

Puget Sound Shellfish

Conservation, Management, and Monitoring Overview



3/14/2024 WDFW Fish Committee

Aaron Dufault – Puget Sound Shellfish Manager, Fish Program, Fish Management Division

Chris Eardley - Puget Sound Shellfish Policy Coordinator



Outline

Organizational Structure

PS Shellfish Co-management

PS Shellfish Overview

- Crustacean
- Intertidal
- Subtidal/Dive team
- Shellfish and Seaweed Biosecurity

New Resources and Work



Puget Sound Shellfish Org. Structure

Crustacean

Intertidal

Subtidal/Dive Team

Shellfish/Seaweed Health

Commercial
Crab
Shrimp

Recreational
Crab
Shrimp

Commercial
Squid

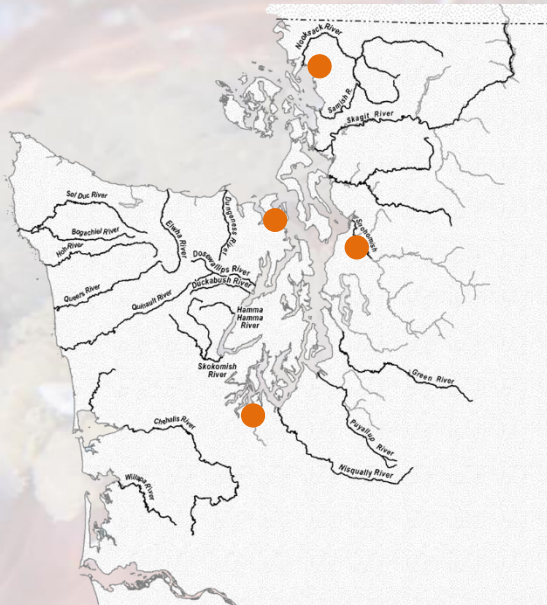
Recreational
Clam
Oyster
Squid

Enhancement

Commercial
Geoduck
Horse Clam
Scallops
Sea cucumbers
Green Urchin
Red Urchin

Recreational
Octopus
Scallops
Sea cucumbers
Scallops
Urchin

Regulatory Role
Aquaculture
permitting (import and transfer)
Inspections
Genetic conservation



Restoration & Recovery

- **Olympia Oysters**
- **Pinto Abalone**
- **Sunflower Seastar***

Puget Sound Shellfish Program

- 17+ fisheries
- 38+ co-management plans
- 35 full time staff and 14 seasonal/temp sci techs



Who we are

PS Shellfish Manager



Shellfish Policy Lead
(Chris Eardley)



PT Admin (Karen
Nordstrom)



Crustacean Team
(Katelyn Bosley)



Intertidal Bivalves +
Squid (Camille S.)



Subtidal - Dive Team
(Hank Carson)



Shellfish and Seaweed
Health
(Katy Davis)



PS Shellfish Co-Management

- WDFW is lead management entity for state shellfish fisheries
 - Contract and co-manage with WDNR primarily for geoduck
 - Work closely with 15 Puget Sound Treaty Tribes
- Boldt (1974) and Rafeedie decisions (1994), Implementation orders
 - **2002 Shellfish Implementation Plan (SIP)** - Cooperative management, harvest management plans, sharing provisions, equal opportunity, private tidelands
- Jointly-developed harvest management plans
 - 35+ management plans Puget Sound-wide
 - Without co-manager signed plans -> more onerous management steps (Sec 4.6 of SIP)
- Throughout the year, some part of our team is engaged in:
 - Co-management interaction with tribes
 - Fishery Monitoring
 - Resource/Population surveys
 - Research
 - Restoration & recovery

November 5, 2023

50th anniversary of Boldt Decision is a 'good time to be alive' for Nisqually community

By Willie Frank III, *The Olympian*



Team Lead: Dr. Katelyn Bosley

CRUSTACEAN FISHERIES

Crab and Shrimp Fisheries Mgmt., Derelict Gear Recovery

Recreational Crab

- F&W Commission Crab Policy [C-3609](#) guides state allocation with priority given to the recreational fishery.
 - “Base” season structure (July 1-Labor day, 5 days/wk)
- “3 S Management” - Male sex only, minimum size, and season to avoid softshell, to promote reproductive potential.
 - 3S not bulletproof in PS - conservation closures in SS and S. HC
- **Harvest Estimation** – Catch estimates are generated from summer and winter catch record card (CRC) data.
 - 217,000 recreational crab endorsements on average purchased (17-22 avg. summer+winter)
- **Test Fishing** - WDFW/tribal test fisheries indicate relative abundance and provide data for soft shell status prior to harvest.
 - Quotas are *currently* not directly informed by data
- New PS recreational crab creeling program – 2 new full-time staff + 8 seasonal sci techs



Commercial Crab

- PS commercial crab fishery limited by policy ([C-3609](#)) to MAs: 5,6,7, 8-1, 8-2, 9
- Fall commercial fishery targets remaining share after summer rec fishery and winter rec harvest projections
- State Puget Sound fishery includes 249 licenses held by 132 license owners
- Commercial sampling – new permanent sci tech in 2022 dedicated to PS commercial shellfish sampling (crab, shrimp, urchin/cucumber)
- Starting in fall 2022, mandatory electronic catch reporting
 - WaTix – commercial electronic catch accounting application (<https://wdfw.wa.gov/fishing/commercial/wa-tix>)

Landing History (last 5 years-state only)

- ~2.7 million pounds/year (majority from MA 7 and 8-1/8-2)
- \$5.44/pound ex-vessel price
- \$13.6 million annual ex-vessel value



Recreational Shrimp

F&W Commission Shrimp Policy ([C-3610](#)) defines allocation of both spot and non-spot shrimp between commercial and recreational



Spot shrimp

- Allocation target 70/30 rec/comm split
- Indexes of abundance are derived from test fisheries - harvest is managed with seasons, gear restrictions (pots), and bag limits
- Seasons range from 1-4 days (South & Central PS) to 6-8 weeks (N. Sound, E. Strait)
- Catch estimates include aerial surveys by plane to estimate effort (buoys or boats) & dockside creel data

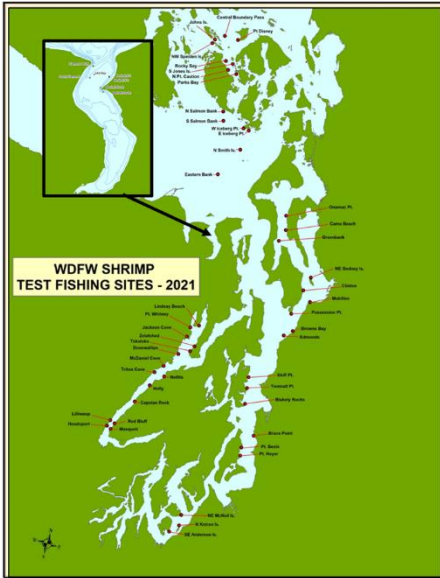


Non-spot shrimp (Dock, Coonstripe, & Pink)

- Allocation target 20/80 rec/comm split
- *Starting* to add non-spot shrimp test fishing locations
- Recreational fisheries occur in most marine areas after the spot shrimp season closes; rarely make regulation changes.
- No harvest estimation currently - fishery is managed via historical “set-asides”
- Effort appears to be low



Commercial Shrimp – Pot and Trawl



Spot Shrimp Test Fishing Locations

Spot shrimp – Pot only fishery

- 18 State commercial licenses; managed with seasons, mandatory electronic catch reporting, and trip limit requirements (declarations)
- Recent 3-year average landing of 109k lbs

Non-Spot shrimp – Pot fisheries

Dock, Coonstripe, & Pink Shrimp

- Same license holders as spot shrimp fishery (18 licenses) – not all participate
- Recent 3-year average landing of 71k lbs

Non-Spot shrimp – Trawl fishery (beam trawl)

- 5 limited-entry permits; 2 permits active in recent years
- Harvest permitted in Strait of Juan de Fuca and San Juan Islands only (MAs 5,6,7)
- Conservation measures include bycatch observers and spot shrimp retention is prohibited
- Bycatch excluder devices on 2 vessels to reduce all bycatch, including spot shrimp
- Recent 3 years average landing of 95k lbs



Team Lead: Camille Speck

INTERTIDAL TEAM

Intertidal Bivalves, Squid, Olympia Oyster Recovery

Intertidal Bivalves

Pacific oyster · Manila · butter · cockle · horse · varnish · mussels · other native clams

- Three primary (up to 10 total) species managed for recreational benefit
 - Top targets: Manila & butter clams, Pacific oysters
 - Managed with seasons, size, and daily bag limits
 - Year-round recreational opportunity
- **1,400 public beaches** managed by WDFW:
 - Owned by WDFW, WDNR, State Parks, counties, cities, ports
 - Complexity->landowner issues
 - ~40 most-popular beaches = bulk of harvest, management attention
 - ~174,000 harvester days and growing; shellfish license = “gateway fishery”
- DOH and State Parks have important non-co-management roles

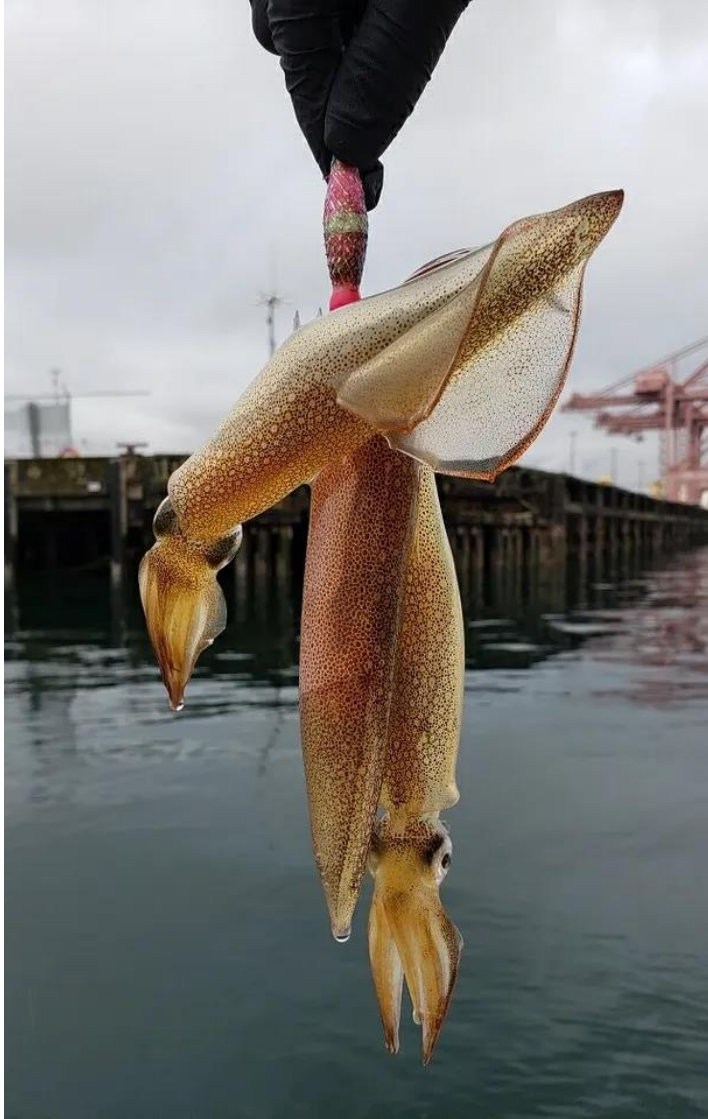


Intertidal Bivalves Cont.

- Stock Assessment - population beach surveys; huge field commitment
- Effort assessed with creel surveys (ingress/egress rates) and aerial surveys
- Creel interview a critical education component – poor compliance following covid
- Season setting - Harvest + effort + tides
- Enhancement – WDFW spends ~\$100k to seed 10 beaches annually with clam and oyster seed (+ trade for seed with co-managers)
- New resources in 2023 – 3 new career seasonal sci techs for intertidal creel and pop surveys



Squid



- **Recreational fishery** - open year-round and growing in popularity
 - Bag limit (10 lbs) and gear restriction (max 4 jigs)
- **Commercial fishery** - opportunity but no consistent interest by fishers
- Puget Sound-wide Management plan
- Harvest assessment - No consistent sound-wide harvest assessment (Last creel in 2016/17)
- Currently utilizing new technician staff to creel squid fishery – working towards sound-wide harvest estimate
 - Efforts focused on public fishing piers; boat effort is difficult to enumerate
 - Biological data!!! – PS squid are data poor
 - Unique creeling challenges – night-time work presents safety issues for staff; English second language



Olympia Oyster Recovery



- New resources *were* needed to make meaningful progress on recovery and implement 2012 Olympia Oyster Rebuilding Plan
- New 22 Supplemental funding -> New Bio 3 position (Julieta Martinelli) – Olympia Oyster Recovery and emerging issues (climate change focus)
- 23-25 Biennium – New pass-through funds to PSRF supports systematic population monitoring, assess restoration methodology success, and genetic sampling



Team Lead: Dr. Hank Carson

SUBTIDAL DIVE TEAM

Geoduck, Urchins, Sea Cucumber, Pinto Abalone Recovery

Geoduck

- World's largest burrowing clam (avg > 2 pounds)
 - Long lived – avg 49 years (oldest 173 years)
- Majority of harvest from commercial dive fishery
- Stock Assessment – divers estimate subtidal biomass on “tracts”; harvest opportunity auctioned by DNR, harvested, and tract allowed to recover over several decades.
 - Revenue from tract sales funds DNR/DFW ALEA & RCMA funds.
- Historical recovery rates aren't always correct (39-year recovery vs 55-years) – reducing harvest rates/region dependent

Last 5 years (averages, state + tribal):
~3.7 million pounds landed annually
\$11.71/pound ex-vessel price
\$43.6 million annual value



Legislatively-mandated Geoduck Task Force Meetings in 2024



Red and Green Sea Urchins

- Primarily harvested in commercial dive fishery by hand in San Juan Islands and Strait of Juan de Fuca (MAs 5,6,7)
- RSU processed to remove roe (the marketable portion), then sold locally, exported to other states, and Asia. GSU shipped whole to Asian markets.
- Limited entry commercial fishery – managed via size limits
- Stock Assessment – periodic historic index site biomass surveys
- RSU last five years (averages, state + tribal):
 - ~439,000 pounds landed annually
 - \$2.53/pound ex-vessel price
 - \$1,108,000 annual value
- GSU last five years (averages, state + tribal):
 - 341,000 pounds landed annually
 - \$2.08/pound ex-vessel price
 - \$709,000 annual value
- Episodic recruitment and historic overharvest threatens sustainability – reducing harvest rates



Sea cucumbers (*P. californicus*)



- Slow-moving scavengers that use tentacles to remove organic material from rocks and sediments
- Divers harvest by hand, land as ‘split and drained’ to remove organs and water, average of ½ pound each
 - Nearly 100% are dried and exported to Asia
 - Management complicated by elastic bodies that cannot be tagged or weighed /measured accurately
- Stock Assessment – periodic historic index site biomass surveys (Biological Reference Points for management)
- Spawning closure March through June
- Historic overharvest and large-scale poaching incident threatened sustainability - quota reductions and district closures have resulted

Last five years (averages, state + tribal):

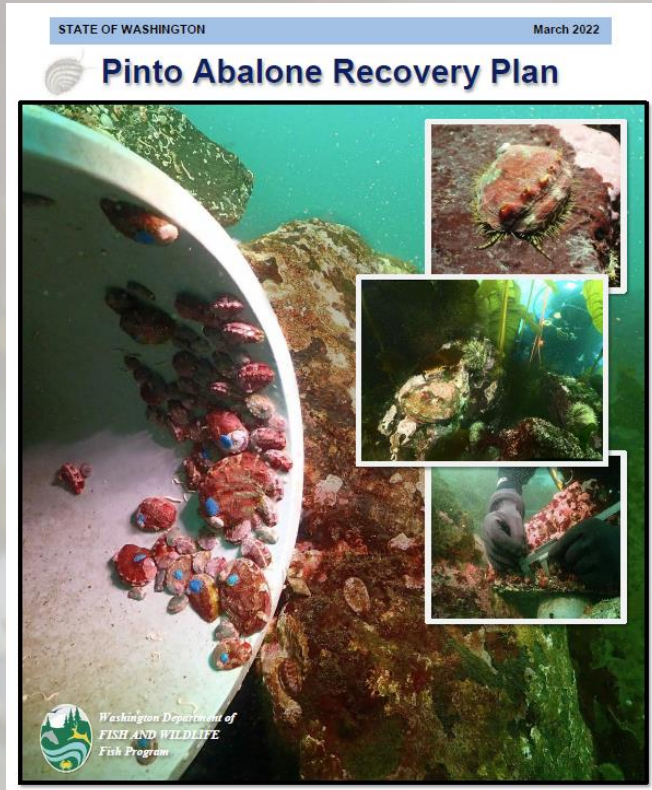
420,000 pounds landed annually

\$4.71/pound ex-vessel price

\$1,975,000 annual value



Pinto Abalone Recovery



- Pinto abalone (*Haliotis kamtschatkana*) added to state endangered species list in 2019
 - IUCN listed as endangered in 2021
- WDFW divers collect broodstock and outplant juveniles, monitor outplant sites for survival. PSRF – hatchery operations
- More resources needed to implement the Pinto abalone Recovery Plan
 - Increase hatchery production, outplant and monitoring efforts, advance tribal partnerships
- 2023-25 Funding - 3 new diver positions to establish outplant sites, collect diverse broodstock, and establish remnant wild population monitoring sites
- Pass-through grants to PSRF and tribal governments for hatchery staff and equipment and dive equipment/training



PUGET SOUND
RESTORATION FUND



Team Lead: Dr. Katy Davis

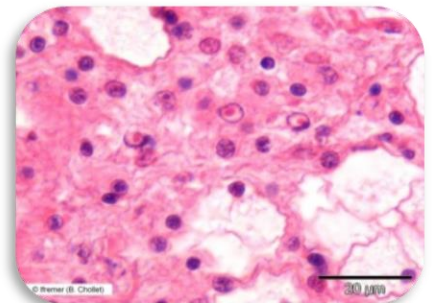
SHELLFISH AND SEAWEED BIOSECURITY

Shellfish and Seaweed Biosecurity

Authority to manage potential shellfish and seaweed disease and pest risks to wild and cultivated shellfish – largely associated with movement of shellfish into or around state waters

Shellfish Import and Transfer Permitting

- Permit all imports and transfers of shellfish (~200 permits annually)
- We maintain a toolbox of conditions for various scenarios to manage risk
 - E.G. Restricted areas, treatments
- WDFW publishes our Import for Aquaculture [guidelines](#)
 - Developed with/reviewed by our Shellfish Import Advisory Committee (SIAC)
- New funding in 2022 supplemental budget doubled size of team – expanding field and regulatory presence



NEW FUNDING AND WORK

New Funding and Work

New supplemental funding in 2022 and 2023 greatly expanded the Puget Sound shellfish team – 2022 \$1.9 million/biennium new funding; 2023 – (1.7 million/biennium)

Recreational crab Bias Correction Phone/email Surveys

Poor CRC return rates impact bias correction calculation

Phone/email surveys in 2022/23 and 2023/24 to validate bias correction function

Electronic CRCs

eCRC data task force - developing eCRC and associated harvest assessment methodology for PS crab

Squid Creel Pilot Project

Repeating 2016/17 creel to inform PS-wide harvest assessment in 2024/25

IT Projects

Shellfish test fishing data online, Aquatic Farm Registration, databased development and data accessibility

Future Resource Needs

Expanding marine area creel presence for recreational crab and shrimp, and add additional biologist capacity



Questions?

