Algoma University Animal Care Committee	Algoma UNIVERSITY
#AU 0005 Measurement of Weight and Length of Live Fish	
Issue date: August 2010	Last revised: October/2024

1. Purpose

This Standard Operating Procedure (SOP) describes procedures for measuring length and weight of live fish. All water used in this SOP should be matched to either where the animal is caught (for wild fish) or matched to holding water (for fish in the animal care facility).

Researchers should consider using a Photarium (https://wildfishconservancy.org/store/photariums/) for weighing and measuring the length of fish. A Photarium is a tank that holds an animal straight and allows for a quick and easy length and weight measurement without the need for anesthesia.

2. Policy

CCAC guidelines on: the care and use of fish in research, teaching and testing. 2005 (https://ccac.ca/Documents/Standards/Guidelines/Fish.pdf). Specifically section H (Experimental Procedures), guideline 75.

3. Responsibility

Principal investigator, their research staff, and their student investigators

4. Training Required

WHMIS
Animal Research Ethics
Training in appropriate SOPs including wild capture of animals (if relevant) and animal handling
Prior to handling MS-222 and sodium bicarbonate, researchers must read their associated SDS

5. Materials Required

Fish measuring board, trough, or photarium (a ruler is not recommended as it is inaccurate and increases handling time)
Balance
Tub or large container with water matched to fish source
Two buckets with water matched to fish source, size and volume appropriate to fish being measured (one is the anesthetic bath, the other is the recovery bucket)
Dip netMS-222 (tricaine methanesulphonate)
Sodium bicarbonate
Container to transport MS-222 back to the lab for disposal
Gloves

NOTE: Refer to SOP 0007 Anaesthesia or Euthanasia of Fish for the proper method to anesthetize fish. In short, different species of fish and different water chemistries will require a different concentration of MS-222 to be used. This SOP uses 50 mg/L of MS-222, which is likely appropriate for most species for light anesthesia; however, different concentrations may be needed for different species.

6. Procedures

1. Add MS-222 (50 mg/L of water) to one of the two buckets of water. Add twice as much sodium bicarbonate to the bucket (e.g., if you have 1 L of water in the bucket, add 50 mg of MS-222 and 100 mg of sodium bicarbonate). If you have 5 L of water in the bucket add 250 mg of MS-222 and 500 mg of sodium bicarbonate). It is **essential** to include sodium bicarbonate as MS-222 is a weak acid and as such can harm fish if it is not properly buffered.

2. If measuring wild-caught fish, use an approved technique (e.g., seine net, trap net, dip net, angling, etc.), to collect animals from the environment. Once collected, animals are placed in the large tub of water. If this technique is to be done with fish being held on campus, the animals can be removed directly from their holding tanks.

3. It is recommended that fish be placed one at a time into the anesthetic bucket; however, more can be placed at a time when the user is comfortable with the procedure.

4. Monitor the fish, as soon as a fish starts to show reduced movement, remove the fish with a gloved hand from the bucket (a dip net can be used if the bucket is deep and reaching into the bucket will cause your arm to get wet).

5. Place the animal on the fish measuring board, being sure to place the snout against the board at one end. Typically either fork length or total length is recorded, see figure 1 below for a comparison of these measures. The animal should not move during the procedure, if they do, ensure that future fish have a longer exposure in the anesthetic bath.

6. Place the animal into the recovery bucket, which will contain fresh stream water and allow them to recover.

7. Monitor the animal(s) in the recovery bucket. Ensure the animals are able to maintain balance and are actively swimming in the bucket. Release the animals by slowly tipping the bucket into the body of water, do not use the dip net as this will add unnecessary handling stress.

8. Once complete, seal the bucket with the anesthetic bath or place the water containing MS-222 into another container that can be sealed. Transport the MS-222 bath back to the lab for proper disposal.

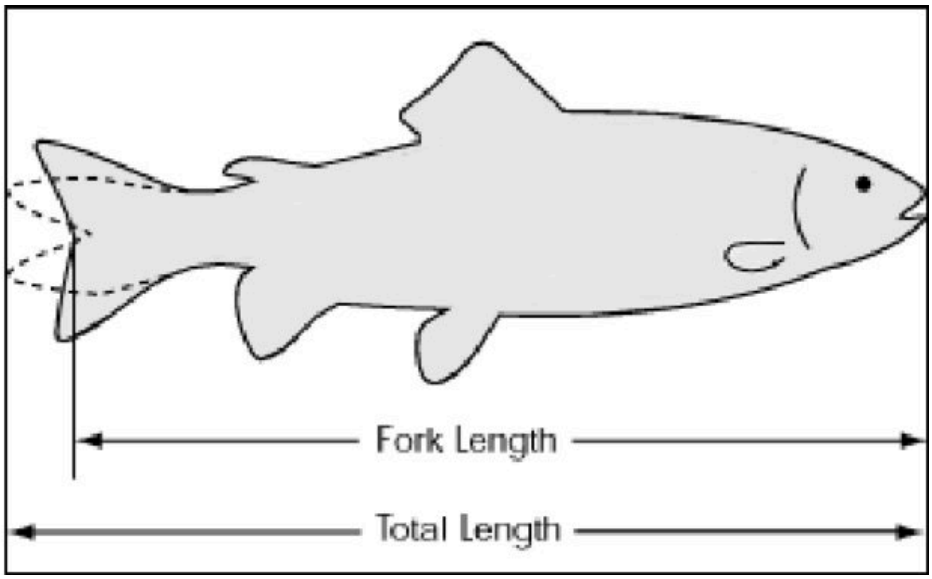

Figure 1: Fork length vs total length of a fish. Note how for total length the two sides of caudal fin are brought together for the measurement (Grove et al., 2021).

7. References

Grove, Laura Jay W., Jeremiah Blondeau, and Jerald S. Ault. 2021. National Coral Reef Monitoring Program's Reef fish Visual Census Metadata for the U.S. Caribbean. SEDAR80-WP-02. SEDAR80, North Charleston, SC. 55 pp.

REVISION HISTORY		
Revision #	Revision Date	Summary of Changes
1	October 2018	
2	May 2024	Discussed changes but they have not been made will need to have Bill review: Comments from the meeting minutes before we can complete revisions: i. using unbuffered MS-222 ii. change disposal of MS-222 iii. regarding disposal: do not put it in the waterways, put it in a sealed container and dispose of it.
3	July 2024	Reformatting
4	October 2024	Changes from the May 2024 meeting were addressed