

SOP #1. Preparations for the Field Season, version 1.0

Revision History Log:

Previous Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #

1.1 Purpose

The purpose of this document is to help prepare field crews for Shenandoah salamander monitoring including becoming familiar with relevant species identification and assembling the proper field gear.

1.2 Scope and Applicability

This document applies specifically to the Shenandoah Salamander Monitoring Protocol and should be reviewed by all personnel involved.

1.3 Procedures and General Requirements

Prior to the field season each year, all personnel should review the protocol narrative document and all Standard Operating Procedures (SOPs #1–8). Data sheets and field notes from previous years should be reviewed to identify general timing of appropriate field conditions (e.g., air temperatures) within the calendar year to aid scheduling of sampling with available personnel. A calendar of tentative sampling dates at each study location should be prepared, especially if technicians will be expected to work on multiple projects at several locations. Special attention should be paid to local weather forecasts near the sampling sites (e.g., Big Meadows weather station) within the week prior to sampling to ensure conditions will be appropriate for detecting the species as well as safe for field personnel.

Particular attention should be paid to studying and reviewing the identification and key differences among terrestrial amphibian species at all life stages.

1.3.1 Safety

- Personnel should review the following chapters of the USGS Safety Manual prior to the initiation of field work:
 - SM 445-2-H Chapter 14: USGS Safety & Health Training
 - SM 445-2-H Chapter 24: Prevention of Zoonotic and Vector-Borne Diseases in the Field
 - SM 445-2-H Chapter 45 The Management of Occupational Heat Stress

- SM 445-2-H Chapter 48 Prevention of Cold Stress Injuries
- SM 445-3-H Safety and Health for Field Operations (operational complement to SM-445-H-2)
- Personnel will receive basic CPR and First Aid training.
- Review contents of first aid kits and obtain additional supplies as necessary.

1.3.2 General Preparation

- Review field notes and data sheets from the previous year(s) to identify unique access issues and field conditions at sites.
- Review identification of amphibian species encountered in previous years (see SOP 2 for specific training procedures).
- GPS waypoints of sampling locations should be loaded in the handheld GPS units. These waypoints are combinations of X (easting) and Y (northing) coordinates in decimal degrees, datum WGS 84. Sampling locations and associated GPS waypoints can be found in the NEARMI Local database.
- Assemble, clean and disinfect, and repair all field equipment so that it is in excellent working condition as outlined in section 1.3.4 below.

1.3.3 Scheduling Field Work

- Field surveys should not begin prior to the middle of April, and should extend no later than the middle of October. Exact starting and ending dates will depend on local climatic conditions that increase seasonal surface availability such as daytime predicted high temperatures $>4^{\circ}\text{C}$, recent precipitation resulting in moist soil/leaf litter conditions, and safety considerations, such as the absence of high winds.
- Conducting field work within the Shenandoah National Park requires a 2 person crew. Each crew is expected to survey 8-15 sampling sites each field day. Hours during the field season may be extended (i.e., more than 8 hours per day), due to the need to sample many sites in a small sample window to minimize variation in surface availability related to seasonal variation.
- Whenever field work is to be conducted, field personnel should notify the SHEN Fish and Wildlife Biologist and Chief of Natural and Cultural Resources with the planned schedule and sampling locations. At least one technician in each crew should have a fully-charged cellular phone on hand in case of emergencies, and should designate an emergency contact person to be “on call” during the sampling. When working in parts of the range where cell service is not available or unreliable, technicians should carry and know how to use a park radio. Technicians should also have the SHEN emergency line stored as a contact in the phone (1-800-732-0911).

1.3.4 Field Equipment

- All field equipment should be assembled, cleaned and checked for correct operation by the middle of March, so that failing equipment can be repaired or replaced.
- Field personnel should bring as many of the following reference materials in the vehicle and/or field as needed for species identification. Reference materials for amphibians in the region include:
 - Powell, R., Conant, R. and J. T. Collins. 2016. A Field Guide to Reptiles and Amphibians of Eastern and Central North America. Fourth edition. Houghton Mifflin Company, Boston.
 - Petranksa, J.W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press, Washington, DC.
 - Highton R and Worthington RD. 1967. A new salamander of the genus *Plethodon* from Virginia. *Copeia* 1967:617–26.

1.3.5 List of Field Equipment for Each 2-Person Survey Team

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| • Clipboard | • Li-ion Batteries for GPS, Camera, etc. |
| • Compass (2) with declination set | • Mechanical Pencils with erasers |
| • Clicker counters (2) | • Rulers (mm) (2) |
| • Thermometer | • Digital calipers, 0.1mm precision (2) |
| • Digital camera | • SOPs and field guide(s) |
| • Fiberglass tape (50 m) (2) | • Specimen containers and labels |
| • Datasheets on Rite-in-the-rain paper | • Plastic zip-top snack/sandwich bags |
| • GPS unit | • First aid kit |
| • Site maps as needed | • Ethyl alcohol wipes/pads |
| • Site list of location information | • Spray bottle with 10% bleach solution |

1.4 Reference Documents

Heyer, W. R., M. A. Donnelly, R. W. McDiarmid, L. C. Hayek, and M. S. Foster. 1994. Measuring and monitoring biological diversity: Standard methods for amphibians. Smithsonian Institution Press, Washington, DC. 364 pp