



8th Annual

Oregon Department of Fish and Wildlife • Marine Resources Program

Dungeness Crab Fishery Newsletter

November 2016

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Have Questions?

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Visit Our Website:

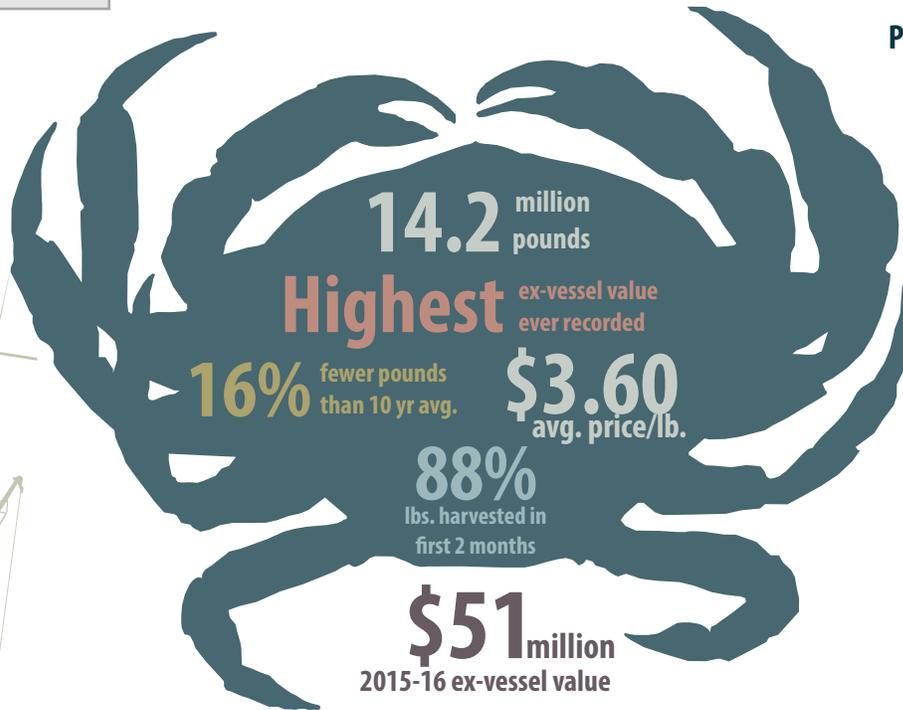
<http://www.dfw.state.or.us/MRP/shellfish/commercial/crab/index.asp>

Excellent Ex-Vessel Value, Average Harvest

The 2015-16 Oregon Dungeness crab season brought in the highest ex-vessel value ever, totaling \$51.0 million dollars! After a month long delay due to elevated levels of domoic acid detected in crab in the southern half of the state, the season kicked off coast-wide on January 4th, 2016. The average price per pound peaked at \$5.06 in March and averaged \$3.60 for entire season. This season's average price was the second highest on the books, just \$0.42 below last season's record high. Landings totaled 14.2 million pounds, about 16% below the 10 year average of 16.8 million pounds. Landings into Oregon ports from the ocean and Columbia River were made by 306 different permit holders in 5,640 separate landings. As usual, the vast majority (88%) of crab were caught in the first eight weeks of the fishery. This is on par with recent seasons that ranged from 83%-89% landed in the first eight weeks. The Astoria area led all ports in total pounds landed with more than 4.4 million pounds, followed closely by the Newport with 4.2 million pounds. The Coos Bay and Brookings areas followed with 2.8 and 1.3 million pounds. There were an estimated 112,200 pots used this past season, which is slightly below the average of 115,000 pots.

How'd it GO?

2015-16 Oregon Season Summary



Pounds Landed

31% Astoria/Seaside

4% Nehalem/Garibaldi/Pacific City

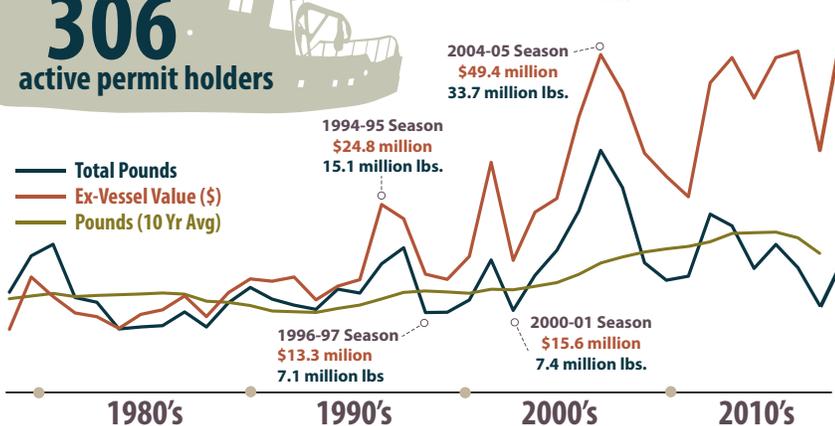
30% Depoe Bay/Newport

3% Florence/Winchester Bay

20% Charleston/Coos Bay

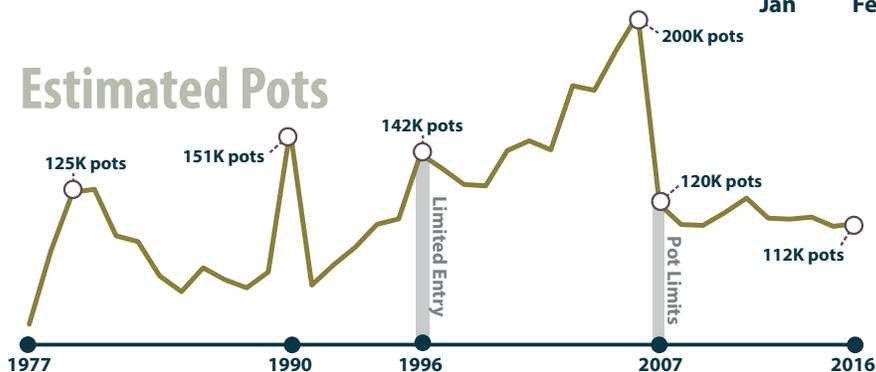
3% Bandon/Port Orford

9% Brookings/Gold Beach





Estimated Pots



(Top) The average price per pound peaked in March at \$5.06 per pound, which was down from last year's peak monthly average price of \$8.23 per pound in February 2015.

(Left) Estimated pots declared, per year, in the Oregon commercial Dungeness crab fishery between 1977-2016. The number of pots used in the fishery has stabilized since the implementation of pot limits in the 2006-07 crab season.

Domoic Acid: Where Are We Now?



Photo: ODFW

This past year we had one of the largest Harmful Algal Bloom (HAB) events ever observed on the west coast, leading to some of the most extensive commercial and recreational shellfish fishery closures and season delays that we have ever seen. The opening of the Dungeness crab fishery in Washington and Oregon was delayed until the beginning of January due to elevated levels of domoic acid (DA), a naturally occurring bio-toxin produced by marine algae of the genus *Pseudo-nitzschia*. In California, elevated levels of DA persisted much longer and caused more extensive delays in their crab fisheries, with some areas not opening until May. Due to continued elevated levels of DA in razor clams around the Coos Bay area, the Oregon Department of Agriculture (ODA) continued to test crab in the Coos Bay area for DA throughout 2016. All crab samples tested had DA levels well below the Food and Drug Administration (FDA) action threshold of 30ppm in cooked viscera, so ODA did not recommend any further action for Oregon crab fisheries during the season. Oregon crab domoic acid results can now be found on ODA's website, listed below. We would

like to thank everyone that has helped us in collecting samples this year for toxin testing, it has been a much more intensive this year and we appreciate everyone's efforts!

In response to the DA delays this year, the Tri-State Dungeness crab Committee (Tri-State), along with each state's health agencies, met in June to identify ways to improve coordination and prepare for future HAB events affecting the west coast crab fishery. Through this meeting we gained a better understanding of how the three states monitor DA and discussed development of a Tri-State crab protocol for monitoring HABs and DA and reopening Dungeness crab fisheries after a bloom. A summary of the 2016 Tri-State meeting is posted on the Pacific States Marine Fish Commission's website at <http://www.psmfmc.org/crab/>. We are still in the process of developing an agreed upon plan, however as the 2016-17 opening of Oregon's crab fisheries approach we will continue to work closely with ODA, industry and the other states to monitor DA levels in crab as we have in the past.

Members of the genus *psuedo-nitzschia* (above) produce domoic acid, a naturally occurring bio-toxin.

Want Domoic Acid Results? Visit: www.oregon.gov/ODA/shared/Documents/Publications/FoodSafety/CurrentCrabBiotoxinData.pdf

Fishery Monitoring News & Updates

Over the past six years, through the re-establishment of the commercial crab program, ODFW has implemented multiple monitoring projects to collect information on the crab resource and commercial fishery. We've collected biological data from the preseason test fishery, dockside as you offload your crab, at-sea aboard voluntarily observed vessels, and through the collection of female crab independent of the fishery. These data helps us evaluate stock trends and keep tabs on the resource (see "Why Monitor" to learn more). This coming year we are planning to evaluate all monitoring projects and decide where we should be focusing efforts into the future. Below are summaries of our core monitoring efforts over the past year.

Why Monitor?



Monitoring provides data to compare historical stock trends with current info

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



Monitoring provides data to track female mating success

Provides information to evaluate the success of management measures



Dockside Sampling

During the 2015-16 crab season we had seasonal sampling coverage on the central and south coast and intermittent sampling coverage on the north coast for sampling catch at the docks. The sampling consisted of measuring carapace widths and sample weights from a certain number of crabs, based on size of the offload. We sampled 500 offloads from 213 different vessels, representing close to 18% of pounds landed for the entire season. Carapace widths averaged 169 mm coastwide and ranged from an average of 166 mm in Brookings to 170 mm in Newport and Astoria areas.

Ride-Along Sampling

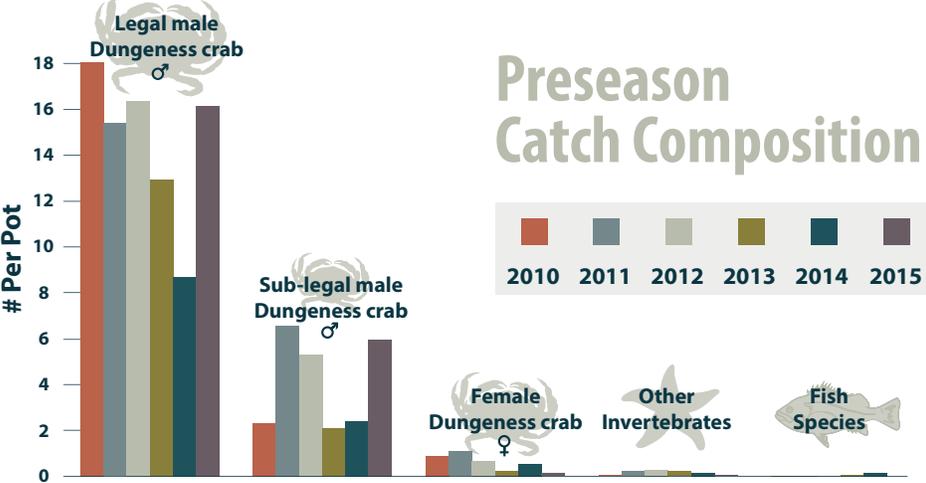
This past season we were able to get out and observe on 14 commercial crabbing trips from five different ports including Astoria, Newport, Charleston, Port Orford and Brookings. We were successful this year in sampling at least one trip in every month of the season, Jan through Aug. To evaluate bycatch of crab and non-crab species caught while crabbing we sampled 920 pots and measured over 7,000 crab.

Female Mating Success

Beginning in 2012, we have collected a small number of female Dungeness crab out of a number of ports to assess relative rates of female Dungeness crab mating success. This is done by dissecting female crab to determine if a "sperm plug" is present, a definitive indicator that a female crab has recently mated. This year we dissected just over 200 crab harvested out of three ports. This monitoring continues to indicate that the majority of adult female crab that have definitely molted successfully mate each season.

Preseason Testing

In November 2015, we sampled a subset of pots on every preseason test trip to evaluate bycatch of crab and non-crab species caught just before the season opens. In total we sampled 68 pots and measured over 1,500 crab. Results of this sampling continue to indicate catch per unit effort (CPUE) of sub-legal male Dungeness crab is the highest of all the categories of bycatch, followed by female Dungeness crab, other invertebrates (sea stars, etc.) and fish species at this time of year.



Bars represent the composition of pot catch data from preseason tests in the six years. Results continue to indicate catch per pot of sub-legal male Dungeness crab is the highest of all categories of bycatch, followed by female Dungeness, other invertebrates (sea stars, etc.) and fish species at this time of year.



Collecting crab for preseason testing. ODFW collects a subsample of these pots to evaluate bycatch.

Logbooks: What's the Gain for All the Pain?

Logbooks are another tool we use to monitor the fishery, and mandatory logbook use began in the 2007-2008 crab season. Even though the program has only been around a few years, the data they provide have been valuable to the resource and fishery.

Our most extensive use of crab logbook data has been in harvest policy development for the commercial Dungeness crab fishery to help ensure a sustainable fishery for the future. The harvest policy consists of a Limit Reference Point (LRP) where we defined a population state of the fishery we aim to avoid, combined with a suite of potential management actions to be taken should that low point be reached. Catch per pot from logbooks is a key element of the LRP and is evaluated annually.

Additionally, here are a few more ways that logbooks are used:

- verifying the location and value of crab fishing grounds in marine spatial planning
- evaluating biological and economic effects of existing marine reserves
- proactively investigating ways to address whale entanglement risk while minimizing disruption to the current management system

And it doesn't stop there – your logbook data are being used for three additional projects this past year alone! These projects, described below, will help us gain more knowledge to benefit the crab resource and the fishery you participate in. The release of all logbook data to collaborators is preceded by an extensive data request process and development of a Confidential Data Use and Non-Disclosure Agreement between all parties.

Bio-Economic Model of Differential Bycatch Mortality Rates

Oregon State University and The Research Group are investigating the potential biological and economic impacts of differential bycatch mortality rates in the Oregon commercial crab fishery. Their project uses crab logbook data for both effort and spatial components of their model. This project was funded by the Oregon Dungeness Crab Commission and the researchers have been engaging with industry through a steering committee. This research will likely wrap up by the end of 2016.

Analysis of Marine Protected Areas Via the Investigation of Ecosystem Services

In partnership with Oregon State University, ODFW's Marine Reserves Program is updating and further developing a bioeconomic model to help determine the likely impacts of Oregon's marine reserves in the next decade. The project uses a variety of social, economic, and catch data, including crab logbook data to model the efficacy of Oregon's Marine Reserves in providing ecosystem services.

Logbook Reminders

-  All landings in an Oregon port require a logbook entry
-  Make sure logs are filled out completely, accurately and legibly
-  Logs are due within 10 days after the month you fished in
- Not sure how to fill out logbooks?
-  See the 1st page of the log for an example
- Crab permit holders are responsible
-  for ensuring logbooks are maintained accurately & truthfully

Reconstructing a Historical Time Series of West Coast Dungeness Crab Abundance

NOAA's Northwest Fisheries Science Center is conducting a retrospective analysis of logbook and landings data from the Dungeness crab fishery in order to create a historical time series of abundance and recruitment. This reconstruction of biomass analysis is part of a larger project supported by National Science Foundation and NOAA that involves examining connections between climate/oceanographic variability and the productivity of key commercially-harvested stocks (salmon, pink shrimp, Dungeness crab, albacore, and groundfish) on the West Coast. The project will then use the information to examine patterns between stocks, with the goal of identifying groups of species that may provide more robust "portfolios" for fishermen and fishing communities in the face of a changing environmental landscape.

Crab Pot Camera: A Peek Inside the Pots

Crab behavior and activity within crab pots can now be monitored with our newly-designed crab pot time-lapse camera system. We hope to use this system to investigate cannibalism mortality or predation, among other studies. These camera systems, developed by ODFW, are operational down to 60+ fathoms, have a synchronized LED flash, and are capable of recording for multi-day periods without maintenance. Although implementing this new technology has been a learning process, we have used them 19 times at-sea so far. Each deployment has been about a week, with our longest soak of 9 days taking over 13,000 pictures! We have mainly focused on obtaining time-lapse pictures throughout this summer but have started experimenting with some time-lapse video as well. We will be wrapping up this year's at-sea trials this fall and plan to be back out on the water by spring to further expand this research.

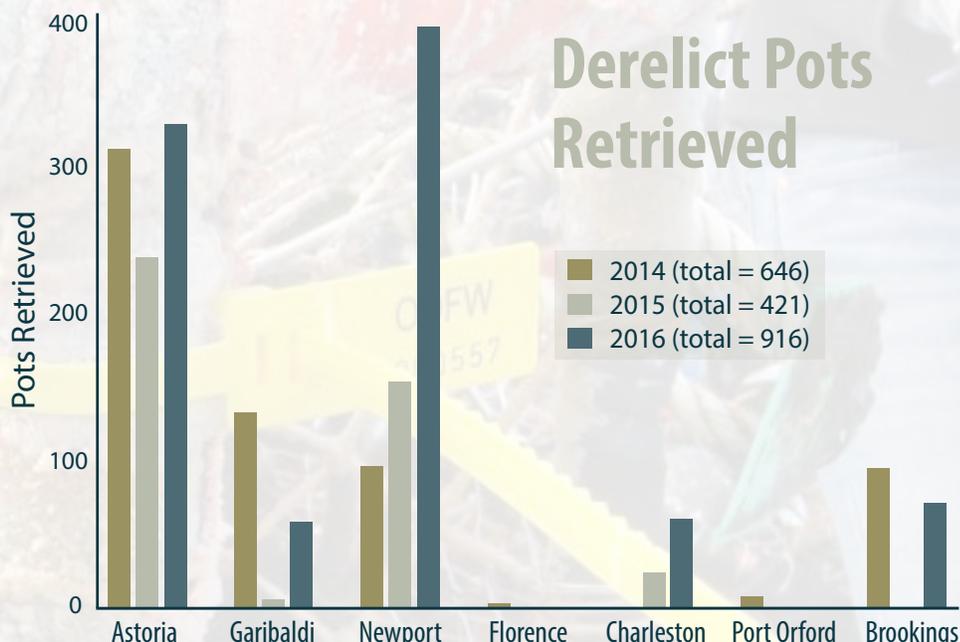
Photo: View of crabs in a pot, taken by the crab pot camera system.



Oregon Fleet Recovers 916 Derelict Pots

To incentivize removal of lost and abandoned crab gear from the ocean, the ODCC recently supported legislation to exempt crab pots recovered in a permitted post season program from Oregon's personal property law, which ultimately allows participants to keep or sell the gear. The Post-Season Derelict Gear Recovery Program was first implemented in 2014, for the third year in a row the program was a success! A record high of 916 commercial crab pots were removed from waters off Oregon. The program continues to raise awareness about derelict crab gear removal efforts and operates very efficiently.

Throughout the duration of the four-week program this year (Sept. 1st - 30th) we issued 52 permits, of which 29 permits recovered gear. For enforcement and tracking purposes, permit requirements included pre and post recovery trip notifications, logbooks, and registration and tagging of recovered gear by state officials. Recovered gear was brought into 5 Oregon ports from 47 separate retrieval trips. Pots retrieved were from 192 different vessels with the majority



Removed pots were brought into many of the major crabbing ports during the first two years of the permitted post-season gear recovery program. In 2016 there were 916 derelict pots recovered.

from this past crab season and in useable condition. All gear was registered and tagged by ODFW or OSP at the dock and all gear registration forms are posted on our website to allow any previous gear owners interested in negotiating for retrieved pots

to contact retrieving vessels (<http://www.dfw.state.or.us/MRP/shellfish/commercial/crab/psdgrp.asp>). We would like to thank everyone who participated in this year's gear recovery program.

Minimizing Whale Entanglements

Whales occasionally become entangled in fishing gear, including but not limited to crab gear, at times causing serious injury or mortality. Since marine mammals are federally protected under the Marine Mammal Protection Act (MMPA) these entanglements are tracked and assessed by the National Oceanic and Atmospheric Administration (NOAA). In recent years, NOAA has observed an increase in the number of whales entangled in fixed gear fisheries along the west coast and has been working with each of the states to share whale entanglement information and explore ways to reduce risk of entanglements in fixed gear fisheries. In collaboration with all three states, before the opening of this past season NOAA developed a pot fishery best practices guide to minimizing marine mammal entanglements which was distributed to vessels during hold inspections. The

guide can also be found on our website at http://www.dfw.state.or.us/MRP/shellfish/commercial/crab/news_publications.asp.

In this coming year collaborative projects funded by NOAA are planned with the states and industry to find, test, and promote practical and effective gear modifications and practices to reduce whale entanglements in crab pot gear. They will also be seeking widespread fishermen involvement in a "gear survey" to gain a better understanding of the types of gear set-ups currently being used in the Dungeness crab fishery. Additionally, the Pacific States Marine Fish Commission is planning a two-day workshop with industry and marine mammal experts to discuss the latest science in reducing entanglements to help generate and prioritize ideas for new gear and practices to minimize whale entanglement on the

west coast. In April 2015, the California Dungeness Crab Task Force (DCTF) was informed of increasing trends in large whale entanglements, as reported by NOAA. A multi-stakeholder Working Group in California was convened in September 2015 to discuss this issue and proactively develop strategies and options for reducing the risk of whale entanglements in California Dungeness crab fishing gear. Fishermen at recent NOAA whale entanglement informational meetings along the Oregon coast this September expressed interest in creating an Oregon working group, similar to California. Oregon Sea Grant is taking the lead to put this together, if you are interested in participating please contact Kaety Jacobson at Kaety.Jacobson@oregonstate.edu (541) 574-6534 or Amanda Gladics Amanda at Gladics@oregonstate.edu (503) 325-8573.

2016-17 Season Opener Info

Want Opener Updates?

Here's how you get them:



Visit Website

Starting mid-Oct we will post weekly updates on preseason testing and information about the season opening status. Updates on this webpage will continue until a decision to open the season is made.

Want opener updates? Visit: http://www.dfw.state.or.us/MRP/shellfish/commercial/crab/season_weekly_updates.asp



Sign-up for text & email updates

If you would like to receive email and/or text messages with up-to-date information about the ocean commercial Dungeness fishery please visit the link below.

Want text updates? Sign-up here: <http://dfw.state.or.us/MRP/>

You can cancel your subscription at any time by logging in on the same webpage listed above.

We Want YOU!

Volunteer to collect crab for testing!

If you are interested in volunteering to collect crab for quality and toxin testing in your port, call ODCC (541-267-5810) or ODFW (541-867-4741).

How's the Crab? 2016 Preseason Testing

In partnership with the Oregon Dungeness Crab Commission (ODCC), the first round of Oregon preseason Dungeness crab quality testing is targeted for completion by November 15 and no later than November 22nd. Crab will also be collected during the first round of testing for toxin testing by the Oregon Department of Agriculture (ODA). Results of all of these tests will be reported as soon as they are available and posted on our website at http://www.dfw.state.or.us/MRP/shellfish/commercial/crab/news_publications.asp.

Wave Energy Development off Oregon

In July 2016, the Bureau of Ocean Energy Management received indication that Principle Power, Inc. would withdraw their commercial lease request for the proposed wind energy facility offshore of Coos Bay. This means that the facility will not be built as proposed. As of November 2016 there are no energy facility structures in the water and no upcoming wave energy device deployments currently permitted off of Oregon. Structures previously installed off of Yaquina Head and Reedsport have been removed. Areas targeted for research for potential wave energy development include waters off Warrenton, Newport, Reedsport, Lakeside and Coos Bay.

For more information please contact Delia Kelly, ODFW's Ocean Energy Coordinator, at 541-867-0300 ext. 292 or email her at: delia.r.kelly@state.or.us.



2016-17 Buoy Tag Colors

Tier 200	Green/Brownish
Tier 300	Lime
Tier 500	Light Grey
Replacements	Pink

Marine Reserves Fishing Regulations

A reminder that the marine reserve sites at Cape Falcon, Cascade Head, Otter Rock, Cape Perpetua, and Redfish Rocks are closed to crabbing and fishing. Crab gear that has accidentally drifted into a marine reserve can be removed with prior approval from Oregon State Police (no species may be retained).

For marine reserves rules, maps, and coordinates visit: oregonmarinereserves.com/rules or call the ODFW Newport office at 541-867-4741. To report violations or for permissions to remove derelict fishing gear contact Oregon State Police at 1-800-452-7888.



Have a safe and productive crab season!

We are always interested in hearing from you about your fishery and the issues that are important to you. Please give us a call or stop by our office in Newport any time.

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