

Standard Operating Procedure 2: Training and Safety, version 1.0

Overview:

In mid-April, a small crew will begin sampling. Job hazard analyses (JHA) and other safety training will be discussed the first morning and then the crew will travel to Lands Run (Site 1F002) to sample the traditional training site. Here, the lead tech will review individual aspects of the protocol and ensure that all crew members use each piece of equipment to sample, and that all understand and correctly fill out the data sheets. All individuals are further instructed in the use of the Hydrolab® units to measure water chemistry parameters and flow meter equipment to measure stream discharge.

Individuals will be instructed on the basic techniques and strategies of capturing insects with the sampling gear, and will be expected to operate independently by the end of the second day. After the first day, the lead technician will be responsible for collection of all of the Portable Invertebrate Box Sampler (PIBS) or Surber samples. The other crewmembers can rotate through the D-net sampling. This assists with consistency of effort during monitoring work.

After the first week, each member of the crew will be proficient at all of the routine tasks. Crew members will be expected to anticipate work tasks and follow through with the completion of those tasks with or without specific instruction from the supervisors.

Working in mountain stream habitats during normal spring flows is hazardous. This is compounded somewhat by the long hikes over rough and steep terrain while transporting pack loads of up to fifty pounds in conditions of cold, heat, and humidity extremes just to access some of the sites. By the end of the sampling period, venomous reptiles have emerged (northern copperhead and the timber rattlesnake), a number of biting and stinging insects have hatched, and an abundance of poison ivy may be present. With adequate preparation, training, the use of personal protective gear, and by being ever mindful of potential hazards during the course of the workday, all of the tasks associated with aquatic macroinvertebrate collection can be accomplished in a manner that is safe to all individuals involved. Employees are expected to point out and discuss unsafe situations with the crew.

General Safety Procedures

- 1) A crew of three including a data recorder and two measurers is optimal for smaller streams. Due to the large size of some streams, four are needed for safety and speed (e.g. the lower sections of the Rose, Rapidan, Hawksbill, and Hughes). A fourth person increases efficiency but is not necessary on the lower Hazel, North Fork Moormans, and Piney River. Due to the stream depth and velocities encountered at these sites during the spring, it is generally safer to have two people walk on either side of the stream when moving the cross section tape up the stream margins rather than having one individual cross the stream multiple times to run the tape. This way, only one of the individuals has to cross for habitat measurements while one person records data. Life jackets will be provided as needed.
- 2) Numerous JHAs specific to Shenandoah National Park will be reviewed by the crew prior to the start of the field season. These JHAs include, but are not limited to: *working in tick*

infested areas, light vehicle use, backcountry travel, aquatic macroinvertebrate collection, lifting and carrying, and Hantavirus. Certain JHAs may require additional safety training.

- 3) As part of the initial introduction to safety, emergency contact information will be collected from each crew member and will be stored in the field vehicles. A copy will also be retained by the Division Chief and Park Dispatch. In addition, crew members will have an opportunity to confidentially share known health issues (e.g. allergy to bee stings) with the Biologist and Lead Technician. When permission is granted, these issues may be discussed with the entire crew.
- 4) Each new member of the crew will be given a set of Potomac Appalachian Trail Club Maps for Shenandoah National Park. They will be expected to use these and the topographic maps in the office to know where we are going each day and know the main routes to nearest hospitals. A set of PATC maps will be retained in each vehicle. Directions to hospitals in surrounding communities will be in the glove boxes of each vehicle. Routes to hospitals can also be found on the SHEN intranet at <http://inpshe/cirsc/SHEN/GIS/Medical%20Facilities%20Near%20SNP/Medical%20Facilities%20Near%20Shenandoah%20NP.HTM>.
- 5) The entire crew will be informed on the use, function and procedures of park radios. Each individual on the crew will know how to call for assistance in the case of an emergency and which radio channels will work best in a given location. During the field season, the crew will always have two functional portable radios on hand at all times in addition to the dash mounted vehicle radios.
- 6) The Biologist and Lead Technician are expected to stay current in basic first aid and CPR throughout the year. Seasonal staff will receive current certification of basic first aid and CPR as time allows.
- 7) An approved first aid kit will be carried at all times when field work is conducted. This kit will be stored in a consistent location and all field personnel will be informed of that location (typically this is in the hood of the red pack). Additional first aid material may be needed under certain circumstances or for certain crew members (e.g. “epipen”). First aid kits will contain Benadryl for allergic reactions in the backcountry. This can assist with any allergic reaction including bee stings or delayed anaphylactic shock (red meat allergies) due to tick bites. Items in the kit must be replaced the day they are used.
- 8) There is no substitute for good personal preparedness at the beginning of the season and at the beginning of each day. Each person on the crew is responsible for packing an adequate supply of food and water for the anticipated conditions of the day. It is particularly important to plan ahead for the longer hikes and to anticipate personal food, water and clothing needs accordingly.

Other Safety Considerations

- 1) Each person participating or assisting the aquatic macroinvertebrate crew will be required to wear appropriate PPE as identified in the JHAs (e.g. non-slip waders, Type III PFD, etc.).

- 2) During the initial 45 minutes to 1 hour at the site the crew is typically separated within the 100 meter reach. Keep a watchful eye for your crewmembers, especially on larger streams where you can't physically hear each other due to the ambient stream noise.
- 3) All crew members are responsible for maintaining situational awareness, which largely includes identifying and communicating potential safety hazards. This also includes providing a personal safety zone about oneself and generally avoiding direct body contact with a fellow crewmember.
- 4) Always take the time to help each other over/around obstacles.

Field Techniques Training

Office tasks and reviewing JHA's typically takes half of the first day. After that, the entire crew will have a half day of field training using all of the equipment associated with aquatic macroinvertebrate work at Shenandoah. Training in the use of discharge meters, water chemistry equipment, and habitat sampling procedures will also occur on-the-job during initial monitoring efforts. Because of sample site conditions, during the initial week of work, the pace is generally slower than it will be from the last week of April thru mid-May. This allows the crew to become used to working in unison and allows individuals to gain a better grasp of the physical and mental demands of the job. Being a small crew, training (via discussion of protocols) takes place during vehicle travel as well as in the field.

Site 1F002 on Lands Run, is a very small stream with good flow and easy access. It is the first site sampled during a monitoring year. At this site, principles of aquatic insect capture and basic insect and niche identification will be conducted. All field techniques will be demonstrated at this time. On the job training will continue as needed/appropriate for the duration of the project. During the first site visit, the entire crew will participate in the full suite of monitoring actions (numerous SOPs outline specific steps in the protocol).

SOP Revision History

All protocols, regardless of how sound they are originally, require modification as new and different information becomes available. SOP version numbers increase incrementally by tenths (e.g. version 1.1, version 1.2...etc.) for minor changes. Major revisions should be designated with the next whole number (e.g., version 2.0, 3.0, 4.0 ...). Small changes or additions to existing methods will be reviewed in-house by Shenandoah or Mid-Atlantic Network staff. However, if a complete change in methods is sought, an outside review is required.

Revision History Log:

Prev. Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #