

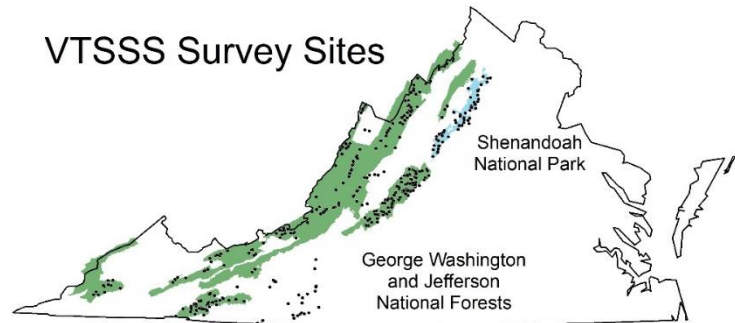
VIRGINIA TROUT STREAM SENSITIVITY STUDY 2021

Notes and Instructions for Sample Collectors

Website Link: <https://uva.theopenscholar.com/vtsss2021>

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(1) VTSSS 2021 Overview

The Virginia Trout Stream Sensitivity Study (VTSSS) is designed to track the effects of acidic deposition and other factors that determine water quality and related ecological conditions in Virginia's native trout streams.

The VTSSS 2021 survey will be the fourth regional survey conducted with the assistance of Trout Unlimited and other volunteer organizations. Previous surveys were conducted in 1987, 2000 and 2010. Following the first survey, a geographically distributed subset of streams was selected for long-term monitoring. This component of VTSSS now includes 72 streams that have been sampled on a seasonal (quarterly) basis for 33 years.

The current plan for VTSSS is to:

- (1) maintain quarterly data collection at representative long-term monitoring sites to support research and trend analysis, and
- (2) periodically conduct regional sampling surveys of the larger population of streams to provide context and assessment capability.

The 2021 survey will establish a decadal time-frame for VTSSS regional sampling. About 450 stream sites will be sampled in 34 counties, representing most of the mountain headwater streams in Virginia that support reproducing brook trout.

Over the years since program inception, VTSSS data and findings have proven important to both local resource management and to the development, evaluation, and implementation of national air pollution control policies.

(2) The Sample-Collection Window

Our plan is to sample all of the survey sites in a 7-day period, Saturday April 24th through Friday, April 30th. If necessary, sampling will continue during the first 7 days of May. The sampling will proceed, rain or shine. However, in the event of extreme weather or dangerous conditions (for example, flooding) the sampling will be delayed. In such a case, the Sample Collection coordinators will notify the sample-collection teams.

(3) List of Equipment and Materials

Each sample-collection team will need the following equipment and materials, except as noted. Items provided by the VTSSS 2021 Project Lab are indicated.

Instructions for use are in the next sections.

1. Prelabeled, prewashed sample bottles for each site assigned to the collection team. Each bottle will be packed in a watertight plastic bag with a pair of disposable plastic gloves. *(Provided by Project Lab.)*
2. A Styrofoam cooler with plastic bag for ice. *(Cooler and bag provided by Project Lab. Ice provided by collectors.)*
3. A pencil for filling out waterproof forms. *(Provided by Project Lab.)*
4. A backpack and small insulated cooler with a small bag for ice, for sites requiring hikes > 15 min. *(Collectors will provide if needed.)*
5. A GPS unit and camera. *(Both are optional and collectors will provide.)*
6. A Site Information and Record Folder for each sampling site. *(Provided by Project Lab.)*

Site folders include the following.

- Site Location Report (waterproof paper)
- Sample Collection Form (waterproof paper)
- Notes and Instructions for Sample Collectors (a version of this document)

(4) Sampling Sites Locations

Sample-collection sites can be located by reference to descriptions, maps, and photographs included in the Site Location Report provided in the Site Information and Record Folder for each site. *Note the descriptions and maps for each site were generated in 2010, so there may be differences in site access and/or appearance and the tag tree may be have fallen or be obscured.*

Site descriptions include: the stream name and four-digit site identification code, the elevation and coordinates of the sampling site, a narrative description of the sampling site, and travel directions for accessing the sampling site. For most sites the site description will include a tag number for a one-inch metal disk attached to a tree adjacent the sampling site. The location, size, and species of the tag tree will be indicated. For those sites without tags, typically situated within Designated Wilderness, the Site Location Report will indicate that there is no tag. Although coordinates may be helpful to collectors with GPS units, the descriptions are designed to allow site location without the use of a GPS unit.

If you are not sure about the site location and/or cannot find the described tag, the sample should still be collected and the location should be documented following the instructions below.

Site location maps include: road maps, terrain maps, and topographic maps. The location of the sampling site will be indicated on each map. Explanatory notes have been added to some of the maps.

Site photographs include: upstream and downstream views of the site. For sites with numbered tags (most of the sites), blaze orange material was used to identify the tag tree in the site photographs. Note the blaze orange material was removed subsequently so will not be present when you return to the site for sampling. For some sites additional photographs are provided that show parking areas, trail heads, and other landmarks.

(5) Sample Collection and Handling

Prior to the sampling trip

1. Upon receipt of the sample materials, one member of the collection team should confirm that the sample bottles, Site Information and Record Folders, and other required materials are available for each assigned site.
2. Note if any of your assigned sites have been designated for duplicate sampling. In such cases, two sample bottles will be provided for the site and a label indicating that the site

is a duplicate site will be located on the Site Information and Record Folder cover. Duplicate samples should be collected at the same location at the same time (one right after the other). Indicate that 2 samples were collected in the comment section of the Sample Collection Form.

3. Obtain ice for the cooler and place it in the provided plastic bag. A standard 10-pound bag of ice will fit in the bag.

Sample collection

1. Determine the exact point on the stream to be sampled. After locating the sample site, the sample collection team must still determine the exact point on the stream to be sampled. The best point to sample will be where the water is flowing fast or falling, where there are no eddies, and where the depth is at least 8 inches. Ideally the sampling point is one that can be reached while kneeling on the stream bank or on stable rocks downstream from the sampling point. It should not be necessary to stand in the water to reach the sample point. The sampling point should be adjacent to the tag tree (if found) or no more than about 5 yards upstream or downstream.

Note: carefully avoid disturbance of water upstream of the sampling point prior to sample collection. This means not walking in the upstream water or on upstream rocks. If accompanied by a pet dog, the dog should be leashed and kept out of the stream prior to sample collection. If upstream disturbance occurs prior to sample collection, wait 10-15 minutes for water to clear before sampling.

2. Sample collection procedure. The sample should be collected on a step-by-step basis as follows.

- Remove the plastic gloves from the plastic bag and put them on.
- Remove the sample bottle from the plastic bag. Place the bag where it will not get dirty or potentially fly away if windy (e.g. hand to second sampler, place on some vegetation or on backpack if carrying).
- Rinse the gloves and sample bottle in the stream at a location 2-3 feet below the sample collection point. The bottle and cap should be rinsed 3 times. For each rinse, fill up the bottle and then pour the rinse water over the inside of the cap, held bottom-side up in the other hand. Pour the rinse water downstream of the rinsing and sampling points and avoid stirring-up streambed debris during the process.
- After the rinsing is completed, move to the sampling point. While collecting the sample, avoid stirring-up streambed debris that might be collected with the sample. Also avoid collecting water that has come in contact with the gloves or the outside of the bottle. This can be best achieved by sampling rapidly flowing or falling water. Fill up the bottle as completely as possible, remove it from the stream and place the cap on the bottle. It is acceptable to have air space in the bottle.

- Return the bottle to its plastic bag. Seal the bag.
- Place the sample on ice within 15 minutes of collection, as discussed below.
- Complete the sample collection form while at the sample site.
- If you cannot locate the tag tree:
 - Provide location description of where the sample was collected in the Comments section of the Sample Collection Form (e.g. 20 yards up from confluence).
 - If possible, take photos from your sample collection point, one upstream and one downstream, and send to your Chapter Coordinator with explanatory information (site ID, date, upstream/downstream)
 - If possible, record GPS site coordinates (decimal degrees preferred) in the Comments of the Sample Collection Form. Most phones have a GPS that functions without cell reception. For iPhones, the compass application has GPS coordinates. Other common mapping applications allow users to obtain coordinates as well (e.g. in Google Maps, hold down finger on current location (creates Dropped Pin). Tap Dropped Pin and scroll down to see coordinates.

3. Sample handling. Samples should be placed on ice within 15 minutes of collection.

- For sites that are close to road access, the sample cooler can be left in the collection team's vehicle. The sample can be placed in the cooler upon return to the car.
- For sites that require long hikes, the collection team should make arrangements to keep the sample on ice during the return hike. One approach would be to use a small soft-pack cooler or other container that will fit in a backpack. Ice could be placed in a small plastic bag in the cooler or container. Note: do not put ice in the plastic bag that contains the sample bottle.
- The samples will be stable as long as they are kept on ice until delivery to the lab. The ice may need to be replenished during sample transit. Avoid submersion of the sample bottle in melted ice water. Note: do not place the sample bottle in a refrigerator or cooler with food or in any container that is not clean.
- As soon as practical after sample collection, deliver the sample to the Sample Collection Coordinator or to a prearranged drop-off point. The Site Information and Record Folders should accompany the sample bottles.

(6) Miscellaneous Notes

- Questions concerning procedures should be resolved through consultation with your Sample Collection Coordinator prior to the sampling trip.
- Take all reasonable steps to minimize the potential for sample contamination. Closely follow the bottle rinsing and sample collection procedure, and keep samples on ice until delivery to the Project Lab.

- Do not jeopardize your personal safety by attempting dangerous routes. Consider alternate routes. In any case, missing a sample site is preferable to taking a safety risk.
- Let your Sample Collection Coordinator know as soon as possible if a sampling site is missed.
- Do not take any kind of vehicle behind closed Forest Service or National Park roads unless prior arrangements have been made. See the next section for contacts.
- Do not go on posted land without landowner permission. Please add landowner contact information to the Sample Collection Form if obtained.
- Add notes and sketches to the Sample Collection Form to improve travel directions and site descriptions if needed.
- Photos to improve travel directions and site descriptions, as well as photos of collection activities will be appreciated. Please send to your Chapter Coordinator with explanatory information (site ID, date, name of any person(s) in photo etc.)

(7) Project Contacts

1. University of Virginia

Department of Environmental Sciences, University of Virginia
 291 McCormick Road
 P.O. Box 4000123, Clark Hall
 Charlottesville, VA 22903

Ami Riscassi, VTSSS Projects Coordinator; 434-924-0520 or 703-508-6228(c);
alr8m@virginia.edu

Susie Maben, VTSSS Laboratory Manager; 434-924-0589 or 434-989-0142 (c);
sw2e@virginia.edu

2. Virginia Council of Trout Unlimited

Tom Benzing, TU VTSSS State Coordinator, 540-568-2794; benzintr@jmu.edu

3. Regional Coordinators

North: Marcia Woolman, 540-253-5545; marciawoolman@gmail.com
 (NOVA, Rapidan, Winchester)

Central West: Rick Webb, 540-468-2881; rwebb.481@gmail.com
 (Massanutten, Shenandoah Valley, Roanoke, Highland and Bath County)

East: Chubby Damron, 434-882-3477; thomasjeffersonstu@gmail.com
 (Thomas Jefferson, Skyline)

Southwest: TBD (Smith River, Little Stony, Mountain Empire, New River, Southern WVa)

4. Sample Collection Coordinators

The Sample Collector Sign-Up Table lists the sample sites assigned to each Coordinator and will be/is available online at <https://uva.theopenscholar.com/vtsss2021>

TU Chapter or County	Site Coordinator	email	phone
Northern Virginia	Rob Cain	cainsvw@yahoo.com	
Rapidan	Amy Orr	willowamy@gmail.com	703-629-8088
Winchester	Stan Ikonen	stanikonen@gmail.com	540-550-3555
Massanutten	Rodney Minor	rodminervt@gmail.com	540-705-6784
Shenandoah Valley	Tom Benzing	benzintr@jmu.edu	540-568-2794
Highland County	Rick Webb	rwebb.481@gmail.com	540-468-2881 540-290-0913 (c)
Bath County	Ryan Hodges	lrh3@tds.net	540-969-6700
Roanoke	Mark Taylor	Mark.Taylor@tu.org	540-353-3556
Thomas Jefferson	Chubby Damron	thomasjeffersonstu@gmail.com	434-882-3477
Skyline Chapter	Steve Romine	romine.photos@gmail.com	434-944-5678
Smith River	Wayne Kirkpatrick	wynbtyk@embarqmail.com	540-570-3511
Little Stony	Justin Bentley	justinbentley08@gmail.com	276-219-4290
Mountain Empire	Heather Davidson	medcodingsolutions@gmail.com	276-685-2045
New River	Arnold Graboyes	abgraboyes@gmail.com	540-239-4379
Southern WVa	Steven Pugh	swvctu@gmail.com or foxbhunr2@suddenlink.net	304-301-4016

5. Agency Contacts

Note: contact information is provided for the land managers within Shenandoah National Park and Virginia's National Forests, where the majority of samples will be collected.

SHENANDOAH NATIONAL PARK

Natural and Cultural Resources
3655 US Highway 211 East
Luray VA 22835

Evan Childress, Supervisory Fish Biologist
(540) 999-3500 x3433; evan_childress@nps.gov

GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS

Supervisor's Office
5162 Valleypointe Parkway
Roanoke VA 24019 (540-265-5100)

Dawn Kirk, Forest Fisheries Biologist
540-291-2188; dawn.kirk@usda.gov

Forest District	District Ranger	District Biologist	Phone
Clinch	Michelle Davalos	Chuck Lane	276-679-8370
Mount Rogers	Barry Garten	Brittany Phillips	276-783-5196
Eastern Divide	Beth Christensen	Jesse Overcash / Kirk Gardner	540-552-4641
Glenwood/Pedlar	Lauren Stull	Danny Wright	540-291-2188
James River/Warm Springs	Theresa Tanner	Steve Tanguay / Emily Schultz	540-839-2521
North River/Lee	Mary Yonce Eric Freels, Deputy Ranger at NR	Meg Riddle	540-432-0187
North River/Lee	Mary Yonce	Meg Riddle, Sarah Davis, biologist at Lee	540-984-4101