



Aboriginal Aquaculture Association Shellfish Facts Geoducks



A traditional First Nations shellfish harvesting

Geoduck

The pronunciation of the name geoduck has its roots in a Nisqually (Washington State) First Nations word - *gwe-duk* meaning “dig deep”.

There is growing interest today amongst coastal First Nations for the culture of geoducks.



Cultured Geoducks:

Geoduck (*Panope abrupta / generosa* - Latin name) - also known as king clam or “elephant trunk clam” by the Chinese.

In 1993 research began into the development of a viable geoduck aquaculture industry in British Columbia.

Sixteen years later, the culture of geoducks is almost ready to move forward into commercial production. However, a reliable and consistent source of seed is still needed.

BC Shellfish Production 2008			
	Harvest '000 tonnes	Landed Value \$ millions	Wholesale Value \$ millions
Total			
Cultured Shellfish	7.2	15.7	27.0
Wild Geoduck	1.6	25.8	33.6

Source: <http://www.env.gov.bc.ca/omfd/fishstats/graphs-tables/farmed-shellfish.html>
Visit site to view shellfish production statistics from 1999 - 2008

Where to farm geoducks:

Geoducks are found in the wild from Alaska to southern California. Geoduck aquaculture is now occurring in Puget Sound, WA. In BC, the few attempts with growing geoducks has, so far, resulted in limited success.

Geoduck aquaculture in BC will most likely occur in the intertidal and subtidal areas off the coast of Vancouver Island, and further north.

What do they look like:

Geoducks grow to 20 cm (8 in.). The outer white shells are round at the front. The shell is cut off at the siphon end, and gaping at all sides, due to the animal’s large body and neck.

Unlike Manila and other clams, geoducks cannot completely retract into their shell.

Native geoducks burrow into a variety of substrates from mud to gravel, in intertidal areas, and down to a depth of 100 m (330 feet) or more.

What do geoducks feed on:

Like other clams, geoducks are filter feeders. They feed on tiny plants called plankton, and other organic material, by drawing water in through an opening called a siphon.

Water and nutrients flow in through the incoming siphon. The gills then trap the food inside the shell while allowing the geoduck to filter out the water through a second outgoing siphon.

Geoducks require a fresh, clean aquatic environment, and protection from predators.





How to farm geoducks:

Geoducks are highly valued in the Asian market, and have the potential for a significant return on investment for the grower. Geoducks, however, have a long culture cycle - between five to seven years - from planting to harvest. Therefore geoduck culture requires good planning and long term management to be profitable.

Key to a viable cultured geoduck industry is the availability of seed from spawning adult broodstock, ideally in a controlled hatchery environment. Under the right conditions, geoduck can spawn every two weeks.

The larvae are kept in hatchery tanks of circulating seawater and fed algae. Between 21 - 25 days the larvae will reach 2.5 - 2.8 mm in size, and are ready to set and mature. The larvae are transformed into tiny seed (juvenile geoduck) - a small version of the adult geoduck.

The juvenile geoduck is then ready for early rearing in a nursery system. Nursery methods are still under development to handle the early post-metamorphosis and the larger sized geoduck juveniles.

Nursery systems include:

- The "FLUPSY" - a Floating UPwelling SYstem' housed on a raft on the ocean.
- Tank or raceway systems - where there is greater control over culture conditions.
- Using a small modified inlet area to create a salt water pond, designed to pump the nutrient rich water into the tank system of the nursery.

Grow-out Phase:

When the juveniles reach a minimum of 1 cm, they can be transferred to grow-out beds in low-intertidal and subtidal areas. Over time, the juvenile will burrow deep into the substrate. Growers use covered PVC pipes to hold the geoduck in place and to protect them from predators during the initial stages.

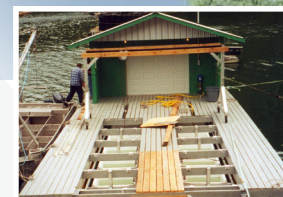
Harvesting geoducks:

Geoducks will take, on average, approximately six years to grow to market size (~ 1 kilogram live weight). Mature geoducks can live over a metre below the substrate, presenting a challenge when it comes to harvesting them.

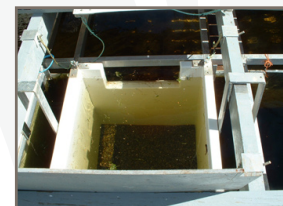
Geoducks are currently harvested using a water pressurized wand which loosens the substrate around the clams, allowing them to be lifted out.



Geoducks of varying sizes on the beach



A nursery raft is called a "FLUPSY" - Floating UPweller SYstem



Large bins with screened bottoms are lowered into openings in the frame and suspended in the seawater.

Did you know....

- Bivalves are mollusks that have two halves or valves. Bivalves that have not yet matured and set are called **larvae**.
- Most bivalve larvae will set between 16 - 28 days after fertilization.
- **Remote setting** refers to the process of transporting bivalve larvae from the hatchery to the grow-out site.

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