

HAGFISH CARE
SOP# = Chon3

PURPOSE: To describe methods of care for hagfishes.

POLICY: To provide optimum care for all animals.

RESPONSIBILITY: Collector and user of the animals. If these are not the same person, the user takes over responsibility of the animals as soon as the animals have arrived on station.

PROCEDURE: At present there is one species of hagfish found around BMS.

Species: Pacific hagfish *Eptatretus stouti*

Identification: Refer to Lamb and Edgell's book, "Coastal fishes of the Pacific Northwest" for in depth descriptions of individual specimens.

Eptatretus stouti: Hagfish are blind, having no eyes. They have no fins and a flat, pointed snout bearing 8 barbels and a small sucking disk mouth. They have 10 to 14 gill pores on each side and can reach 63cm in length. Hagfish secrete copious quantities of thick slime.

Sites: Hagfish are found in the channels or open ocean bottom.

Methods: A crab trap or an old can punctured with holes and baited with fish works well to catch hagfish; drop the trap to a muddy bottom at any depth below 18m. Pull up traps after a day or two days at the most.

Transport: Please follow transport and handling of fish SOP.

Holding: Hagfish should be held in continually flowing seawater. Lids are necessary not only to prevent escape but also to keep the tanks dark. Screens or guards on the outflow pipes are a must, as a swimming hagfish will easily be sucked out of the drain. Pieces of pvc pipe on the bottom of the tank make excellent hiding places, shelter such as marine plants and rocks will also help to decrease stress levels. Hagfish are quite susceptible to skin infections when over handled or kept in poor conditions.

Feeding: Hagfish feed on any dead animal. Often hagfish will not eat for up to 3 weeks after capture but once they are comfortable in their surroundings they will eat with vigor.

Tank Cleaning: Once a month, the hagfish should be removed from the tank and placed into a holding bucket. The tanks should be drained and the sides and bottom should be scrubbed and rinsed with warm freshwater. The tanks should then be rinsed with cold seawater and allowed to refill, and the hagfish replaced.

Anesthetic: Anesthetizing these animals is size, species, and density dependent; approximately 50-100mg/L for anesthesia. Always wear gloves when using MS-222. Clove oil is most effective as an anesthetic at concentrations of 40-60 mg/L, and should be dissolved in ethanol (e.g., 1:9) before mixing into the water. Clove oil has a slightly faster induction time and a longer recovery time than similar concentrations of MS-222 (TMS). Clove oil has a wide margin of safety between effective and lethal doses, and fish do not show signs of distress when being anaesthetized.

Euthanasia: Euthanasia is size, species, and density dependent; inhalant anesthetic overdose of approximately 500mg/L of MS-222.

Animal Return: Animals should be returned to the site of their collection. Be sure to have well oxygenated water in bucket that they are being returned in. If any anesthetic chemical has been used on the fish during it's holding at BMSC, the animal must not be released before the drug withdrawal time. Withdrawal time should be on the label of an anesthetic in degree-days (degree-days are the accumulated thermal units for a given day. One day at 10C is 10 degree-days).

Note: MS-222 has a 5 - day withdrawal time for salmon above 10C.

DAILY ACTIVITIES:

1. Ensure water is flowing into the tank at a reasonable rate.
2. Ensure the standpipe is in place and not blocked.
3. Check for and remove and dead animals.
4. Check for and remove any uneaten prey organisms.
5. Check for and remove and foreign organisms.

K. Bartlett April/10