



Marine Resources

35<sup>th</sup> Annual

# Pink Shrimp Review

2024

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## Have Questions?

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[www.dfw.state.or.us/MRP/shellfish/commercial/shrimp](http://www.dfw.state.or.us/MRP/shellfish/commercial/shrimp)

This newsletter provides a summary of Oregon's 2023 pink shrimp (*Pandalus jordani*) season including trends in the fishery, its stock, and information relevant to stakeholders. Oregon's pink shrimp fishery is managed sustainably in cooperation with shrimpers, processors, and scientists.

The 2023 shrimp season got off to a slow motion start, but fast-forward to June, landings and effort really picked up. Shrimp abundance was high, but market demand seemed low. 2023 catch volume was 44.1 million pounds, 12<sup>th</sup> highest among the fishery's 67 year history. The ex-vessel value of the fishery was high (18.2 million USD). Price per pound was low, at an average of \$0.42 per pound. Catch rates were the 3rd highest rate of all-time (971 pounds per hour for double rig vessels) due to a large holdover of last year's age 1 shrimp and modern fleet efficiency.

# 2023 Season

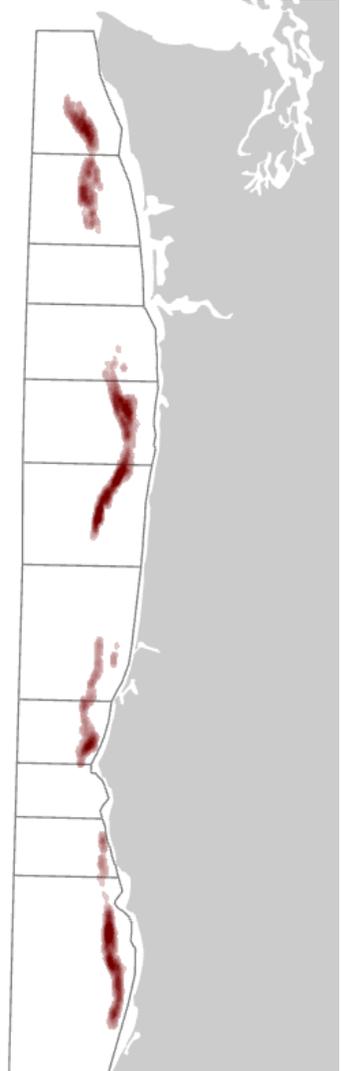
**44.1 million**  
pounds landed

**\$18.2 million**  
ex-vessel value



**Catch area**

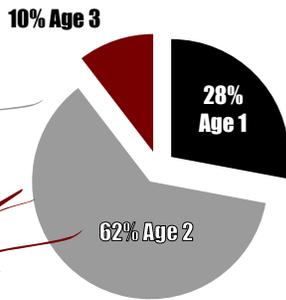
**56**  
vessels



Shrimp age by number



Shrimp age by weight

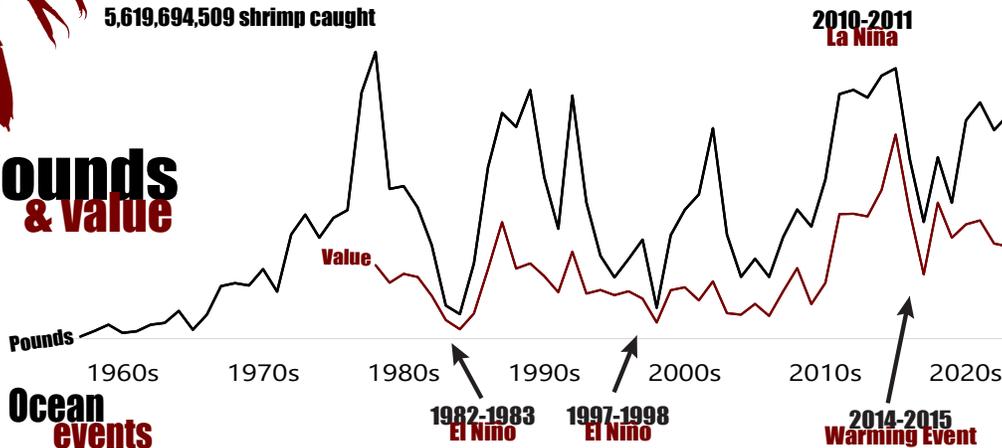


**Third highest catch rate EVER!** 🍊 🍊

🍊 **Low price/lb**  
Lowest since 2010

5,619,694,509 shrimp caught

## Pounds & Value



# What's new?

## Wind Energy Areas

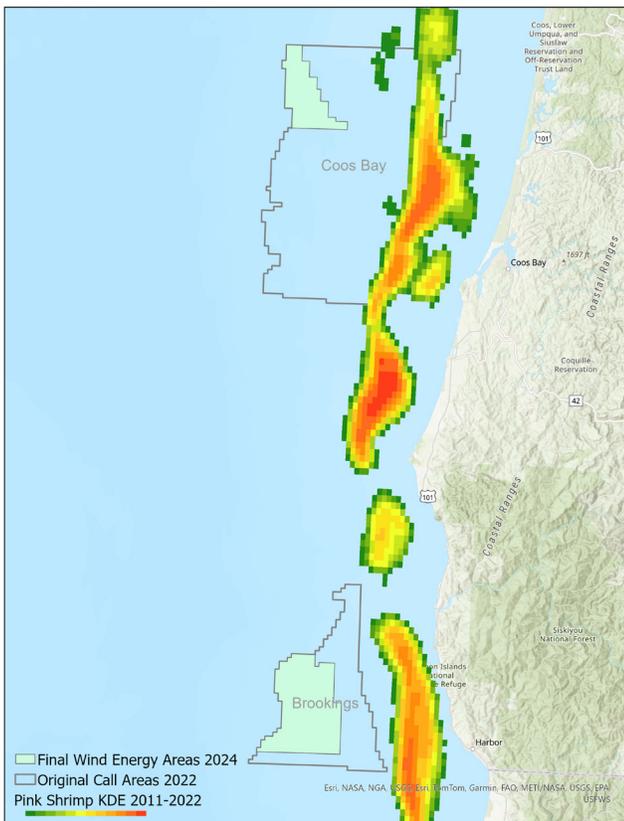
In February 2024, the Bureau of Ocean Energy Management (BOEM) finalized the two Wind Energy Areas (WEAs) offshore Oregon. These WEAs are subsets of the original larger call areas from 2022. ODFW staff compiled shrimp logbook data from 112,913 tows representing almost a half billion pounds of catch from the years 2011-2021 to understand historical shrimping in and around the original call areas. The final WEAs do not include any areas where shrimping has taken place historically. However, this does not mean that shrimpers and other related infrastructure (e.g., ports) will not be impacted by the development of offshore wind energy (e.g., underwater cables). ODFW will continue to provide comments to BOEM on how to minimize impacts of offshore wind energy development on the fishing industry as the process continues.

Thanks to the many years of cooperative logbook work between shrimpers and biologists, robust data allows the overlap between shrimp grounds and areas considered for potential offshore wind development to be visualized (Figure below).

These data and more can be found at:

<https://offshorewind.westcoastcoceans.org/visualize/>

Questions? Check in with Delia Kelly, ODFW Ocean Energy Coordinator. [Delia.R.Kelly@odfw.oregon.gov](mailto:Delia.R.Kelly@odfw.oregon.gov)



Final Wind Energy Areas announced in 2024 compared to original call areas from 2022 and pink shrimp trawl effort from 2011 through 2022.

## New Rule for 2024

There were amendments to [ORS 506.690](#) and [ORS 506.720](#) that are relevant for the 2024 pink shrimp season. Prior to January 2024, for the first violation of unlawful taking, possession or killing of food fish (e.g., small shrimp over 160 ct/lb.), 5% of the average market value was recovered by the state, 10% for the second violation in five years, and 20% for the third violation. **Effective starting in 2024, the entire landing can be seized for a violation of unlawful taking, possession, or killing of food fish and the Fish and Wildlife Commission may institute a suit for the recovery of damages equal to twice the fair market value of the food fish.** The goal of this amendment was to further discourage the landing of illegally small shrimp. We do not wish to see anyone have their entire landing seized and forfeited, so please monitor the count/lb. of your tows closely, especially when fishing at the beginning and end of the season.

## Eulachon Returns

The 2022 and 2023 eulachon runs in the Columbia River were the two largest runs in recent history, at 18.3 million lbs. spawning stock biomass (SSB) and 17 million lbs. SSB, respectively (JCRMS, 2024). This was likely due to favorable marine environmental conditions that were experienced by cohorts that contribute the most to adult returns. The 2024 run is expected to be of similar size to those in 2022 and 2023. While this is welcome news for this Endangered Species Act listed threatened species, we are not quite out of the trawl yet... Other river systems, like the Fraser River, BC, have not experienced similarly strong returns and there is still much unknown about the distribution of eulachon in the ocean and their natal origins. Therefore, it is imperative that we continue to use the tools we have (LEDs and BRDs) to reduce bycatch in the shrimp fishery.

We are planning a bycatch reduction study this summer to compare bycatch and shrimp catch between trawls fishing at different heights off the seafloor. Shrimp vessel and permit owners should reach out to [Eric Anderson](#), if they are interested in partnering with ODFW on this important research.

Finally, scientists at ODFW and the National Marine Fisheries Service (NMFS) are working on species distribution models for eulachon that may give us a better understanding of their biomass and distribution in the ocean.



*Thaleichthys pacificus* AKA eulachon AKA ooligan smelt

# 2023 Season Summary

## Landings Data

Even though pink shrimp landings in 2023 got off to a slow start, Oregon landings were high and up from last year. 44.1 million pounds were landed, the 12th most in the fishery's 67 year history (Figure 1).

Fifty-six vessels landed shrimp into Oregon in 2023 (Figure 2) accounting for 844 individual trips (Figure 3). While the number of trips was up from the 2022 season, these rates are very low historically.

On average, 52,308 pounds were landed per trip, the second most in the fishery's history (Figure 4)!

Good hold-over from last year's stock, especially shrimp born in 2021 (age 2 in 2023), made for exceptional shrimping. The presence of these older, larger shrimp helped make catch rates outstanding.

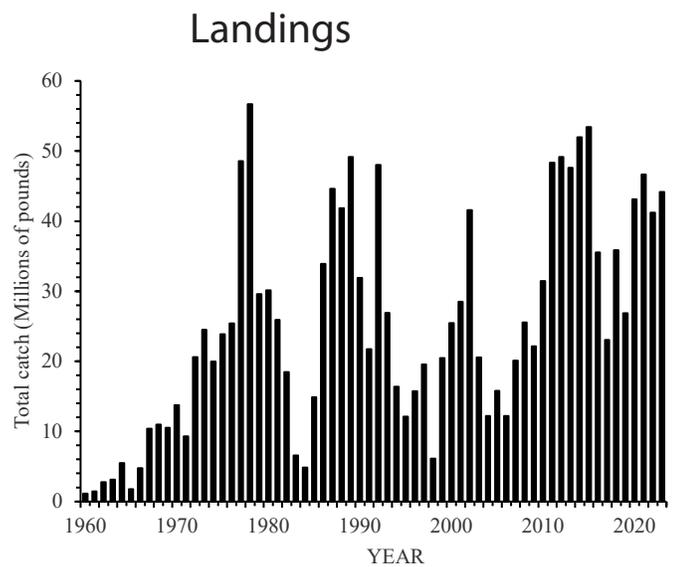


Figure 1. Landings of pink shrimp into Oregon by year: 1957-2023.

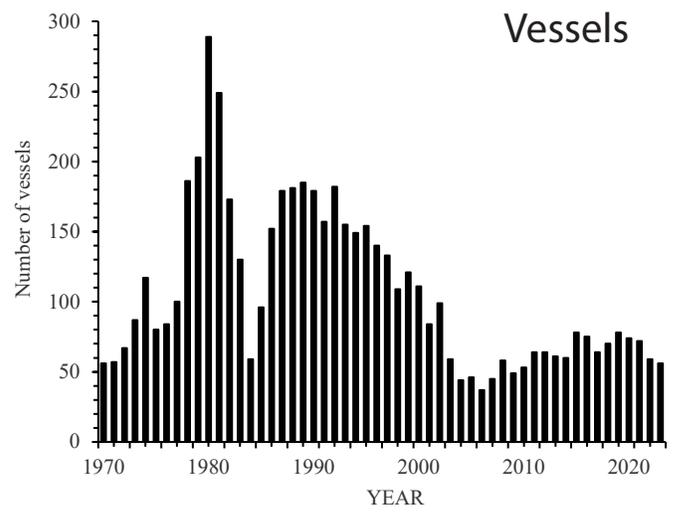


Figure 2. Number of vessels landing pink shrimp into Oregon, by year: 1970-2023.

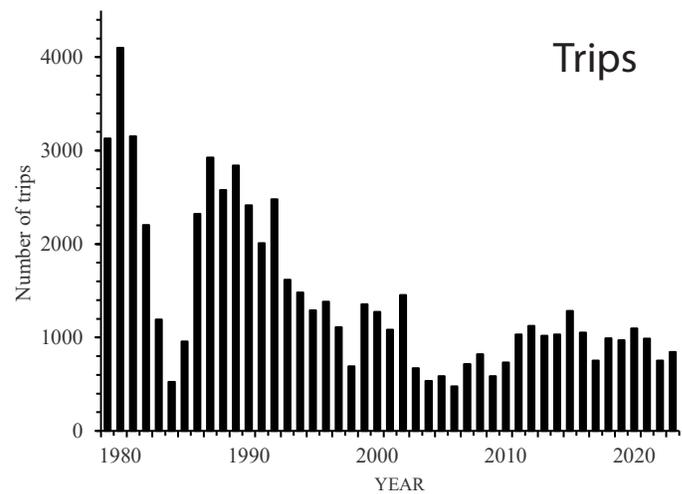


Figure 3. Number of trips landing pink shrimp into Oregon, by year: 1979-2023.

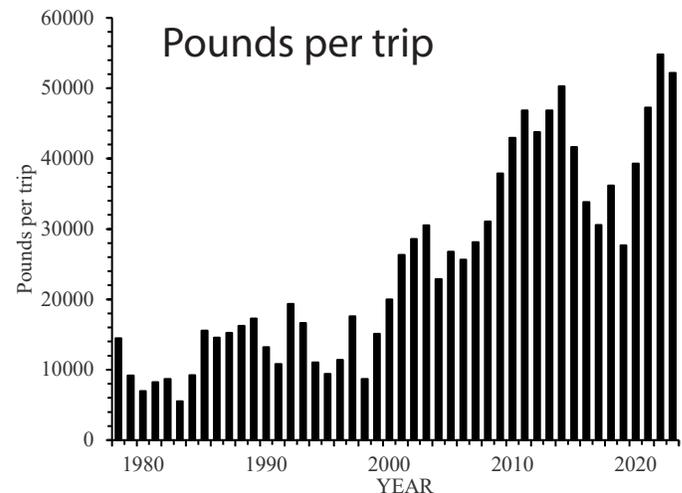


Figure 4. Average catch-per-trip (pounds) for pink shrimp vessels landing into Oregon, by year: 1978-2023.

# 2023 Catch Area

Catch in 2023 was greatest off Northern California and the central coast of Oregon, but excellent throughout the region and the season. Catch started out slow as price was negotiated and some vessels were still crabbing into early April (Figure 5).

Figure 7 shows a heat map of tow locations for Oregon landed pink shrimp catch.

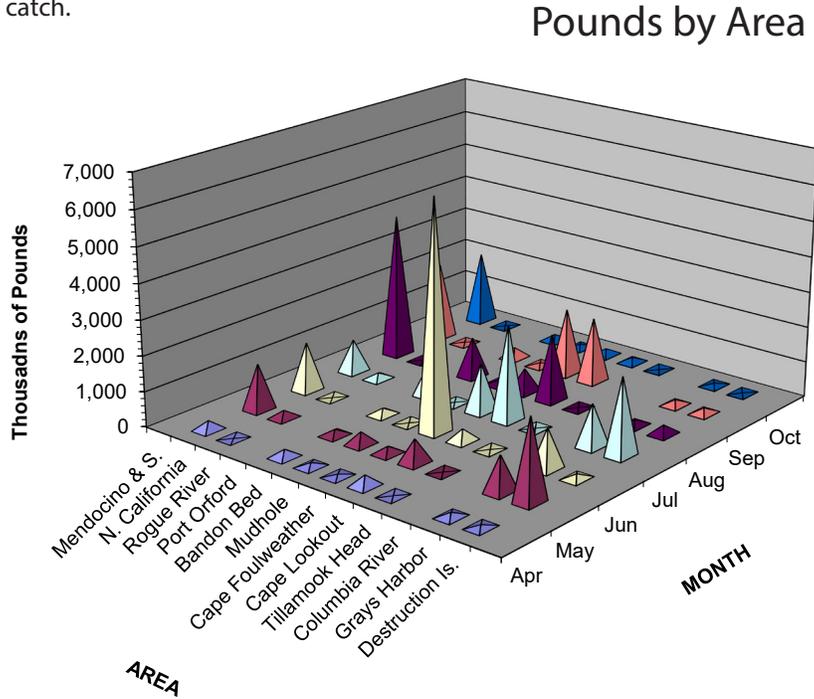


Figure 5. Total pounds of pink shrimp caught in each area and month landed into Oregon, 2023.

Trips were very short in 2023. Vessels averaged 21 hours (in double rig equivalent hours) of tow time per trip, similar to last year and the high efficiency years in the early 2010s (Figure 6). Overall, the amount of time shrimping per trip has reduced over time, as the fleet continues to become more efficient.

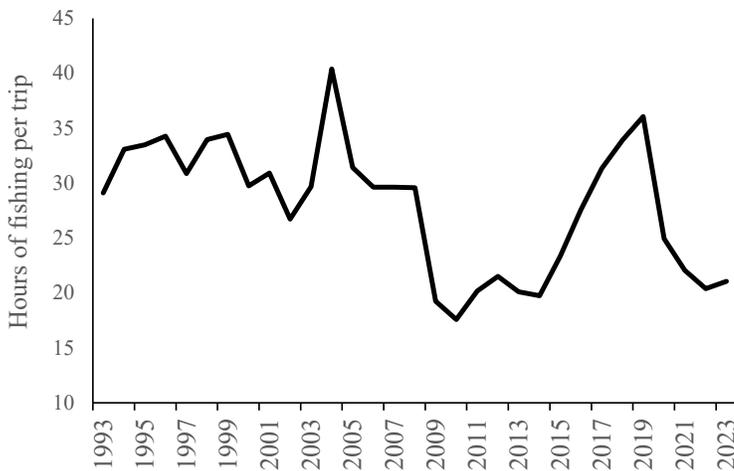


Figure 6. Hours (expressed in Double Rig Equivalent (DRE)) of fishing per trip into Oregon, 1993-2023.

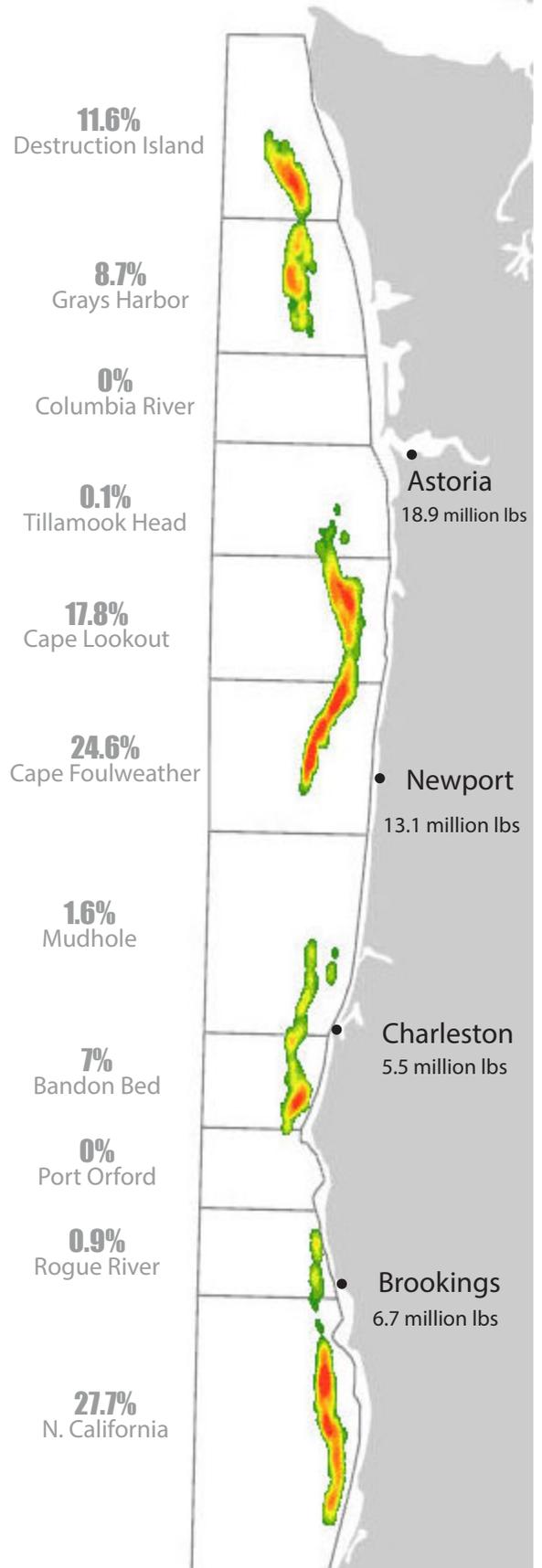


Figure 7. Heat map of pink shrimp catch by state statistical areas for 2023 Oregon landings, and amount of pounds delivered to each port.

Effort (number of hours the fleet fished) continued to be low when compared to historical rates. In 2023, effort was up slightly from last year but still relatively low (Figure 8). Effort was most focused off central Oregon and Washington during summer (Figure 9). It then shifted to off Northern California in the fall.

Effort was low due to a combination of factors including: 1) high efficiency of the modern fleet, 2) negotiating prices in a difficult market, 3) processing constraints, and 4) high fuel prices.

Hours of effort are displayed in units of Single Rig Equivalent (SRE) hours, meaning that single rig hours are counted 'as is' and double rig hours are multiplied by 1.6.

## Effort by Area and Month

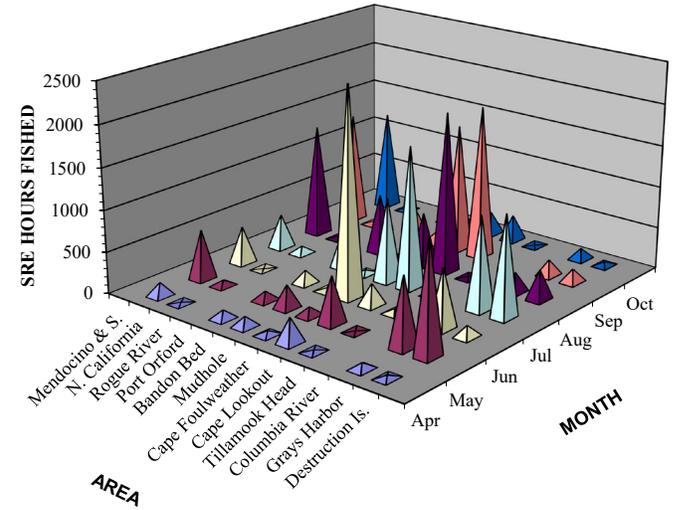
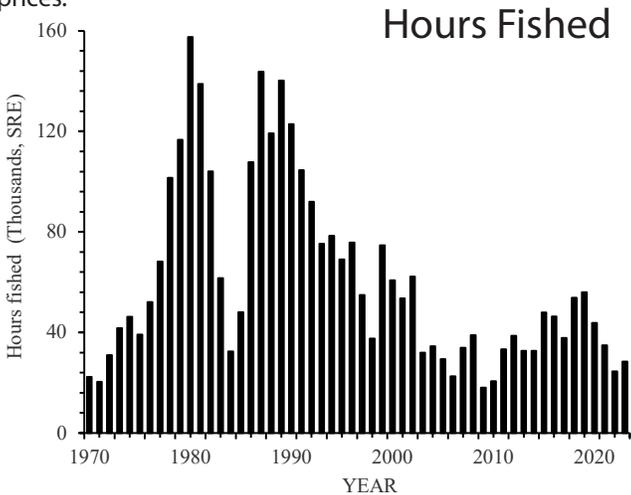


Figure 8. Total hours (SRE) fished for pink shrimp landed into Oregon, by year: 1970-2023.

Figure 9. Total hours (SRE) fished for pink shrimp landed into Oregon, by area and month, 2023.

# Efficiency

Efficiency, expressed in Catch Per Unit of Effort (CPUE) was the third highest ever recorded! Shrimp were caught at a rate of 1,554 lbs. of shrimp/hour SRE (971 lbs./hour in double rig terms; Figure 10). Highly efficient shrimpers working a massive stock of shrimp drove this amazing catch rate.

## CPUE by Area and Month

CPUE was good just about everywhere, but particularly excellent off Northern California (Figure 11).

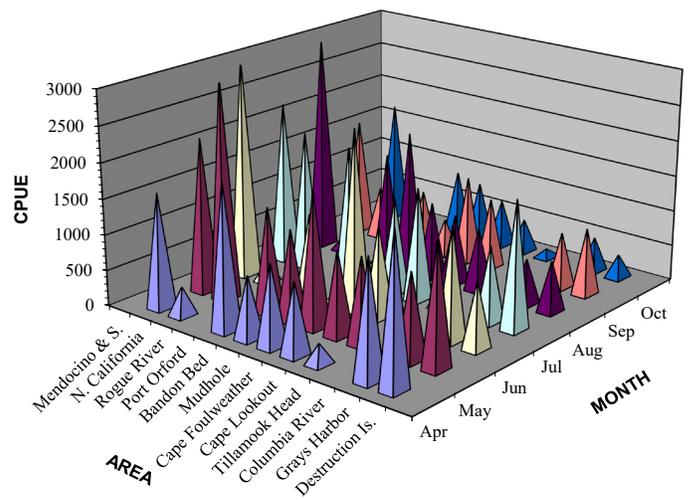
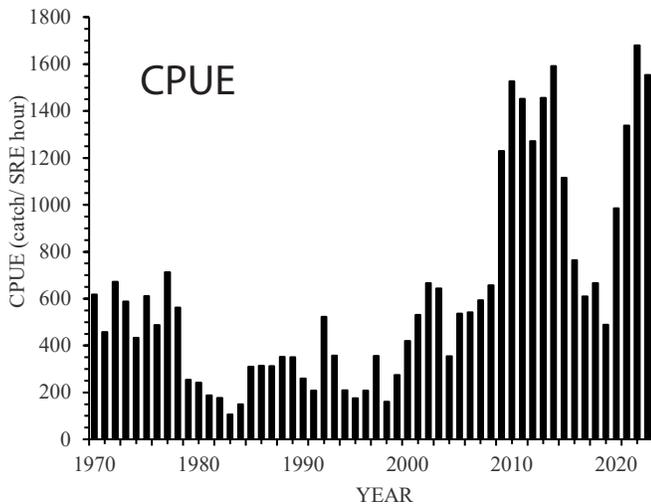


Figure 10. Average CPUE (SRE) for Oregon pink shrimp landings, by year: 1970-2023.

Figure 11. Average CPUE (SRE) by area and month for Oregon pink shrimp landings, 2023.

# Value

Ex-vessel value was high in 2023 (18.2 million USD), despite the low price per pound. Nominal fishery value was the 13th highest value of all time (Figure 12).

At \$0.42 per pound, the average price was down from last year and the lowest since 2010 (Figure 13). Price per pound has steadily decreased since 2019. Values are nominal (i.e., not adjusted for inflation).

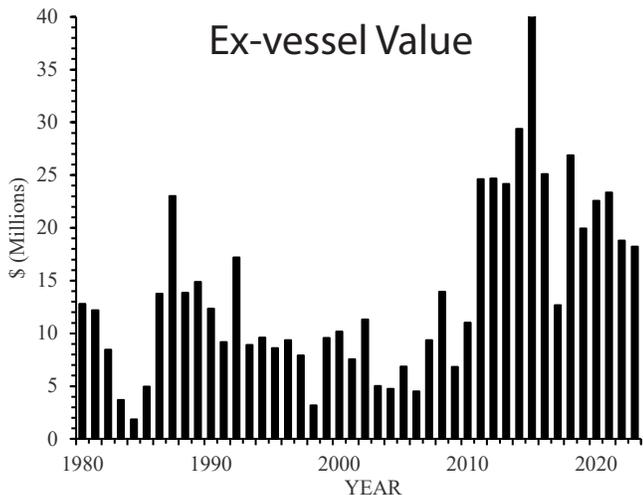


Figure 12. Ex-vessel value (USD) of pink shrimp landed into Oregon, by year: 1980-2023.

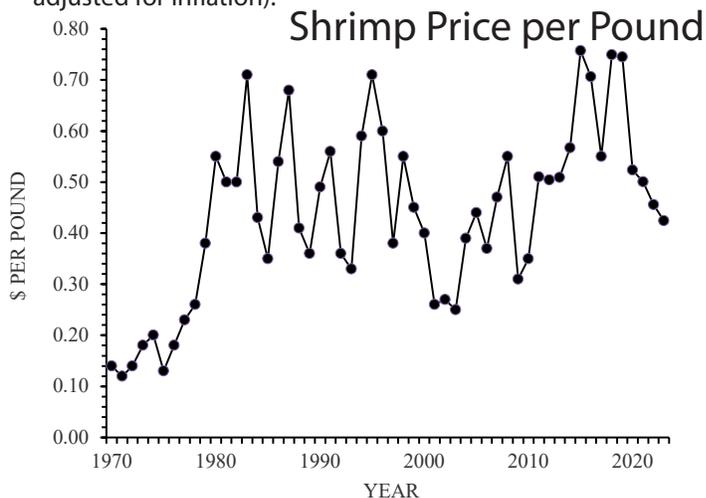


Figure 13. Average ex-vessel price-per-pound of pink shrimp landed into Oregon, by year: 1970-2023.

# Age and Size

Pink shrimp live short lives and grow quickly; catch is typically composed of three year classes (age one, two and three). In most years, catch depends heavily on age one shrimp.

By number of individual shrimp, 41% were age one, 54.2% were age two, and 4.7% were age three (Figure 14).

By weight, older shrimp (age two and three) made up about 72% of the catch (Figure 15), despite only being about 59% of the catch by individual numbers.

Mean count per pound was 127 shrimp/lb., which is down a bit from last year (Figure 16). Lower counts were likely due a strong recruitment of age one shrimp in 2022, which allowed for a greater proportion of age 2 shrimp caught in 2023.

## Weight of Shrimp by Age

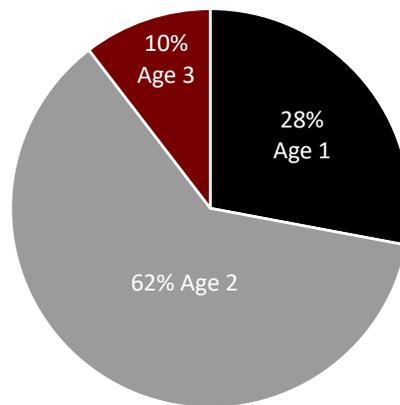


Figure 15. Weight of pink shrimp, landed into Oregon, 2023.

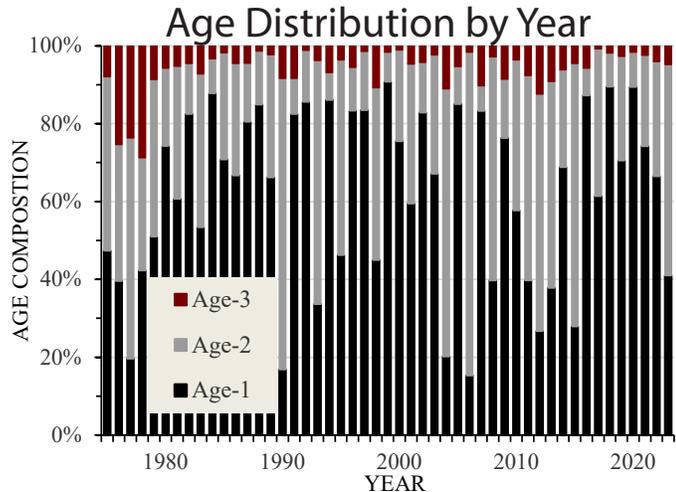


Figure 14. Age composition of pink shrimp landed into Oregon, by year: 1975-2023.

## Count per Pound by Year

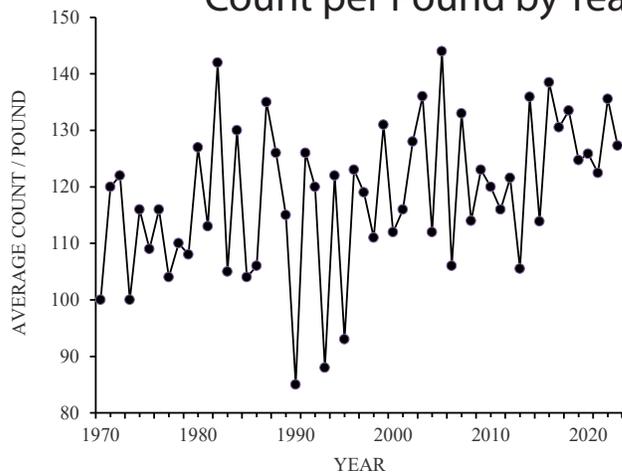


Figure 16. Average count per pound of pink shrimp landed into Oregon, by year: 1970-2023.

# 2024 Indicators

Here we describe some of the indicators which provide a forecast of what to expect next season.

*"If my answers frighten you, then you should cease asking scary questions."*

-Jules Winnfield (*Pulp Fiction*)

## Environmental Conditions

By comparing past pink shrimp population levels to past environmental condition, we can forecast future pink shrimp abundance based on current environmental conditions. Pink shrimp recruitment has a strong relationship to oceanographic conditions during their larval period (Figure 17). Specifically, sea level height (SLH) at Crescent City, CA during the pink shrimp's larval period has shown a strong link to recruitment levels in Oregon; the lower the sea level, the greater recruitment.

Why sea level? While it may not matter to a pink shrimp if there are a few extra inches of water above their head or not, the average height of the sea does correlate to environmental conditions that are known to affect pink shrimp larvae (larval transport, food supply from upwelling, etc.), thus providing a single indicator to predict recruitment.

In 2024, pink shrimp catch will be composed of three year classes (those born in 2021, 2022, and 2023).

**2023 year class:** The environmental conditions which larval pink shrimp experienced in 2023 were pretty poor. When compared to the past 45 years, it was in the 13th percentile. Age one recruitment is typically the largest component of the fishery, by number.

**2022 year class:** The above average environmental conditions of 2021 should have delivered a good recruitment class. However, less than a billion age one shrimp were caught in 2023, which was about half of 2022's age one catch and a third of 2021's age one catch. Hopefully, we see more shrimp from this recruitment class show up in 2024 as two year olds.

**2021 year class:** In 2024, we're hopeful that a good proportion of the catch will be these three year old shrimp. 2023 saw the 4th greatest catch of age two shrimp, potentially a good sign for age three shrimp in 2024. Historically, there are few three year olds left to catch, but they are so large that they have an unequal part of the catch by weight.

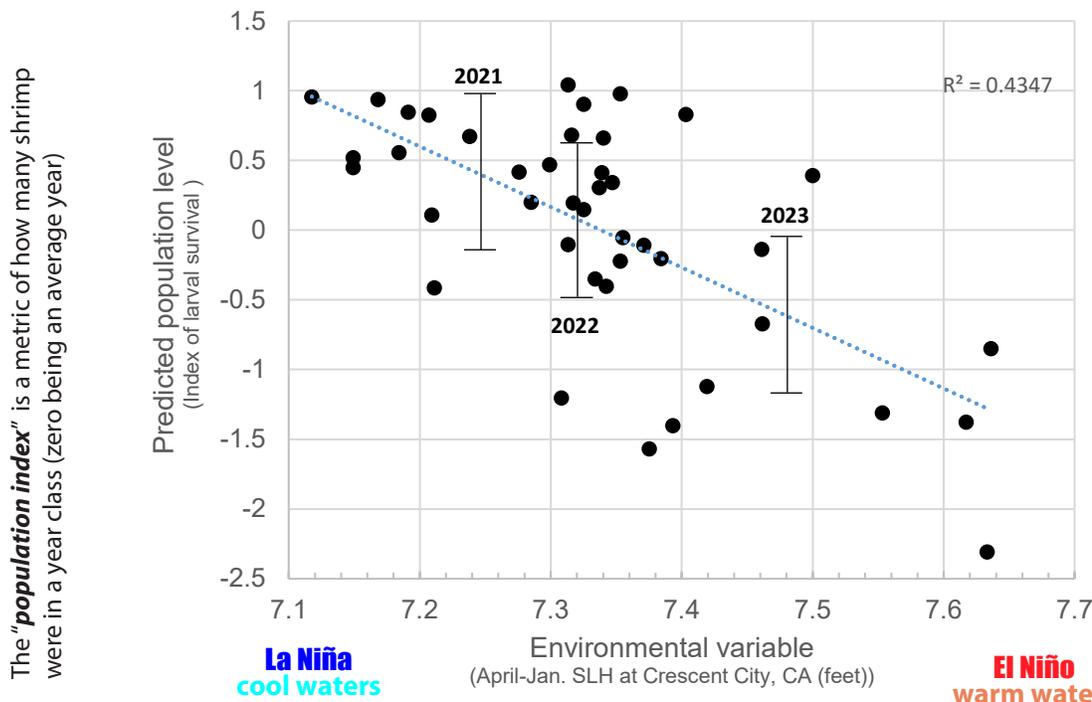


Figure 17. Pink shrimp population/ environmental model.

Each dot on this graph represents a year (1979-2020).

Vertical lines labeled with year represent the range of population expected, given the environmental conditions in the year they are released as larvae.

The "environmental variable" used is sea level height (SLH) from April to January in Crescent City, CA.

Crustaceans lack hard structures for aging, such as ear bones (otoliths) used in fish aging, thus other means must be used. Pink shrimp simultaneously release eggs, grow quickly, and live short lives. These three attributes allow for age assignment using statistical (multi-modal distribution) analysis. In this way, ages of shrimp are determined by bulk measurement of their size over time. Size measurements (carapace lengths; CL) are aggregated then compared to other time periods to determine age and growth.

Each graph tells a story; in the example below (Figure 18), there are many age one shrimp, then a few age two and three. While a single graph is like a snapshot, comparing changes in these graphs over time tells a story. The horizontal (X) axis of these graphs indicates the size of the shrimp (larger as you move to the right) and the vertical (Y) axis shows the relative amount of each size group (not total abundance). The “lumps” of these graphs are caused by the central tendency of each age group; thus changes to relative amounts of age classes can be tracked along multiple graphs. Arrows track year classes and indicate rate of growth as time goes on. These graphs look a little complex at first, but once understood, it becomes easy to visualize (Figure 19).

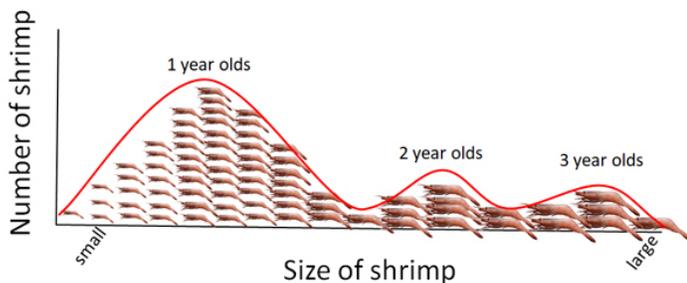


Figure 18. Hypothetical multi-modal size distribution of pink shrimp.

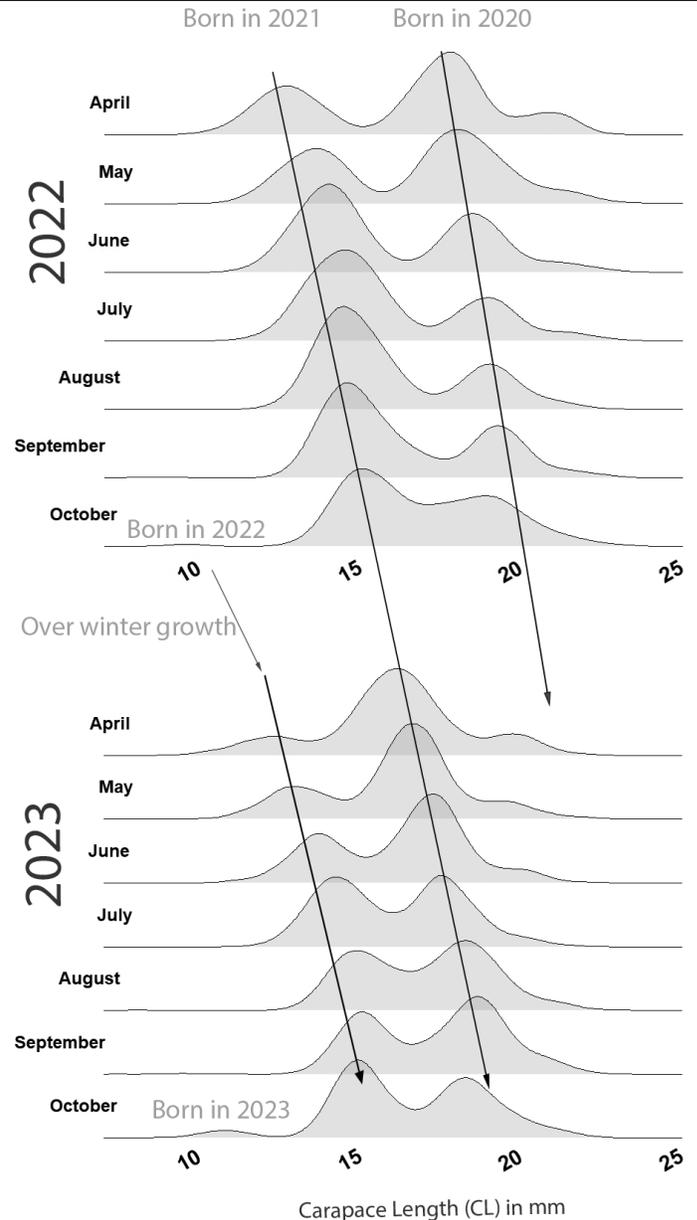


Figure 19. Pink shrimp size distributions by month (2022 and 2023) from Oregon landings.

## Forecasting Methods

We forecast next year's catch in two different ways.

### 1. Forecast from environmental data:

We examine environmental conditions over the past few years then weight a forecast of each year depending on expected contribution of each year class (e.g., age one shrimp are typically the primary component of catch; therefore, environmental data from that year are more heavily weighted, whereas environmental conditions from three years ago are less heavily weighted).

### 2. Forecast from sampling data:

In this forecast, we look at last year's catch of each age class, rank them according to previous generations of shrimp, then weight each rank to project what next season might be like.

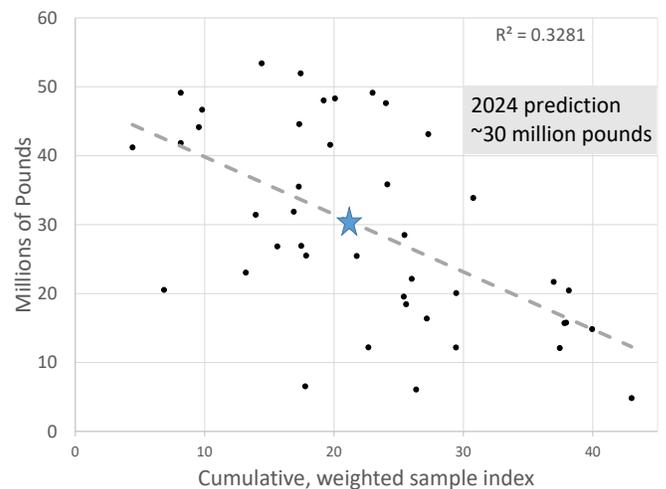
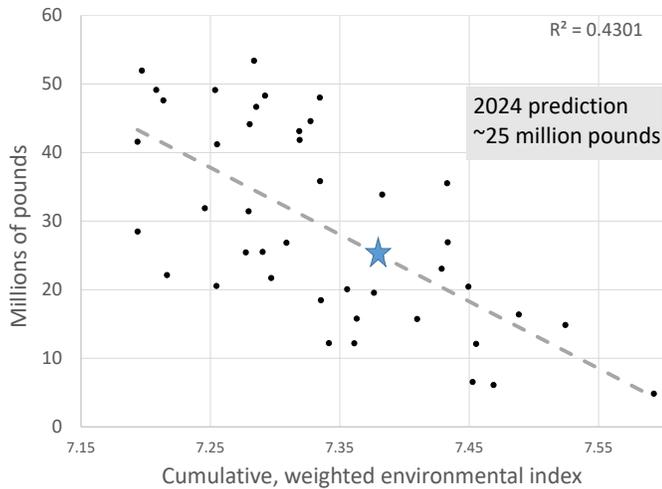


Figure 20. Cumulative, unified forecast of Oregon pink shrimp catch based on environmental factors.

Figure 21. Cumulative, unified forecast of Oregon pink shrimp catch based on sampling data.

This cumulative, unified forecasting is based on the typical percentage of weight contribution of each age class to the current year's catch. The environmental model predicts 2024 to be a 25 million pound season (Figure 20), while the sampling data model predicts a 30 million pound season (Figure 21).

To give some context of the variability expected, for last year's 44.1 million pound season, the predictions were 34 (environmental model) and 38 million pounds (sampling model).

## Regulation Info

Key regulations that apply to <b>Oregon</b> pink shrimp deliveries				
		Fishing off CA*	Fishing off OR**	Fishing off WA***
Areas	0-3 miles	No fishing	OR permit needed	No fishing
	3-200 miles Key closed areas	Delgada Canyon, Tolo Bank, other closed areas (see CA regs)	Nehalem Bank, Daisy Bank, Stonewall Bank, Heceta Bank, Coquille Bank	Grays Canyon (see WA regs)
Mesh size		Minimum 1-3/8"	No minimum	
BRD		≤ 3/4" spaced rigid grate		
LEDs		5 LEDs in central 16 feet of each net, spaced 4 feet apart (More LEDs may be used)		
Count per pound		≤160 shrimp/ pound		
VMS declaration		Required		
Season		April 1- October 31		
*CA Regulation details: <a href="#">CA Fishery Management Plan</a> **OR Regulation details: <a href="https://www.dfw.state.or.us/OARs/index.asp">https://www.dfw.state.or.us/OARs/index.asp</a> ***WA Regulation details: <a href="https://wdfw.wa.gov/fishing/commercial/shrimp#">https://wdfw.wa.gov/fishing/commercial/shrimp#</a> **** <a href="#">NMFS groundfish limits</a>				

# Research Priorities

Here, we address three research areas in priority order: 1) shrimp population dynamics, 2) non-target catch and 3) ecosystem effects.

## Priority 1: Shrimp Population Dynamics

Our documentation and analysis of pink shrimp population dynamics is the highest priority of our program. Understanding changes in the shrimp population and comparing it to past populations, environmental data and other factors is critical to our ability to detect and address overfishing. ODFW's pink shrimp program has a thorough, long-term dataset of shrimp populations, which is central to our ability to assure it is fished sustainably.

### 2023 Sampling:

We calculated annual indices on the number of shrimp using fish ticket, logbook and biological sample data. ODFW biologists collected logbooks for 844 trips, entered data for 8,146 shrimp tows, and measured 22,705 shrimp.

ODFW staff completed data entry of raw biological sample data going all the way back to 1957. This longterm dataset is composed of almost 1.5 million shrimp!

### Planned for 2024:

ODFW staff are finalizing a manuscript on the use of a body condition index (BCI; i.e., fat vs. skinny) to predict stock levels of pink shrimp. BCI and CPUE for pink shrimp are highly correlated. However, BCI has some key advantages for stock assessments: it is a quasi-fishery independent metric and can be calculated and analyzed more rapidly than CPUE.

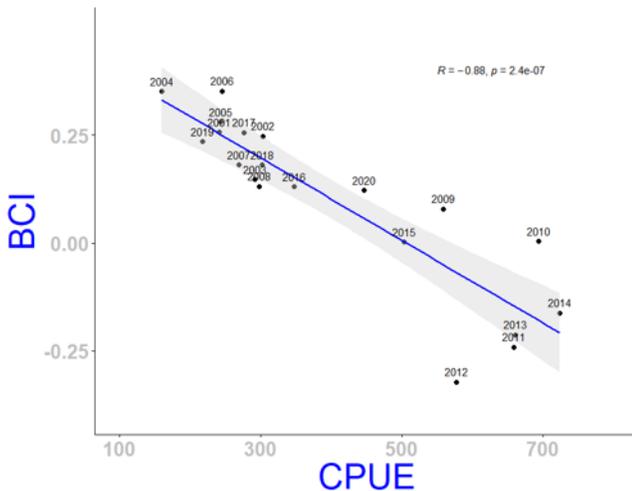


Figure 22. BCI and CPUE of pink shrimp are strongly correlated. (Groth and Anderson, in press)

## Priority 2: Non-Target Catch

### Observed and Estimated Bycatch of Eulachon in the 2002–21 U.S. West Coast Fisheries:

Eulachon, *Thaleichthys pacificus*, have always been common bycatch to the U.S. west coast shrimp fishery and are listed as "threatened" under the Endangered Species Act. As such, industry and science have made great strides in reducing bycatch in the fishery. Research conducted collaboratively among industry and scientists resulted in methods, then applied rules, which reduce eulachon bycatch substantially.

In 2023 NOAA fisheries published a technical memo describing eulachon bycatch in the pink shrimp and other U.S. west coast fisheries. It is available here: <https://repository.library.noaa.gov/view/noaa/56197>. Most bycatch of eulachon occurs in the pink shrimp fishery and while optimized bycatch reduction grates and LED lights placed on the footrope of trawls have greatly reduced the amount of eulachon bycatch, we will continue to work with the fleet to improve the sustainability of the fishery.

### Planned for 2024:

ODFW has secured grant money to charter a shrimp vessel during the 2024 season for a research project. We are specifically interested in investigating the effect of fishing line height (i.e., the height of the trawl off the seafloor) on the amount of shrimp and fish caught in trawls with LEDs placed on the footrope. Shrimp vessel owners and permit holders who are interested in partnering with ODFW on this important research should contact [Eric Anderson](#) on how to apply for the contract.

### More free LEDs!

ODFW has also secured funding to purchase more LEDs to distribute among active Oregon shrimp vessels. We are excited to continue to partner with the shrimp fleet and help offset some of the cost of this important bycatch reduction tool. ODFW staff will be reaching out to vessels to give them their lights.

## Priority 3: Ecosystem Effects

While the first two priorities are often visited and clearly evaluated, habitat effects of shrimping are more challenging to evaluate. ODFW has periodically compared trawled and non-trawled areas to understand the effects and recovery rate of habitats in relation to shrimping activity. We carry this out in the area of Nehalem Bank, Oregon where shrimping was excluded in 2006. Remote Operated Vehicles (ROVs) are used to view these habitats at trawled and non-trawled sites over the course of time. We did this work in 2007, 2012 and 2022.

### Planned for 2024:

Video from the 2022 survey still needs to be reviewed and analyzed. This will be a priority for 2024.

Eulachon smelt (*Thaleichthys pacificus*) have always been common bycatch in the west coast pink shrimp fishery. In 2010, they were listed as "threatened" under the Endangered Species Act. Fishery scientists and industry leaders have made substantial strides in reducing eulachon bycatch. One of the major breakthroughs in bycatch reduction was the discovery that attaching LED fishing lights to the fishing line of a shrimp trawl could reduce eulachon bycatch by as much as 91% ([Hannah et al. 2015](#)). Fishery managers in Oregon, Washington, California, and British Columbia, Canada used this research to make regulations that require shrimpers to maintain at least five LED fishing lights, spaced four feet apart in the central 16 feet of the fishing line of each trawl (see [OAR 635-005-0630](#)). While the use of LEDs has undoubtedly been successful in reducing bycatch in the fishery, ODFW wanted to get a better understanding on how LED fishing lights were used fleet-wide.

## Results and ODFW Recommendations

Overall, there was a positive response and several comments encouraged further study to continue to find ways to reduce bycatch.

More than 60% of vessels reported seeing less bycatch when using more than five lights (Figure 23). On average, the Oregon fleet uses eight LED fishing lights on both the port and starboard side, spaced approximately 4.8 feet apart. **ODFW recommends spacing LED fishing lights four feet apart to remain in compliance with [OAR 635-005-0630](#).** There was an overall agreement within the fleet that as you fished further north, more lights were required due to a large presence of eulachon in Washington waters last season. Additionally, vessels using wider trawls reported the need for more LEDs to cover the length of the fishing line. While the scientific research does not support that using more than five lights on the fishing line of each trawl improves bycatch reduction, it did not hurt either. However, placing LEDs anywhere besides the fishing line (e.g., the headrope or around the BRD grate) did cause a significant increase in eulachon bycatch. **ODFW strongly recommends limiting LED fishing light placement to the fishing line of the trawls.**

Overall, shrimpers reported an even split between using Lindgren-Pitman Electralume, FishTek NetLight/PotLight, or a mixture of both brands for illuminating the fishing line of their trawls (Figure 24). LED fishing lights must be approved by ODFW before being used as a footrope lighting device. You can find a list of ODFW approved lighting devices here: <https://www.dfw.state.or.us/mrp/shellfish/commercial/shrimp/regulations.asp>.

Maintenance of LEDs fluctuated throughout the fleet. 86% of shrimpers reported checking the LEDs once a day, either at the beginning or end of each fishing day (Figure 25). 14% of shrimpers reported checking their lights less frequently, usually at the start or end of a shrimp trip. Survey results indicated that battery life was an average of 15 days, whereas the whole light lasted an average of 18 days with some vessels reporting lights lasting up to 90 days. **ODFW recommends checking that LED lights and batteries are functioning properly at least once a day.**

ODFW worked with 21 vessels to assess the condition of the LED fishing lights they were using. Accessible lights (e.g., lights that were not buried or within rolled nets) were counted then tested to determine how many were functioning properly. Approximately 70% of lights that were tested were in good working order. 10 vessels had every accessible LED light in working order, while four vessels had less than half of their accessible lights working.

The Lindgren-Pitman and FishTek lights contain O-rings that prevent seawater from entering the plastic housing. They may need to be lubed or replaced occasionally to prevent leakage. **ODFW recommends checking batteries, maintaining lights regularly, and obtaining the silicon sleeves for FishTek lights.** If the lights are zip tied to the sleeve, then tied to the foot rope, there is a lower chance of the unit breaking or being crushed, reducing the need to replace whole lights.

For more information on previous LED fishing light studies, visit our website: <https://www.dfw.state.or.us/mrp/shellfish/commercial/shrimp/LEDs.asp>

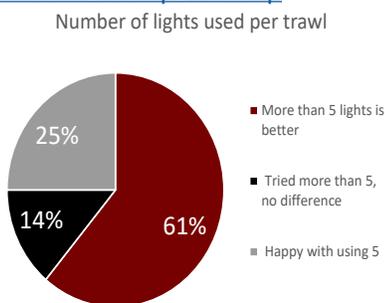


Figure 23. Percent of fleet that has tried using more than 5 LEDs.

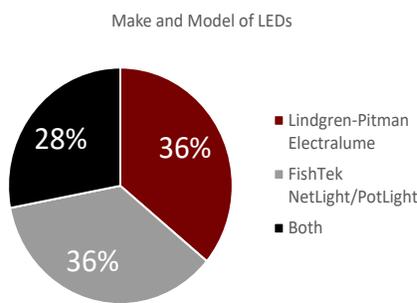


Figure 24. Percent of fleet that uses different brands of LEDs.

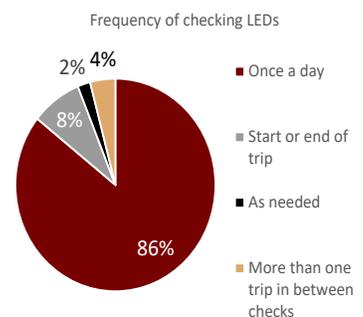


Figure 25. Frequency that vessels check that their LEDs are working.

# Sustainability

## Enforcement

In 2023, Oregon State Police (OSP) performed several enforcement actions including regular inspections, count per pound checks, and response to wastage issues.

On the docks, OSP's Marine Fisheries Team made a full investigation on a shrimp vessel regarding small shrimp. Troopers took samples of shrimp throughout the offload to calculate the average count per pound. The average count per pound of this landing exceeded the maximum count per pound for pink shrimp, which is 160. Other landings were spot checked in 2023, but no other issues were found. Good shrimp counts were a result of careful fishing and strong cohorts of age 2 and age 3 shrimp (see cover page infographic) which were more than 70% of the catch by weight.

OSP troopers also responded to multiple landings that had a large amount of discarded/weighback shrimp. Discarded shrimp was spoiled and could not be sold for human consumption. No citations were issued, however, OSP plans to continue to investigate landings with large amount of discard and will give citations if they can prove wanton wastage of shrimp. See [ORS 509.112](#).

In 2023, OSP troopers spent 38 hours making 24 contacts during pink shrimp enforcement work.

## MSC News

In 2007, Oregon's pink shrimp fishery became the first shrimp fishery in the world to become certified "sustainable" by the Marine Stewardship Council (MSC). Every year since, annual surveillance audits take place, where experts in the field of fisheries and sustainability review the condition of the fishery and the progress of science and management. A more thorough review and recertification is required every five years.

In 2022 the pink shrimp fishery underwent its third recertification. Joining Oregon and Washington, California's fishery was also added as a unit of assessment. During this process, the U.S. west coast pink shrimp fishery was closely scrutinized by a panel of worldwide fishery sustainability experts and re-certified as sustainable!

The 2023 recertification, which will be good through 2028, was under the MSC Fisheries Standard version 2.01. MSC has revamped their standard to version 3 and the pink shrimp fishery will likely be reassessed under version 3 in 2027-2028. ODFW and industry leaders will monitor this transition closely to make sure we continue to meet the qualifications to maintain our MSC certification.

For more information on version 3 of the MSC Fisheries Standard, visit their website: <https://www.msc.org/standards-and-certification/fisheries-standard/version-3>



## Discard / Weighback

While discard/weighback in the shrimp fishery remains low (less than 1%), we have noticed an increase in discarded shrimp over the last several years. 2022 saw the highest percent discard on record due to the discard of entire landings because of the presence of broken glass in the shrimp grounds just north of Coos Bay. In 2023 shrimpers avoided these areas and discard decreased. However, we still saw above average discarded shrimp, which coincided with the lowest average price per pound since 2010 (Figure 26).

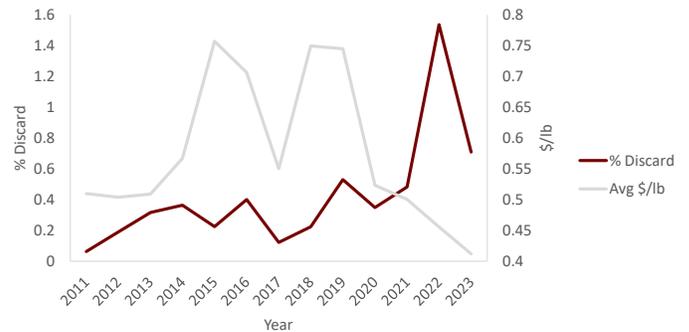


Figure 26. Annual percent of discarded shrimp compared to average price per pound for shrimp.

In several landings, there was substantial amounts of shrimp that was too warm or spoiled and, therefore, could not be processed or sold for human consumption. While value of the shrimp fishery is a concern to both industry and managers, it is important to minimize wastage for the sustainability of the resource. Although they are very different species and fisheries, the percent of shrimp discard is more than double the percent discard recorded in the Dungeness crab fishery (Figure 27).

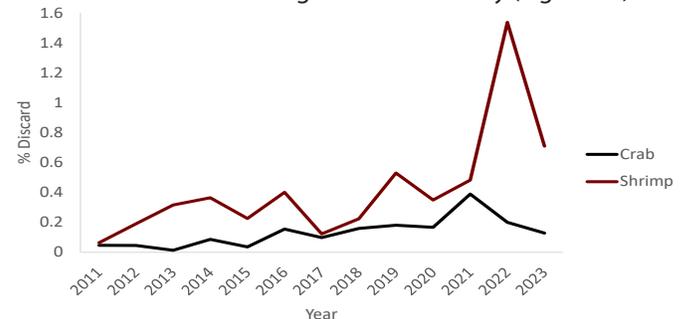


Figure 27. Difference in annual percent discard for the commercial shrimp and crab fisheries.

OSP and ODFW staff discussed icing procedures with processors and boat crews and discovered that some cases were a result of under-icing. **Most shrimp processors recommend boats collect and mix ice equal to 15-20% of their shrimp catch.** Other cases were a result of broken equipment or delays in offloads. ODFW recommends more open dialogue between boats and processors to ensure that the boats are mixing ice and shrimp to acceptable levels and can land in a reasonable amount of time or arrange for more ice to be put on the boat when landings are delayed. OSP will continue to monitor landings for wanton waste and will intervene as needed.

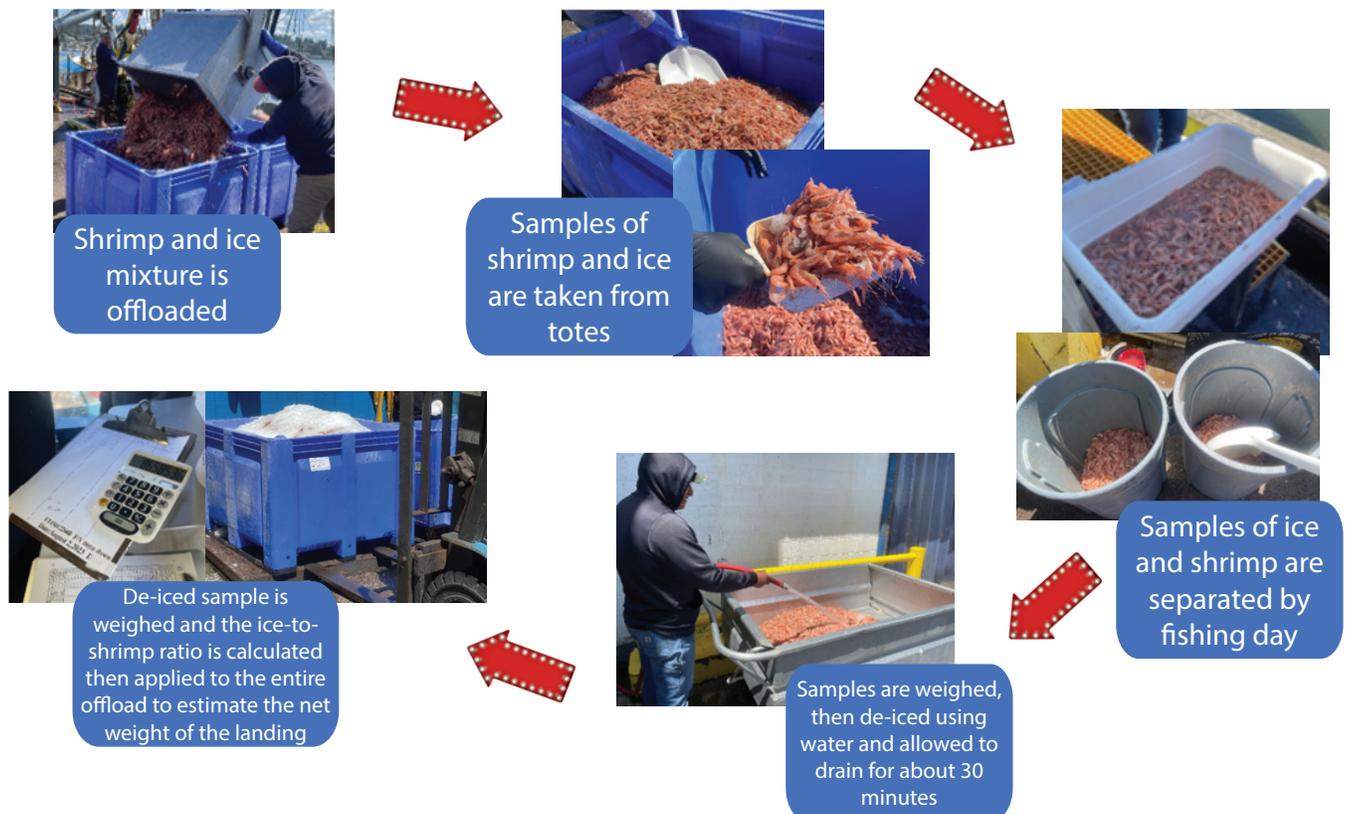
## Shrimp and Ice

The ice-to-shrimp ratio plays a crucial role in determining the quality, safety, and economic viability of pink shrimp. In March 2022, Oregon pink shrimp processors were notified by ODFW to submit their methodology for how they calculate ice-to-shrimp ratios and net weight of shrimp in order to be in compliance with [OAR 635-006-0205](#). ODFW received plans from shrimp processors in Brookings, Charleston, Newport, and Astoria.

The ice-to-shrimp ratio is a quantitative measure that expresses the proportion of ice used to preserve and transport pink shrimp. It is essential for several reasons:

- The main focus of the request made from ODFW was to ensure accurate net weight of shrimp landed was being calculated and recorded by Oregon pink shrimp processors.
- Quality Assurance: A lower ice-to-shrimp ratio implies that less ice is used, resulting in a higher concentration of shrimp. This can lead to less preserved, lower-quality shrimp, which is crucial for consumer satisfaction and marketability. Common ice percentage desired by shrimp processors is around 15-20%.
- Food Safety: Proper refrigeration and icing are fundamental for preserving the safety of seafood products. An appropriate ice-to-shrimp ratio ensures that shrimp remain at safe temperatures during transportation and storage, reducing the risk of bacterial growth and foodborne illnesses.
- Economic Implications: The cost of ice, storage, and transportation is a significant factor in the profitability of pink shrimp harvesting operations. Managing the ice-to-shrimp ratio effectively can improve the economic sustainability of the fishery.

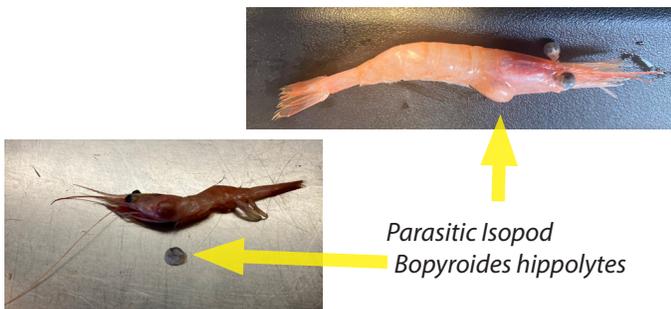
During the 2023 season, ODFW staff visited every Oregon shrimp processor and observed their sampling process to ensure that their plans were being followed and accurate net weights of shrimp were being recorded on fish tickets. While every processor has their own plan, the general idea is the same (see flow chart below). Each processor has different tools for collecting and de-icing samples, and therefore tools and methodologies varied slightly between processors. It was determined that Oregon processors would be allowed to use their own methodologies, if approved by ODFW, and tools that they have access to, in order to give greater flexibility to the process. This flexibility allows for better industry engagement and collaboration with industry stakeholders. Input from these stakeholders can help strike a balance between quality, safety, and economic sustainability. All shrimp processors were found to be compliant with [OAR 635-006-0205](#), however, ODFW staff will make necessary suggestions on how to improve their methodologies and calculations of ice-to shrimp ratios.



# Other Topics

## *Bopyroides hippolytes*

In 2023 we saw a few *Bopyroides hippolytes*, a parasitic isopod (think of a “pill bug”) in shrimp samples. We see these isopods on shrimp occasionally, but most often when densities are high. We noticed them in 2015 and 2022, two of our greatest shrimp abundance years. These parasitic isopods live on the gills of the shrimp, underneath the shell covering the “head” (carapace). Viewed from the outside, it appears as a blister on the carapace of a shrimp. Cutting away the blister reveals the isopod. Reported detrimental effects on host shrimp include slower growth rates and delayed sex change from male to female (Cowles 2008).



Parasitic Isopod  
*Bopyroides hippolytes*

## *Eualus macrophthalmus*

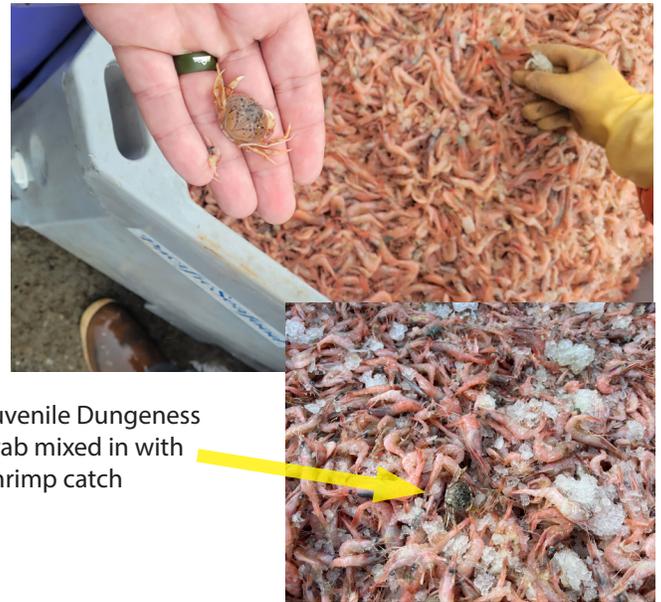
This cousin of the pink shrimp, commonly known as the large-eyed eualid, was observed in a pink shrimp sample that was landed in Newport in August 2023. At first sight, the surprised biologist thought it was an age-0 pink shrimp with eggs... But after closer examination this individual was keyed out using Butler's (1980) *Shrimps of the Pacific Coast of Canada*. Large-eyed eualids are rare in pink shrimp catch due to their small size, as they only reach a maximum body size of three inches. They are likely pelagic for most of their life and are usually found in deep water (~200 fathoms).



*Eualus macrophthalmus* AKA large-eyed eualid

## Dungeness Crab

Towards the end of the season, a few shrimp landings had juvenile Dungeness crab mixed in with the shrimp catch. All landings that contained crab were from fishing that had occurred off Northern California in October. ODFW spoke with shrimpers and plant workers and learned that some had seen them before when shrimping in autumn off Northern California, while others had never seen them before in shrimp catch. One deckhand said they are easy to pick out from the shrimp catch and return to the ocean alive. ODFW made recommendations to captains about raising their fishing line height and sorting bycatch to return as many juvenile crabs to the ocean as possible.



Juvenile Dungeness crab mixed in with shrimp catch

## Literature Cited

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Cowles, D. (2008). “*Bopyroides hippolytes*.” *Invertebrates of the Salish Sea*, 2024, from <https://inverts.wallawalla.edu/index.html>.

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Joint Columbia River Management Staff, ODFW and WDFW. 2024 Joint Staff Report Concerning Stock Status and Fisheries for Sturgeon and smelt. 55 p.

### How to cite this report:

Anderson, E.S., Palmer, M.L., and Avila, A.M. (2024). Oregon's Annual Pink Shrimp Review. Newport, OR, Oregon Department of Fish and Wildlife. 35: 16 p.

# Who We Are

ODFW's mission is to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations.

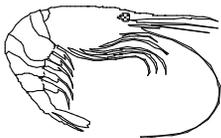
The pink shrimp fishery project is managed with the following long term objectives:

1. Maximize biomass yield from the pink shrimp fishery, consistent with detecting and addressing any significant growth or recruitment overfishing that develops.
2. Operate the fishery, to the extent possible, under a stable regulatory environment that allows vessel operators maximum flexibility in deciding where, when and how to fish for pink shrimp.
3. Through collaborative research with vessel operators and the sharing of research findings, develop and implement measures to minimize direct bycatch mortality, the unseen mortality of animals that escape capture, and any adverse effects on seafloor habitat from the operation of the fishery.

Oregon's pink shrimp project is spread out among the major ports of Oregon to:

1. Collect fishery dependent data (biological samples and logbooks)
2. Assist and communicate with shrimpers.

## Good Luck Shrimping in 2024!



# Questions?

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Jill Smith, Assistant Project Leader (503) 325-2462

Licensing: (503) 947-6101  
Fish Tickets: Nadine Hurtado (503) 947-6247



Marine Resources

# ODFW Pink Shrimp Team

**Astoria:** Jill Smith

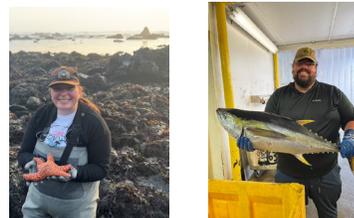


**Newport:**  
Eric Anderson



**Charleston:**

Meaghan Palmer, Joel Prickett, and Katlyn Lockhart (clockwise)



**Brookings:**

Valerie Stephens, Trinity Sylvester, and Jake Cupp (left to right)



Astoria

Newport

Charleston

Brookings

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