ELECTROFISHING METHODS POLICY

Montana Department of Fish, Wildlife and Parks

INTRODUCTION

The growing interest in and use of Montana's fisheries resources by the public places ever increasing demands for obtaining information about our fish populations. Electrofishing has been a common fisheries sampling tool for over thirty years in Montana and it continues to be an important method for sampling fish populations today. Electrofishing is one of the few methods that allows fishery professionals to quantitatively sample fish populations for assessment of, among others, population dynamics, age and growth, and movement.

Over the years, injury to fish and other organisms as a result of electrofishing was known to occur but was generally considered to be of a minor and inconsequential nature. However, in 1988 a publication by Sharber and Carathers documented serious injury to large rainbow trout captured by electrofishing. The resulting publicity caused many agencies, including the Montana Department of Fish, Wildlife and Parks (MDFWP), to examine their own electrofishing practices.

Since 1989, MDFWP has tested a variety of electrofishing systems on a number of fish species (*Fredenberg, W., 1992. Evaluation of electrofishing - induced spinal injuries resulting from field electrofishing surveys in Montana. Montana Department of Fish, Wildlife and Parks, Helena. Unpublished report. 43 p.)*. The study demonstrated a significant rate of injury to certain fish species with particular electrofishing gear. These results prompted a re-evaluation of previously accepted electrofishing practices and the development of guidelines for acceptable equipment type and use.

Electrofishing may result in adverse consequences for affected fish of a variety of species and life history stages. The presence of injuries under some circumstances dictates a conservative policy until more specific data are available. Injury should be assumed to occur unless information indicates otherwise. It is therefore the determination of the Fisheries Division that <u>all</u> electrofishing by any entity operating in the waters of the State of Montana conform to the following policy. Modification of this policy may be adopted as additional information becomes available.

POLICY

It is the policy of the MDFWP that all electrofishing conducted in the waters of the State of Montana conform to the following standards to minimize injury to aquatic life. This policy shall apply to employees of MDFWP, other state and federal agencies and those entities operating under the authority of a collector's permit issued by MDFWP. The only exceptions to this policy are for permanent collections where all fish sampled are killed, or for experimental purposes. Exceptions must be approved by the Fisheries Division Administrator and such requests must be submitted with written justification at least sixty (60) days in advance. No other electrofishing may be conducted. Any violation of this policy will be referred to the Administrator of the Fisheries Division for corrective action.

The standards are:

1. Each electrofishing effort should be preceded by an analysis weighing anticipated negative impacts on aquatic life against benefits to be gained from the data collected. Other methods of data collection should be considered in this analysis.

2. Electrofishing over spawning areas containing eggs or larvae will be conducted only when eggs are needed for government hatcheries or the data to be collected are critical to the well being of the fish population as determined by the regional fisheries manager.

3. The use of electrofishing gear in waters containing Species of Special Concern should be minimized. Prior approval must be given by the regional fisheries manager before electrofishing in these waters.

4. Electrofishing in areas where threatened or endangered aquatic species may be encountered is restricted to situations in which electrofishing gear and methodology have been shown to be of minimal impact to that species or a recovery team has determined that electrofishing will be in the best interest of the threatened and endangered species.

5. Electrofishing units which produce only 60 HZ pulsed DC waveforms are prohibited (e.g. Coffelt VVP2C, VVP2E, etc.). Settings on units that provide rectified sine, capacitor discharge or AC waveforms may not be used.

6. Settings on electrofishing units that produce pulse rates in excess of 30 Hz per second are not allowed in waters containing self-sustaining salmonid populations. The use of higher pulse rates for collection of warm/coolwater species should occur only after consideration has been given to the effect of this electrical form on these species and prior approval has been received by the regional fisheries manager.

PRACTICES

The following guideline table should be consulted before selecting and operating electrofishing equipment. The mention of specific brands and models of equipment is based solely on the electrical characteristics specified above. Other brands and models are excluded from this table due to lack of information. The MDFWP does not endorse any specific brand or model of electrofishing equipment.

Questions or comments on this policy should be directed to Chair, MDFWP Electrofishing Committee, 1400 South 19th, Bozeman, MT 59715.

MONTANA ELECTROFISHING GUIDELINES

PARAMETER	*RECOMMEND*	*AVOID*
Pulse Rate	*30 Hz or less*	*Over 30 Hz*
Pulse Duration	*5 milliseconds*	*10 milliseconds or >*
Pulse Shape	*Smooth DC - Best* *CPS - Second Choice* *Square - Third Choice*	*Rectified Sine* *Capacitor Discharge* *AC*
Voltage	*High Conductivity = use low voltage* *Low Conductivity - use high voltage*	
Shocker Box	*Coffelt Mark 22M* *Coffelt Mark 22 CPS* *Coffelt VVP 15 (smooth DC or low pulse rates)* *Leach/Fisher (smooth DC only)*	*Coffelt VVP2C* *Coffelt VVP2E* *Leach/Fisher Pulse*
Generator	*Low Conductivity (<200 umhos/cm) 2,500 W or >* *High Conductivity (>200 umhos/cm) 5,000 W or >)*	*Inadequate power supply/generator*
Electrode	*Bigger is Better - Always use largest possible anode except in highest conductivity water (800 umhos/cm or >)* *Always maximize cathode size, in metal boats use the boat.*	*Small point anodes such as a single dropper.* *Never use small cathode*

MONTANA ELECTROFISHING GUIDELINES

PARAMETER	*RECOMMEND*	*AVOID*
Method	*Mobile Anode - Best*	*Never allow fish to lie in field*
Intensity	*Turn power down to the lowest effective level.*	*Excessive current*
Brands	*Look for brands. If numerous turn power down.*	*Branded fish are an indicator of spinal injury.*
Fish Species	*Most Susceptible to spinal injury -* *Rainbow Trout* *Cutthroat Trout* *Brown Trout* *Less Susceptible -* *Arctic Grayling* *Unknown Susceptibility* *Warmwater Spp.*	*Never assume fish are not being injured based only on external appearance.*
Fish Size	*Exercise caution with large fish.*	*Do not assume small fish are immune to spinal injury.*
Environmental Variables	*Record water temperature and conductivity and adjust methods accordingly.*	*Do not ignore water conditions.*
Eggs	*Assume eggs in redds have potential to be damaged.*	*Avoid shocking spawning females and areas with redds.*
Crew	*Use trained crews.*	*Avoid multiple-dipping into the field and other factors that will stress fish.*