

# Washington Razor Clam Management



## Setting the 2013-2014 Season

WDFW has annually held a series of public meetings to obtain input regarding the season structure, bag limit and management of razor clams.

However, over the last couple of years, in consideration of the State's economic situation, and given the budget and staff reductions within WDFW, the agency replaced most public meetings and this cost with internet and email based commenting. So, once again, for the 2013-2014 season most public input is being solicited through the internet and via email. One public meeting has been scheduled for September 19, 2013 at 6 pm, in Long Beach, Washington at the City of Long Beach Depot meeting building located at 102 3rd ST NW (across from Dennis Company in downtown Long Beach.)

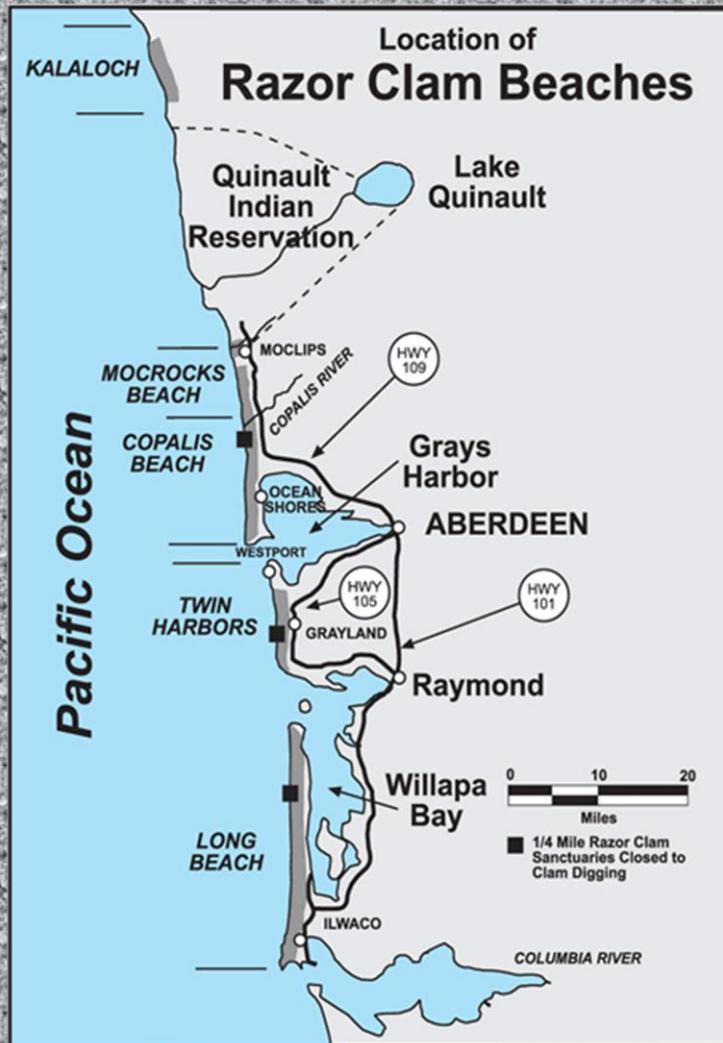
The following presentation is designed to provide you with much of the same information – in a similar format that has traditionally been used in the meetings.

Thanks for taking the time to view this presentation. Any specific comments or questions can be directed to : [razorclams@dfw.wa.gov](mailto:razorclams@dfw.wa.gov)

# What's Up?

## CONTENTS OF THIS PRESENTATION

- Review of the 2012-13 Season
- Marine Toxin Update / ORHAB
- Status of Razor Clam Stocks
- Tribal Co-management
- Season Options for 2013-14



Washington's razor clam habitat is divided into five management beaches. From the south they are: Long Beach (from the Columbia River North Jetty to end of Leadbetter Point); Twin Harbors (from the northern shore of Willapa Bay to the Grays Harbor South Jetty); Copalis (from the Grays Harbor North Jetty to the Copalis River); Mocrocks (from the Copalis River to the south boundary of the Quinault Indian Reservation – just south of the Moclips River); Kalaloch (from Olympic National Park South Beach Campground to Brown's Point, just south of Olympic National Park Beach Trail # 3). Within these five management beaches there are a total of 58 miles of sandy beaches and prime habitat for the Pacific Razor Clam (*Siliqua patula*).

# Razor Clam Digging In Washington State

WDFW's goal is to provide a safe and enjoyable recreational experience, while still protecting the resource.



The razor clam fishery in Washington is not only a significant source of revenue for tourism-dependent businesses such as restaurants and motels, but also an important source of community identity and basis for tribal subsistence. Razor clam harvesting, cleaning, cooking, eating, and canning have been an important focus of family relationships and local culture in Washington coastal communities for many generations.

**FISH AND WILDLIFE COMMISSION**  
**POLICY DECISION**

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<b>POLICY TITLE:</b>	<b>Razor Clam Management</b>	<b>POLICY NUMBER:</b>	<b>POL-C3009</b>
<b>Cancels:</b>		<b>Effective Date</b>	January 4, 1997
		<b>Termination Date</b>	(if applicable):
<b>See Also:</b>		<b>Approved by:</b>	<u>/s/ Lisa Pelly</u> Fish and Wildlife Commission Chair

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**The management objectives for the razor clam fishery are:**

- Manage the razor clam resource on all coastal beaches for recreational use with a minor separate commercial fishery located only on detached spits of Willapa Bay.
  - Protect public health and safety.
  - Manage the resource to maintain stable and healthy populations.
  - Maximize recreational opportunity.
  - Provide a quality recreational experience.
  - Independently manage the razor clam populations on Kalaloch (*in cooperation with Olympic National Park*), Mocrocks, Copalis, Twin Harbors and Long Beach while considering the pertinent interactions of seasons, effort, opportunity and tribal allocations.
  - Provide for consistent commercial fishing opportunity that does not conflict with the recreational fishery.
- 

The fishery is managed by WDFW staff with specific guidance provided by the Washington Fish and Wildlife Commission; nine citizen members serving six-year terms who are appointed by the governor and confirmed by the Washington State Senate. For more information see: <http://wdfw.wa.gov/commission/>

In it's Policy C3009 the FW Commission has provided seven objectives WDFW follows in managing this fishery.

Note that the management of the recreational razor clam fishery at Kalaloch occurs in cooperation with the Olympic National Park.

# 2012-2013 Fishery Review



Average of  
14.4 clams  
per digger  
trip



Total  
harvest  
of 6.0  
million  
clams



417,400  
digger  
trips

Going into the 2012-13 recreational razor clam season, we knew that the number of razor clams (and correspondingly the TAC values for most beaches) had rebounded from a low point the previous year and were now higher than they had been in many seasons. This was especially true at Mocrocks, one of the most popular beaches with a population of harvestable clams the highest since the 1998-99 season. As a direct result, this season had the highest total effort and total harvest since the 1997-98 season.

The 2012-13 razor clam season was the best in more than 20 years, based on all indicators including a comparison of the number of days offered by beach, the total number of estimated diggers trips and the estimated total number of clams harvested.

From October 2012 through May, diggers harvested more than 6 million clams on Washington's coastal beaches with 417,000 digger trips. The number of days of digging offered on most beaches also increased over previous seasons.

This is a major increase from the 2011-12 season, which produced a total of 2.5 million clams harvested, the lowest harvest in the last 12 years. A typical season results in a harvest of 3.2 million razor clams. The 2012-13 total harvest exceeds every season since 1983.

Recall, that as the season began we reported an increase in razor clam populations on all beaches, except for Kalaloch. In the case of Twin Harbors and Mocrocks, shellfish biologists found the largest populations they had recorded in more than 17 years.

We also modified the exploitation rate we use to determine the total allowable catch for Twin Harbors and Long Beach. This decision to begin using a modified strategy to set the (total allowable catch) allows us to increase the harvest rate when populations are stronger, adding more harvest opportunities.

The one blemish on the season was the season-long digging closure of Kalaloch beaches. State and National Park Service managers are concerned with small clam populations there. Olympic National Park has jurisdiction for the Kalaloch beaches.

Highlights for the 2012-13 season:

- WDFW offered harvest openers on each beach (except Kalaloch) during every month between October and April.
- The low tide tables allowed for successful late evening digging over the New Year's Holiday. Even with crummy weather and high surf, almost four thousand people chose to ring in 2013 by harvesting razor clams.
- A 61-foot commercial crab vessel ended up on the northern end of the Long Beach Peninsula very early the morning of January 25 – just hours prior to a razor clam opener. The boat crew got off safely and clean-up crews contained most of the fuel on-board. WDFW enforcement officers and State Park Rangers closed the northern tip of the Peninsula to clam diggers to keep folks safe and away from the vessel, which was later cut up and removed.
- The Long Beach community held their first Razor Clam Festival in more than 20 years. Scheduled for a weekend (April 27) with an excellent low tide and had over 15,000 people in town to dig with many dropping by the event. WDFW staffed a display and answered many good questions!

## Washington Recreational Razor Clam

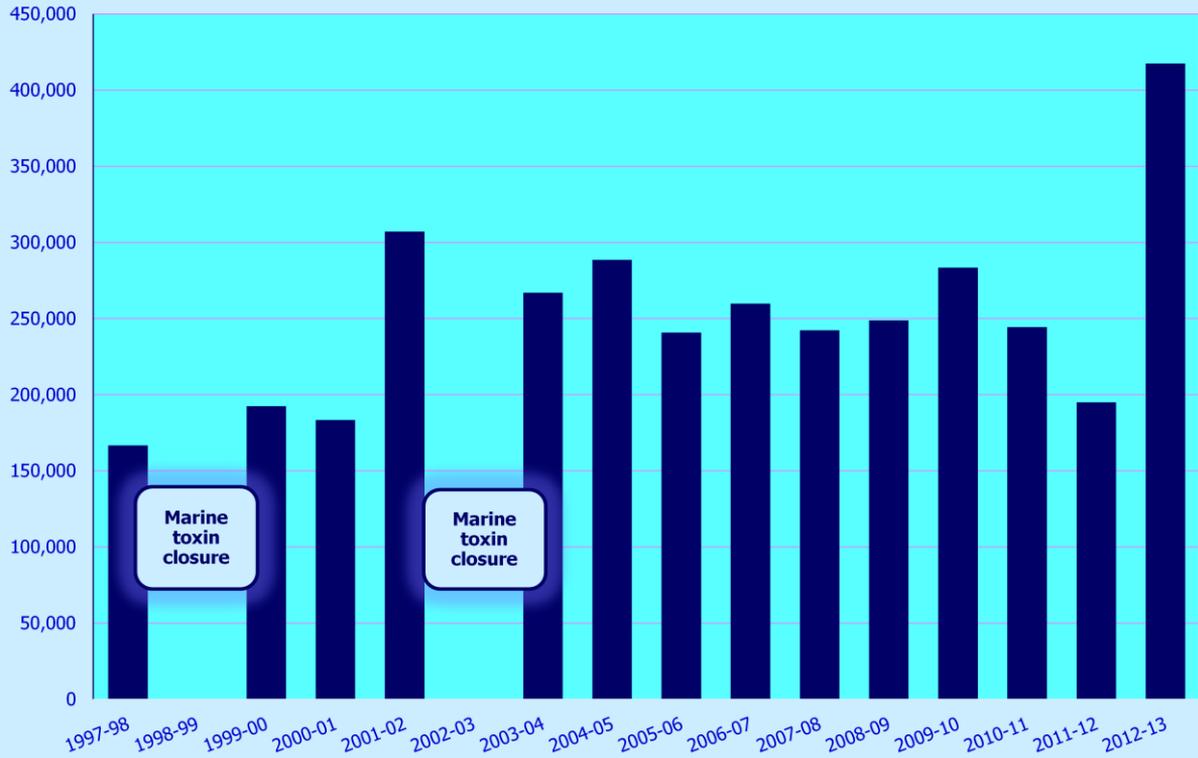
<i>20012-13 Season Totals</i>	<b>HARVEST</b>	<b>EFFORT</b>	<b>Average Daily Catch (clams/digger)</b>	<b>Total Digging Days</b>
<b>Long beach</b>	2,382,398	165,238	14.4	42
<b>Twin Harbors</b>	1,537,299	106,278	14.5	81
<b>Copalis</b>	1,393,686	95,700	14.6	28
<b>Mocrocks</b>	764,726	51,783	14.8	30
<b>Kalaloch</b>	0	0		0
<b>TOTAL</b>	6,078,109	418,999	14.5	

Each of the five beaches is managed separately. A value for total allowable catch (TAC) is determined for each beach through data collected in our annual summer razor clam stock assessment work (discussed more in the slides ahead). As a result, some beaches have more digging opportunities than others. The average daily catch during the 2012-13 season was close to the legal daily bag limit of 15 clams per person. It is always a good sign when over the course of the entire season most diggers can take home their limit of 15 razor clams - even with some occasional tough weather challenges.

For comparison, the average number of diggings days over the last ten seasons is : Long Beach = 26; Twin Harbors = 36; Copalis = 18; Mocrocks = 22

## Washington Recreational Razor Clam Total Effort By Season 1997/98 through 2012/13

Digger trips



The economic impact of this fishery is also significant, especially during the quiet fall, winter and early spring months along the coast...in an average season (based on 2007-08) the diggers that descend on these communities (during monthly razor clam openings) bring with them an estimated season total of \$22 million.

The total effort during the 2012-13 season (417,000 diggers trips) is 72% higher than the 2007-08 season total effort (of 242,000 digger trips). Therefore a reasonable inference can be made that the value of the 2012-13 season was in the neighborhood of 72% higher. This leads to an estimated total economic impact of the 2012-13 season of \$37 million. For more information see: *Dyson, K. and D.D. Huppert. 2010. Regional economic impacts of razor clam beach closures due to harmful algal blooms (HABS) on the Pacific coast of Washington. Harmful Algae 9: 264-271.*

Month	Long Beach	
October 2012	5 Days	Sat, Sun, Mon + Sat, Sun
November 2012	5 Days	Thu, Fri, Sat + Thu, Fri
December 2012	7 Days	Sat + Fri, Sat, Sun + Sat, Sun, Mon
January 2013	6 Days	Thu, Fri, Sat + Fri, Sat, Sun
February 2013	5 Days	Fri, Sat, Sun + Fri, Sat
March 2013	5 Days	Fri, Sat, Sun + Fri, Sat
April 2013	7 Days	Fri, Sat, Sun + Fri, Sat, Sun, Mon
May 2013	2 Days	Fri, Sat
<b>Totals:</b>		
	42 Days	
	Effort = 165,238 digger trips	
	Harvest = 2,382,398 clams	
	(Including wastage of 55,539 clams)	
	Portion of TAC Harvested = 128.9%	

Late in the season while reviewing state harvest totals on Copalis and Mocrocks, a biometrician discovered an error in the calculations used by the state to estimate the daily recreational harvest. Biologists determined this error had gone undetected for a number of years and resulted in the reporting of harvest totals that in general underestimate the true total – on all beaches. Because this error was found so late in

the 2012-13 season the total harvest on Long Beach exceeded the TAC by 28.9%.

Month	Twin Harbors	
October 2012	10 Days	Sat-Thu + Sat-Tue
November 2012	10 Days	Tue-Sat + Mon-Fri
December 2012	11 Days	Sat + Tue-Sun + Fri-Mon
January 2013	10 Days	Tue-Mon + Fri-Sun
February 2013	8 Days	Thu-Tue + Sat, Sun
March 2013	9 Days	Tue –Mon + Thu-Sun
April 2013	13 Days	Tue-Sun + Wed-Tue
May 2013	10 Days	Wed-Tue + Fri-Sun
<b>Totals:</b>		
	81 Days	
	Effort = 106,278 digger trips	
	Harvest = 1,537,299 clams	
	(Including wastage of 41,491 clams)	
	Portion of TAC Harvested = 81.7%	

Twin Harbors enjoyed more days of digging than any other beach has had for over 20 years...81 days! Still, the entire TAC was not harvested...the total harvest was 81.7% of the 2012-13 TAC.

Month	Copalis	
October 2012	4 Days	Sat, Sun + Sat, Sun
November 2012	3 Days	Fri, Sat + Fri
December 2012	5 Days	Sat + Fri, Sat + Sun, Mon
January 2013	4 Days	Thu, Fri, Sat + Sat
February 2013	2 Days	Fri, Sat
March 2013	4 Days	Sat, Sun + Fri, Sat
April 2013	6 Days	Fri, Sat, Sun + Fri, Sat, Sun
May 2013	0 Days	
<b>Totals:</b>		
	28 Days	
	Effort = 95,700 digger trips	
	Harvest = 1,393,980 clams	
	(Including wastage of 29,174 clams)	
	Portion of TAC Harvested = 130.0%	

Late in the season while reviewing state harvest totals on Copalis and Mocrocks, a biometrician discovered an error in the calculations used by the state to estimate the daily recreational harvest. Biologists determined this error had gone undetected for a number of years and resulted in the reporting of harvest totals that in general underestimate the true total – on all beaches. Because this error was found so late in the 2012-13 season the total harvest on Copalis exceeded the TAC by 30.0% and no May digging could be offered at Copalis. In addition, the state closed Mocrocks short of attaining the state’s TAC share and transferred those clams to the QIN share to help account for the overharvest of the state’s share at Copalis.

As many are aware, the Copalis razor clam management beach is one of three beaches WDFW co-manages with tribal governments. The Quinault Indian Nation (QIN) has federally adjudicated fishing rights on this beach and we share the total allowable catch (TAC) 50/50 with the QIN. More details on state/tribal co- management of razor clams in Washington are found later in this presentation.

Month	Mocrocks	
October 2012	4 Days	Sat, Sun + Sat, Sun
November 2012	3 Days	Fri, Sat + Fri
December 2012	6 Days	Sat + Fri, Sat, Sun + Sun, Mon
January 2013	4 Days	Thu, Fri, Sat + Sat
February 2013	2 Days	Fri, Sat
March 2013	4 Days	Sat, Sun + Fri, Sat
April 2013	7 Days	Fri, Sat, Sun + Fri, Sat, Sun, Mon
May 2013	0 Days	
<b>Totals:</b>		
	30 Days	
	Effort = 51,783 digger trips	
	Harvest = 765,637 clams	
	(Including wastage of 10,874 clams)	
	Portion of TAC Harvested = 84.2%	

Late in the season while reviewing state harvest totals on Copalis and Mocrocks, a biometrician discovered an error in the calculations used by the state to estimate the daily recreational harvest. Biologists determined this error had gone undetected for a number of years and resulted in the reporting of harvest totals that in general underestimate the true total – on all beaches. Because this error was found so late in the 2012-13 season the total harvest on Copalis exceeded the TAC by 29.9% and no May digging could be offered at Copalis. In addition, the state closed Mocrocks short of the state’s TAC share and transferred those clams to the QIN share to help account for the overharvest of the state’s share at Copalis.

Mocrocks razor clam management beach is also one of three beaches WDFW co-manages with tribal governments. The Quinault Indian Nation (QIN) has federally adjudicated fishing rights on this beach and we share the total allowable catch (TAC) 50/50 with the QIN. More details on state/tribal co- management of razor clams in Washington are found later in this presentation.

## **KALALOCH**

**As occurred during the 2011-12 season, WDFW and Olympic National park jointly made a decision to forgo recreational harvest at Kalaloch during the 2012-13 season. The plan was to provide the population on this beach a chance to recover from the decline it has experienced since 2009.**

The Quinault Indian Nation (QIN) and the Hoh Tribe both have federally adjudicated fishing rights on this beach and we share the total allowable catch (TAC) 50/50 and these two tribes. More details on state/tribal co- management of razor clams in Washington are found later in this presentation. In addition, because Kalaloch falls within the boundaries of the Olympic National Park - WDFW works very closely with staff at Olympic National Park in the joint management of the Kalaloch razor clam recreational fishery.

# MARINE TOXINS



Now, onto a topic that can really play havoc with shellfish harvesting – as experienced razor clammers know all too well.

Naturally occurring Harmful Algal Blooms (HAB) produce toxins that are ingested by razor clams and then concentrate in their meat tissue.

The razor clam fishery has been closed three times for a full season and many times for shorter periods – due to levels of two marine toxins in razor clam tissue that have exceeded state and federal action levels. In fact, coast-wide a total of 24.6% of all potential harvest days have been cancelled due to marine toxins produced by HAB events.

# Domoic Acid

## Amnesic Shellfish Poisoning (ASP)

- Produced by a diatom (*Pseudo-nitzschia sp.*)
- Domoic acid - neurotoxin
- Nausea, dizziness, memory loss
- Stroke-like symptoms that can lead to death
- No antidote
- Not destroyed by cooking/freezing
- Not easily detected

The marine toxin domoic acid has been the most prevalent toxin affecting razor clams harvest along the Washington coast. It is produced by a naturally occurring member of the marine plankton community – a diatom – named *Pseudo-nitzschia*. Recent research has led to better understanding of where these diatoms originate and what oceanographic and weather conditions must be present to allow them to move closer to shore and affect razor clam populations. Since 1992 when domoic acid was first found in razor clam meat tissue a total of 22% of planned razor clam digging opportunities have been lost due to high marine toxin levels, with the vast majority due to domoic acid.

This slide details the dangers domoic acid – in high levels – presents. More details can be found on the WDFW web site at :

[http://wdfw.wa.gov/conservation/research/projects/algae\\_bloom/index.html](http://wdfw.wa.gov/conservation/research/projects/algae_bloom/index.html)

# PSP Toxin

## Paralytic Shellfish Poisoning (PSP)

- Produced by a dinoflagellate (*Alexandrium sp.*)
- Saxitoxin- neurotoxin
- Numbness, finger tingling/toes, lips
- Can paralyze the diaphragm and lead to death
- No antidote
- Not destroyed by cooking/freezing
- Not easily detected

The toxin that causes paralytic shellfish poisoning (PSP) is produced by another naturally occurring member of the marine plankton community. This species is the dinoflagellate named *Alexandrium*. PSP has historically been less of a problem for the razor clam fishery. However, in past seasons there have been razor clam closures due to PSP.

# WDFW is required to collect samples per strict WDOH protocol:

To open or remain open, ALL samples must test below  
The action level...

- Samples from 3 areas per beach.
- 12 adult clams per sample.
- 2 collections 7-10 days apart (often means digging on poorer tides).
- Last collection as close to opening as possible.
- In-season collections also 7-10 days apart.



As a result of concern for the health of the many people who enjoy razor clams, WDFW works closely with staff at the Washington Department of Health (WDOH) to collect and transport to the WDOH lab (north of Seattle in Shoreline) for processing. These clams are collected on a strict schedule that allows for the final sample to be collected as close to the day of each period razor clamming is open. This is the reason our openers are always announced as ‘tentative, until final marine toxin results are available.’”

## Current Marine Toxin Levels

Throughout the 2012-13 razor clam season the regular tests of razor clam tissue found that levels of the toxins that produce PSP and domoic acid were both at very low levels. As of this writing (Sept. 1, 2013) levels of both toxins continue to remain low.

However, experience tells us that this can change rapidly and levels of these toxins can accumulate in razor clams fairly quickly.

Together with the Washington Department of Health we will continue to collect and test razor clam samples just prior to every opener to insure the clams you are harvesting and consuming are safe.

The most recent levels can be found at:

[http://wdfw.wa.gov/fishing/shellfish/razorclams/domoic\\_levels.html](http://wdfw.wa.gov/fishing/shellfish/razorclams/domoic_levels.html)

For more information, see:

<http://www.doh.wa.gov/CommunityandEnvironment/Shellfish.aspx>

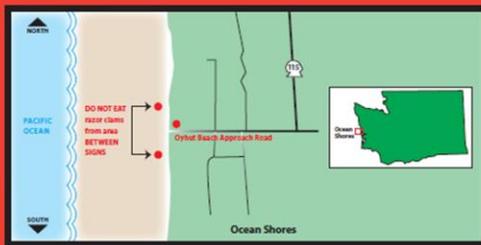
# Bacterial Pollution Around Oyhut

## POLLUTION WARNING DRAFT

**DO NOT EAT  
Razor clams from  
area between signs**



**190 yards north and south of  
Oyhut Beach Approach Road**



Always check the shellfish safety hotline:

**1-800-562-5632** or  
[www.doh.wa.gov/shellfishsafety.htm](http://www.doh.wa.gov/shellfishsafety.htm)



Washington State Department of  
**Health**  
360-236-3330

For more information, contact:

Marine water quality at the end of the Oyhut Beach Approach off of Damon Road (on the Copalis Razor Clam Management Beach – just north of Ocean Shores) does not meet the Washington State Department of Health’s (WDOH) standard for safe shellfish harvesting. WDOH has posted an area of beach that starts 190 yards north of the Out beach road and ends 190 yards south of this road - with signs warning diggers to avoid harvesting clams from this section of beach.

The source of the bacterial contamination in this area has not been found. Grays Harbor County is working with the WDOH to investigate and testing continues. It is hoped this harvest warning will be temporary.

Marine water quality at the end of the Oyhut Beach Approach off of Damon Road (on the Copalis Razor Clam Management Beach – just north of Ocean Shores) does not meet the Washington State Department of Health’s (WDOH) standard for safe shellfish harvesting. WDOH has posted an area of beach that starts 190 yards north of the Out beach road and ends 190 yards south of this road - with signs warning diggers to avoid harvesting clams from this section of beach.

The source of the bacterial contamination in this area has not been found. Grays Harbor County is working with the WDOH to investigate and testing continues. It is hoped this harvest warning will be temporary.

## Concerns over Radiation Levels

In 2011, a devastating earthquake and tsunami damaged a nuclear power plant in Fukushima, Japan. Recently, national and international news have reported tanks leaking contaminated water into the ocean, closing fishing areas in Japanese waters. The Washington Department of Health has the lead in monitoring for any impacts on Washington State. To date, all the fish or shellfish (including species like tuna that have a trans-Pacific migratory pattern) tested have revealed no radiation based public health risk.

Prior to the start of the 2012-13 season, WDFW will collect additional razor clam samples specifically for WDOH testing of radiation levels. The results will be closely evaluated before the approval of any recreational digging season.

More details can be found at

[:http://www.doh.wa.gov/Emergencies/EmergencyPreparednessandResponse/FukushimaUpdate.aspx](http://www.doh.wa.gov/Emergencies/EmergencyPreparednessandResponse/FukushimaUpdate.aspx)

More details can be found at :

<http://www.doh.wa.gov/Emergencies/EmergencyPreparednessandResponse/FukushimaUpdate.aspx>

# Tsunami debris reaching Washington's coastline

Debris has begun reaching Washington's ocean beaches from the tsunami that accompanied the devastating earthquake in Japan in March 2011. State and local agencies are working together to respond to the problems and risks associated with marine debris from the tsunami, and there are several ways the public can help.

More details can be found at : <http://wdfw.wa.gov/tsunami/>

A small Japanese vessel with non-native fish onboard were found on Long Beach in March 2013.



**FOR IMMEDIATE RELEASE – April 10, 2013**  
13-005-MDNR

**Media contact:**

Washington State Marine Debris Task Force Information Officer, 1-855-827-9904.

***Boat found with live fish inside confirmed to be Japan tsunami debris***

**LONG BEACH** – State and federal agencies learned today that the Sai-shou-maru – the 20-foot boat that washed ashore near Long Beach on March 22, 2013, with several non-native fish inside – came from Japan after it was swept out to sea by the tsunami on March 11, 2011.

The state Military Department's Emergency Management Division (EMD) and National Atmospheric and Oceanic Administration (NOAA) received confirmation from the Consulate-General of Japan in Seattle.

The consulate told EMD and NOAA officials the original owner does not wish to have the Sai-shou-maru returned.

Washington State Parks now has possession of the boat and is working with the Columbia River Maritime Museum in Astoria to place the Sai-shou-maru on permanent loan there.

Besides the five striped beakfish found in the open well of the boat when it washed ashore, the Washington Department of Fish and Wildlife estimates 30 to 50 species of plants and animals were also on the Sai-shou-maru – including potential invasive species.

State officials quickly removed the Sai-shou-maru from the beach and collected samples of potential invasive species including the fish, algae, anemones, crabs, marine worms and shellfish.

These specimens are of great scientific value as scientists attempt to understand how they could have survived such a long journey and whether they pose a threat to Washington and the West Coast.

<http://www.nwfsc.noaa.gov/orhab/>



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Olympic Region Harmful Algal Blooms

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[HAB Impacts](#)

[Project Plan](#)

[Partnerships](#)

[Benefits](#)

[Meetings](#)

[Gallery](#)

[Sustaining  
ORHAB](#)

[Outreach](#)

[Education](#)

The ORHAB project is bringing knowledge to the local communities on the Olympic peninsula of the Washington State coast, empowering the tribes and state managers to make scientifically-based decisions about managing and mitigating harmful algal bloom (HAB) impacts on coastal fishery resources.

The ORHAB Partnership was formed in June 1999 by local residents and coastal communities' in response to seemingly random closures of the shellfisheries due to outbreaks of marine biotoxins (Paralytic Shellfish Poison, PSP) and demonic acid contamination of razor clams. It became clear that in order to manage these outbreaks there was a need to better understand underlying dynamics of these disruptive HAB events. These research efforts, made possible by federal funding from NOAA, have been underway since the summer of 2000.

To find out more about ORHAB and HABs, please visit the navigation bar on the left.



[Acknowledgments](#) | [Disclaimer](#)

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In regards to monitoring and studying harmful algal blooms (HAB) and the resulting toxins, WDFW and WDOH do not operate alone. We are part of a larger partnership of agencies, tribes and universities all interested and involved in HAB monitoring and research.

For more information see :

[http://wdfw.wa.gov/conservation/research/projects/algals\\_bloom/index.html](http://wdfw.wa.gov/conservation/research/projects/algals_bloom/index.html)

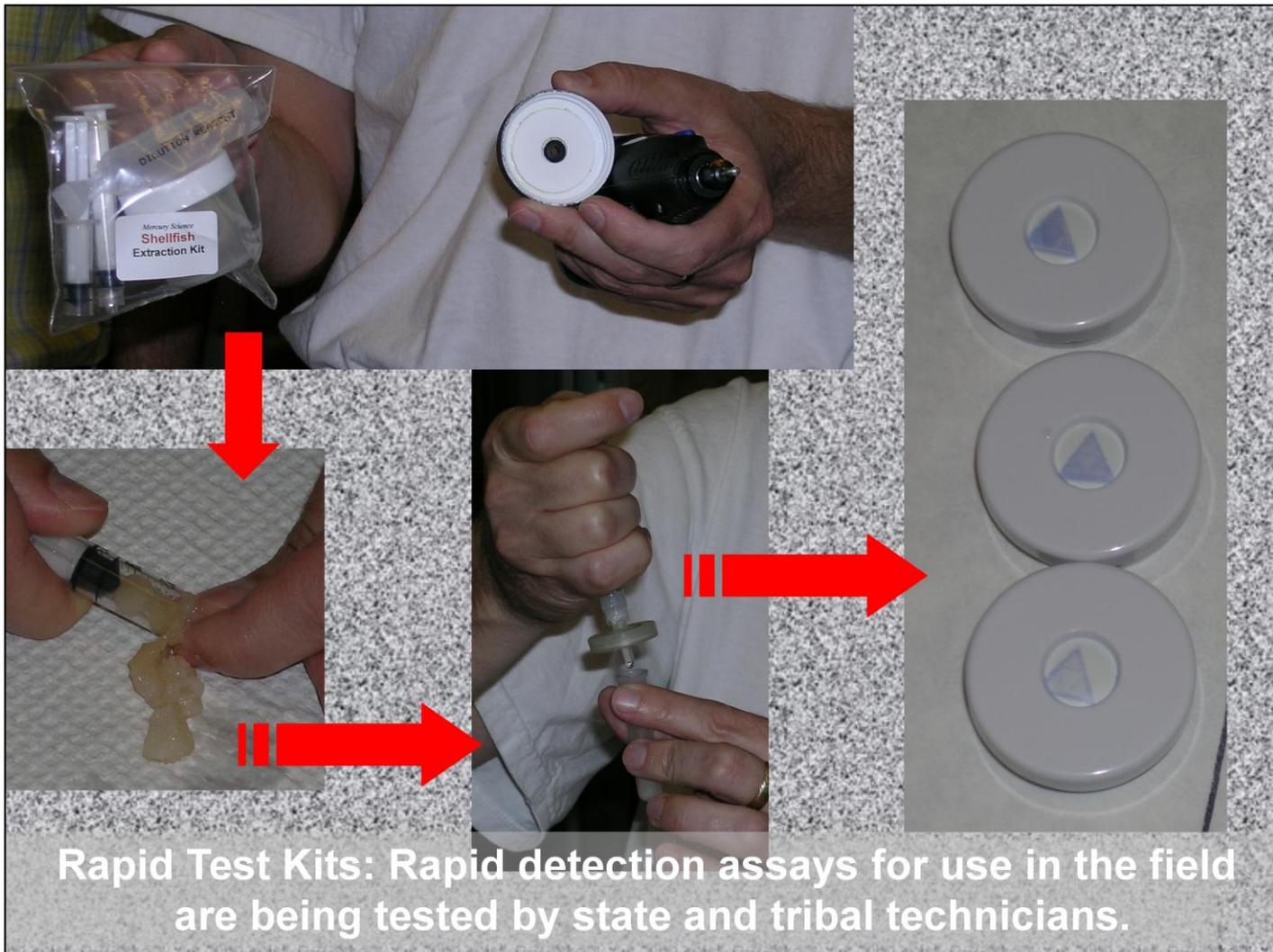


**WDFW's role:  
monitor surf zone  
plankton,  
toxins, and  
water quality...**



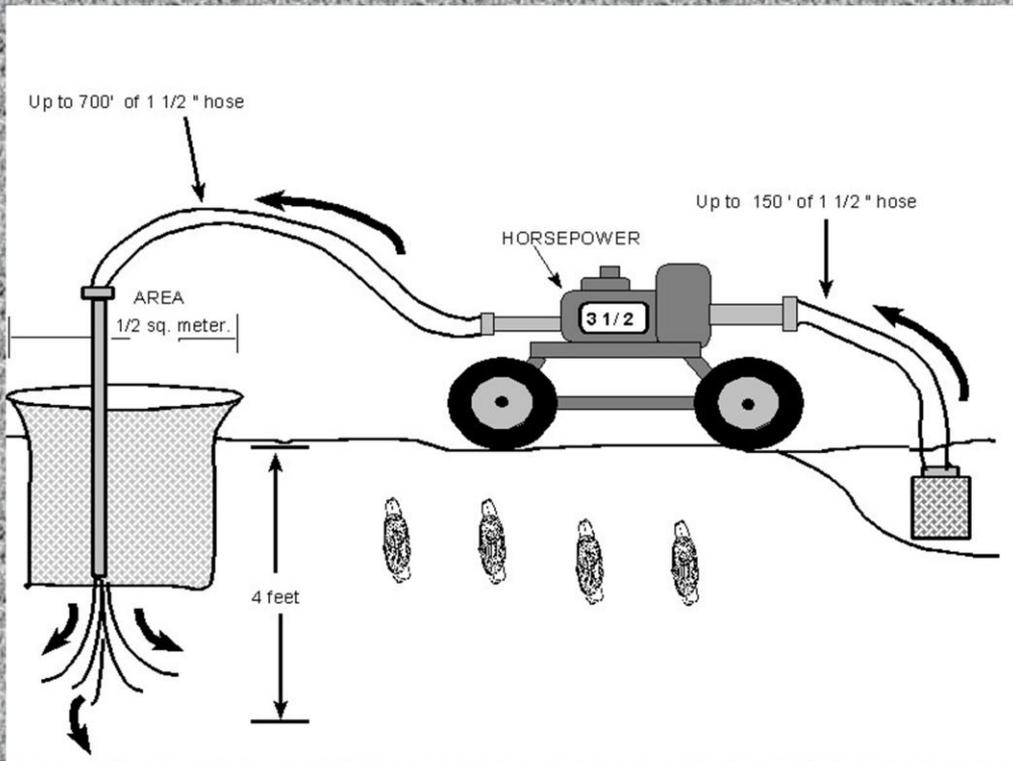
**...to determine  
the environmental  
conditions associated with blooms  
of *Pseudo-nitzschia* species.**

To conduct WDFW's work with monitoring for HABS a staff member has received training by University and federal experts. He makes regular collections of plankton samples from the surf zone and then analyzes them to determine the presence of toxic cells. The data received from this monitoring program can provide us advance notice of pending problems and give us time to adjust openers and give razor clammers a heads up of what may be coming.



One major goal of the ORHAB project has been to develop and implement rapid detection technologies. This technology offers the promise of allowing field staff to determine the presence of toxins in shellfish tissue without having to wait for the current time-consuming transport of samples to a distant laboratory.

# Status of the Razor Clam Stocks



We can now turn our attention to the work WDFW does to annually determine the number of razor clams available on each beach.

Starting in May and ending in September  
WDFW and tribal co-managers survey a total



...total of 58 miles of  
Razor Clam habitat...  
from the sound end of the  
Long Beach Peninsula (Beard's Hollow) to  
the north end of Kalaloch.

This year's work started on May 12<sup>th</sup> and for the most part was completed by late August.

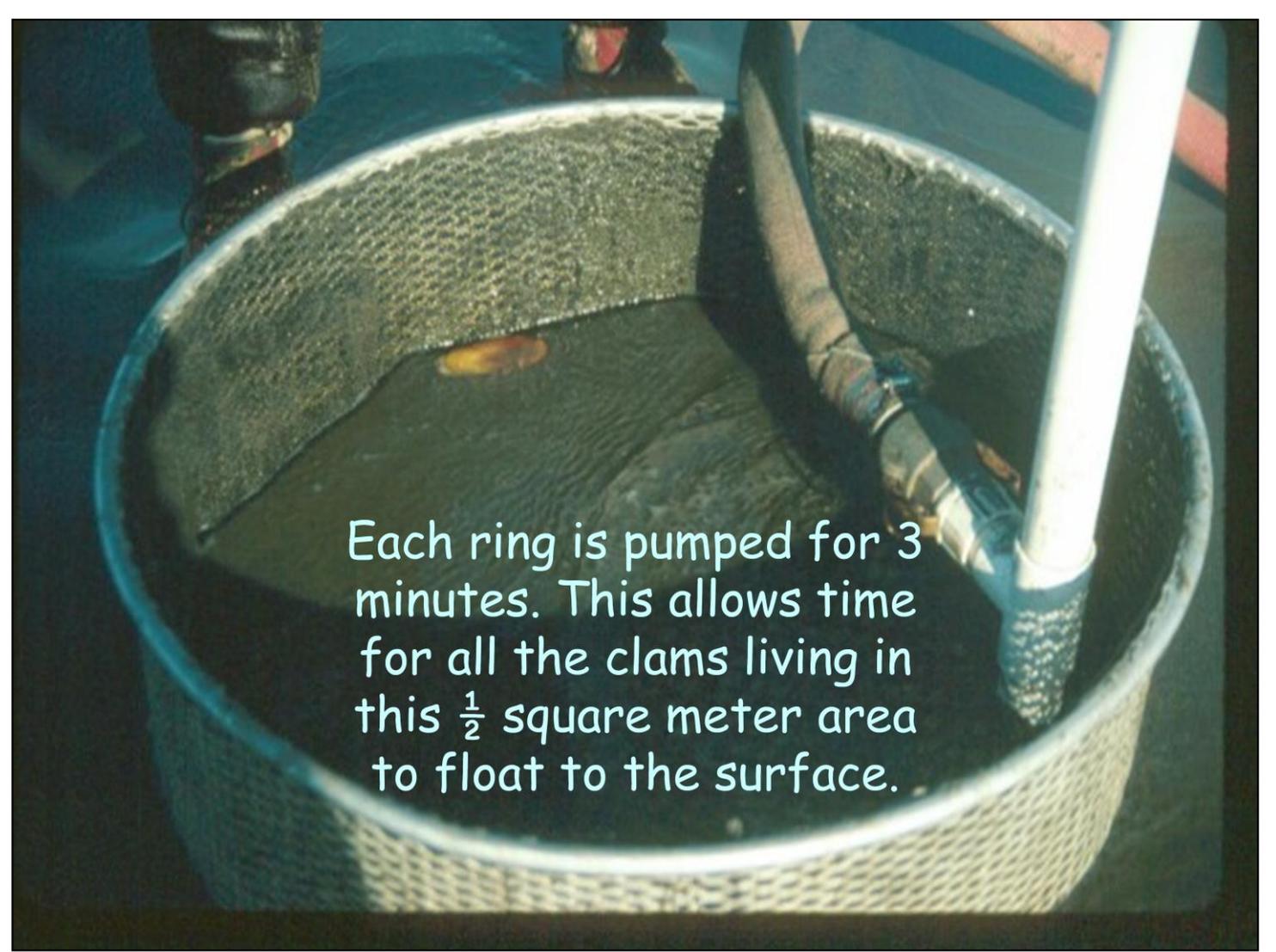
The survey method WDFW has been using since 1997 is the Pumped Area Method...

Surveying razor clams is not as easy as just digging all the clams in a known area. Razor clam digging requires the clam to 'show' and not all clams 'show' at the same time. As a result, it is not possible to dig every clam in a known area.



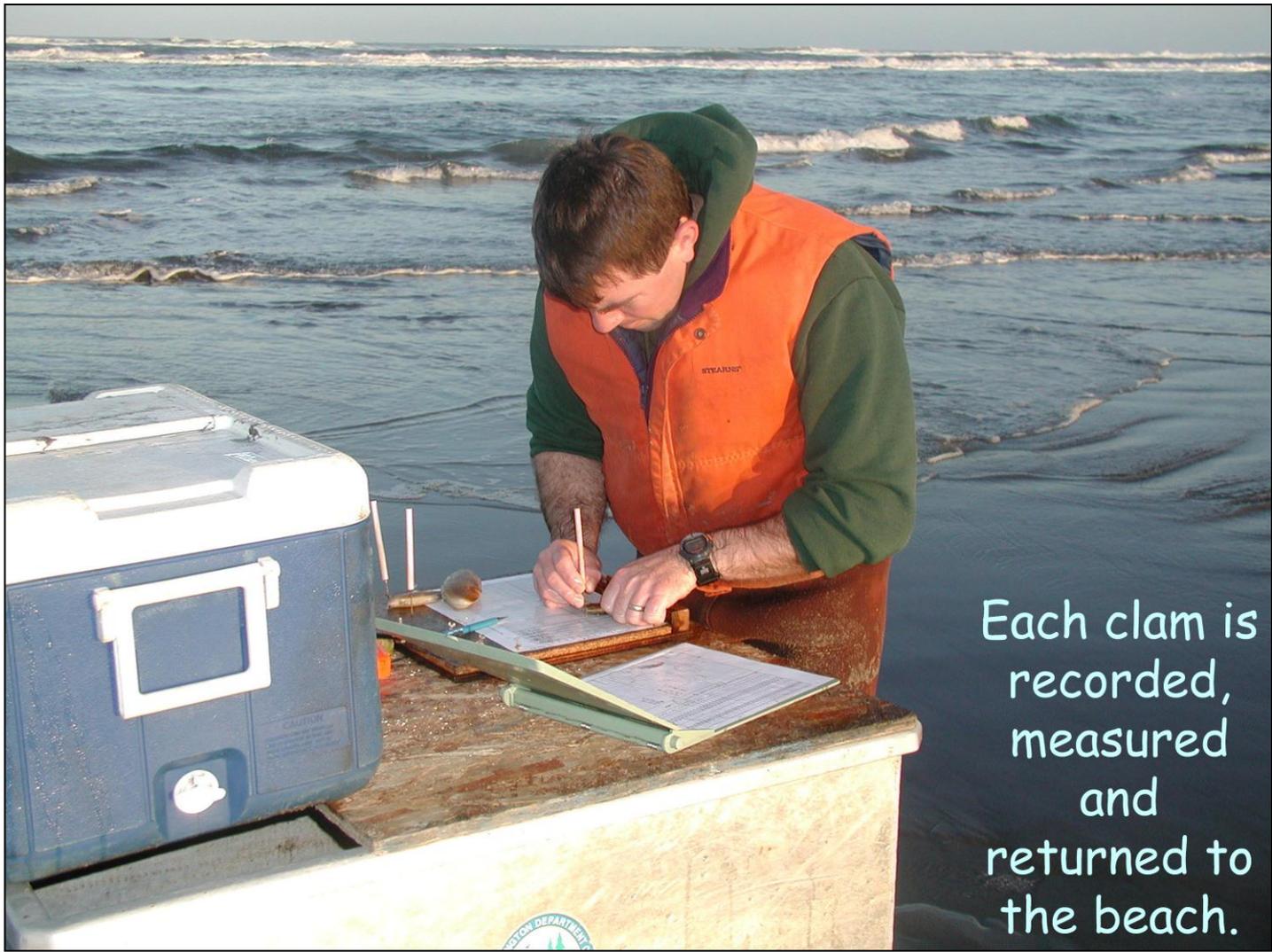
Water is pumped up the beach  
and used to liquefy the sand  
within a  $\frac{1}{2}$  square meter  
aluminum ring.

The Pumped Area Method uses water (pumped from the surf or a nearby lagoon) to liquefy the sand within an aluminum ring that is exactly  $\frac{1}{2}$  square meter in area. Every clam that is within the area of the ring will float to the surface and can be counted as part of the random sample. The clams sampled range in size from full grown adults (6 inches plus) down to juvenile clams that are as small as 5 mm and have only recently settled into the sand from the larval stage. This provides us a way to make estimates for both the recruit sized clams ( $\geq 76$  mm) and the pre-recruits clams ( $< 76$  mm). Any previous stock assessment method did not provide a bases for estimating pre-recruits.



Each ring is pumped for 3 minutes. This allows time for all the clams living in this  $\frac{1}{2}$  square meter area to float to the surface.

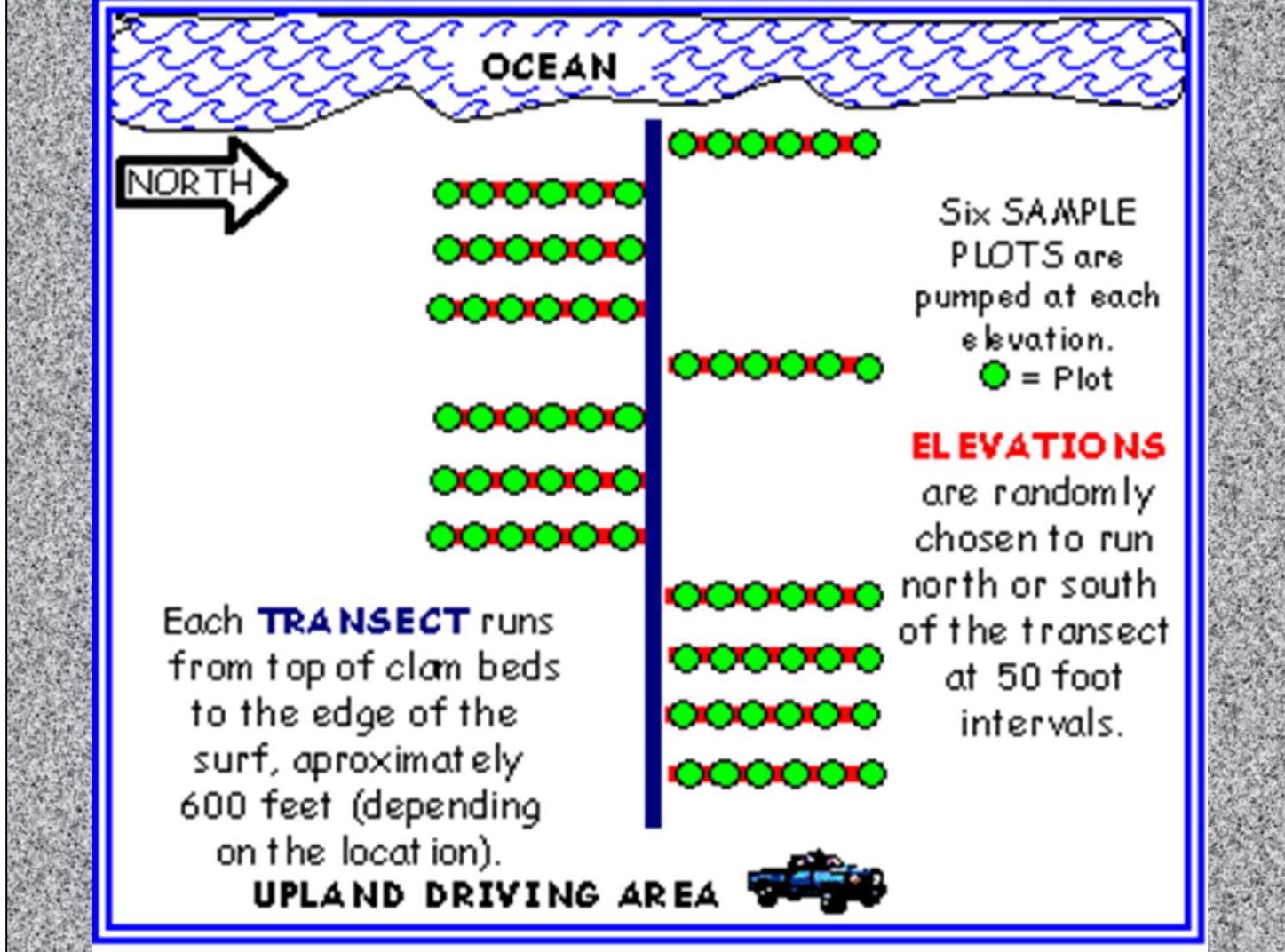
Each ring is pumped for 3 minutes allowing time for all the clams in the area of the ring to float to the surface and be pumped.



Each clam is recorded, measured and returned to the beach.

Each clam is measured and recorded and returned to the beach.

The Pumped Area Method allows biologists to obtain the full data set needed to estimate both recruit clams and pre-recruit clams. This is in contrast with previous razor clam population sampling methods that were unable to estimate pre-recruits.



Each of the five management beaches is sampled with randomly selected transects chosen approximately 1 mile apart. The sampling occurs during good low tide and begins at the top of the razor clam beds and moves out to the edge of the surf. Six plots (sample rings) are pumped at 50 foot intervals.



## 2013 Stock Assessment - Results

Many of you will recall that our 2012 stock assessment showed that razor clam populations on all beaches, except at Kalaloch, had strong increases in the number of harvestable size clams.

The 2013 assessment shows us that populations are at even higher levels than we saw in 2012. There has even been some improvement at Kalaloch, although razor clam populations on this beach remain weak.

# How many days can we dig?

Stock assessment data :

1. Estimate of the number clams
2. Estimate of the average size

TAC (total allowable catch) =  
Total clams 3 inches or greater x  
**fixed harvest rate of 30%.**

The main purpose for the collection of accurate stock assessment data is to allow for a good estimate of the number of clams that can be safely harvested in the coming year – without harming the overall population.

The stock assessment data provides us with estimates of the total number of clams and their average size. We are then able to determine the total number of clams that are at or over 3 inches (this size at which razor clams generally begin to make a clear “show” and are harvestable. The total allowable catch (TAC) for each beach is then calculated using a fixed harvest rate of 30% of the total number of clams at or over 3 inches.

Know that razor clams that are 3 inches during our summer stock assessment will quickly grow and become a more suitable size as the season progresses.

# How many days can we dig?

Stock assessment data :

1. Estimate of the number clams
2. Estimate of the average size

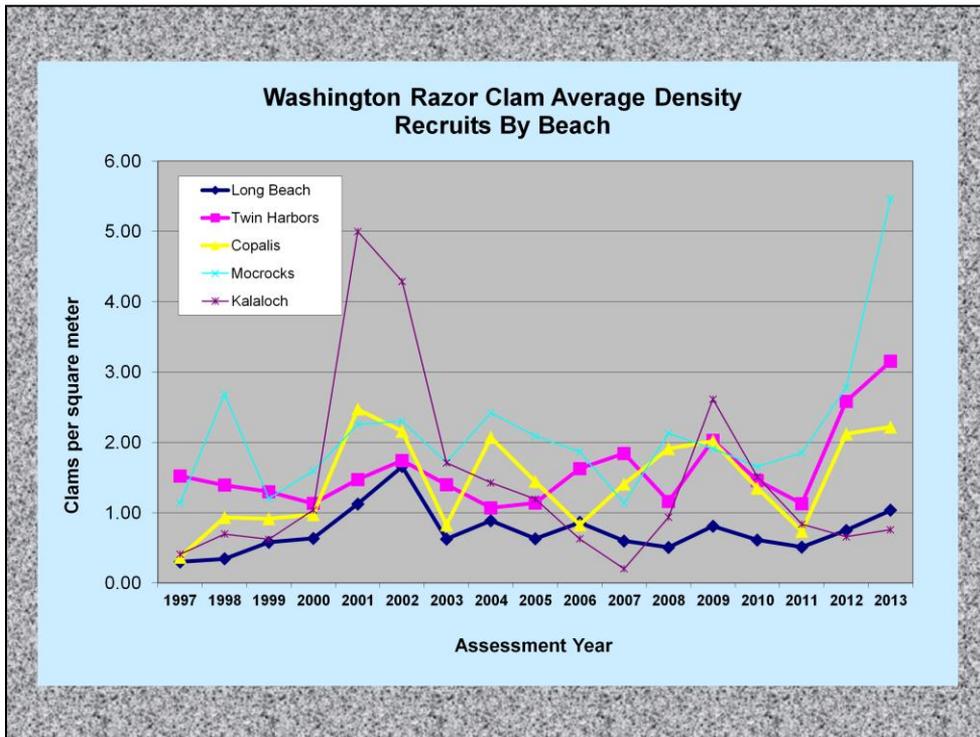
TAC (total allowable catch) =  
Total clams 3 inches or greater x  
**variable harvest rate.**

During the 2012-13 season, WDFW began using a new “variable” harvest rate on two beaches (rather than using a fixed harvest rate of 30%.)

On these beaches we determine the harvest rate based on the ratio of the **current population** of razor clams (as measured by our most recent stock assessment on each beach) and the **highest population** level measured (again on each beach). The maximum harvest rate possible (using the variable harvest rate method) is 40%.

This methods allows for more harvest during times of abundant populations while still preserving the spawning capacity of the population. It also includes an automatic rebuilding strategy (with a reduced harvest rate) during times when stocks are weak.

- During the 2012-13 season the TAC at Twin Harbors was determined using a variable harvest rate of 40%. That will again be the case for 2013-14 season
- During the 2012-13 season the TAC at Long Beach was determined using a variable harvest rate of 34.5%. For 2013-14 season, the TAC has been determined using a variable harvest rate of 39%.



The best way to compare razor clam populations between beaches is to look at the average density (on the razor clam beds over the entire length of each beach) as measured in our annual stock assessment work. This graph displays average density on each beach back to 1997. (Because of the change in the way razor clam populations are assessed, it is difficult to compare populations earlier than 1997.) It is clear from this data that razor clam populations naturally move up and down a fair amount. This is not an unexpected pattern in a shellfish population that is so heavily dependent on favorable oceanographic and weather conditions to allow for successful spawning and setting. As with any natural population, there are also disease processes that contribute to the variability in population levels. It is also easy to see that during this 17 year period, Mocrocks has the most dense populations, with Kalaloch, Copalis and Twin Harbors and Long Beach all showing improvement in overall densities. This pattern compares very favorably to the long term history of Washington razor clam populations. The next several slides will show the specific data from each beach as measured in total number of clams. However, keep this chart comparing average density over all beaches in mind as you review the beach specific data.

The 2013 the average density (clams per square meter) by beach is : Long Beach = 1.03; Twin Harbors = 3.15; Copalis = 2.22; Mocrocks = 5.47; Kalaloch = 0.76.

For comparison:

The 2012 the average density (clams per square meter) by beach is : Long Beach = 0.75; Twin Harbors = 2.58; Copalis = 2.12; Mocrocks = 2.78; Kalaloch = 0.66.

## LONG BEACH RAZOR CLAM POPULATION, TOTAL ALLOWABLE CATCH (TAC) AND HARVEST DATA

YEAR	POPULATION (clams)		TAC (clams) of recruits	HARVEST TOTAL (clams)	% of TAC harvested
	RECRUITS	PRE- RECRUITS			
2009-10	5,611,837	3,582,973	1,683,551	1,774,864	105.4%
2010-11	4,254,159	13,652,853	1,276,248	1,459,610	114.4%
2011-12	3,648,805	2,781,402	1,094,642	1,425,685	130.2%
2012-13	5,356,383	14,450,287	1,606,915	2,382,398	128.9%
2013-14	7,387,752	814,599	2,881,223		
<b>AVERAGE</b>	<b>5,251,787</b>	<b>7,056,423</b>		<b>1,760,639</b>	

There has been a 37% increase in the Long beach population of recruit sized razor clams at Long Beach. While this is not the largest population of razor clams we've recorded at Long Beach, it is very close. As a result, we have used a variable harvest rate (discussed in slide #34) of 39% at Long Beach to determine the TAC for the 2013-14 season.

The number of pre-recruit clams is lower than the average. However, it appears that the most successful setting of juvenile razor clams occurred this summer after we had finished most of our stock assessment work.

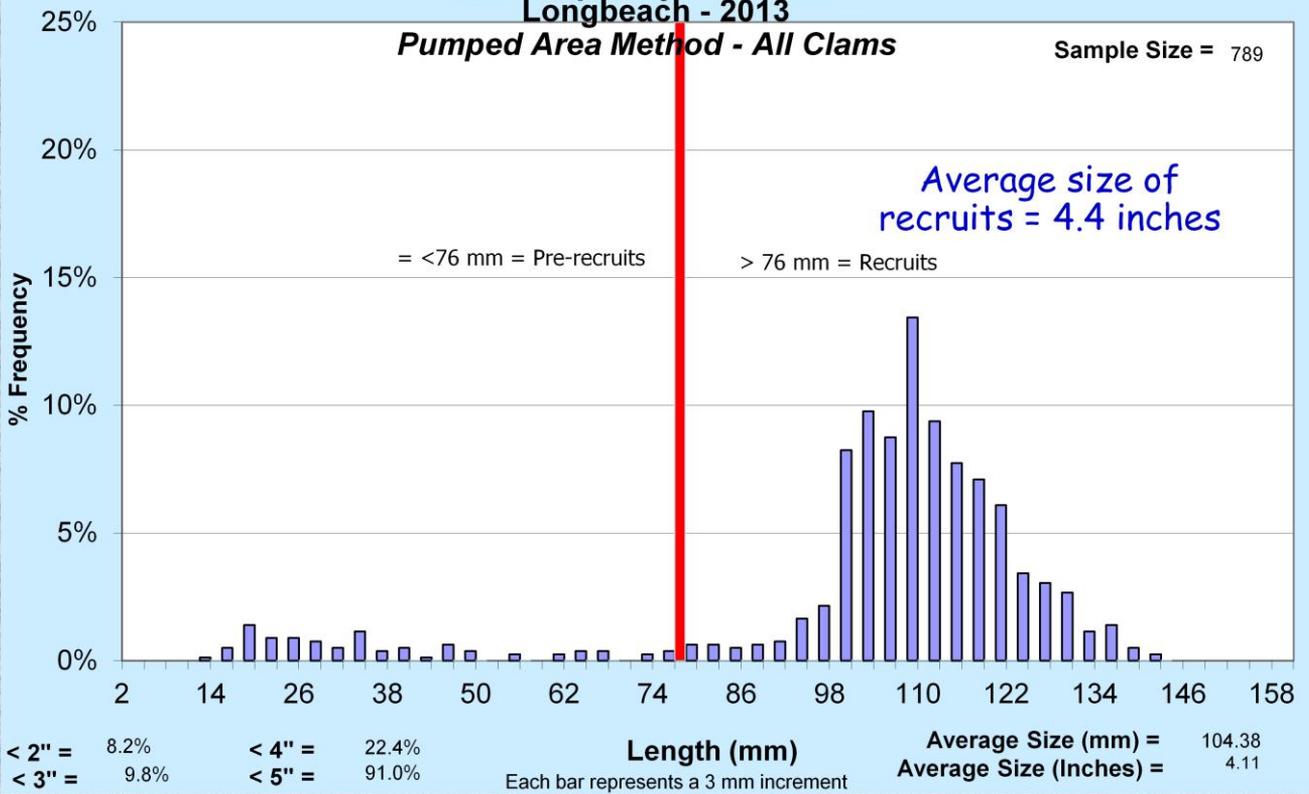
As we discussed in slide number 11, late in the 2012-13 season while reviewing state harvest totals on Copalis and Mocrocks, a biometrician discovered an error in the calculations used by the state to estimate the daily recreational harvest. Biologists determined this error had gone undetected for a number of years and resulted in the reporting of harvest totals that in general underestimate the true total – on all beaches. This table shows corrected Long Beach harvest levels back to the 2009-10 season.

# Washington Razor Clam

Size Frequency Distribution  
Longbeach - 2013

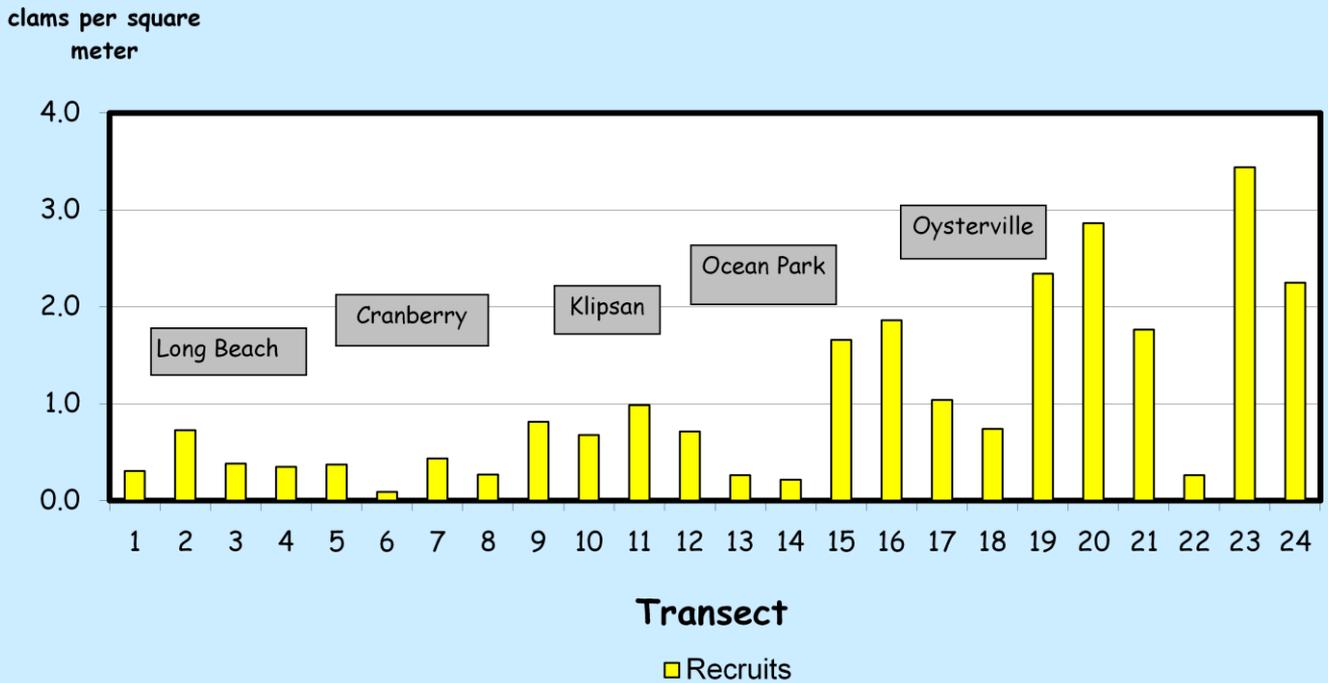
*Pumped Area Method - All Clams*

Sample Size = 789



The average size of the Long Beach recruit clams found in our summer surveys was 4.4 inches **which** is larger than the 2012 average of 3.99 inches and larger than the 2011 average of 4.1 inches.

# Long Beach Razor Clam Population Recruit Distribution - 2013



As is typically the case at Long Beach, the better digging is on the north end of the beach.

As you read further in this presentation, be sure to note the y-axis in the similar graphs displaying recruit distribution on each of the other beaches. For example, the highest density transect at Long Beach (#23) matches one of the lowest density transect at Mocrocks.

The 2013 the average density (clams per square meter) by beach is : Long Beach = 1.03; Twin Harbors = 3.15; Copalis = 2.22; Mocrocks = 5.47; Kalaloch = 0.76.

For comparison:

The 2012 the average density (clams per square meter) by beach is : Long Beach = 0.75; Twin Harbors = 2.58; Copalis = 2.12; Mocrocks = 2.78; Kalaloch = 0.66.

## TWIN HARBORS RAZOR CLAM POPULATION, TOTAL ALLOWABLE CATCH (TAC) AND HARVEST DATA

YEAR	POPULATION (clams)		TAC (clams)	HARVEST	% of TAC harvested
	RECRUITS	PRE-RECRUITS	of recruits	(clams) TOTAL	
2009-10	3,925,788	2,500,305	1,177,736	1,024,023	86.9%
2010-11	2,818,092	2,859,722	845,428	1,042,366	123.3%
2011-12	2,054,381	5,571,684	616,314	753,793	122.3%
2012-13	4,704,458	8,757,897	1,411,337	1,537,299	81.7%
2013-14	5,744,411	1,398,700	2,297,764		
<b>AVERAGE</b>	<b>3,849,426</b>	<b>4,217,661</b>		<b>1,089,370</b>	

On Twin Harbors the 2013 stock assessment measures the highest population of razor clams we've seen back to 1997. (Because of the change in the way razor clam populations are assessed, it is difficult to compare populations earlier than 1997.) It is also 18% higher than the 2012 population, which was the previous high.

As a result, we have used a variable harvest rate (discussed in slide #34) of 40% at Twin Harbors to determine the TAC for the 2013-14 season.

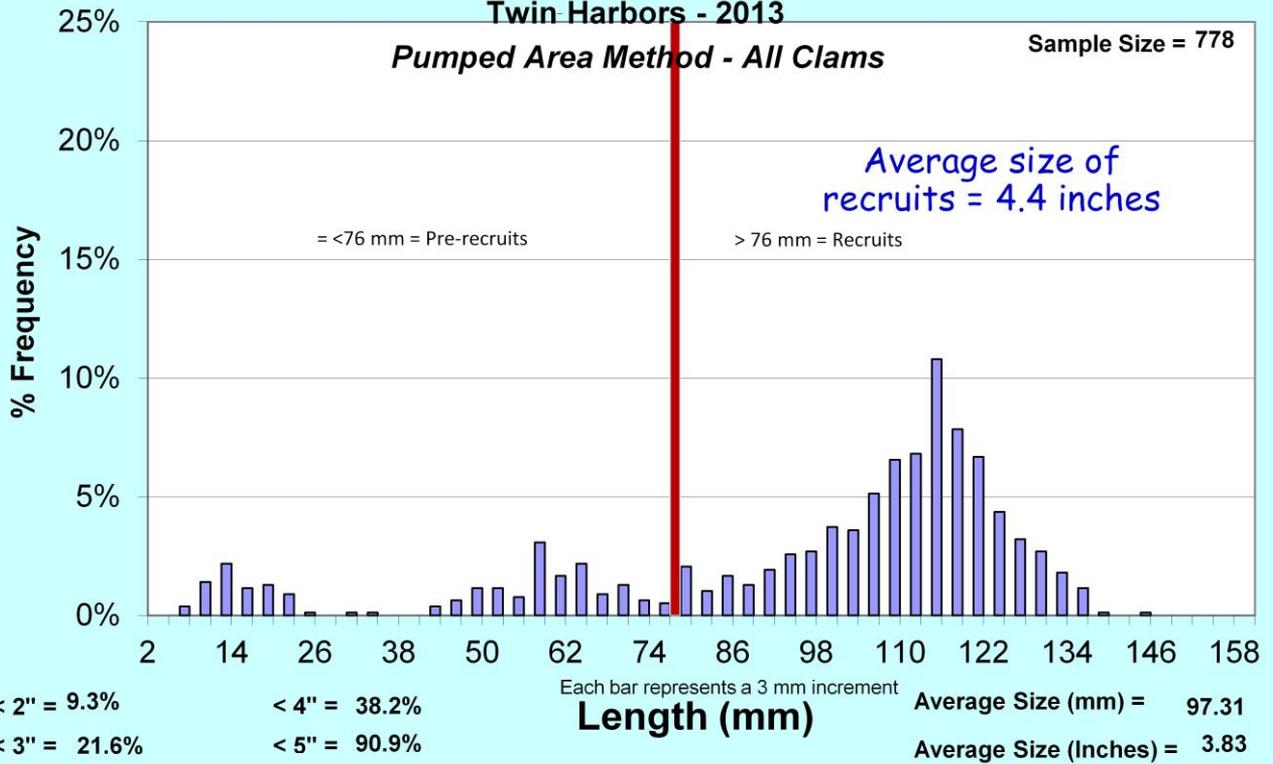
As we discussed in slide number 11, late in the 2012-13 season while reviewing state harvest totals on Copalis and Mocoorks, a biometrician discovered an error in the calculations used by the state to estimate the daily recreational harvest. Biologists determined this error had gone undetected for a number of years and resulted in the reporting of harvest totals that in general underestimate the true total – on all beaches. This table shows corrected Twin Harbors harvest levels back to the 2009-10 season.

# Washington Razor Clam

Size Frequency Distribution  
Twin Harbors - 2013

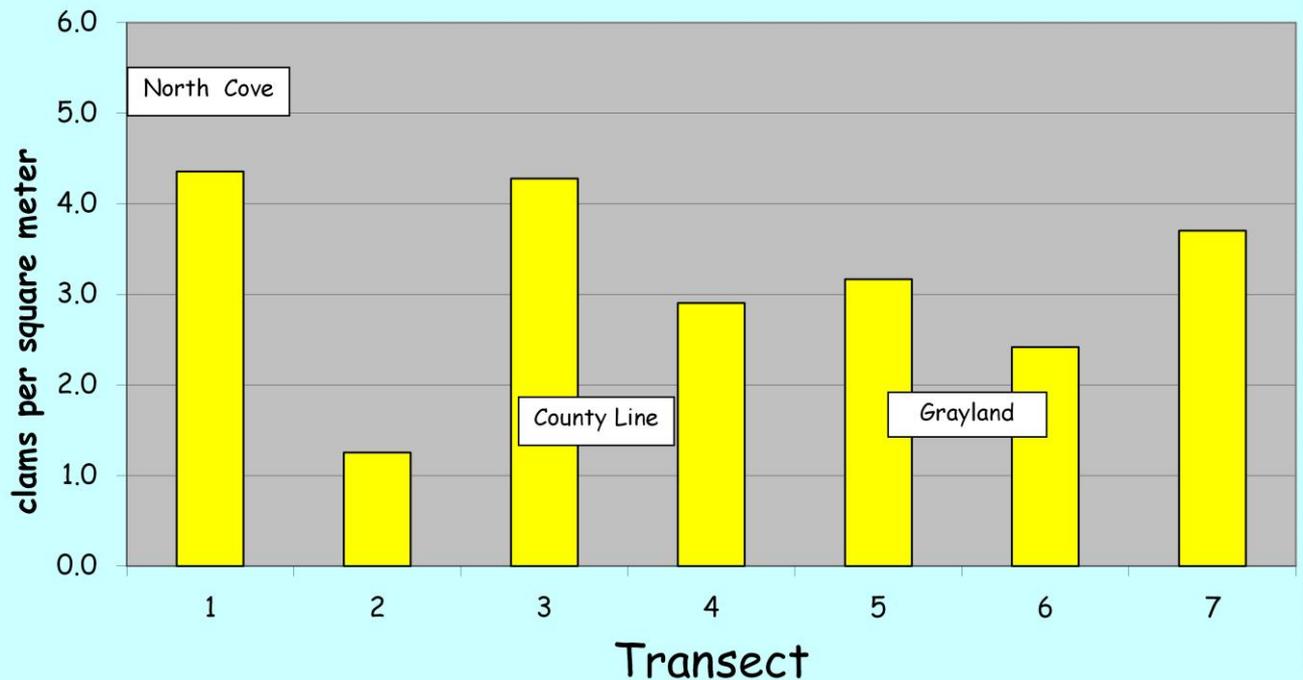
*Pumped Area Method - All Clams*

Sample Size = 778



The average size of the Twin Harbors recruit clams found in our summer 2013 surveys was 4.4 inches which is larger than the 2012 average of 3.9 inches.

## Twin Harbors Razor Clam Population Recruit Distribution - 2013



The 2013 assessment found a significant improvement in the densities of clams at most all locations along the Twin Harbors beach.

We expect there may be periods during the coming season when Twin Harbors is open when other beaches are not. It will be important for diggers to know which beach they are planning to harvest on and to pay attention to signs posted on beach approaches that would indicate a specific beach is closed to harvest.

The 2013 the average density (clams per square meter) by beach is : Long Beach = 1.03; Twin Harbors = 3.15; Copalis = 2.22; Mocrocks = 5.47; Kalaloch = 0.76.

For comparison:

The 2012 the average density (clams per square meter) by beach is : Long Beach = 0.75; Twin Harbors = 2.58; Copalis = 2.12; Mocrocks = 2.78; Kalaloch = 0.66.

**COPALIS RAZOR CLAM POPULATION, TOTAL ALLOWABLE CATCH (TAC) AND HARVEST DATA**

YEAR	POPULATION (clams)		TAC (clams) Harvest rate @ 30% of recruits	State's Share (50% w/ <i>adjustments</i> )	State's	% of share
	RECRUITS	PRE- RECRUITS			HARVEST (clams)	
2009-10	6,810,540	608,425	2,043,162	1,021,581	1,356,700	132.8%
2010-11	4,554,449	6,791,312	1,366,335	683,167	965,264	141.3%
2011-12	2,475,820	7,344,699	742,746	371,373	466,196	125.5%
2012-13	7,151,264	9,898,813	2,145,379	1,072,690	1,393,980	130.0%
2013-14	7,472,919	1,394,801	2,241,876	1,120,938		
<b>AVERAGE</b>	<b>5,692,998</b>	<b>6,462,269</b>			<b>1,045,535</b>	

The 2013 Razor clam populations at Copalis are also showing a very nice increase in recruit sized razor clams.

As we discussed in slide number 13, late in the 2012-13 season while reviewing state harvest totals on Copalis and Mocrocks, a biometrician discovered an error in the calculations used by the state to estimate the daily recreational harvest. Biologists determined this error had gone undetected for a number of years and resulted in the reporting of harvest totals that in general underestimate the true total – on all beaches. This table shows corrected Copalis harvest levels back to the 2009-10 season.

# Washington Razor Clam

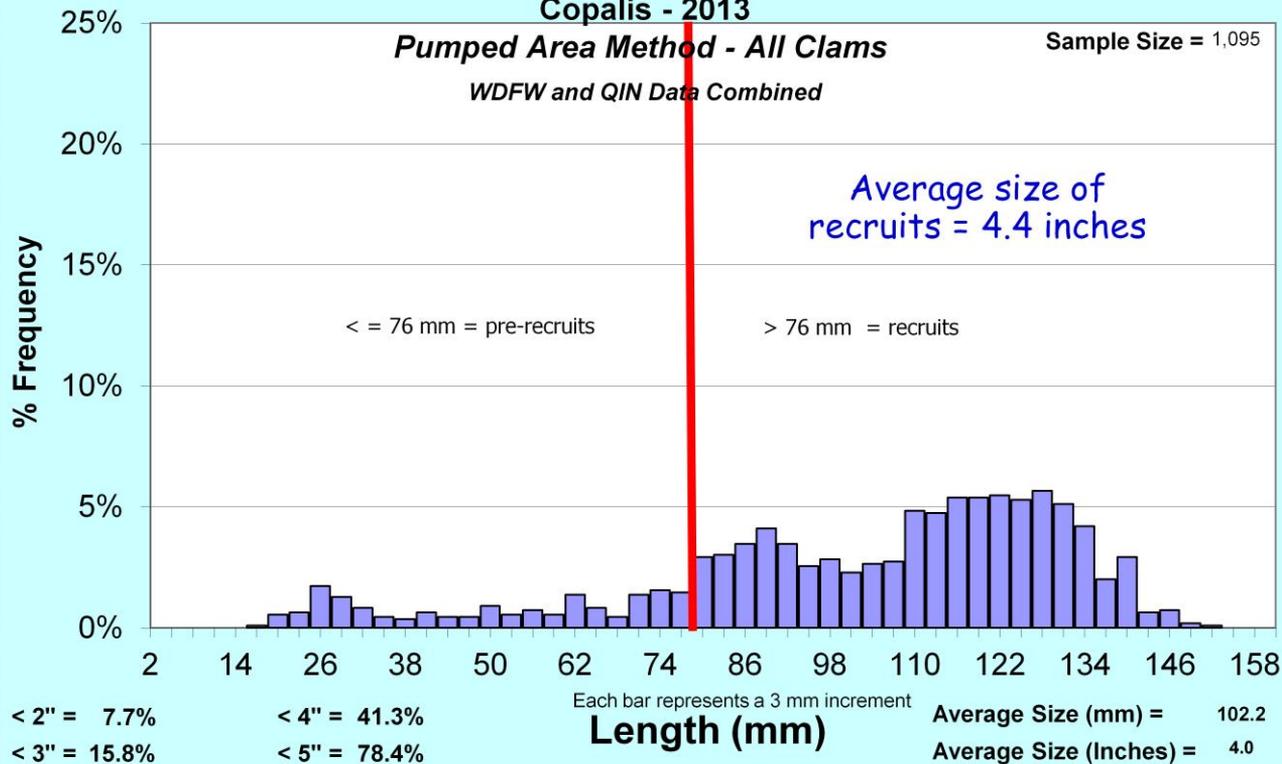
## Size Frequency Distribution

Copalis - 2013

*Pumped Area Method - All Clams*

Sample Size = 1,095

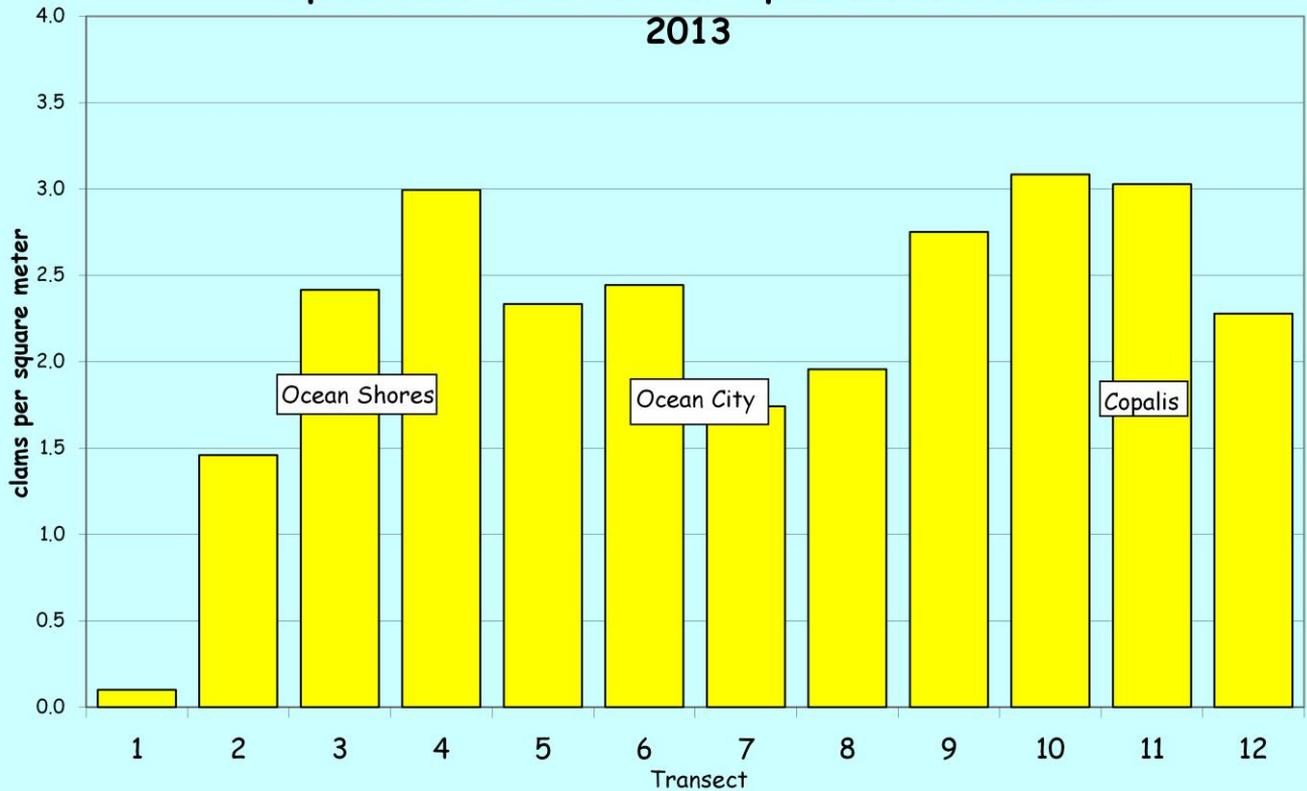
*WDFW and QIN Data Combined*



The average size of the Copalis recruit clams found in our summer surveys was 4.4 inches which is larger than the 2011 average of 4.0 inches.

## CopalisRazor Clam Recruit Population Distribution

2013



The southern boundary for our stock assessment at Copalis is 0.2 miles south of the Tarus Beach Approach. Beyond that razor clam populations are sparse.

Except for the traditionally lower densities of razor clams on the southern extreme of razor clam population on Copalis – the clams are fairly evenly distributed and show a strong increase in most all areas.

The 2013 the average density (clams per square meter) by beach is : Long Beach = 1.03; Twin Harbors = 3.15; Copalis = 2.22; Mocrocks = 5.47; Kalaloch = 0.76.

For comparison:

The 2012 the average density (clams per square meter) by beach is : Long Beach = 0.75; Twin Harbors = 2.58; Copalis = 2.12; Mocrocks = 2.78; Kalaloch = 0.66.

## MOCROCKS RAZOR CLAM POPULATION, TOTAL ALLOWABLE CATCH (TAC) AND HARVEST DATA

YEAR	POPULATION (clams)		TAC (clams)	State's Share	State's HARVEST	% of share harvested
	RECRUITS	PRE-RECRUITS	Harvest rate @ 30% of recruits	(50% w/ adjustments)	(clams) TOTAL	
2009-10	4,197,541	1,414,149	1,259,262	629,631	603,869	95.9%
2010-11	3,637,245	18,064,334	1,091,174	545,587	682,784	125.1%
2011-12	4,038,871	8,211,211	1,211,661	605,831	758,431	125.2%
2012-13	6,064,416	10,276,881	1,819,335	909,667	765,637	84.2%
2013-14	11,935,249	6,663,172	3,580,575	1,790,287		
<b>AVERAGE</b>	<b>5,974,671</b>	<b>8,925,949</b>			<b>702,680</b>	

In 2012 we reported that Mocrocks population was the strongest in the last 17 years. (Because of the change in the way razor clam populations are assessed, it is difficult to compare populations earlier than 1997.)

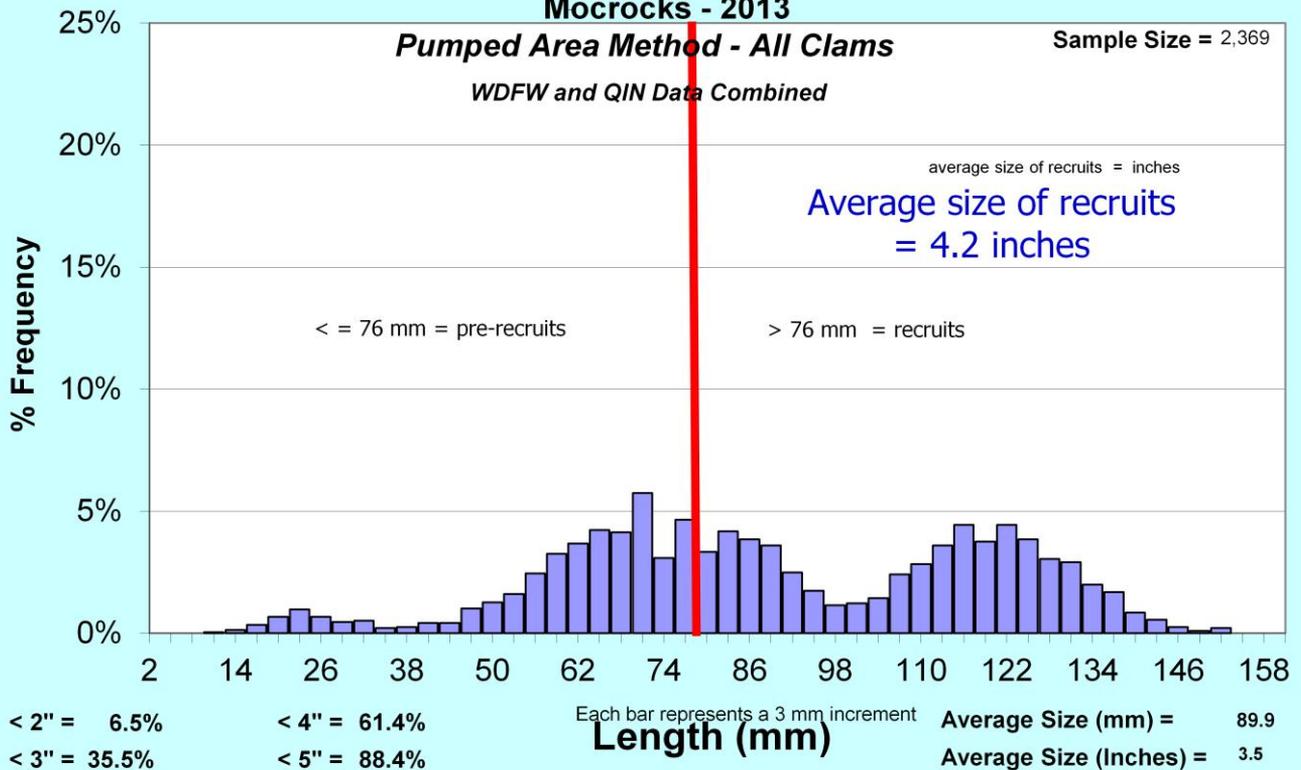
As you can see the 2013 assessment is nearly double the 2012 estimate. Mocrocks remains “Razor Clam Central”, with the strongest population densities – as has historically been the case.

We expect there may be periods during the coming season when Mocrocks is open when other beaches are not. It will be important for diggers to know which beach they are planning to harvest on and to pay attention to signs posted on beach approaches that would indicate a specific beach is closed to harvest.

As we discussed in slide number 14, late in the 2012-13 season while reviewing state harvest totals on Copalis and Mocrocks, a biometrician discovered an error in the calculations used by the state to estimate the daily recreational harvest. Biologists determined this error had gone undetected for a number of years and resulted in the reporting of harvest totals that in general underestimate the true total – on all beaches. This table shows corrected Mocrocks harvest levels back to the 2009-10 season.

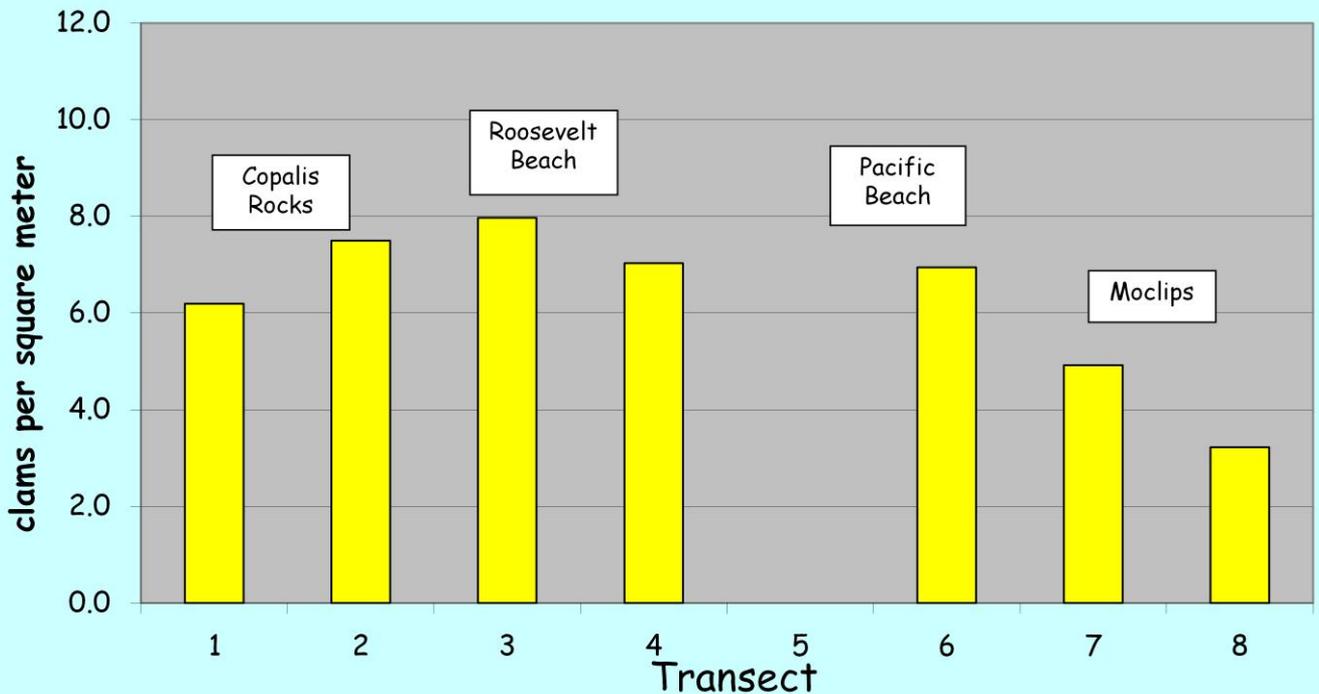
# Washington Razor Clam

## Size Frequency Distribution Mocrocks - 2013



Consistent recruitment (successful spawning) of razor clams at Mocrocks - over time is very evident with clams of most sizes present in our samples. Diggers will find a mix of both larger and smaller clams on this beach. We want to remind everyone that they are required to keep the first 15 clams regardless of size or condition.

## Mocrocks Razor Clam Population- 2013 Recruit Distribution



Razor clam densities this year (2013) at Mocrocks are strong everywhere except one very unusual transect (#5) near the center of the beach. This randomly selected transect was near the mouth of Joe Creek and we found zero recruit sized clams (and very few pre-recruits). Our sampling methodology does allow us to move away from the mouth of fresh water entrances to the beach. (Razor clams do not survive well in areas with regular fresh water influence.) In this case we moved the maximum amount allowed under the agreed to sampling plan. However, we believe this one transect was devoid of any recruit clams because of winter time fresh water flows over this portion of the razor clam beds. Nevertheless, the data from this transect is included in our estimate of the number of clams at Mocrocks.

**KALALOCH RAZOR CLAM POPULATION, TOTAL ALLOWABLE CATCH (TAC) AND HARVEST DATA**

YEAR	POPULATION (clams)		TAC (clams) harvest rate 25.4%	50%	State's HARVEST (clams) TOTAL
	RECRUITS	PRE-RECRUITS	of recruits	SHARES	
2009-10	3,532,257	3,251,387	897,193	448,597	46,373
2010-11	2,038,773	3,042,018	517,848	258,924	14,345
2011-12	1,138,272	2,321,662	289,121	144,561	2,952
2012-13	894,041	903,369	227,086	113,543	0
2013-14	1,033,286	536,262	262,455	131,227	
<b>AVERAGE</b>	<b>1,727,326</b>	<b>2,010,980</b>	<b>438,741</b>	<b>219,370</b>	

A minor improvement in the number of razor clams at Kalaloch was found during the 2013 assessment. The average density of razor clams on Kalaloch is estimated from the 2013 assessment work to be 0.76 clams per square meters, still well below the 17-year average density which is 1.44 clams per square meter.

Recall that the Olympic National Park works closely with WDFW staff in the management of the recreational fishery on the Kalaloch beach. WDFW takes the lead in the population assessment work. ONP has the lead in harvest monitoring and enforcing the recreational fishery. Both groups work together to set specific dates when harvest will occur on this beach. At the time of this writing, no decisions have been made regarding any possible digging at Kalaloch during the 2013-14 season.

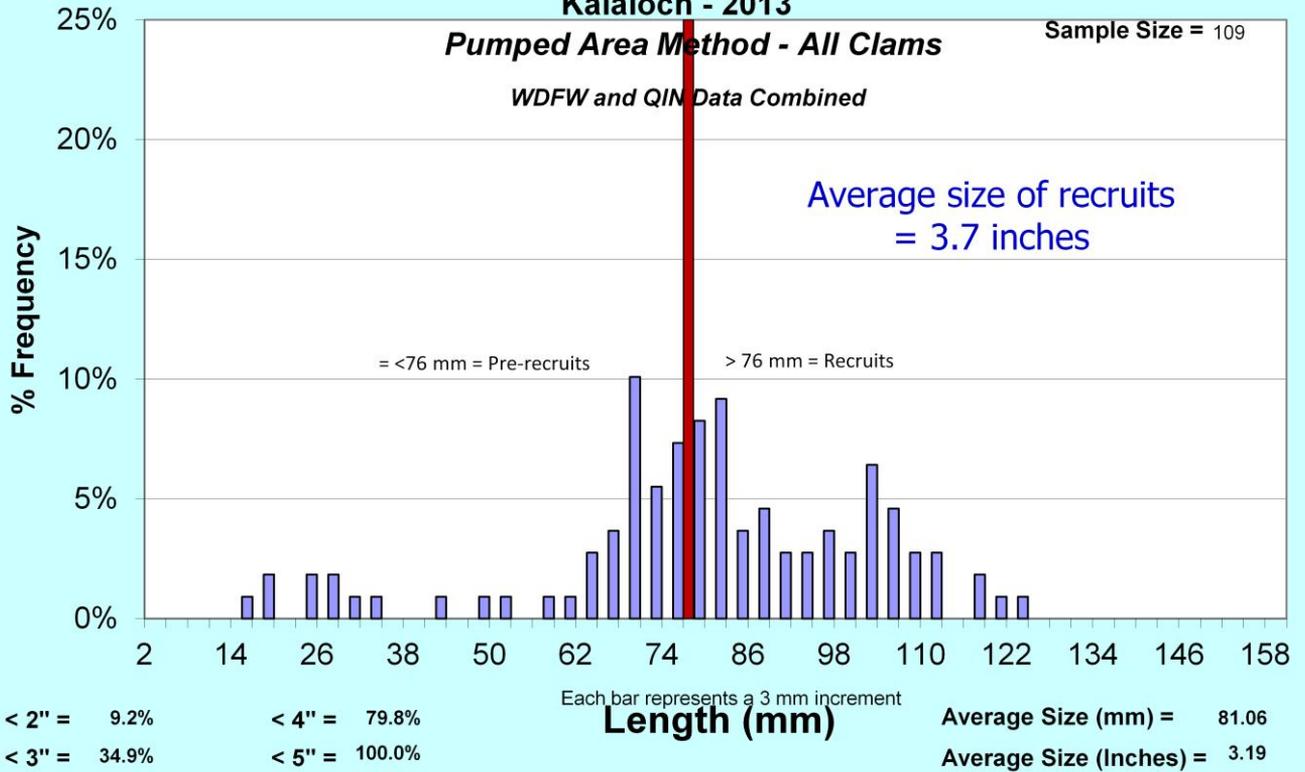
# Washington Razor Clam

## Size Frequency Distribution Kalaloch - 2013

*Pumped Area Method - All Clams*

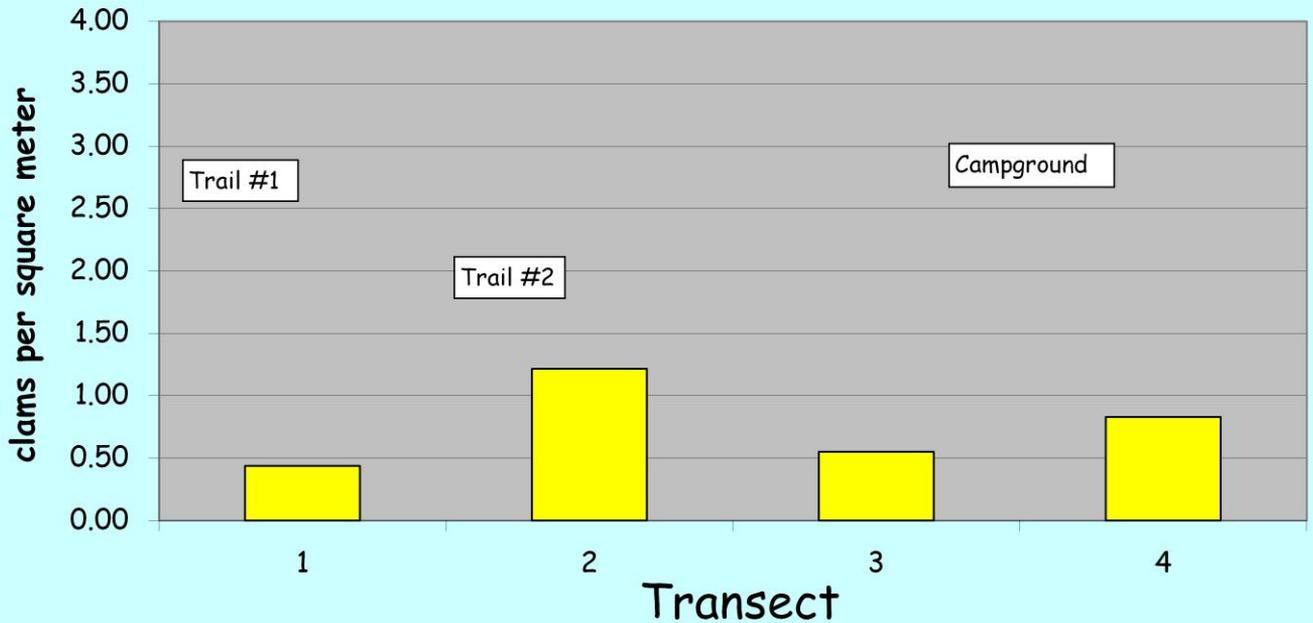
Sample Size = 109

*WDFW and QIN Data Combined*



The recruit clams at Kalaloch remain small with the average size of 3.7 inches. Very few larger clams were found in our assessment work.

## Kalaloch Clam Population Distribution - 2013



Along the length of the 4 mile Kalaloch beach, no areas looks particularly stronger than the others.

The 2013 the average density (clams per square meter) by beach is : Long Beach = 1.03; Twin Harbors = 3.15; Copalis = 2.22; Mocrocks = 5.47; Kalaloch = 0.76.

For comparison:

The 2012 the average density (clams per square meter) by beach is : Long Beach = 0.75; Twin Harbors = 2.58; Copalis = 2.12; Mocrocks = 2.78; Kalaloch = 0.66.

# Co-Management With Coastal Tribes

- Share the resource and share the work
  - ...complete joint stock assessments
  - ...determine TACs jointly
- Sign Fishery Management Plans annually
- Different seasons for different reasons
  - ...tribal C&S and or commercial seasons
  - ...State recreational seasons
- Each group monitors their own fishery
  - ...make individual harvest estimates / share data
  - ...provide enforcement

As was mentioned earlier, WDFW works closely with two coastal tribes in the management razor clam populations.

## Quinault Tribal staff working on Kalaloch Beach in July 2011



The Quinault Indian Nation (QIN) shares the labor of the stock assessment work - with their own crews of biologists and technicians who also use the Pumped Area Method. Working side by side QIN and WDFW staff assess razor clam populations at Copalis, Mocrocks and Kalaloch. On each of these beaches  $\frac{1}{2}$  of the sample transects are completed by QIN staff and  $\frac{1}{2}$  by WDFW staff. The data is pooled and a joint population estimate is made.

At Kalaloch the Hoh Tribe provides additional staff to assist in the assessment on that beach. Because there is no vehicle access on the Kalaloch beach – having extra people available to move the gear up and down trails to the beach and walk sometime long distances down the beach – is critical to the success of the work.

**2007-08 INTERIM RAZOR CLAM MANAGEMENT AGREEMENT  
FOR COPALIS AND MOCROCKS BEACHES**

**ENTERED INTO BY THE STATE OF WASHINGTON  
AND QUINAULT INDIAN NATION**

August 28, 2007

This agreement establishes principles, concepts, and procedures, which will govern the non-Indian and treaty tribal fisheries for razor clams at Copalis and Mocrocks Beaches.

**1. EFFECTIVE DATE**

This agreement is effective on August 28, 2007.

**2. TERM**

The term of this agreement is until August 27, 2008, unless superseded by another agreement.

Each year in August WDFW and the costal tribes sit down and discuss the population estimates and proposed total allowable catch (TAC) for the co-managed beaches; Copalis, Mocrocks and Kalaloch. The result of those discussion is a an agreed to Fishery Management Plan signed by policy representatives of each group – that guides the management of the fisheries in the coming season.

	2013-14 TAC Share (clams)	2012-13 aver daily harvest (clams)
Long Beach	2,881,223	57,000
Twin Harbors	2,297,764	19,100
Copalis	1,120,938	49,000
Mocrocks	1,790,287	25,200
Kalaloch	131,227	

This is a recap of the 2013-14 Total Allowable Catch that will guide WDFW during the 2013-14 season. We also list here the average catch over all the days the 2012-13 season was open, by beach – except for Kalaloch where the harvest levels were very poor and not representative of a normal situation.

# SEASON OPTIONS

What do you think???

- Fall and Winter and/or Spring season only?
- Weekends (Friday/Saturday or Saturday/Sunday)?
- Weekdays (especially if daylight tides) ?
- Fewer winter and more spring tides.
- Two days / twice a month ???

Feed back WDFW has received over the last several years is that most clam diggers like the season structure we've been using that allows for a few days of digging – each month – on as many beaches as possible.

Many owners of coastal businesses have also said that such a season structure also helps them by drawing people to coastal communities during periods of the year when fewer people would normally visit.

However, we are always open to suggestions and would be happy to hear any ideas about what might work better for you.

What do you think???

Feel free to email your  
comments and suggestions  
to: [razorclams@dfw.wa.gov](mailto:razorclams@dfw.wa.gov)

Thank you for taking the time to review this presentation. We are interested in your feedback on this method of providing razor clam information – and any season structure comments you might have.

# How to get updated razor clam season information:

WDFW Web Site: <http://wdfw.wa.gov/>

Shellfish Rule Change Hotline: 1-866-880-5431

Region Six (Montesano) 24 hour recording:  
360-249-4628

E-mail distribution list :  
sign up today!!!



*To be added to our e-mail update list, please send an email request to: [razorclams@dfw.wa.gov](mailto:razorclams@dfw.wa.gov)*

>>> Dan Ayres 08/14/03 12:26PM >>>

You are receiving this message because you have expressed interest in Washington State's recreational razor clam fishery. If you do not wish to receive future messages, please reply by return e-mail.

#### DOMOIC ACID UPDATE

The latest demonic acid levels were reported today(8/14/03) by the Washington Department of Health. Levels continue to drop on most all beaches, improving the chances for a fall season.

Long Beach Reserve; 3 ppm on 8/11/02 (down from 9 ppm on 7/15/03)

Twin Harbors Area CL; 17 ppm on 8/11/03 (up from 10 ppm on 7/15/03)

Copalis; 17 ppm on 8/11/03 (down from 36 ppm on 7/15/03)

Mocrocks; 12 ppm on 8/11/03 (down from 24 ppm on 7/21/03)

Kalaloch; 22 ppm on 8/10/03 (down from 28 ppm on 7/29/03)

You may be interested to know that we maintain an email distribution list for anyone specifically interested in razor clam related issues. The periodic updates sent out using this list include information on season openers, marine toxin levels and other pertinent topics. If you are interested in having your email address added to this list, please let us know by sending an email request to: [razorclams@dfw.wa.gov](mailto:razorclams@dfw.wa.gov)



Thanks again for visiting this presentation!

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