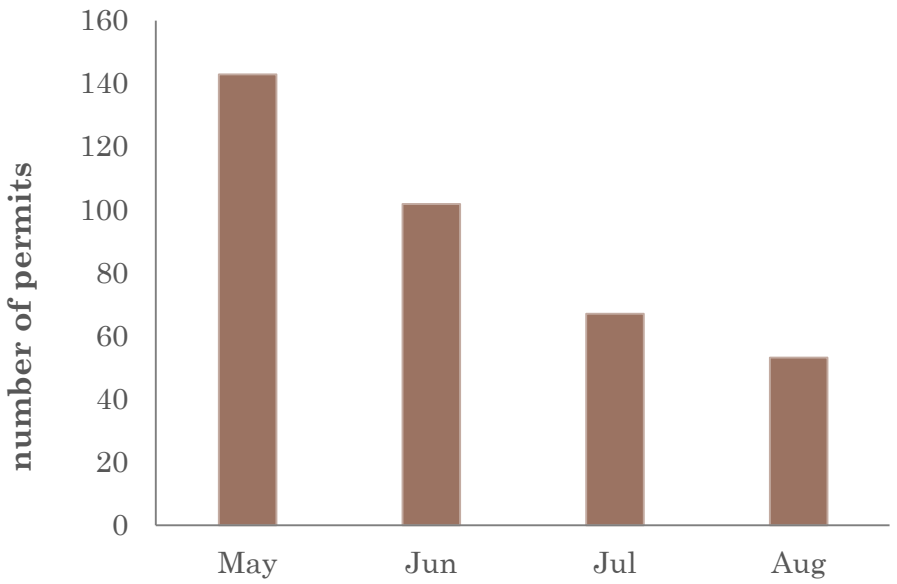
**Summary of survey feedback**

*1A. Transferrable Summer Endorsement*

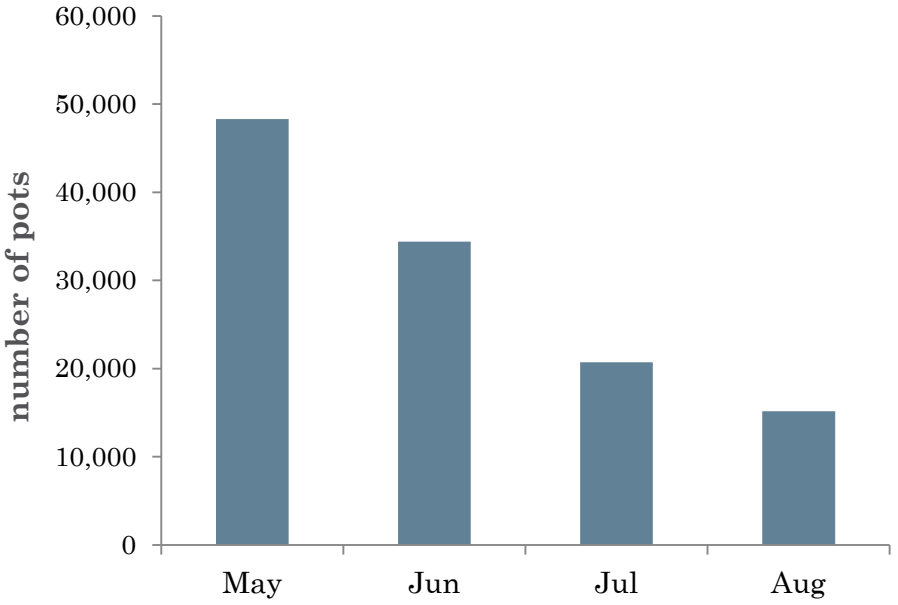
| Opinion | Proportion of Total Responses |
|---|---|
| NR or Need more Info | 18.02% |
| Oppose | 53.15% |
| Neither | 11.71% |
| Support | 17.12% |

*1B. Non-Transferrable Summer Endorsement*

| Opinion | Proportion of Total Responses |
|---|---|
| NR or Need more Info | 18.92% |
| Oppose | 54.05% |
| Neither | 14.41% |
| Support | 12.61% |




**12 season average**



# 2. Summer buoy tags

**Potential to reduce risk**

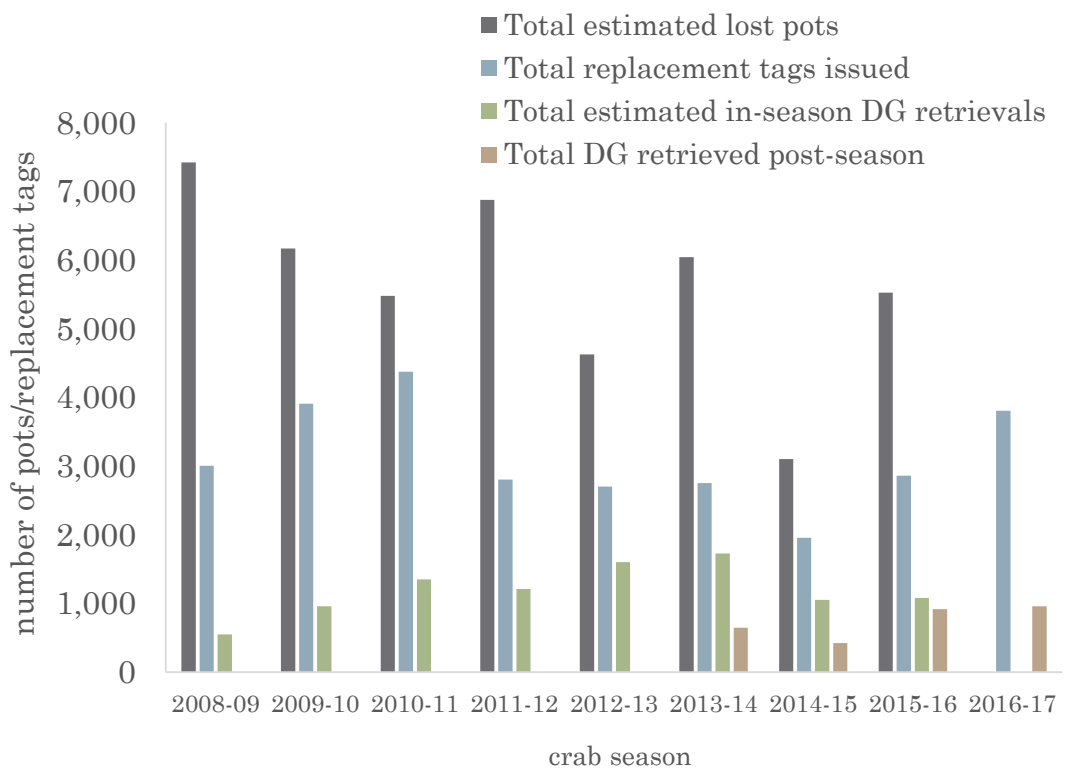
- Encourages vessels to get gear out of the water earlier so they wouldn't have to deal with summer tagging of their gear;
- Potential to facilitate earlier and longer post season derelict gear retrieval.

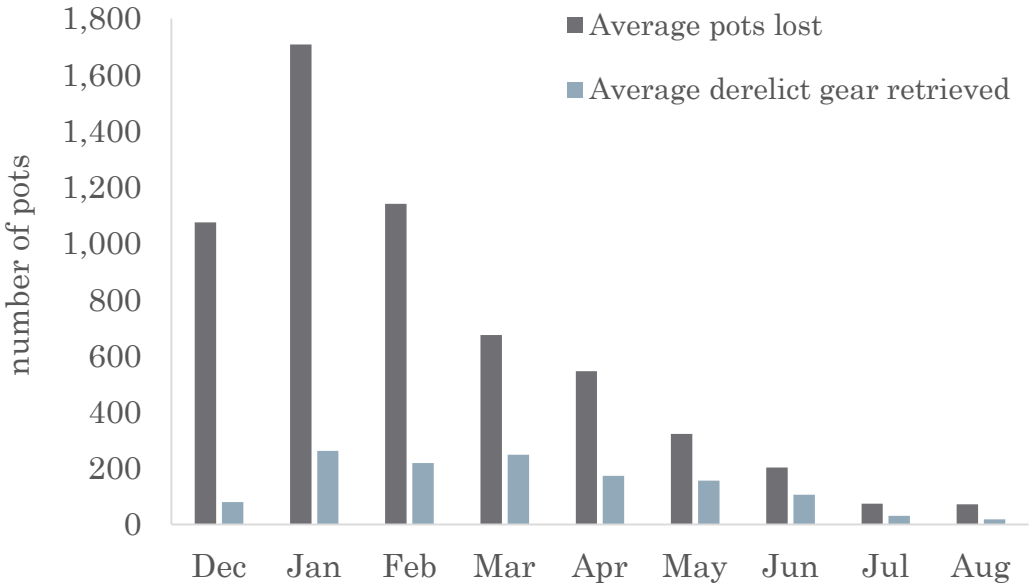
**Tradeoffs**

- Standalone, might not reduce gear in water now or cap potential effort

**Summary of survey feedback**

| Opinion | Proportion of Total Responses |
|---|---|
| NR or need more info | 9.01% |
| Oppose | 36.94% |
| Neither | 18.02% |
| Support | 36.04% |



# 3. Summer closures around hotspots

**Potential to reduce risk**

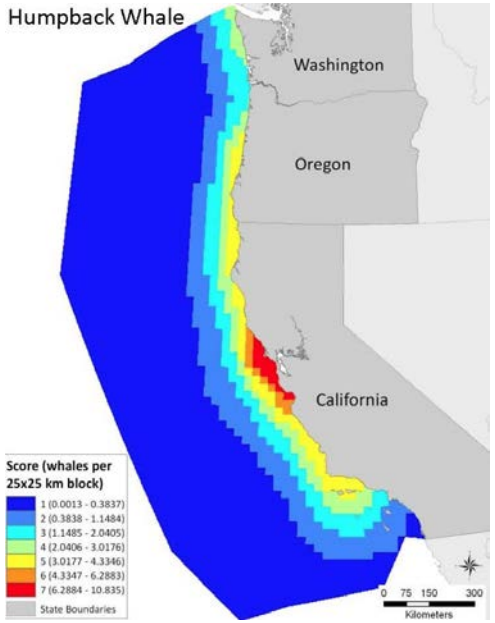
- Removal of gear from areas of elevated risk
- Allow for maximum harvest while trying to minimize mgmt. actions to areas of highest risk

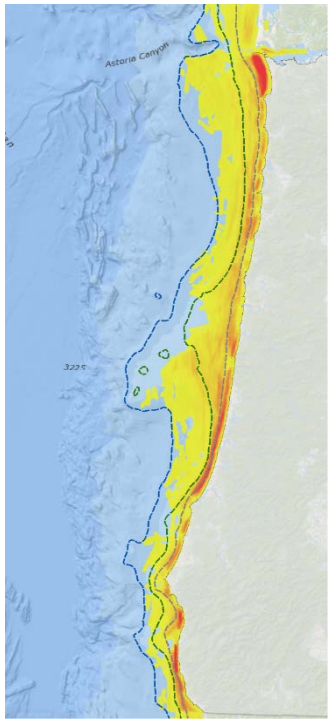
**Tradeoffs**

- Very limited whale distribution data off Oregon to inform effective placement for in-season management
- Significantly increases management complexity

**Summary of survey feedback**

| Opinion | Proportion of Total Responses |
|---|---|
| No response or Need more Info | 15.32% |
| Oppose | 33.33% |
| Neither | 13.51% |
| Support | 37.84% |



whale distribution + fishing effort = elevated risk hotspots

# 4. Lower pot limit after June 15th

**Potential to reduce risk**

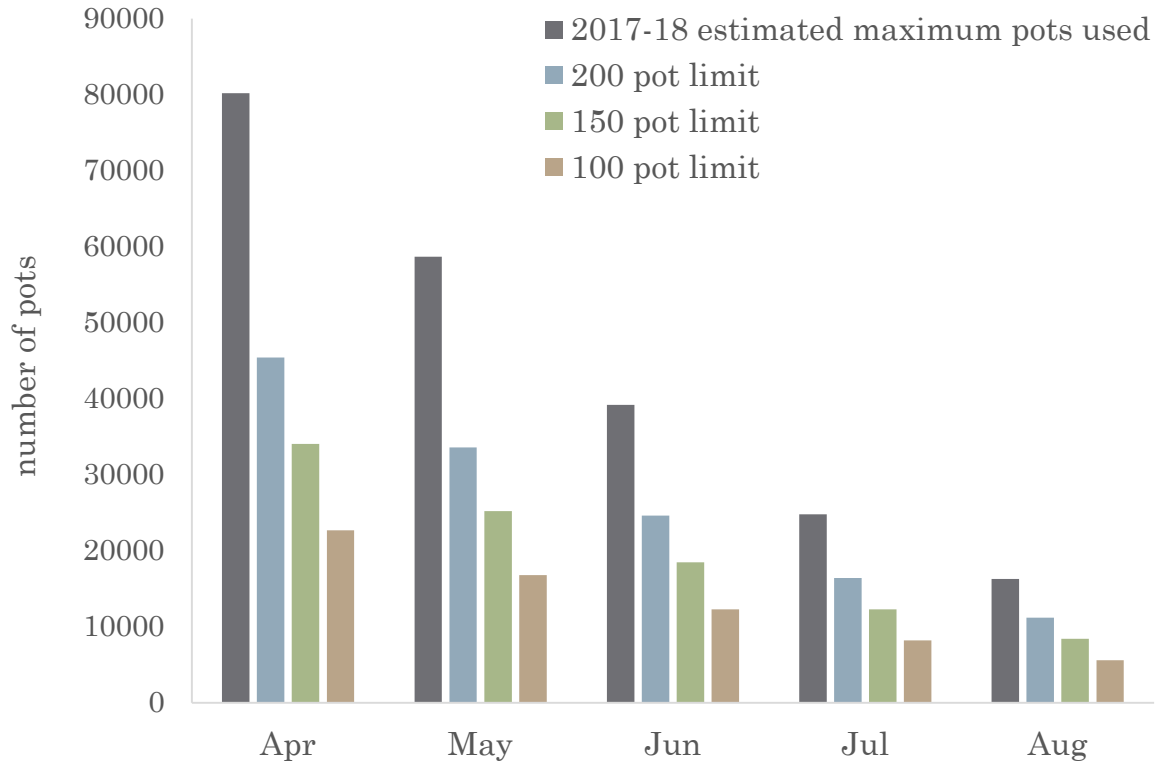
- Reduces active and allowable gear in higher risk time of season
- Minimizes economic impact and lost harvest opportunity

**Tradeoffs**

- Unknown economic impact
- Enforcement likely would require summer buoy tag

**Summary of survey feedback**

| Opinion | Proportion of Total Responses |
|---|---|
| NR or Need more Info | 10.81% |
| Oppose | 39.64% |
| Neither | 10.81% |
| Support | 38.74% |



# 5. Eliminate lost pot tag replacement

**Potential to reduce risk**

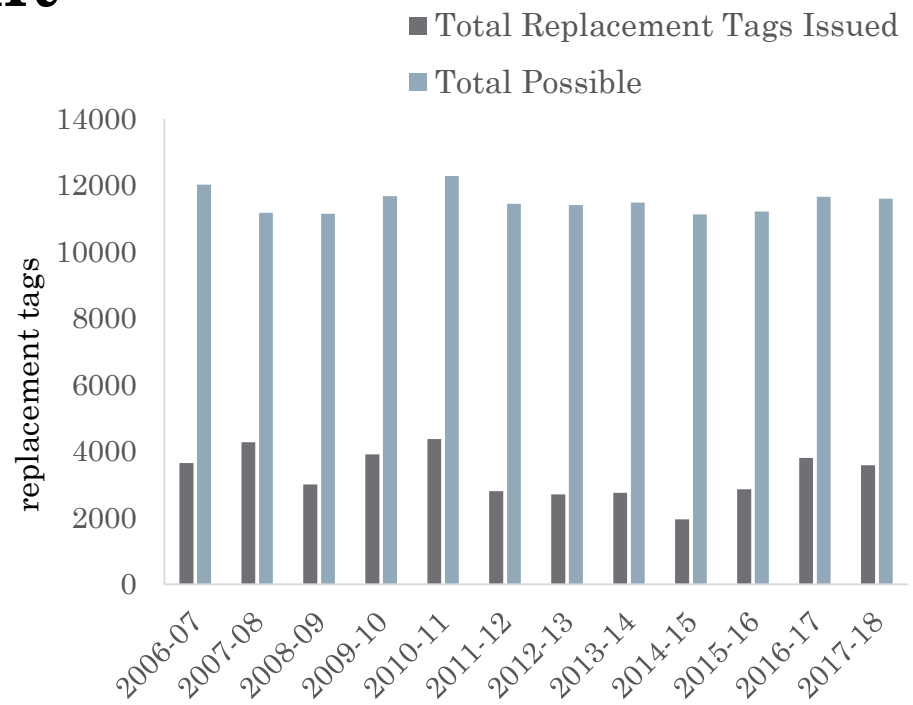
- Eliminates potential for additional 10% of total pots in the fleet from being utilized in the fishery
- Equitable impact to all sectors of the fleet
- Improve fleet's efforts to avoid pot loss and potential to increase efforts to recover gear in-season

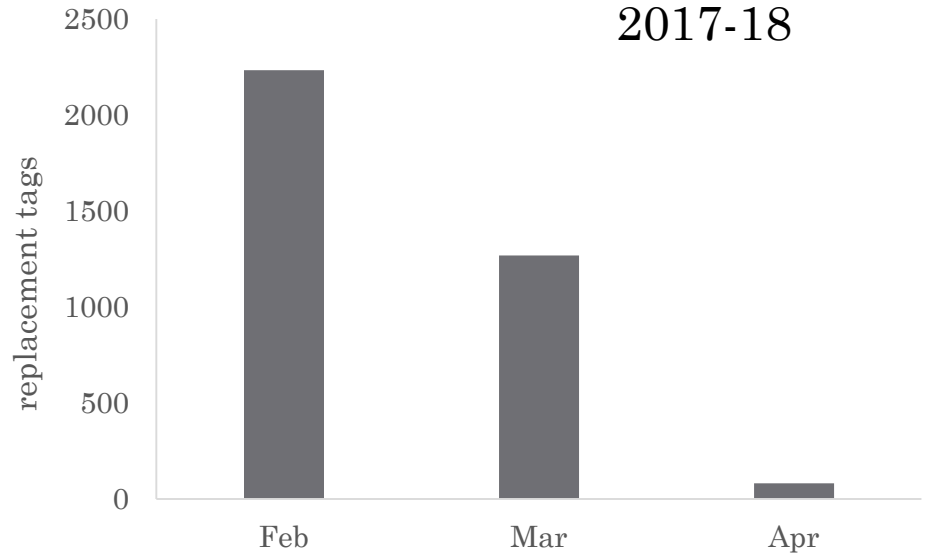
**Tradeoffs**

- Potential to decrease efficiency in the early season with lower entanglement risk and may encourage some to fish longer into the season

**Summary of survey feedback**

| Opinion | Proportion of Total Responses |
|---|---|
| NR or Need more Info | 7.21% |
| Oppose | 45.95% |
| Neither | 14.41% |
| Support | 32.43% |



# 6. Close Fishery on June 15th

**Potential to reduce risk**

- Removes gear in higher risk times of the season
- Lengthens time allowed for post-season derelict gear program to remove more gear

**Tradeoffs**

- Inequitable impacts on different sectors of the fleet
- Reduces access to the resource
- Reduces suite of alternative fisheries during spring/summer months
- Reduces availability of live crab for local markets

**Summary of survey feedback**

| Opinion | Proportion of Total Responses |
|---|---|
| NR or Need more Info | 5.41% |
| Oppose | 49.55% |
| Neither | 4.50% |
| Support | 40.54% |

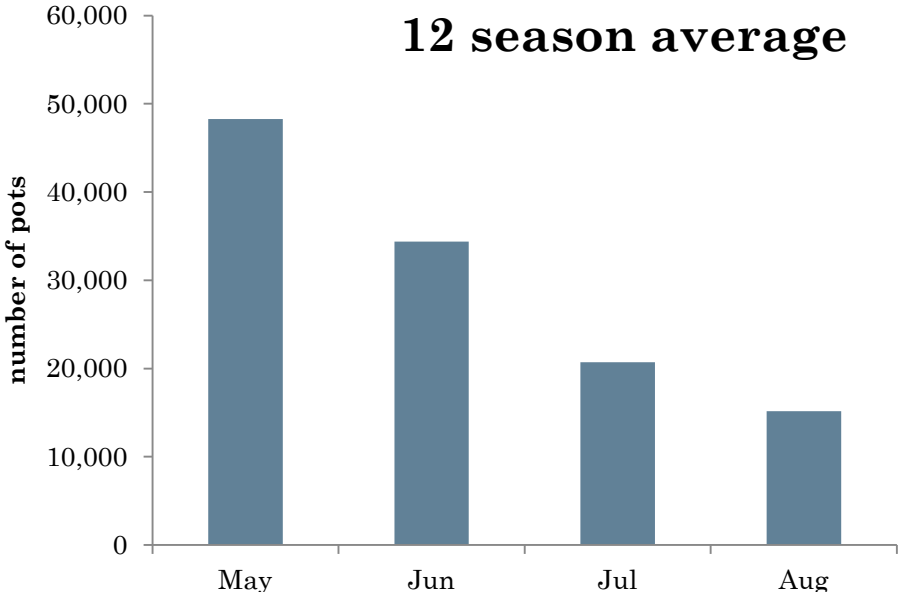
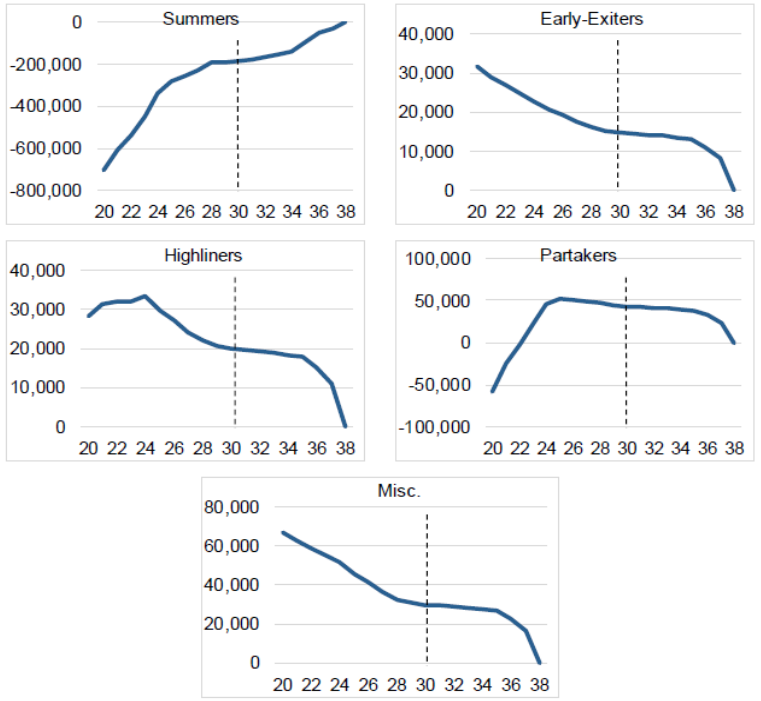



Figure XI.3
Profitability Impacts by Vessel Classifications for Early Season Closure



# 7. Limit Surface Gear

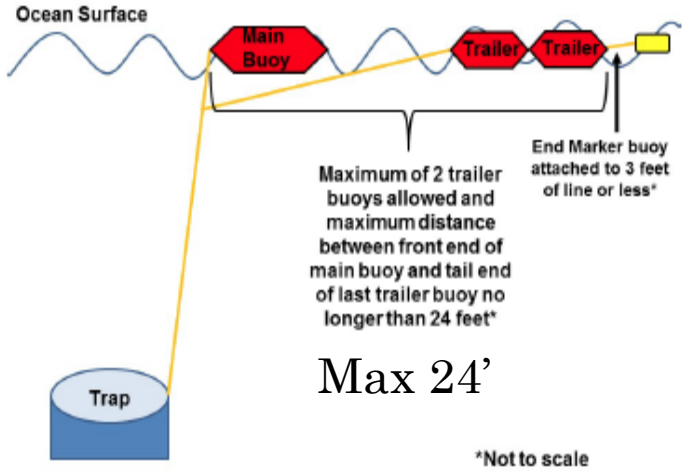
**Potential to reduce risk**

- Minimizes part of gear that has been found in some gear recovered from whales that have been disentangled

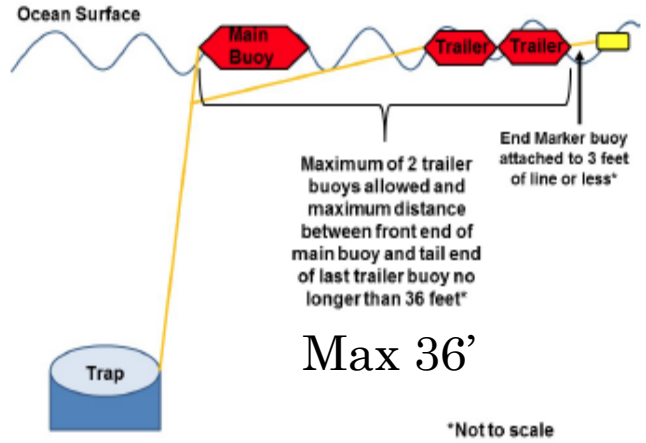
**Trade-offs**

- Status quo number of vertical lines in the water
- Unclear if significant contribution to entanglements
- Might have minimal impact if most of the fleet in within limits already

**At Depths ≤35 fathoms**




**At Depths >35 fathoms**




**<u>Working Group Preliminary Recommendation</u>**

- Gear modification remains an important area for exploration and research
- Currently not enough information to recommend specific gear modification(s)
- Collaborate with the other states
- Involve fishermen in future forensic reviews in real time to learn more

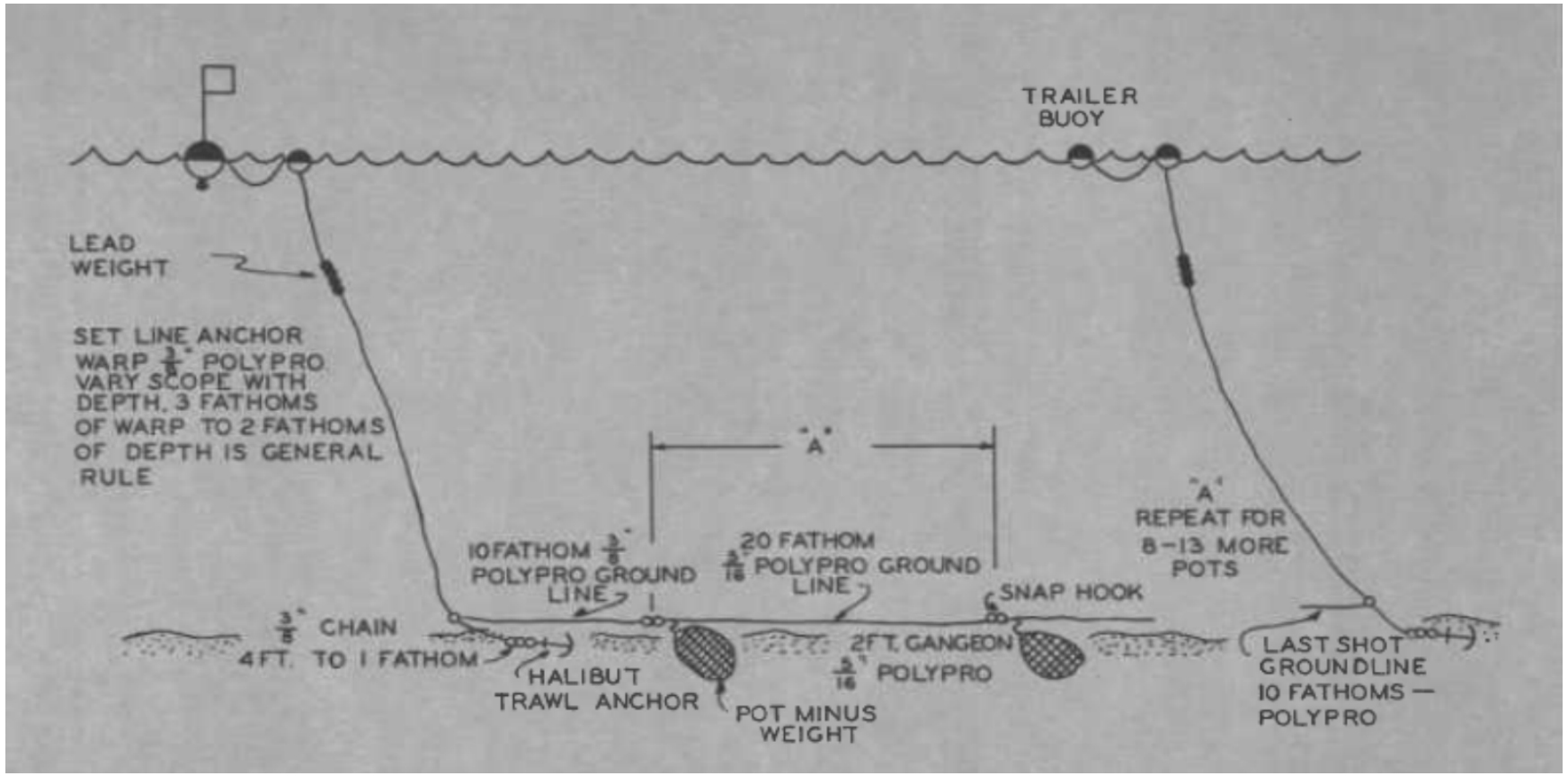
# 8. Longlining

**Potential to reduce risk**

- Reduces vertical lines in the water

**Trade-offs**

- Potential to increase severity of entanglements to whales
- Potential to increase risk to whales that feed on the bottom
- Increased gear conflicts could lead to more lost gear and lost gear of greater risk
- Potential to reduce confidence in enforcement of pot limits which could lead to more pots deployed each year



# Management Options to Reduce Risk

| | | Reduce Risk | Minimize economic impact | Equitable fleet wide | Logistics | Industry survey support |
|---|---|---|---|---|---|---|
| 1A | Transferrable summer endorsement | | | | | |
| 1B | Non-transferrable summer endorsement | | | | | |
| 2 | Summer buoy tags | | | | | |
| 3 | Summer closures around hotspots | | | | | |
| 4 | Lower pot limit after June 15th | | | | | |
| 5 | Eliminate lost pot tag replacement | | | | | |
| 6 | Close fishery on June 15th | | | | | |
| 7 | Minimize surface gear | | | | | |
| 8 | Longline | | | | | |

low/poor | medium/fair | high/good

# Next Steps

- Evaluate input from October public meetings
- Discuss feedback with Oregon Working Group
- Informational report to the Oregon Fish and Wildlife Commission
- Refine a package of recommendations to reduce risk