

Jamestown Aquaculture

Brief History and Current Ventures



Kurt Grinnell, Seafood and Geoduck Manager

Why are we pursuing aquaculture?

Shellfish gathering is a treaty right. With limited resources in the 21st century, we choose to “grow our own.”

ARTICLE 4. The right of taking fish at usual and accustomed grounds and stations is further secured to said Indians, in common with all citizens of the United States; and of erecting temporary houses for the purpose of curing; together with the privilege of hunting and gathering roots and berries on open and unclaimed lands. Provided, however, That they shall not take shell-fish from any beds staked or cultivated by citizens.

The history of Jamestown aquaculture includes:

Gathering and selling seafood was once a regular occurrence at Jamestown



Jake Hall with crab trap; Hannah Johnson cleaning crab

Tribal Commercial Fishers

Since obtaining federal recognition in 1981, the Tribe has licensed commercial Tribal fishers, who harvest and sell commercially, tracking quantities to fulfill the State/Tribal co-management requirements and paying taxes through the Tribe.



Josh Chapman leaving Quilcene

Geoduck Divers

Since 1995, the Tribe has licensed geoduck divers to harvest the allotted quantities on behalf of the Tribe. The Asian market has proven to be quite profitable, with shipments of live geoduck leaving from SeaTac airport daily during harvest season.



Bo Holden with a load of geoduck

The geoduck (*Panopea generosa*) is the world's largest burrowing clam, reaching an average size of 2.07 pounds (including the shell) in subtidal waters of Puget Sound.

The Geoduck Resource is Co-Managed by the State and the Tribes

Total available geoduck biomass is determined by surveys done by the Department of Natural Resources, and the Tribes who participate in the fisheries.

The Tribe's Natural Resources managers, Natural Resources Policy Representative and Tribal Council work with the Washington Department of Fish and Game to determine the annual harvest locations and levels.

Together in 1997, Tribes and the State recommended an annual total allowable catch (TAC) rate of 2.7% of the commercially available geoduck biomass. Today, the State and Tribes use a declining model, now at 2% and with the quota decreased annually.



Geoduck deemed harvestable are divided into “tracts,” which are shared proportionately among the Tribes within a particular area.

There are about 10 Tribes in Washington that harvest geoducks. The dive-year runs from April-to-April.



In 2017, the Jamestown S'Klallam Tribe's quota is approximately 232,000 pounds located in several tracts.

The Jamestown S'Klallam Tribe has 5 boats with a total of 13 trained divers coming in and out of the fishery.

Each boat employs 2-3 people, contracted by the Tribe, including divers, tender and deckhand.

Each diver harvests about 400 pounds of geoduck per day, for a total daily harvest of 2,500 – 4,500 pounds daily.

To reach our quota, we average 65-80 dive days per year.



Geoduck are graded for quality before sale.

The Asian market prefers a number 1 grade that weighs 1.8 pounds, has a white shell, a very light colored neck and with the neck at least the length of the shell.

A 2 grade is a little darker in color or was a number one grade geoduck with a blemish.

A 3 grade is darker but still has a decent length of neck.

A 4 grade is small, has very little neck and is dark in color.



Grade 1



Grade 2



Grade 3



Grade 4

In addition to grades 1-4, there are also geoduck that are deemed small (1 – 1.5 pounds), extra small (less than 1 pound), or broken.

Each type of geoduck is sold to an appropriate buyer.

State and Tribal Enforcement impose very strict penalties for high-grading, which means only taking the best geoduck and leaving the rest on the sea floor to die. Penalties include loss of dive privileges, fines and possible incarceration.

Tribal Natural Resources and Enforcement staff monitor the fleet above and below water to check for high grading.



Small



Broken

Packing and Shipping

Geoduck is delicate. It is shipped in a cardboard outer box around a Styrofoam inner box with foam packing and gel ice to keep them cold.

Detailed records of product handling, product traceability and time-to-temperature controls are kept.

Records are audited twice yearly by the State Department of Health and the National Oceanic and Atmospheric Administration, in addition to unannounced inspections.



International Trade: We ship to China (Beijing, Guangzhou and Shanghai), Taiwan, Hong Kong and Hanoi

While we don't deal with the wholesalers' challenges in Asia, we are very aware of the difficulties they face. In addition to the price per pound paid to us, the cost of shipping, and the 5% water (and weight) loss that occurs during shipping, distributors must also pay \$7.80 per pound import duty.



Truck ready to leave
Sequim for SeaTac airport

Tribal Employment

The geoduck fishery employs 4 full time and 2 part time staff when the season is underway. These employees must like working with seafood, have a driver's license, and be able to lift 60 pounds many times per day.



The Future in Geoduck

Farmed geoduck is proving to be a promising venture.

Growth in the total amount we could potentially harvest will be determined by the number of acres we have available to farm.

Geoduck aquaculture is more than making up for the decreasing amount of wild geoduck we can harvest each year.



Geoduck seeding
into protective
tubes

Jamestown Seafood

Operated from the late 1980s through 2004 at the Oyster House at Cline Spit, and later from what is now the EDA building in Carlsborg, selling shellfish.

The Tribe closed Jamestown Seafood in 2004 due to financial losses and Dungeness Bay pollution.

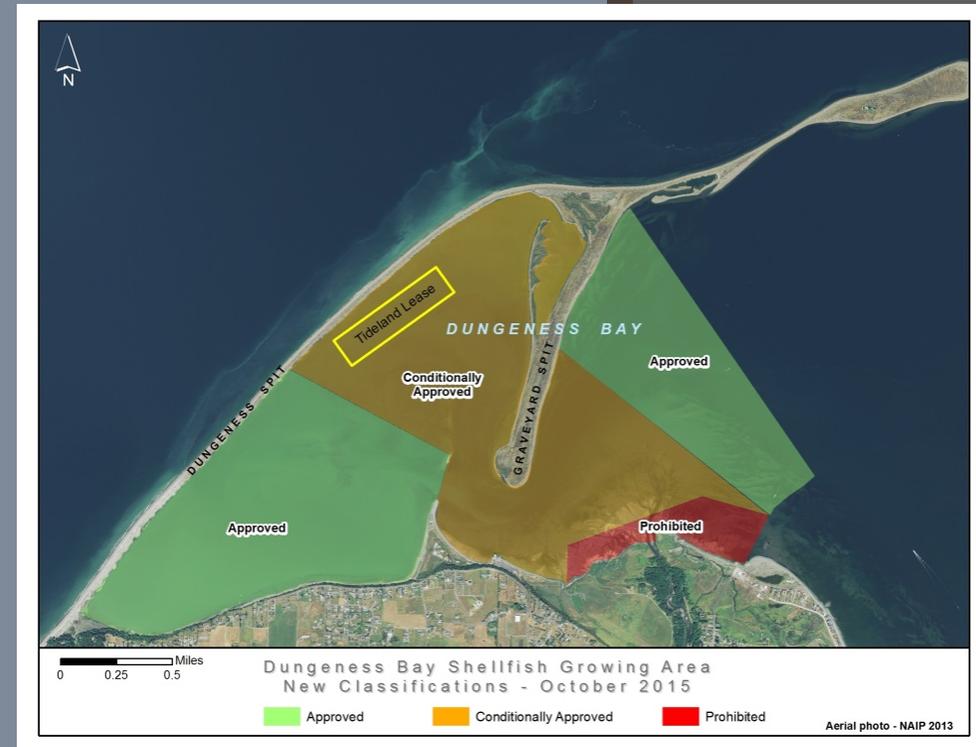


Pollution in Dungeness Bay

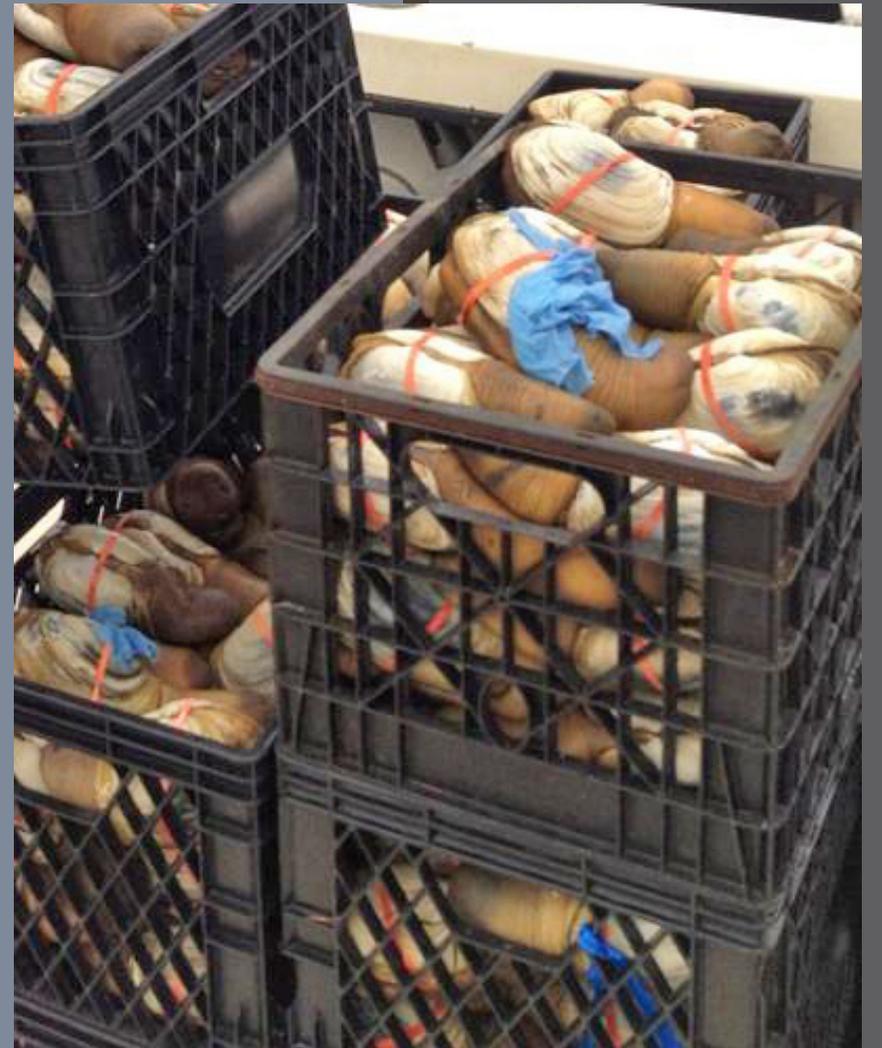
In 1997, water quality monitoring by Department of Health showed fecal coliform bacteria counts were increasing near the mouth of the Dungeness River in Dungeness Bay. By the fall of 1997, bacteria levels near the river mouth exceeded the federal limit for fecal coliform.

The Tribe joined with other partners to create a Clean Water Strategy, focusing on failing septic systems up river.

Upgrades began in 2011, and by 2015, the entire Bay had been upgraded to again allow shellfish harvesting.



The downgrade of Dungeness Bay and the pollution in Sequim Bay prior to the clean-up and restoration of Jimmycomelately Creek and Estuary caused the Tribe to pause inland aquaculture through much of the first decade of the 21st century. Geoduck diving in deep water continued.



Restarting Aquaculture

In 2009, the Tribe's Shellfish department and Aquaculture Manager Kurt Grinnell began planting purchased oyster seed in the Sequim Bay tidelands. In 2010, they followed that with geoduck seed. Stæstílæm Kúl (Jamestown Gold) oysters were immediately embraced by high end restaurants.



Serving Stæstílæm Kúl (Jamestown Gold) oysters at a local event.

The Beginning

- Permitted Tidelands by Kelly Toy
- Pilot Aquaculture Program – Geoduck and Oysters
- Jimmy Come Lately Creek Project – Scott Chitwood and Randy Johnson
- Sequim Bay is a viable, productive bay



What?
No Seed!

New Plan –
Vertical
Production,
from seed to
table



Once the pilot project had proven successful, we moved forward, this time starting by producing seed.

Our new partnerships at the Point Whitney Shellfish Hatchery have taken us to a new level in the aquaculture business.



Jamestown Aquaculture in 2017

Jamestown Point Whitney Shellfish Hatchery
Jamestown Shellfish Farms
Jamestown Sablefish Program

Brinnon, Washington

Kona, Hawaii

NOAA Manchester Site, Port Orchard, Washington

Commercial Production - Geoduck

PVC tubes – 1 per square ft
3 to 4 millimeter seed – 3
per tube



Commercial Production – Oyster

Multiple growing
methods



Point Whitney Shellfish Hatchery

Built in 1950's

Salt water lagoon

Talks begin with Troutlodge Inc

Jim Donaldson – Olympus Aquaculture Consulting – Feasibility Study

Discussions with Taylors, Seattle Shellfish and Hama Hama

Approached Jamestown Tribe

Feasibility Study for Re-development of the Point Whitney Shellfish Hatchery into a Geoduck Clam Seed Hatchery for Troutlodge Sablefish LLC

Prepared by



October 29, 2012



The Learning Curve

Partners – Troutlodge Inc (the biggest trout egg producer in the world, now called PW Holdings LLC), Native Trust Seafood, and Jamestown Tribe

Identify the right people in Aquaculture (Mentors, Partners and staff)

The conversion.....Sablefish to Shellfish

Sablefish operations move to NOAA Manchester, Port Orchard, WA
(Our new partners)

Point Whitney is converted back to its original purpose – a shellfish hatchery

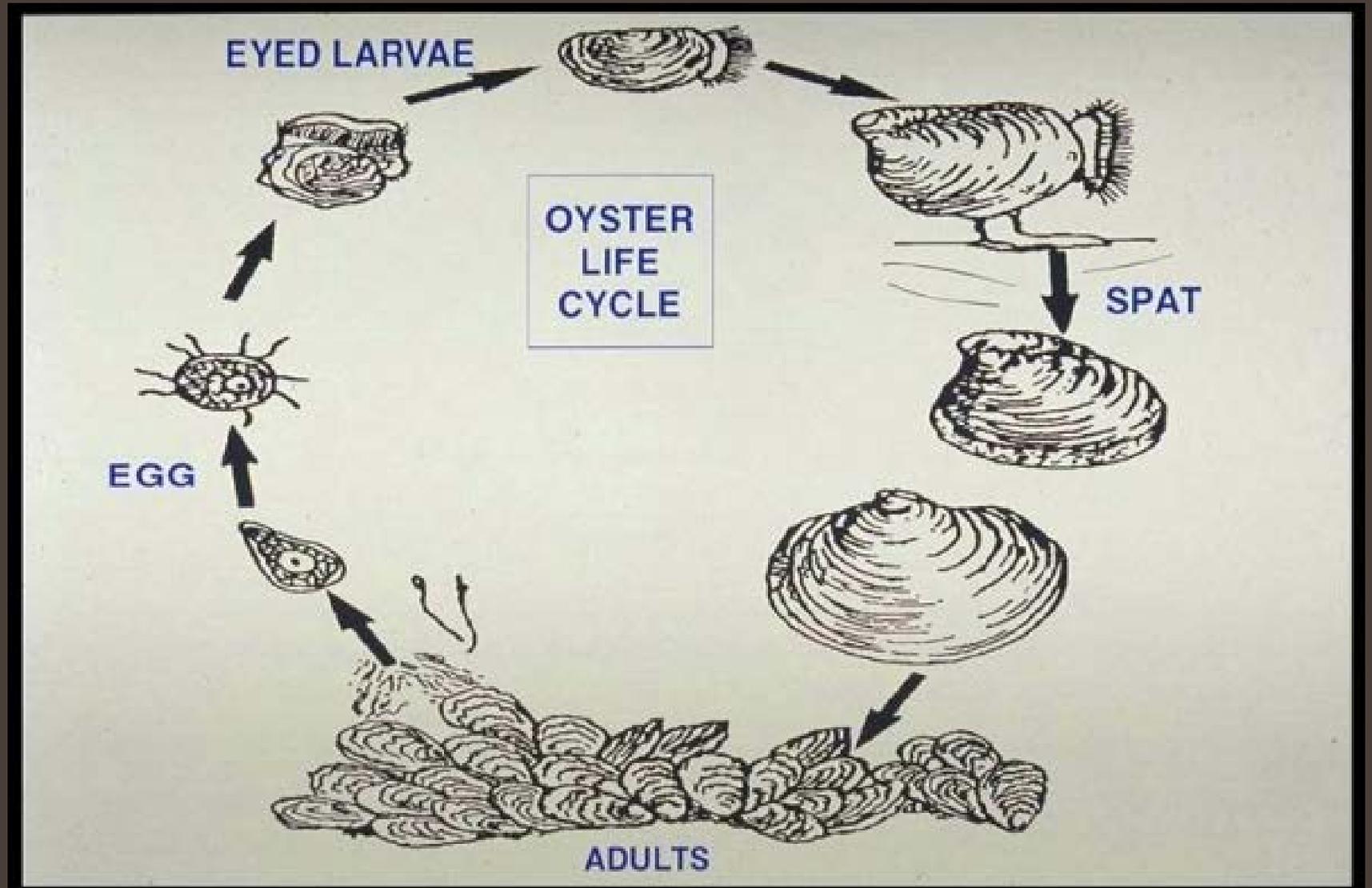
Ocean Acidification and other variables

Production crash

Industry challenges – Pacific Shellfish (Coast) and Taylors

22% drop in hatchery production in 2005-2009 – with continuing inconsistencies

Buffering (pH balanced) water helps but.....



The Kona Site

Previous Sablefish hatchery-mothballed site of the U.S. Government's Nuclear research site

Why Hawaii?

Sea water wells

- 2500 ft. well
- PH balanced water
- Temperature controlled
- Filtered

Superior year-round algal production

- SUN! ☺

Site Manager – Nate Tsao,

Algal Production



Algae Lab



Spawn and Set

Spawning:

6000 liter hatchery tank

- Larvae set on ground oyster shell (cultch)
- Screened 3 time in a 30 day period

500-1000 Micron (0.5-1.0 millimeter) seed moved to down wellers or setting tables

1000-1680 Micron (1.0 – 1.5 millimeter) moved to 10 silo up weller

At 3.0 millimeter seed is then shipped to Point Whitney site for conditioning



Downweller
water current
moves down
through the
seed.

Upweller
water current
pulls up through
the seed.

Downweller at Point Whitney



Upweller at Point Whitney



Point Whitney Hatchery

Algae Production

Lab, Carboys

Various species of algae



Point Whitney Hatchery –

Algae Production –
last stage before
feeding



What is a FLUPSY?

A FLUPSY is a floating nursery with 24+ bins that hold seed of different sizes, and a large paddle wheel run by a electric motor that draws water into the unit and pulls it up through each bins, simulating tidal action. From this point on, the sea feeds the oysters.

John Wayne Marina, Sequim

Flupsy (floating
upweller system)
from Point Whitney

Permitting performed
by Ralph Riccio



Flupsy Paddle wheel



Oyster Seed

71,000 1/2" Seed ready for sale



Finally, seed for the tidelands!

At 1/2", seed is placed on the sand or in bags to grow. 30,000 seed fit under a 15x50-foot net. Some seed is also grown in bags that tumble with the tides.

For commercial sale, oyster size ranges from 2 to 7 inches long. By the summer of 2018, our goal is to sell 5,800 dozen per week.



Tumbled oyster bags in Sequim Bay

The tumbling effect of this process creates a deep cupped oyster.



Jamestown - Dungeness Farm

53 Acres

Still in permitting
process



Jamestown/Port Gamble Dabob Bay Farm

66 Acre Washington
State Department of
Natural Resources
(DNR) lease on Dabob
Bay near Quilcene



Success -Selling seed to happy customers:

- Wescott Bay Shellfish
- Jamestown Tribe
- Tulalip Tribe
- Nisqually Tribe
- Chelsea Farms
- Padden Seafood Inc
- Puget Sound Restoration Fund
- Native Trust Seafood
- Eagle Creek Shellfish
- Suquamish Seafood
- Alice Helker
- Marlin Holden
- Reed Gunstone
- More.....



Employing Tribal People

Casey Allen



Nick Rawley



Jamestown
Point Whitney
Brinnon

Matt Henderson



Brian Iverson



Jamestown
Point Whitney
John Wayne
Flupsy

Brandon Allen



Spenser Stensland



Jamestown
Point Whitney
Kona

Nate Tsao



Dalton Tokuyama



Wet Storage at Point Whitney

Live seafood holding tanks with circulating filtered seawater

Capable of holding 7,000 pounds of geoduck

2,700 dozen oysters



NOAA Manchester – Port Orchard WA

Rick Goetz, PHD, Supervisor
Research Physiologist – Finfish

In addition to shellfish, the Tribe and
PW Holdings LLS partnered with
NOAA to produce black cod
(sablefish) at their lab and fish farm.

Sablefish sells in the same range as
halibut and wild salmon, and
although wild stocks are stable,
they do not meet consumer
demand.

We're looking for at least one
customer, hopefully a Tribe, who
wants to farm this fish, using our
methods.



Black cod



Dr. Rick Goetz

Sablefish tanks and outdoor fish pens

Born at 500-3000 feet with yoke sack

By the time they reach the surface, they have used this up and they begin to feed

Fingerlings



Adults at 2.5 kilos in fish pens



End Consumers:

2016 Festival of Trees

Jamestown oysters ready to eat at a local restaurant

Who is our target market???



Male, 30 years of age

Seafood connoisseur, conscience of food sustainability,
\$40,000-\$100,000 annual income

The Future of Aquaculture for the Jamestown S'Klallam Tribe

- New Business Plan includes:
 1. Continue to grow 7-inch oysters to expand our Asian markets
 2. Sell at least 5,000 dozen oysters per week to distributors across the US
 3. Expand oyster seed sales
 4. Continue our wild geoduck sales and expand our farm geoduck production
 5. Work through the issues (Army Corps, Wildlife Refuge, etc) regarding our 53 acre tideland lease on Dungeness Bay
 6. Begin planting the Dabob Bay tidelands in the Spring of 2017
 7. Determine what will happen with NOAA partnership and the sablefish project