	Fisheries and Oceans Canada **STANDARD OPERATING PROCEDURE** **SOP-OPA-ACC-02**
TITLE: Procedures for biopsy and tissue sampling of marine mammals	
EFFECTIVE DATE: APRIL 2013 **LAST REVISION DATE**: SEPT 2021	
APPROVED BY: Ontario, Prairie & Arctic Animal Care Committee (OPA-ACC)	

1.0 PURPOSE

To provide instructions for the efficient and safe tissue sampling of marine mammals**.**

2.0 SCOPE

This procedure applies to all scientists, technicians, students, animal care and veterinary staff at the DFO Ontario & Prairie and Arctic Regions.

3.0 RESPONSIBILITIES

Ontario, Prairie and Arctic Animal Care Committee (OPA-ACC) is responsible for:

- Review and approval of animal use protocols and management procedures for animal use (OPA-ACC Chair: Michelle Wetton-Salo)
- Taking action if procedures are misused. (See Section 3.0, OPA-ACC Terms of Reference)

The OPA-ACC Veterinarian is responsible for:

- Support in the review process of animal use protocols.
- Advice on health and disease management for research fish.
- Provision of training and advice on use of anaesthetic drugs and prescriptions as required.
- Use of professional judgement in determining if research users of animals demonstrate competency to perform procedures; taking action to address unnecessary pain or distress of animals.

Division or Responsible Managers have overall responsibility for:

- Ensuring that personnel are aware of and understand the policy/procedure.

All personnel that plan to use this procedure are responsible for:

- Familiarizing themselves with this policy/procedure;
- Obtaining training for this procedure prior to conducting it unsupervised.

4.0 APPROVED PROCEDURE

TISSUE SAMPLE COLLECTION:
(By species)

BOWHEAD, BELUGA, KILLER WHALES, NARWHALS, AND WALRUS

Skin and blubber samples for chemical and genetic analysis will be collected from bowhead, beluga, killer whales, narwhal, and walrus using standard remote biopsy sampling techniques (see FWI-ACC-SOP-01 for whale pursuit methodology). Skin and blubber cores will be collected using a biopsy dart fitted with a tubular sterile stainless steel tip (4 cm or 2 cm length and 0.6 cm diameter). Tips will be cleaned and sterilized thoroughly with Isopropyl alcohol or Betadine antiseptic solution prior to biopsy collection. A bleach/water solution (1 part bleach to 9 parts water) may be used if the alcohol or Betadine are not available in the field. A crossbow or airgun will be used to fire a biopsy dart fitted with the tubular sterile stainless steel tip. Killer whales will be targeted at the saddle patch region below the trailing edge of the dorsal fin, bowhead whales will be targeted mid-dorsally along the lumbar region, beluga whales and narwhals will be targeted at or just below the dorsal ridge, and the dorsal surface of walrus is targeted from the shoulders to midway down the body. If a biopsy attempt is unsuccessful and the biopsy tip comes into contact with any potential source of contamination, the biopsy tip will be re-sterilized prior to the next biopsy attempt.

There is no realistic potential for mortality or serious injury, as animals will be approached slowly from a boat and biopsy attempts will be made from a distance of 10-20 meters. Possible injury during biopsy deployment includes unsuccessful biopsy dart penetration, in which the injury would be a superficial wound. All biopsy materials are thoroughly cleaned and sterilized to minimize risks of infection upon contact with the animal. Remote biopsy of whales and walrus using either crossbows or airguns to deliver biopsy darts is routinely used in studies of various marine mammal species.

SEALS

Seal tissue samples are typically collected during the tagging process (please see FWI-ACC-SOP-01 for methodology). Hair can easily be collected by cutting with scissors, being sure to always cut away from the seals skin. Fat biopsies will be collected from the hips using a 5 mm diameter sterile punch. Biopsy from the hips should be taken at about 60% of the standard length. A local anaesthetic (xylocaine) may be used. Place the punch as perpendicular to the skin as possible. Push the punch in firmly in rotating the device to cut through the skin and blubber down to the superficial muscle tissue. Pull out the punch gently. Biopsy site should be sprayed with the antiseptic Betadine. If possible, collect any blood from bleeding wound, placing it into labelled vacutainer tube. Otherwise, an experienced researcher may collect blood from the hind flipper vein using a vacutainer system if needed. A veterinarian may attempt to collect blood from the extradural intra-vertebral vein in the lumbar region using the 10 ml syringe and a spinal needle. This is done as follows: feel and find the spine just above the hips; locate two vertebrae and insert the needle firmly in between them, slightly on the side; the needle should either hit the bone or the vein after going through the fat and muscle; when in the vein, the resistance felt on the needle is different and a venous return check is essential to make sure the needle is actually in the vein; stay as steady as possible and pull the syringe

piston to suck up the blood. Pull out the needle quickly and press on the spot to prevent bleeding. Spray with Betadine.