

Appendix 2

Electrofishing Procedures 2021

## Electrofishing procedures

The electrofishing procedures are as follows. A suitable habitat is first chosen. It is recommended to choose a habitat that has small riffles, which may contain fry and somewhat deeper water (up to 24") and faster flowing as it may contain parr. Once a site is established, the lower or downstream barrier is placed first. The edge of the net is usually tied to the shore on a branch or sometimes held in place with large rocks.

A section of net is unrolled to give ample working space but not too much as the current can pull the net downstream. Large rocks are placed on the burlap fringe on the upstream side ensuring that the rocks cover the burlap edge.

When the small section of netting is installed, unroll the barrier net in a small length and repeat the procedure (**Figure 1**). When enough netting is installed, a person can begin installing the crutch sticks, one stick upstream and one stick downstream, holding up the net. Rope hoops are built into the nets which are dedicated for the crutch sticks.

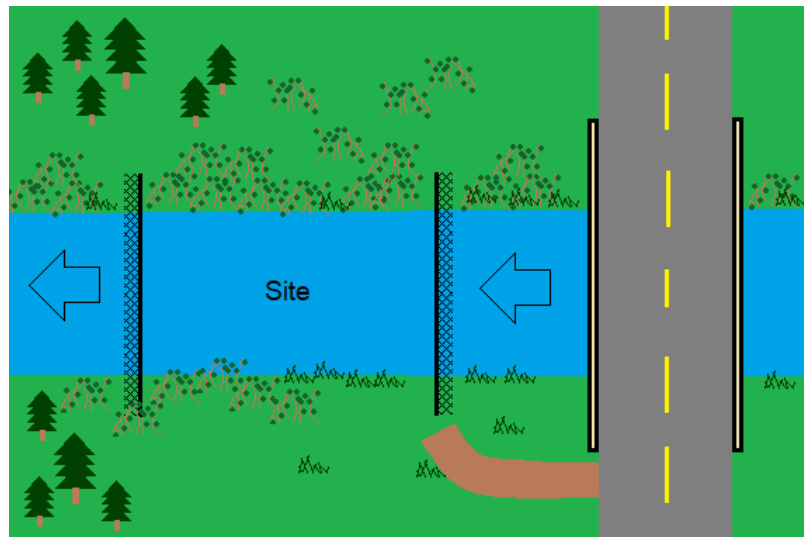
Ensure that there is no place the burlap is not touching the bottom of the river as this can become an entry or escape point for the fish. It becomes easier if one person holds the large net, another stays on the inside of the study site to place the rocks and the rest of the team collects the rocks for the burlap. Repeat this procedure until the entire net is installed and the burlap is covered in rocks and that the net is standing upright.

Try walking on the edge of the river or grass while moving to the installation to the upper barrier. This is important as to not walk into the study area during the procedure disturbing any fish. The same procedure is followed for the upper barrier only the burlap is folded towards the downstream side of the site so both burlaps become folded in towards the study area.

The above procedure can be applied to streams or brooks of considerable smaller stature but for larger or wider river or streams barriers should be placed in a rectangular fashion. All of the burlap should end up folded into the study site. Usually two nets are used and overlapped at some point to have a continuation of the barrier nets. Approximately 100 m<sup>2</sup> is targeted for an electrofishing study in any way the nets are setup or how narrow the stream maybe.

Observation and recording of water velocity have been recorded through the season, this is a best practice method. This will indicate if water velocity is greater than 5 feet per second, electrofishing cannot be efficiently effective for comparative data with other sites.

**Figure 1**



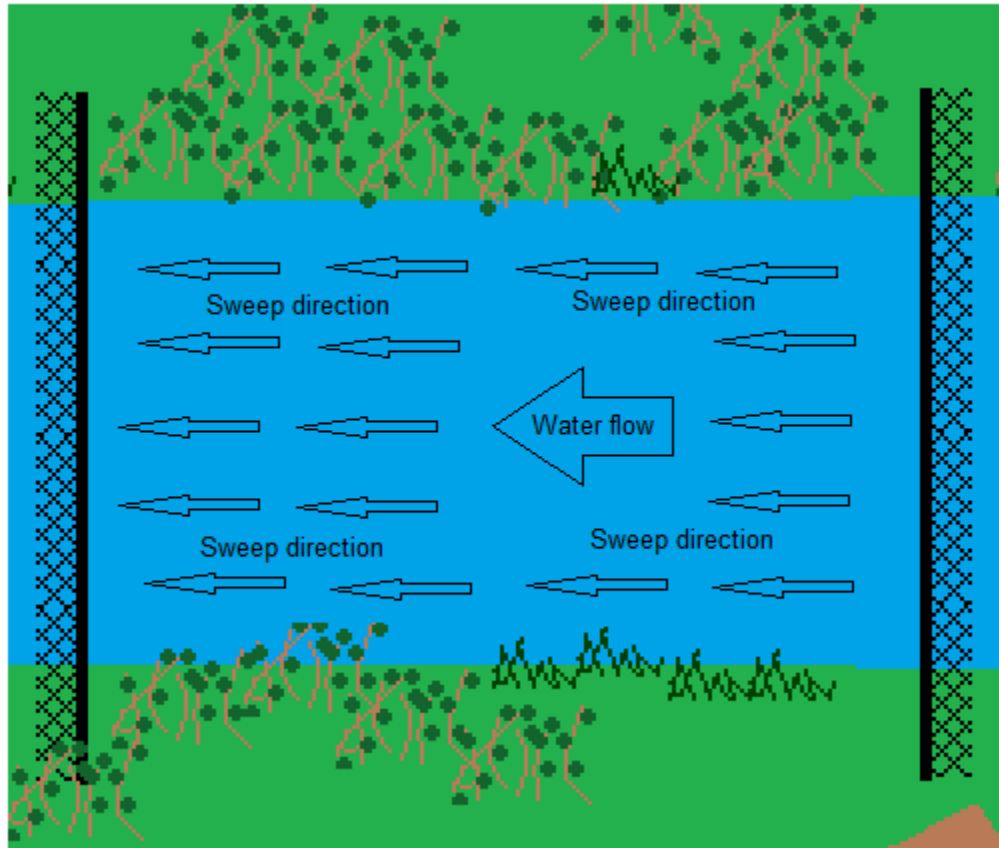
**Typical site layout**

Once the nets are installed begin setting up the electrofishing unit. The ground cable is attached to the “cathode” plug and the probe (long fiberglass wand with a ring on the end) is attached to the “anode”. Ensure that the power switch is on the off position during the installation of the battery.

The electrofishing unit is usually set in specific settings which are found on the side of the unit depending on the site. The settings are usually PULSE RATE and DUTY CYCLE. The voltage switch is the one that changes the most during the season. To determine what voltage the unit needs to be set, first start at a lower voltage for example 250 volts. Start a shocking test outside the enclosure to observe fish reaction. Do not touch the wand to the ground wire. ALWAYS read the manual before use, and have a formal training certificate. Also basic first aid & CPR is mandatory.

Electrofishing begins at the bottom barrier working from one side of the river to the other side following the downstream net (**Figure 2**). First the person with the back pack always sweeps with the water direction starting upstream towards the bottom barrier net. One person should be walking with the dip net downstream of the wearer of the back pack to collect the stunned fish that either floats in the water or have been held against the bottom barrier net. The two person team with the apron net should follow behind until the entire bottom barrier net has been cleared.

**Figure 2**



**Typical sweep direction into net**

The collected fish go into a 5 gallon pail with holes perforated at the upper half of the pail. This is done so that the perforations can allow water exchange at times maintaining good oxygen conditions. Once the bottom barrier has been fished, the two person team with the apron net, setup the net in an angle to the water as to create a pocket. The person with the dip net should be placed between the back pack wearer and the apron net as to collect the stunned fish. The shocking array is most effective within 2ft radius around the probe which means three passes should be done before moving the apron net laterally. Once the entire width of the study area has been cleared move upstream to approximately where the wand started shocking the previous pass. This is done to ensure that the entire study surface has been shocked.

Once the first sweep has been completed two people can measure and record the length of the fish captured. The salmon parr, salmon fry and all trout are usually measured and the other species only counted. The measurements must be accurate and taken at the inside of the forked tail and not the total length of the fish.

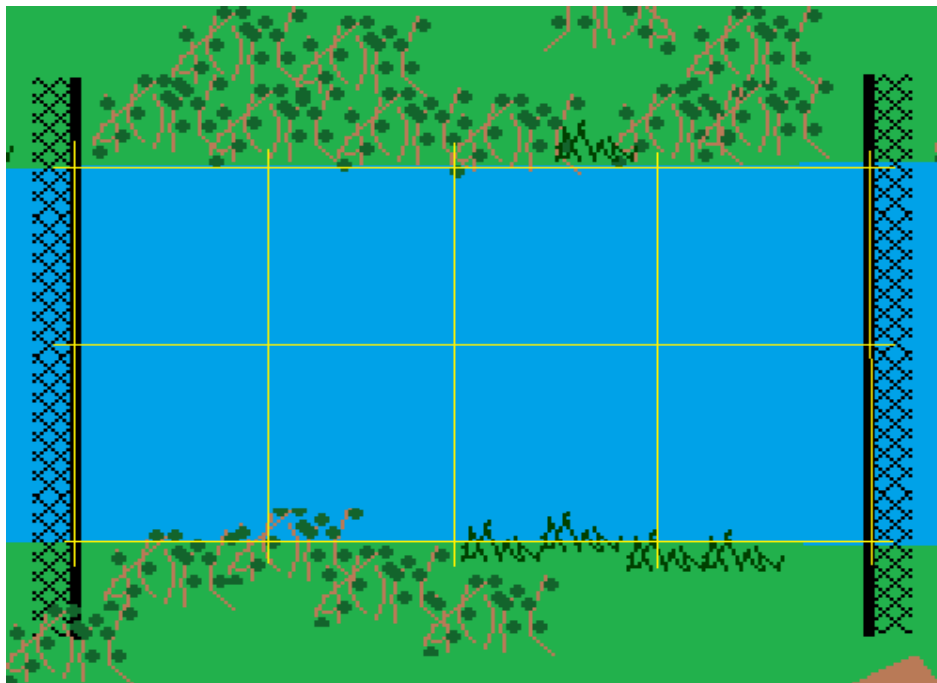
The barrier nets should always be standing up during the sweeps to hold back the fish inside the study area. If at any time the barrier nets fall down into the study area, possibly due to high water or fallen crutch sticks, the entire site shall be taken down. The location can be studied again at 2 to 4 weeks later to let fish reclaim its habitat.

The total number of fish captured per sweep should reduce at every sweep for a total of three sweeps. If the total number of fry and parr diminish three times ex; (sweep 1 = 32 parr, sweep 2 = 17 parr, sweep 3 = 5 parr) this means the study has been successful. If the total number of parr and fry do not diminish three times additional sweeps are required until the total number is in reduction three times. It is important to not take down the site until the total number parr and fry have been measured and counted. If the total number of fish does not decrease, check the bottom of the barrier nets to ensure they have been secured with rocks and have no loose area.

There are two types of nets used during the electrofishing study. There are two rolls of 100ft long nets and two rolls of 50ft long nets. Combinations of these nets are used to accomplish the approximate 100 square meter area required for the electrofishing study area.

There are other parameters observed during electrofishing studies. Such parameters are water depth measurements. 20 measurements are recorded within the electrofishing site after the three sweeps have been completed and the fish are all measured. Total lengths are taken three times, one on each side and one in the center (**Figure 3**). Total widths are also measured five times dividing the site in equal parts. These lengths and widths are added to the field sheets which are later used to determine the total dimension of the electrofishing site in square meters.

**Figure 3**



**Typical measuring grid**

Open site procedure:

This mythology is used when areas in the river are wider than the nets applied, in some cases this method assures less habitat disturbance for verification when electrofishing.

Electrofishing conversion in an open site using one sweep is as follows;

**Middle River –**

- Number of fish caught greater than 10 add 75%  
Ex. If you get 20 fry or parr add 15 for a total of 35
- Number of fish caught less than 10 add 50%

**For all other rivers –**

- Number of fish caught greater than 10 add 65%
- Number of fish caught less than 10 add 30%

Ex. 9 fry % used 30% = 30 30 X 533.8 sq./m. X 100 = 5.62 fry per sq./m.

**Trout surveys above the power dam area –**

- All number of fish caught add 55%