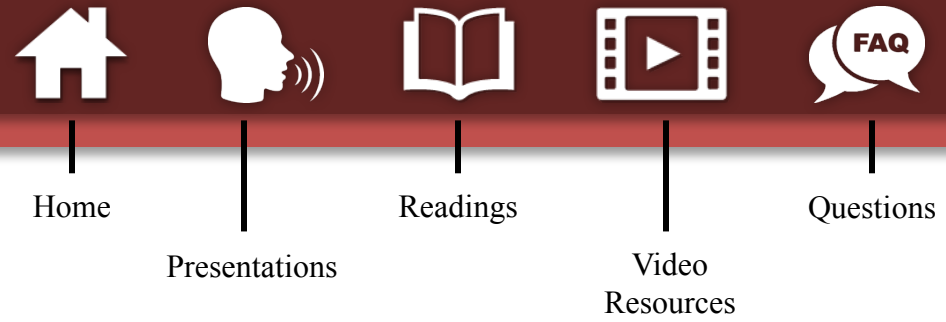
FT 120 – Fisheries of Alaska

8

Southcentral AK Clam Fisheries

Module Composition



Fisheries Technology

This module will cover four main areas:

1. Biology of AK Clam Species
2. Clamming 101
3. Clam Fishery Management
4. Clam Research – Reproduction

When viewing recorded lectures, the slides will automatically advance. The Prev and Next buttons are available but it is recommended you listen and view the recorded lectures in auto mode. You can return to the main menu of the recorded lectures by tapping the recorded lecture icon (speaker).

At the end of each of the areas there are self-check quizzes to make sure that you understand the basic student learning outcomes for each area.

By the end of this module you should be able to:

- List the important clam species of Alaska
- Describe various aspects of clam biology to include: growth, reproduction, and role in the ecosystem
- Identify various external and internal anatomical features of bivalves
- Describe different kinds of clamming techniques
- Correlate clam habitat type to probability of species presence
- Differentiate between the types of abundance estimates
- Describe techniques used to study clam growth
- Identify techniques for determining clam maturity

Readings

Fisheries Technology

Read pp1-4 in
Clams1.pdf in iBooks

Read page 1 in
Clams2.pdf in iBooks

Presentations

Fisheries Technology

About the Presenter	Joel Markis - UAS Assistant Professor
Clam Biology	General Biology of Bivalves (18 minutes)
Clam Fishing	How are Clams Harvested (12 minutes)
Clam Management	Clam Management (17 minutes)
Clam Research	Research on Clam Reproduction (15 minutes)

About the Presenter

Joel Markis

Assistant Professor
Fisheries Technology
University of Alaska Southeast

Growing up in Southcentral Alaska Joel was continuously exposed to the outdoors and fisheries. After graduating from Bartlett High school in Anchorage, he pursued a growing passion for fisheries by attending Montana State University in Bozeman, MT where he received a B.S. in Fish and Wildlife Management while honing his skiing and fly fishing skills. This newfound knowledge allowed Joel to work various fisheries jobs all over Alaska, traveling to exotic places all while under the context of 'work'. After spending time in places like Katmai, Aniakchak, Kenai Fjords, Denali, The Tongass and Wrangell St. Elias he decided to pursue a graduate degree in Marine Biology from the University of Alaska Fairbanks where he used SCUBA to study the nearshore fish and habitat complexity in Kachemak Bay.

Before coming to the UA system, Joel was a research fisheries biologist with the Kachemak Bay Research Reserve in Homer. While there he studied marine ecology and questions pertaining to fish habitat use in the nearshore environment. Joel also coordinated a nationwide water quality and meteorological monitoring project and worked on a hardshell clam recruitment and growth study focused on determining the timing of spawning, recruitment and growth of pacific littleneck clams.

Joel has been with the Fisheries Technology program since 2013 when he was an outreach coordinator and adjunct faculty at the Homer campus. In his free time Joel enjoys backcountry skiing, fishing, sailing, is an avid Scuba diver and dive instructor, and generally likes spending time outside. He is passionate about teaching and Alaskan fisheries.

Sport and Commercial Clamming in SC AK

Species of Clams

2 Primary Designations

Hardshell Clams

Typically in more rocky gravely habitats

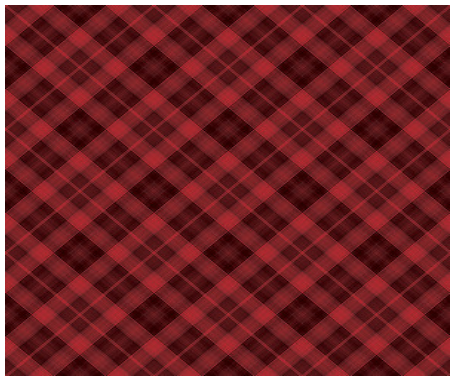
Softshell Clams (Razors)

Mud sand habitats

Hardshell Clams

Pacific Littleneck Clam (*Protothaca staminea*)

- Steamer Clams
- Plaid Clams Crosshatching



Hardshell Clams

Butter Clam (*Saxidomus gigantea*)

WA Butte Clam

Parallel lines - Pinstripe

Hardshell Clams

Basket Cockle (*Clinocardium nuttallii*)

Heart Cockle

Softshell Clams

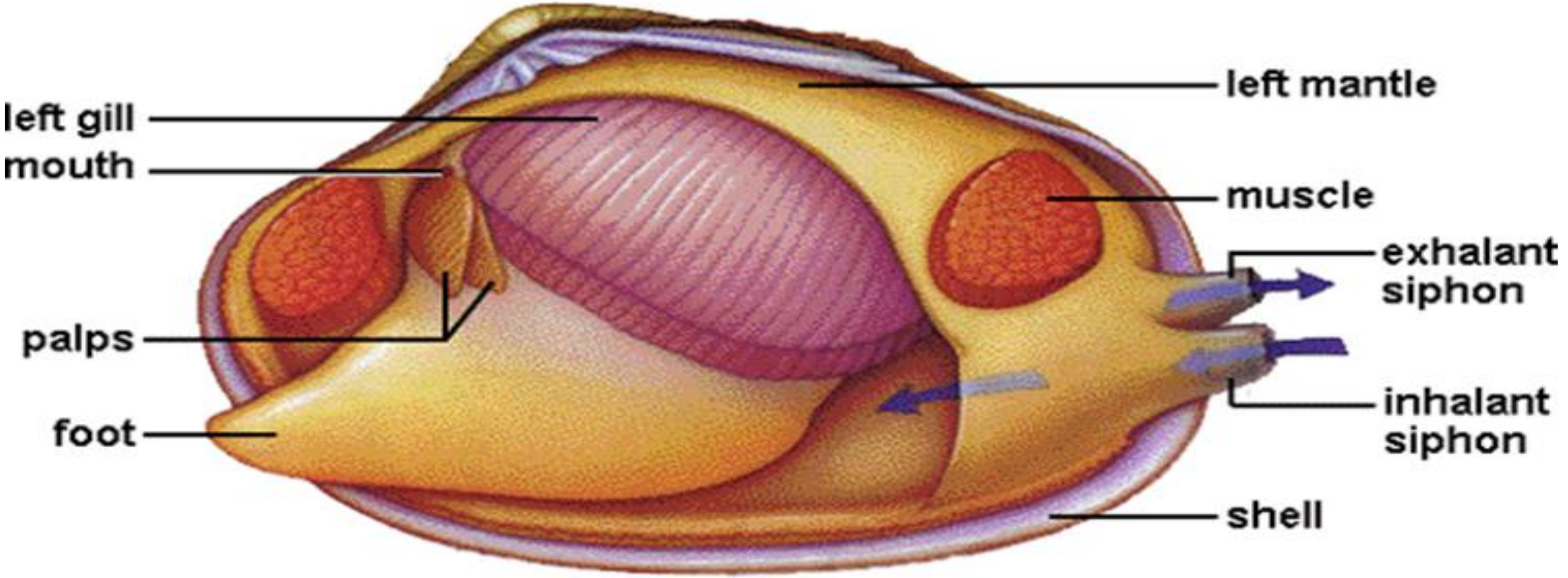
Pacific Razor Clam (*Siliqua patula*)

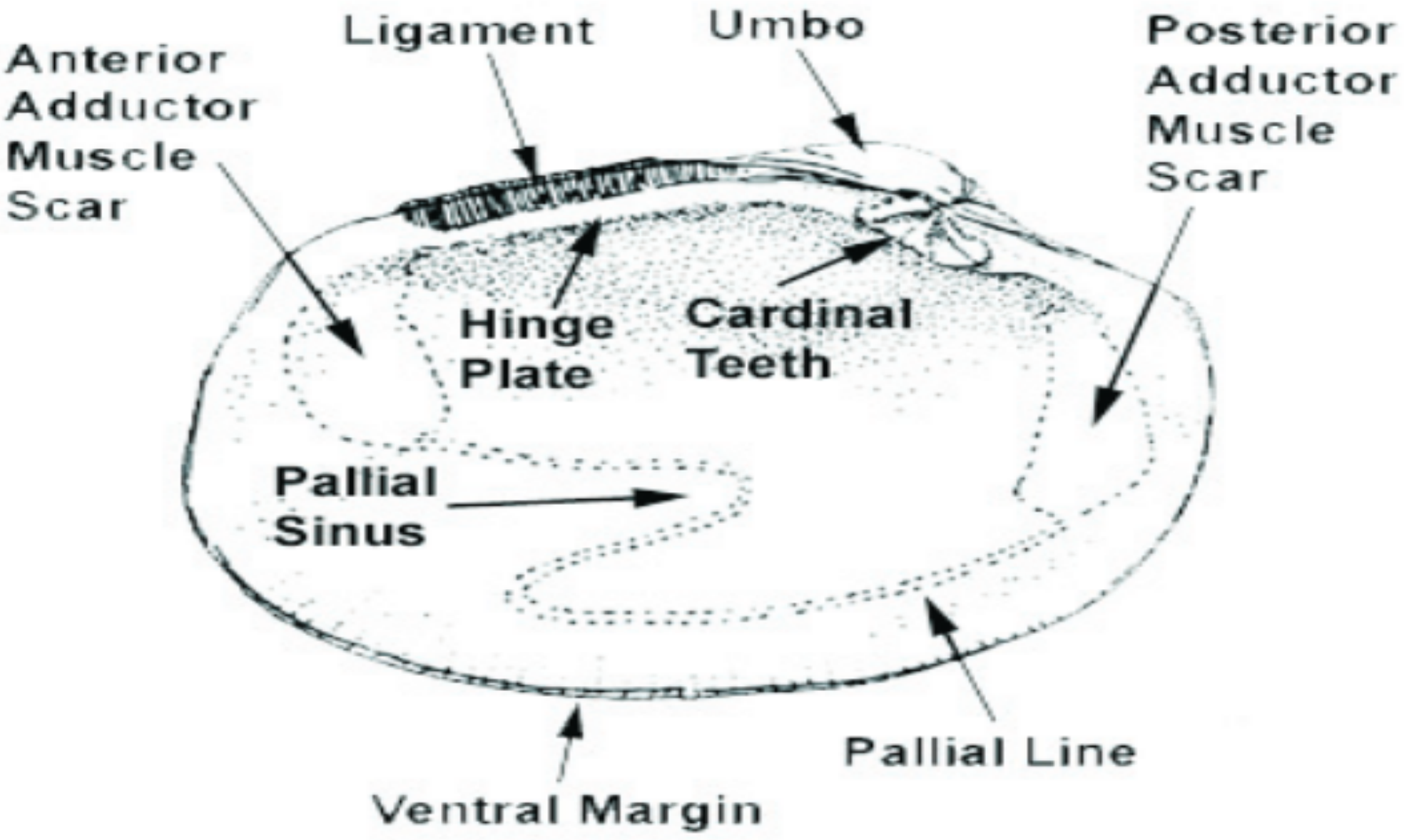
Razor Clam

Clam Biology

Kingdom:	Animalia
Phylum:	Mollusca
Class:	Bivalvia
Order:	Veneroida
Family:	Veneridae

Clam Biology




Ligament
Umbo
Anterior Adductor Muscle Scar
Posterior Adductor Muscle Scar
Hinge Plate
Cardinal Teeth
Pallial Sinus
Ventral Margin
Pallial Line

Anatomy and Movement

Anatomy and Movement

Pacific Littleneck

Size
up to ~10 cm (4 in)

Age
Up to 14+ yrs

Range/Distribution
Aleutian Islands, Alaska, south to Baja California

Diet
Filter feeders. Plankton particles, benthic diatoms

Predators
Moon snails, octopus, Sea Stars, Otters

Reproduction
Broadcast spawners

Butter Clam

Size
Over 13 cm (4 in)

Age
Up to 18+ yrs

Range/Distribution
California, north to the Aleutian Island

Diet
Plankton and detritus

Predators
bears, otters, Octopus, Sea Stars, Moon Snails, ???

Reproduction
Broadcast spawners

Razor Clams

Size
Over 30 cm (12 in)

Age
Up to 11+ yrs

Range/Distribution
Pismo, California, north to the Aleutian Islands.

Diet
Plankton and detritus

Predators
bears, otters ???

Reproduction
Broadcast spawners in spring

Clam vs Salmon mgmt…

Clam Biology

Quiz - 4 questions

Last Modified: Jun 23, 2015 at 04:14 PM

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Edit in Quizmaker

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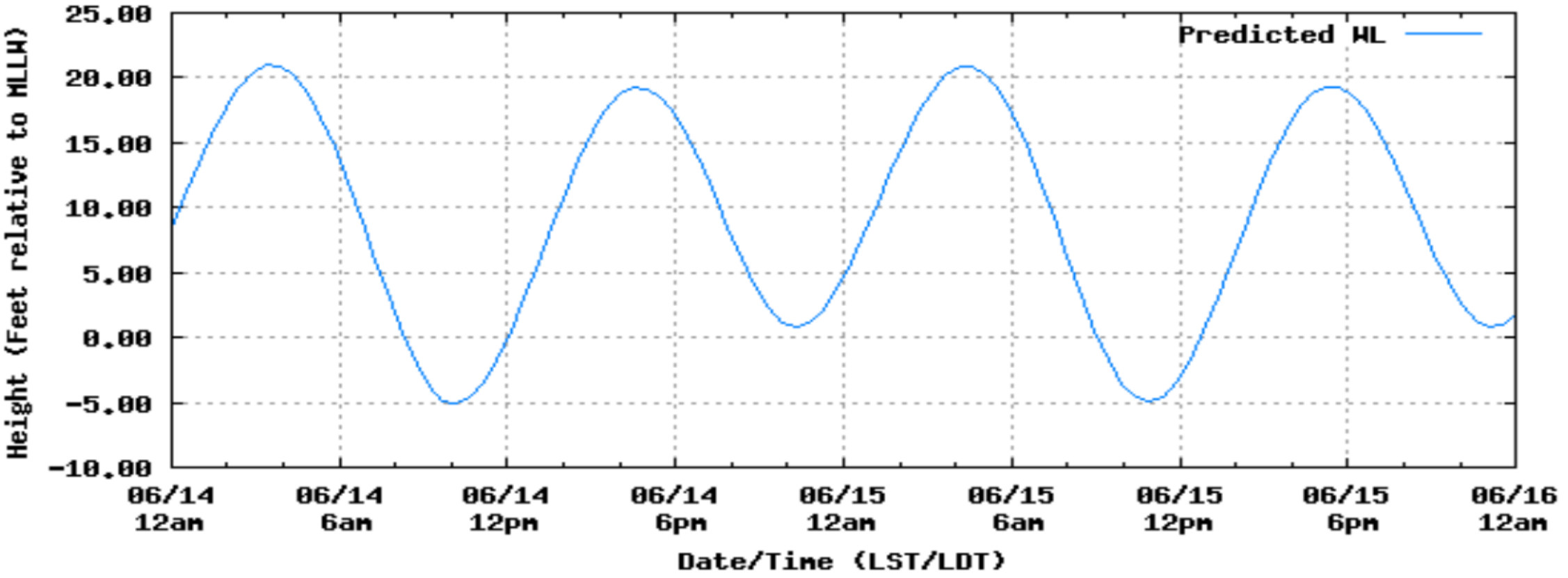
Clamming!

Clamming!

Clamming (and almost everything) revolves around tides

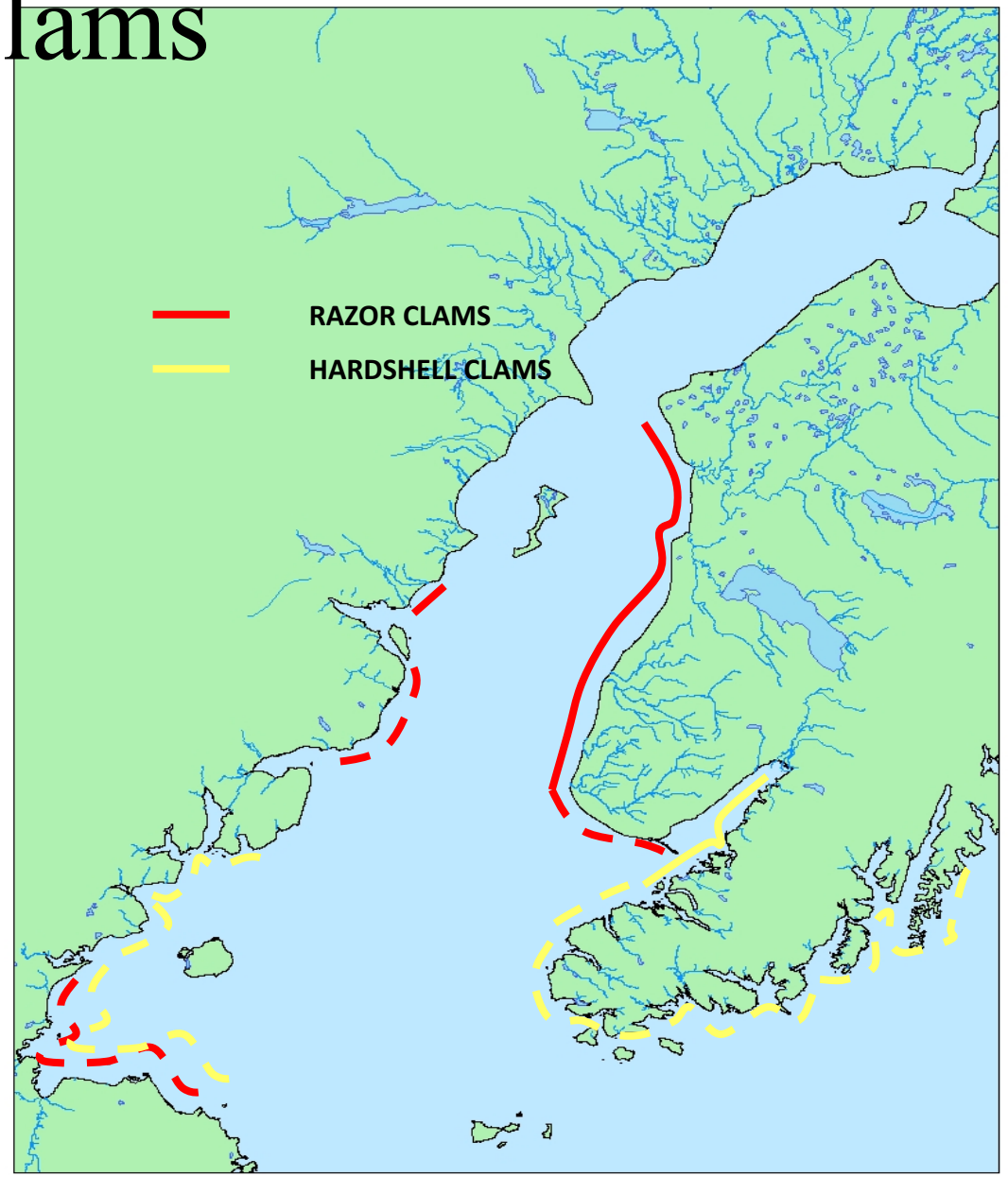
Minus tides are best (the lower the better)



Tides Rule!

Tide stories

Cook Inlet Clams



Razor Clams

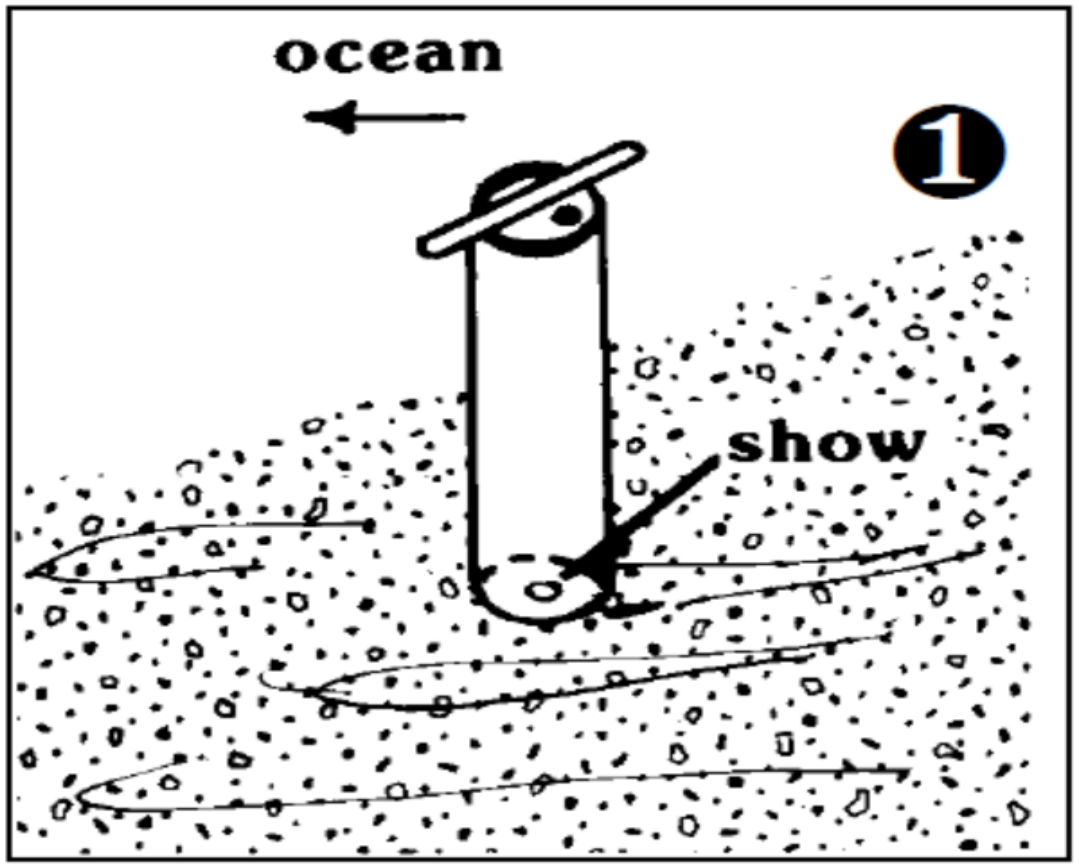
Razor Clam Regulations

Sport Fishing License (have it on you!)

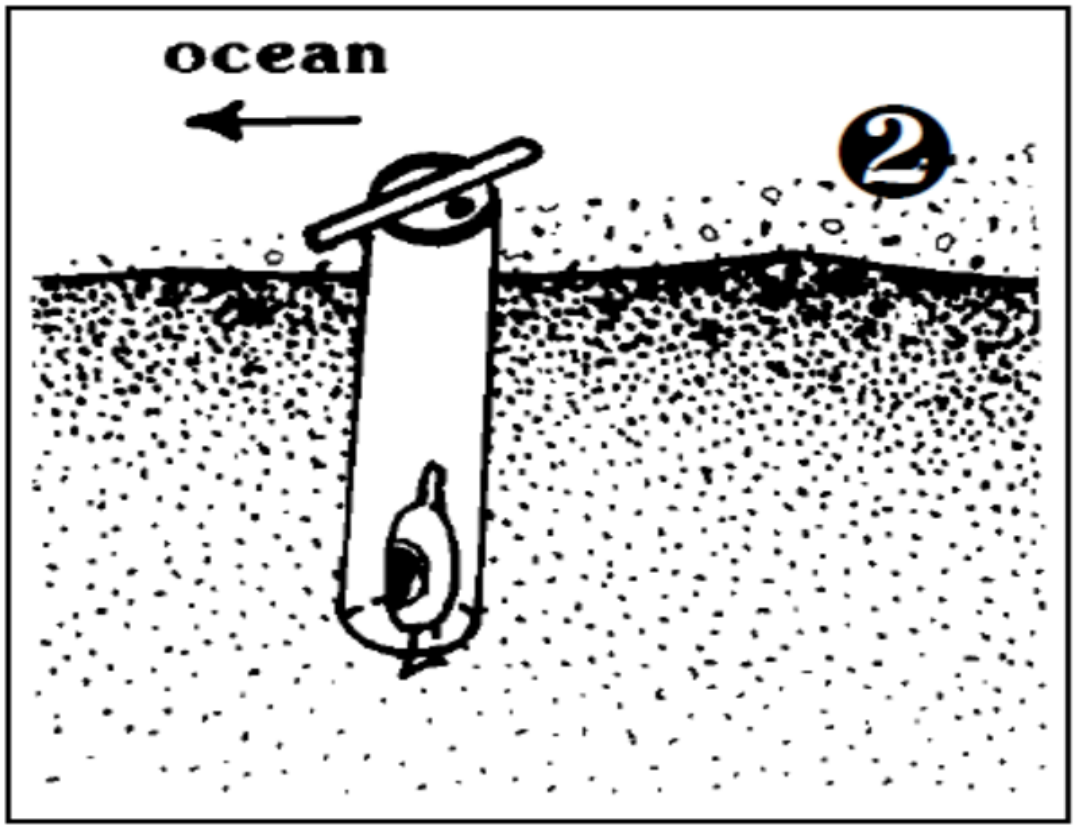
Bag Limit: first 60 per day that you dig

Possession limit: 120

Razor Clamming Tools

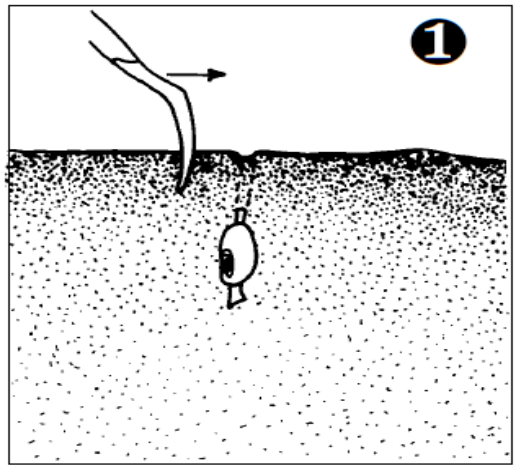


1. Place the tube over the "show." Check the impression of tube in the sand to center the clam.

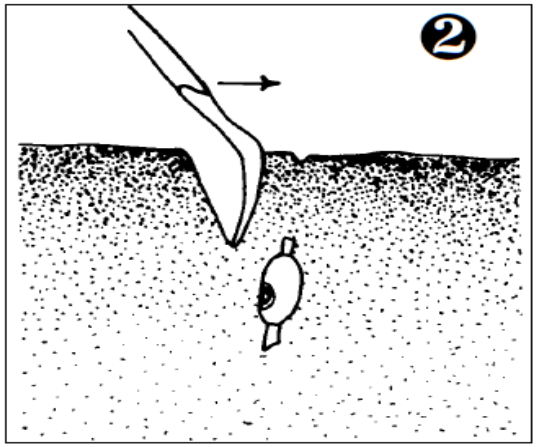


2. Work the tube in carefully with an up-and-down, rocking or twisting motion. Place finger or thumb over air vent, pull up. Remove the core of sand holding the clam. Do this in two or more stages if desired. **DON'T HURRY!**

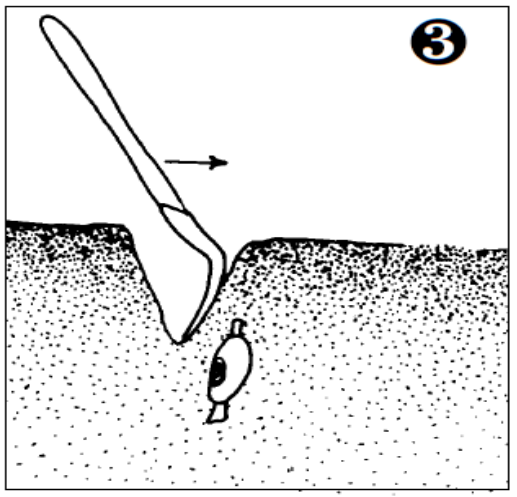
Using a Clam Shovel



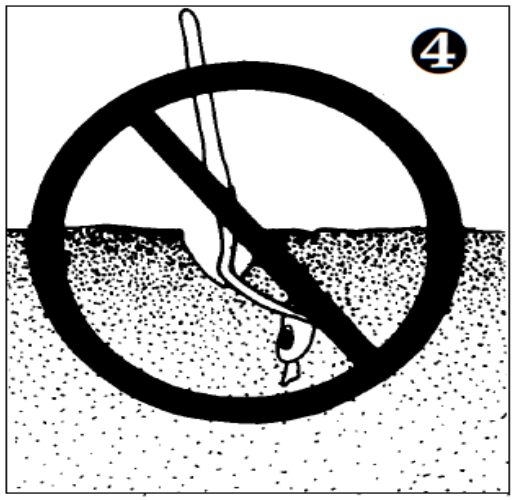
1. Insert shovel 3 to 6 inches from the "show," depending on the length of the blade and the amount of curve in the blade. Longer, more curved blades are started farther from the show.



2. Remove sand with a lifting motion. Try twisting the shovel at the same time. Note that the blade remains nearly vertical.



3. The next shovelfuls expose the clam enough to reach down and remove it by grasping the neck or shell. Note that the shovel and the hole to the side of the clam, not on top of the clam.



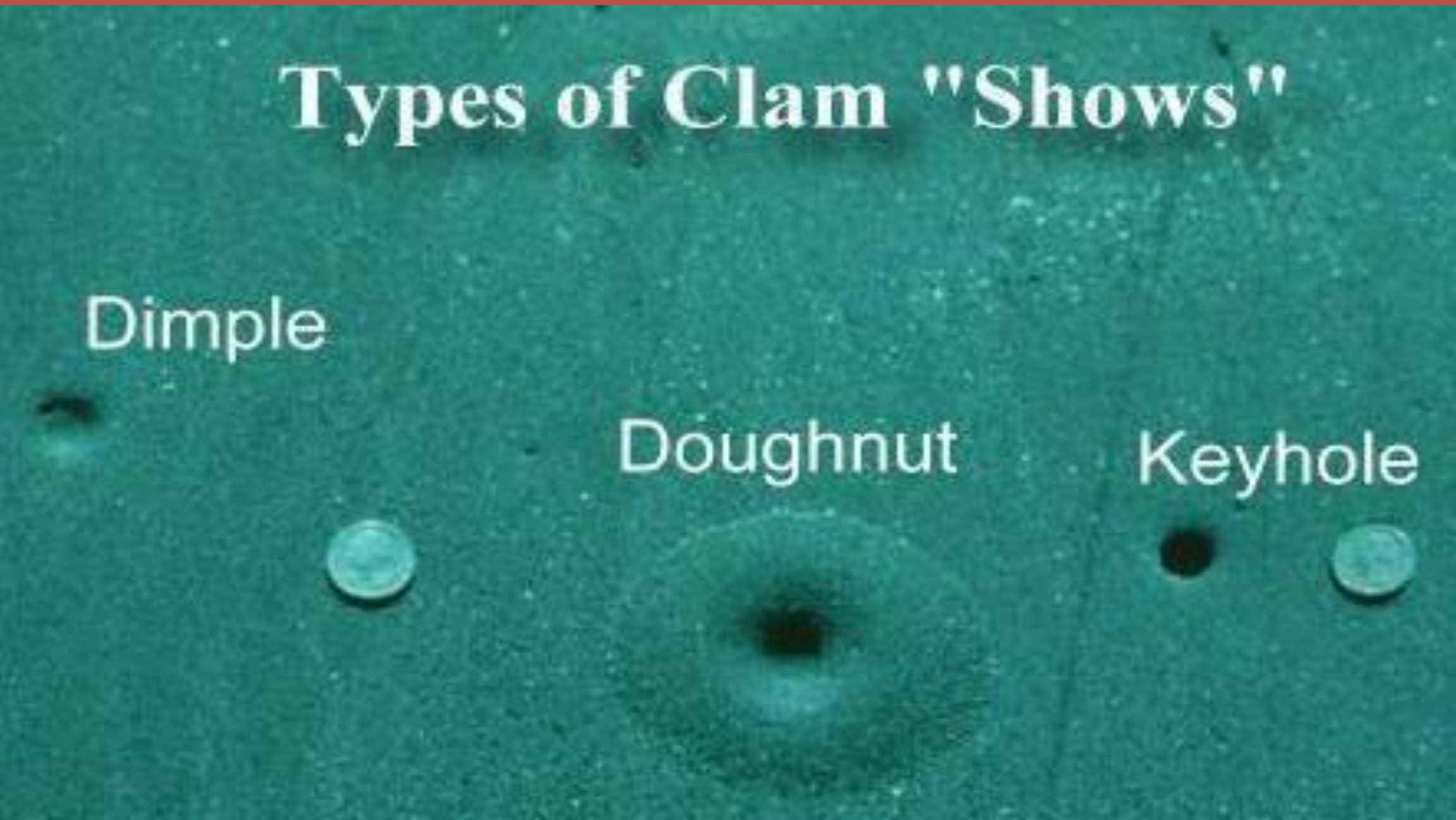
4. DON'T pry back on the handle. This cuts off the neck or smashes the clam. Also, don't try to dig too fast. Broken clams still count toward your bag limit, and may even cut your hand.

It is Flipping Cold!

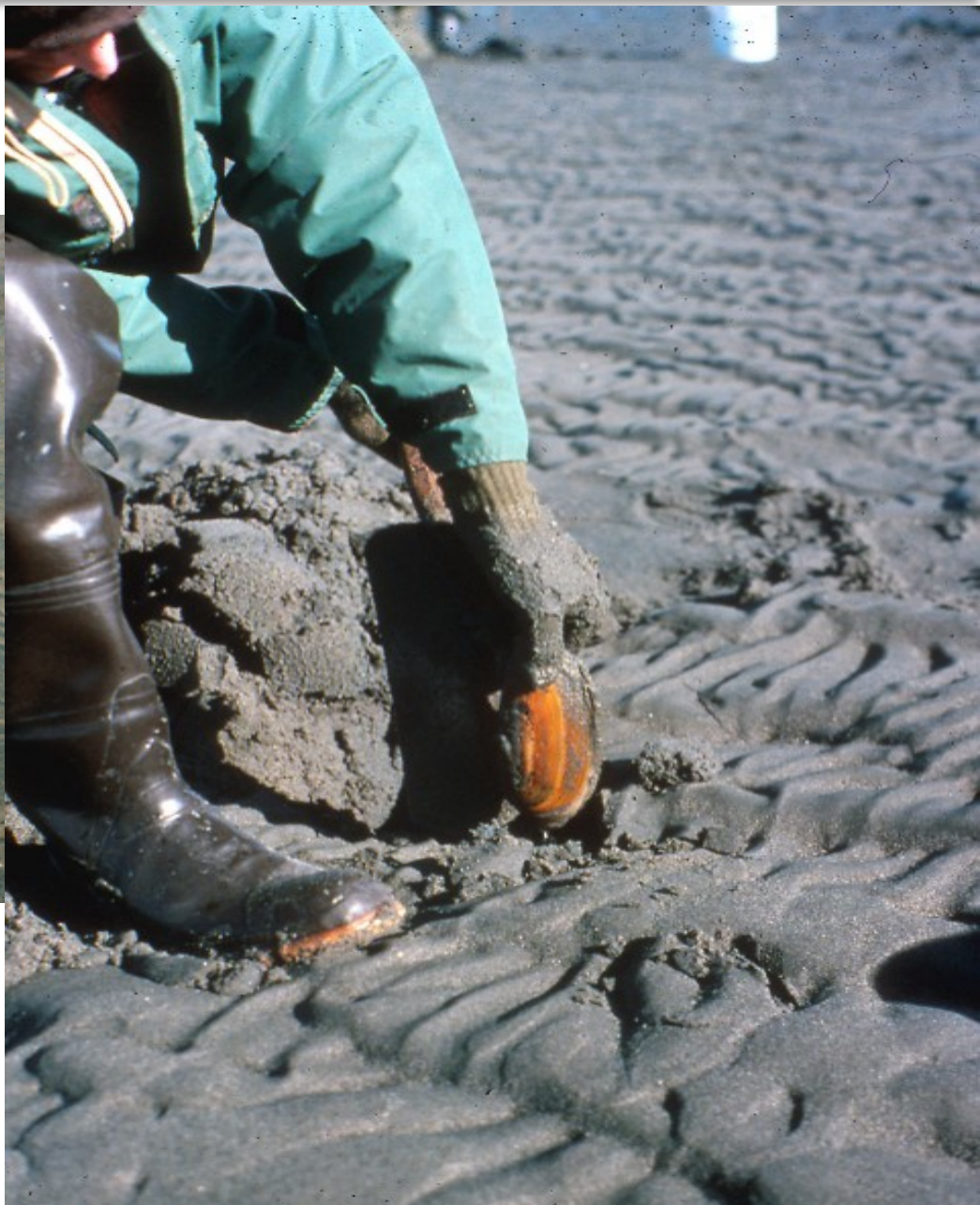
Always a Circus

Where do you dig?

Clamming


Types of Clam "Shows"
Dimple
Doughnut
Keyhole

Clamming



Processing

Hardshell Clams

Littleneck (Protothaca staminea)

Butter clam (Saxidomus giganteus)

Hardshell Clam Regulations

Sport fishing license!

Littleneck Clams

Bag limit 80 per day

Possession limit 80

Minimum size 1½” wide

Butter Clams

80 per day / 80 in possession

2 ½” wide to harvest

Subsistence permit

Clamming Tools

Variable habitat

Break

Clamming

Quiz - 4 questions

Last Modified: Jun 23, 2015 at 04:00 PM

PROPERTIES

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Edit in Quizmaker

Edit Properties

Clam Management

How are clams Different?

- They stay put (for the most part)
- They are broadcast spawners
- Typically recruit into the population in pulses
- Susceptible to mass die off (Winter freeze)

Clam Management

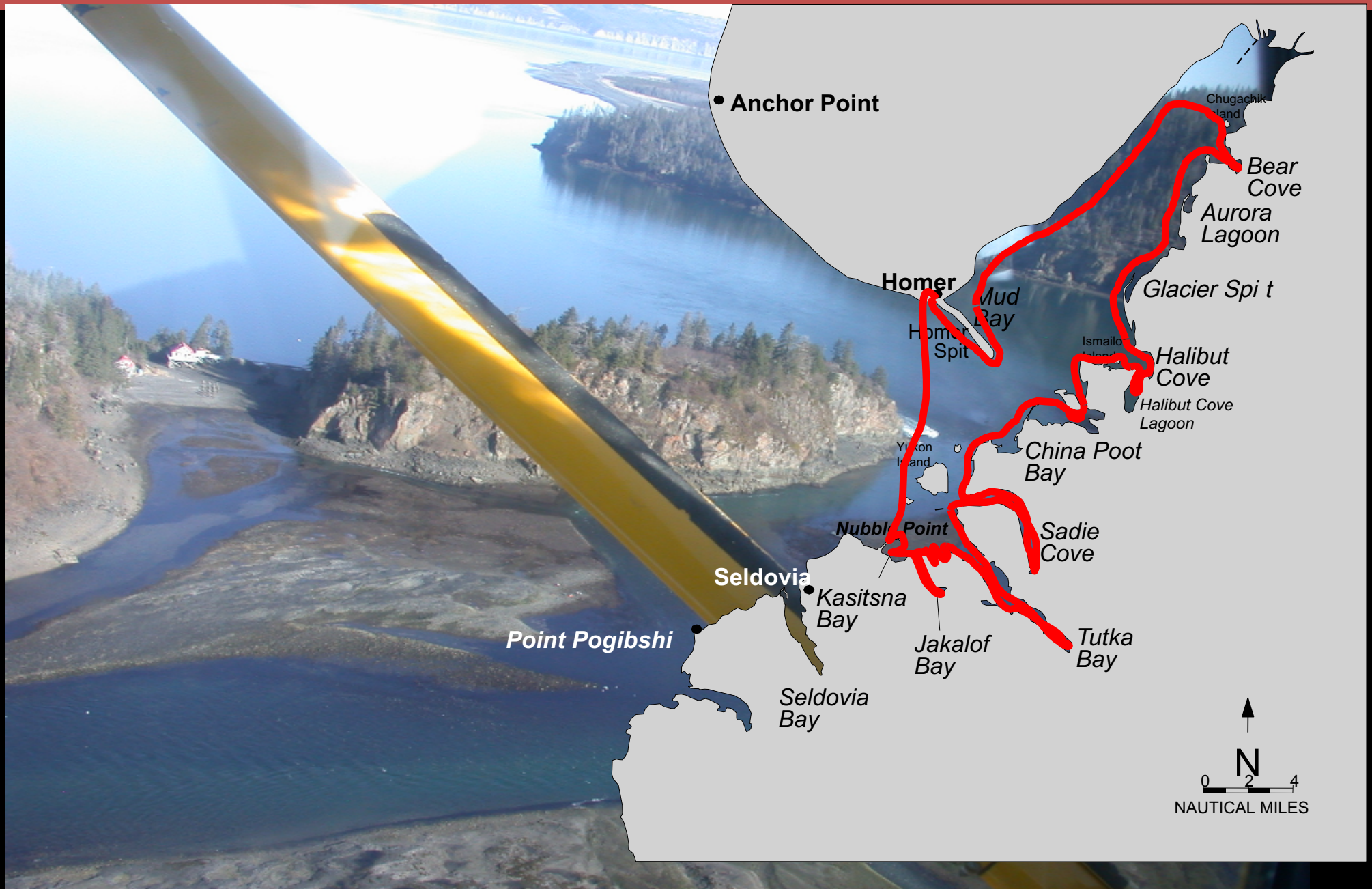
What do we need to Know?

- How many
  - Population
- Harvest
  - Number
  - Size
  - Age

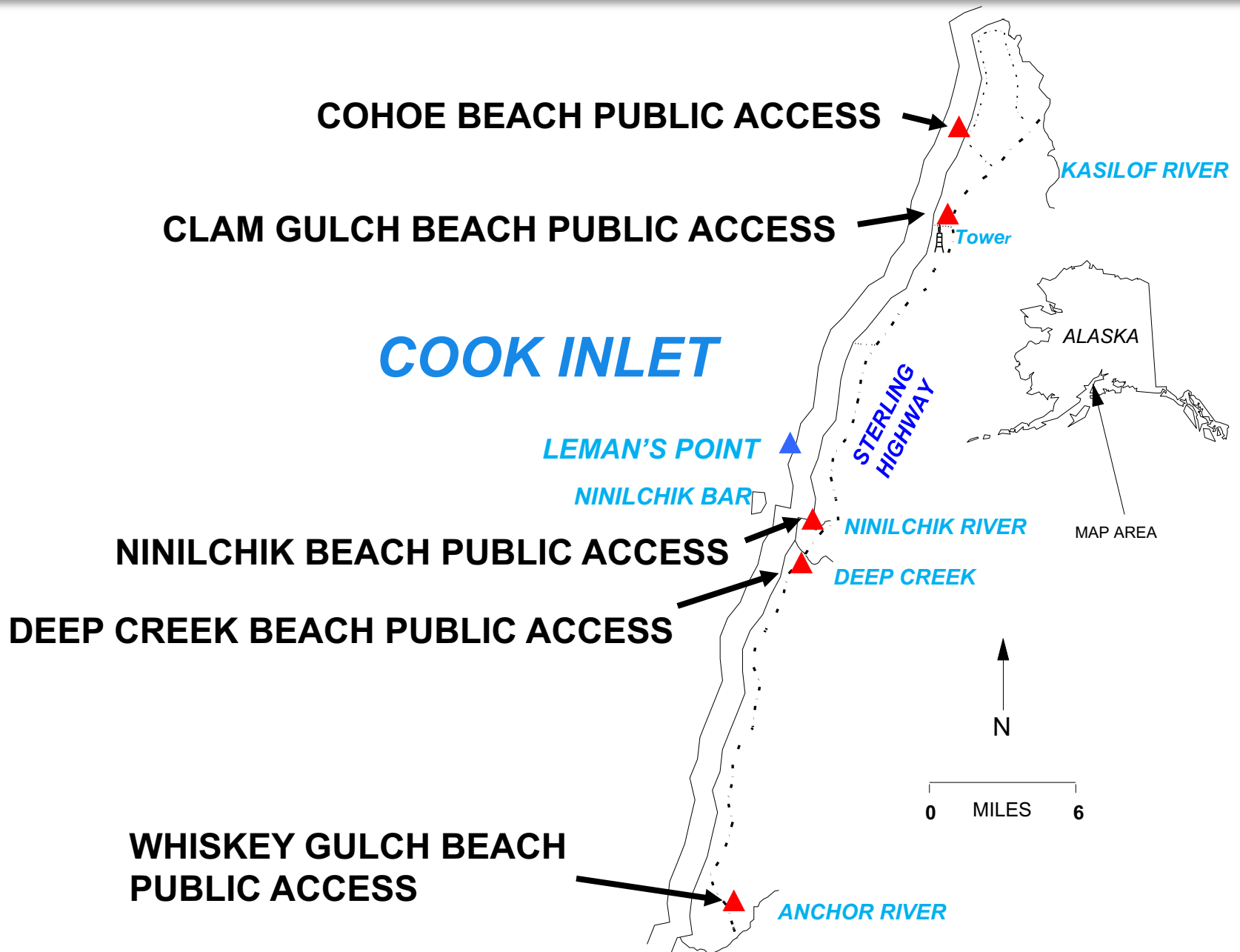
Harvest assessment

- Sport/PU
  - Mail survey 1981-present
  - Permit 1997-2002 (biased)
  - Aerial digger counts 2004-2007, 2009-
- Commercial
  - Fish tickets
  - Harvest maps

Clam Management



Clam Management

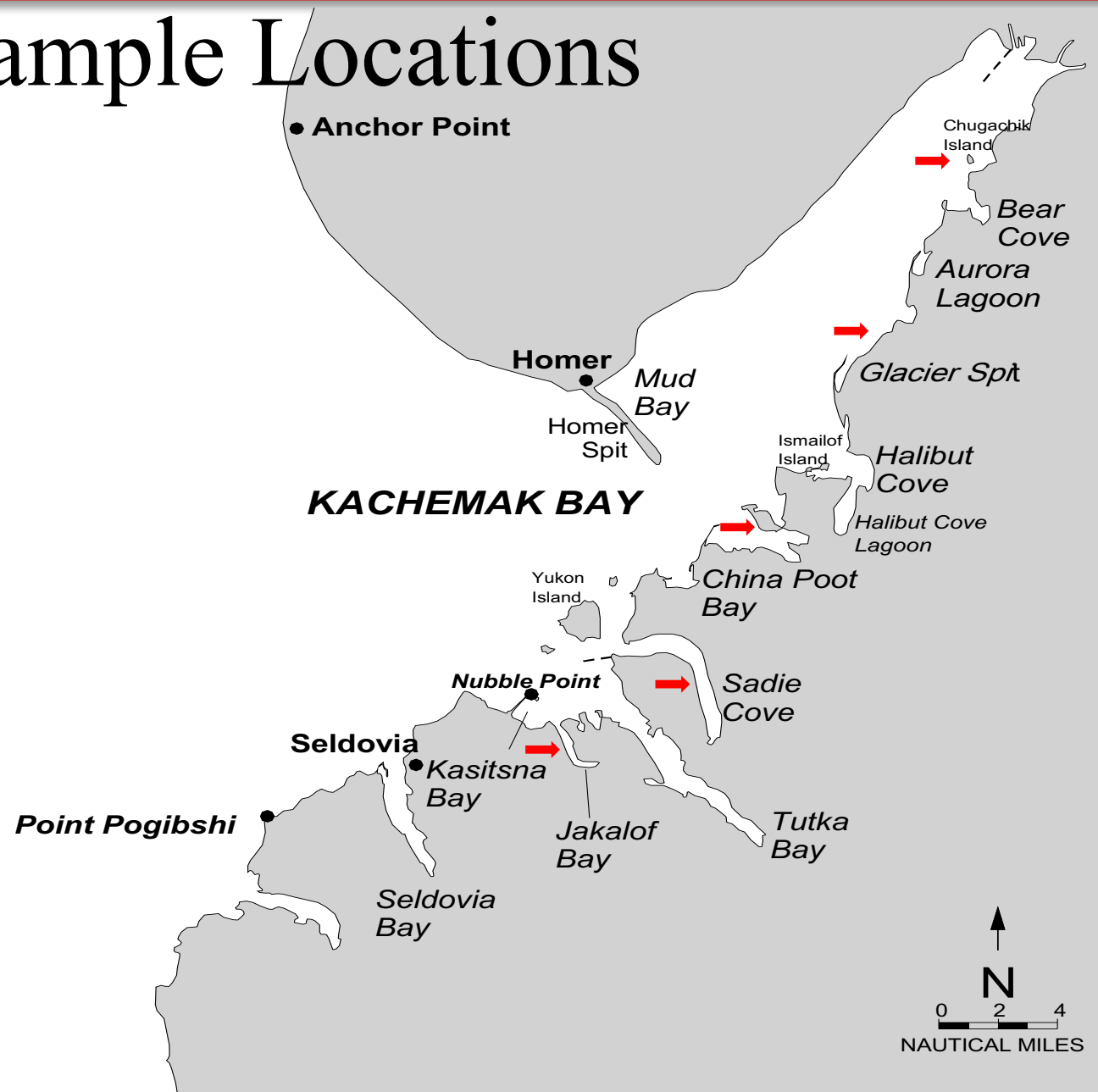


Aerial Harvest Surveys

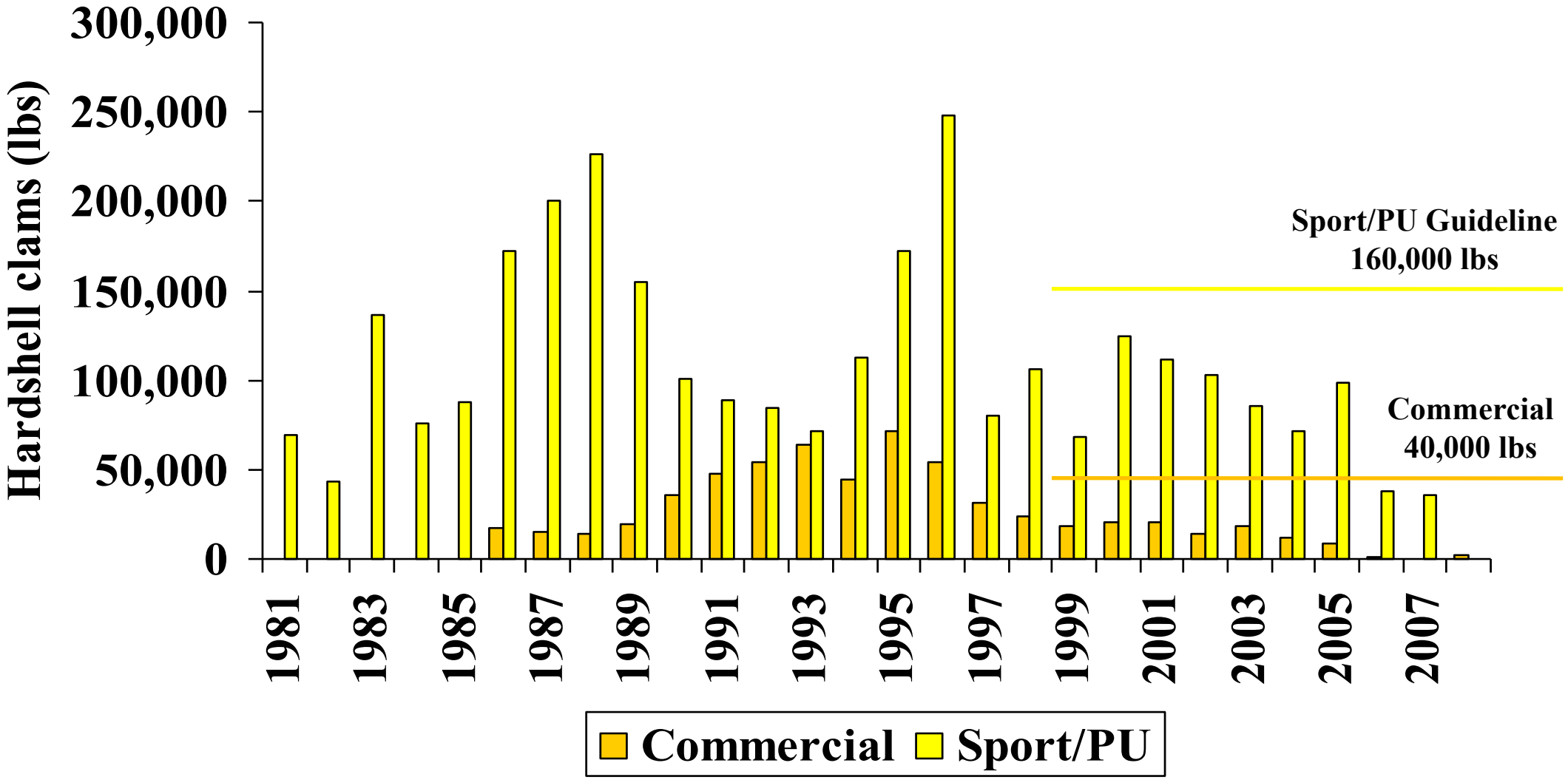
Clam sampling Hardshell

- Population
  - Density/abundance/biomass
  - Species composition
- Biological
  - Length
  - Age
- Habitat
  - Substrate
  - Elevation

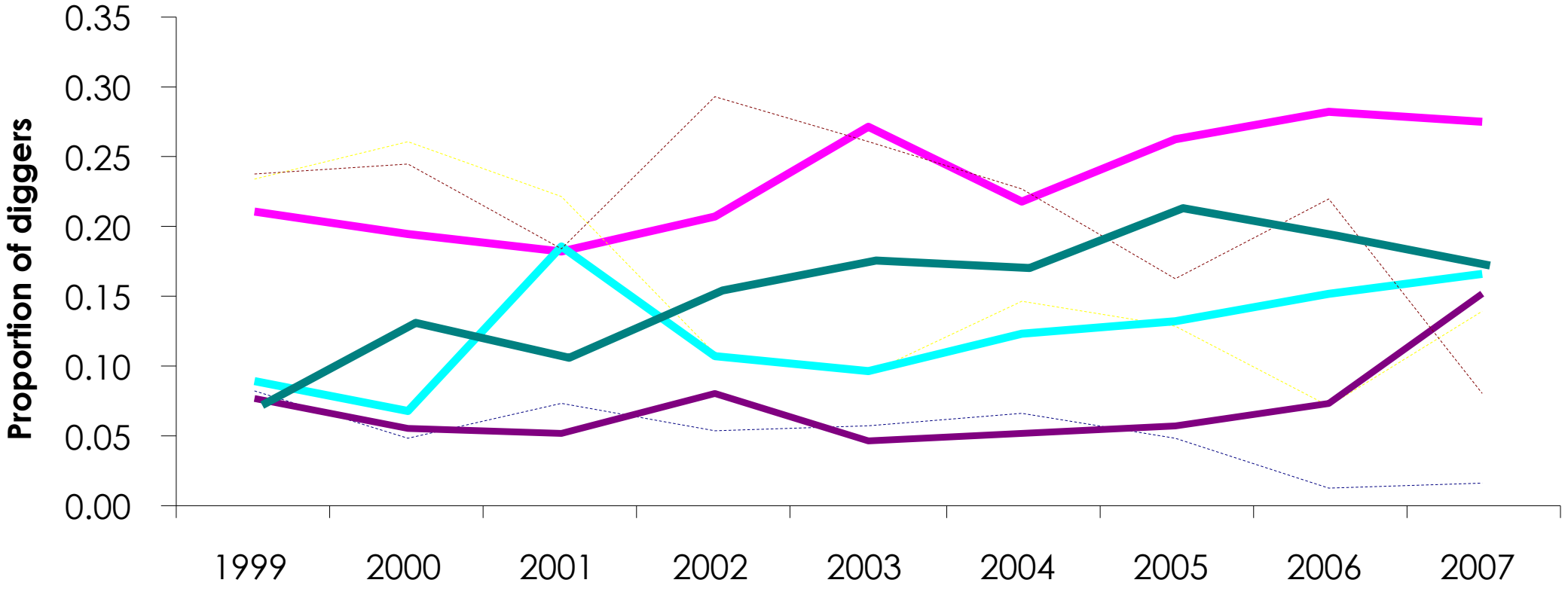
Kachemak Bay Sample Locations



Harvests and Harvest Guidelines



Distribution of Diggers from Aerial Counts



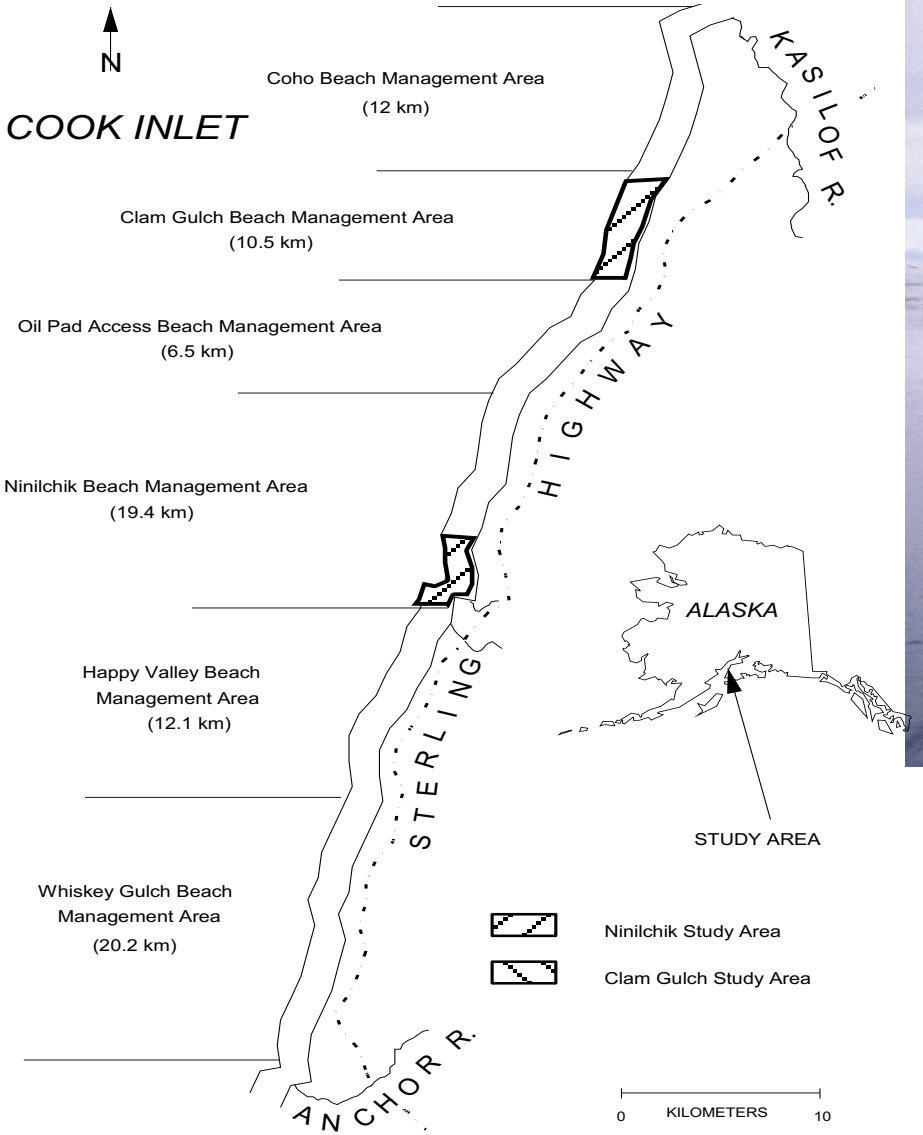
OVERALL INCREASE

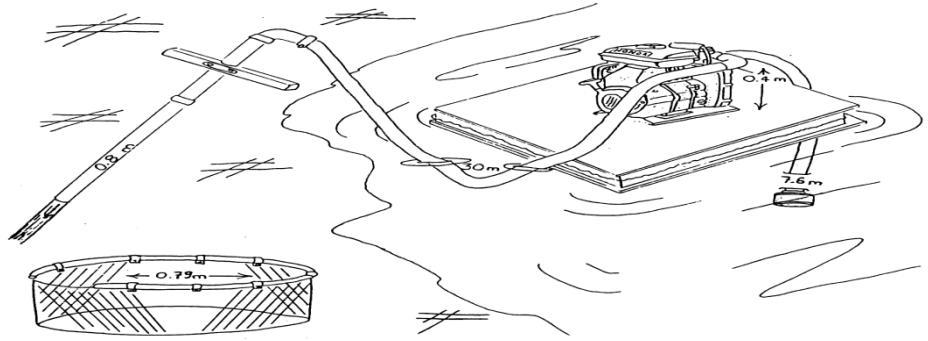
Jakolof
Kasitsna
Other
China Poot

OVERALL DECLINE

Sadie Cove
Halibut Cove Lagoon
Homer Spit

Clam Pumping for Abundance





Clam Management

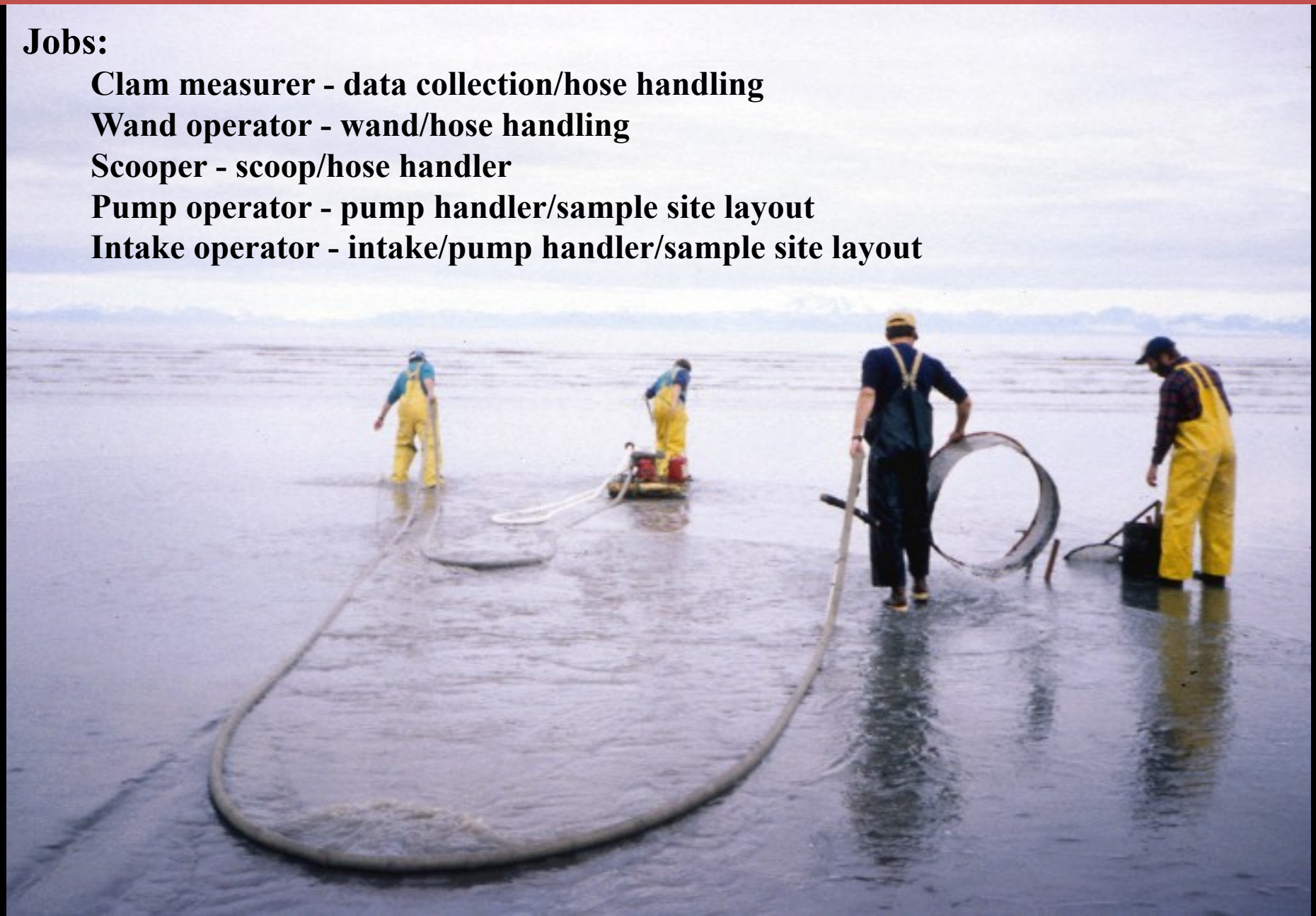
Goal 7 holes every 50 feet

Take 3 minutes or less/hole

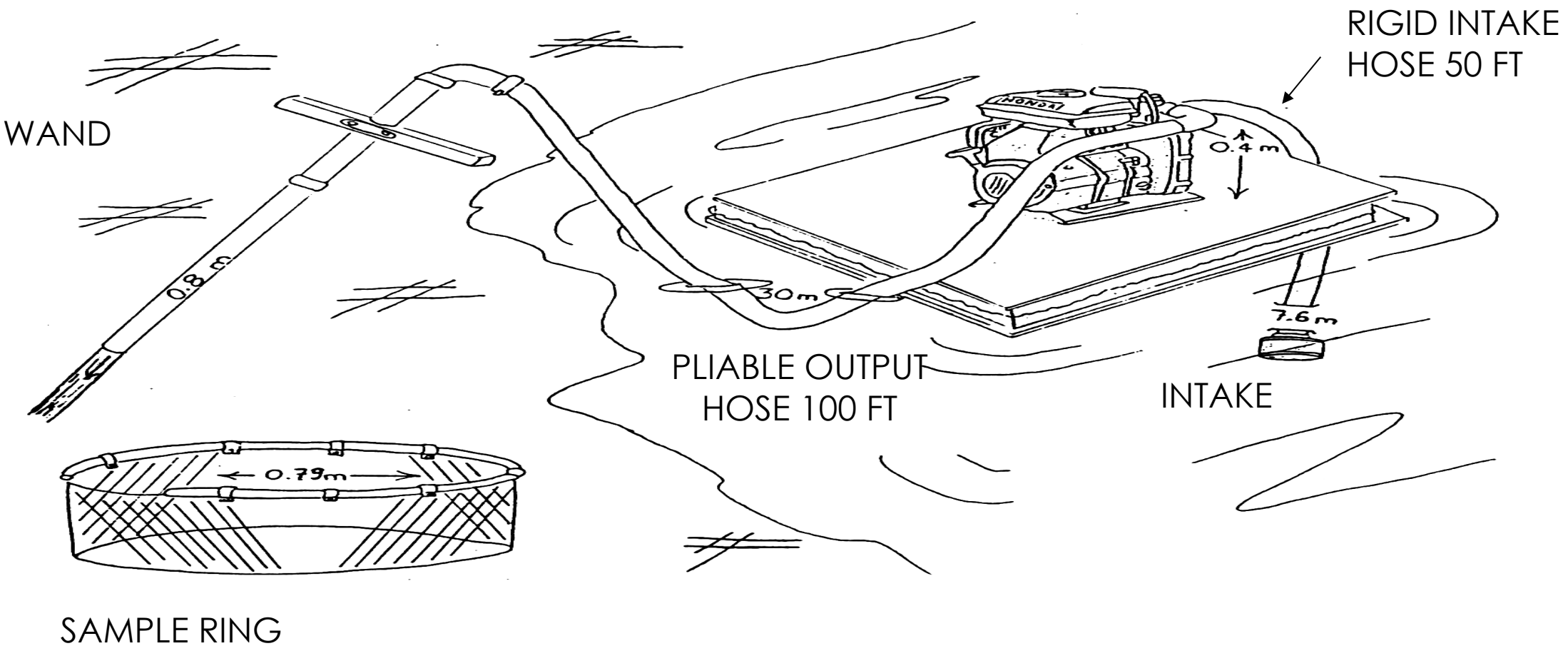
Clam Management

Jobs:

- **Clam measurer - data collection/hose handling**
- **Wand operator - wand/hose handling**
- **Scooper - scoop/hose handler**
- **Pump operator - pump handler/sample site layout**
- **Intake operator - intake/pump handler/sample site layout**



Clam Management



Clam Management

Clam Management

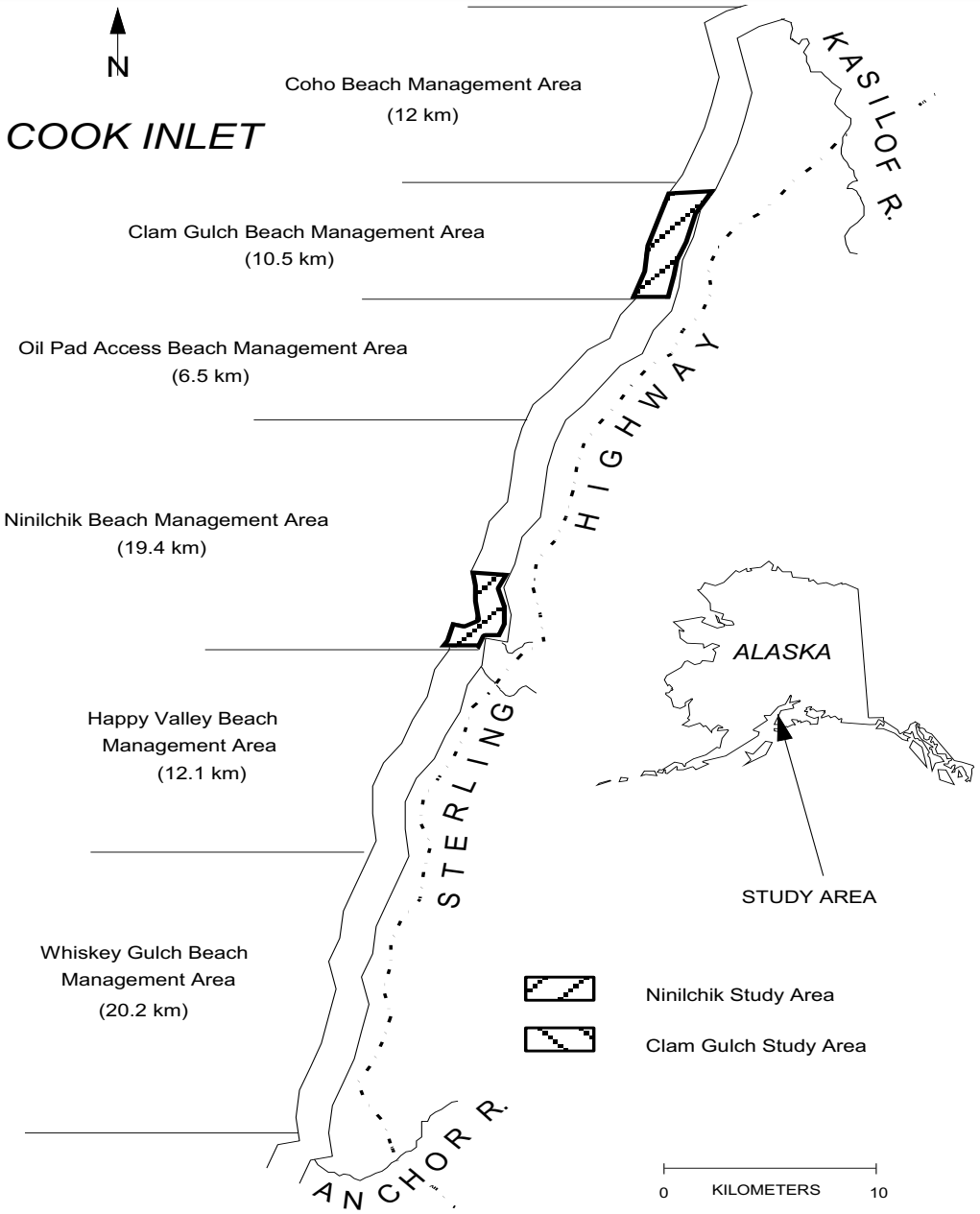
Clam Management

Clam Digging for ASL

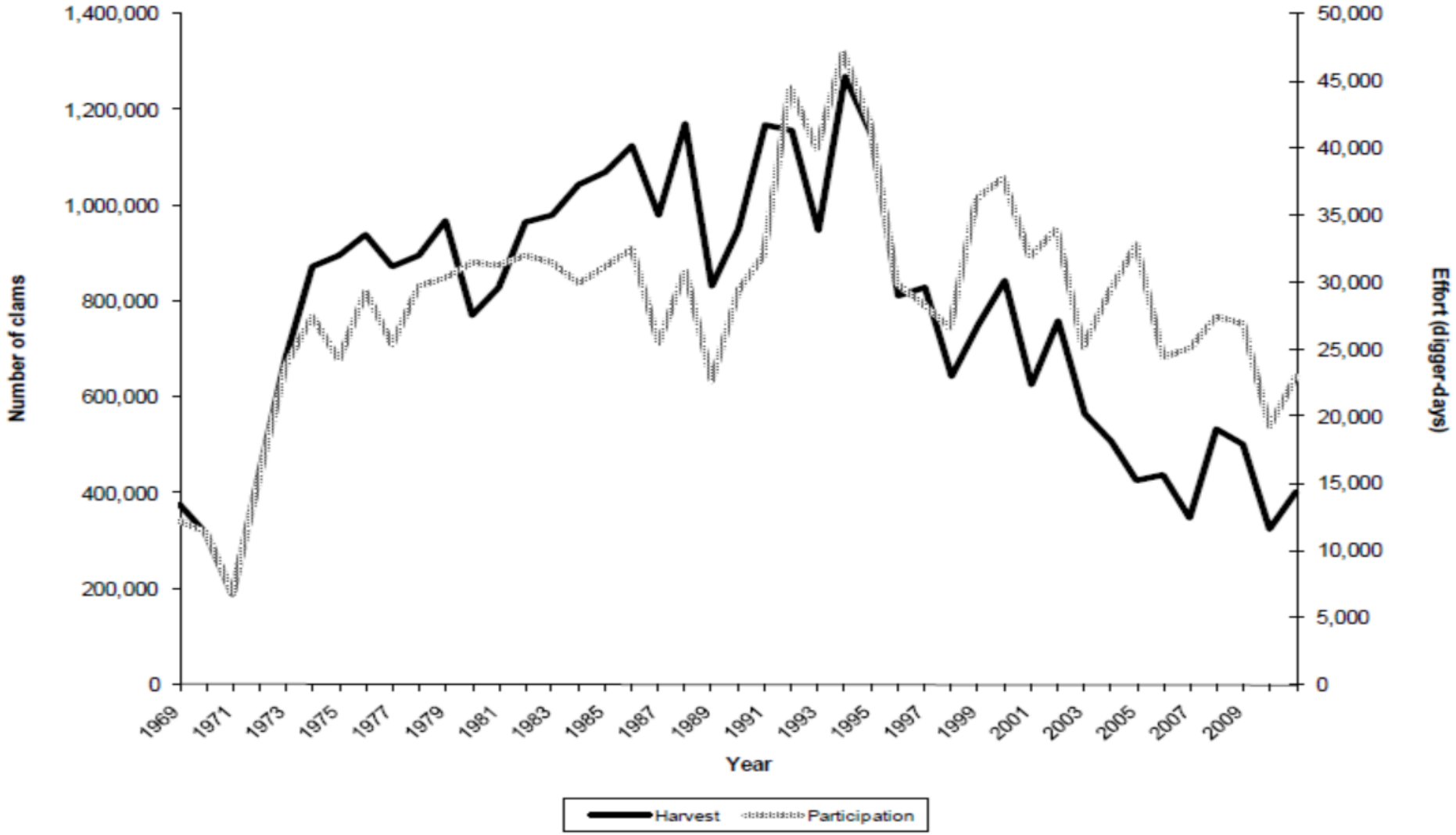
Clam Management

What do we Know?

- How many
  - Population
- Harvest
  - Number
  - Size
  - Age



Clam Harvest and participation



Clam Management

Quiz - 4 questions

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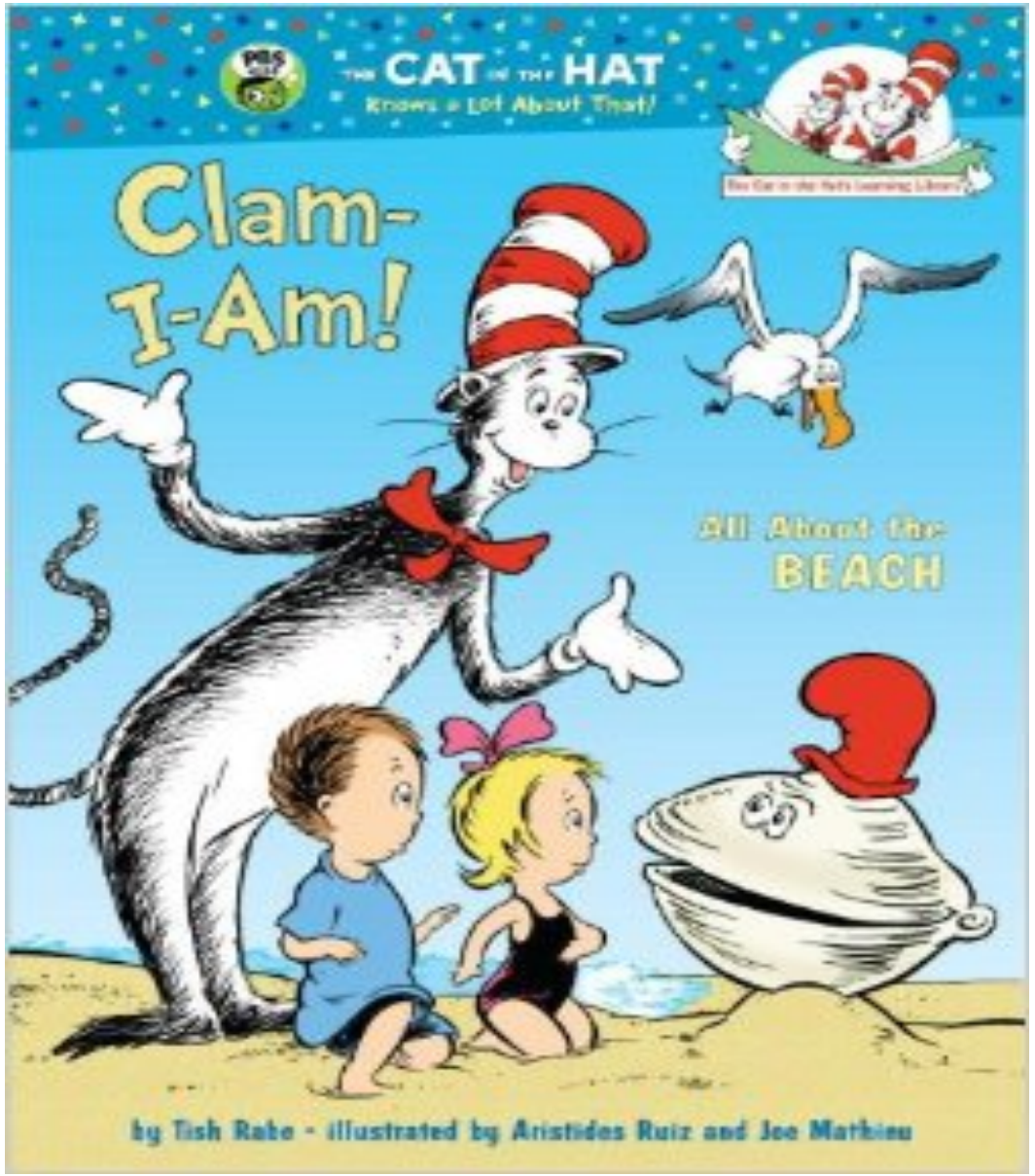
Clam Research



Where do clams come from?

How fast do clams grow?

When do clams spawn?

When do clams recruit out of the water column

How fast do clams grow?

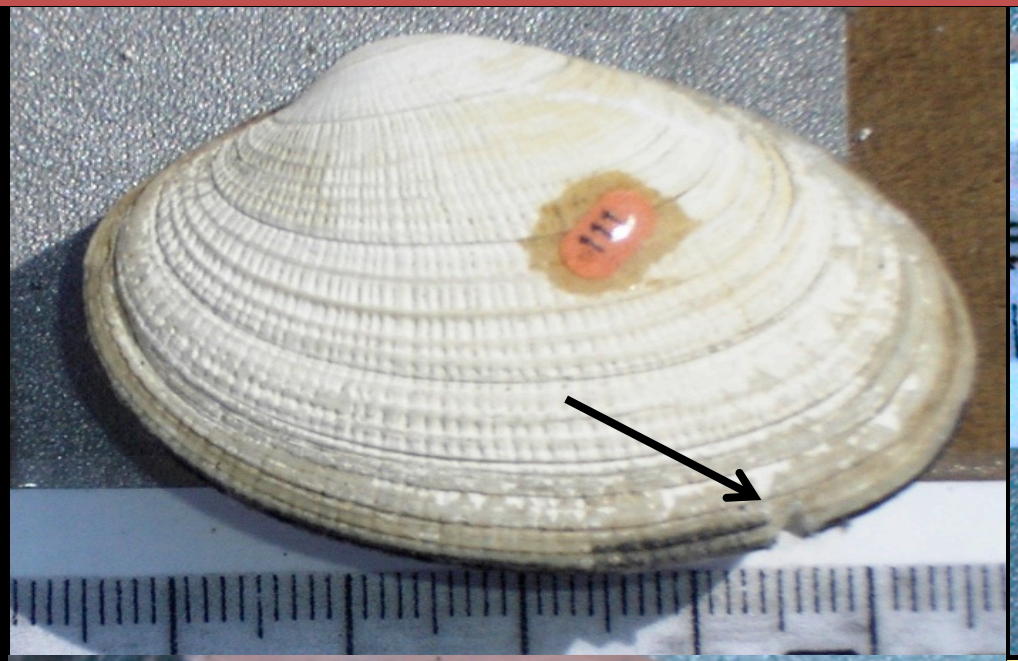
Clams don’t move so mark and re-measure

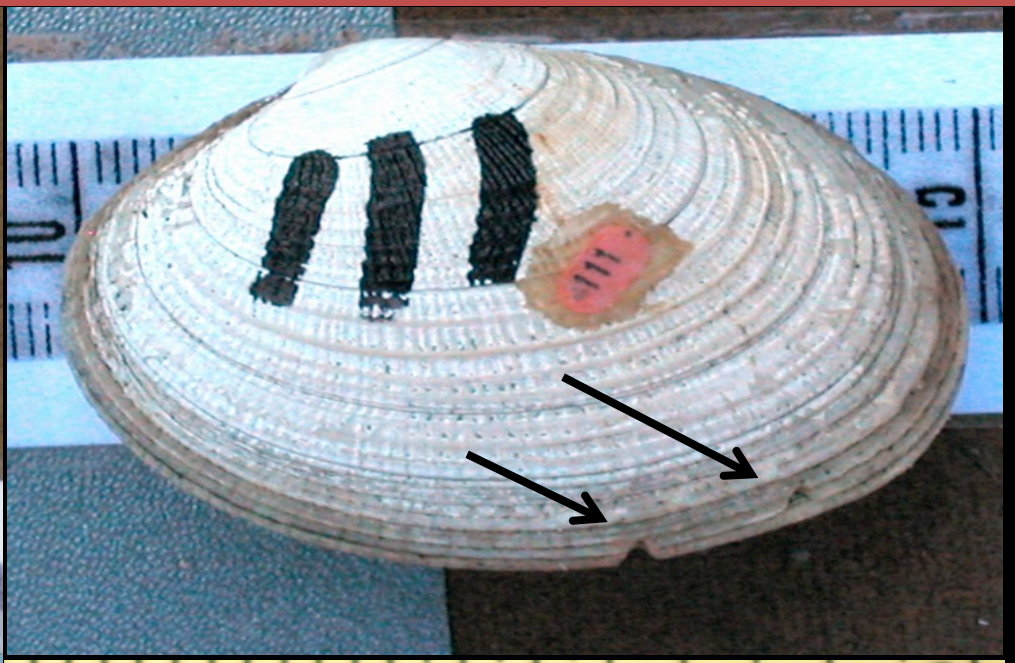
Not as easy as it sounds

Clam Research


Sharpie
FINE POINT
Permanent Marker
228
228


THE NORTH FACE
Sharpie
Fine Point
Permanent Marker



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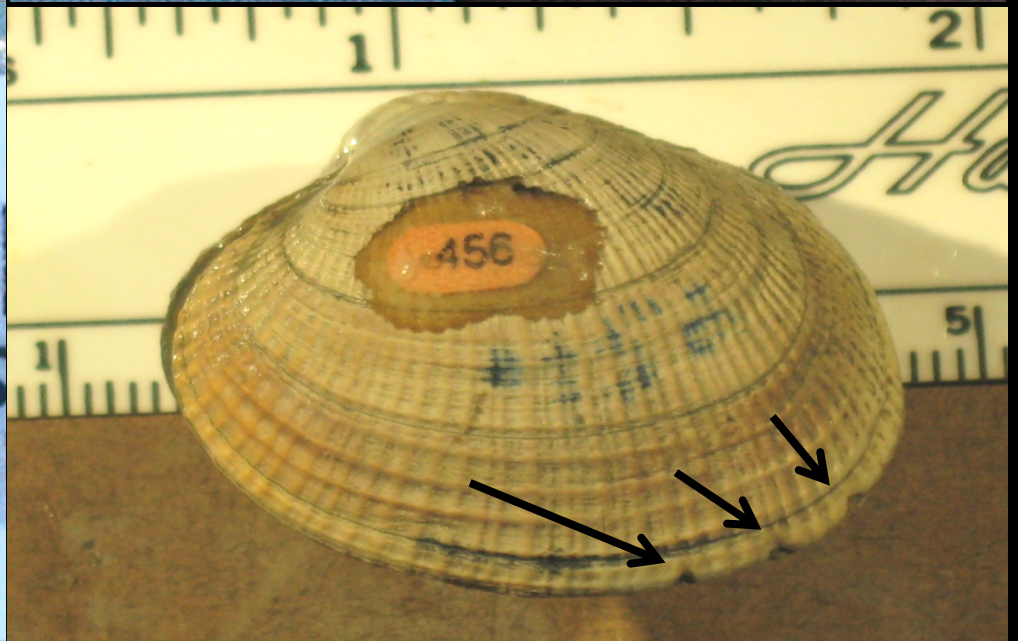
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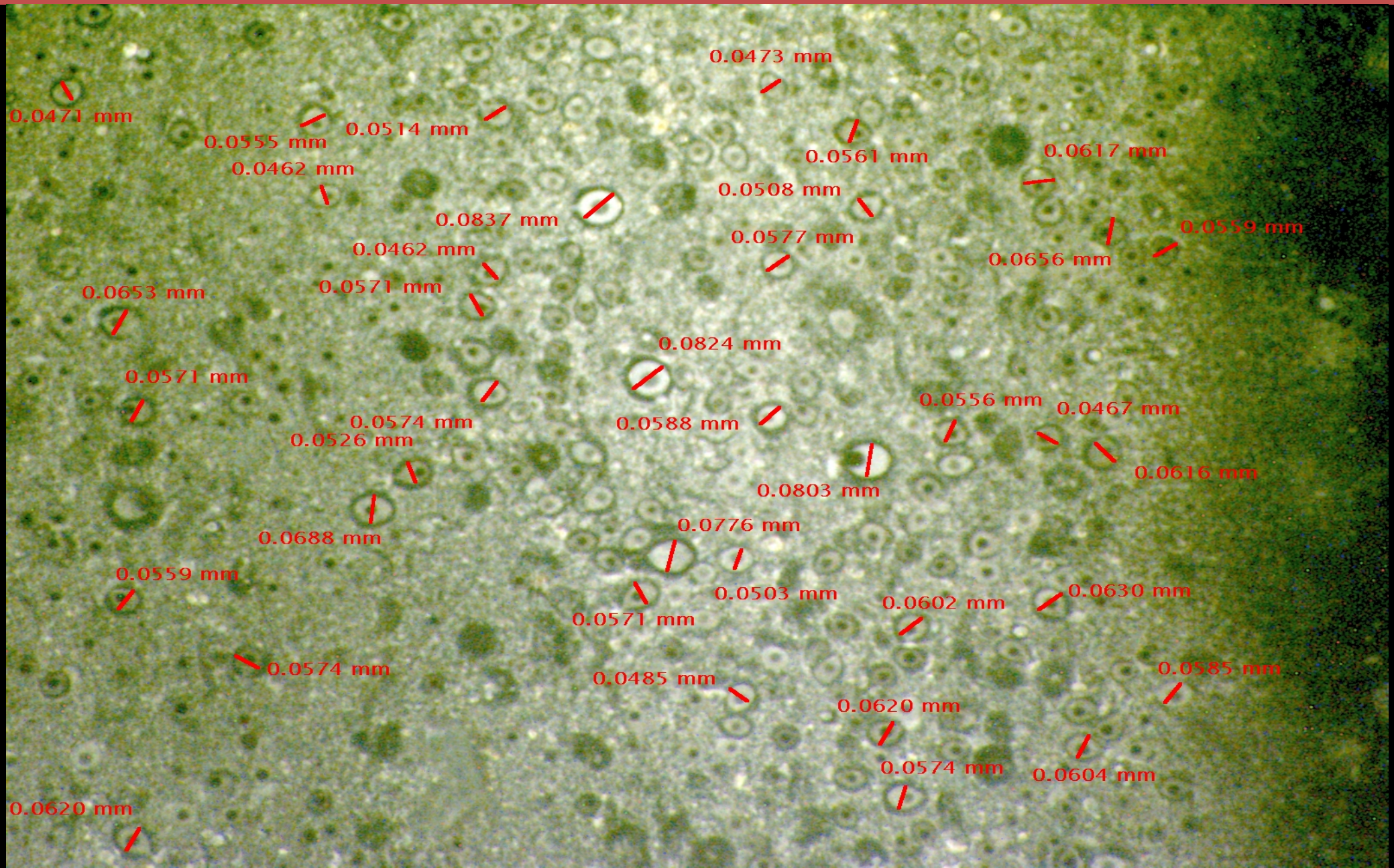
When do clams spawn?

When their body to shell ratio is high

When their eggs are full

When their sex organs look ripe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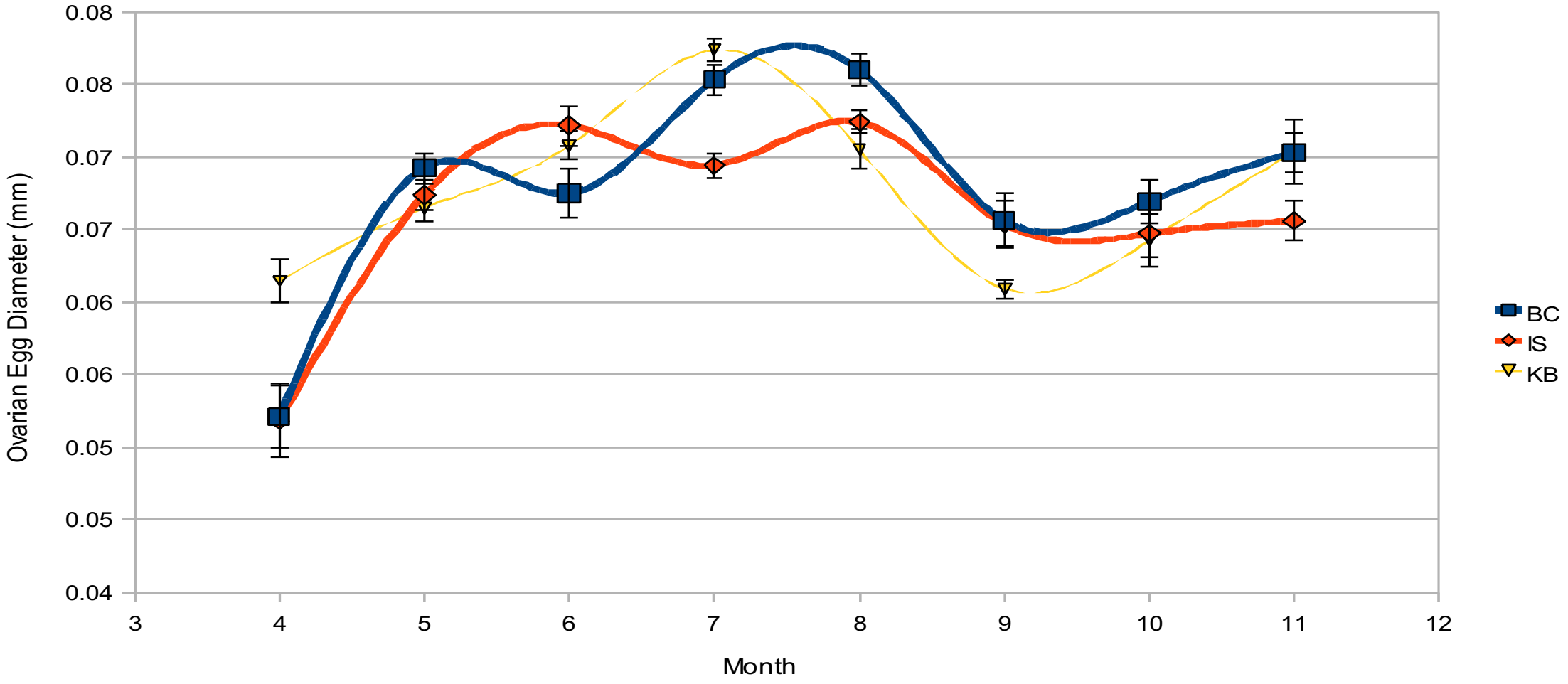
When do clams spawn?

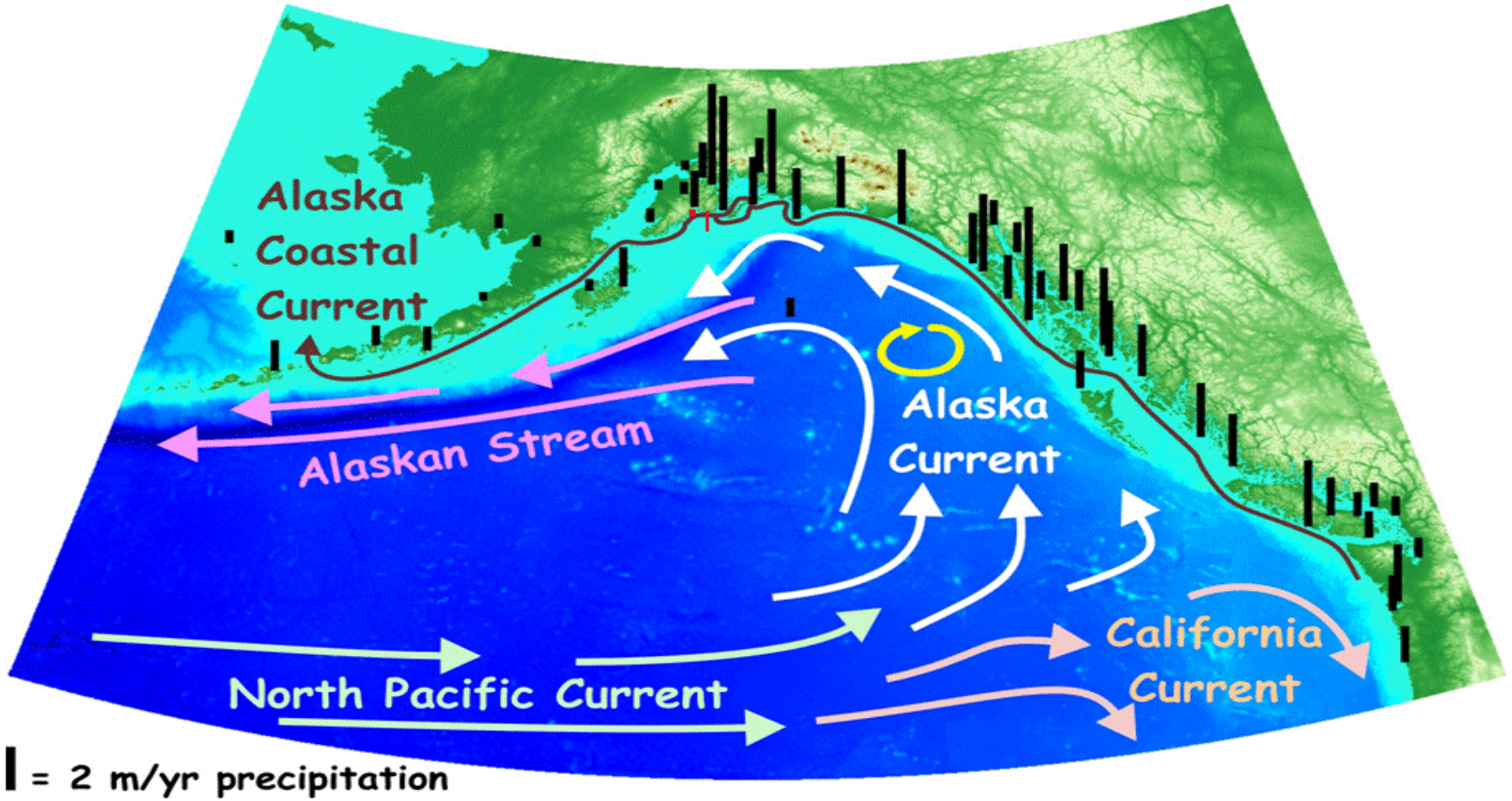


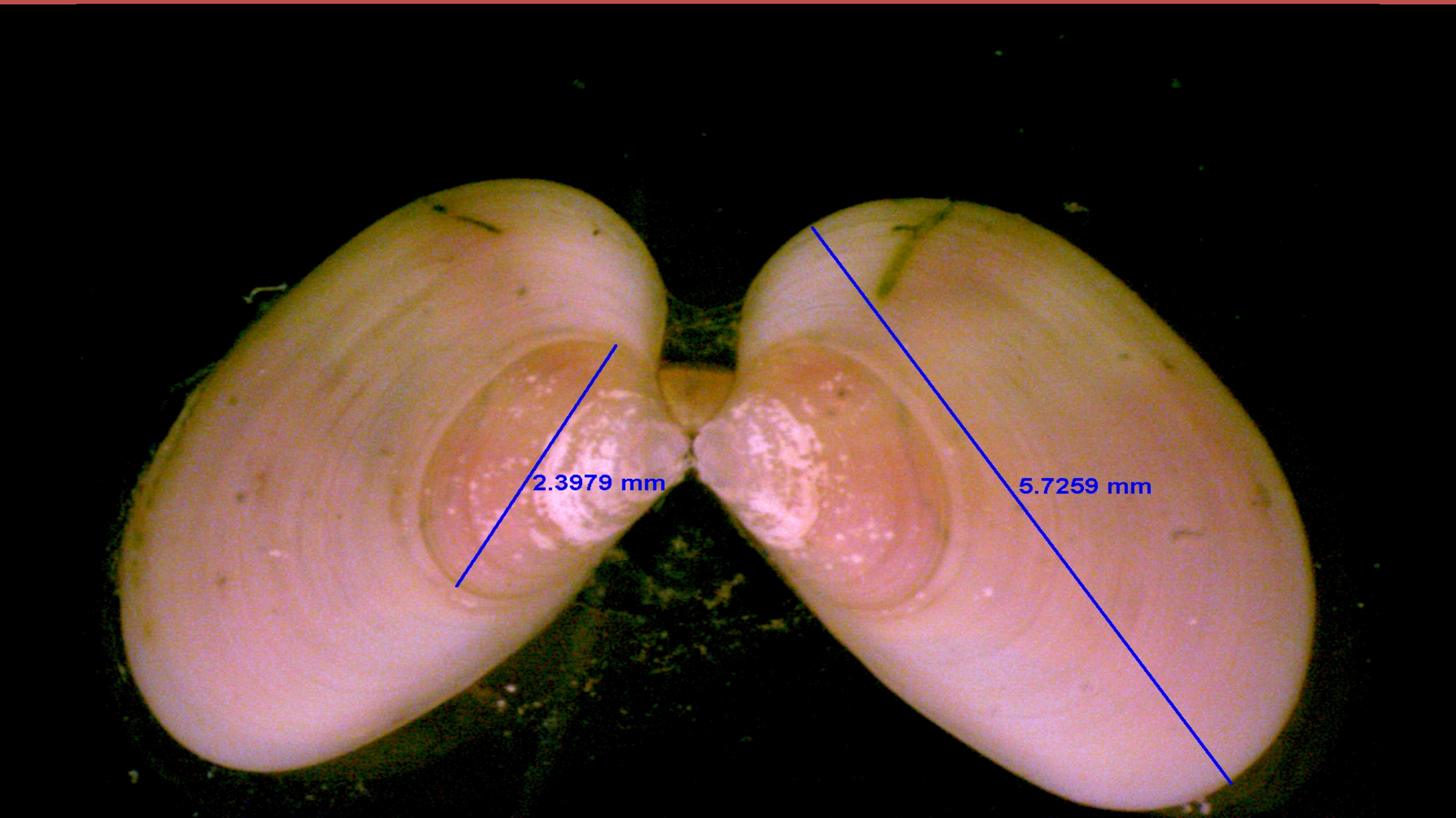
When do clams Recruit

Collect sediment every month and sieve it!!!

Tediously look through dirt under scope and count clams

Larval period

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That's all Folks!

Clam Research

Quiz - 4 questions

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Edit Properties

There are no videos associated with this module

Frequently Asked Questions

What parts of a clam can you eat?

Do clams use other shells to start building their own?

Did your growth study validate the aging techniques previously used?

What do you like best about your job?

Does commercial lamming have an impact on clam populations?

Do bears eat clams?

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What do you like best about your job?

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Do bears eat clams?

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