

Protocol for Monitoring Fish Communities in Small Streams in the Heartland Inventory and Monitoring Network

SOP 2: Training, Version 1.1

Revision History Log:

Previous Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #
1.0	4/6/2017 & 5/4/2018	Dodd	Clarified crew requirements for effective and safe sampling.	Ensure all crewmembers are safe and trained appropriately and data collection is high quality. New Safety Plan published in 2018	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 project leader and crew leaders should review this protocol, the fish species list and fish reference collection (see SOP 4 for list), 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 project leader and crew leaders.

Sampling Efficiency and Data Consistency Considerations

An experienced and consistent sampling team will result in optimized data quality and consistency/efficiency of sampling effort. 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.

To maintain data quality consistency and efficiency while keeping the crew safe, a crew of three to six people are needed for fish sampling, depending on the gear used and size of the stream. At least half of the crew must be experienced (i.e. one field season of experience) with electrofishing and seining procedures and gears. The project leader and crew leaders are to have extensive experience in electrofishing procedures (i.e. 2-3 field seasons) and have completed the U.S. Fish and Wildlife Service (USFWS) electrofishing course (Principles and Techniques of Electrofishing). For backpack electrofishing, a crew of three is needed and at least one must have completed the USFWS electrofishing course. For tow barge electrofishing, five to six crewmembers are needed with at least two crewmembers having completed the USFWS electrofishing course. For seining, two to three crewmembers are required. At least two people on the crew must have competent data recording

abilities. This will ensure that the numerous fish measurements and counts will be recorded accurately.

New crew members must be sufficiently trained and understand the importance of consistent sampling. Crew members who are inexperienced with fish or habitat gear will undergo training by the project lead or field crew lead prior to the field season to learn safety features and proper sampling techniques of the equipment. Prior to recording data, the project or crew lead will explain and demonstrate to new crewmembers how to record data on the field forms and will check the data recording during fish processing. When team members alternate or change, the project leader or crew leader will explain the importance of consistent sampling, provide an overview of sampling equipment, demonstrate electrofishing and seining techniques, habitat data collection methods, and data recording procedures.

Prior to the field season, the project and field crew leads need to refamiliarize themselves with the fish fauna by examining preserved specimens located in the reference collection and reviewing fish species lists collected within the parks. The project lead for fish monitoring will have taxonomic expertise, having completed an Ichthyology course and having 3 or more years of fish identification experience. The project lead will be the QA officer for both experienced staff (i.e. have 1-2 years of fish identification experience or have taken an Ichthyology class) and inexperienced staff who will assist with fish identifications. Field crew leads responsible for fish identifications down to the species level will have completed an Ichthyology course and be certified by the QA officer (i.e., project lead). See SOP 4 for details on the certification process. Only the project lead or certified crew leads will be allowed to make final determinations of identifications to the species level.

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 Wilson's Creek National Battlefield and Heartland Network Safety Health and Wellness Plan (WICR 2018) 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.

For reaches sampled with tow barge electrofishing gear, at least two members of the five to six member crew are required to complete USFWS electrofishing 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 in case the other crewmember is incapacitated or injured. For smaller tributaries where a backpack electrofishing unit is used, at least one person on the three person crew must complete electrofishing training.

Sampling teams (fish or habitat) must always have at least two crewmembers; no one should sample alone (WICR 2018). NPS employees must wear properly fitting U.S. Coast Guard approved personal floatation devices (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 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 (project leader and crew leaders) 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

Wilson’s Creek National Battlefield and Heartland Inventory and Monitoring Safety Health and Wellness Plan (WICR). 2018. U.S. National Park Service, Republic, MO. 221 p.