

# Alberta Fisheries Management Division

## Electrofishing Policy Respecting Injuries to Fish

Fish Research Licences

### Current Policy (March 2004)

**Revisions are being finalized. Please consult with Fisheries Contact prior to collection.**

It is the policy of the Alberta Fisheries Management Division (AFMD) that all electrofishing conducted in waters of the province of Alberta will conform with standards adopted to minimize injury to fish. This policy applies to all electrofishing conducted by provincial employees as well as the electrofishing conducted under the authority of a Fish Research Licence issued to other government, educational or private consultants. The only exceptions to this policy are for collections where all fish sampled are killed, or for experimental purposes. Exceptions must be approved by the Director of the Fisheries Management Branch and such requests must be submitted with written justification at least thirty (30) days in advance.

The AFMB requires that electrofishing be conducted only when other less harmful means of population sampling will not yield the desired results, and only when careful consideration has been given to the effects of electrofishing on fish populations. The increased attention given to Alberta's fishery resources by both the public and private sector has led to the increased use of electrofishing as a sampling tool. Every electrofishing operation should be preceded by an objective analysis of the necessity of conducting the work, and whether or not the potential benefits outweigh the costs, financially as well as from a resource impact viewpoint.

Electrofishing of spawning runs and over spawning fish will not be allowed except in instances where eggs or sperm must be collected for government hatcheries or the data being gathered are critical to the well-being of that fish population. Electrofishing over trout redds which contain developing embryos should not occur under any circumstances. Research on impact to eggs and larvae of non-salmonid species also needs to be conducted.

Electrofishing of threatened species may only be conducted after documentation that the type of electrofishing and the method used to apply it will result in the minimum rate of injury to that species.

The attached table should be used as a guide in selecting equipment and operational settings to minimize injury to fish. Most of the information summarized in the table is derived from a study on electrofishing injury to trout. In general, the guidelines require a high level of training for crew leaders and the use of common sense in the application of electricity to fish.

Specifically, the policy of the AFMB prohibits the use of the following equipment in trout waters:

1. Electrofishing units such as the Coffelt VVP 2C, Coffelt VVP 2E, and Leach/Fisher pulse boxes which produce only 60 Hz pulsing DC waveforms are not allowed, and the Smith Root VI-A model.
2. Rectified sine, capacitor discharge, or AC waveforms are not allowed.

3. Standard pulse rates in excess of 30 Hz per second should be avoided, generally. The effects of high pulse rates on warmwater species is unknown. However, in view of the damage done by high pulse rates on trout, it is recommended that low pulse rates should be used as much as possible in capturing warmwater species.

Questions in regard to the application of this policy, use of certain types of equipment, or new information should be referred to the Director of the Fisheries Management Branch. This policy may be modified or changed as new information becomes available.

## Alberta Electrofishing Guidelines

PARAMETER	RECOMMEND	AVOID
Pulse Rate	30 Hz or less	Over 30 Hz
Pulse Duration	5 milliseconds	10 milliseconds or greater
Pulse Shape	Smooth DC – Best  CPS – Second Choice  Square – 3 <sup>rd</sup> 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  Smith Root VI-A
Generator	Low Conductivity (<200 umhos/cm) 2,500W or >  High Conductivity (>200 umhos/cm)	Inadequate power plant
Electrode	Bigger is Better – Always use largest possible anode except in highest conductivity water (800 umhos/cm or >) Always maximize cathode size, in metal boxes use the boat.	Small point anodes such as a single dropper  Never use small cathode
Method	Mobile Anode – Best	Never allow fish to lie in field
Intensity	Turn power down to the lowest level you can get by with.	Overkill
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	Be more cautious with large fish even though the evidence is mixed on susceptibility to injury	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	Avoid shocking spawning females and areas with redds	Assume eggs in redds have potential to be damaged.
Crew	Use the best-trained crew available. Avoid multiple-dipping into field and other factors that will stress fish.	Untrained crews are not permitted. Never electrofish under conditions that are marginal or hazardous for you or the fish.