

Washington Razor Clam Management

Setting the 2014-2015 Season



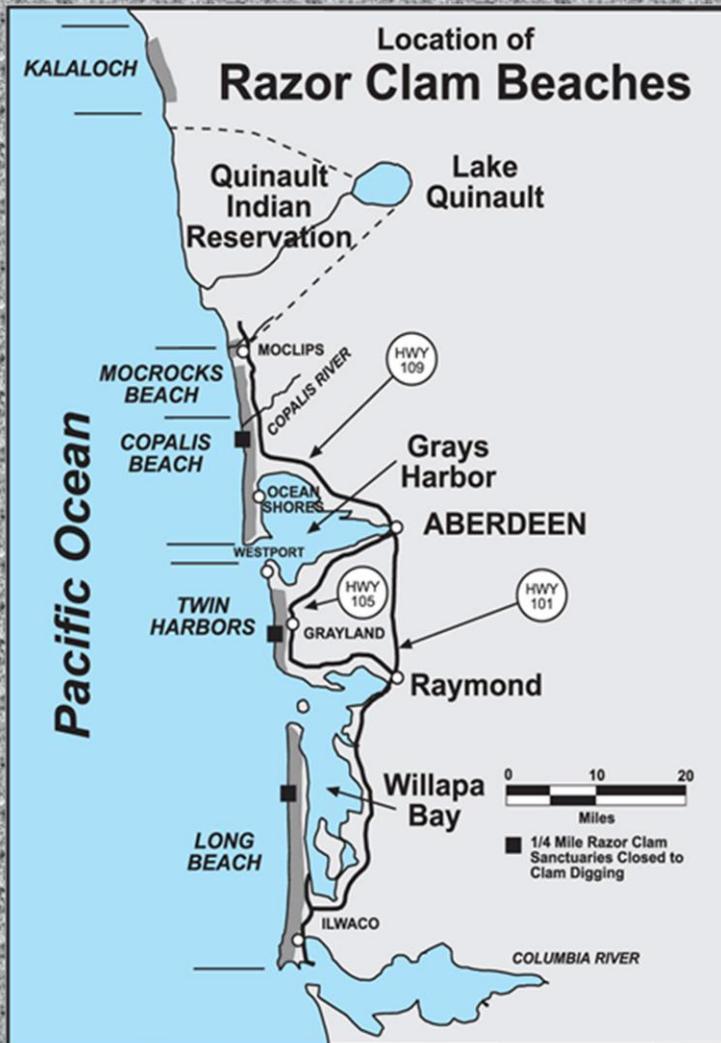
The following presentation is designed to provide you with general information on the management of the recreational razor clam fishery in Washington and specific information on what to expect for the 2014 -15 season.

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

What's Up?

CONTENTS OF THIS PRESENTATION

- Review of the 2013-14 Season
- Marine Toxin Update / ORHAB
- Status of Razor Clam Stocks
- Tribal Co-management
- Digging with Kids
- Season Options for 2014-15



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

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

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.
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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 Fish and Wildlife Commission has provided seven objectives WDFW uses in managing this fishery.

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

2013-2014 Fishery Review



Average of
13.9 clams
per digger
trip



Total
harvest
of 6.3
million
clams



451,000
digger
trips

From the start of the 2013-14 recreational razor clam season, we knew that the number of razor clams (and correspondingly the Total Allowable Catch values for most beaches) had reached near record levels. We expected to be able to offer a lot of digging opportunities. This was especially true at Mocrocks and Twin Harbors. The end result was a season that had the highest total effort and harvest for the Washington recreational razor clam fishery since 1982 – 32 years ago!

Washington Recreational Razor Clam

<i>20013-14 Season Totals</i>	HARVEST	EFFORT	<i>Average Daily Catch (clams/digger)</i>	<i>Total Digging Days</i>
Long Beach	2,423,612	181,240	12.7	72
Twin Harbors	1,714,479	119,872	13.8	105
Copalis	1,102,421	75,198	14.0	24
Mocrocks	1,044,692	74,736	13.5	54
Kalaloch	0	0		0
TOTAL	6,285,205	451,046	13.9	

Each of the five beaches is managed separately. The Total Allowable Catch (TAC) is determined for each beach using 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 2013-14 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.



Washington Recreational Razor Clam Fishery

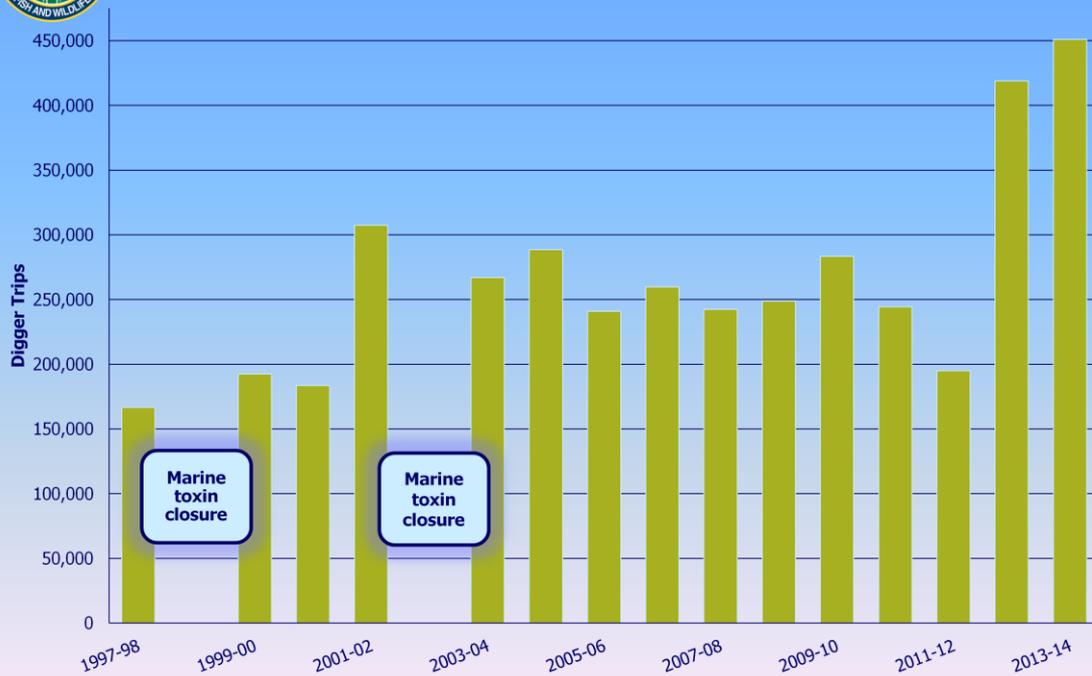
Days Open for Harvest / Season

Beach	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09	2007-08	2006-07	2005-06	2004-05	2003-04	average
Long Beach	72	42	23	35	37	22	22	21	21	23	18	30
Twin Harbors	105	78	26	46	46	27	40	30	26	25	18	42
Copalis	24	28	13	15	24	24	11	7	18	25	14	18
Mocrocks	54	30	20	30	23	25	11	16	26	25	14	25
Kalaloch	0	0	3	12	17	0	0	11	18	8	8	7

Looking at the number of days open for digging over time (on each beach) it is clear that the 2013-14 season was exceptional for most all beaches.



Washington Recreational Razor Clam Total Effort By Season 1997-98 through 2013-14



A total of 451,000 digger trips were made during the 2013-14 season. This is the highest razor clam digging effort on the Washington coast since 1982.

Month	Long Beach	
October 2013	7 Days	Fri-Mon + Fri-Sun
November 2013	8 Days	Sat-Tues + Fri-Sun, Sat
December 2013	10 Days	Sun-Wed, Sat-Mon, Sun-Tues
January 2014	9 Days	Wed-Sat, Fri-Sat, Wed-Fri
February 2014	4 Days	Sat-Sun, Thu-Fri
March 2014	6 Days	Sat-Sun, Fri--Mon
April 2014	13 Days	Tue-Thu, Tue-Sun, Sun-Wed
May 2014	14 Days	Thu-Sun, Wed-Tue, Tue-Sat
June 2014	1 Days	Sun
Totals:	72 Days	
	Effort = 181,240 digger trips	
	Harvest = 2,423,612 clams	
	(Including wastage of 114,655 clams)	
	Portion of TAC Harvested = 84.1%	

At Long Beach you have to go back to 1979 to find a season with more digger trips and the total number of clams harvested. In that year (1979) there were 231,000 digger trips and 2.7 million clams harvested. Looking back from 1979 one needs to go back to 1966 to find another season that beats the 2013-14 season!

Month	Twin Harbors	
September 2013	5 days	Thu-Mon
October 2013	11 Days	Fri-Tue + Thu-Tue
November 2013	15 Days	Fr-Fri + Fri-Wed + Sat
December 2013	15 Days	Sun-Sat + Sat-Wed, Sun-Tue
January 2014	13 Days	Wed-Sun + Wed-Sat + Tue-Fri
February 2014	5 Days	Sat-Sun, Wed-Fri
March 2014	8 Days	Sat-Mon, Wed-Mon
April 2014	14 Days	Tues-Thu, Mon-Sun, Sun-Wed
May 2014	18 Days	Thu-Sun, Tue-Tue, Tue-Sat
June 2014	1 Days	Sun
Totals:	105 Days	
	Effort = 199,872 digger trips	
	Harvest = 1,714,479 clams	
	(Including wastage of 119,872 clams)	
	Portion of TAC Harvested = 74.6%	

During the 2013-14 season, Twin Harbors enjoyed 105 days of digging, more days in one season than any other beach in over 20 years. In addition, not since 1967 have more clams been harvested on the Twin Harbors beach. All of that is true, even though during the 2013-14 season, only 74.6% of the Twin Harbors Total Allowable Catch was harvested.

Month	Copalis	
October 2013	4 Days	Fri ,Sat + Fri, Sat
November 2013	4 Days	Sat, Fri + Sat, Fri
December 2013	4 Days	Sat, Sun, Mon, Tue
January 2014	1 Days	Sat,
February 2014	1 Days	Sat
March 2014	1 Days	Sat
April 2014	2 Days	Sat, Sun
May 2014	6 Days	Fri, Sat, Sun + Thu, Fri, Sat
June 2014	1	Sun
Totals:	24 Days	
		Effort = 75,198 digger trips
		Harvest = 1,102,421 clams
		(Including wastage of 47,767 clams)
		Portion of TAC Harvested = 78.9%

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.

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.

Since that time WDFW and the Quinault Indian Nation (QIN) have come to an agreement on a five-year schedule WDFW will use to return to a portion of the clams that were inadvertently dug in excess of the state’s harvest share from Copalis and Mocrocks.

It is important to note that near the end of the 2013-14 season the QIN offered WDFW 250,000 clams from their share of the Copalis TAC. This gave us the confidence to move forward with the additional days of Copalis digging in late May and early June. Without this gift, the season at Copalis would have closed at the end of April.

Month	Mocrocks	
October 2013	8 Days	Fri – Mon + Fri - Mon
November 2013	8 Days	Fri-Mon + Fri-Sun, Sat
December 2013	9 Days	Sun-Tue, Sat-Mon, Sun-Tue
January 2014	8 Days	Wed-Sat + Fri, Sat + Thu, Fri
February 2014	4 Days	Sat, Sun + Thu, Fri
March 2014	5 Days	Sat, Sun + Fri - Sun
April 2014	3 Days	Fri-Sun
May 2014	8 Days	Fri-Sun + Sat, Sun + Thu-Sat
June 2014	1 Day	Sun
Totals:	54 Days	
	Effort = 74,736 digger trips	
	Harvest = 1,044,692 clams	
	(Including wastage of 32,034clams)	
	Portion of TAC Harvested = 50.0%	

As many are aware, the Mocrocks 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.

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Since that time WDFW and QIN have come to an agreement on a five-year schedule WDFW will use to return to a portion of the clams that were inadvertently taken by the state fishery - in excess of the state's harvest share from Copalis and Mocrocks.

Not since the 1982-1983 has there been a season when more digger trips occurred on the Mocrocks beach. It is also important to note that this high number of digger trips occurred with only 50% of the state's share of razor clams actually harvested. The reason more days were not offered (to take a larger portion of the state's share of the TAC) is a simple matter of sharing with the tribal fishery. Because the nature of these two fisheries is so different, we are unable to open both state and tribal fisheries on the same day. The result is that the tribes have access to only half the good low tides and the state has access to only half the good low tides.

KALALOCH

As occurred since the 2012-12 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. Coast-wide since 1992, a total of 18% 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/algal_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 2013-14 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. 2, 2014) 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

The most recent levels can be found at:

http://wdfw.wa.gov/fishing/shellfish/razorclams/domoic_levels.html

For more information, see:

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



Olympic Region Harmful Algal Blooms

ORHAB PARTNERSHIP

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.



For more information see : http://wdfw.wa.gov/conservation/research/projects/algal_bloom/index.html

The impacts of harmful algal blooms (HAB) on razor clam fisheries along the coast of Washington State was the impetus that brought together Seattle based NOAA HAB researchers, University of Washington oceanographers and marine algae experts, state and tribal fishery managers and human health experts to form a successful partnership - the **Olympic Region Harmful Algal Bloom (ORHAB)** project. Beginning in 2000 with five-years of funding from NOAA's Monitoring and Event Response for Harmful Algal Blooms ([MERHAB](#)) Program the ORHAB partnership provided for a host of activities that included the necessary scientific equipment and for the unique training of local technicians as HAB specialists. With the end of federal funding and primary reliance on state dollars generated by a surcharge on recreational shellfish licenses, the focus of the partnership is primarily on HAB event prediction and monitoring. These state funds provide for two HAB specialists, one working for WDFW and the other for the University of Washington. In addition, funding from the Quinault Indian Nation (QIN) provides a third HAB specialist who works for QIN. While employed by separate agencies these local experts work closely together to monitor for HAB events along the entire Washington coast. The ORHAB specialists regularly present and discuss their findings with staff biologists and public health experts from WDFW, QIN and the Washington Department of Health (WDOH). In addition, scientists from NOAA and the UW provide oversight and advice on a regular basis. Insight gained from the ORHAB partnership and the recently completed ECOHAB-PNW project has led to a better understanding of where HAB events originate and what environmental factors promote their growth. While much is yet to be learned, we can better manage our important shellfish fisheries because of these insights, good science, and hard work produced by well trained - and locally based - HAB specialists.

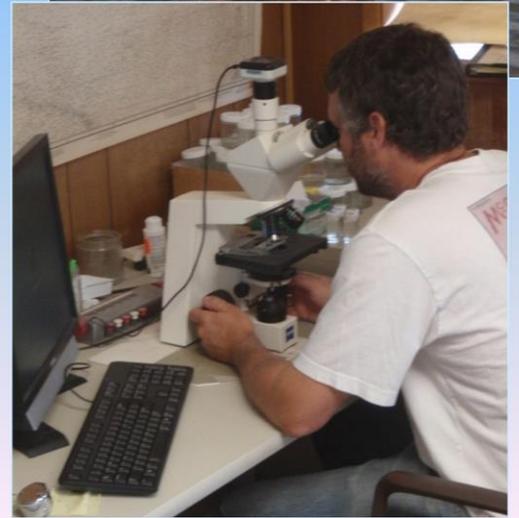
For more information see : http://wdfw.wa.gov/conservation/research/projects/algal_bloom/index.html

MERHAB : <http://www.cop.noaa.gov/stressors/extremeevents/hab/current/fact-merhab.aspx>

WDFW regularly monitors surf zone plankton, toxins, and water quality...



...to determine the environmental conditions associated with blooms of harmful 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.

For more information see:

http://wdfw.wa.gov/conservation/research/projects/algal_bloom/index.html



Transferring sample dilutions to a microplate



Adding domoic acid control to dilution series



Loading microplate reader

WDFW is now able to conduct a rapid field test using the ELISA method for the presence of domoic acid in shellfish and seawater

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 seawater samples shellfish tissue without having to wait for the current time-consuming transport of samples to a distant laboratory. This process does not replace the regulatory testing conducted by the Washington Department of Health, but it does provide managers with an early warning of potential pending HAB issues.

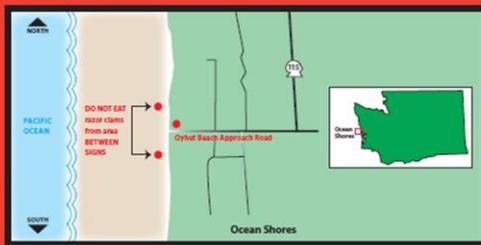
Bacterial Pollution Around Oyhut

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



Washington State Department of
Health
360-236-3330

For more information, contact:

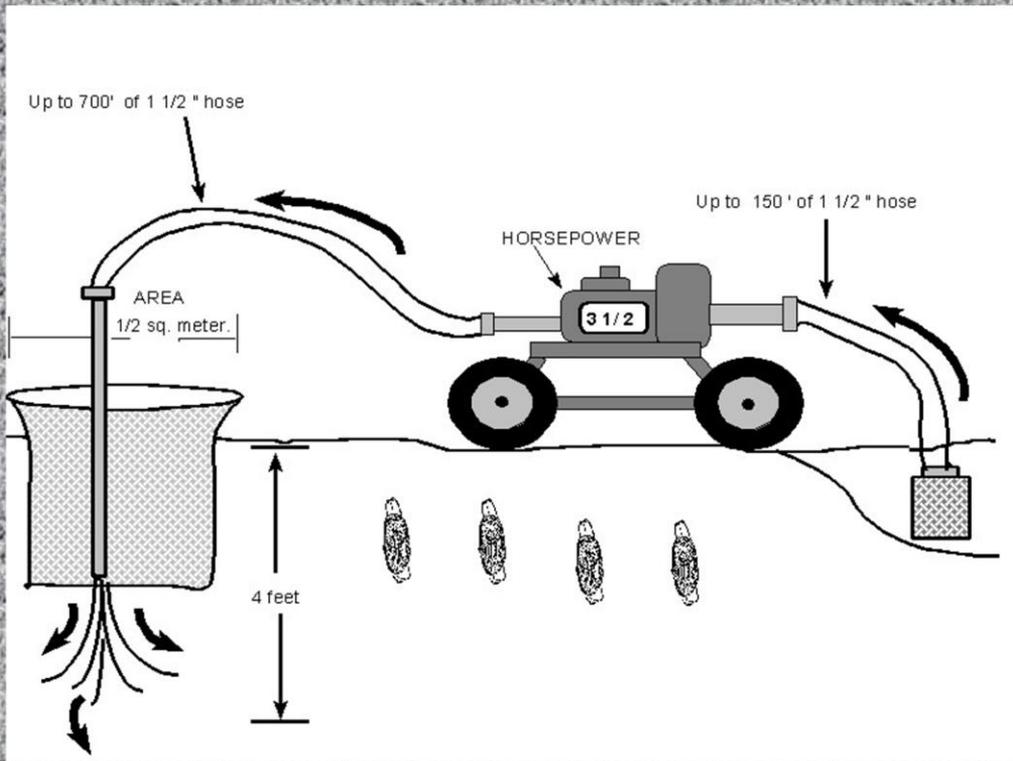
Marine water quality at the end of the Oyhut Beach Approach off of Damon Road (on the Copalis Razor Clam Management Beach – just north of Ocean Shores) does not meet the Washington State Department of Health’s (WDOH) standard for safe shellfish harvesting. WDOH has posted an area of beach that starts 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 Oyhut 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.

Status of the Razor Clam Stocks



We 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 27th and was completed on August 25.

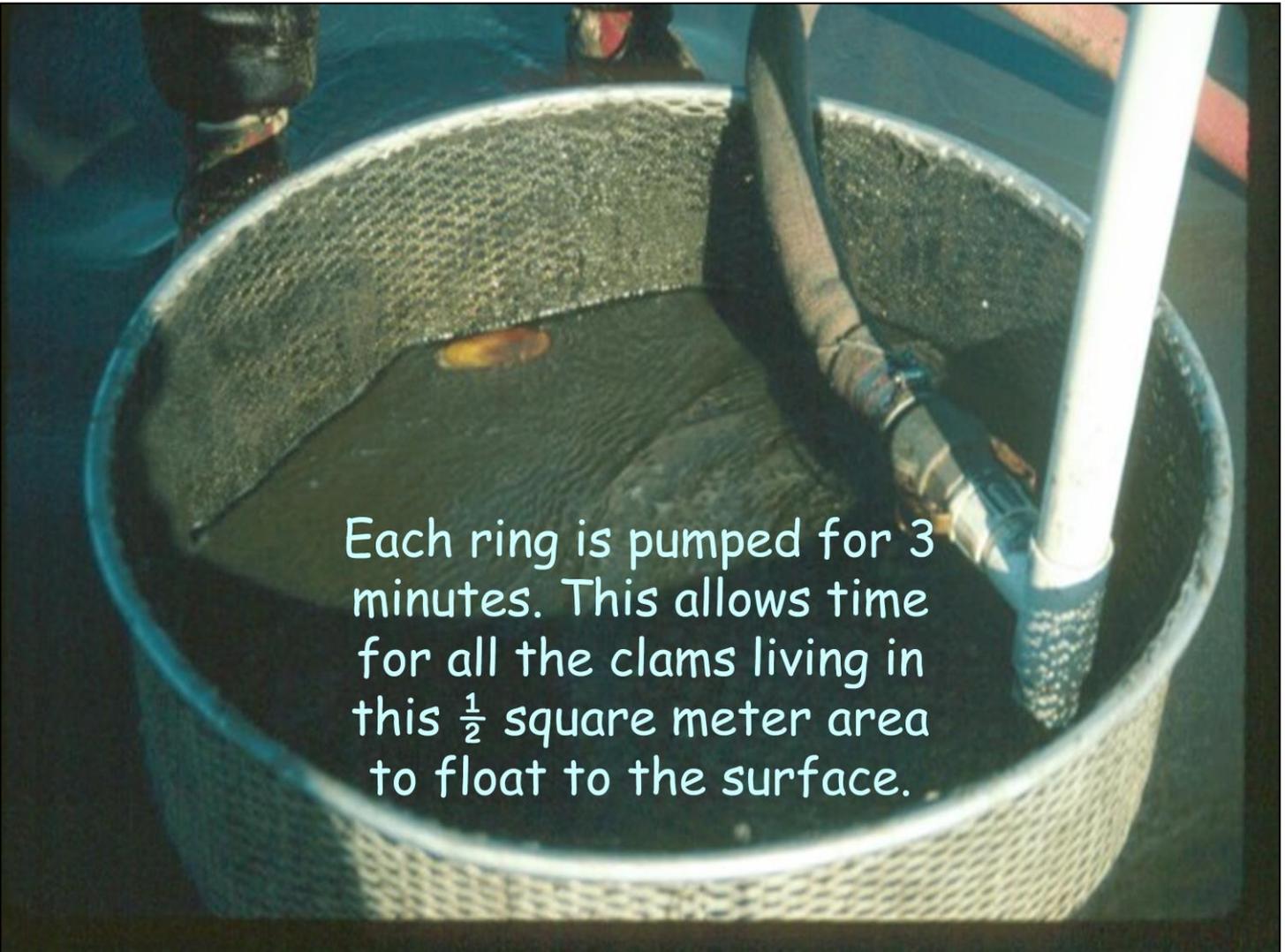
The survey method WDFW has been using since 1997 is the Pumped Area Method.

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. The sampling method we use takes this into account and removes all the clams from a known area.



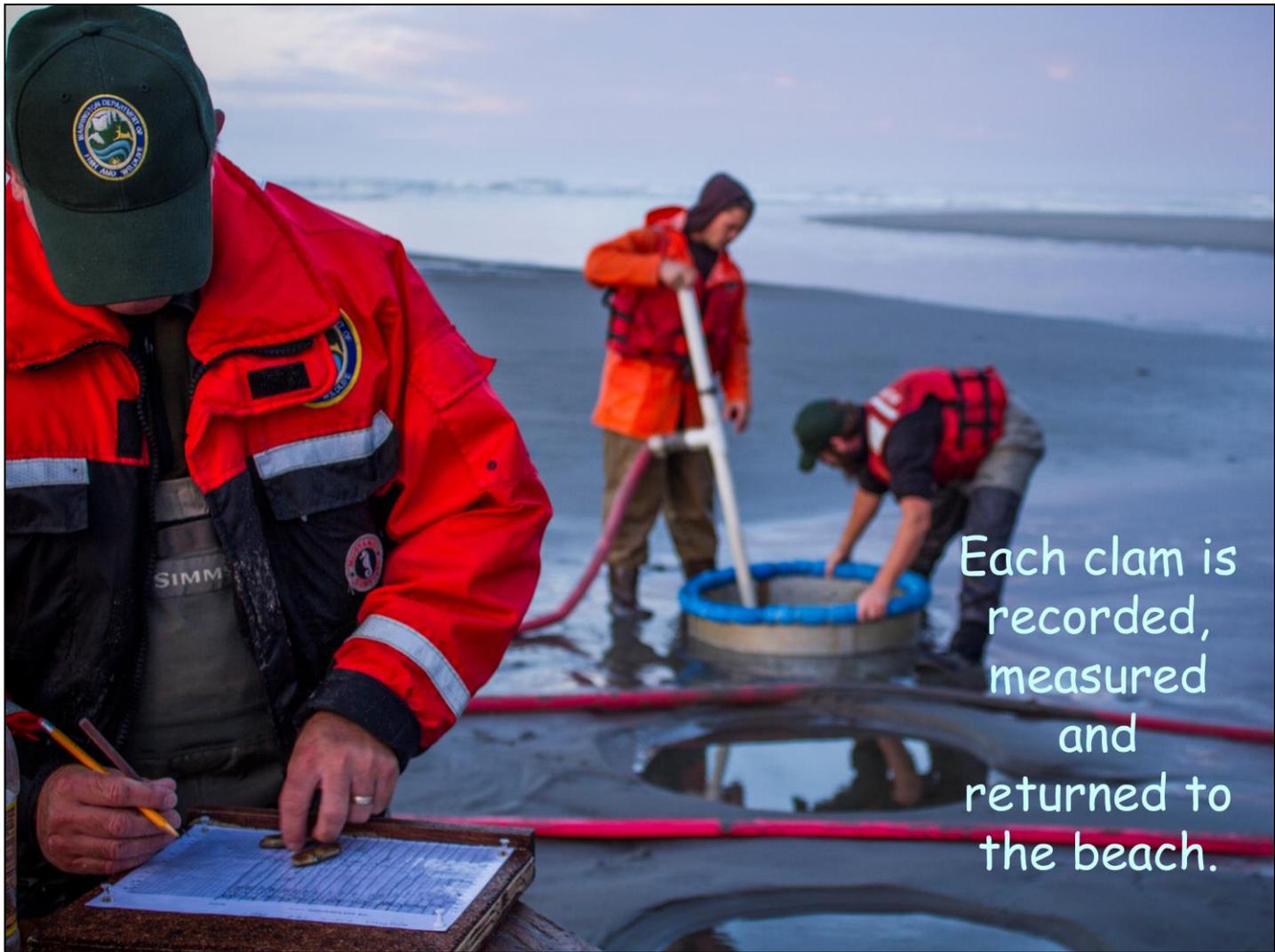
Water is pumped up the beach
and used to liquefy the sand
within a $\frac{1}{2}$ square meter
aluminum ring.

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 (≥ 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.

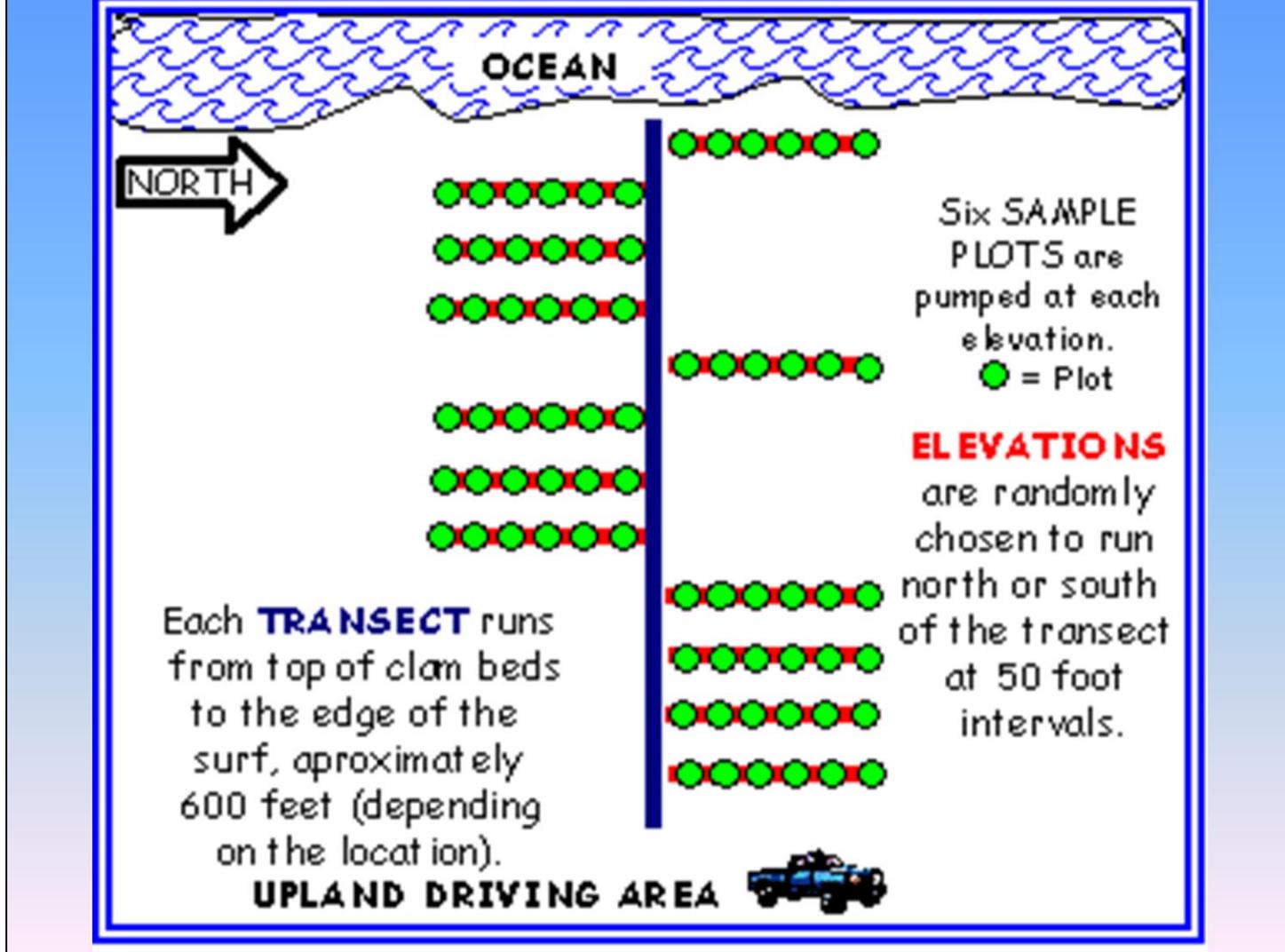
Each ring is pumped for 3 minutes allowing time for all the clams in the area of the ring to float to the surface and be counted.



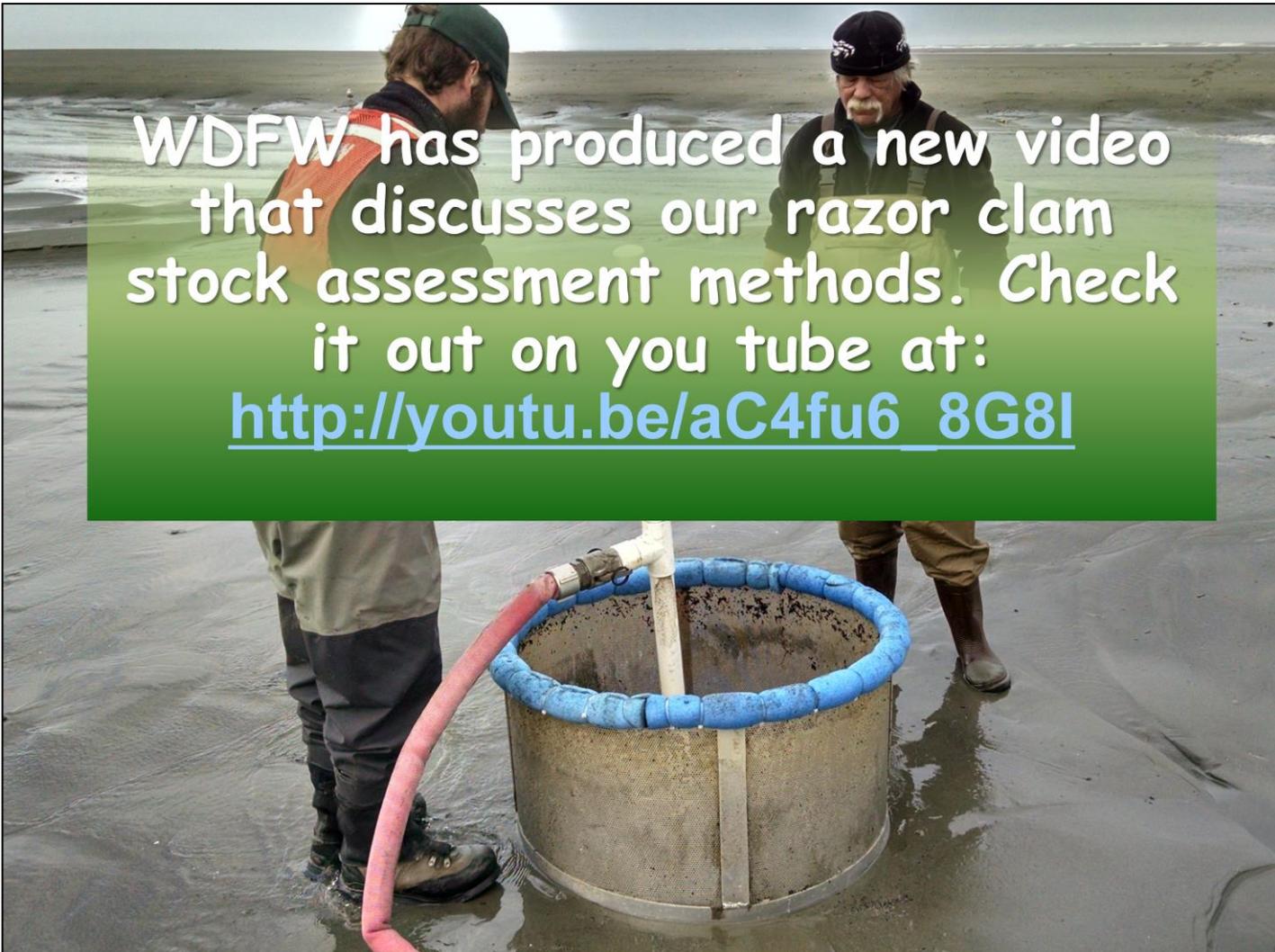
Each clam is recorded, measured and returned to the beach.

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 one-mile apart. The sampling occurs during a 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 each 50 foot interval.



WDFW has produced a new video that discusses our razor clam stock assessment methods. Check it out on you tube at:
http://youtu.be/aC4fu6_8G8I

A recently produced video that demonstrates the WDFW stock assessment methods is now available on line. This will give you a better picture of the work we do each summer all along the Washington coast to make the best possible razor clam population estimates to be used in the management of the fishery. The video can be found at; http://youtu.be/aC4fu6_8G8I



Many of you will recall that our 2013 stock assessment showed that razor clam populations on all beaches, except Kalaloch, had strong increases in the number of harvestable size clams.

Our analysis of the 2014 razor clam stock assessment shows that populations on some beaches are at even higher levels than we saw in 2013. Read on for the details.

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.

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2. Estimate of the average size

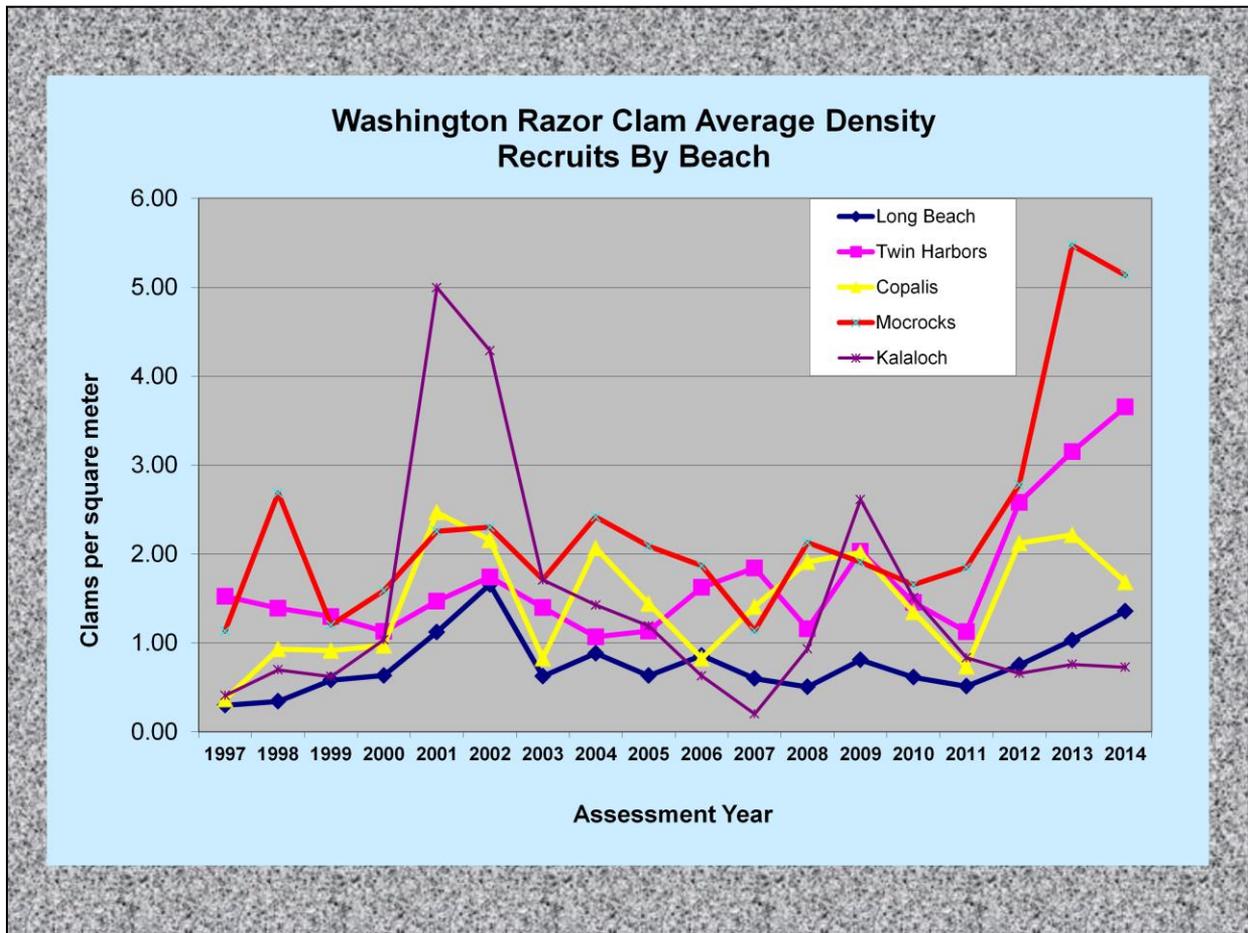
TAC (total allowable catch) =
Total clams 3 inches or greater x
variable harvest rate.

During the 2011-12 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.

Is being used to determine the TAC (total allowable catch) for Long Beach, Twin Harbors. WDFW and QIN agreed to use the higher rate (40%) on Copalis and Mocrocks for 2014-15.



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 change in abundance 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 18 year period, Mocrocks has the most dense populations, though there has been a slight decline over the strong 2013 population here. Twin Harbors and Long Beach both show continued improvement in overall densities. The yellow Copalis line is showing a decline in adult populations over the 2013 assessment with Kalaloch also showing a slight decline. 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 2014 the average density (clams per square meter) by beach was : Long Beach = 1.36; Twin Harbors = 3.65; Copalis = 1.68; Mocrocks = 5.14; Kalaloch = 0.73.

For comparison:

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

The 2012 the average density (clams per square meter) by beach was : 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			
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	2,423,612	84.1%
2014-15	9,694,093	25,633,364	3,885,492		
AVERAGE	6,068,238	11,466,501		1,922,826	

For the second year in a row there has been a significant increase in the abundance 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 40% at Long Beach to determine the TAC for the 2013-14 season.

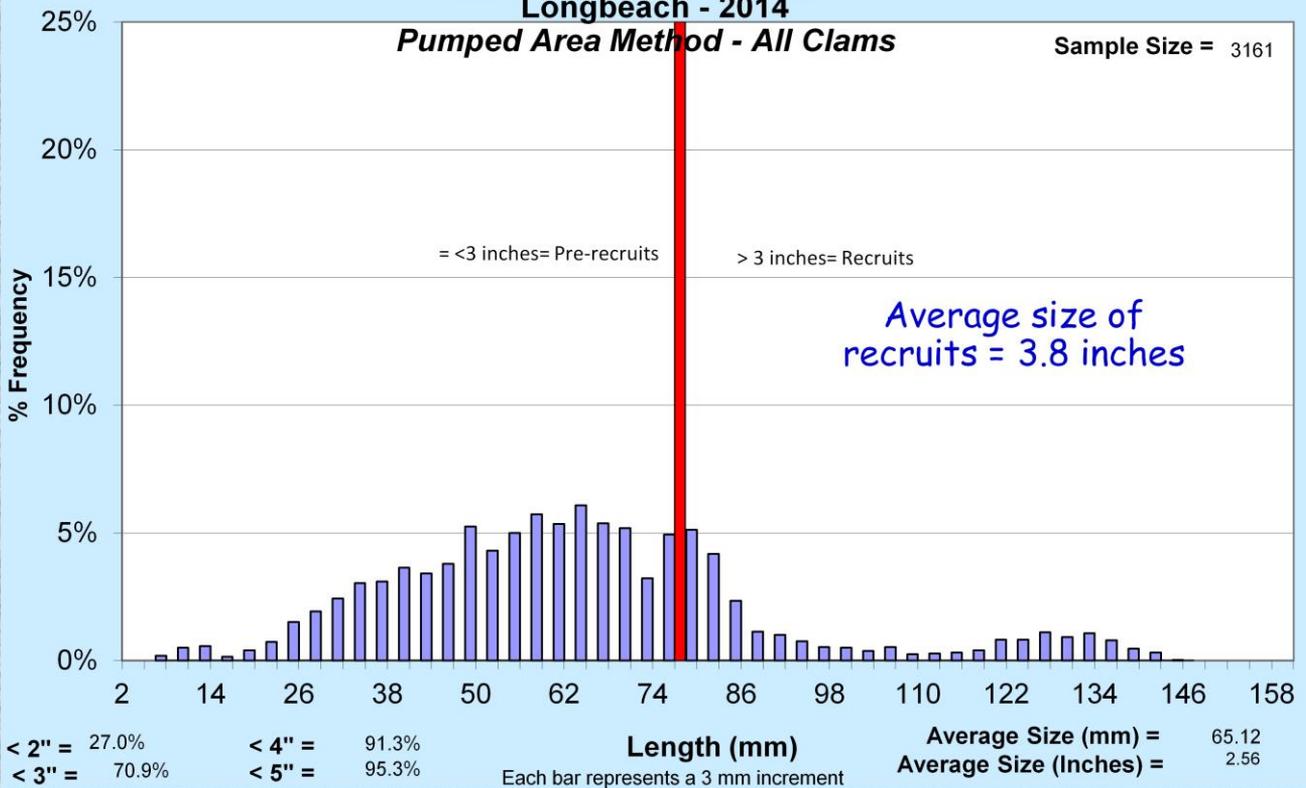
Unlike last year, the number of pre-recruit clams is more than double the short-term average and the second highest on record. This is a very good sign for strong adult populations in future seasons.

Washington Razor Clam

Size Frequency Distribution Longbeach - 2014

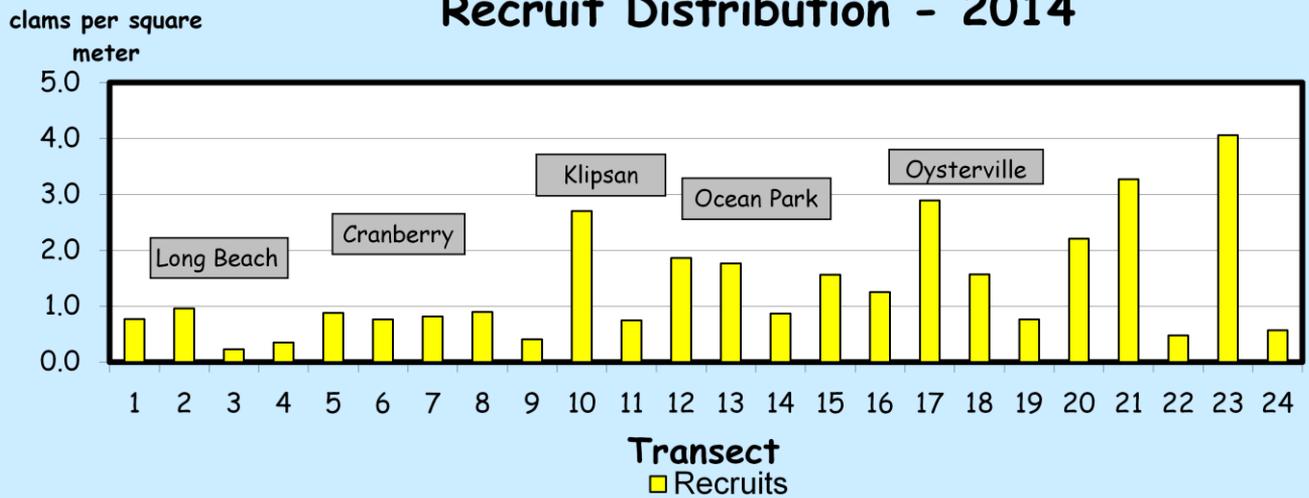
Pumped Area Method - All Clams

Sample Size = 3161



The average size of the Long Beach recruit clams found in our summer surveys was 3.8 inches which is less than the 2013 average of 4.4 inches and the 2012 average of 3.9 inches. This is a result of the heavy recruitment of young clams into the fishery. These clams will grow quickly, but we want to remind you that as the fall season begins you are required to keep the first 15 clams, regardless of size or condition.

Long Beach Razor Clam Population Recruit Distribution - 2014



Generally at Long Beach the better digging is on the north end of the beach. However, the distribution of clams along the beach found in our 2014 assessment shows good populations exist in many places all along the beach.

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

YEAR	POPULATION (clams)		TAC (clams) of recruits	HARVEST (clams) TOTAL	% of TAC harvested
	RECRUITS	PRE-RECRUITS			
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	1,714,479	78.9%
2014-15	6,657,152	3,113,981	2,662,861		
AVERAGE	4,395,699	4,340,397		1,111.153	

In 2013 we found the razor clam population (of recruit clams) on Twin Harbors to be 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.) The 2014 population is almost 1 million clams greater than 2013, an increase of 16%.

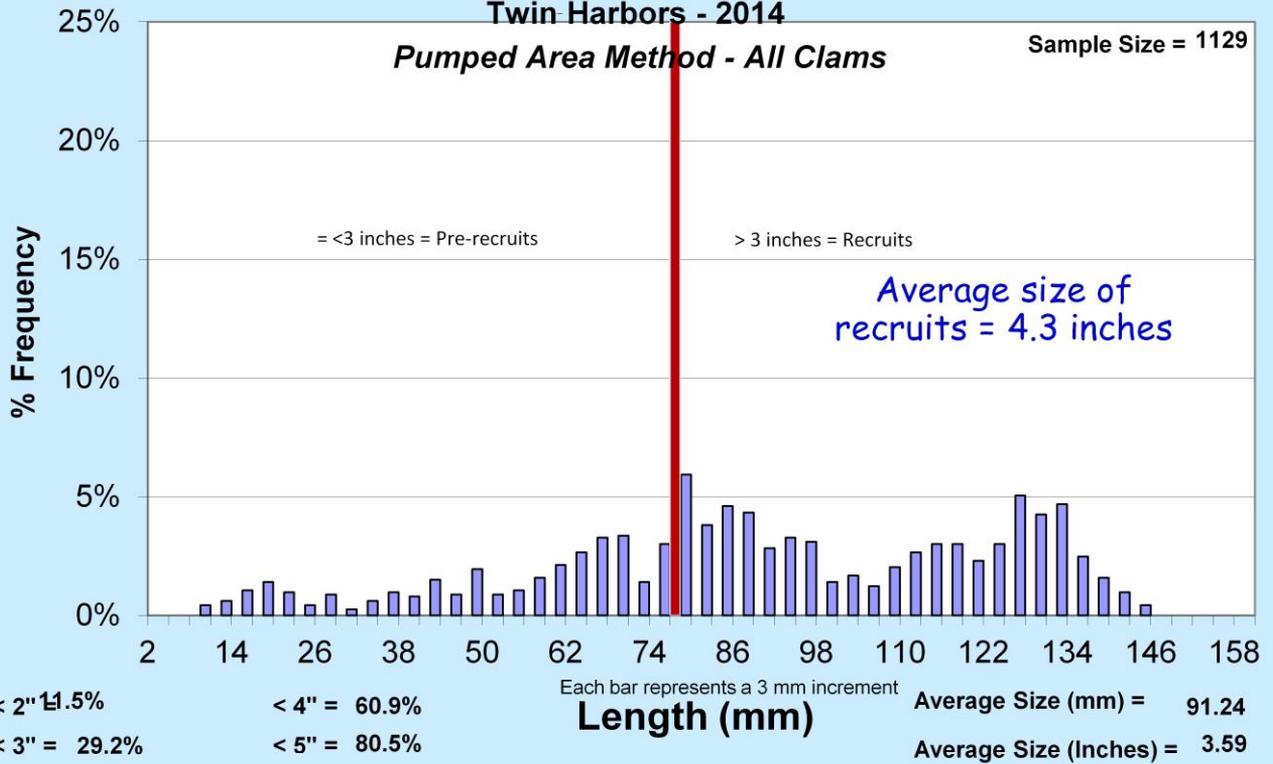
As a result, we are using a variable harvest rate (discussed in slide #34) of 40% at Twin Harbors to determine the TAC for the 2014-15 season.

Washington Razor Clam

Size Frequency Distribution
Twin Harbors - 2014

Pumped Area Method - All Clams

Sample Size = 1129



The average size of the Twin Harbors recruit clams found in our summer 2014 surveys was 4.3 inches. This compares to the 2013 average of 4.4 inches which is larger than the 2012 average of 3.9 inches.

Twin Harbors Razor Clam Population Recruit Distribution - 2014



Except for the very southern end of the Twin Harbors beach, the 2014 assessment found a significant improvement in the densities of clams at most locations along the Twin Harbors beach.

Again this season, 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.

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

YEAR	POPULATION (clams)		Total TAC (clams) of recruits	State's Share (50% w/ <i>adjustments</i>)	State's HARVEST (clams) TOTAL	% of share harvested
	RECRUITS	PRE- RECRUITS				
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	1,396,608	1,102,421	78.9%
2014-15	5,680,975	6,848,607	2,101,961	889,827		
AVERAGE	5,467,646	6,455,646			981,965	

Our assessment work shows the 2014 Razor clam populations at Copalis has had a decrease in recruit sized razor clams. This is likely due to the relatively low number of pre-recruits found in the 2013 assessment. However, this lower number of recruits at Copalis will result in fewer days of harvest during the 2014-15 season. But the good news is the healthy number of pre-recruits we estimated are now present at Copalis will very likely translate to more recruits in the coming seasons.

Recall that 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.

Since that time WDFW and the Quinault Indian Nation (QIN) have come to an agreement on a five-year schedule WDFW will use to return to a portion of the clams that were inadvertently dug in excess of the state's harvest share from Copalis and Mocrocks.

Washington Razor Clam

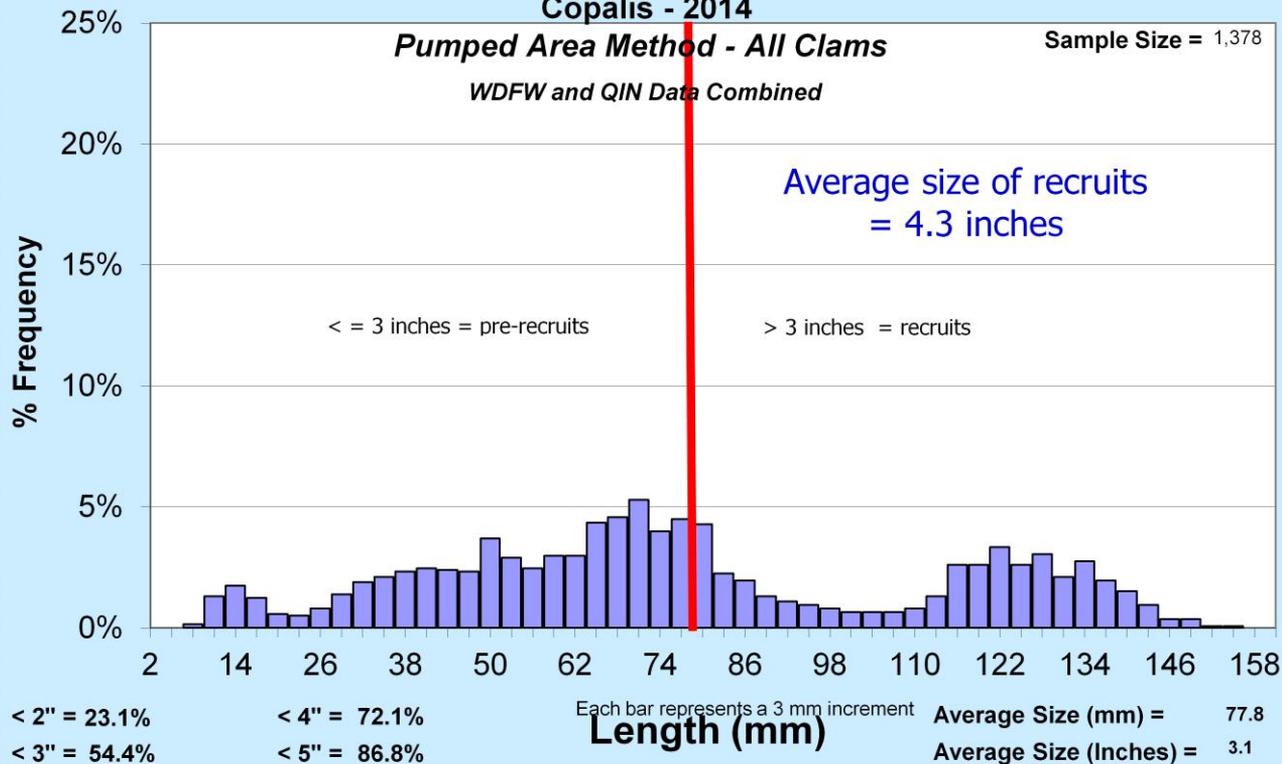
Size Frequency Distribution

Copalis - 2014

Pumped Area Method - All Clams

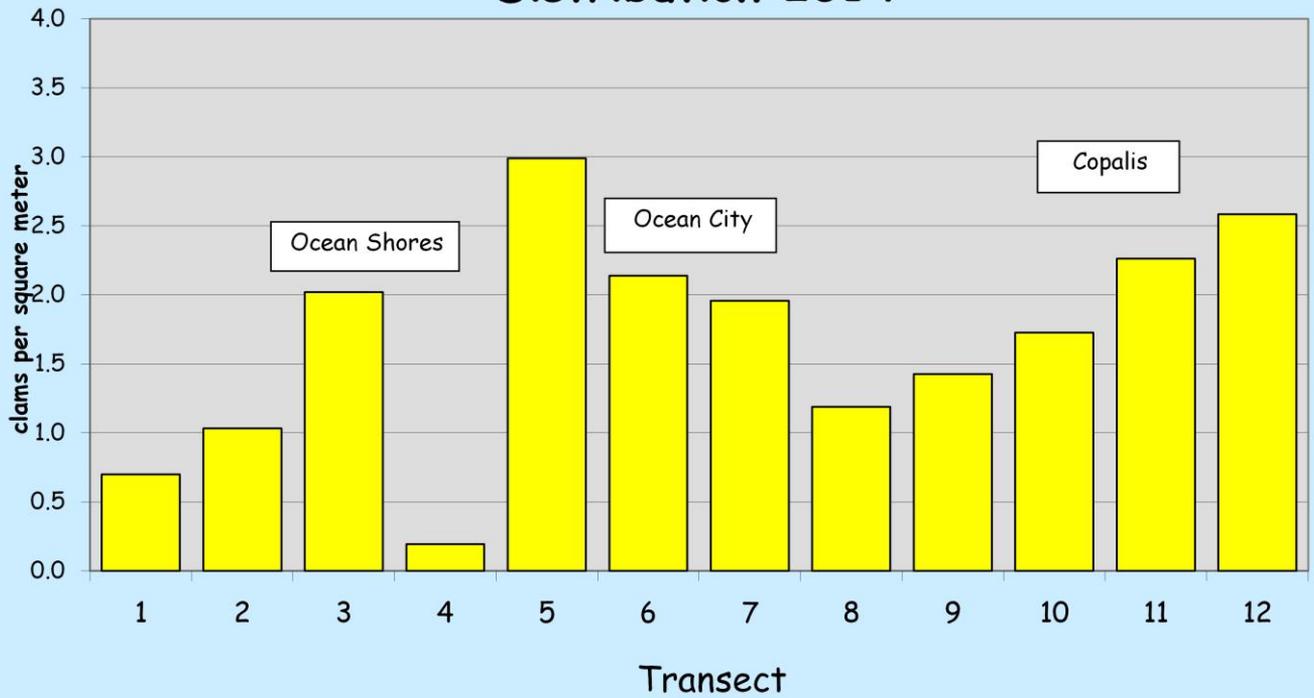
Sample Size = 1,378

WDFW and QIN Data Combined



The average size of the Copalis recruit clams found in our 2014 summer surveys was 4.3 inches which is the same as the 2013 average of 4.3 inches.

Copalis Razor Clam Recruit Population Distribution 2014



Except for an unusually low density transect just north of Ocean Shores, digging should be equally good in most areas of the Copalis Beach.

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

YEAR	POPULATION (clams)		Total TAC (clams of recruits	State's Share (50% w/ <i>adjustments</i>)	State's HARVEST (clams) TOTAL	% of share harvested
	RECRUITS	PRE- RECRUITS				
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	1,102,421	78.9%
2014-15	11,201,544	12,981,705	4,480,617	2,240,309		
AVERAGE	7,375,465	11,239,461			875,496	

In 2013 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 2014 assessment has decreased some, but still represents the second highest population in the last 18 years. Also, very encouraging is the healthy population of small pre-recruit clams that is definitely a good sign for future seasons.

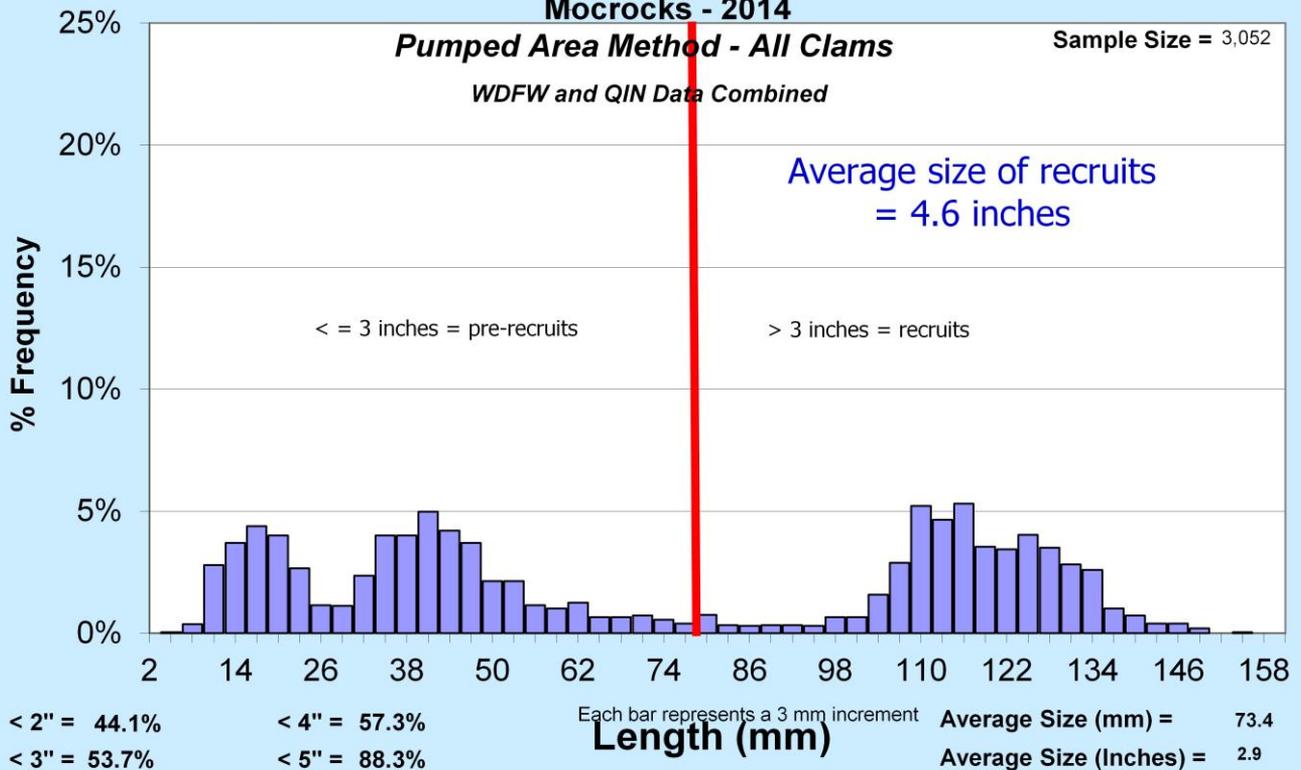
We expect there may be periods during the coming season when Mocrocks is open when other beaches are not. It will be important for diggers to know which beach they are planning to harvest on and to pay attention to signs posted on beach approaches that would indicate a specific beach is closed to harvest.

Recall that 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.

Since that time WDFW and the Quinault Indian Nation (QIN) have come to an agreement on a five-year schedule WDFW will use to return to a portion of the clams that were inadvertently dug in excess of the state's harvest share from Copalis and Mocrocks.

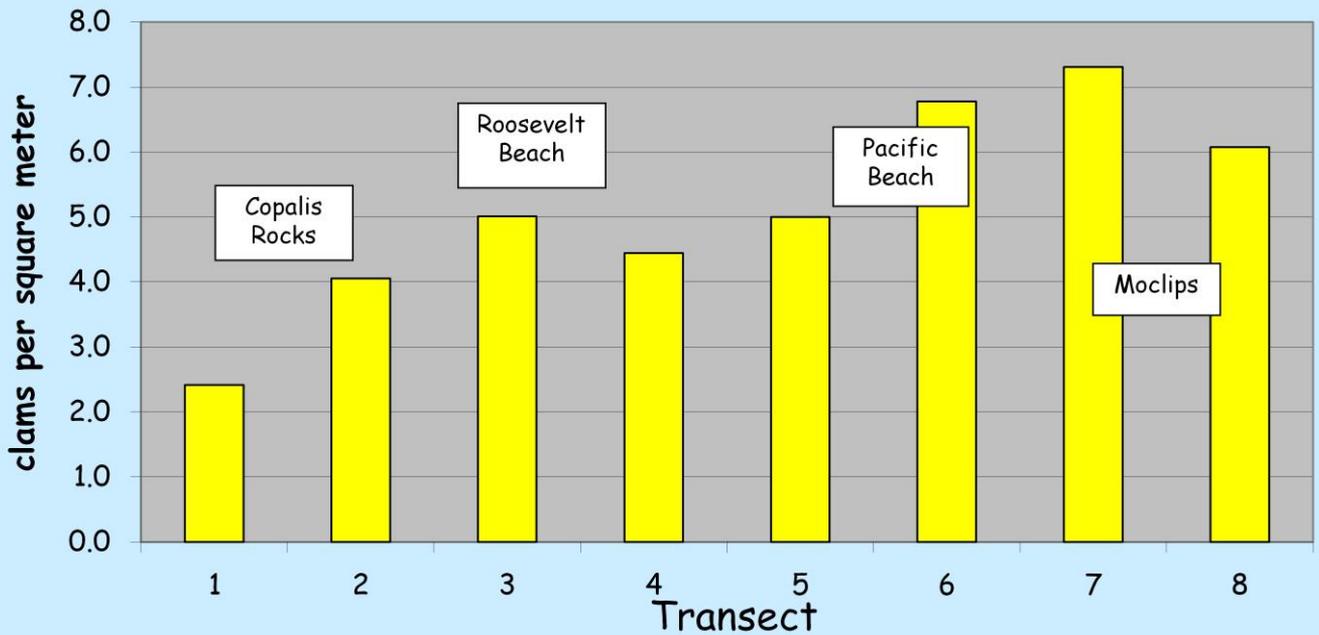
Washington Razor Clam

Size Frequency Distribution Mocrocks - 2014



The average size of the Mocrocks recruit clams found in our 2014 summer surveys was 4.6 inches which is similar to the 2013 average of 4.3 inches. 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- 2014 Recruit Distribution



Razor clam densities this year (2014) at Mocrocks are strong in most all of the areas sampled. Digging should be especially good in the Pacific Beach and Moclips areas. Note that the y-axis for this Mocrocks graph is expanded over that used on the other beaches to capture the exceptionally strong densities of clams on this beach.

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

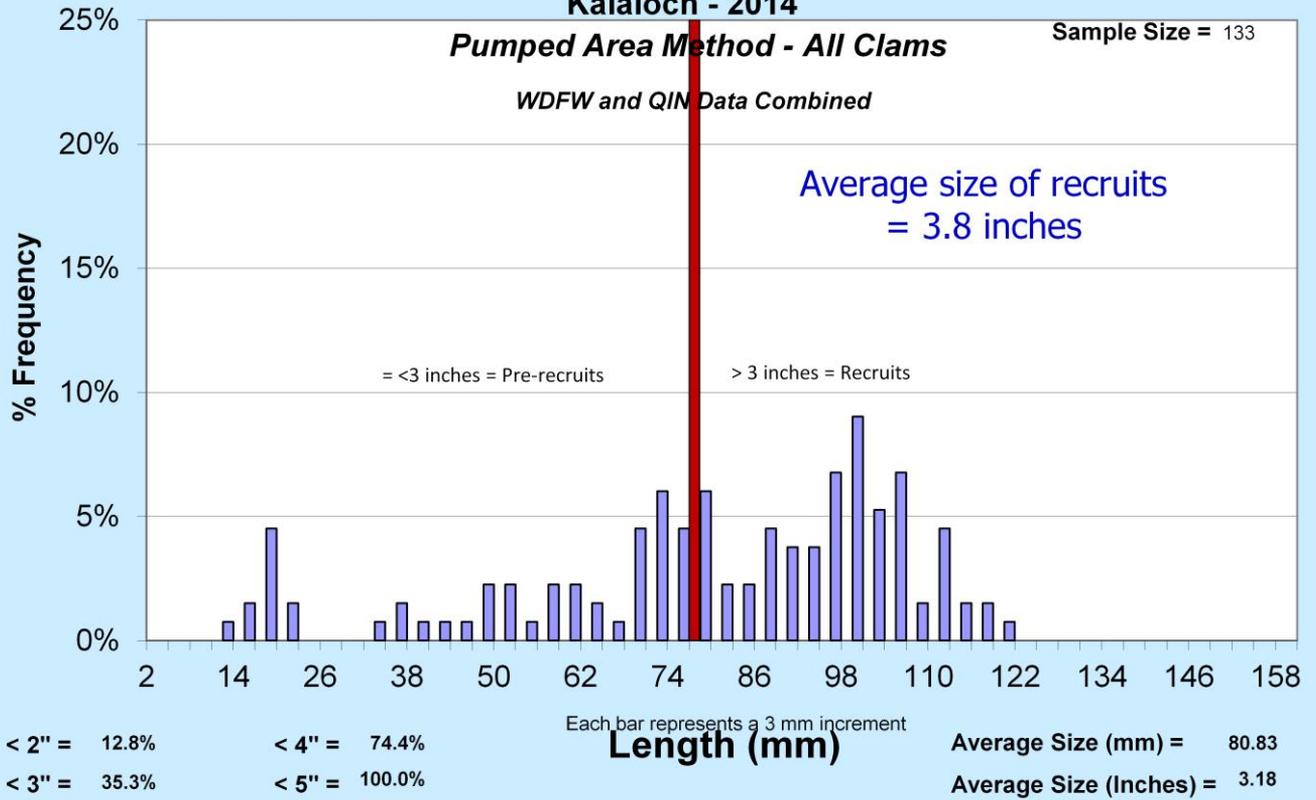
YEAR	POPULATION (clams)		TAC (clams) harvest rate 25.4%	50%	State's HARVEST (clams)
	RECRUITS	PRE-RECRUITS	of recruits	SHARES	TOTAL
2010-11	2,038,773	3,042,018	517,848	258,924	14,345
2011-12	1,138,272	2,321,662	289,121	144,561	2,952
2012-13	894,041	903,369	227,086	113,543	0
2013-14	1,033,286	536,262	262,455	131,227	0
2014-15	990,040	549,684	251,470	125,735	
AVERAGE	1,218,882	1,470,599	309,596	154,798	

The number of recruit sized razor clams at Kalaloch in 2014 was lower than during the 2013 assessment. The reasons for the continued low density of razor clams on this beach is not clear.

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.

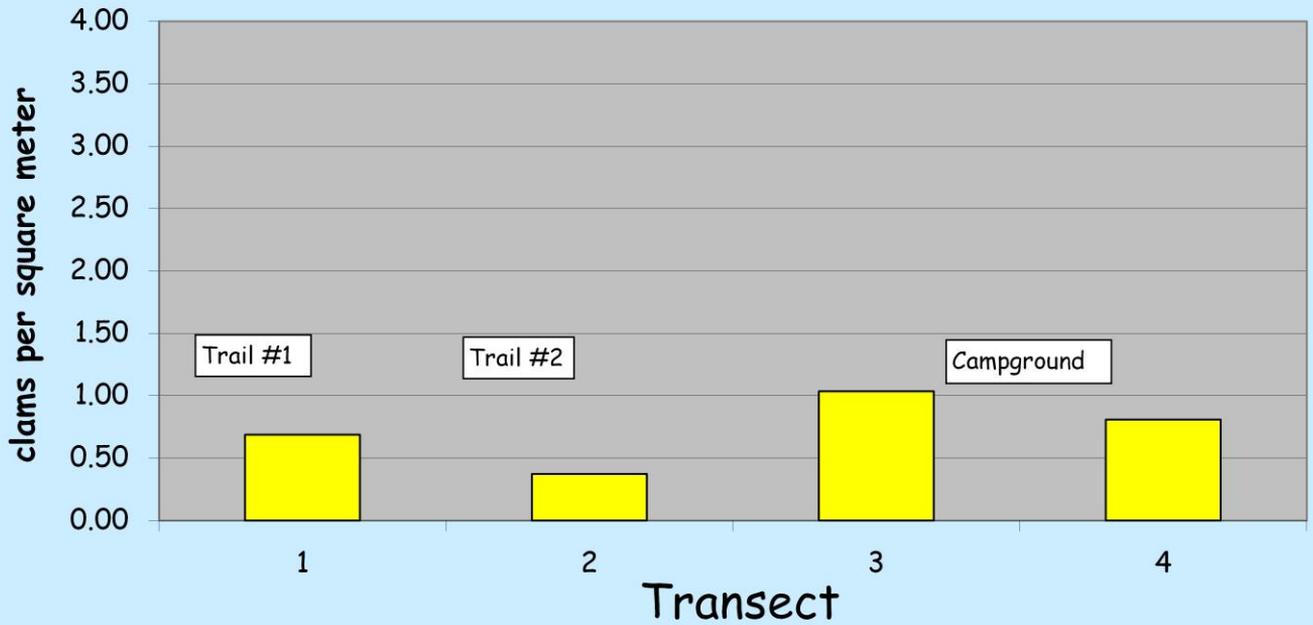
Washington Razor Clam

Size Frequency Distribution Kalaloch - 2014



The recruit clams at Kalaloch remain small with an average size of 3.8 inches. Very few larger clams were found in our assessment work.

Kalaloch Clam Population Distribution - 2014



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

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 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 QUINULT 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.

	2014-15 TAC Share (clams)	2013-14 aver daily harvest (clams)
Long Beach	3,885,492	33,600
Twin Harbors	2,662,861	16,300
Copalis	889,827	46,000
Mocrocks	2,240,309	19,300
Kalaloch	125,735	

This is a recap of the Total Allowable Catch that will guide WDFW during the 2014-15 season. We also list here the average daily catch during the 2013-14 season, by beach.

Dig with your kids, not for them . . .

Razor clamming is a fun and easy-to-learn activity that draws generations of families and friends to the Washington coast each year.

We understand that children have varying abilities when it comes to handling digging equipment. Adults may assist kids, but kids need to actively participate in the entire process of digging and gathering razor clams.

Watch our YouTube video online to see an example of how to dig razor clams with kids:
<http://www.youtube.com/thewdfw>



Also, please remember:

- Adults and youth age 15 and older need a license to dig razor clams; licenses are available at many local sporting goods retailers and online at wdfw.wa.gov;
- Everyone needs to dig his or her own limit, bring a separate container for his or her clams, and not dig more than the 15 clam limit;
- It is unlawful to dig for someone else or dig part of someone's limit, unless digging for a disabled harvester with a designated harvester card.
- You are required to keep the first 15 clams dug, regardless of size and condition. Wasting razor clams is against the law.

The Washington Department of Fish and Wildlife is asking for your help to ensure current and future generations continue to enjoy bountiful razor clam harvests.



For more on razor clam seasons, regulations, digging, and cooking your clams, visit WDFW's recreational razor clam website: <http://wdfw.wa.gov/fishing/shellfish/razorclams/>

**We hope you and your family
have a great time at the beach.**



Still have questions
about razor clam digging?

Call 360-249-4628



WDFW has
produced a new
video titled:
"Razor Clams in
Washington
Digging with
Kids"

Check it out
at:

http://youtu.be/gI9p_PparVk

Razor clamming is a fun and easy-to-learn activity that draws generations of families and friends to the Washington coast each year. We understand that children have varying abilities when it comes to handling digging equipment. Adults may assist kids, but kids need to actively participate in the entire process of digging and gathering razor clams. Check out the video at:

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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 coastal businesses have also said that such a season structure 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

Thank you for taking the time to review this presentation. We are interested in your opinions regarding our management of the razor clam resource and specifically any suggestions or comments you have on the way we might structure the 2014-15 season.

Email your comments to : razorclams@dfw.wa.gov

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 at
razorclams@dfw.wa.gov



To be added to our e-mail update list, please send an email request to: 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



Thanks again for visiting this presentation!

Dan L. Ayres
Coastal Shellfish Manager
Washington State Department of Fish and Wildlife
Region Six
48 Devonshire Road
Montesano, WA 98563 USA
Telephone: 360-249-4628 (ext. 209)