

# 2018-19 WDFW Puget Sound Shrimp Fishery Report

Prepared for the Washington Fish and Wildlife  
Commission

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Spot Shrimp (*Pandalus platyceros*)



June 14, 2019

## Purpose of this Report

This report fulfills Fish and Wildlife Commission Policy C-3610 by providing an annual summary describing the performance and harvest of commercial and recreational shrimp fisheries.

## Introduction

Spot shrimp (*Pandalus platyceros*) are large, often growing to 7-8 inches in overall length, and are highly prized in recreational and commercial fisheries. Their range along the Pacific Northwest coast is from Alaska to southern California. Their range also extends to Asia, with significant populations off the coasts of Korea and Japan. Spot shrimp live in subtidal sandy and rocky habitats from the intertidal zone to the deepest depths of Puget Sound. More than 80 species of shrimp inhabit Washington waters. Four species are commonly harvested by recreational and commercial fishers. Species other than *Pandalus platyceros* are referred to as non-spot shrimp in this report and in State and Tribal shrimp harvest management plans. Common non-spot species include pink shrimp (*Pandalus eous*), dock shrimp (*Pandalus danae*), and coonstripe shrimp (*Pandalus hypsinotus*).

Spot shrimp are a hermaphroditic species that begin life as male and become female in its later years. They live for about four years. Stock assessment is conducted through trapping pre- and post-season. This provides abundance estimates and samples collected can also be used to develop a spawner index. The spawner index is an important tool which can be used to predict appropriate harvest strategies. A spawner index model is used in Canada, but it has not been widely accepted in the co-management of this species in Washington. Recreational harvest effort is assessed through flights, vessel based observations, and through surveys of harvesters at off-load sites. Regional quotas in Puget Sound are established through the co-management planning process, which takes into account historic knowledge of preferred habitats within regions, prior fishery performance, and test fishing. To maintain orderly fisheries, the State and Tribes enter into annual shrimp harvest agreements pursuant to *U.S. v. Washington*. The Puget Sound shrimp fishery is managed separately from the Washington coastal fishery.

Shrimp pots are the preferred gear type allowed in State and Tribal fisheries. Shrimp pots must have escape hatches and rot cord to allow for shrimp escapement, have weighted line to reduce vessel conflicts and trap loss, and be marked to identify gear type and ownership. A limited entry trawl fishery is allowed in two Shrimp Regions; San Juan Islands and the Strait of Juan de Fuca, with restrictions to control area, depth, gear and species taken. Observers monitor 10% of shrimp trawl trips for ESA compliance and to determine the incidental bycatch of spot shrimp.

This report provides information about fishery policy, current management practices, and describes performance of State and Tribal, recreational and commercial, and spot shrimp and non-spot shrimp fisheries over time, including the recent 2018-19 shrimp season. This report also describes education and outreach and enforcement efforts to ensure regulatory compliance.



## Shrimp Policy

A revised shrimp policy (C-3610) was adopted by the Fish and Wildlife Commission on December 15, 2012. This policy protects and conserves Puget Sound pandalid shrimp resources, while providing for recreational and commercial fishing opportunities. Specific objectives include providing for trawl and pot fisheries consistent with conservation objectives, allocating harvest consistent with *US vs. Washington*, monitoring for accurate catch accounting, managing conservatively, improving collection of biological and fishery information, developing a voluntary program to convert trawl licenses to pot fishery licenses, developing a pot fishery license buy-back program, and pursuing strategies to promote regulatory compliance and reduction of gear loss.

The general allocation objective for spot shrimp fisheries is to manage 70% of the combined State share for recreational opportunity and 30% for commercial opportunity. A regional strategy focuses the commercial fishery in the areas that are less accessible to recreational fishers. Regional allocation targets are specified as follows:

**Region 1** will be managed to harvest 80% of the State share of quota in the recreational fishery.

**Region 2** will be managed for the recreational fishery to take 100% of the State's share of the quota. Commercial harvest openings can occur in Region 2 after the recreational season is completed, with a maximum harvest of 10% of the State share of the quota.

**Region 3** will be managed for the primary benefit of the commercial fishery. The recreational fishery will be structured to harvest 22% of the State share of the quota. The State shrimp fishery in the Discovery Bay shrimp district will be managed for the exclusive benefit of the recreational fishery.

**Region 4** will be managed for the recreational fishery to take 100% of the State's share of the quota. Commercial harvest openings can occur in Region 4 after the recreational season is completed, with a maximum harvest of 10% of the State share of the quota.

**Region 5** will be managed for the recreational fishery to take 100% of the State's share of the quota. Commercial harvest openings can occur in Region 5 after the recreational season is completed, with a maximum harvest of 5% of the State share of the quota.

**Region 6** will be managed for the recreational fishery to take 100% of the State's share of the quota. Commercial harvest openings can occur in Region 6 after the recreational season is completed, with a maximum harvest of 10% of the State quota.

Regions 1 and 3 may be adjusted annually or in-season by equal percentage points as needed to ensure that the Puget Sound general allocation objective of 70%-30% is attained.



The Puget Sound recreational allocation (70%) is close to being realized, increasing from 65% in 2016 to 67% in 2018 (Table 1). An increase in Region 3 to from 29% in 2017 to 33% in 2018 helped to off-set a decrease in Region 1 from 75% to 70% in respective years. Commercial “clean-up” fisheries were necessary in Regions 4 and 5 in 2008, to utilize remaining shares of quota in those regions. This resulted in less than 100% of the allocation being utilized by the recreational fishery in those regions.

**TABLE 1.**  
**Recreational Spot Shrimp Allocation Targets Identified in Fish and Wildlife Commission Policy C-3610 and Harvest Percentages by Region for 2016, 2017 and 2018.**

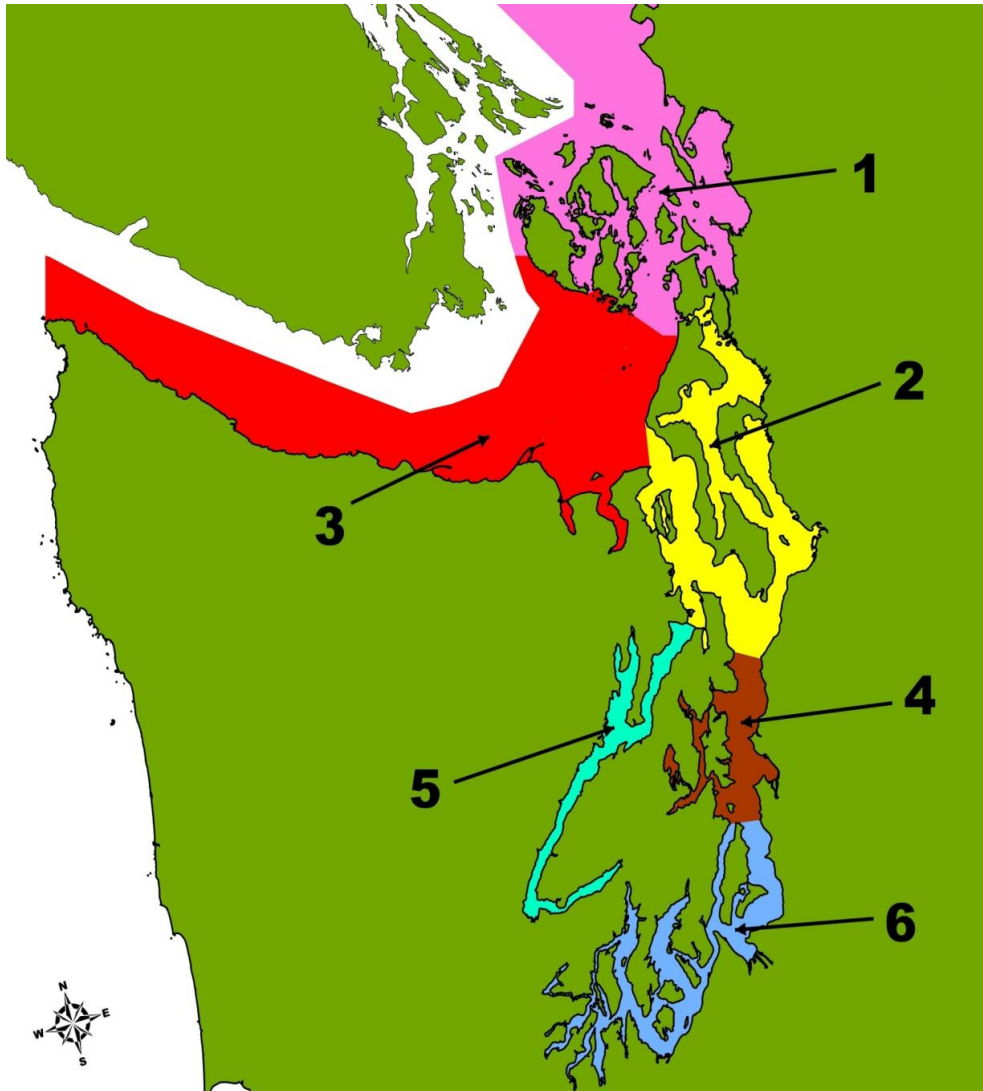
Region	Recreational Target %	Actual % Harvested in State Fishery		
		2016	2017	2018
1	80	75	75	70
2	100	100	100	100
3	22	21	29	33
4	100	100	100	94
5	100	95	94	96
6	100	100	100	100
Statewide	70	65	66	67

Per Fish and Wildlife Commission Policy C3610, the Puget Sound recreational non-spot shrimp pot fishery will be managed to take up to 20% of the State share of the non-spot shrimp quota. The commercial non-spot pot fishery will be provided the opportunity to harvest a minimum of 80% of the State share of the non-spot quota. The non-spot shrimp trawl fishery will be managed for the exclusive benefit of the commercial fishery and will be restricted to Regions 1 and 3. The trawl fishery will be designed and regulated to harvest non-spot pandalid shrimp only.

## Harvest Management Regions

Six shrimp harvest management units have been established in Puget Sound (Figure 1). Policy provides for recreational and commercial harvest opportunity in all regions; with Regions 2, 4, 5 and 6 targeted primarily for recreational spot shrimp harvest, unless quota shares remain following the recreational fisheries.





**Figure 1. Shrimp harvest regions in Puget Sound.**

Shrimp management region boundary lines take into consideration historic WDFW Marine Areas, WDFW Marine Fish – Shellfish Catch Areas (MF/SF), and tribal usual and accustomed areas at the time when shellfish harvest management plans were first negotiated, circa 1995. Table 2 (below) shows defined shrimp regions and associated WDFW Marine Areas and WDFW Marine Fish/Shellfish Catch Areas.



TABLE 2.

The relationship between Shrimp Regions, WDFW Marine Areas and WDFW MF/SF Catch Areas

Shrimp Regions	WDFW Marine Areas	WDFW MF/SF Catch Areas
1	7 (portion)	20A, 20B, 21A, 21B, 22A, 22B, 23A
2	8-1, 8-2, 9	24A, 24C, 25B, 26A
3	4, 5, 6, 7 (portion)	23A, 23B, 23C, 23D, 25A, 25E, 29
4	10	26B, 26C
5	12	25C, 27A, 27B, 27C
6	11	26D
7	13	28A, 28B, 28C, 28D

## Co-management harvest plans

Federal Sub-proceeding 89-3 of *US v. Washington* provides a framework for Treaty Tribe harvest of shellfish in Washington. Sub-proceeding 89-3 decisions are sometimes collectively referred to as the Rafeedie Decision. The first implementation order regarding Treaty Tribe shellfishing occurred in 1995. Implementation orders mandate that harvest must occur under harvest management plans developed by affected parties. Annual co-management harvest plans provide more detailed conditions and responsibilities of parties when conducting their respective fisheries including management principles, annual shares of quota, timing of fisheries, and harvest reporting. 15 treaty tribes participate in 6 shrimp harvest management plans in Puget Sound.

## Fishery Performance

### *Total harvests of spot shrimp*

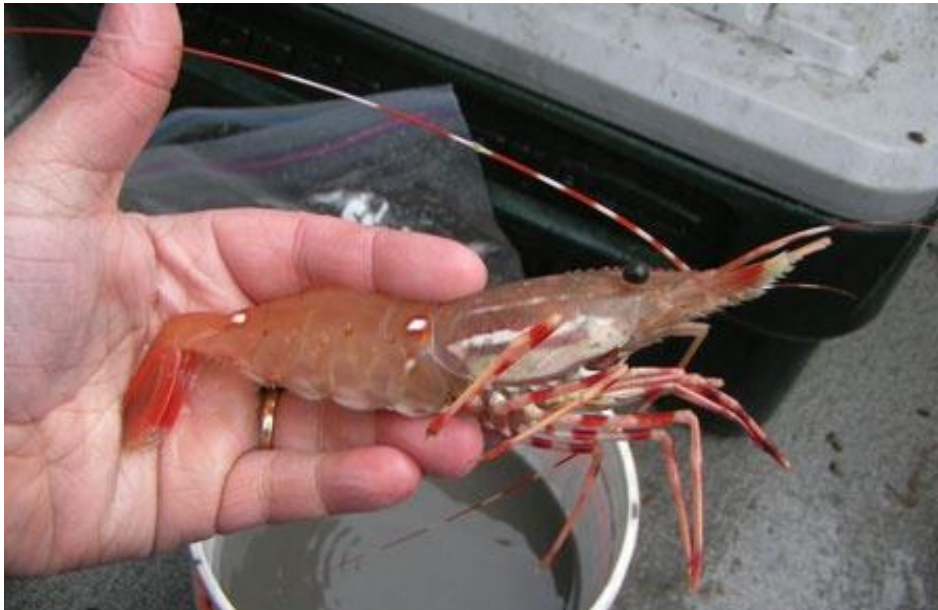
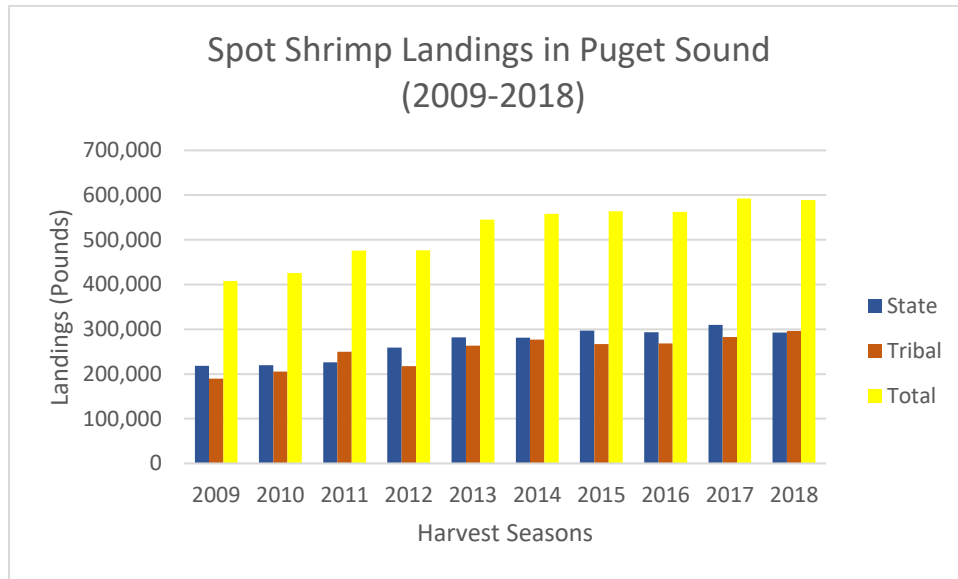


Figure 2. A spot shrimp (*Pandalus platyceros*) from Puget Sound.



Over the last 10 years, spot shrimp (Figure 2, above) landings in the State and tribal fisheries combined has ranged from about 408,000 to 593,000 pounds in Puget Sound (Figure 3). Catch has generally increased from 2009 through 2018. In 2018-19, the total State catch was 292,441 pounds and Treaty Tribe harvest was 296,374 pounds, a 1.3% difference.

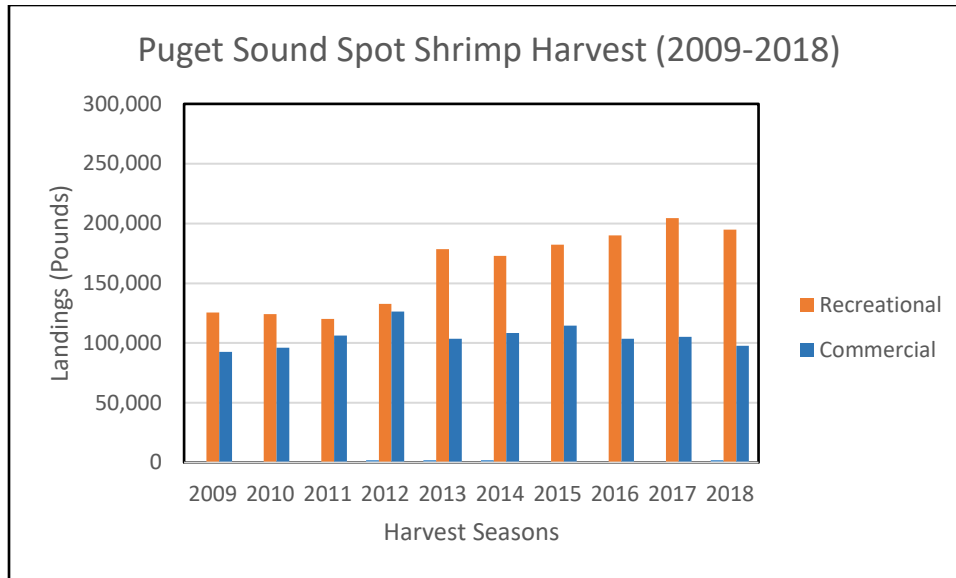


**Figure 3. State, tribal and total spot shrimp landings in Puget Sound over last 10 years.**

***Recreational and commercial harvests of spot shrimp***

Over the last ten years, the State commercial spot shrimp landings have ranged between 92,562 pounds (2009) and 126,333 pounds (2012), (Figure 4). In the same time frame, recreational landings have ranged from 120,073 pounds (2011) to 204,450 pounds (2017). When the Fish and Wildlife Commission Policy C-3610 was adopted in 2012, the recreational harvest comprised 51% of the total harvest and commercial harvest took the remaining 49% of the total harvest. Following implementation of the Commission shrimp policy in 2012, harvests have shifted to meet new target allocations. In terms of meeting target allocations, the proportion of recreational harvest has improved nearly every year to the current level of 67% of the total spot shrimp harvest.





**Figure 4. Recreational and non-Tribal commercial spot shrimp landings in Puget Sound over last 10 years.**

***Recreational spot shrimp harvest effort by Region***

In shrimp regions where the State share of spot shrimp quota is large and recreational effort is low, the seasons are often prolonged and achieving the regional statewide harvest allocation objectives can be challenging. In 2016, a strategy was used to better target a summer recreational fishery share of spot shrimp quota in 1W and 3 by increasing daily limits from 80 to 160 shrimp. This strategy worked well to focus the recreational fishery effort in those areas, but in turn this reduced the number of fishing days. This strategy was fine tuned in 2017 by reducing the daily limit to 120 shrimp, which still promoted a higher level of recreational effort and provided fishing opportunity into August. Recreational effort estimates increased significantly in Region 1 in 2018 and the season length was significantly reduced, likely a result of bonus limit inducements to more fully utilize the spot shrimp resource (Table 3). For the 2019 season, Crab and Shrimp Advisors have recommended a strategy to reduce the weekly harvest effort by limiting the number of open days per week (from 7 to 4 days per week) and reverting back to daily limits of 80 shrimp, with a goal of extending the season into late July or early August for the 2019 season.

**TABLE 3. Recreational Spot Shrimp - Open Harvest Days in 2016, 2017 and 2018**

Region	Recreational Days Open Each Year		
	2016	2017	2018
<b>1 East</b>	18	16	9
<b>1 West</b>	76	72	63
<b>2</b>	2	2	2
<b>3</b>	91	90	63
<b>4</b>	1	1	1
<b>5</b>	4	7	8
<b>6</b>	1*	1*	1*





\*In Shrimp Region 6; 1 day was open in the northern portion (Marine Area 11) and 2 days in the southern portion (Marine Area 13) in 2016, 2017, and 2018.

### ***Recreational Spot Shrimp landings***

Recreational spot shrimp landings have been consistent over the last 3 years (Table 4). The exception is Region 6, where the South Puget Sound area (Marine Area 13) where spot shrimp harvest declined in 2018. In sub-Region 1 West, increased catch per day accompanied the increased recreational effort. The average catch/day in sub-Region 1 West was 418, 412, and 502 pounds in 2016, 2017, and 2018; respectively. A similar increase in apparent efficiency was observed in Region 3 where average catch/day was 249, 384, and 608 pounds in 2016, 2017, and 2018 respectively. Bonus limits were in place in Shrimp Region 3 in each of these harvest years. The apparent increases in efficiency in these two regions were taken into account when establishing a 2019 fishing strategy with the Crab and Shrimp Advisory Committee. An example of an abundant landing of spot shrimp in Shrimp Region 3 is shown in Figure 5 (below).



**Figure 5. Recreational spot shrimp catch in the Strait of Juan de Fuca.**

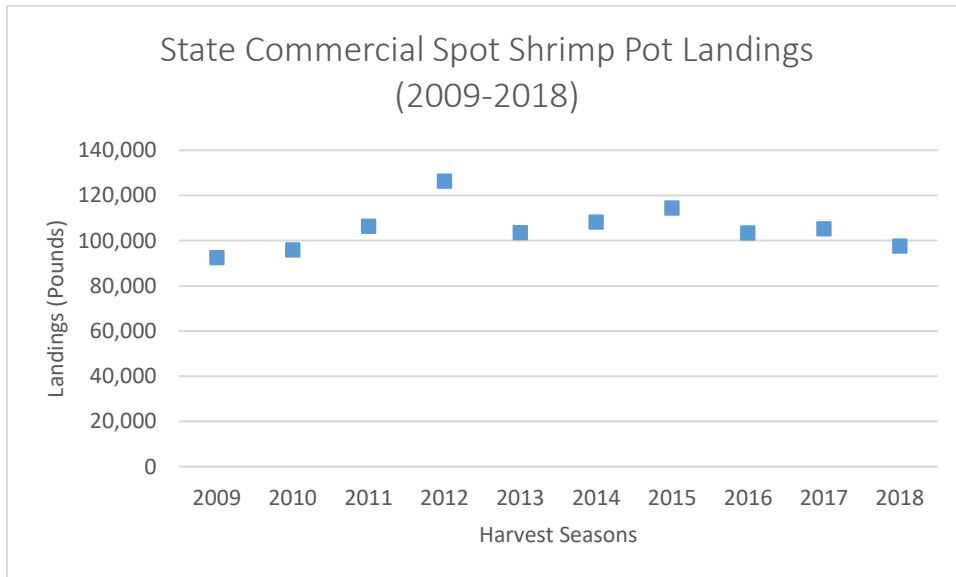


**TABLE 4.**  
**Recreational Spot Shrimp Harvests in 2016, 2017 and 2018**

Regions	Harvest Seasons		
	2016	2017	2018
<b>1 East</b>	5,067	7,608	4,081
<b>1 West</b>	31,811	29,689	31,676
<b>2</b>	26,578	28,622	23,418
<b>3</b>	22,633	34,619	38,323
<b>4</b>	10,890	8,895	7,972
<b>5</b>	84,750	90,007	87,234
<b>6</b>	8,161	5,225	2,159

***Commercial spot shrimp pot fishery***

Commercial shrimp pot fishing has been limited to 18 transferrable licenses since 2001. Spot shrimp are targeted by the State commercial pot fishery. It is unlawful to retain spot shrimp for commercial purposes using trawl gear (WAC 220-340-520). Since the 2012 Fish and Wildlife Commission Shrimp Policy C-3610 was implemented, commercial spot shrimp landings have ranged from 97,578 pounds (2018) to 114,504 pounds (2015), (Figure 6).



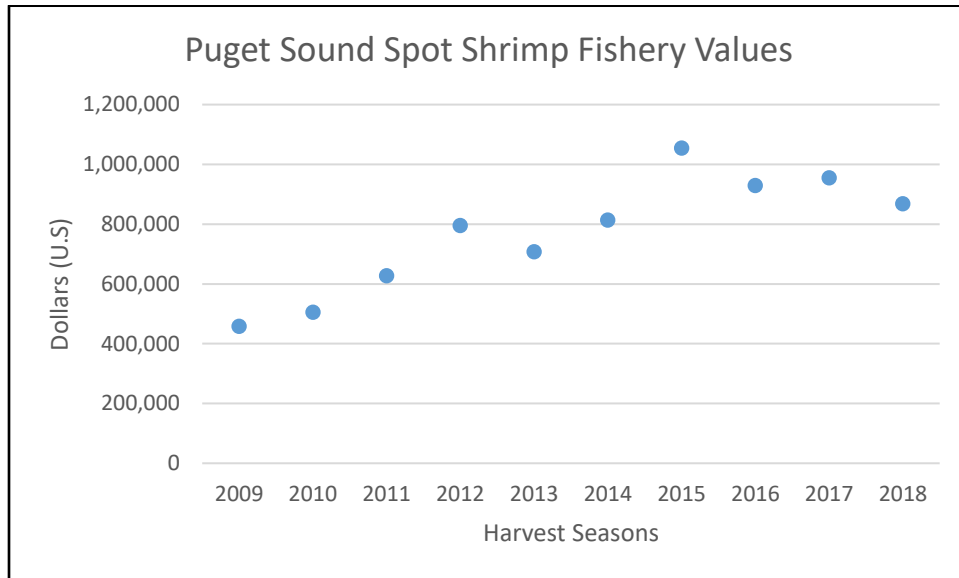
**Figure 6. Commercial spot shrimp landings in Puget Sound over last 10 years.**

**Commercial spot shrimp value**

The ex-vessel commercial value is recorded at the time the first receiver takes possession and completes a shellfish receiving ticket. Over the last decade, the ex-vessel commercial spot shrimp fishery value



reached a peak of over \$1M in in 2015, then modestly declined. Ex-vessel spot shrimp fishery value was \$868,731 in 2018 (Figure 7).



**Figure 7. Puget Sound State commercial spot shrimp fishery ex-vessel values (in \$US) from the 2009 through the 2018 season. These values are not adjusted for inflation.**

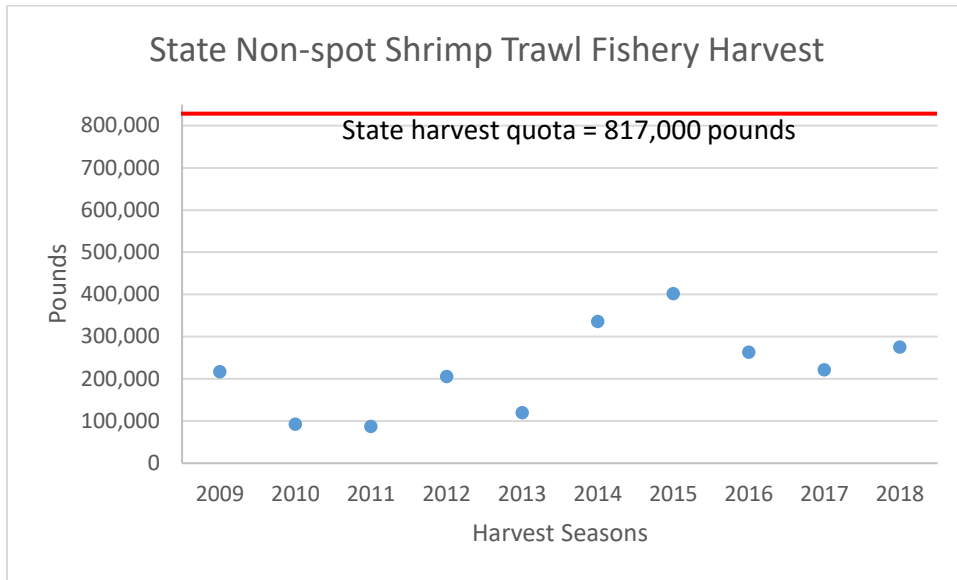
## Commercial non-spot trawl fishery

In the non-spot trawl fishery there are 5 trawl licenses. Two of these licenses have non-spot shrimp landings in the Strait of Juan de Fuca (Shrimp Region 3). Pink shrimp (Figure 8) are targeted in the non-spot trawl fishery and 734,000 pounds of the State quota share are located in Shrimp Region 3. Non-spot trawl harvest in 2018 in Region 3 was 236,025 pounds, or only 32% of the total regional trawl quota share. The remaining 83,000 pounds of State non-spot trawl quota share is allocated to Shrimp Region 1 (San Juan Islands). Non-spot trawl harvest in 2018 in Region 1 was 39,267 pounds, or 47% of the total regional trawl quota share. The total State non-spot trawl quota share in Puget Sound of 817,000 pounds has been underutilized over the last decade (Figure 9). These quota shares are likely underutilized due to low market demand and small profit margin for pink shrimp.



**Figure 8. Pink shrimp (*Pandalus eous*)**

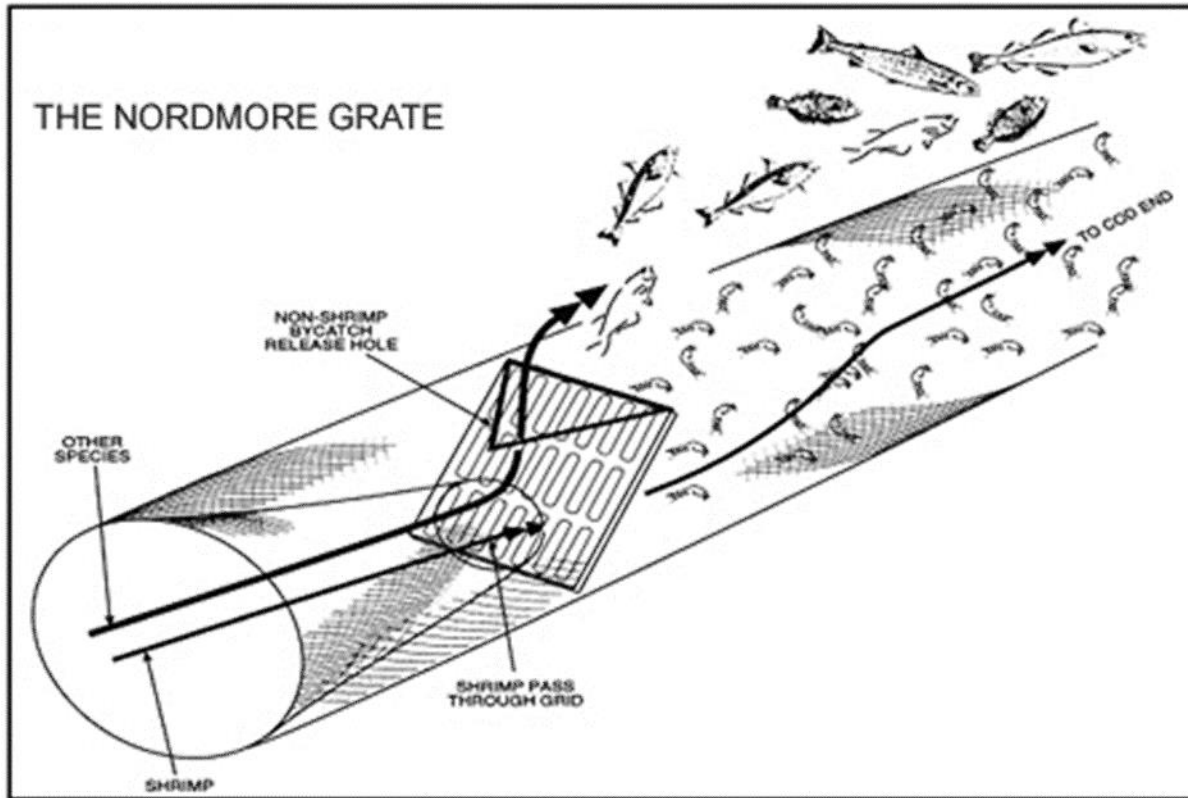




**Figure 9. Puget Sound State commercial spot shrimp trawl fishery landings from 2009 to 2018 compared to State share of non-spot trawl quota.**

An observer program for Endangered Species bycatch was initiated in the trawl fishery in 2011. The observer program also makes observations of spot shrimp bycatch in non-spot shrimp trawl fisheries. Observer data showed an increase in spot shrimp bycatch during the 2013-14 season. To reduce bycatch, including spot shrimp bycatch, excluder devices were used on one vessel in 2015 (Figure 10). This gear significantly reduced bycatch, and a second trawler began using an excluder device in 2017.





**Figure 10. Representation of bycatch excluder device used in the Puget Sound non-spot shrimp trawl fishery (from Pinkham & Schick, 2009).**

There has been little recreational effort observed in the non-spot shrimp fishery. Managers are attentive to any sign of significant increase in recreational effort in this fishery.

## Education and outreach

The focus of shrimp education and outreach is to reduce closed season shrimping, prevent loss of shellfish gear, promote rot cord use that allows shrimp escapement from derelict pots, and reinforce daily limits. The target for outreach effort is all recreational shrimpers.

WDFW web pages are a good source to find information related to recreational shrimp harvest. These pages have practical information about shrimp fishing including licensing, configuring and marking pot gear, and harvest regulations.

## Shellfish gear sweeps

Similar to the crab fishery, shellfish gear sweeps are made when shrimping is closed. Since several regions have punctuated recreational shrimp openings, some only lasting 4 hours on a single day, the frequency of gear sweeps is likewise commensurate with the reduced shrimping effort. Gear sweeps in Shrimp Region 1 may require additional effort in 2019, since the fishery is closed 3 days per week. The closed days provide opportunity to do gear sweeps within the season in Shrimp Region 1.



The same challenges and benefits of recovering and processing crab pots applies to shrimp pots. This includes:

- Secure storage and staff time is required to process the large volume of gear recovered
- Not able to identify fishers due to improperly marked buoys
- Fishers often assume gear was stolen
- Removing gear does provide an educational opportunity when owner are contacted
- Removing gear prevents continuous fishing by derelict pots and reduces unintended shrimp mortalities

## **Derelict shellfish gear recovery**

In addition to WDFW pot sweeps, there is an effort to recover derelict shellfish pots under a contract with the NW Straits Foundation. The recovery effort uses sidescan sonar to detect submerged gear and then divers use this information to retrieve abandoned pots. The Foundation reports that over the last 5 years, 723 recreational and 628 commercial pots have been recovered. In 2018 alone, the NW Straits Foundation was able to detect and recover 426 commercial and 265 recreational derelict pots. Most of the recovered pots were crab pots, but some of these pots were shrimp pots lost during shrimp fisheries.

## **Enforcement**

Enforcement officers make frequent compliance checks of shrimpers and their catch. In WDFW Region 4, officers issued 40 written warnings, 45 tickets and made 3 referrals during the 2018 shrimp fishery. In WDFW Region 6, officers issued 7 written warnings, 19 tickets and made 5 referral during the 2018 shrimp fishery. An example violation is shown in Figure 11 (below) when Officers Stout and Miller cited a harvester in Region 1 in possession of nearly 300 shrimp. The harvester was aware that the daily limit was 80 shrimp.





**Figure 11. Enforcement officer with overharvest violation of nearly 300 spot shrimp (daily recreational limit is 80 spot shrimp).**

#### LITERATURE CITED

Pinkham, K., Schick, D. (2009) *Improving the Size Selectivity for Northern Shrimp Through Use of a Combination of a Modified Nordmore Grate and Square Mesh Cod End: shrimp catch data, from the F/V Jeanne C. NEC-KP2003-1 from the Gulf of Maine, 2003-2004 (NEC-CoopRes project).* Biological and Chemical Oceanography Data Management Office (BCO-DMO). Dataset version 2009-01-16. <http://lod.bco-dmo.org/id/dataset/2999>.

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