

HERRING CONSERVATION & RESEARCH SOCIETY (HCRS)

STATEMENT OF INTEREST

STOCK ASSESSMENT TEST FISHING PROGRAM

SECTION 1 – VESSEL-BASED DIVE SURVEY

A herring scuba dive spawn survey program may be conducted in 2014 in the following areas: Haida Gwaii (Queen Charlotte Islands), Prince Rupert, Central Coast, Strait of Georgia, and West Coast Vancouver Island. Chartered vessels may be selected to participate in the program as specified in this Statement of Interest.

Section 1 specifies the requirements for Vessel-based dive survey charter vessels. Requirements for Shore-based dive survey charter vessels are described in Section 2.

Applicants are advised to read the documents carefully. All information requested in the application must be completed for the application to be evaluated. Incomplete or illegible applications will be disqualified.

Bids for all charters will be received in the form of dollars per day. (GST not included.) There is no requirement to retire a roe herring licence for any of the charters.

Applicants are advised the terms for required marine and liability insurance have been changed to reflect new requirements of Public Works. See information in costing section.

Please forward the completed applications to:

**Herring Conservation & Research Society
101 - 5170 Dunster Road* Box 403
Nanaimo, BC V9T 6M4**

Applications will be received up to 16:00, January 29, 2014.

- Applications can be delivered via mail, courier, or dropped off. Courier deliveries are accepted during normal business hours (Monday to Friday: 09:00 – 17:30; Saturday: 09:00 to 15:00).
- If you wish to drop off your application at another location you must make arrangements with Greg Thomas. The selection process will not be delayed because of missing or late applications.
- Faxed or emailed applications will not be accepted
- The lowest, or any bid will not necessarily be accepted.

If additional information is required, please call Greg Thomas at 250-741-6759.

(* HCRS mail box is located in the "Print Three" office at 101 – 5170 Dunster Road, corner of Dunster Rd and Mostar Road, Nanaimo. ph 250-751-2994)

Table of Contents

<u>TABLE OF CONTENTS</u>	2
<u>OVERVIEW OF 2014 TEST FISHING PROGRAM</u>	3
<u>CHARTER DESCRIPTIONS</u>	3
CHARTER # DIVE 1 HAIDA GWAII.....	3
CHARTER # DIVE 2 PRINCE RUPERT	3
CHARTER # DIVE 3 CENTRAL COAST	4
CHARTER # DIVE 4 ST. OF GEORGIA.....	4
CHARTER # DIVE 5 ST. OF GEORGIA.....	4
CHARTER # DIVE 6 WEST COAST OF VANCOUVER ISLAND	4
<u>APPLICATION DETAILS</u>	5
<u>APPLICATION DETAILS</u>	5
<u>COSTING INFORMATION</u>	5
<u>OPERATIONAL INFORMATION</u>	6
<u>REQUIREMENTS AFTER THE CHARTER IS AWARDED</u>	6
<u>SUPPORT VESSEL REQUIREMENTS</u>	7
<u>GENERAL VESSEL REQUIREMENTS</u>	7
<u>DIVE TENDER REQUIREMENTS</u>	8
<u>EQUIPMENT REQUIREMENTS FOR DIVE TENDING VESSEL</u>	8
<u>PERSONNEL</u>	8
<u>VESSEL MASTER</u>	9
<u>CREW</u>	9
<u>DIVE SUPERVISOR</u>	9
<u>DIVERS</u>	10
Diver Equipment	10
<u>DATA REQUIREMENTS AND DELIVERABLES</u>	10
<u>APPLICATION INFORMATION FOR 2014 DIVE CHARTERS (PG 1 OF 3)</u>	11
<u>BID INFORMATION FOR 2014 DIVE CHARTERS</u>	14
APPENDIX 1. MAIN DIVE TENDER CONSIDERATIONS.....	15
APPENDIX 2. GENERAL REQUIREMENTS FOR HERRING SPAWN SURVEY SAFE DIVING PROCEDURES.....	15

OVERVIEW OF 2014 TEST FISHING PROGRAM

CHARTER #	AREA	TYPE OF OPERATION	DATES	DURATION	DESCRIBED IN SECTION
Dive 1	HG – 2E/2W	Vessel-based Dive	Flexible Start [^]	23	1
Dive 2	Areas 3, 4, and 5	Vessel-based Dive	Flexible Start ^{^^}	20	1
Dive 3	Areas 6, 7, and 8	Vessel-based Dive	Flexible Start	27	1
Dive 4	Areas 14, 15, 17, 18	Vessel-based Dive	Flexible Start ^{^^^}	17	1
Dive 5	Areas 14, 15, 17, 18	Vessel-based Dive	Flexible Start ^{^^^}	17	1
Dive 6	Areas 23, 24, and 25	Vessel-based Dive	Flexible Start ^{^^}	21	1
Dive 7	Areas 14,15,17,18, 23,24,25	Shore-based Dive	As required	10	2
	[^] Unpaid break periods may be required				
	^{^^} Up to 3 day unpaid break period				
	^{^^^} Up to 7 day unpaid break period				

CHARTER DESCRIPTIONS

Charter # Dive 1 Haida Gwaii

One charter dive vessel for herring spawn survey with total duration of 23 days in Areas 2E and 2W. Start date is flexible, but survey activities are anticipated to commence approximately March 18, 2014. All coverage will be completed by April 30, 2014. Exact start date for this vessel will depend on the dates that spawning occurs. Charter must supply two skiffs each capable of doing shallow water spawn assessment, and each capable of carrying three people and associated gear. The period of spawn assessment will be determined in consultation with the fishery manager. This vessel may be required to take unpaid extended break periods if spawning is intermittent. A satellite phone is required for this charter. Charter must supply primary vessel capable of providing living accommodation for up to eight personnel.

Charter # Dive 2 Prince Rupert

One charter dive vessel for herring spawn survey with total duration of 20 days. Exact start dates for this charter will depend on the dates that spawning occurs. This vessel will conduct survey activities primarily in Statistical Areas 3, 4, and 5, unless the vessel is directed to another area. Charter must supply two skiffs each capable of doing shallow water spawn assessment, and carrying three people and associated gear. A satellite phone is required for this charter.

This vessel may be requested to take up to a 3 day unpaid break period. Charter must supply primary vessel capable of providing living accommodation for up to eight personnel.

Charter # Dive 3 Central Coast

One charter dive vessel for herring spawn survey with total duration of 27 days. Exact start date for this vessel will depend on the dates that spawning occurs. This vessel will conduct survey activities primarily in Statistical Areas 6, 7, and 8, but may also be directed to other areas if required, such as Area 9, and / or Area 10. Charter must supply two skiffs each capable of doing shallow water spawn assessment, and of carrying three people and associated gear. A satellite phone is required for this charter. Charter must supply primary vessel capable of providing living accommodation for up to eight personnel.

Charter # Dive 4 St. of Georgia

One charter dive vessel for herring spawn survey with a total duration of 17 days, commencing as required by spawning. It is anticipated that there will be up to a 7 day unpaid stand down period. The break period will be determined in conjunction with vessel master, HCRS and DFO. This charter will begin and end in the St. of Georgia area. Charter must supply two skiffs each capable of doing shallow water spawn assessment, and capable of carrying three people and associated gear. Charter must supply primary vessel capable of providing living accommodation for up to seven personnel. (Other vessel-based dive charters require accommodation for eight people.)

Charter # Dive 5 St. of Georgia

One charter dive vessel for herring spawn survey with a total duration of 17 days, commencing as required by spawning. It is anticipated that there will be up to a 7 day unpaid stand down period. The break period will be determined in conjunction with vessel master, HCRS and DFO. This charter will begin and end in the St. of Georgia area. Charter must supply two skiffs each capable of doing shallow water spawn assessment, and capable of carrying three people and associated gear. Charter must supply primary vessel capable of providing living accommodation for up to seven personnel. (Other vessel-based dive charters require accommodation for eight people.)

Charter # Dive 6 West Coast of Vancouver Island

One charter dive vessel for herring spawn survey with a total duration of 21 days, commencing as required by spawning. It is anticipated that there will be up to a 7 day unpaid stand down period. The break period will be determined in conjunction with vessel master, HCRS and DFO. This vessel will conduct survey activities in Statistical Areas 23, 24, and 25. The charter must supply two skiffs each capable of doing shallow water spawn assessment, and capable of carrying three people and associated gear. The charter must supply a primary vessel capable of providing living accommodation for up to eight personnel.

APPLICATION DETAILS

Application Details

- Identified minimum requirements must be met before the bid is considered compliant.
- Preference will be given to skippers / vessels with a good record of previous dive survey experience.
- Photos of the support vessel and dive tender vessels must be enclosed to assist the selection committee.
- Applicants must submit proof of valid Canadian Steamship Inspection certification with their application.
- The Dive Supervisor and one additional diver must be identified in the proposal. The dive supervisor must have at least two years of herring spawn survey experience. The additional named diver must have a minimum of one year's dive spawn survey experience. Both the supervisor and the additional diver must be approved by DFO.
- Substitution of dive tending vessels after selections are made must have the approval of PBS Dive Officer (Charles Fort). There will be in-season checks made to verify that the tenders used are the ones that were specified in the bids.

Costing Information

- All dive survey vessels must ensure that all crew, passengers, and divers are covered by WCB. The charter must arrange their own WCB coverage. Applicants are advised to call WorkSafe BC (1-888-922-2768) to obtain an estimate of costs. Note that divers' WCB rates will be different than fishing crew rates.
- Successful applicants will be asked to provide proof of full marine and liability insurance prior to commencing their charter. Note required terms of insurance have been changed to reflect requirements by Public Works. A full description of required marine and liability insurance can be obtained from Greg Thomas. The HCRS does not have to be listed as a named insurer. However, vessel must be insured for charter work, and for having a DFO person on board for a portion of the charter. Applicants are asked to check this carefully with their insuring company, as additional costs may be incurred for this coverage.
- The successful applicant will pay all costs incurred by the vessel. These costs include (but are not limited to) fuel, WCB coverage, liability insurance, and costs of survey related cellular / satellite phone calls.
- The supply of a vessel and operator to HCRS is subject to GST. The vessel owner (or operator) must provide a GST Registration Number, and must include this number on the invoice to the HCRS.

- Skippers will be required to attend, at their own expense, two DFO / industry meetings: Sign up and post season meetings will be held in Vancouver.

Operational Information

- The herring dive survey will follow the procedures outlined in the “Herring Spawn Survey Manual”, which will be included in the data kit. (Note – a 2009 version of the manual is available online at <http://www.pac.dfo-mpo.gc.ca/science/species-especies/pelagic-pelagique/herring-hareng/hertags/pdf/SurveyManual.pdf>)
- All dives must comply with WorkSafe B.C. Regulations. Any omissions in this document of generally accepted safe diving practices are not to be taken as a lack of endorsement of those practices.
- Any modifications to the dive survey protocol should only be done after consulting the HCRS and DFO Science staff.
- Vessel and crew should be prepared to conduct sounding and other monitoring activities if time permits.
- All vessels will load and unload DFO equipment at the Pacific Biological Station in Nanaimo. Skippers should ensure that all equipment is on board before leaving PBS.
- Charters will begin and end in the area of operation of their charter.
- Vessels must sign a contract with the HCRS prior to beginning spawn survey operations.
- Final payment for charter will not be issued until all data is submitted and equipment is returned.

REQUIREMENTS AFTER THE CHARTER IS AWARDED

- Copies of diver documentation, including CSA Occupational SCUBA certificates, First Aid / CPR certificates and Transportation endorsement must be sent to PBS Dive Officer (Charles Fort) prior to the charter commencing. The HCRS will not issue the contract until all paperwork is submitted.
- Proof of Marine and Liability Insurance must be provided to the project coordinator prior to the charter commencing (as per new terms).
- The charter may not commence diving until proof of satisfactory compressor air test has been received.
- The charter may not commence diving until the HCRS contract has been signed and returned to the HCRS.

SUPPORT VESSEL REQUIREMENTS

General Vessel Requirements

- Vessels must conform fully to Transport Canada safety requirements, must meet all regulatory requirements, and must be in excellent overall condition. Vessels must be certified for the crew, including the skipper and one DFO person
- Vessel size must be adequate to make open water passages, and to perform duties in exposed areas of the coast in winter conditions.
- Haida Gwaii, Prince Rupert, Central Coast and WCVI charters must supply support vessel capable of providing living accommodation (i.e. bunks) for up to eight personnel (crew, divers and one DFO diver).
- A minimum of seven bunks are required for the St. of Georgia dive charters
- Survival suits for all crew members plus one DFO person is a mandatory requirement.
- Life raft certified capacity for the crew, skipper, and one DFO person is mandatory.
- The vessel must have sufficient deck space to load and unload and store dive equipment when not in use.
- To minimize chance of hypothermia, an enclosed changing area for divers is required. This may be a ladder into the hold, easy access to engine room (while wearing dry suits), or an enclosed area on deck.
- Vessel must have an adequate fresh water supply to provide daily showers for divers, and facilities on deck to rinse dive gear at end of day's operations.
- The support vessel must carry a Level I first aid kit, as per WorkSafe B.C. regulations governing fishing vessels.
- Support vessel must carry enough medical oxygen to provide a continuous supply during a medical evacuation. An "M"/625 litre cylinder or greater is recommended.
- A compressor of adequate size to fill 5 or 6 tanks over a two or three hour time period is required. Test results from an accredited lab showing compressor air has passed CSA Z180.1 or CSA 275.2-04 standards for diving operations within the last year must be available on board and must be presented prior to commencement of test fishing operations. (This documentation must be sent to the PBS Dive Officer, Charles Fort) The charter may not commence diving until proof of satisfactory air test has been received.
- The following equipment is mandatory:
 - Echo sounder.
 - Two radars
 - Cellular phone in areas where there is cell phone coverage
 - Chart Plotter
 - Satellite phone (except for St. of Georgia charters)

- Vessels must supply a computer with a minimum of Windows XP (or better) operating system installed. If the computer doesn't already have a running copy of the HSD data herring spawn data entry program, it must be delivered to Charles Fort (250-756-7259) at the Pacific Biological Station sometime prior to the charter commencing. The computer must be available at PBS for a minimum of two weeks, to enable software installation and testing.

DIVE TENDER REQUIREMENTS

- Dive tending vessels that provide some coverage for divers will be given preference. Specifications listed in Appendix 1 will be considered when evaluating vessels.

Equipment Requirements for Dive Tending Vessel

- Electronics. Must be equipped with a two way VHF radio. Either stationary or portable VHF radios are acceptable. Arrangements should be made to standby on previously arranged working channel. The signalling device must remain effective after immersion in salt water (as in a capsized).
- Some type of navigational aid is required (e.g. portable GPS, radar, or compass).
- Depth sounder.
- Safety Equipment. Flares, dive flags, radio, whistles, auxiliary propulsion (e.g. oars, kicker) are required. The tender vessels must carry field oxygen (E or D cylinders) and Level I first aid kits during diving operations. A throw line to assist recovering divers is required. Dive tenders greater than 6 m in length must have an EPIRB.
- Ladders to enable divers to get out of the water.

PERSONNEL

- A full crew complement is required, but in no case to be less than seven: (a minimum of vessel master, engineer, cook), and 4 certified divers. Two of the non diving crew members will be required to operate the dive tending vessels.
- A standard dive team consists of two divers and a boat operator working from a single skiff. Each support vessel has two such teams working closely together on the spawn beds (usually on adjacent transects).
- When applicants are hiring divers, they should discuss and clearly define the terms and conditions of employment. Some things to consider and clarify are: what date do you expect divers to be available; if you are paying divers on a daily rate will you pay them for weather days or stand-down days, when no diving takes place; will you pay them travelling time to and from the vessel; if you get an extension, will they be available to work?

Vessel Master

- The vessel master should be fully knowledgeable of the management areas concerned, and must have a minimum of 5 years experience as a vessel master. Please list roe herring fishing experience, and charter experience (both seine test and spawn survey) in the charter area, as well as in other areas. (Test fishing experience counts as fishing experience). List years of dive spawn survey charter experience (up to 4 years). Preference may be given to vessel masters with spawn survey charter experience.
- Vessel Master must have current Marine Emergency Duties certificate.
- The vessel master is responsible for making the proper arrangements to have divers onboard as required to survey all spawns in their contract area. Vessel masters are required to notify Charles Fort and Greg Thomas of any in-season personnel changes.

Crew

- Please list names of the 2 non diving crew members, and any experience they may have working on herring dive surveys. Preference may be given to crew that has previous dive survey experience.
- At least one non diving crew member is required to have a Transportation endorsement.
- Boat operators should be competent and knowledgeable in the diving apparatus being used, the diving operation in progress and emergency diving procedures. All boat operators must be trained in first aid oxygen therapy, and CPR, and carry proof of this training. WorkSafe B.C. approved courses are available through community colleges, St. John's Ambulance, and other agencies. Contact Charles Fort (250-756-7259) if you need help finding a particular course.

Dive Supervisor

- One of the four divers will be designated as the 'Dive Supervisor'. The Dive Supervisor is defined as a person having complete and direct responsibility for the diving operation, and for ensuring that all safety and survey protocols are followed by dive teams. It is the Dive Supervisor's responsibility to train divers, tenders, and compressor operators as required and ensure that their duties are carried out safely and correctly. The Dive Supervisor and the test fishing master are responsible for making certain that diving operations adhere to Work Safe B.C. regulations.
- The Dive Supervisor is required to have at least two years experience in herring spawn assessment techniques. (A list of potential candidates is available on request.)
- The Dive Supervisor and one additional diver must be identified in the proposal. (The additional named diver must have a minimum of one year's dive spawn survey experience.) Both the supervisor and the additional diver must be acceptable to DFO.
- In addition to diving related responsibilities, the Dive Supervisor will be responsible for data collection, data entry, and for the preparation of the final data package for DFO.

Vessel masters should be aware that problems with the data package will reflect on their charter performance, as well as on the Dive Supervisor's rating. Payment will not be issued until a complete and satisfactory data package is submitted.

Divers

- All divers are to be certified as CSA Occupational SCUBA divers. In addition to carrying documentation proving this certification, they must also have documentation showing a valid dive medical clearance and valid First Aid / CPR certificates. Persons completing this 'statement of work' application should be aware that neither a recreational diving certificate nor a Seafood Harvesting Licence will be considered as acceptable certification.

Diver Equipment

Divers are expected to have equipment that is in good working condition. Maintenance records as required by WorkSafe B.C. are to be available for inspection.

- All divers are to carry a watch.
- Depth gauges are to be tested at the start of the survey
- Diver to tender signalling devices (whistle, "safety sausage" or orange garbage bag, flare, or strobe) are now required for open water dives.
- Buoyancy Compensation Devices are now required "appropriate to the diving conditions" In kelp beds, extra care must be taken to secure inflator hoses and loose straps.
- Divers might require extra weight to survey safely in shallow water.
- Kelp: Divers will carry at least one entanglement knife, secured on the upper body where it is accessible without twisting.
- All extraneous gear, unused hose whips, etc. to be removed or secured.
- Kelp survey should be done by divers experienced in kelp environment.

DATA REQUIREMENTS AND DELIVERABLES

- A brief logbook recording vessel activities is required and must be maintained onboard (details will be provided.) A paper copy is not required, but an electronic copy (Word, Word Perfect, etc.) of this logbook that can be edited will be required. Final payment will not be authorized until logbook is received.
- A vessel master report is required at the end of the charter which summarizes the points of interest in the program, issues encountered, comments on spawning distribution and abundance, and recommendations for changes to the program. A template will be provided.
- Completed paperwork for use of diver recalls.
- The completed spawn data survey package must be submitted to Charles Fort (Pacific Biological Station) within 2 weeks of the finishing date of the charter. Dive gear from ALL dive vessels, including Haida Gwaii and Prince Rupert areas, must be returned to PBS. Final payment will not be authorized until all gear is returned, and data is received.

APPLICATION INFORMATION FOR 2014 DIVE CHARTERS (pg 1 of 3)

The M.V. _____, V.R.N. _____ is hereby offered as a herring dive survey vessel by the undersigned:

Name(s) of Owners _____

Address (include postal code and area code for phone) _____

Phone _____

Vessel Master Name _____ **Contact Number** _____

Please list all relevant experience of vessel master: list number of years experience as vessel master, list tickets held, include description of experience in the area(s) applied for (i.e. fished or test fished herring in the area before); list previous years of dive survey test experience as vessel master. Use separate sheet if desired.

List number of years as vessel master			
List Roe Herring Fishing Experience			
Year	Area	Type (e.g. Seine, gillnet, test)	Vessel
List up to four years of dive spawn survey experience as vessel master (if any) during the last 10 years			
Year	Area		Vessel
Marine Tickets held:			
Please attach Vessel Master's Marine Emergency Duties certificate if available			

Dive Supervisor Name _____			Contact Number _____		
Year	Location		Vessel		

APPLICATION INFORMATION FOR 2014 DIVE CHARTERS (pg 2 of 3)

Diver Experience: Name _____		
Year	Location	Vessel
Crew Experience on dive surveys. Please submit transportation endorsement with application if available.		
Name _____		
Year	Location	Vessel
Name _____		
Year	Location	Vessel

Description of support vessel:

Registration #: _____ Length: _____
 Beam: _____ Draft: _____
 Gross Tonnage: _____ Year Constructed _____
 No. of Crew (Capt.' included): _____ Construction Material: _____
 Number of staterooms: _____ Fuel Capacity: _____
 Number of Berths _____ Life raft certified capacity: _____
 No. of survival suits: _____ Fresh water capacity : _____

Dimensions of wheelhouse: _____

Expiry date of most recent Steamship Inspection Transport Canada: _____

Description of electronics (make and model required). Please be specific.

Echo sounder: _____
 Radios: _____
 Radars: _____
 Cell Number: _____
 Chart Plotter _____
 Sat phone (# 1, 2, 3) _____

APPLICATION INFORMATION FOR 2014 DIVE CHARTERS (pg 3 of 3)

Photos of dive tenders must be included:

DIVE TENDER #1

Length:		Beam:	
Construction material:		Fuel capacity:	
Navigational Equipment:		Draft:	
Cruising speed:		Sounder:	
VHF Radio 1:		VHF Radio 2:	
EPIRB*		Oxygen:	
Type of first aid kit:		Engine & HP:	

DIVE TENDER #2

Length:		Beam:	
Construction material:		Fuel capacity:	
Navigational Equipment:		Draft:	
Cruising speed:		Sounder:	
VHF Radio 1:		VHF Radio 2:	
EPIRB*:		Oxygen:	
Type of first aid kit:		Engine & HP:	

(EPIRB required if dive tender greater than 6 m in length)

List safety equipment that will be available for divers (mandatory flares, dive flags, radio, "auxiliary propulsion" (use separate sheet if preferred):

Describe facilities for divers on the support vessel (e.g., workspace, change space, drying space for dive gear, amount of deck space). (Use separate sheet if preferred):

List computer specs:

List compressor specs:

BID INFORMATION FOR 2014 VESSEL-BASED DIVE CHARTERS

Vessel Name and V.R.N.: _____
 GST Number _____
 Fishing Master: _____

Please enter your bid in dollars per day (not including GST) for the following test fishing locations:

#	AREA	DATES	DURATION (days)	BID
D1	HG - 2E/2W	Flex start approximately Mar 10	23	
D2	Prince Rupert	Flexible Start	20	
D3	Central	Flexible Start	27	
D4	Gulf	Flexible Start	17	
D5	Gulf	Flexible Start	17	
D6	WCVI	Flexible start	21	

Signature of Master: _____

Where the master is not the registered owner of the vessel offered, the registered owner must sign below.

I, _____, being the registered owner of
 the fishing vessel _____, do hereby authorise
 _____, to offer said vessel for service from _____

to _____ Inclusive, and further offer him / her exclusive use of the vessel
 during that period, including the right to enter into contract for the provision of the services in the
 expression of interest document.



Appendix 1. Main Dive Tender Considerations

1. Tender vessels must comply with Transport Canada Small Commercial Vessels regulations.
2. Herring gillnet punts are not acceptable as diver tender vessels. The ideal vessel is usually an aluminium hulled whaler or v-hull design, 18 - 22 feet long, outboard powered, with a small cabin and provision for extra buoyancy. Inflatables, while more stable, lack the deck space of an aluminium work boat, are often less manoeuvrable, and are subject to rock damage.
3. Equipment capacity. Capable of carrying 2 divers, boat operator, dive and survey gear, with room for the divers to don gear without danger of falling overboard
4. Stability. Divers must be able to exit and enter the loaded tender vessel without threatening to swamp it, especially in swells. The tender's transom must be high enough to manoeuvre in reverse without taking excess water over the stern. Tender should have enough reserve buoyancy to remain afloat if swamped.
5. Manoeuvrability. Must be able to manoeuvre close to divers without running them over, to avoid rocks, and to accurately lay lead lines.
6. Ability to beach. Tender vessel must be capable of landing safely on a beach and working in shallow water.
7. Fixed struts or slow-reacting leg hydraulics in inboard/outboards are not suitable for this work. Larger vessels with hulls which are difficult to repair, or highly susceptible to rock damage are also not suitable.
8. Engine unaffected by repeated shut downs & start ups. During diver retrieval the tender's engine must be stopped to eliminate the possibility of a diver contacting a moving prop. Diesel inboard engines are designed for continuous operation, so operators may be reluctant to increase wear and fouling by repeatedly starting and stopping of the engine.
9. Shelter. In very cold locations (eg. QCI) or locations where transects are short and the divers do not swim enough to keep warm, some protection from the wind contributes greatly to diver comfort.
10. Wind. High sided, flat bottomed punts are subject to wind action and are not suitable, especially in exposed locations where the vessel is manoeuvring among rock piles. This design hinders the ability of the boat operator to retrieve divers safely and efficiently.
11. Ease of diver entry. Repeated entry from the water adds to divers' fatigue, and excess fatigue contributes to accidents. High sides will hamper the emergency retrieval of an injured diver.

Appendix 2. General Requirements for Herring Spawn Survey Safe Diving Procedures

1. Hours of operation: Daylight only: 0730 - 1900 PST (1700 on days of low light/visibility)
2. Divers can expect to make 2 to 10 repetitive dives per day, depending on location.
3. All dives will be no decompression dives, using the DCIEM tables or other WorkSafe B.C. approved table (written exemption required for non-DCIEM tables).

4. In areas of deeper spawn (Haida Gwaii and Barkley Sound) it is sometimes necessary to have three or four divers rotating dive duties in one skiff in order to minimize nitrogen build-up on multiple 'deep' dives (below 40 feet).
5. Dive logs are to be kept current at all times.
6. Computers to be used ONLY as a backup to dive logs and tables. Dives to be logged as square dives, bottom time = start of descent to time diver's head appears at surface. This discounts offgassing time at shallow (< 3 msw) stations and increases the safety margin for multiple dives.
7. Where a repetitive dive's repetitive group letter is less or equal to that of a preceding dive, divers will follow the correct procedure to avoid Repetitive Group loops (DCIEM Diving Manual, 1-24).
8. Spot diving to locate ends of spawn or location of spawn shallower than 60 feet:
 - a) Use either buddy pair or single diver secured to a buoy line.
 - b) Ascent rate NOT to exceed 15 metres (50 fsw) per minute.
 - c) Work across or up the slope (deep to shallow).
9. Seaward end of transect will be dropped at a maximum depth of 20 metres, using depth sounder, and marked by a buoy with a maximum of 20 metres of line.
10. Descent rate is not to exceed 18 metres / 60 fsw per minute.
11. Divers work upslope from deep to shallow, not exceeding 15 metres / 50 fsw per minute ascent rate, unless otherwise specified by the dive tables used.
12. Solo diving (24.35) is only permitted if:
 - a) the diver has a buoy and line to the surface clipped securely to his/her equipment OR is in constant audio communication with the tender.
 - b) no macrocystis kelp or other entanglement hazard is present.
 - c) a dressed standby diver is available in the tending skiff. This skiff may tend only one solo diver at a time.
13. Deep Spawn (below 20 metres / 60 feet) is to be surveyed using buddy pairs.
 - a) The dive may be run as a multi-level dive using DCIEM procedures (DCIEM Diving Manual 1-26). In this case one diver surveys the spawn bed while the second monitors depth and time and controls the dive.
 - b) Both divers are to terminate the dive with enough air left to allow either to make a controlled ascent to the surface while sharing air, including recommended safety stops.
14. When recovering divers, the skiff's engine is to be shut off, unless working in a surf zone or other area where it is necessary to move the skiff immediately once the divers are back on board.
15. If it is necessary to tow divers (out of a surf zone or macrocystis bed), the dive tender will either:
 - a) travel in reverse if the divers are hanging onto the skiff's gunwales, or
 - b) use a towline so that the divers are towed astern well clear of the skiff's propeller.
16. Support vessel to be anchored close to daily worksite (within visual range, if possible without compromising the vessel's security).

17. VHF channel 16 or previously arranged working channel to be monitored during diving operations.
18. All hazardous occurrences (accidents or near-misses) are to be logged.