

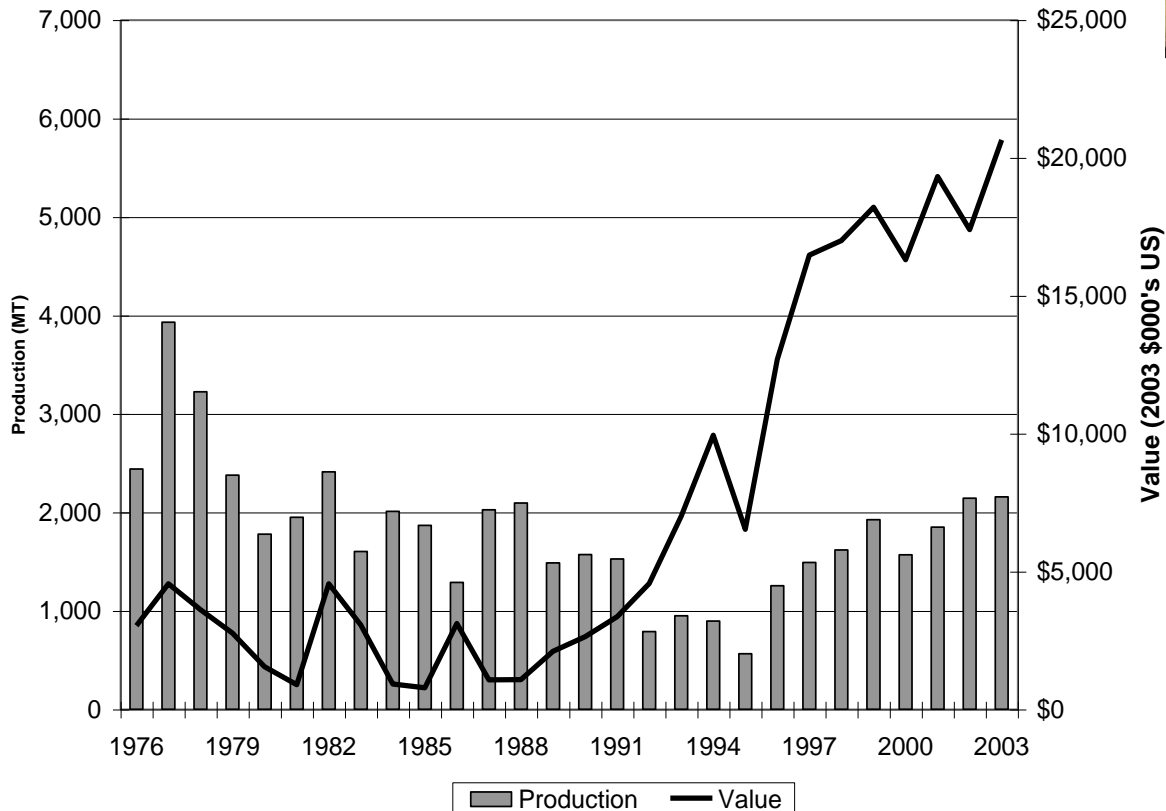
What are geoducks?

- *Panopea generosa*
- Nisqually word for “dig deep”
- Saltwater clams (Bivalve molluscs) native to the PNW
- Big, deep, long-lived, very numerous, highly fecund



Geoduck Fishery

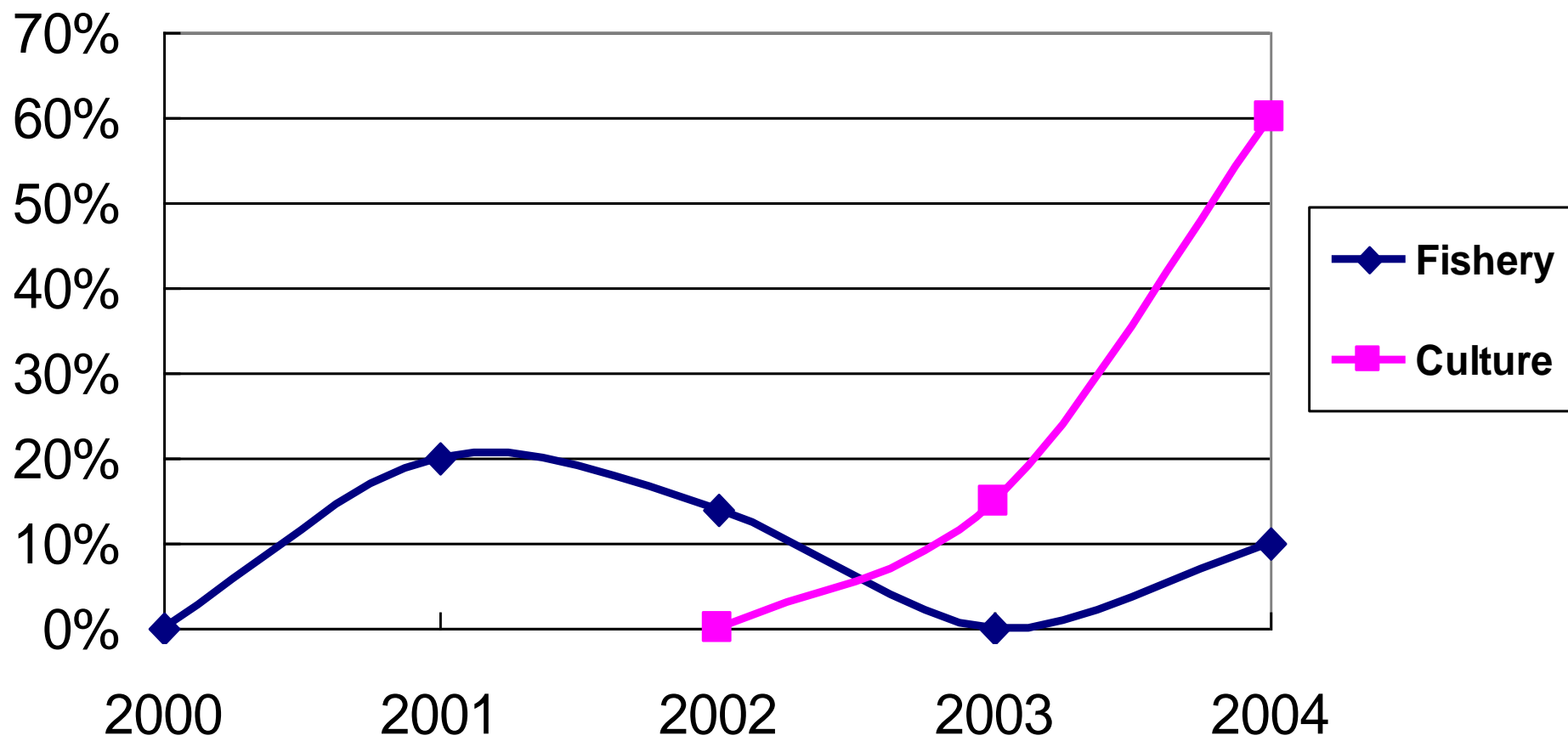
- Began in 1970
- Value increased in 1990s
- Extremely lucrative
- Managed sustainably but cannot meet demand



What is geoduck aquaculture?

- Aquaculture: agriculture in the water
- “farming” geoducks for human food
- Methods developed by WDFW for fisheries enhancement
- Adapted by shellfish industry
- Rapid expansion





Percent change in WA geoduck landings and aquaculture production (Jonathan King, Northern Economics, Anchorage AK, Personal Communication).

How does it work?



Broodstock



Spawning Broodstock



Geoduck "Seed"

How does it work?



PVC tubes – “anti-predator structures”



Tubes covered with net
Net and tubes left in place for 2-3 years



Net and tubes removed after 2-3 years
Geoduck remain for 5-7 years total before harvest

How does it work?



Geoducks harvested using low pressure water hoses
Causes “liquefaction” of the sediment around the clam’s body, allowing them to be removed easily

How is it Managed?

- Complex regulatory and permit process



Federal

US Army Corps
of Engineers

Consultation
with other
agencies:
US Fish &
Wildlife
NOAA
US EPA

State

Department of
Natural
Resources

Department of
Health

Department of
Fish and
Wildlife

Department of
Ecology

Local

City/County
government

So what is the problem?

- **Habitat effects?**
 - Tubes and nets physically alter the habitat
 - Harvesting liquefies sediment
- **Food web effects?**
 - Clam abundance change the ecosystem—they eat plankton that would be eaten by someone else
 - Nutrient effects: increased nitrogen and phosphorus near farms?
- **Genetic effects?**
 - What are the genetic effects of growing geoducks within the range of wild geoduck?
- **Disease effects?**
 - What is the likelihood that having a high concentration of geoducks leads to a disease epidemic? Will this impact the local wild geoduck?
- **Little Peer-Reviewed Science**
- **Heated Debate**

Who are the stakeholders? What do they think?

- Growers
- Environmental advocates
- Local property owners
- Resource Managers: WDFW/WDNR
- Washington Treaty Tribes
- Geoduck Fishermen
- “They are putting feedlots in PS and they are feeding off our fishery resources to fatten up their product”
- “They are picking places with high ecological value...they want the most pristine areas with eel grass and other valuable resources”

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- “The disturbance isn’t continuous. After several tide cycles, you see the critters back.”
- “We try to avoid firefights by looking for areas without multiple use, but those areas are getting harder to find.”
- “ Mature geoducks filter up to 31 gallons of water per day, removing nutrients that promote algae blooms that rob the water of oxygen vital to marine life...and the feces from geoducks helps feed sea grasses that are a critical component of the nearshore habitat.”

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- “Clams are blasted out of the sand with high pressure water hoses, temporarily turning the tideflats into a liquefied, soupy mess.”
- “I came home from work one day a year ago and there it was in front of my house. It’s a horrible eyesore. I wish they would take it out.”

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- “Commercial geoduck clam aquaculture occurs on privately-held or leased lands and to date has been mostly in intertidal areas (on beaches).”
- “A WDFW Aquatic Farm Registration and Washington Department of Health Shellfish License are required to cultivate and sell farm-raised geoducks.”

What else would you like to know about this issue?