



Softshell Aquaculture in Plum Island Sound

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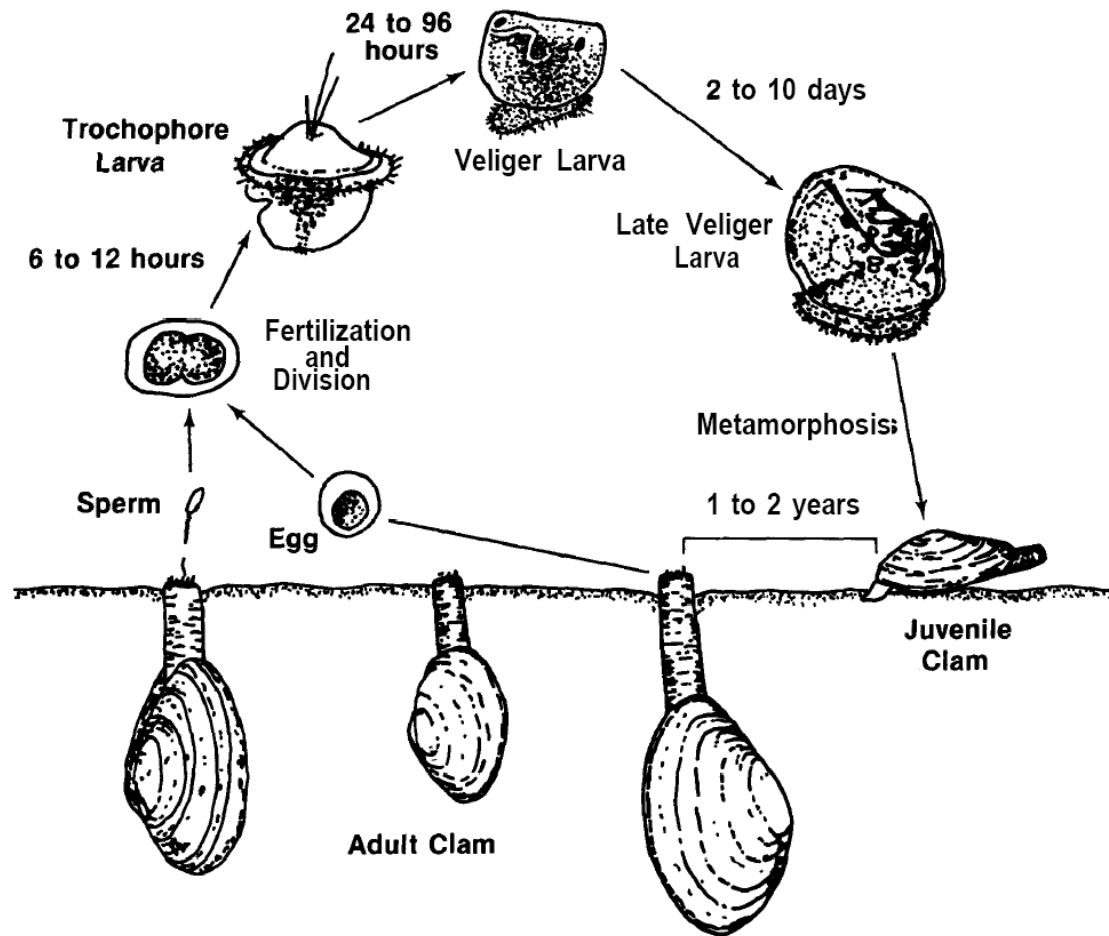
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The Location

- Plum Island Sound is an estuary centered on the Parker River in Essex County in Northeastern Massachusetts.
- The area is home the Parker River Wildlife Refuge.
- The refuge is 4,662 acres, with approximately 3,000 acres of salt marshes.
- The Wildlife Refuge is protected, but is open to some recreational activities.



Clam Cycle:



Clamming

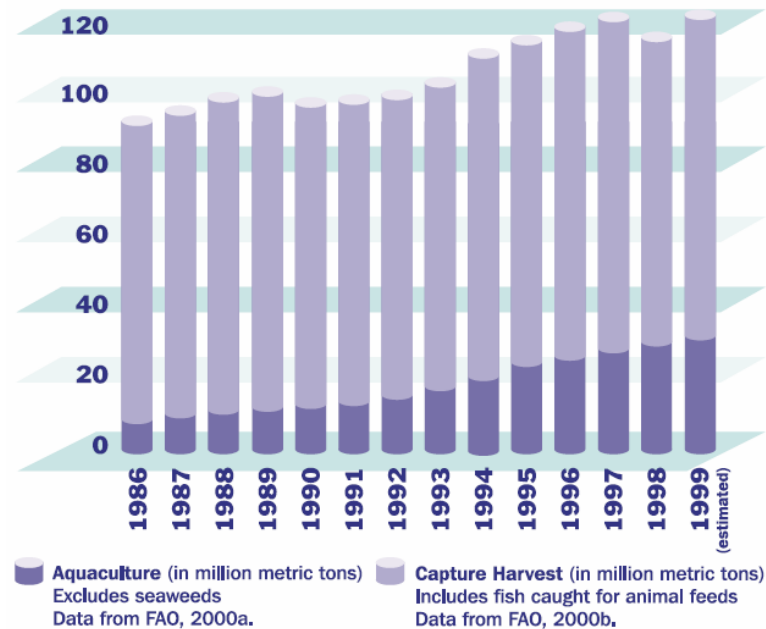
- Clamming in the refuge requires multiple permits
- Traditional clamming methods are digging in the tidal mud
- Clam aquaculture is becoming more researched and practiced



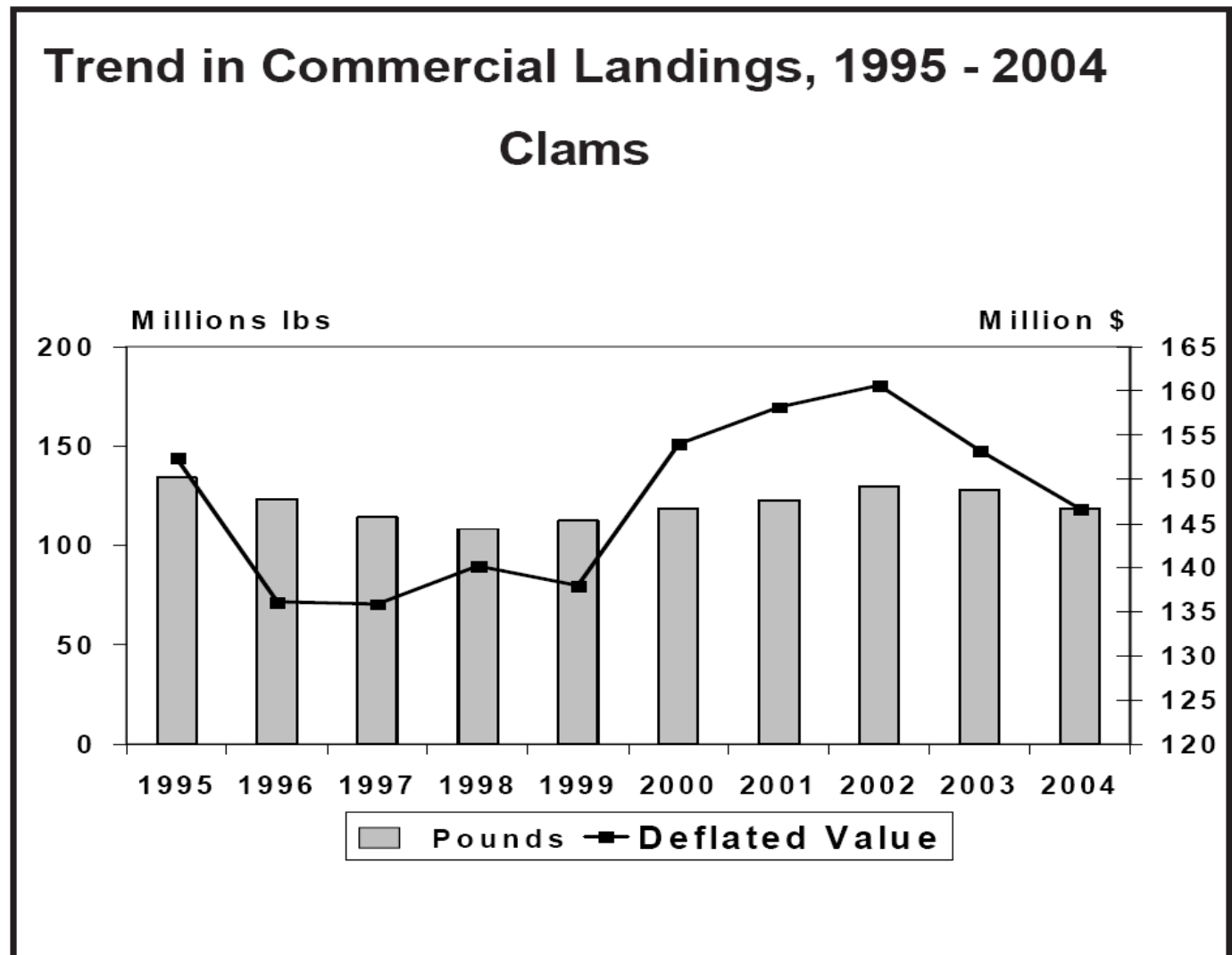
Aquaculture

- Farming of organisms that live in water, such as fish, shellfish, and algae.
- The idea is to help counteract the increasing capture harvest rate

World Fisheries Production



Commercial Clamming Trend



Site Determination

● **Criteria:**

- **The site must be located in a Softshell Clam habitat**
- **The site must be located outside the navigational channel**
- **The site must be outside the Plum Island Sanctuary**
- **The site needs to be located a half mile away from any beach**

Requirement One & Two

Southern Section of Plum Island Sanctuary
With Softshell Clam Suitability Area



0 625 1,250 2,500 Meters

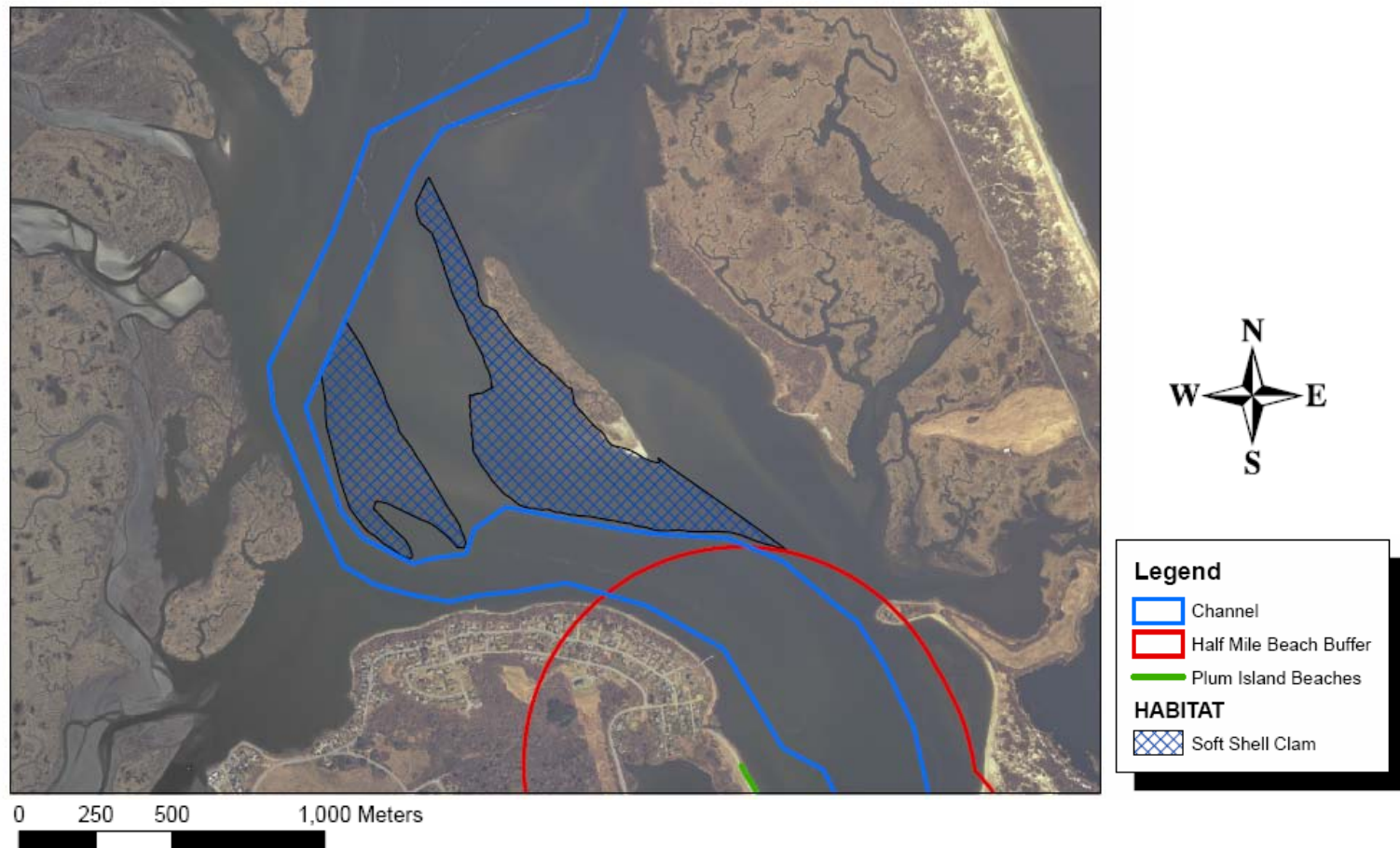


Legend

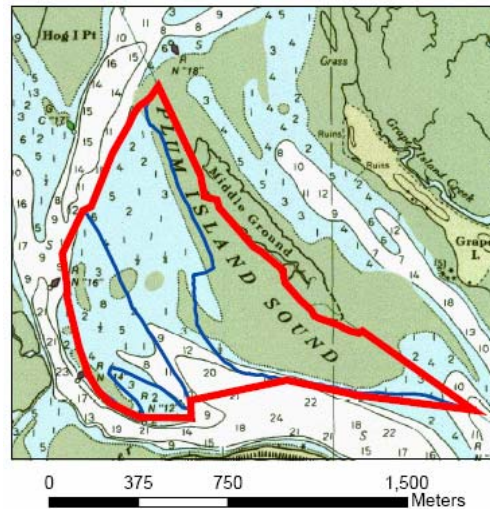
- Sanctuary Outline
- Plum Island Sanctuary
- HABITAT**
- Soft Shell Clam

Requirement Three & Four

Harvesting Constraints From Navigational Channel & Beachs



The Site's Final Location



Other Site Information

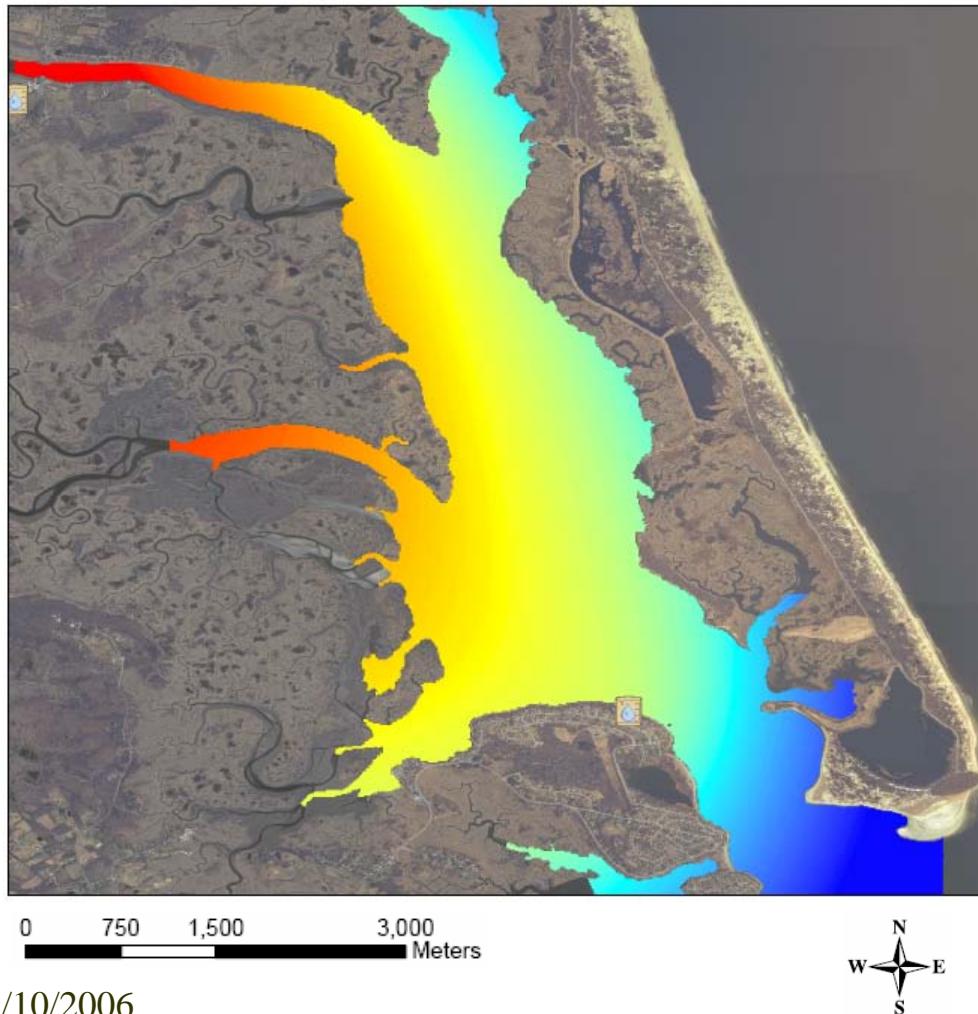
—Site Size

—This sites area is approximately 986,000 square meters



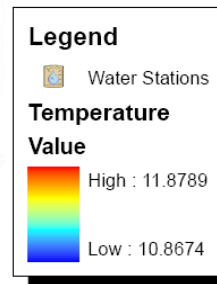
Other Important Data

Temperature Trend



—This map shows the temperature trend that flows out of the rivers and into the Atlantic Ocean

—Because there are only a few points where data was collected there is a margin of error



What Makes The Plum Island Site Different

–Using A House Boat(s)

- There is little or no need to culture algae
- Research / Farming can be done in poor weather
- Mobility for winter time farming



What Makes The Plum Island Site Different

- Floating crates house the adult clams until they are large enough for harvesting

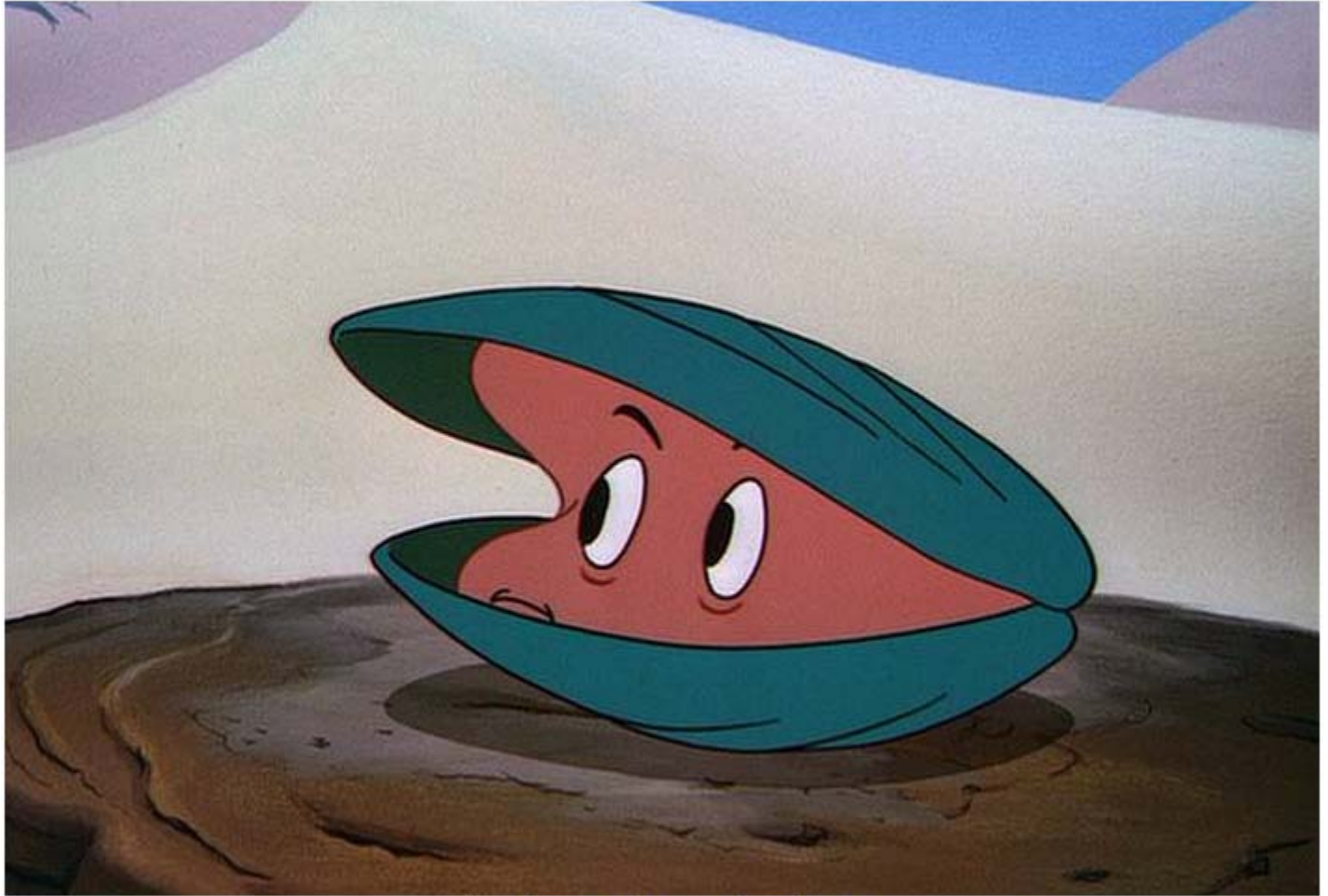


Conclusion

● Results:

- A site in Plum Island Sound is feasible.
- The site has the potential for high yields of clams due to the ideal water temperatures and flow of algae.
- Using a house boat could dramatically reduce cost and improve production efficiency
- The rafts and the crates could potentially limit clam loss by giving the clams protection from predators
 - They also make the farming site portable, which is a form of natural disaster mitigation

Questions, Comments, Concerns?



Clam from "The Simple Things"