

Methods for Monitoring Fish Communities of Buffalo National River and Ozark National Scenic Riverways in the Ozark Plateaus of Arkansas and Missouri, Version 2.0

Standard Operating Procedure (SOP) 2: Training, Version 1.1

Revision History Log:

Previous version number	Revision date	Author	Changes made	Reason for change	New version number
1.0	7/21/2016	Dodd	Clarified crew requirements for effective and safe sampling	Ensure all crewmembers are safe and trained appropriately and data collection is high quality	1.1

Training requirements generally fall into two categories: sampling efficiency/quality and safety. Sampling crews need to be able to work in the field in a manner that will maximize the quality of the information collected and ensure their safety. Prior to field season, the fisheries biologist (i.e. project leader) and aquatic ecologist(s) should review this protocol, the fish species lists (see Appendices 1 and 2 in the Protocol Narrative), and operation manuals and/or Heartland I & M Network (HTLN) lab guides for water quality (for example, hand-held meters), habitat (for example, flow meter), and electrofishing equipment (for example, backpack shocking unit). In the field, additional crewmembers will be instructed on safety procedures, use of equipment, and data recording procedures by the fisheries biologist or the aquatic ecologist(s).

Sampling Efficiency and Consistency Considerations

An experienced and consistent sampling team will result in optimized data quality and consistency/efficiency of sampling effort. The fisheries biologist and aquatic ecologist(s) are to have extensive experience in boat operation and electrofishing procedures and have completed the U.S. Fish and Wildlife Service (USFWS) electrofishing course (Principles and Techniques of Electrofishing) and the Department of Interior (DOI) Motorboat Operators (MOCC) Practical. An on-line refresher MOCC course is required every 5 years to remain certified in motorboat operations of a government vessel. Other technicians, seasonals, or interns on the crew will be trained on boat and electrofishing gear operation and safety prior to the field season by the fisheries biologist or aquatic ecologists. Only those who have completed the MOCC Practical training will operate boats during electrofishing. Other crewmembers may operate motored vessels (canoes or boats) during habitat collection but only if a MOCC certified person is present in that vessel.

Two critical elements to collect quality data and maintain consistency across years is: an adequate number of experienced crewmembers and the consistency in the team conducting the fish sampling and habitat data collection. At least half of the crew must be experienced with electrofishing and habitat collection procedures. For efficiency and to obtain consistent quality data, a minimum crew of six is needed on mainstem sites (where multiple gear types are used) and at least five to six personnel are needed on medium to large tributaries (where multiple gear types or a tow barge is used). At least two crewmembers must have completed the USFWS electrofishing and DOI motorboat training courses and at least three must be experienced (at least one summer of experience) in electrofishing streams and rivers. For smaller tributaries that only require backpack electrofishing, two to three crewmembers are required (depending on stream size) of which one must have completed the USFWS electrofishing training course and at least two have experience with electrofishing. New crew members must be sufficiently trained and understand the importance of consistent sampling. When team members alternate or change, the fisheries biologist (with assistance from the aquatic ecologists) will explain the importance of consistent sampling, provide an overview of sampling equipment, demonstrate electrofishing and habitat data collection techniques, and data recording procedures.

The fisheries biologist will have adequate taxonomic expertise (completed an Ichthyology course and have at least 3 years of fish identification experience). It is preferred, but not required, that the aquatic ecologist or another crewmember also have taxonomic expertise, so that two crewmembers are familiar with the local fish fauna. Prior to the field season, the fisheries biologist and aquatic ecologist(s) need to refamiliarize themselves with the fish fauna by examining preserved specimens located in the reference collection (see SOP 5 for collection of reference specimens) and reviewing fish species lists (see Appendices 1 and 2 in the Protocol Narrative). In the field, the fisheries biologist will train other crewmembers in coarse identification of specimens, separating them into groups such as sunfish, sculpins, minnows, and darters to aid in initial sorting and processing of fish.

At least two people in the crew must have competent data recording abilities. This will ensure that the numerous fish measurements and counts will be recorded accurately and habitat data will be recorded on the correct form for each transect. Prior to recording data, the fisheries biologist or aquatic ecologist will explain and demonstrate to new crewmembers how to record data on the field forms and will check the data recording during fish processing or habitat collection.

Safety Considerations

Some field sampling activities carry a real potential for personal injury or death, and safety qualifications of the sampling crew are the most important consideration prior to conducting field sampling. Safety considerations include elements of planning, equipment use and maintenance, and behavior of crewmembers. Before the field season, all crewmembers are required to read the Heartland Network Safety Plan and Procedures (HTLN 2015) that describes potential dangers and abatement actions for field and laboratory/office work. This document includes safety on boating/canoeing, fishery/stream surveys, electrofishing, dehydration, camping, office work, general/winter driving, and hazardous materials. Each crewmember must sign and date an annual review form stating that they have read and understand the Safety Plan. In addition, crewmembers

will read the electrofishing safety chapter from the USFWS electrofishing course and sign a review form.

All crewmembers that will operate a motorboat during electrofishing or will operate a boat without the presence of a MOCC certified person are required to have completed the MOCC course. For mainstem sites and large tributaries, at least two members of the five to six member crew are required to complete electrofishing and MOCC training. This is to ensure that at least one crewmember who has completed electrofishing training and is familiar with the equipment's safety features is part of the fish sampling crew at all times and that at least one person is able to operate the boat in case the other MOCC certified crewmember is incapacitated or injured. For smaller tributaries where a backpack electrofishing unit is used, at least one person on the two to three person crew must complete electrofishing training.

Sampling teams (fish or habitat) must always have at least two crewmembers; no one should sample alone (HTLN 2015). NPS employees must wear properly fitting U.S. Coast Guard approved personal floatation devices (PFDs) when in canoes or other boats and should wear PFDs when wading in fast current. During electrofishing, all crewmembers will wear waterproof waders made of nylon, neoprene, or rubber ("breathable waders will not be used), and low voltage rubber gloves. Each sampling team needs a first aid kit, a cellular telephone or park radio, and an emergency contact list (including medical facilities closest to each sampling site) with them during sampling. Safety requirements stipulate that prior to sampling, at least two crewmembers must be adequately trained in first aid and cardiopulmonary resuscitation (CPR) techniques. Prior to sampling with new team members, the electrofishing team coordinators (the fisheries biologist and aquatic ecologist) need to explain basic safety rules and be sure that new personnel understand all safety signals and know the location of all safety switches on the electrofishing equipment.

References Cited

Heartland I&M Network (HTLN). 2015. Heartland Network Safety Plan and Procedures: U.S. National Park Service, Heartland I&M Network Monitoring Program. Wilson's Creek National Battlefield, Republic, Mo. 93 p.