Pacific Northwest Aquatic Monitoring Partnership (PNAMP)
Electrofishing Method Template

Background/Abstract:

To Users: The questions that you find below represent guidance from PNAMP (www.pnamp.org) and electrofishing experts for developing your method. It is not our intent to standardize responses to these questions but rather to standardize how an electrofishing method is documented. Some of the questions have a multiple choice component. If you do not know the answer(s) at any point in the process, **please do not guess**; obtain the correct answer from helpful sources, such as equipment manuals.

This template was originally developed to be customizable in MonitoringMethods.org , a website designed to provide consistent documentation of protocols and methods used in research and monitoring.

1. Objective/Purpose – What is the intent of your program? (e.g., Management survey, Abundance, Detection)

Sampling Objectives (Describe all that apply.)

☐ Specimen Collection
☐ Species Presence-Absence
☐ Species List (all species present)
☐ Relative Abundance (e.g., CPUE)
☐ Absolute Abundance (e.g., mark-recapture)
☐ Population Dynamics (e.g., recruitment, growth, mortality)
☐ Other: _____

2. Why are you using electrofishing to achieve this objective?

3. What is the Program name? What is the Affiliation?

4. Who is the Point of Contact? What is the email address and phone number of the Point of Contact?

Step by Step Instructions

1. How many crew members do you use? (One should never electrofish alone.)

2. Does the person who carries the shocker (backpack) also carry a dip net?

3. Include a description of the waveform (and alternatives, if necessary) to be used for all sampling. Do so by answering the following multiple choice questions:

Electric Waveform (Identify all that apply)

☐ Alternating Current (AC)
☐ Continuous Direct Current (DC)
☐ Pulsed Direct Current (PDC)
☐ Other: _____
☐ Do Not Know

Waveform Frequency (if AC or PDC)

☐ Enter Hertz (pulses per second) _____
☐ Do Not Know

Duty Cycle or Pulse Width (if PDC)

☐ Enter Duty Cycle (percent) _____OR
☐ Enter Pulse Width (milliseconds) _____
☐ Do Not Know

4. What is your sampling procedure? Include information about the use of block nets. Some questions that you should answer are below. Be descriptive about how you collect the fish in this portion.

Sampling Conditions (Identify all that apply.)
☐ Standing Waters
☐ Flowing Waters
☐ Warm-Water Fishes
☐ Cold-Water Fishes
☐ Other: _____

Sampling Pattern (Describe all that apply)
☐ Upstream
☐ Downstream
☐ Along Shore
☐ In-Out from Shore
☐ Zig-Zag across channel
☐ Other: _____

Other Sampling Choices (Describe all that apply)
☐ Block Nets
☐ One Dip-Netter
☐ Multiple Dip-Netters
☐ Fish Pick-up Boat *see next page for continued multiple choice answers*

☐ Day

☐ Night

☐ Other: _____

Habitat Measurements (Identify all that apply. Attach separate methods for each of the identified habitat measurements to your protocol)

☐ Temperature, ambient

☐ Conductivity, specific (conductivity adjusted to 25 C)

☐ Conductivity, ambient (conductivity at ambient temperature)

☐ Other Water Quality Parameters (e.g., turbidity)

☐ Other Water Quantity Parameters (e.g., discharge)

☐ Other: _____

5. How do you measure sampling effort? How long (time or distance) do you electrofish?

Measures of Sampling Effort (Identify all that apply)

☐ None

☐ Fixed Time Per Sample

☐ Fixed Distance Per Sample

☐ Variable Time Per Sample

☐ Variable Distance Per Sample

☐ Other: _____

6. How do you determine threshold voltage for catching fish?

7. What is your procedure for holding and processing captured fish?
    a. How are captured fish held (e.g. a bucket as the crew moves along, or collapsible mesh laundry basket)?
    b. How are fish processed (e.g. length, weight, sex)? Attach separate methods for each of the identified habitat measurements to your protocol .

Photos and Figures

Forms

Equipment

1. What is the make and model of your control unit(s)? (Identify all that apply)

Backpack Units:

☐ Smith-Root LR-24
☐ Smith-Root LR-20B
☐ ETS ABP-2
☐ ETS ABP-3
☐ Midwest X-Stream
☐ Halltech HT-2000
☐ Aquashock Solutions A1L
☐ Aquashock Solutions AP1
☐ Other: _____

All Other Units:
☐ Smith-Root GPP 2.5
☐ Smith-Root GPP 5.0
☐ Smith-Root GPP 7.5
☐ Smith-Root GPP 9.0
☐ Smith-Root VVP-15B
☐ Smith-Root Type VI-A
☐ Smith-Root 1.5kVA
☐ ETS MBS-1D
☐ ETS MBS-2D
☐ ETS ACBS
☐ Midwest Infinity
☐ Other: _____

2. Does your unit use batteries or a generator? Or other?

3. What is the rated maximum continuous power output in average watts? (e.g. 400 W, 200 W) (Your user manual or manufacturer can provide this information)

4. Identify the attributes of your anode.

Anode - Positive Electrode (Identify all that apply)
Anode Shape (one shape is an element):
☐ Ring (immersed)
☐ Diamond (immersed)
☐ Droppers (cables or pipes suspended from a ring or other support)
☐ Other: _____

Anode Size:

☐ Overall length _____ ☐ inches ☐ centimeters

☐ Material thickness _____ ☐ inches ☐ centimeters

Anode Number: (e.g., one ring anode would be one set and one element per set)

☐ Number of Sets_____

☐ Number of Elements Per Set_____

5. Identify the attributes of your cathode?

Cathode – Negative Electrode (Identify all that apply)

Cathode Shape (one shape is an element):

☐ Ring (immersed)

☐ Diamond (immersed)

☐ Droppers (cables or pipes suspended from a ring or other support)

☐ Boat Hull

☐ Other: _____

Cathode Size:

☐ Overall length _____ ☐ inches ☐ centimeters

☐ Material thickness _____ ☐ inches ☐ centimeters (exclude boat hull)

Cathode Number: (e.g., 3 droppers per side would be two sets and 3 elements per set)

☐ Number of Sets_____

☐ Number of Elements Per Set_____

6. What is the handle length, hoop diameter and mesh size of your dip net (s)?

7. What safety equipment do you use (other than that on the electrofishing unit)?

8. What chemicals, if any, do you use during sampling? What for?

9. What other equipment do you regularly take with you?

Citation

Please provide information about how this method should be cited.

Advanced

Literature Cited

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Reynolds, J.B. and A. L. Kolz. 2012. Electrofishing. Pages 305-362 in Zale, A.V., D.L. Parrish and T.M.Sutton, editors. Fisheries techniques, 3rd edition. American Fisheries Society, Bethesda, Maryland.

Provide a list of references that you have used to support your Method.