

HAKE CARE

PURPOSE: To describe methods of care for hake.

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: There is only one species of codfish found around BMS.

Species: Pacific hake *Merluccius productus*

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

Merluccius productus: Pacific hake have large scales and a protruding lower jaw with no whiskers. They have two dorsal fins with the second one being long and deeply notched. The anal fin is also long and deeply notched. These fish can reach 91cm in length.

Sites: These fish are found at deep depths by day but rise to surface waters after dusk.

Methods: They can be caught as by-catch in salmon nets and groundfish trawls. Survival is low due to stress and hemorrhaging .

Holding: Held in continually flowing seawater with air stones. Lids are necessary.

Feeding: Feed these fish with tiny shrimp-like plankton. Fish generally do not feed until they are comfortable with their surroundings.

Tank Cleaning: Every 2nd week, the fish should be removed from the tank and placed into a holding tank. 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 fish replaced.

Anesthetic: Anesthetizing these animals is size, species, and density dependent; approximately 0.2mg/L of MS-222. 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 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 0.4 - 2.0 g/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.