



# Animal Use Protocol (AUP) Vertebrates or Cephalopods

At the Bamfield Marine Sciences Centre (BMSC), the use of animals for research is a privilege. It is the responsibility of the researcher to show that the use of animals is justified, that the project has merit, and that the procedure to which the animals will be subjected will be carried out humanely and in accordance with the Canadian Council on Animal Care (CCAC) standards. <https://www.ccac.ca/en/standards/>

## Contents:

1. Checklist – page 2
2. AUP Application – page 4
3. Appendices – page 8

BMCS Animal Care Contacts	Email	Instructions
Coordinator of Animal Care (CAC)	<a href="mailto:cac@bamfieldmsc.com">cac@bamfieldmsc.com</a>	Primary contact for all BMSC animal care and ethics needs. <ul style="list-style-type: none"> <li>• Send initial complete AUP application to the CAC email.</li> <li>• It is required that you schedule a Research and Animal Care Orientation meeting (RACO) with the CAC prior to collecting and using animals at BMSC.</li> </ul>
Animal Care Technician (ACT)	<a href="mailto:actech@bamfieldmsc.com">actech@bamfieldmsc.com</a>	Secondary contact for BMSC animal care – onsite Animal Care.
Animal Care Committee Coordinator	<a href="mailto:acc.coord@bamfieldmsc.com">acc.coord@bamfieldmsc.com</a>	AUP processing, CCAC and ACC business. <ul style="list-style-type: none"> <li>• For all further communication with the ACC, including forwarding and processing of all documentation required for AUP approval (approved permits, approved home AUPs, responses to the ACC and amendment requests.)</li> </ul>
Bamfield Animal Care Committee (ACC)		Volunteer Committee responsible for ensuring that all animal users and caregivers are informed of and comply with BMSC animal care and use policies. <ul style="list-style-type: none"> <li>• All communication with the ACC must go through the Animal Care Committee Coordinator.</li> </ul>



# Animal Use Protocol (AUP) Vertebrates or Cephalopods

## Checklist for RESEARCHERS – *Before You Arrive:*

- Email the **complete BMSC AUP using Vertebrates or Cephalopods application** to [cac@bamfieldmsc.com](mailto:cac@bamfieldmsc.com) before your research is to commence. **Allow 60 days for AUP review and approval. AUP submission deadlines are 60 days prior to planned start date at BMSC.**
- Approval of HOME and BMSC AUPs are required before any animal use (including collection) begins as per CCAC guidelines.

Check	The <b>complete BMSC AUP using Vertebrates or Cephalopods application</b> must have the following documents, where applicable, included with it:
	1. BMSC AUP using Vertebrates or Cephalopods form - available on BMSC Website at: <a href="http://www.bamfieldmsc.com/resource/animal-care">http://www.bamfieldmsc.com/resource/animal-care</a>
	2. Collection permit from Fisheries and Oceans Canada (DFO). ( <i>If applicable, approved or in-progress application</i> ) <a href="https://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/sci/index-eng.html">https://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/sci/index-eng.html</a>
	3. Collection permit from BC's Ministry of Forests, Lands and Natural Resource Operations and Rural Development (MFLNRO) for terrestrial or freshwater species ( <i>If applicable, approved or in-progress application</i> ) <a href="http://www.frontcounterbc.gov.bc.ca/">http://www.frontcounterbc.gov.bc.ca/</a>
	4. Land access permits must be obtained from the Huu-ay-aht First Nations (HFN), MFLNRO, Parks Canada and others ( <i>If applicable, approved or in-progress application</i> ) <ol style="list-style-type: none"> <li>Consult: <a href="http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/0704336#appB-1-2">http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/0704336#appB-1-2</a></li> <li>MFLNRO: <a href="http://www.frontcounterbc.gov.bc.ca/">http://www.frontcounterbc.gov.bc.ca/</a></li> <li>Parks Canada: <a href="https://www.pc.gc.ca/apps/rps/page1_e.asp">https://www.pc.gc.ca/apps/rps/page1_e.asp</a></li> <li>HFN: <a href="https://huuayaht.org/services/lands-permits/">https://huuayaht.org/services/lands-permits/</a></li> </ol>
	5. Proof of Animal Care training certificate for all Research Staff working with vertebrates on the project. <ol style="list-style-type: none"> <li>The training must comply with Home Institution Animal Care training standard.</li> <li>Please refer to CCAC requirements for training. <a href="https://www.ccac.ca/en/training/">https://www.ccac.ca/en/training/</a></li> </ol>
	6. Any and all Standard Operating Procedures (SOPs) that will be followed as a part of the research. (BMSC, Home Institution or other sources)
	7. HOME Institution (HI) AUP Application ( <i>Approved or in-progress application</i> )
	8. Once in-progress applications and permits are approved, these documents must be forwarded to <a href="mailto:acc.coord@bamfieldmsc.com">acc.coord@bamfieldmsc.com</a> as they are available. Approved permits and home AUPS are a requirement for BMSC AUP Approval.



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## Notes for your application:

1. Forms should be typed. Every section should be completed.
2. Researchers are welcome to seek advice from the Associate Director of Research or the BMSC Coordinator of Animal Care (CAC) concerning their AUPs before submission to Animal Care. As well, resources are available from the CCAC.  
<https://www.ccac.ca/en/standards/guidelines/general-guidelines.html>
3. Researchers are required to sign off on their approved AUPs prior to or upon arrival at BMSC.
4. It is required that a Research and Animal Care Orientation (RACO) meeting must happen with the entire lab before animal work occurs upon your arrival at BMSC or shortly after. It is the responsibility of the Principal Investigator (PI) to contact the BMSC Coordinator of Animal Care (CAC) at [cac@bamfieldmsc.com](mailto:cac@bamfieldmsc.com) in order to arrange a time to schedule the Research and Animal Care Orientation meeting. At this meeting, your research team will review the approved AUP with the BMSC CAC and will also get access codes/keys to your assigned BMSC laboratory location.
5. All collections must be entered into the BMSC Biodiversity/Collection Records database. This database is password protected. Once your AUP is approved, you will receive your log in information. <http://biodiv.bamfieldmsc.com/>



# Animal Use Protocol (AUP)

## Vertebrates or Cephalopods

For administration use only

BMSC AUP #	Date AUP Received	Date AUP Approved

### 1. Project Overview

<b>Project Title</b>			
Proposed Start Date for Current Application		Has this protocol been approved before?	<input type="checkbox"/>
Proposed End Date for Current Application (< 1 year)		If yes, provide previous protocol number.	
Multi-Year Project <i>(indicate the year this applications relates to)</i>		year # of #year project <i>e.g. year 2 of 4 year project</i>	

### 2. Principal Investigator (PI)

Full Name		Home Institution	
Position and Department		Home Institution AUP#	
Business Phone		Animal Care Training Certified	
Cell		Name of Certification	
Email		Proof of Certification attached?	<input type="checkbox"/>
Phone at BMSC			
Permit #s (If Applicable):			
DFO Animal Collection		Other	
MFLNRO		Huu-Ay-Aht First Nations	

### 3. Associate Scientists, Research Staff

Full Name	Home Institution and Dept.	Onsite contact info (BMSC Cabin #)	Position (co-investigator, technician, undergrad student, grad student)	Working with animals?	Proof of Animal Care training included?

### 4. Peer Review

Has this project received peer review?	If yes, specify:		
	Granting Agency Name	Date	Status of Funding Approval
<input type="checkbox"/>			

### 5. Lay Description of Project

Provide a concise typed abstract (250 words or less) in simple language that a non-scientist can understand. Outline the objectives of the project, the experimental approach, originality, and the significance of the expected results to human and/or animal health. Note that BMSC may need to release this abstract to the public relations office to provide information to the public about experiments in progress at BMSC.

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## 6. Relief of Pain

Note: ACC members are obligated to treat or euthanize animals in distress. The BMSC CAC and Veterinarian have authority to euthanize, however a reasonable attempt will be made to communicate in advance with the researcher. If you cannot be contacted, the decision of the ACC is final. Ensure that arrangements are in place to permit consultation on a 24 hour basis. Note that only euthanasia methods that are approved by the CCAC are acceptable. <https://www.ccac.ca/Documents/Standards/Guidelines/Euthanasia.pdf>

Species	Analgesia (Agent/route/method/dosage)	Anaesthesia (Agent/route/method/dosage)	Euthanasia (Agent/route/method/dosage)

Justification for not using anaesthesia or analgesia:	
If using physical methods of euthanasia within CCAC guidelines, justify.	

## 7. Endpoint Analysis (for CCAC Reporting)

Endpoints (removal of the animal from the study or euthanasia) are meant to be implemented as soon as necessary scientific data has been gathered, or at the first indication of pain, distress, suffering or non-recoverable disease state. Endpoints could occur anytime between initial capture and the completion of research. For each species you intend to work with under this AUP, please complete the following.

Specify the potential for animal injury or mortality between initial capture and the completion of research including during transport and animal holding, how that would be monitored for, and what the researcher would do in the event of an endpoint specific to animal holding.

[https://www.ccac.ca/Documents/Standards/Guidelines/Appropriate\\_endpoint.pdf](https://www.ccac.ca/Documents/Standards/Guidelines/Appropriate_endpoint.pdf)

1. What are the indicators of pain and/or distress that the animals can be expected to demonstrate?	
2. State what the monitoring frequency is once the animals show signs of pain/distress in the experiment?	
3. It is the responsibility of the supervising investigator to ensure that only properly trained personnel will perform the observations. Who will do the observations? The PI may elicit assistance from the BMSC Coordinator of Animal Care (CAC) to train personnel in endpoint observation. The BMSC Veterinarian acts on an intermittent/consultative basis and may not be onsite/available at all times.	
4. What is the chain of reporting for the results of monitoring once the animals are reaching endpoint?	
5. Who has the authority to euthanize in the researcher's group?	
6. It may be required that sample collections need to be taken from animals that die unexpectedly or are euthanized. If this happens, please detail.	
7. Other notes	
8. Summarize the details of endpoints for this project. Include the time frame that you could start to expect	

the animal to experience pain, distress, suffering or death?	
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## 8. Classification of Experiments, Summary of Species and Categories of Invasiveness

\*The CCAC requires that each experimental protocol be designated Acute or Chronic, and assigned a category of invasiveness.

[https://www.ccac.ca/Documents/Standards/Policies/Categories\\_of\\_invasiveness.pdf](https://www.ccac.ca/Documents/Standards/Policies/Categories_of_invasiveness.pdf) or

<https://www.ccac.ca/Documents/Standards/Guidelines/Wildlife.pdf>. If in doubt about the appropriate category, or if the project involves different categories, list the highest applicable category. See Appendix 1 of this document for details.

\*\*For Purpose of Animal Use, please refer to category number in Appendix 2.

List each species to be used, Purpose of Animal Use and Category of Invasiveness while working at BMSC.						
Species	Location of collection or field study	Purpose of Animal Use**	BMSC Lab/Aquaria Location	Total # animals /yr	Acute/Chronic Experiments	Category of Invasiveness*
If you are unable to get the species that you require, what other species you could use instead for your research? Note that your collection permit must specify the alternate species as well.						

## 9. Field Studies and Experimental Protocols

Note: Fill out #1 - #4 ONLY if you will be conducting experiments or studies in the field. This section needs to be completed for the collection of animals from the field as well.

1. Provide a description of the capture, restraint and any other information that is pertinent to the field study.	
2. Do you expect any non-target species to be caught? Describe actions to take if caught.	
3. Do you anticipate any potential ecological impacts?	
4. What is the potential for animal injury or mortality during this field study? Supply humane endpoints.	

Describe the proposed experiments designated by number (e.g. Exp #1) giving all details of procedures to be done on animals. You must clearly outline procedures and the effect that could or will potentially impact the welfare of the animals(s). Consult CCAC guidelines <https://www.ccac.ca/en/standards/guidelines/general-guidelines.html> and BMSC SOPs <http://www.bamfieldmsc.com/resource/animal-care> for acceptable procedures.

For each experiment include:

- The name of each researcher involved in each experiment;
- All experimental activities (lab and field) described in detail. (Substances, volumes administered, location, times, frequencies, needle gauge, etc.);
- Monitoring of animals (basic care), habitat enrichment, water and or air check, feeding, escape prevention;
- For surgical procedures; post-surgical monitoring and care (duration, monitoring frequency, care period, expected lasting impairment, etc.);
- Analgesia, anaesthesia or euthanasia (agent/route/method/dosage). Or justification for not using analgesia/anaesthesia;
- SOPs should be developed and provided.

Experiments Please provide a detailed description of your proposed research protocol and email to [acc@bamfieldmsc.com](mailto:acc@bamfieldmsc.com)

## 10. Justification of Use of Animals

The Three Rs tenet (**Replacement, Reduction and Refinement**) guides scientists on the ethical use of animals in science.

- Replacement refers to methods which avoid or replace the use of animals in an area where animals would otherwise have been used
- Reduction refers to any strategy that will result in fewer animals being used
- Refinement refers to the modification of husbandry or experimental procedures to minimize pain and distress

For more information, visit <https://3rs.ccac.ca/>

1. Why must sentient animals be used in these experiments (as opposed to (e.g. computer models, tissue culture or microbes)? Have you considered replacement alternatives to animal use?	
2. Why must this/these species be used? Are there any alternative species that could be used?	
3. Justify the number of animals requested based upon a statistical rationale, citations from the literature or previous research. Numbers used should reconcile with table in Section 8 Relief of Pain.	
4. Specify if any of the animals used will be repurposed to/from another PI for their use. If so, include the Project Title/PI and the number of animals repurposed.	

## 11. Care Requirements

Once animals arrive on station, their care is the responsibility of the PI and his/her associates unless assistance of BMSC staff is needed and requested. Consult CCAC guidelines and BMSC SOPs for acceptable methods.

Describe the care and monitoring of animals in holding designated by species. You must clearly outline procedures and the effect that could or will potentially impact the welfare of the animals(s). Consult CCAC guidelines <a href="https://www.ccac.ca/en/standards/guidelines/general-guidelines.html">https://www.ccac.ca/en/standards/guidelines/general-guidelines.html</a> and BMSC SOPs <a href="http://www.bamfieldmsc.com/resource/animal-care">http://www.bamfieldmsc.com/resource/animal-care</a> for acceptable procedures.		
<ul style="list-style-type: none"> <li>• Monitoring of animals (basic care), habitat enrichment, water and or air check, feeding, escape prevention;             <ul style="list-style-type: none"> <li>○ Note: All animals must be observed daily by a person(s) qualified to assess their well-being Per CALAM Standards of Vet Care <a href="https://www.ccac.ca/en/standards/other-recognized-standards.html">https://www.ccac.ca/en/standards/other-recognized-standards.html</a></li> </ul> </li> <li>• other medical treatments as appropriate, as indicated through veterinary consultations;</li> <li>• housing and husbandry methods, and environmental enrichment as a means to refine animal care;</li> <li>• any limitations on environmental enrichment from that normally offered to animals in the institution, based on CCAC guidance, must be justified to the ACC;</li> <li>• refinements to the length of time that animals will be held/used;</li> </ul>		
Care of animals by species		
	Y/N	If yes, describe type of care/assistance required.
Do any animals require special care (e.g. temperature, gas, light period, feeding regime) or isolation?	<input type="checkbox"/>	
Is animal care assistance required of BMSC Staff?	<input type="checkbox"/>	

## 12. Disposition of Animals

Provide details on the return of live animals or the disposal of carcasses if euthanasia is required.	
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## 13. Key Word Description – Check All That Apply

General	Procedures	Agents	Surgical
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<input type="checkbox"/> Acute	<input type="checkbox"/> Primary Cell Culture	<input type="checkbox"/> Altered Enviro Exposure	<input type="checkbox"/> Anaesthetics	<input type="checkbox"/> Cannulation
<input type="checkbox"/> Antibody Production	<input type="checkbox"/> Product Effectiveness	<input type="checkbox"/> Blood Sampling	<input type="checkbox"/> Bio-Hazardous	<input type="checkbox"/> Major
<input type="checkbox"/> Behavioural Study	<input type="checkbox"/> Regulatory	<input type="checkbox"/> Euthanasia	<input type="checkbox"/> Carcinogens	<input type="checkbox"/> Minor
<input type="checkbox"/> Breeding	<input type="checkbox"/> Reinforcement/Motivation	<input type="checkbox"/> Food Deprivation	<input type="checkbox"/> Chemical	<input type="checkbox"/> Multiple
<input type="checkbox"/> Cell Cultures	<input type="checkbox"/> Research	<input type="checkbox"/> Gavaging	<input type="checkbox"/> Freund's Complete Adjuvant	<input type="checkbox"/> Survival
<input type="checkbox"/> Chronic	<input type="checkbox"/> Species	<input type="checkbox"/> Identification/Marking	<input type="checkbox"/> Infectious	<input type="checkbox"/> Stereotaxic
<input type="checkbox"/> Conservation	<input type="checkbox"/> Staged Behavioural Encounters	<input type="checkbox"/> Injections <input type="checkbox"/> IP <input type="checkbox"/> IV <input type="checkbox"/> IM <input type="checkbox"/> SQ	<input type="checkbox"/> Inflammatory	<input type="checkbox"/> Terminal
<input type="checkbox"/> Development of Techniques	<input type="checkbox"/> Teaching	<input type="checkbox"/> Infection Induction	<input type="checkbox"/> Immunogenic	<input type="checkbox"/> Other (Specify):
<input type="checkbox"/> Digestibility	<input type="checkbox"/> Tissue/Organ Collection	<input type="checkbox"/> Physical Restraint	<input type="checkbox"/> Radioisotope	
<input type="checkbox"/> Environmental Protection	<input type="checkbox"/> Transgenic Animal	<input type="checkbox"/> Special Diet	<input type="checkbox"/> Other (Specify):	
<input type="checkbox"/> Field Work	<input type="checkbox"/> Transplant	<input type="checkbox"/> Trapping/Netting		
<input type="checkbox"/> Method Effectiveness	<input type="checkbox"/> Validation of Non-Animal Model	<input type="checkbox"/> Water Restriction		
<input type="checkbox"/> Observational	<input type="checkbox"/> Wild Animals	<input type="checkbox"/> Whole-body Radiation		
<input type="checkbox"/> Palatability	<input type="checkbox"/> Other (Specify):	<input type="checkbox"/> Other (Specify):		
<input type="checkbox"/> Pilot Study				

#### 14. Potential Hazards

	Y/N	If yes, describe the hazards and your mitigation plans (e.g. animal disposal).
Does the proposed research involve any potential hazards to humans or animals (e.g. carcinogens, isotopes, chemicals)?	<input type="checkbox"/>	

#### 15. Declaration

1. Animals used in this research project will be cared for in accordance with the principles contained in "The Care of Experimental Animals – A Guide for Canada" (published by the CCAC) including feeding, shelter, escape prevention (see <http://www.bamfieldmsc.com/resource/animal-care>);
2. You have considered alternative procedures that do not involve the use of living animals;
3. You will use the minimum number of animals consistent with the objectives of the described research or teaching program;
4. You have carefully selected the species that you propose to use to be appropriate to the project;
5. You are aware of and will consult, as needed, the guidelines posted on the BMSC website regarding methods for animal care, handling, anesthesia and euthanasia <http://www.bamfieldmsc.com/resource/animal-care>;
6. You will notify the BMSC Animal Care Committee (ACC) of any revisions to this experimental protocol;
7. You will keep copies of all approved protocols, revisions and amendments in an accessible file;
8. You will acknowledge that repeated examples of irresponsible animal care will jeopardize your opportunity to do future research or teach at BMSC;
9. Upon your arrival at BMSC or shortly after, you are aware that a Research and Animal Care Orientation (RACO) meeting must happen with the entire lab before animal use occurs. It is the responsibility of the Principal Investigator to contact the BMSC Coordinator of Animal Care (CAC) at [cac@bamfieldmsc.com](mailto:cac@bamfieldmsc.com) in order to arrange a time to schedule the Research and Animal Care Orientation (RACO) meeting.

Approval by the ACC is valid for a period of one year. Protocols must be renewed annually even if no revisions are made. Protocols may be renewed up to 3 additional years if a multiple-year project.

\_\_\_\_\_  
Principal Investigator (PI) Name and Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Animal Care Committee Chair (ACC Chair) Name and Signature

\_\_\_\_\_  
Date



## Appendix 1: Category of Invasiveness for Wildlife Studies

**ACUTE:** Any study involving euthanasia of an animal upon receipt or shortly after a brief period of housing (NO manipulations or experiments to be performed on conscious animals). E.g. Animals euthanized for tissues, or anaesthetized and not allowed to recover from anaesthesia.

**CHRONIC:** Any study which involves recovery of an animal from anaesthesia after an experiment, and maintenance of animals in BMSC facilities for more than 2 days (not counting the normal conditioning period).

See Appendix D for Categories of Invasiveness for Wildlife at <https://www.ccac.ca/Documents/Standards/Guidelines/Wildlife.pdf>

Examples outlined in that document include:

<b>CATEGORY A:</b>	Methods used on most invertebrates or on live isolates. <b>Possible examples:</b> the use of tissue culture and tissues obtained at necropsy; the use of eggs, protozoa or other single-celled organisms; experiments involving containment, incision or other invasive procedures on metazoa; and studies in which the animals are observed without any disturbance to them.
<b>CATEGORY B:</b>	Methods used which cause little or no discomfort or stress. <b>Possible examples:</b> observational studies in which there is some disturbance to the animals but not to the point that the same individuals are repeatedly observed so as to habituate or otherwise modify their behavior; census or other surveys which disturb animals but which do not involve capture or marking individuals; noninvasive studies on animals that have been habituated to captivity; short periods of food and/or water deprivation equivalent to periods of abstinence in nature.
<b>CATEGORY C:</b>	Methods which cause minor stress or pain of short duration. <b>Possible examples:</b> capture, using methods with little or no potential to cause injury and marking of animals for immediate release; long-term observational studies on free ranging animals where the behavior of individuals may be altered by repeated contact; brief restraint for blood or tissue sampling; short periods of restraint beyond that for simple observation or examination, but consistent with minimal distress; short periods of food and/or water deprivation which exceed periods of abstinence in nature; exposure to non-lethal levels of drugs or chemicals; low velocity darting and slow-injection darts with immobilization chemicals. Such procedures should not cause significant changes in the animal's appearance, in physiological parameters (such as respiratory or cardiac rate, or fecal or urinary output), in social responses or inability to survive. Note: During or after Category C studies, animals must not show self-mutilation, anorexia, dehydration, hyperactivity, increased recumbency or dormancy, increased vocalization, aggressive-defensive behavior, or demonstrate social withdrawal and self-isolation.
<b>CATEGORY D:</b>	Methods which cause moderate to severe distress or discomfort. <b>Possible examples:</b> capture, using methods that have the potential to cause injury (e.g., high velocity darting and rapid-injection darts with immobilization chemicals, net gunning, etc.); maintenance of wild caught animals in captivity; translocation of wildlife to new habitats; major surgical procedures conducted under general anesthesia, with subsequent recovery; prolonged (several hours or more) periods of physical restraint; induction of behavioral stresses such as maternal deprivation, aggression, predator-prey interactions; procedures which cause severe, persistent or irreversible disruption of sensorimotor organization. Other examples in captive animals include: induction of anatomical and physiological abnormalities that will result in pain or distress; the exposure of an animal to noxious stimuli from which escape is impossible; the production of radiation sickness; exposure to drugs or chemicals at levels that impair physiological systems (N.B. Experiments described in this paragraph would be Category E if performed on wildlife immediately prior to release). Note: Procedures used in Category D studies should not cause prolonged or severe clinical distress as may be exhibited by a wide range of clinical signs, such as marked abnormalities in behavioral patterns or attitudes, the absence of grooming, dehydration, abnormal vocalization, prolonged anorexia, circulatory collapse, extreme lethargy or disinclination to move, and clinical signs of severe or advanced local or systemic infection, etc.
<b>CATEGORY E:</b>	Procedures which cause severe pain near, at, or above the pain tolerance threshold of unanesthetized, conscious animals. This Category of Invasiveness is not necessarily confined to surgical procedures, but may include exposure to noxious stimuli or agents whose effects are unknown; exposure to drugs or chemicals at levels that (may) markedly impair physiological systems and which cause death, severe pain, or extreme distress; behavioral studies about which the effects of the degree of distress are not known; environmental deprivation that has the potential to seriously jeopardize an animal's well-being; use of muscle relaxants or paralytic drugs without anesthetics; burn or trauma infliction on unanesthetized animals; a euthanasia method not approved by the CCAC; any procedures (e.g., the injection of noxious agents or the induction of severe stress or shock) that will result in pain which approaches the pain tolerance threshold and cannot be relieved by analgesia (e.g., removal of teeth without analgesia, or when toxicity testing and experimentally-induced infectious disease studies have death as the endpoint); capture methods with a high potential of causing severe injury that could result in severe chronic pain and/or death (e.g., leghold traps)

For more information, visit <https://www.ccac.ca/en/standards/fundamental-principles.html>

## Appendix 2: Purpose of Animal Use

Purpose of Animal Use – Check the item below that best describes the purpose of animal use (determined by BACC and PI); From: Appendix A – CCAC AUF Instructions <a href="https://www.ccac.ca/Documents/Assessment/AUF_Instructions.pdf">https://www.ccac.ca/Documents/Assessment/AUF_Instructions.pdf</a>	
0. Breeding Colony/Stock: Animals held in breeding colonies (e.g. fish, rodents) that have not been assigned to a particular research, teaching or testing protocol.	Animals held in breeding colonies (e.g. fish, rodents, farm animals) that have not been assigned to a particular research, teaching or testing protocol.
1. Studies of a fundamental nature in sciences related to essential structure or function (e.g. biology, psychology, biochemistry, pharmacology, physiology etc.)	Basic science studies, including biology, psychology, biochemistry, pharmacology, physiology). Examples: studies designed to understand the cellular and/or molecular basis of inflammatory reactions or other basic physiological or biochemical reactions; studies designed to understand one or some of the various facets of the role played by a hormone or other compound produced by mammals; studies designed to better understand the behavior of various species; studies designed to better understand the population dynamics of various species
2. Studies for medical purposes, including veterinary medicine, that relate to human or animal disease or disorders.	Studies carried out to better understand a specific disease or disorder and to help find therapies for it. Examples: development of a mouse model for a specific type of cancer or other disease; studies to determine which antibodies are the most likely to contribute positively to the therapy of a specific type of cancer; studies to determine which molecule within a particular class of compounds is the most likely to contribute to maintaining stable blood glucose levels in an animal model of diabetes
3. Studies for regulatory testing of products for the protection of humans, animals, or the environment.	Studies required by government authorities. Examples: safety testing, regulatory toxicology, vaccine efficacy trials, and testing of new therapeutic compounds (if it is to generate data that is going to be used in a submission for an investigational new drug application (IND) or for a new drug application (NDA)); shellfish toxin testing
4. Studies of the development of products or appliances for human or veterinary medicine.	Studies carried out to investigate potential therapies (as determined following studies of PAU 2) for humans or animals, before regulatory testing (PAU 3) is carried out on the most promising therapies. Examples: studies undertaken in animals to investigate the role and effects of a specific drug or immunotherapy candidate for cancer; studies undertaken to develop physical devices to assist heart function; studies undertaken to develop artificial organs
5. Education and training of individuals in post-secondary institutions or facilities.	Teaching or training programs where animals are used to introduce students to scientific work and teach manual skills and techniques.

## Appendix 3: Acronyms

ACT	Animal Care Technician
AUP	Animal Utilization Protocol
BACC	Bamfield Animal Care Committee
BMSC	Bamfield Marine Sciences Centre
CAC	Coordinator of Animal Care
CALAM	Canadian Association for Laboratory Animal Medicine
CCAC	Canadian Council on Animal Care
DFO	Fisheries and Oceans Canada

HFN	Huu-ay-aht First Nations
HI	Home Institution
ITC	Introductions and Transfers Committee
MFLNRO	Ministry of Forests, Lands and Natural Resource Operations and Rural Development
PAU	Purpose of Animal Use
PI	Principal Investigator
RACO	Research and Animal Care Orientation
SOP	Standard Operating Procedure