WVU IACUC Policy and Guidelines:
Use of Electrofishing in Research and Teaching

Purpose

The purpose of this policy is to minimize the risk of injury to personnel and mitigate injury and mortality to fish and other animals during electrofishing activity.

Background

Electrofishing is a standard technique used in research, and it is often the only method to effectively collect fish in areas unable to be sampled by other standard techniques (e.g., seines). Electrofishing introduces an electric current into the water to momentarily stun fish to aid in collection. Electrofishing units may be housed in a backpack (to sample small streams), held on a barge that is towed through water (to sample large rivers), or mounted on a boat (to sample large rivers and lakes).

Electrofishing units have a generator or battery that produces an electric current, a power control device that modifies the electric current to maximize efficiency and reduce potential injuries to the fish, and one or more electrodes (anodes and cathodes). Fish respond to electricity in a predictable manner. If the electric field is detected from a distance, fish will evade the field. If the fish are within the electric field, the fish will swim toward the anode (taxis). As the fish approaches the anode, the fish may undergo narcosis (immobility in which the muscles are relaxed) and loss of equilibrium. Fish are immobilized (or "stunned") briefly and are captured by a dip net. The fish are then removed from the electrical field, placed in a bucket or live well, and then processed according to the animal use protocol.

Guidelines for Use

The following are the recommended conditions for use of electrofishing in research and teaching:

A. Electrofishing can be conducted using direct current (DC), pulsed DC, and alternating current (AC). However, DC or pulsed DC is to be used whenever possible to reduce injuries and mortality.
B. Electrofishing settings should be set at the lowest voltage and frequencies possible. These settings should be based on the water conductivity, temperature, target species, and size.
C. Because fish are more vulnerable to electricity at high water temperatures, electrofishing should not be used for cold-water species if water temperature is > 20.0°C or for cool or warmwater species if water temperature is > 30.0°C.
D. Fish should be removed immediately from the electrical field when shocked with an insulated handled net and placed in a bucket or live well.
E. The bucket or live well should contain well-oxygenated water at a temperature similar to the water the fish were obtained from.
F. The condition of the fish in the bucket or live well should be monitored. Fish should be processed according to the approved animal use protocol(s) as soon as possible.

G. All electrofishing units should have maintenance and safety inspections once a year.

Requirements for Use

The following are mandatory requirements for use of electrofishing in research and teaching:

A. Only individuals with documented training in this technique can operate the electrofishing equipment.

Safety of Personnel

B. Individuals with a pacemaker or other cardiac issues ***are not to*** assist with electrofishing unless cleared to do so by Occupational Medicine.

C. At least one member of each group engaged in the activity ***must*** be CPR certified. All personnel should know the location of the nearest hospital.

D. Personal Safety Equipment Requirements:
   1. Personnel wading in streams and rivers during electrofishing ***must*** have nonbreathable waders with rubber soles.
   2. Personnel working on electrofishing boats ***must*** wear rubber-soled boots.
   3. Insulated rubber gloves ***must*** be worn by all personnel while electrofishing.
   4. Waders, boots, and gloves ***must*** be inspected regularly to ensure that there are no leaks. (Personnel should also have polarized sunglasses (if sampling during the day), brimmed hats, and a wading belt (if sampling in streams and rivers)).
   5. Life jackets ***must*** be worn when working on a boat or when sampling in deep or swift water. For shallow stream work, life jackets ***must*** be available for all personnel wishing to use one.

E. An electrofishing safety "pre-check" ***must*** be conducted before each use to make sure the equipment is working and that all personnel understand safety instructions.

F. The power supply ***must*** only be connected immediately before sampling and disconnected immediately after sampling.

G. Personnel ***must*** have proper state and/or federal permits to use electrofishing equipment.

Faculty Instructor Responsibilities for Use of Electrofishing in Teaching

H. Faculty ***must*** provide and document training for all students participating in or observing electrofishing activities. Training ***must*** cover safe use, animal welfare concerns, and a review of this policy.

I. Resources for the training of students include:
   1. The US Fish and Wildlife Services has many resources available on electrofishing including the following safety video: https://www.fws.gov/training/Electrofishing-Safety-CSP2202
   2. Faculty can direct students with questions about their personal health situation to Occupational Medicine for consultation.

J. Faculty ***must*** ensure that all students/wildlife camp participants complete an Occupational Health Questionnaire (OHQ).