

# Clams, Mussels & Oysters

*Bivalves are abundant along the Pacific Coast and the beaches of the Salish Sea. They are a staple to many Northwest Coastal Natives. Edible species include butter clams, horse clams, little neck (steamer clams), cockles, blue mussels, gooseneck barnacles, Pacific oysters and Olympia oysters. Most harvesting sites do not require a minus tide to gather these delectable seafoods. Families traditionally managed and were responsible for productive shellfish beaches that were often located near villages. Mussels, oysters and various clam species were dried and used as winter food. They are fondly considered the cornerstone of traditional feasts. Elders from throughout the Salish Sea share stories of digging clams, harvesting seaweed and building a hot fire to cook a meal right on the beach.*

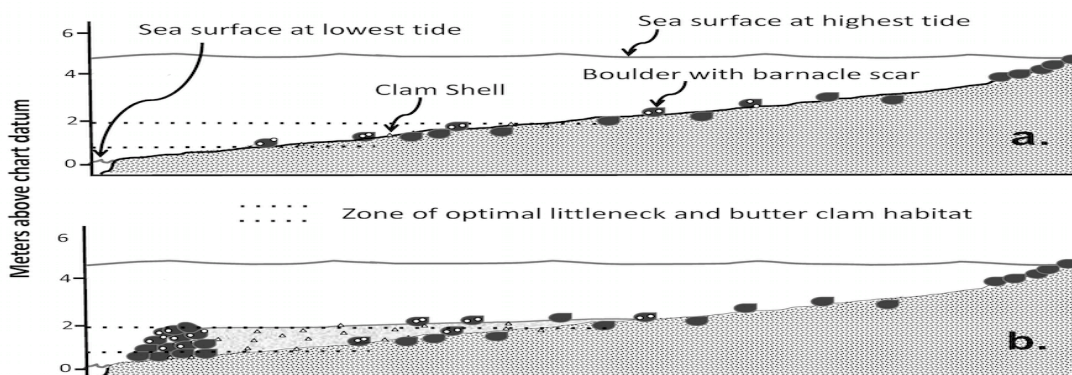


**Other names:** Bivalve, Mollusk, Shellfish

**Identification:** The bivalve family of sea species includes clams, geoduck, mussels, oysters and scallops. These are soft-bodied sea species with two hard shells of equal size as a layer of protection. They are related to other mollusks such as gastropods (one-shelled animals, think snails and limpets), and chitons that used to be eaten more commonly, but bivalves are a bigger and more consistent part of the traditional diet.

<http://www.doh.wa.gov/Portals/1/Documents/4400/332-087-Shellfish-ID.pdf>

**Where they grow:** These tasty beach findings can be found at saltwater beaches during middle to low tide zones.



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### **Harvesting and processing bivalves:**

Traditionally, the only tools used for clams were a basket, a keen eye and a digging stick made of ironwood (also known as oceanspray, *Holodiscus discolor*). Large amounts of shells from previously eaten bivalves are found throughout the Salish Sea, remnants of a feasting site. These are called “middens” and consist of bivalve shells. Middens are typically found at major harvest locations, sometimes piled up several feet thick, representing generations of harvest. When a shellfish bed was not close to a village, the bivalves were sometimes dug, removed from the shell, and smoked or dried before paddling back home with the food. Often, these shell heaps are also found near streams, where fresh water was used to clean the meat.



#### **Box:**

Clams can live a very long time. A clam off the coast of Iceland was found to be older than 500 years old and was the oldest living animal known on earth.



*Above: Digging Stick, courtesy of Muckleshoot Preservation Dept*

### **Food and Medicine:**

Clams, mussels and oysters are perfect little packages of nutrition. Within their tiny bodies, they contain important nutrients like iron, magnesium, zinc, and Omega 3 fatty acids that help our bodies to build blood and maintain immunity. They are also low in calories, low in cholesterol, and are an outstanding source of protein. In fact, regularly consuming shellfish has been shown to help reduce cholesterol.

Oysters in particular, have a very long history of nourishing humans. Increasing archaeological evidence shows that early humans relied heavily on shellfish, and that without them we may not have survived as a species. Oysters have the highest concentration of zinc than any food, a nutrient that promotes good health for our body’s immunity and specifically our reproductive system, proving the lore of its aphrodisiac nature. They are referred to as the “food of love” in many cultures.

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## Traditional Technologies – Clam Gardens:



*Above: A photo of a clam garden in Canada. The line of rocks at the right is the terrace, and the people are standing in the clam bed held up by the terrace. Photo contributor: Maurice Major*

It is important to highlight the dedication Coast Salish Ancestors had to the ancient shellfish beds we thrive on to this day as well as the health of the waters. Bivalves are the filter system of the Salish Sea because each individual can clean out 15 to 20 gallons of water per day. Ensuring healthy production of shellfish meant clean water and food security. Stewardship was truly upheld through managing production on many levels. Historically, what we now call shellfish beds or beaches, were treated just like the gardens they truly are. While harvesting clams is nourishing and delicious, ancient gatherers were efficient multi-taskers. The shores of the Salish Sea can be shallow and quite narrow, therefore innovative Coast Salish Ancestors would build terraces using large rocks they would come across while harvesting, rolling them down the beach in to what would overtime become a stone wall, or a rock terrace, located beyond the usual high tides. Eventually the stonewall would accumulate with gravel, sediment and shell hash that clams prefer and would create a broader clam bed where there originally had been a steep drop-off into the sea. This would expand habitat and is an intentionally built “clam garden”. These ancient clam gardens were sometimes built quickly and deliberately to invigorate clam production, especially butter clams. By removing rocks and increasing the amount of land at the tidal elevations preferred by clams, clam larvae have a safer and more fertile place to take hold, and more clams can grow to adulthood. Acre for acre, a clam garden produces four times the protein as nearby

beaches without the garden terraces. When the clams spawn, the next generation can drift to the next beach, making clam gardens nurseries for the whole area.

Like many traditional ways of managing lands, clam gardens represent a nudge to the natural system, rather than a replacement. There is no need for hatcheries, no need to add food or fertilizer, and machinery is not required. Clams can be dug with the traditional digging sticks that were used since time immemorial—in fact, the removal of big rocks and creation of nice clam beds makes the digging even easier. Harvesting a clam garden maintains it.

Although many are not actively managed anymore, terrace walls will stand for centuries. Their nooks and crannies provide shelter and habitat to juvenile fish, octopus, gastropods, and other food species. Archaeologists have excavated a few, and used barnacle scars and clams that were accidentally buried by the walls to get radiocarbon dates. These show that some clam gardens have been in place for 2000 years! Further south in the Salish Sea, natural conditions are friendlier to clams without the need for constructed clam gardens. By the time you get to the southern inlets, tidal flats can be extensive and rich in clams without need for terraces, and therefore clam gardens are not found there.

For more information and informational videos please visit:

<https://clamgarden.com>

<https://clamgarden.com/media-education/>

### **Traditional Technologies – Oyster Reefs**

Unlike clams, which burrow into the gravel and mud, oysters like to have a rocky bottom and also do not require digging. Their shells attach to the rocks as they sit at the bottom of the water, and become exposed to the air during lower tides. Just as they observed and knew the habitat requirements of clams, Northwest Coastal Natives recognized the needs of oysters and helped make additional habitat for these bivalves by creating oyster reefs. And as with clam gardens, they enhanced and increased habitat through slight adjustments to their own practices and to natural systems, not through massive alteration.

How did tribes create oyster habitat? The story begins with traditional cooking, in which rocks were heated up and used to steam, boil, and roast all sorts of foods. The rocks could be re-used for a while, but eventually they begin to crack and fall apart, becoming too small to be useful and potentially getting fragments into the food. Nobody wants sharp rocks underfoot and in the way, and in some places people tossed them onto the tidal flats, away from canoe landings. At T'Peeksin (Totten Inlet, in the far south Salish Sea), near the muddy upper end of the inlet, there is an entire peninsula of discarded cooking stone, colonized by oysters and barnacles in an area where these shellfish otherwise have no place to live.

### **Consuming Bivalves - Human Health concerns:**

Washington has a reputation for safe, wholesome shellfish. Our state is the leading producer of farmed shellfish in the nation, and commercial product is shipped around the world. Miles of Puget Sound shoreline and Washington coastal beaches attract hundreds of thousands of recreational and Tribal harvesters each year.

The Washington State Department of Health (DOH) regularly tests both molluscan shellfish and the water where they grow to make sure the shellfish are safe to eat. The Tribes have signed a Consent Decree with DOH and the Federal government and agree to follow their regulation to insure that shellfish harvested and consumed by Tribal members are safe to eat.

Additionally, DOH licenses and inspects all Tribal commercial shellfish operations to make sure shellfish intended for markets and restaurants are harvested, handled, and shipped in a safe and sanitary manner. When environmental or operational conditions pose a threat to public health, tidelands are closed to all harvesting.

For more information visit: <http://www.doh.wa.gov/CommunityandEnvironment/Shellfish>

### **Conservation Efforts and Resources:**

The Olympia oyster is the only oyster that is native to the Puget Sound. The Pacific oyster was actually transplanted from Asia. Olympia oysters are now on the threatened species list, and tribes in the southern Puget Sound region, including Squaxin and Skokomish, have programs centered on its preservation and recovery. Many tribes are maintaining bivalve beaches and are even planting them in areas where they have become scarce. Although erosion is taking its toll, numerous “middens” (heaps of discarded shells) throughout the Salish Sea region show how important shellfish have been for thousands of years; these and other features highlight how Salish Sea tribes managed shellfish sustainably. Numerous agencies and non-profits are studying and working to restore the near-shore habitats of Puget Sound and the Salish Sea. There is a wealth of information on the following websites:

### **Additional Resources**

Puget Sound Restoration Fund- Olympia Oyster Restoration:

<http://www.restorationfund.org/projects/olympiaoyster>

Puget Sound Marine Invasive species Identification Guide:

[http://vmp.bioe.orst.edu/Documents/mism\\_ID\\_Cards5print.pdf](http://vmp.bioe.orst.edu/Documents/mism_ID_Cards5print.pdf)

Health of the Salish Sea Ecosystem Report

<https://www.epa.gov/salish-sea>

The Puget Sound Ecosystem Monitoring Program

<http://www.ecy.wa.gov/programs/WQ/psmonitoring/index.html>

PSEMP is an integrated, coordinated monitoring and assessment program for Puget Sound is needed to provide credible and useful information about the Puget Sound ecosystem and guide the Puget Sound Partnership’s, Ecology’s, and others’ monitoring efforts and improve our policy and management decisions.

The Puget Sound Nearshore Ecosystem Restoration Project

<http://www.pugetsoundnearshore.org/>

PSNERP is one of the largest habitat restoration and preservation programs ever undertaken in the United States. We are building a plan of action by answering the questions:

- How has the shoreline of Puget Sound changed?
- Where are the most problematic changes and why?
- What can we do to protect and manage the nearshore?
- What actions should we take and where?

Encyclopedia of Puget Sound

<https://www.eopugetsound.org/terms/379>

Puget Soundkeeper Alliance

<http://www.pugetsoundkeeper.org/>

Soundkeeper's mission is to protect and preserve the waters of Puget Sound. Founded in 1984 as the Puget Sound Alliance (PSA), PSA was the first grassroots citizens' organization to focus exclusively on protecting the marine environment of Puget Sound.

**References:**

[http://www.pugetsoundnearshore.org/technical\\_papers/shellfish.pdf](http://www.pugetsoundnearshore.org/technical_papers/shellfish.pdf)

An Environmental and Historical Overview of the Puget Sound Ecosystem

[[https://pubs.usgs.gov/sir/2010/5254/pdf/sir20105254\\_chap1.pdf](https://pubs.usgs.gov/sir/2010/5254/pdf/sir20105254_chap1.pdf)]

[<http://www.firstpeople.us/FP-Html-Legends/>]

<http://sciencenordic.com/new-record-world's-oldest-animal-507-years-old>

# The Gossiping Clams

-A Suquamish Legend as told by Roger Fernandes

*A long time ago, clams had feet. They walked everywhere. Wherever you went, there were clams. If you were getting out of bed in the morning, there would be a little clam standing there watching you. If you were cooking a meal, there would be a clam watching you. If you were washing your face, there would be a clam watching you. No matter where you were or what you were doing, there would be a clam watching you.*

*When the clams got together at night, they would tell each other what they saw people doing. They would talk and talk about everyone. And if the story they told was not exciting enough, they would make things up. They would exaggerate and lie about you. The clams would gossip.*

*One day Raven, that big black bird, was way out in the woods. He was doing something bad and he did not want anyone to see him. I don't know what he was doing, but it must have been bad because he was hiding. When he was done doing that bad thing, he turned around and there was a little clam watching him.*

*"Oh!" said Raven. "I didn't know anyone was watching me. Please promise me you won't tell anyone what I was doing. I don't want anyone to know."*

*"I promise, Raven. I won't tell anybody," said the little clam.*

*"I'm serious!" exclaimed Raven. "You must not tell anyone!"*

*"I promise Raven. I won't tell anyone," said the clam.*

*But when that little clam got home, what do you think he did? Of course, he told everyone. He told the story of what he saw Raven doing to all the clams. When Raven heard about this, he was very angry. He spread his black wings across the earth and gathered up all the clam people. He took them down to the beach. He would drop one clam onto the sand and with his foot push it beneath the sand. He did this to one and then another. He did it to all the clams until all of them were buried under the sand. Then he said to them, "Now if you want to talk about people, go ahead. But now when you gossip, water and sand will rush into your mouth!"*

*So now the clam people are under the sand. That is their punishment for gossiping, for talking about people behind their back. But do you think that has stopped the clam people? Of course not. Whenever you cross a muddy stretch of beach, you will see little spurts of water coming from under the sand. That is the clam people. They are still talking, and they are talking about you.*

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## Elaine's Clam Fritters

*For this delicious recipe, Elaine Grinnell recommends using clams that are fresh or frozen. Clams should be soaked overnight in a bucket of salt water, changing the water twice to ensure sand is out of the clams. Process immediately after to preserve the flavor.*

1 lb. butter clams, fresh or recently frozen, chopped in a food processor  
1 lb. geoduck, chopped fine in a food processor  
1 medium-sized onion, chopped  
4 celery sticks, chopped  
2 eggs, plus 1 egg yolk  
1 cup flour  
1 teaspoon salt  
Oil for frying (lard, coconut or palm oil)

Combine all ingredients. A spoon should stand straight up in the mixture. In a heavy frying pan, heat the oil. Spoon the mixture into the pan to make small cakes. Cook for five minutes on each side or until the fritter is brown around the edges.

Cook time: 40 minutes. Serves 10-12.

*Recipe from Elaine Grinnell, Jamestown SK'lallam*

