

SEA CUCUMBERS

While the majority of tribal Sea Cucumber harvesters are divers, management agreements permit a trawl fishery as well. Lummi Natural Resources requires that all trawl Sea Cucumber fisheries have an on-board monitor who records all incidental catch. Data from monitors is used to estimate local Sea Cucumber populations through analysis of Sea Cucumber catch rates, as well as ensuring that by-catch rates are below permitted thresholds.



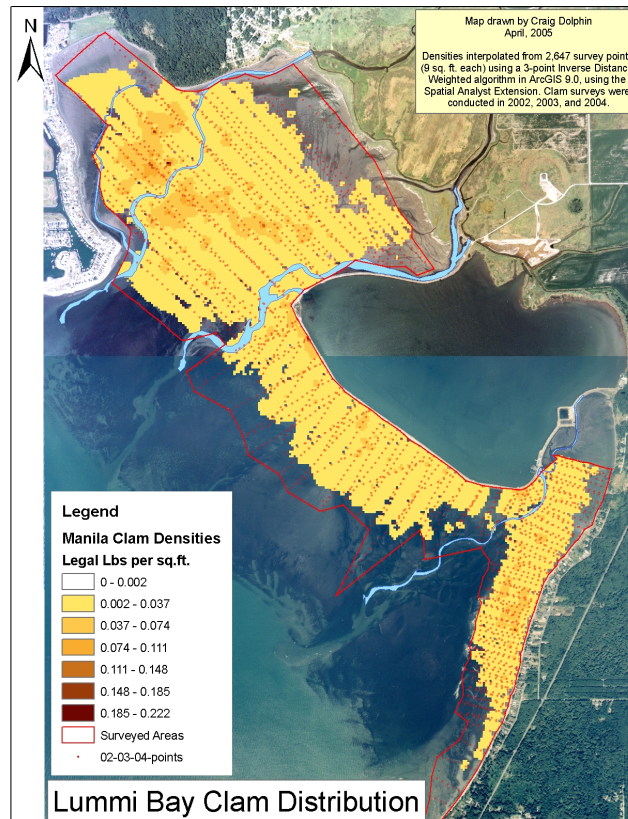
Sea Cucumbers are caught primarily by Divers

GEODUCK CLAMS



Recently Lummi has provided deep versus shallow water Geoduck clam samples to the University of Washington for gonad analysis and aging. This is an effort to answer questions about the reproductive potential of Geoducks that live in water deeper than can currently be harvested commercially. If deep-water Geoducks are not able to reproduce then they cannot re-seed depleted shallower water areas.

If you have any questions about Harvest Management at Lummi, please contact Alan Chapman at 360-384-2202



NATURAL RESOURCES DEPARTMENT

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NATURAL RESOURCES DEPARTMENT

HARVEST MANAGEMENT SHELLFISH SCIENCE



*"When the tide is out,
the table is set"*
-Traditional Saying

HARVEST MANAGEMENT: SHELLFISH SCIENCE

Lummi fishermen harvest many forms of sea-life, including Dungeness crab, Spot Shrimp, Manila clams, Sea Cucumbers, Sea Urchins, and Geoduck clams.

Management of these resources is based on the best available science to ensure the sustainability of the resource. Lummi Natural Resources is directly involved in conducting scientific studies and surveys to provide managers with information that is critical for good decision making.



*Dungeness Crab:
Lummi's most
economically valu-
able fishery today.*

DUNGENESS CRAB

Adult Dungeness crabs lose their hard outer shell once a year so that they can grow bigger (this is a process called molting). Molting leaves crabs soft and easily damaged until their new shell can harden up again.

To avoid inadvertently damaging soft-shell crab (by trapping soft-shell crabs in pots with hard crabs or by handling stress), Lummi conducts several shell condition tests each year prior to opening a management area for harvest. Harvesting only begins once 80% of the legal sized Dungeness crabs in an area are hard. The timing of molting depends on the exact area but typically occurs during late-winter or spring.



*Lummi's
Shellfish biolo-
gist heading
out to test crab
shell condition
in the Georgia
Strait.*

MANILA CLAMS

Over 100 tribal members harvest Manila clams commercially. Lummi conducts annual population surveys on over 1,600 Acres of on-reservation tidelands and also a further 40-50 acres at some important off-reservation harvest areas such as Birch Bay State Park, or Semiahmoo / Drayton Harbor.



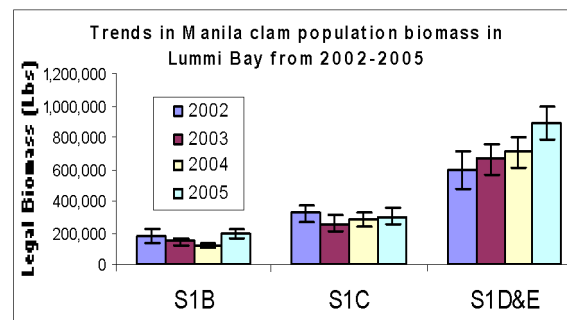
*Clam survey crew ready for another day
of clam surveying*



*Manila Clams marked for a growth and
survival experiment in Lummi Bay*

Computer analysis of the clam survey information, along with data for clam growth and survival, allows us to map clam distributions, calculate total population sizes, and estimate sustainable harvest levels so that the resource is maintained for future generations.

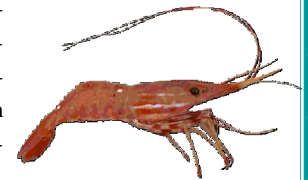
Lummi also obtains samples of clams and oysters for biotoxin testing to avoid any risk from naturally occurring seasonal problems caused by harmful algal blooms (e.g., red tide).



SPOT SHRIMP

Spot Shrimp are a popular target for commercial and non-commercial fishermen alike. Despite the long history of Spot Shrimp fishing, however, some basic questions about their life history remain unanswered. Without this information there is uncertainty over how we can best maximize harvest opportunities while still ensuring the sustainability of the fishery.

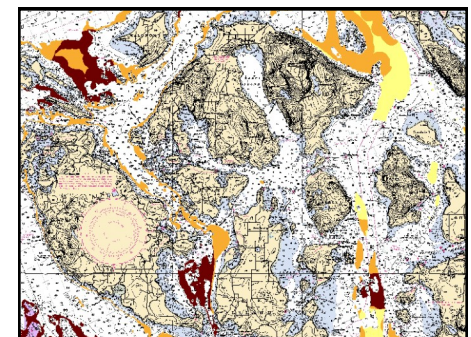
Lummi Natural Resources performs fishery-independent pre-season and post-season index surveys to evaluate the health of the fishery. By using identical gear in exactly the same locations each time, we can use catch-per-



*Spot Shrimp start life as males,
then turn into females as they get
older, but do they die after just
one breeding season as females?*

pot data to assess year-class strength, as well as to evaluate what impact the fishery has on the stock. In particular, the number of females per pot is useful to determine how many females remain to breed after the fishery is closed.

We also use specialized GIS computer software to model Spot Shrimp habitat so that we can someday estimate the potential of different management areas for sustainable harvest.



*Computer model of Spot Shrimp habitat in the San
Juan Islands*