



This licence and/or permit is issued under the authority of SECTION 4 OF THE FISHERIES ACT.

This licence and/or permit authorizes the person(s) listed below, subject to the following terms and conditions, to collect the species and quantity of fish identified below for: Broodstock purposes. Non-compliance with any condition of this licence and/or permit may result in the cancellation of this licence and/or permit.

Licence/Permit Activity Description:

Geoduck Broodstock Collection

Licence Holder:

FIN: 35669

Mark Mcdermid

1525 West 29th Ave

Vancouver BC V6J 2Z1

Contact Number: 604-732-4622

Individuals or groups assisting with the authorized activity:

Sean Williams

Species, Quantity of Fish, Area(s) and Gear:

Species: PACIFIC GEODUCK (*Panopea generosa*)

Licence Area: Subarea 16-1
Subarea 16-2
Subarea 16-18
Subarea 16-19
Subarea 16-20
Subarea 16-21
Subarea 17-11

Gear: Dive

To be Retained: 250

Units: Individuals (live)

Additional Descriptions: Portions of Subareas 16-1, 16-2, 16-18, 16-19, 16-20, 16-21 and 17-11 not covered by sanitary or management closures

Terms and Conditions:

A DFO approved Observer, Sean Williams of 3453 Falcon Drive, Wellington, BC, shall be on board when harvesting is taking place, to document the location of harvest by completion of dive data logsheets. Logsheets are to be completed on-board the harvest vessel prior to landing geoduck. A sample logsheet is attached as Appendix 1.

The Observer shall collect and document morphometric data including shell length, wet weight and quality assessment, and photograph all animals collected. This information is to be forwarded to E. Wylie, Fisheries and Oceans Canada, 3225 Stephenson Point Road, Nanaimo BC V9T 1K3 within 30 days of the collection. Data collection information is included in Appendices 2 and 3.

Genetic samples are required from at least 25 animals from the authorized harvest area. The samples from each harvest site should be grouped and labelled separately. Samples are to be sent to DFO at the end of the project. Sample protocol and contacts are provided in Appendix 4.

Geoducks collected under authority of this licence may be held at the Island Scallops Ltd. hatchery (5552 West Island Highway, Qualicum Beach, BC).

When the geoduck are of no further use for the broodstock/hatchery purposes, they are to be disposed of in a method that satisfies Environment Canada regulations for disposal of fish and fish waste. Environment Canada does not allow disposal at-sea and therefore recommends that fish waste be either (1) disposed of at a municipal land-based disposal facility, or (2) disposed of through a reduction facility.



The DFO Office responsible for the area in which fishing takes place shall be notified on each occasion prior to the collection of samples. Notification shall occur by telephone during normal business hours. If you are unable to notify the local office on evenings or weekends, advise the DFO Radio Room at 1-800-465-4336 prior to sampling.

Copies of this licence must accompany the collecting personnel, be on board any collecting vessel, be carried with the transport vehicle at all times during collection and transport of samples and shall be present in the holding area or hatchery. The original, signed licence must be produced upon the request of a Fishery Officer or Guardian.

The collection of bivalves from areas closed for PSP (red tide), ASP (domoic acid) or bacterial contamination under the Management of Contaminated Fisheries Regulations is not authorized by this licence. Check with the local DFO office or on the internet for closure information immediately prior to sampling. Closure information is available on the internet at: http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Biotoxins/closures/default_e.htm

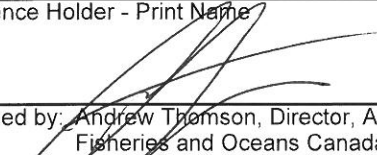
Specimens retained under the authority of this licence may not be utilized, sold or processed for food or bait.

Specimens caught and retained under authority of this licence may not be shipped or provided to any party not named on this licence.

This licence may be revoked or amended by the Department prior to the expiry date as may be considered necessary by the Department.

See attached documents.

A Section 56 Fishery (General) Regulations Permit is required for the transfer of live specimens between marine areas, or to holding tanks which discharge to marine waters. The licence holder is required to make application to the Federal/Provincial Introductions and Transfers Committee. Contact numbers and application forms are available from their website: http://www-heb.pac.dfo-mpo.gc.ca/intro_trans/transfers_e.htm

Licence Holder - Print Name	Signature	Date
Issued by: Andrew Thomson, Director, Aquaculture Management Division Fisheries and Oceans Canada		JUN 20 2011

Licence Printed: 10 June 2011

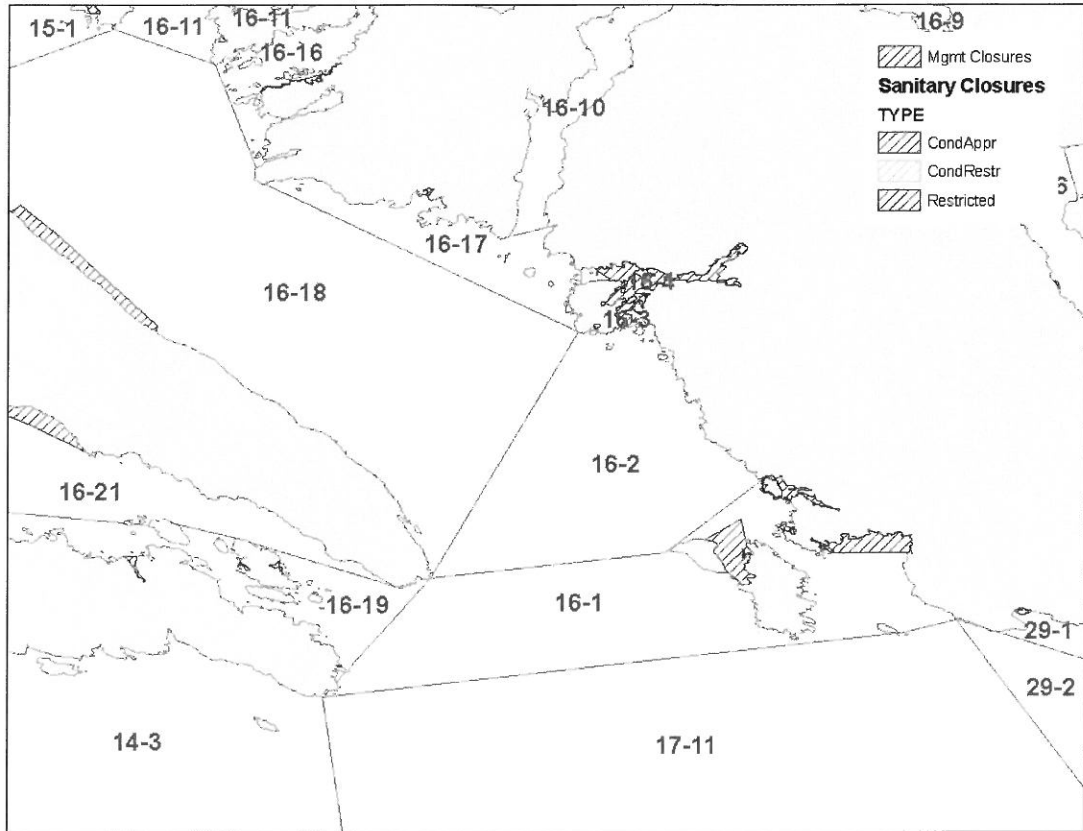
Attachments for XBI 6 2011

Harvest area: The harvest area includes portions of Subareas 16-1, 16-2, 16-18, 16-19, 16-20, 16-21 and 17-11 not covered by sanitary or management closures.

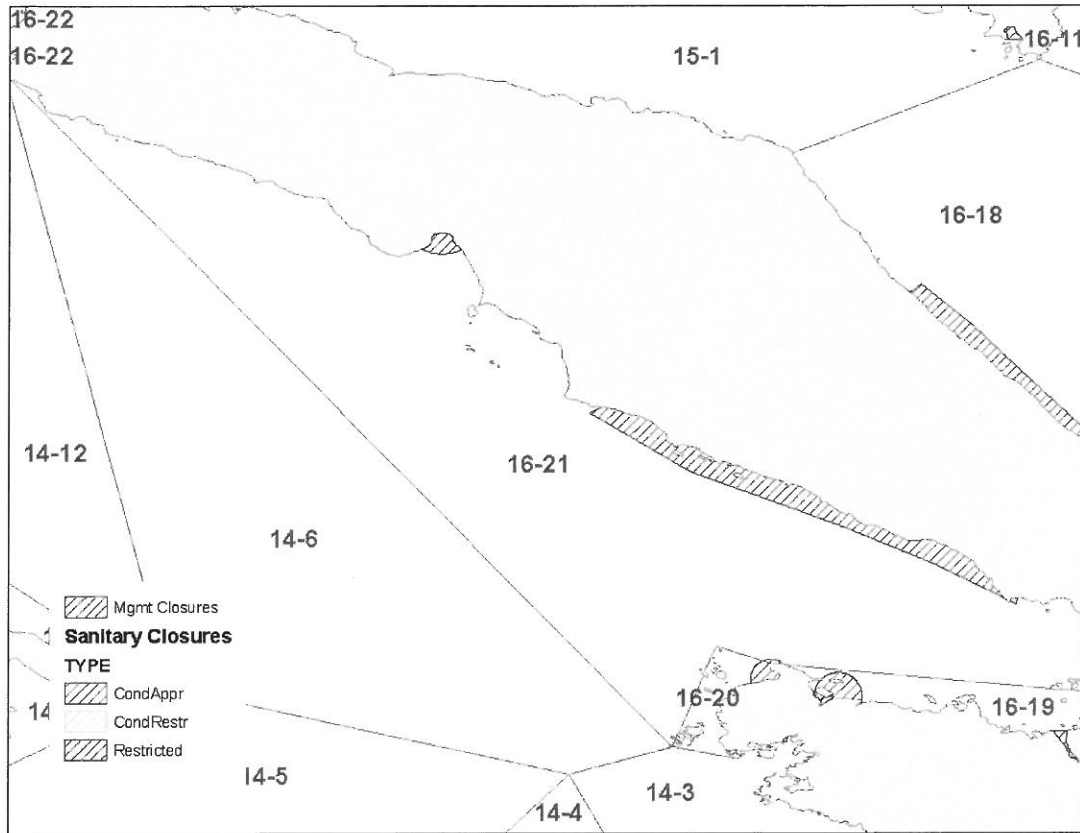
Closures may be implemented on short notice in the event of changes to contamination status, PSP or other biotoxin events. Licence holders, vessel masters, and harvester are reminded that:

- It remains the responsibility of the *vessel master* to ensure that an area is not closed for harvest due to Sanitary or Biotoxin Contamination. Fishing in a closed area is an offence under the *Fisheries Act*. Consumption of product harvested from within a closed area poses a serious health risk.
- Prior to commencement of fishing, the vessel master must take care to confirm that an area is open for harvesting either through the DFO website at: http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Biotoxins/closures/default_e.htm or the toll-free information line at 1-866-431-3474, or by contacting a local DFO office directly. Contact information is available in Appendix 15 of the Integrated Fisheries Management Plan.
- Information may also be available through weekly broadcasts over a commercial or marine radio station (“the weather channel”).

Map 1. Portion of harvest area that includes management closures. Please review Appendix 1 and ensure the area is open for harvest.



Map 2. Portion of harvest area that includes management closures. Please review Appendix 1 and ensure the area is open for harvest.



Appendix 1. Geoduck and Horse Clam Harvest Log

For brood stock collections reporting please complete the relevant portions of Sections A and C of the logsheet. Use a separate copy for each collection day.

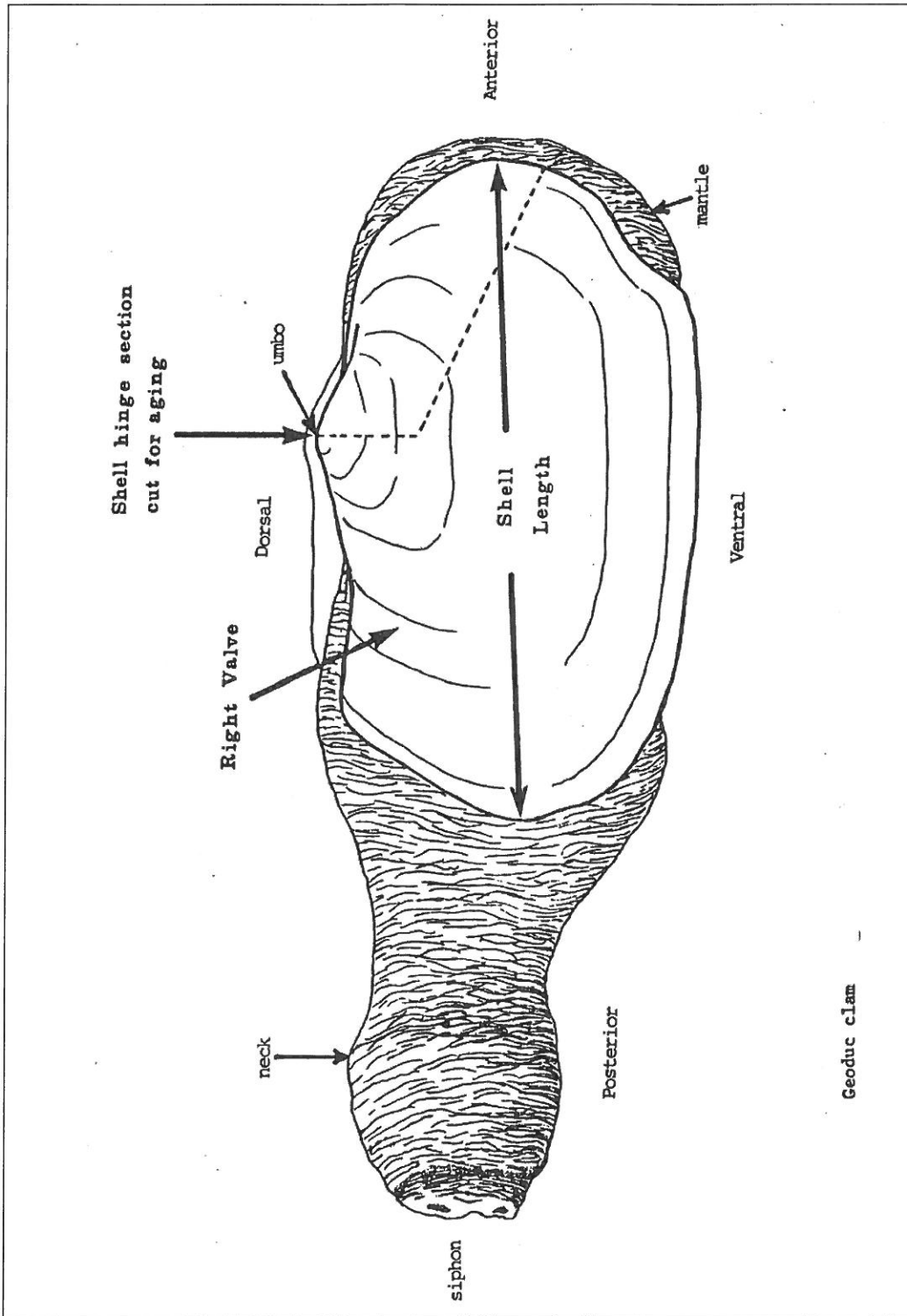
LANDING DATE IN PORT:		GEODUCK <input type="checkbox"/> HORSE CLAM <input type="checkbox"/> VALIDATION & HARVEST LOGBOOK	VALIDATION ID No.	
<i>Please Print, Use Pen</i>				
A	G-TAB	VESSEL NAME	CFV #	VESSEL OPERATOR
DATE ONTO PACKER			TIME (24 hr clock)	# CAGES
MGMT AREA		SUB - AREA	QUOTA AREA	DAYS FISHED
PACKER GROSS WT.				PACKER NAME
B	OFFLOAD TIME	VAL. METH.	BUYER	
TOTAL CAGES	GROSS DOCK WEIGHT	TOTAL CAGE WT + LINER WT	PRODUCT TYPE	CONV. FACTOR
TOTAL LINERS	CAGE WT LINER WT		PREVIOUS R.Q.	= NET OFFLOAD WEIGHT
CAGE TAGS ? <input type="checkbox"/> Y <input type="checkbox"/> N		TRANSFER TO / FROM G-TAB #	SPLIT LOAD? <input type="checkbox"/>	HOW MANY PARTS? <input type="checkbox"/>
HOLD CHECK? <input type="checkbox"/> Y <input type="checkbox"/> N			YES <input type="checkbox"/> NO <input type="checkbox"/>	
Observer's Comments:				TOTAL NET WT. FOR ALL PARTS

C DIVE HARVEST INFO - USE A NEW PAGE FOR EACH NEW QUOTA AREA FISHED.
 - ENTER THE DIVE INFO FOR EACH DIVE. ALSO RECORD GPS LAT. & LONG. IF POSSIBLE.
 - USE NEXT DIVE LINE TO RECORD GPS COORDINATES WHEN NECESSARY, AS SHOWN BELOW.

DIVE No.	DIVE SITE	HARVEST DATE (m/d)	SUB-AREA	HARVEST LOCATION <small>(bay, pass, island, N,S,E,W; LAT & LONG)</small>	DIVER NAME <small>(last name, first name)</small>	DIVER MINUTES	DEPTH (ft)		# CAGES
							min.	max.	
1	B	10 / 25	9	Otter Pass E., Trap Islands	Clarke, Jim (example)	87	24	34	15
2	B	10 / 25	9	" 52° 08.311' 129° 42.693'	Brodie, Al (example)	130	30	35	17
TRUE PIECE COUNTS ?				YES	NO	TOTALS			
IS YOUR HARVEST CHART MARKED?				YES	NO	PIECES	MINUTES	CAGES	

prepared by ARCHIPELAGO MARINE RESEARCH LTD. Please Print, Use Pen
 WHITE COPY --- Observer YELLOW COPY --- Truck and Plant PINK COPY --- Vessel

Appendix 2. Method to Measure Geoduck Shell Length.



Appendix 3. Geoduck Morphometric Data Collection Sheet

No.	Shell length mm	Weight g	Neck colour light, medium, dark	Scabs dark	Blisters clear	Warts raised beige	Pits dark red /brown	Comments

Appendix 4. Geoduck Sampling Protocols for DNA Analysis

Sample up to 100 adult individuals per site for DNA analysis. The sampling process is a very small flesh clip, is non-destructive and product can continue to market, or into brood stock use. The potential effects of the sampling procedure on the live holding of brood stock has however not been tested at this time and may require further investigation by industry.

For DNA analyses to be conducted in the Molecular Genetics Lab (MGL) at the Pacific Biological Station, the sampling vials, boxes and ethanol mentioned below can be obtained from the MGL. Contact Carrie Gummer by telephone at 250 756-7316 or by email Carrie.Gummer@dfo-mpo.gc.ca for sampling supplies and to arrange sample delivery.

Each box containing sample vials should be clearly labeled with:

- the harvest location information (DFO subarea, location name and aquaculture tenure Canadian Land File number if applicable).
- harvest date
- harvest vessel
- sampler name and contact information

Collect tissue samples from a random selection of live or freshly dead animals. If necessary, frozen animals may also be used – care should be taken to thaw the tissue as little as possible during sampling. It is best to place the frozen tissue directly into the ethanol.

Very small (~20 mg) pieces of tissue are required. Rinse sampling gear (scissors, clippers or tissue punchers) well between samples in water or ethanol.

Remove a sample of tissue from the membrane between the siphons at the top of the neck. This sample can be obtained using either a small hole punch or small scissors. Place the tissue sample from each individual (or the entire individual if sampling larvae) into a separate 2 ml vial with a screw cap lid. The vials should contain 95% undenatured alcohol and can be filled prior to or immediately after the tissue sample is added. The vial should be no more than 25% full of tissue sample with the remainder filled with ethanol.

Ensure that the vials are labeled with individual identifiers if required and placed in boxes designed to hold 100 vials. Labelling can be done with a Sharpie permanent marker. Label the box with information on the species, date of sampling, location or origin of samples, sample collectors, etc.

Once the samples are in 95% ethanol they can be stored at room temperature until transported to the lab for analysis.

The most important things are to rinse the sampling tool between individuals, ensure the ethanol does not get diluted with water during the process of sampling, and to ensure the caps are tight on the vials once sampling is completed.

Plan to deliver the sample boxes directly to the Pacific Biological Station. Please be sure to make prior arrangements during regular business hours to ensure staff are on hand to receive the samples. Contact Carrie Gummer by telephone at 250 756-7316 or by email Carrie.Gummer@dfo-mpo.gc.ca to arrange sample delivery.