

15th Annual Oregon Department of Fish and Wildlife Marine Resources Program Dungeness Crab Fishery Newsletter



2022-23 and 2023-24 Season Edition - November 2024

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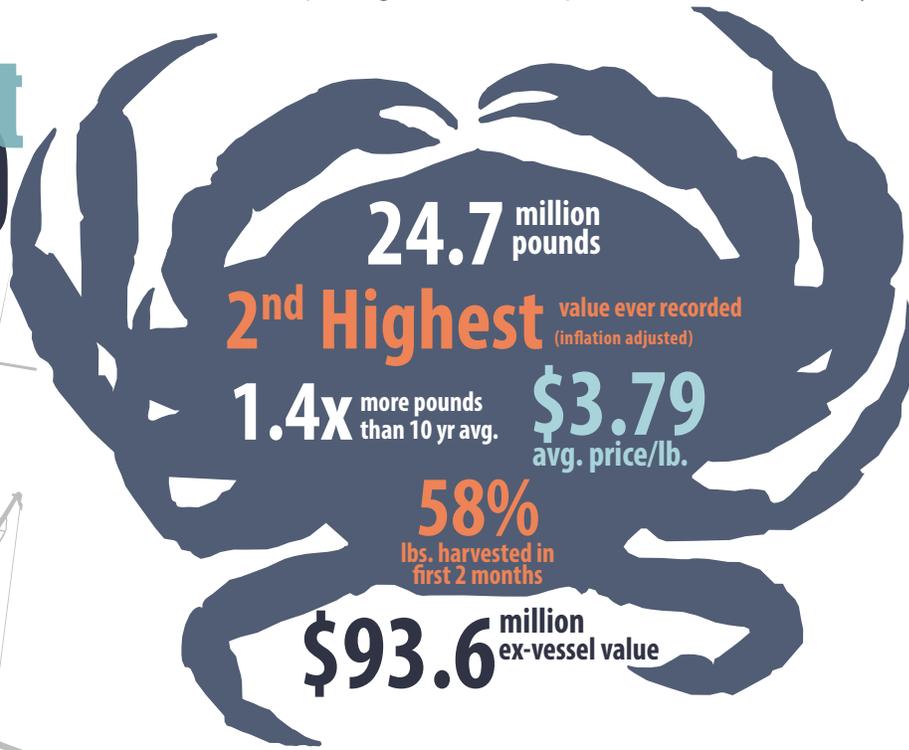
Excellent Season!

The 2023-24 commercial Oregon Dungeness crab fishery landed a total of 24.7 million pounds of crab into Oregon ports coastwide, well over the 10-year average of 18 million pounds. These landings equated to \$93.6 million ex-vessel value, the second highest grossing season on record by just under a million dollars when adjusted for inflation. The average price per pound peaked at \$6.40 in May 2024 and came in at \$3.79 across the entire season, just slightly above the past ten season averages. In total, 321 different permit holders landed crab on 5,783 separate fish tickets into Oregon ports from the ocean and Columbia River.

The 2023-24 season opening was delayed due to low meat recovery. The first area opening was from Cape Foulweather to the (see page 2)

How'd it GO?

2023-24 Season Summary



Pounds Landed

30% Astoria

8% Nehalem/Garibaldi/Pacific City

37% Depoe Bay/Newport

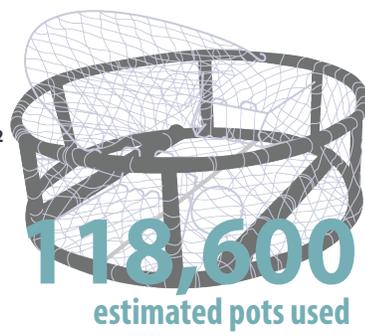
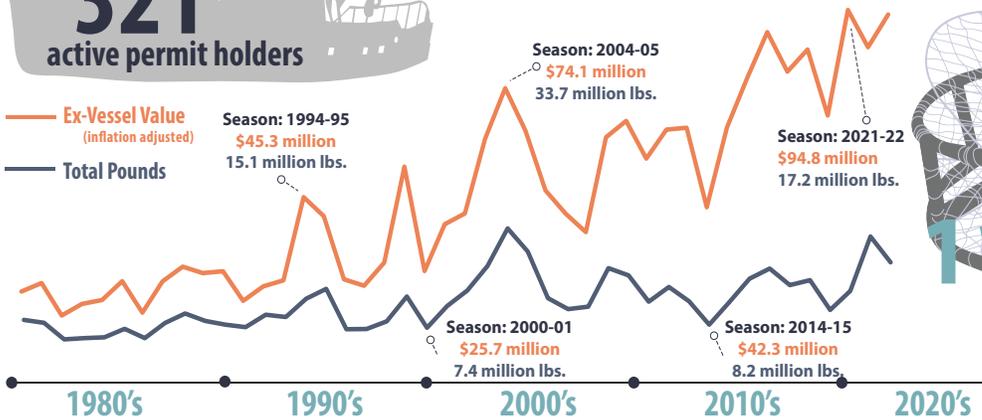
4% Florence/Winchester Bay

14% Charleston

Bandon/Port Orford

3%

5% Gold Beach/Brookings



Season Summary (cont'd)

Oregon/California border on December 16, 2023. The area from Cape Falcon to Cape Foulweather opened on December 31, 2023, and the area from Cape Falcon to the Oregon/Washington border opened on February 1, 2024. Fifty-eight percent of the season total was landed in the first eight weeks of the fishery, compared to 73-91 percent in recent seasons (excluding those with additional delays due to industry price negotiations). Staggered opening dates and high crab abundance likely contributed to a lower percentage landed at the beginning of the season.

For the eighth season in a row, the Newport area led all ports in total landings with more than 9 million pounds (37% of the coastwide total), followed by the Astoria and Charleston areas landing 7.5 (30%) and 3.4 (14%) million pounds, respectively. Garibaldi, Winchester Bay, Port Orford and Brookings were also active with combined landings just over 19% of the coastwide total. An estimated 118,600 total pots were used in the fishery this past season, slightly above the estimated average of 115,547 pots utilized each season since the implementation of pot limits.

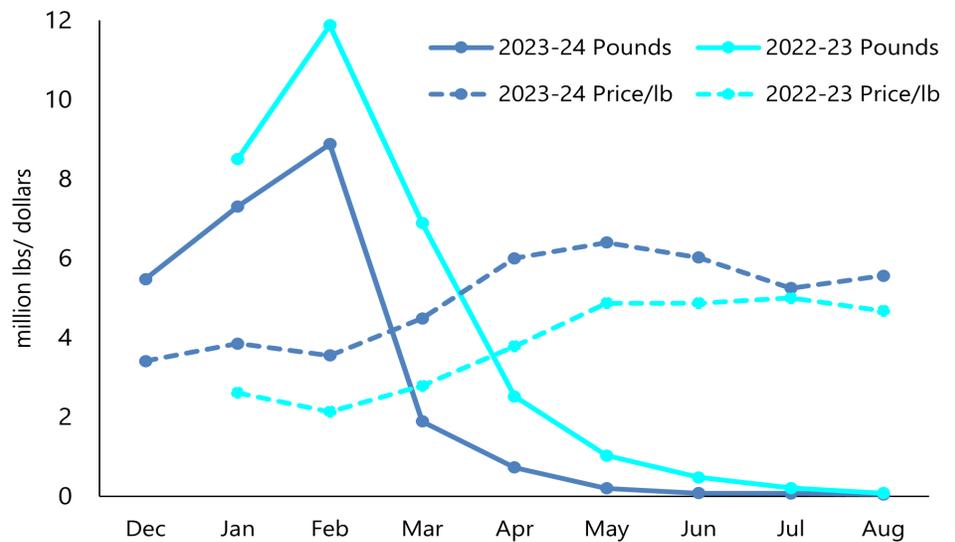


Figure 1: Pounds of crab landed and price per pound by month.

2022-23 Season Recap: High Volume and Value!

The 2022-23 commercial Oregon Dungeness crab fishery landed a total of 31.6 million pounds of crab into Oregon ports coastwide, nearly doubling the 10-year average at that time of 16.6 million pounds. It was the second highest volume season on record in Oregon. These landings equated to \$85 million ex-vessel value, the third highest grossing season on record when adjusted for inflation. The average price per pound peaked at \$5.00 in July 2023 and came in at \$2.69 across the entire season, the lowest average price per pound in ten years. In total, 310 different permit holders landed crab on 6,151 separate fish tickets into Oregon ports from the ocean and Columbia River. An estimated 112,300 total pots were used in the fishery in the 2022-23 season, which was slightly below average since the implementation of pot limits.

In-Season Derelict Gear Recovery

For the second and third consecutive years, the Oregon Dungeness Crab Commission (ODCC) funded in-season derelict gear removal efforts starting in May. ODCC contracted vessels in major Oregon crabbing ports to remove derelict crab gear that was outside of 40 fathoms after May 1 and/or did not have late season tags attached (see map for 2024 efforts). ODFW staff met the participating vessels at the dock and documented all the recovered pots. ODCC staff contacted all gear owners and informed them where to pick up their pots. In 2023, four vessels made eight trips and brought in 205 derelict pots and, in 2024, five vessels made 13 trips and brought in 379 derelict pots. A big thank you to ODCC and all the chartered captains and crews for these efforts! We look forward to continuing to partner on future fleet initiatives to get derelict gear out of the water as early and efficiently as possible.

Bring in Derelict Gear Now!

Efforts to reduce risk of entanglement by removing derelict lines in the water both during and after the season are more important than ever for the continued sustainability of the fishery.

Derelict Gear Recovery Reminders

Seasonal allowances

- Season start to 2nd Monday in June - 25 pots
- 2nd Monday in June to August 14 - 50 pots
- August 15 to October 31 - Unlimited pots
*without post-season permit, conditions listed below still apply

Conditions upon retrieval

- Gear must be unbaited
- Retain only legal crab
- Record number of pots and locations in logbook
- Transport gear to shore on same trip
- Return gear to owner

Derelict Gear Recovery

In the tenth (2023) and eleventh (2024) years of the Post-Season Derelict Gear Recovery Program (PSDGRP), 593 and 783 total pots were removed from waters off Oregon between August 30th and October 11th each year. The number of pots brought in through the program has ranged from 421 to 957 pots per year since 2014. We issued 40 permits in 2023 and 45 permits in 2024, and just above half of those recovered gear each year.

In 2023, derelict pots were recovered on 39 separate trips and this year pots were recovered on 43 separate trips. In both years, derelict pots were brought into seven different ports coastwide (see map for 2024 efforts). All recovered gear was registered and tagged by ODFW at the dock and all gear registration forms are posted on our website. Any previous gear owners interested in negotiating for recovered pots can contact the retrieving vessels directly.

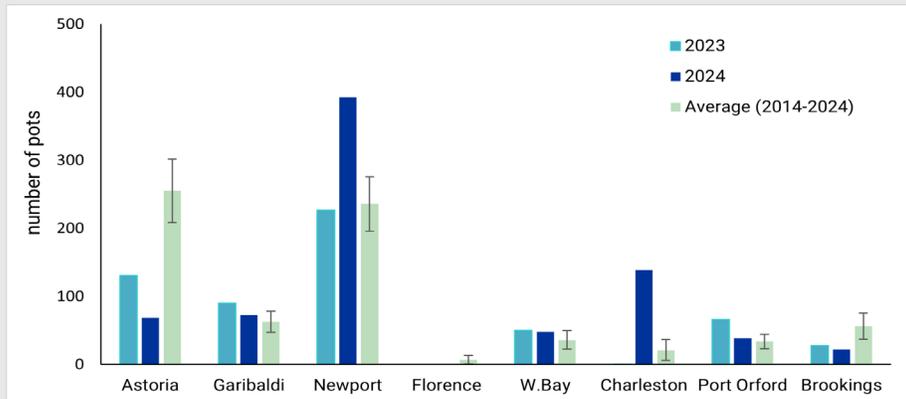
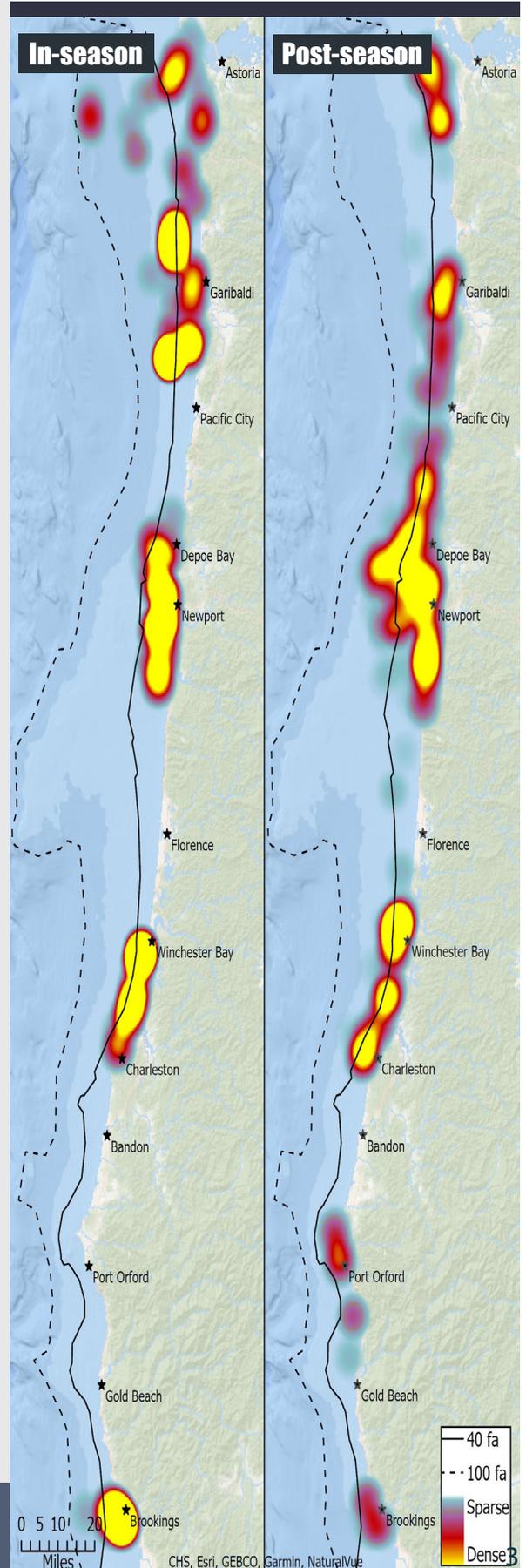


Figure 2: Pots recovered in the post-season program by port. Error bars are the standard deviation of pots landed into each port across all years of the program.

We continued outreach efforts to solicit locations of derelict pots from many different types of ocean users. We regularly shared these locations with PSDGRP permit holders to target for retrieval and many of them were retrieved and registered through the program. Some reported pots from this year are likely still in the water though, so please consider retrieving them under the in-season derelict gear allowances as you start crabbing this season (see reminders on page 2). The updated list of reported gear locations is on our derelict gear recovery webpage listed below.

The program continues to be successful at bringing in a significant amount of derelict crab gear and raising awareness both within the fleet and with other ocean users about the crab industry's efforts to remove derelict gear. Less than half of the derelict pots recovered in the PSDGRP had late-season tags attached (29% in 2023 and 32% in 2024). This means that there is a significant amount of derelict gear in the water from May through September that increases the fishery's risk of marine life entanglement at a time when endangered whales are more prevalent in Oregon waters. As we move into another crab season, we strongly encourage all fishery participants to recover derelict gear throughout the season as allowed by regulation and participate in next year's post-season program.

2024 Recovery Efforts



Want more info about the PSDGRP?

<https://www.dfw.state.or.us/MRP/shellfish/commercial/crab/psdgrp.asp>

CHS, Esri, GEBCO, Garmin, NaturalView

Fishery Monitoring

The primary tools we use to monitor the crab fishery are dockside and at-sea sampling to evaluate size of catch and bycatch rates, fish tickets to track total harvest, and crab logbooks to track effort over space and time. Dockside sampling in the past two seasons (2022-23 and 2023-24) consisted of measuring the carapace widths and weighing a portion of the crab landed, based on the size of the landing. Crab measured in the 2023-24 season averaged 172.28 mm, slightly larger than the previous season average size of 169.87 mm (Figure 3). Over the 2012-13 through 2023-24 seasons, the average coastwide carapace width of sampled crab has remained relatively constant each season, ranging from 167 mm to 172 mm. While there are small differences between ports each season, trends are not consistent across seasons, indicating that there is not a portion of the coast where landed crab have been consistently larger or smaller than elsewhere on the coast. A small percentage of sampled crab fell below the commercial size limit in both seasons (0.41% in 2022-23 and 0.28% in 2023-24). While sub-legals landed in the fishery remain low, there is zero allowance for short crab at the dock so they can contribute to the reproductive stock. ODFW communicates with fishers about all potential violations, and routinely discusses enforcement concerns with Oregon State Police (OSP) when sublegal crab are sampled.

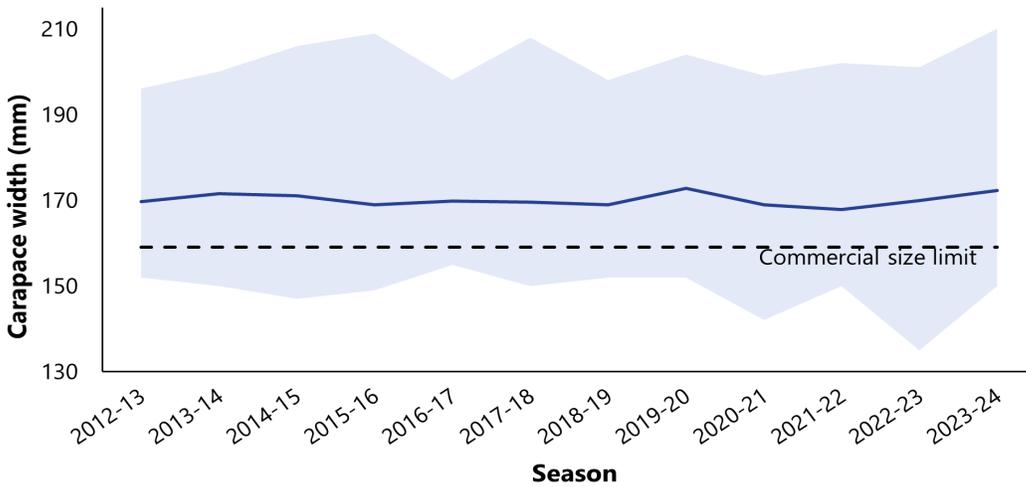


Figure 3: Average carapace width (shaded minimum and maximum) measured coastwide by season compared to the commercial legal size of 6.25 inches.

Crab Logbooks and Fish Tickets

Crab logbook and fish ticket data are used by ODFW, as well as academic researchers and other agencies, to describe the crab resource and the fishery you participate in, to benefit management of the crab resource and protect the crab fishery itself. The use of any logbook and fish ticket data follows a rigorous data request process and development of a Data Use and Non-Disclosure Agreement between the Department and all data users.

Over the past two years, crab fish ticket and logbook data have contributed to a continuation of our own Section 6 whale distribution project (see page 8), National Oceanic and Atmospheric Administration's (NOAA) entanglement risk assessment efforts, Oregon State University's (OSU) economic evaluation of crabbing location choice relative to safety considerations, and in two projects for the U.S. Bureau of Ocean Energy Management's (BOEM) siting of areas for potential ocean development, the OROWindMap Data Portal and Pacific Fishing Effort Mapping Project (PacFEM) (see page 10 for more information about ocean energy development off Oregon).

Why Monitor?



Provides data to compare historical stock trends with current information.

Allows investigation of year class structure, recruitment trends and relative abundance.

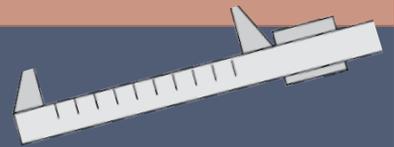


Provides data to assess and quantify bycatch rates of female crabs, undersize crabs and other species.

Offers a communication channel between ODFW and the fleet, processors, and enforcement.



Provides information to evaluate the success of management measures.



Actively gauge your crab at sea and train all new crew members on how to properly measure crab!



Submit crab logs regularly throughout the season at one of our convenient locations in Astoria, Newport, Winchester Bay, Charleston, Port Orford, Gold Beach or Brookings.

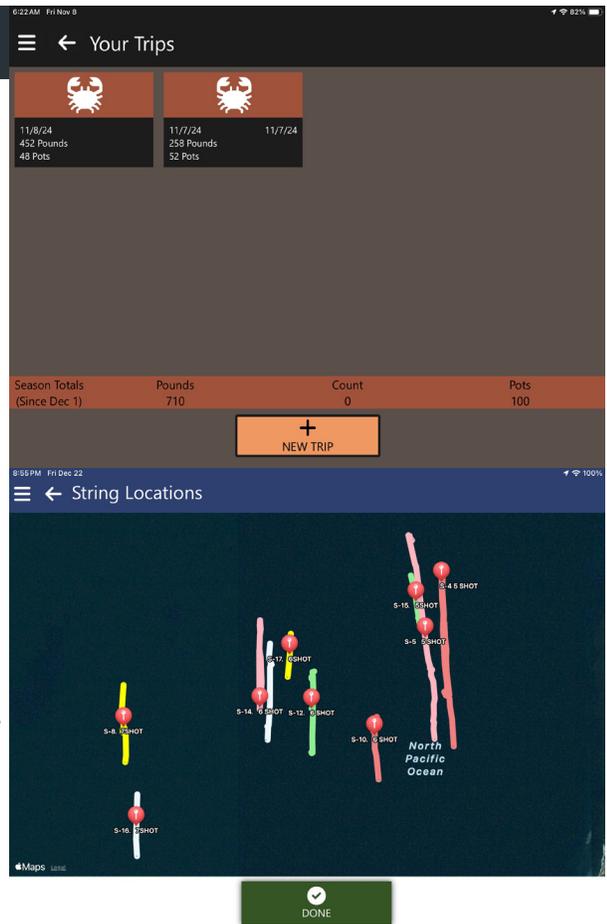
Crab Electronic Monitoring

In 2022, we initiated a pilot project, contracting with the software developer Harbor Lights Software, to create and field test an integrated electronic logbook and vessel tracking system (elog system) for the crab fishery. This type of system is needed to increase the precision, accuracy, and accessibility of fishing effort, catch, and location information. This will assist managers and the crab industry to 1) strengthen crab traceability regulations, 2) inform the effectiveness of and compliance with marine life entanglement mitigation measures, 3) track fishery reference points closer to real-time, and 4) effectively enforce season opening provisions.

During this past crab season, we had 15 captains test a second version of the elog system on the water. The enhanced system incorporated input from the first phase of testing to make it more crabber-friendly and enabled connections to additional hardware. In the upcoming 2024-25 season, we plan to test a third and final pilot version of the system, including on vessels already equipped with LIME units. We really appreciate all of the feedback from captains that have tested this system so far and look forward to getting more to continue to improve it.

We are working closely with Pacific States Marine Fish Commission (PSMFC), along with the other states, on establishing PSMFC as the clearinghouse for all crab vessel monitoring data across the West Coast. PSMFC is now receiving all the electronic tracking data from crab vessels in all three states and has built a Dungeness crab fleet viewing tool for the states to monitor fishing activity. We appreciate all these efforts tremendously and look forward to continuing to work with PSMFC on refinements.

Both ODFW and PSMFC were recently awarded NOAA Fishery Information System grants with the goal of having a fully operational electronic logbook and a data clearinghouse system in place to store, access and assess crab fishing data in advance of our regulatory implementation targets. Within our conservation plan for reducing risk of entanglements, we are committed to requiring electronic vessel monitoring by the 2026-27 crab season and the electronic logbook system by the 2030-31 season.



Photos: Screenshots of ODFW elog system phase 3.

Proposed Conservation Plan Timeline for Requirements

- 2026-27 vessel monitoring
- 2030-31 electronic logbook

Got kids or grandkids

The ODCC offers a scholarship program for students connected to the Oregon Dungeness crab fishing industry to pursue higher education and ease the financial burden of college expenses. These scholarships, awarded annually, can be used at any 2-4 year, public or private, nonprofit, Title IV postsecondary school in the U.S. Applicants must be children, stepchildren, grandchildren, or legal dependents of licensed Oregon Dungeness Crab fishermen or crew members enrolled in a full-time program. For more details, students should contact the ODCC or check the Office of Student Access and Completion scholarship catalog.



going to college?

Reducing Marine Life Entanglements

Entanglement in fishing gear has the potential to seriously injure or kill marine life. This is particularly concerning when threatened or endangered whales or sea turtles are involved. Across the West Coast, there has been an elevated number of marine life entanglements since 2014, driven largely by increased entanglement of humpback whales. This number peaked in 2016 and has since leveled off to some degree but remains above historical levels.

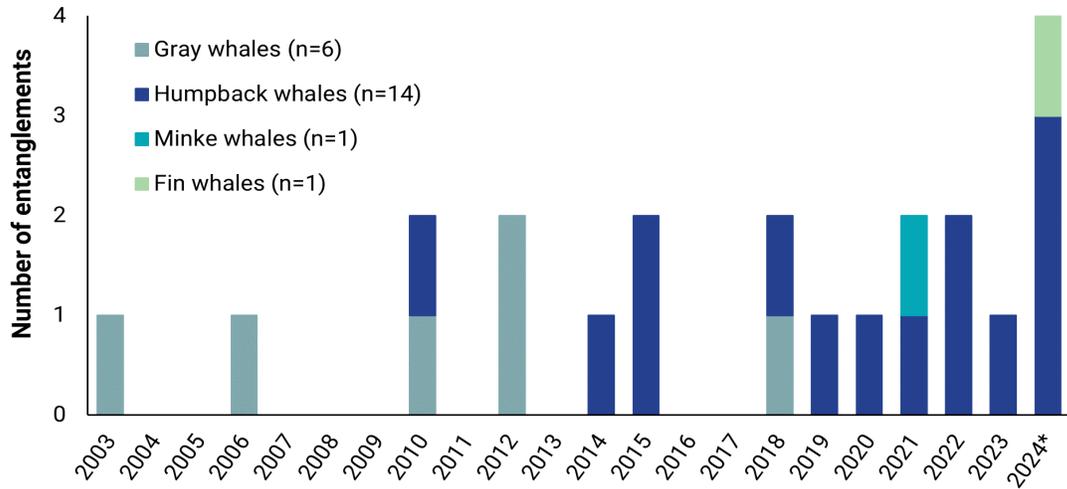


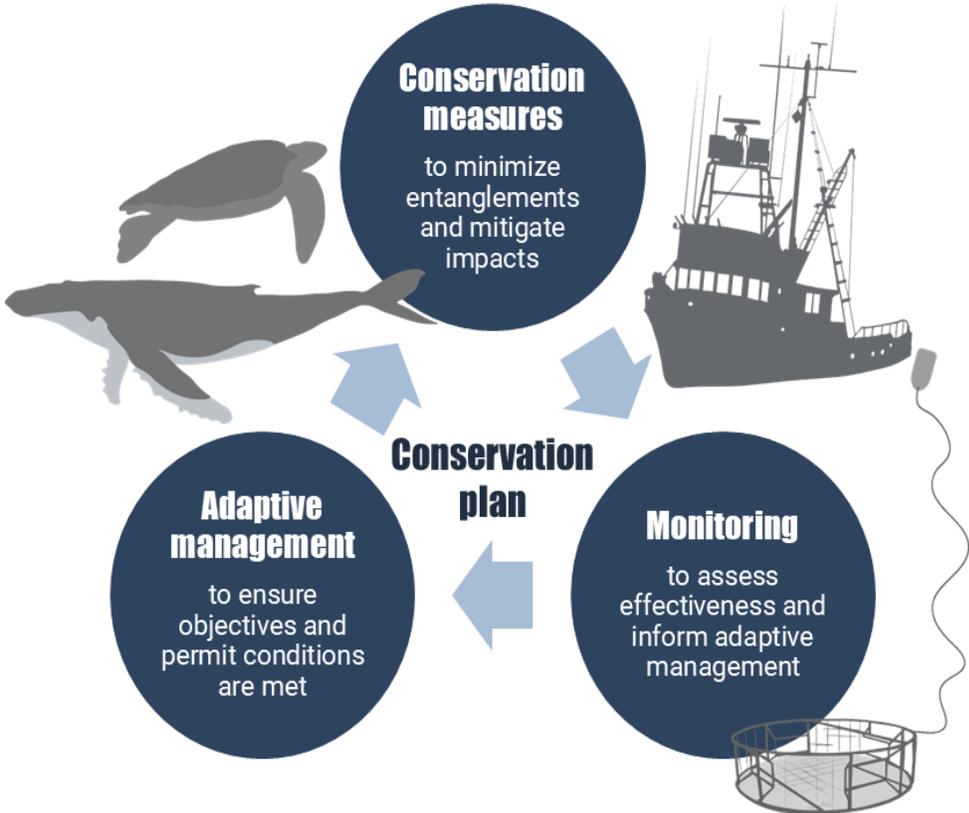
Figure 4: Number of confirmed whales entangled in Oregon Dungeness crab gear by year and species. Entanglements are confirmed by NOAA fisheries. 2024 data is preliminary and goes through Oct. 16, 2024

A portion of confirmed entanglements have been attributed by the National Marine Fisheries Service (NMFS) to West Coast and Oregon commercial Dungeness crab fisheries. Since 2003, there have been 14 entanglements of Endangered Species Act (ESA) listed humpback whales, one entanglement of an ESA-listed fin whale, six entanglements of non-listed gray whales, and one entanglement of a non-listed minke whale attributed by NMFS to Oregon crab gear (Figure 4).

Conservation Planning For Reducing Entanglement Risk

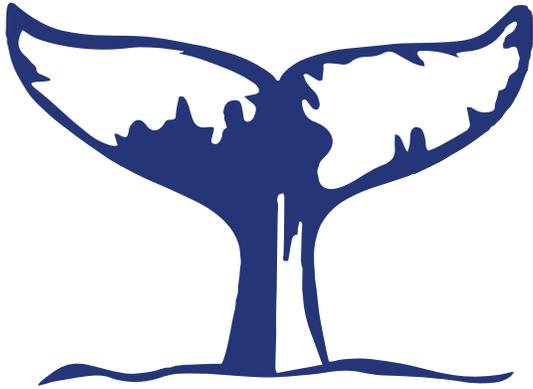
ODFW continues to actively address entanglements in Oregon’s fixed gear fisheries. At the forefront of these efforts is development of a draft Conservation Plan (CP) that lays out a comprehensive strategy to minimize and mitigate the incidental entanglement of federally-protected whale and sea turtle species by the Oregon crab fishery. The CP is required to secure an incidental take permit (ITP) under the Endangered Species Act.

The foundation of the CP is a suite of conservation measures designed to minimize entanglement occurrence and mitigate impacts. The plan lays out a monitoring and adaptive management strategy that will be used to assess whether the measures are being successful and, if not, to make necessary adjustments. Key conservation measures implemented in recent years include a 20% reduction in pot limits, a requirement for an additional late-season buoy tag, and a 40-fathom depth restriction, all starting on May 1 each season. Monitoring measures focus on providing higher resolution information on fishery activity and whale species distribution, as well as improving detection of entanglements and identification of the gear involved. Line marking, adopted into rule this year, is a critical monitoring tool for improved gear identification (see page 12).



Electronic monitoring will fill another essential monitoring role in the CP (see page 5). Finally, the CP adaptive management approach proposes a suite of potential management responses that will be implemented if certain entanglement or entanglement risk thresholds are reached or exceeded, to ensure that ITP conditions are being met.

We plan to finalize the draft CP for submission to NMFS this winter, after which NMFS will consider all aspects of the plan and issue a determination on the proposed ITP. This process is expected to take multiple years to complete, and the CP will be considered final only once an ITP is approved by NMFS.



**Entangled Whale?
1-877-SOS-WHAlE**

Act Now to Reduce Risk!

Follow the Dungeness Crab Fishing Directive to Minimize Marine Life Entanglement Risk. Please embrace the important role you play in helping implement these practices to minimize risk of entanglement NOW to maintain a dynamic and vibrant crab fishery.

Take Level 1 First Responder training to learn proper assessment, documentation, and reporting of entangled whales. This course is a starting point for those interested in contributing to response efforts and understanding the various roles involved in disentanglement.

Report entangled whales or sea turtles IMMEDIATELY to the NMFS 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. Do not attempt disentangling any marine life.

West Coast Take Reduction Team

As part of a settlement agreement with the Center for Biological Diversity, NMFS is establishing a new Take Reduction Team (TRT) to address the incidental mortality and serious injury of several strategic marine mammal stocks in commercial fishery gear on the U.S. West Coast. The preliminary scope includes three stocks (Central America/Southern Mexico humpback whales, Mainland Mexico humpback whales, and Eastern North Pacific blue whales) and five pot/trap fisheries (Federal sablefish, CA Dungeness crab, OR Dungeness crab, WA Dungeness crab, and CA spot prawn). Key aspects of the TRT process and requirements are defined under the Marine Mammal Protection Act (MMPA). The team will be made up of members representing both user and non-user interests that include federal and state agency representatives, researchers, conservationists, and fishing industry members. The group will meet intensively over a six-month period next year to consider available data and information, deliberate, and develop recommendations to reduce marine mammal take. These recommendations will form the foundation of a Take Reduction Plan that will be implemented by NMFS to achieve specific goals laid out in the MMPA. We expect that conservation measures included in the CP will be folded into the TRT process, as much as possible.

ODFW was asked by NMFS to provide industry representative recommendations for the TRT. In July, we utilized an online form to solicit interest in participating on this team and received 13 responses. We provided a letter to NMFS, available at https://dfw.state.or.us/MRP/entanglement/docs/Final_ODFW_TRT_letter_to_NMFS_Aug2024.pdf, that includes the full list of interested parties and, from these, our recommendations for three primary and three alternate industry representatives. Official appointment is subject to NMFS review and approval. In that letter, we supported NMFS preliminary intent to convene the TRT in June 2025, which is earlier than the court-mandated start date, to avoid coinciding with the start of the 2025-26 crab season. We also emphasized the importance of adequate industry representation on the TRT and flexible opportunities for engagement in the process.

Want more info about ODFW efforts to address marine life entanglement?

<https://www.dfw.state.or.us/MRP/entanglement/>

Oregon Whale Survey Update

ODFW has continued collaborating with Dr. Leigh Torres's Geospatial Ecology of Marine Megafauna Laboratory (GEMM) at OSU to help provide critical information about where and when whales are in Oregon waters by collecting whale sighting data aboard U.S. Coast Guard helicopter flights and vessel-based surveys. The overall goal of this project, titled *Overlap Predictions About Large Whales (OPAL)*, is to evaluate entanglement risk in Oregon by improving knowledge of whale space-use patterns and assessing co-occurrence with fishing effort.

Phase 1 of this project developed species distribution models that significantly improved our ecological understanding of whale habitat use patterns off Oregon, particularly for humpback whales. OSU used the monthly predictions of whale distribution over a 10-year period to model co-occurrence relative to Dungeness crab fishing effort from logbook data. This work provided spatially explicit maps of entanglement risk under various environmental conditions. The results quantify how much overlap there is between whales and crab gear, where and when that overlap takes place, and how these overlap rates change relative to oceanographic conditions like upwelling and the Pacific Decadal Oscillation (PDO). The big picture take-homes of this work to-date include:

1. In Oregon shelf waters (~110 fathoms) during spring and summer, the distribution of humpback, blue and fin whales is influenced by depth and conditions that indicate upwelling and frontal zones.

2. Entanglement risk in Oregon waters:

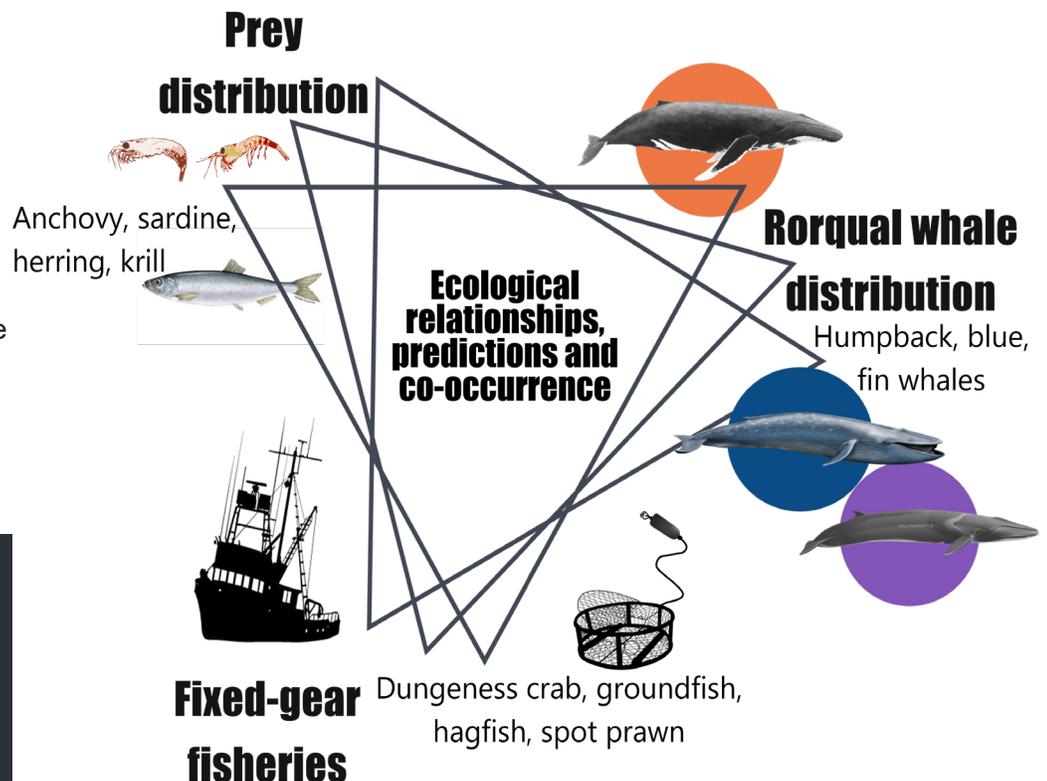
- **Peaks in April, then decreases offshore (> 40 fathoms) and plateaus nearshore**
- **Increases when ocean conditions are productive and whales are more abundant**
- **Decreases during marine heatwaves due to poor feeding conditions for whales**
- **Patterns and drivers are different than California**



Photo courtesy of Dr. Leigh Torres, OSU. NOAA/NMFS permit # 27426

Next Steps - OPAL 2.0

Continuing this work through a second NOAA Section 6 Species Recovery grant, OSU has maintained vessel and monthly aerial whale surveys that significantly increased the sample size for new modelling efforts. This three-year project (2022-2025), OPAL 2, also uses data on krill and prey fish distribution to help increase accuracy and effectiveness of entanglement risk predictions. This project has been funded jointly by ODCC, ODFW and NOAA Section 6 Species Recovery funds.



Want more information, including links to the resulting publications?

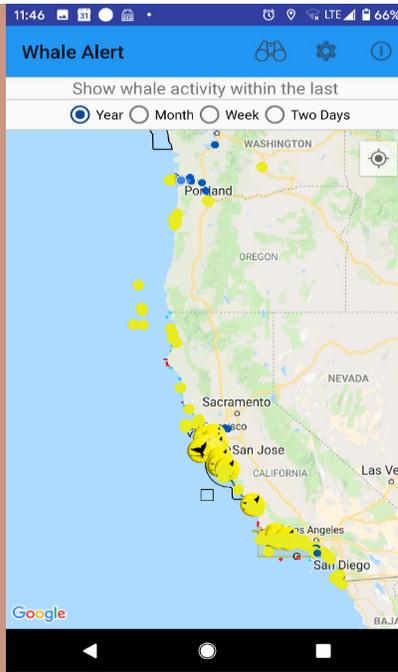
<https://mmi.oregonstate.edu/gemm-lab/where-are-whales-oregon-waters>

Infographic courtesy of Dr. Leigh Torres, OSU.

Want to be involved? Use Whale Alert App!

All ocean users can help collect data for the whale surveys by being the eyes on the water to record whale locations in the areas that the research team doesn't cover. This will help the researchers ground truth their observations with "citizen science" sightings of whale presence to ensure accurate models of whale distribution. Download and use the Whale Alert App to document where healthy, free-swimming whales are seen off Oregon. Recruit others to join Whale Alert, and post information about it and your participation on social media. If the whale models are informative, we will all be better at fishing in ways that avoid the whales and keep the fishery (and whales) thriving.

**Download Whale Alert App
On iOS App Store or Google Play**



Picture: Homescreen of the Whale Alert App where you can explore recent whale sighting data entered by fellow citizen scientists. The app is available for download for both android and iphone operating systems.

New Scarring Study

OSU has also been conducting a scarring analysis of humpback whales to assess undetected entanglement rates and changes in entanglement rates overtime. The research team has scored 1,548 photos, based on likelihood of prior entanglement and photo quality, of 583 individual humpback whales photographed in Oregon waters since 2016. Results will help us continue to hone our management approach to reducing the risk of marine life entanglement. This project has been funded by a federal congressional earmark. More information is located here <https://mmi.oregonstate.edu/gemm-lab/slate>.

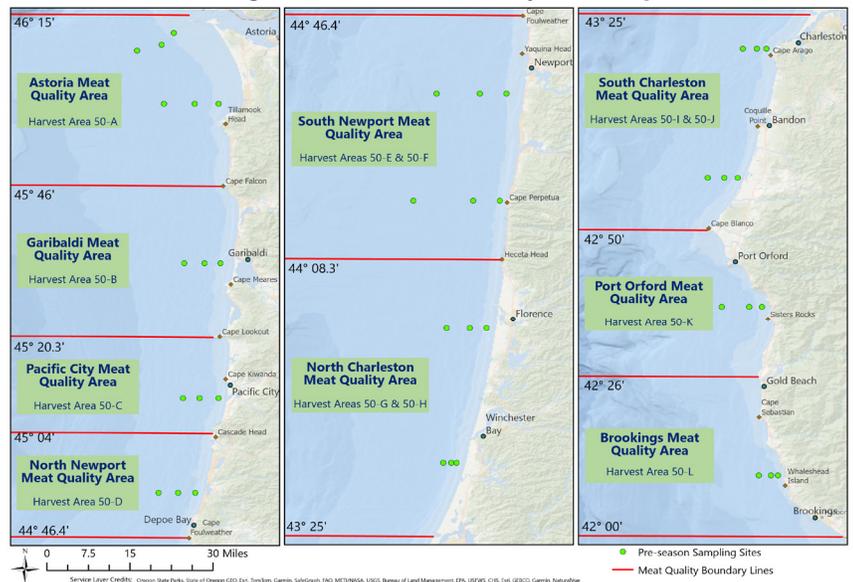


Photo courtesy of Dr. Leigh Torres, OSU. NOAA/NMFS permit # 27426

Season Opening Changes

Preseason Testing - The Tri-State Dungeness Crab Committee (Tri-State) met this spring to discuss a range of issues. The committee agreed to a few changes to the season opening protocol including: adding information that will be posted with each round of testing results, describing how cooked test crab will be stored overnight if needed, removing an erroneous legacy reference to 'two areas', and clarifying California's statutory restriction prohibiting delay beyond January 15. Tri-State also agreed that within the Oregon appendix to the protocol, an additional test station would be added in harvest area A and that meat recovery for crab from harvest areas C and D will be tested and reported separately. The Oregon Fish and Wildlife Commission (OFWC) adopted the revised protocol into regulation in September 2024.

Dungeness Crab Meat Quality Area Map effective October 17, 2024

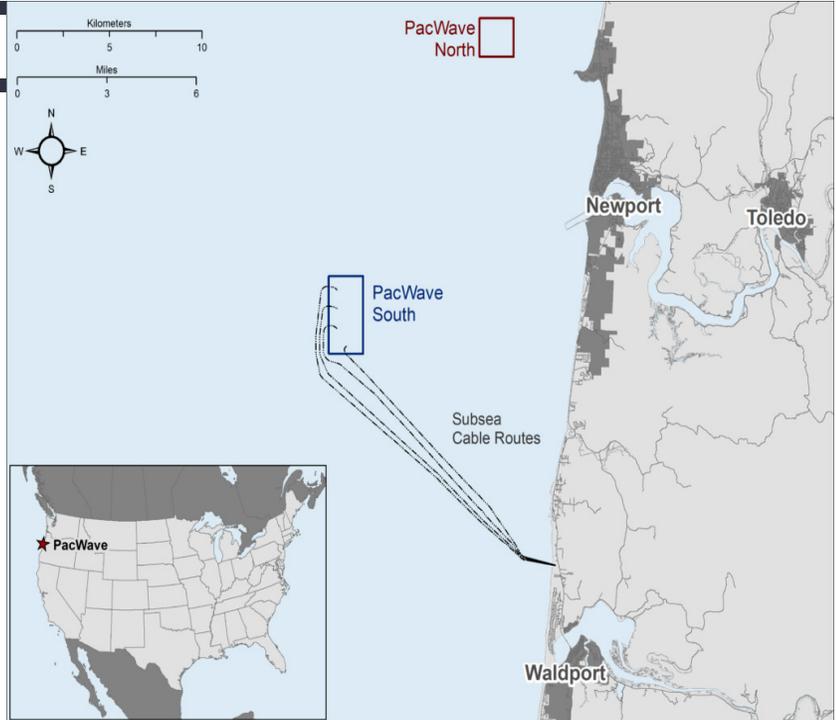


Closed area transit - Due to low meat recovery and elevated biotoxins in certain areas, the past two crab seasons (2022-23 and 2023-24) featured multiple areas opening on different dates. For both seasons, temporary rules allowed commercial crab vessels to transit and deliver crab into certain closed areas if they carried an active vessel monitoring system (VMS). In September 2024, the OFWC adopted permanent rules allowing vessels with approved VMSs to transit and deliver crab into closed areas to increase operational efficiency and safety for vessels, particularly when there are different season opening dates among areas. Vessels will be required to pre-register with ODFW and declare each trip they intend to transit in and out of the closed area(s) to assist with monitoring vessels using this allowance. More information is located here https://www.dfw.state.or.us/MRP/shellfish/commercial/crab/Closed_Area_Transit_Info.asp.

Ocean Energy Development off Oregon

Wave Energy

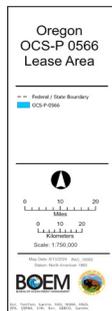
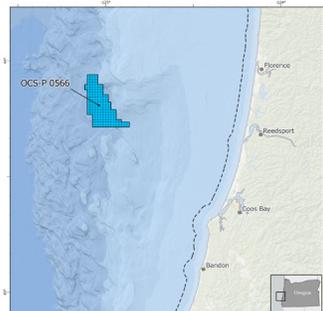
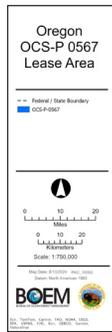
PacWave is an open ocean wave energy testing facility consisting of two sites operated by OSU, each located in the Pacific Ocean within a few miles of Newport, Oregon. At PacWave South, OSU completed installation of subsea cables in August-October 2024. Construction of the onshore facility is expected to be completed in late 2024. PacWave South will be operational by the spring of 2025. At PacWave North, OSU reinitiated research in 2024 with the deployment of the Ocean Sentinel and an assortment of other research moorings. This equipment is intended to overwinter at sea at the project site off Yaquina Head near Newport. Wave energy devices are not yet permitted with this deployment but individual developers may seek their own authorization to undertake testing at PacWave North next year. For additional information about both wave energy test sites, see OSU's PacWave website at <https://pacwaveenergy.org/>.



Map courtesy of Oregon State University PacWave.

Offshore Wind Energy

In August 2024, the BOEM announced the Final Sale Notice of two lease areas off Coos Bay and Brookings to be auctioned October 15 for subsequent evaluation for offshore wind development. However, on September 27, BOEM postponed the auction due to lack of interested bidders. That same day, Governor Kotek sent a letter to BOEM requesting a halt to current leasing activities and stating that Oregon must complete



our Roadmap process and have all associated enforceable policies in place before BOEM proceeds

Maps show the auction of areas identified by BOEM for offshore wind leasing that have been postponed. <https://www.boem.gov/renewable-energy/state-activities/Oregon>.



Photo courtesy of Principle Power. If future floating offshore wind turbines come to Oregon, they may be similar to those installed at the Kincardine Floating Offshore Wind Energy Project, in Aberdeen Scotland.

with future lease-related activities. Work to develop the Roadmap includes input from a Roundtable convening between November 2024 and June 2025 to gather perspectives from a broad list of interested parties, including the fishing industry.

Should offshore wind leasing resume in the future, it appears likely that turbines would be located largely outside crab grounds. However, there will likely be transmission cables and other infrastructure located between the offshore wind farms and the Oregon coast, intersecting with crab grounds. ODFW continues to advocate for the use of best available fisheries information in all stages of the planning process to help identify and avoid or minimize conflicts.

Want more info? Contact Delia Kelly, Ocean Energy Coordinator
(541) 857-2534 or delia.r.kelly@odfw.oregon.gov

Crab Larval Monitoring

In winter, Oregon's Dungeness crab release tiny swimming larvae that develop in the ocean for 3 to 4 months. When released, larvae ride north on the Davidson Current. As they grow, they move offshore into the California Current, which carries them back south. The last larval stage is called a megalopa (picture). The 'task' of megalopae is to migrate from offshore to the nearshore where they settle to the bottom and become juvenile crabs. In Oregon, the abundance of megalopae returning to shore has been monitored by catching them in light traps. Dr. Alan Shanks, at the University of Oregon's Institute of Marine Biology (OIMB), has been assessing these returns in Coos Bay for the past 23 years.

The goal is to better understand how oceanography influences the daily and annual abundance of megalopae returning to the coast. Early on, however, Dr. Shanks realized a cool side benefit of the work is using the megalopae catch to predict landings in the commercial crab fishery! After initial funding from NOAA, the Oregon Dungeness Crab Commission has been funding this project since 2006. Their support has been critical in helping us learn more about what drives the size of the commercial crab catch each season. To-date, this long-term monitoring project has provided three major insights about Oregon Dungeness crab:



Photo courtesy of Hakai.org

- **Pattern of daily abundance** suggest that megalopae are transported across the shelf by the internal tides. These are caused by large waves under water, which generate currents at the surface (aka tide rips). This work suggests megalopae ride, or surf, the tide rips back to shore.

- **Annual variation** in the number of returning megalopae has been huge! Annual catch has been as high as 2.8 million megalopae and as few as 2,000. This variation is primarily driven by two oceanographic conditions: 1) very low catch when there is strong El Ninos, and megalopae are likely transported too far north and, 2) high catch when the Pacific Decadal Oscillation (PDO) is negative (coastal waters are colder), and megalopae are getting a good ride back to the Oregon coast.

- **Commercial fishery predictions** in many years can be made with a surprising degree of accuracy. The predictions, however, are low when there are marine heat waves (MHW) which are now occurring regularly. From this monitoring, predicted commercial crab landings for the next four seasons (2024-25 through 2027-28) are 11, 30, 19 and 8 million pounds respectively. There is a good chance these predictions are low since the megalopae returned during MHW years, but that isn't factored into the model yet due to lack of data.

There is lots of interest to keep this work going! Dr. Leif Rasmuson (ODFW Marine Fisheries Research Project Leader) and Dr. Maya Watts (OIMB) are now collaborating with Dr. Shanks, who is in the process of retiring, to keep learning about this system as it continues to change and to keep this valuable time series growing. This work is also starting to be used by in the Pacific Fishery Management Council's Integrated Ecosystem Reports as an index of prey availability in the California Current because megalopae are an important food source for many fish and marine mammals.



Photo courtesy of G. Krutzikowsky, ODFW

Want more info?

Contact Leif Rasmuson, 541-270-5561

leif.k.rasmuson@odfw.oregon.gov

Check out PFMCI Ecosystem reports here

<https://www.integratedecosystemassessment.noaa.gov/regions/california-current/california-current-iea-indicators>



Ocean Commercial Dungeness Crab Fishery Line Marking

Dates to know!

2026-27 season: All line between two buoys (except for buoy gangions) must be yellow and black line or contain one set of solid yellow and black marks.

- If only one buoy is used, the upper one fathom of the vertical line must be yellow and black line or contain one set of solid yellow and black marks.

2028-29 season: Upper 15 fathoms of the vertical line must be yellow and black line or contain three sets of solid yellow and black marks distributed with one near each end and one in the middle of the upper 15 fathoms.

2033-34 season: Only yellow and black line may be used to meet the requirements above. Sets of solid marks are no longer permitted.

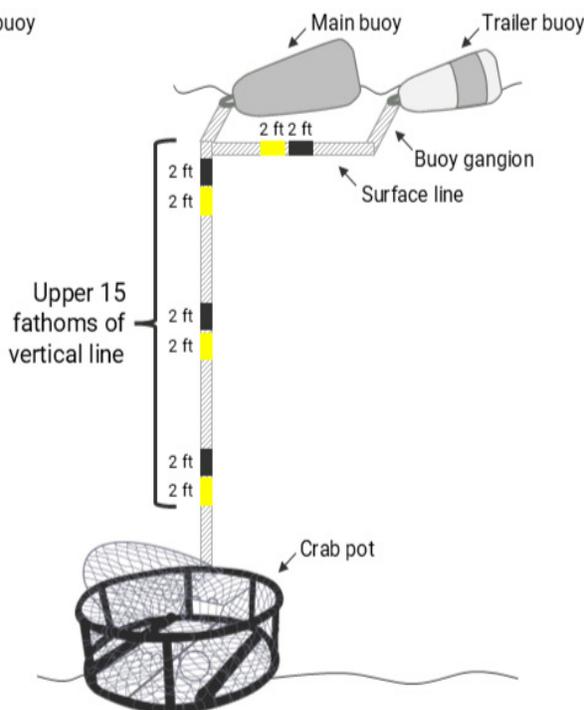
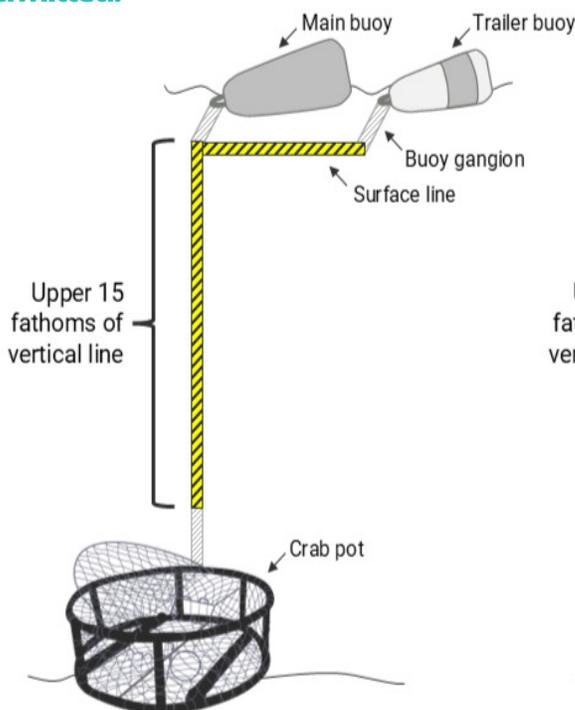
Marking Specifications

Dual-colored line: Must have the majority yellow strands and at least 1/3 black.

Transitional solid marks: Each set of solid marks must cover the entire circumference of line for at least 2 ft. of yellow within 6 in. of at least 2 ft. of black.

Shallow depth allowance: If using less than a total of 20 fathoms vertical line, all but the 5 fathoms of line closest to the pot must be marked.

Prohibitions: Line marking required in any other West Coast fishery is prohibited anywhere on Oregon commercial crab gear. Also, line marking that is required in any West Coast fishery is prohibited from being used in other commercial or recreational fixed gear fisheries.



= Commercial Dungeness crab
 = Oregon

Transitional solid marking method
allowed through end of 2032-33 season



Want Crab Fishery Updates?



ODFW Text and Email Updates

Sign-up here: <http://dfw.state.or.us/MRP/> If you would like to receive email and/or text messages with up-to-date information about the ocean commercial Dungeness fishery.



ODFW Season Opening Updates

Visit here: http://www.dfw.state.or.us/MRP/shellfish/commercial/crab/season_weekly_updates.asp Starting mid-Oct to get weekly updates on preseason testing and information about the season opening status.



ODFW Crab Advisory Groups Updates

For ODCAC email: Kelly.C.Corbett@odfw.oregon.gov
For OEAC email: Brittany.L.Harrington@odfw.oregon.gov

If you would like email updates about the Oregon Dungeness Crab Advisory Committee (ODCAC) or the Oregon Entanglement Advisory Committee (OEAC), please contact us.



ODA Text and Email Alerts

Sign-up here: <https://www.oregon.gov/oda/programs/FoodSafety/Shellfish/Pages/CrabBiototoxinInfo.aspx> If you would like to receive email and/or text messages from the Oregon Department of Agriculture about when and where crab are being tested for domoic acid.



ODCC Text Updates

Sign-up by texting: **CRAB to (833) 763-0443**

If you would like to receive text message updates about the crab fishery from the Oregon Dungeness Crab Commission.





Oregon Department of Fish and Wildlife
2040 Marine Science Drive
Newport, OR 97365

Marine
Resources

Have a safe and productive crab season!

We are always interested in hearing from you about the fishery and the issues that are important to you. Please give us a call or email us any time!

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Commercial Crab Project Leader

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Visit Our Website: **<http://www.dfw.state.or.us/MRP/shellfish/commercial/crab/.asp>**