

## MONTANA DEPARTMENT OF FISH WILDLIFE AND PARKS

### **Electrofishing Policy**

All electrofishing operations will be conducted in accordance with Montana Department of Fish, Wildlife and Parks electrofishing guidelines, using only trained electrofishing crew members. All equipment must be constructed and operated according to approved electrofishing guidelines.

### **General Electrofishing Guidelines**

Electrofishing guidelines are set up to provide the groundwork for electrofishing crews to safely and efficiently perform their work duties. There are several factors affecting a safe, efficient electrofishing operation; primary among these are experienced personnel, safe equipment, and updated training.

- I. Experienced Personnel - All electrofishing crews must be led by a crew leader who has taken a Fish, Wildlife and Parks safety standards course.
  - a. Crew leader - Must receive formal training in water safety, electrofishing theory and electrical safety.
  - b. Crew member - Must receive some form of water safety instruction and be instructed by the crew leader in current electrofishing safety techniques for expected electrofishing type and water conditions.
- II. Safe Equipment. - Electrofishing equipment must be maintained in good working order. It must be constructed and operated according to Fish, Wildlife and Parks safety standards. The crew must be trained in its safe operation and maintenance.
- III. Guidelines for Specific Electrofishing Operations - Each type of electrofishing has its own specific operational and safety procedures, which the crew leader is responsible for implementing.
- IV. Continued Safety Training. Safety training of all electrofishing crews will be updated with new equipment and safety procedures as they become available.

## **SPECIFIC ELECTROFISHING GUIDELINES**

### **I. Experienced Personnel.**

1. All fisheries personnel that use electrofishing equipment as a management tool will be familiar with equipment and its safe operation.
2. At least one member of each electrofishing crew (crew leader) will have taken the Montana Department of Fish, Wildlife and Parks electrofishing safety course. All other crew members must take a standard one day electrofishing safety and training course taught by a trained crew leader which will include equipment and safety checklists and a "dry run" with no electricity in the water.
3. All electrofishing crew members must be able to swim 25 yards with a personal floatation device (life jacket) and waders on.
4. At least two members of every electrofishing crew must have current certification in CPR (Cardio-Pulmonary Resuscitation).
5. All crew members must be physically fit and must report known health problems to their supervisor.

### **II. Equipment.**

#### **A. Personal Equipment.**

1. All personnel on the electrofishing crew must be equipped with waterproof footwear that is free of leaks. Belted chest-high waders or neoprene waders with slip-resistant soles are generally recommended for most electrofishing to provide adequate boot height to prevent body contact with the water. Neoprene waders are available for cold weather electrofishing.
2. All personnel on the electrofishing crew must wear waterproof rubberized gloves that are free of leaks.
3. The wearing of polarized sunglasses is recommended to increase in-water visibility (safety) and the effective retrieval of fish.
4. At the crew leaders discretion, (with the exception of boom shocking on large rivers or in lakes), crew members will wear a personal floatation device.

5. All electrofishing boats must carry a first aid kit. Spare clothing and fire-starter supplies, packed in a waterproof storage bag, is also recommended.

B. General operational safety procedures.

1. The anode should never touch the cathode or any other metal equipment.

2. All equipment will be given a thorough inspection before use.

3. Electrofishing will not be conducted if climatic or water conditions are such as to pose safety problems beyond those normally expected.

4. If any person feels an electric shock, even minor, the electrofishing operation must be shut down and repaired. A report on the incident must be given to the regional fisheries manager or your immediate supervisor.

5. "Dip" net handles which have metal cores will be covered with a non-conductive material and then frequently inspected for cracks. Rubber butt-caps must be in place.

### **III. Guidelines for Various Types of Electrofishing.**

- A. Large river fixed-electrode (boom) electrofishing;**  
generally jet-boat propulsion but may also be rowed.
1. A minimum crew of two personnel of which at least one must be a trained crew leader.
  2. Only crew members experienced in motorized river boat operation may drive the electrofishing boat. Untrained boat operators may drive the boat only with the direct supervision of the trained personnel by their side.
  3. The electrofishing boat can be constructed of either metal or nonmetal and when it is of metal construction the hull of the boat should be used as a cathode.
    - a. All internal metal equipment must be grounded to the boat.
    - b. Skid-proof decking is required on the netting platform.
  4. There should be a guard rail 36-48 inches above the netting platform to protect "dip" netters from falling out of the boat during electrofishing operation.
  5. "Positive" kill switches for the electrofishing circuit must be installed, with one switch in easy reach of boat operator and one for the dip netter(s). It is recommended that a "positive" kill be installed for the boat operator that will also shut off the generator.
  6. Crew leader should have a good knowledge of the water hazards present in each of his electrofishing sections. All new sections must be "run" in the boat prior to electrofishing.
  7. A functional fire extinguisher must be carried in a readily-accessible location in the boat.
  8. A first-aid kit must be carried in the boat.
  9. Crew members must wear some form of personal floatation device at all times.
  10. An extra change of clothing and dry matches is recommended for crew members, if space is available.
  11. Wearing of hearing protection devices is optional but recommended.

**12. Night electrofishing.....**

- a. Primary lighting must be a 12 volt system to avoid blackouts if the generator malfunctions. A 110 or 220 volt lighting system is recommended as a secondary or accessory system.
- b. The electrofishing boat must carry a fully charged spare 12 volt battery and a flashlight.
- c. The boat must be equipped with a 12 volt spotlight hand-held by the driver and used to navigate boating hazards. The 12 volt system must be semi-permanently grounded to prevent possible blackouts from circuit disruption (not alligator clips).
- d. All lighting should be equipped with in-line switches rather than using a battery terminal disconnect.
- e. Night electrofishing will be conducted only after the reach or body of water has been thoroughly scouted and preferably electrofished during daylight hours first.
- f. Electrofishing boats should be equipped with internal lighting sufficient to light the deck and the area behind the deck around the fish holding tank.
- g. On large or remote lakes or streams it may be advisable to carry an extra motor. At a bare minimum night shocking crews should have sufficient gear to spend the night out if a breakdown occurs.

13. Electrofishing observers - Untrained observers will be allowed as a secondary dipnetter only after a thorough briefing on the safety aspects of the operation and only when accompanied on the netting platform by a trained crew member (primary dipnetter).

- B. Drift mobile or boom electrofishing (No motor).** This refers to an electrofishing operation where two people remain in the boat and one person in the water controls the boat, generally small or medium-sized rivers.
1. A minimum crew of two personnel of which one must be a trained crew leader, with only experienced personnel handling the boat.
  2. Electrofishing boat must be constructed of a non-conductive material with all internal metal equipment having a common ground, but not grounded to the external cathode.
    - a. Skid-proof decking is required on the netting platform.
    - b. Only plastic gas cans may be used.
  3. There must be a 36-48 inch guard rail to protect netters from falling out of the boat during the electrofishing operation.
  4. Mobile anode handles must be made of a non-conductive material and electric cord frequently inspected for weak spots.
  5. "Positive" kill switches must be installed in the electrofishing circuit, with one located near boat operator and one near "dip" netters and anode operator. It is recommended that the rear kill switch also be installed so that it will kill the generator.
  6. Crew leader should have a good knowledge of water hazards present in each shocking section.
  7. Wearing of hearing protection is optional, but is recommended.
  8. A functional fire extinguisher must be carried in the boat, mounted in a readily accessible location.
  9. Crew members must wear some form of personal floatation device unless the crew leader designates it optional on a particular water.
  10. It is recommended that crew members should have an extra change of clothes and dry matches, if space in the boat is available, especially during cold weather shocking.
  11. No observers will be allowed in the electrofishing boat. They must either observe from the bank or from another boat.

**C. Portable drift electrofishing.**

This type of electrofishing is a hybrid of drift and bank shocking where a boat is used to carry the generator and other shocking equipment, but electrofishing personnel do not normally ride in the boat (Crawdadd shocking).

1. A minimum crew of three personnel of which one must be a trained crew leader, with only experienced personnel handling the boat and shocker unit.
2. The electrofishing boat must be constructed of a non-conductive material with all internal metal having a common ground, but not grounded to the external cathode. Only plastic gas cans can be carried in the boat.
3. Mobile anode handles must be made of a non-conductive material and electric cord frequently inspected for weak spots.
4. "Positive" kill switches must be installed in the electrofishing circuit, with one located near the boat operator.
5. Crew leader should have a good knowledge of water hazards present in each shocking section.
6. Wearing of hearing protection is optional.
7. A fire extinguisher must be carried in the boat.
8. Crew members must wear some form of personal floatation device unless the crew leader designates it optional on a particular water.
9. It is advisable that crew members have an extra change of clothing and dry matches.
10. No observers will be allowed in the immediate vicinity of the electrofishing operation.
11. In deep water the anode operator may sit (not stand) on the foredeck of the boat. The dipnetter may not ride in the boat under any circumstances while the electrofishing operation is under way.

#### **D. Backpack Electrofishing.**

1. A minimum crew of two personnel of which one member must be a trained crew leader.
  - a) Only a trained crew member can operate backpack electrofisher.
2. The backpack unit must be equipped with a quick release belt.
3. When battery-powered units are used, a gel-cell leak-proof battery should be used to minimize acid burn possibilities.
4. An "excessive tilt" electrical shutoff for electric current will be installed on the backpack unit.
5. Mobile anode must contain a "deadman" type switch in the handle to break the electrical current. The handle must be constructed of a non-conductive material. Taping down the deadman switch is a serious safety hazard.
6. Observers may be used in this type of electrofishing operation, but only as a secondary dipnetter or to transport fish up or downstream to "livecars".

#### **E. Bank electrofishing.**

This refers to the method of placing a generator on the bank and running a cord upstream or downstream. Due to the safety implications this method should be avoided unless absolutely necessary.

1. A minimum crew of two personnel of which one member must be a trained crew leader.
2. The bank electrofishing unit (generator and electrofishing box) must have a common ground to earth to reduce shock hazard.
3. The bank electrofisher must have a "positive" kill switch for both the electrode operator and the dip netter. These positive kill switches must be either made waterproof or operate off of a 12 volt safety circuit.
4. Observers must remain on the stream bank and not enter the stream during the electrofishing operation.



### GILL NETTING GUIDELINES

Gill nets are a standard management tool, widely used within the Fisheries Division. They are also potentially lethal to personnel who utilize them. The following suggestions on conditions for use of gill nets have been developed by the Electrofishing/Water Safety Committee to provide guidance for safe working conditions for those new to gill net use, and as a reminder for more experienced personnel.

1. Never, ever, work alone! Gill nets have a deadly affinity for zippers, pull tabs, buttons, rings, and fingers. Entanglement in a net can be impossible to escape without assistance. Do not set or pull gill nets by yourself!
2. Dress for success. Minimize exposed clothing with buttons, zippers, etc. that are prone to tangling. Some raincoats, hooded sweatshirts, etc. are well-adapted to this operation. Remove rings, watches, nose rings, or earrings, before handling nets.
3. Life Preservers. Wear them always, preferably under smooth external clothing.
4. Boats. Use enough boat for the water you are on! Float tubes, inflatable vinyl rafts, etc. will not do the job. The boat must be sufficient to handle the worst-case scenario, which includes hung up nets or bad weather. Use great care with motors. An entangled motor will stall, causing the boat to turn stern toward the waves and swamp in rough water.
5. Weather. Check the forecast! A boat suitable for setting nets in light water may be totally unsafe for a rough water retrieval. If the nets cannot be safely pulled, let them fish until the weather improves. Better the fish die than yourself.
6. Net Loss. No one wants a lost net. They fish for a long time. Use adequate anchors and strong buoy lines. Be sure that both ends are marked with brightly-colored buoys and identified with DFWP lettering. Floating nets should be marked in several places along their length.

7. Helicopter Netting. This is an irreplaceable but inherently dangerous technique for sampling mountain lakes. Always wear a life preserver. A lifeline may be useful. Never throw anything; the rotors are unforgiving. The pilot cannot help you so be extremely cautious.
8. Non-target Catches. Make maximum use of buoys to warn away swimmers, divers, and boaters. Talk to people on the lake and tell them nets are out. The potential for fatalities is real. Avoidance of areas and times of heavy public use helps reduce risk. There are major legal and emotional consequences to an accident. Don't be the first!