



## 2018 Accomplishments Report

### TABLE OF CONTENTS

<b>INTRODUCTION</b>	<b>2</b>
<b>2018 HIGHLIGHT PROJECTS</b>	<b>4</b>
<i>Red Spruce Restoration in the Gauley District</i>	<b>4</b>
<i>Minded Land Reforestation at Sharp's Knob</i>	<b>5</b>
<i>CASRI Celebrates Partnerships and Progress</i>	<b>7</b>
<b>CASRI ACCOMPLISHMENTS, 2018</b>	<b>9</b>
<i>Tree Plantings, Spruce Release, and Native Seed Collection &amp; Propagation</i>	<b>9</b>
<i>Habitat Restoration, Monitoring, Research, and Education</i>	<b>10</b>
<i>Media</i>	<b>11</b>



*The view from Canaan Valley National Wildlife Refuge after the 2018 CASRI conference . Courtesy of Connor Liu*

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## INTRODUCTION

The Central Appalachian Spruce Restoration Initiative (CASRI) is a group of partners with the common goal of restoring the red spruce-northern hardwood ecosystem in the central Appalachian region. The group was formed in the early 2000's, when concerned individuals came together to address and take action against the issue of spruce habitat decline. The work of CASRI partners helps to protect the red spruce ecosystem and the rare and endangered species that live with in.

Restoration is performed in many ways including planting spruce seedlings, spruce release, habitat restoration, and non-native invasive species removal. CASRI also participates public education and research to promote the continuation of red spruce ecosystem restoration. The restoration actions and public involvement performed by the partnership are guided by CASRI's Vision which is defined by the strategic action plan.

The highlighted stories in this report give a small taste of the work done in the last year by CASRI partners. However, CASRI is not limited to those examples or what is listed above and a complete list of reported accomplishments for the last year follows.

# Central Appalachian Spruce Restoration Initiative

## 2018 Accomplishments Report

2018 was another successful year for CASRI partners. In the Central Appalachians, over 52,870 red spruce seedlings were planted in 2018. Along with the red spruce, approximately 69,210 seedlings of other native plants associated with red spruce were planted, a tremendous increase from 2017.

CASRI partners collected seed from 24 different species of native plants in 2018 and these seeds will be used in 2019 and 2020 to promote local genetics in red spruce ecosystem restoration. Spruce release was performed on 302 acres in 2018 and over 550 acres of land have been put on the path to restoration this year alone.

Below is a list of the CASRI partners, who are responsible for making the spruce habitat restoration happen in Central Appalachia.

Compiled by Hannah Wroton, AFHA AmeriCorps with U.S. Forest Service.

### CASRI is proud to include the following partners:

- Appalachian Forest Heritage Area (AFHA)
- Appalachian Mountain Joint Venture (AMJV)
- Appalachian Regional Reforestation Initiative (ARRI)
- Appalachian Landscape Conservation Cooperative (APLCC)
- Canaan Valley Institute (CVI)
- Canaan Valley National Wildlife Refuge (CVNWR)
- Environmental Protection Agency (EPA)
- Green Forests Work (GFW)
- Natural Resources Conservation Service (NRCS)
- National Wildlife Refuge System
- The Mountain Institute (TMI)
- The Nature Conservancy (TNC)
- Trout Unlimited (TU)
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Forest Service Northern Research Station (NRS)
- U.S. Forest Service Monongahela National Forest (USFS-MOF)
- U.S. Forest Service George Washington-Jefferson National Forest (USFS-GWF)
- West Virginia Division of Natural Resources (WVDNR)
- West Virginia Division of Forestry (WVDOF)
- West Virginia Highlands Conservancy (WVHC)
- West Virginia State Parks
- West Virginia University (WVU)





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## 2018 Highlighted Projects

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### Red Spruce Restoration In The Gauley Ranger District



*The ERT began its work during the brisk but sunny April weather.*

Gauley Mountain, the Cranberry Wilderness, and the surrounding area are a hotspot of biodiversity and one of the key strongholds in West Virginia's spruce ecosystem. This year, The Nature Conservancy's Ecological Restoration Team (ERT) traveled to the Richwood area to begin the first active restoration project for red spruce on the Gauley Ranger District of the Monongahela National Forest. This project was one small step for a crew, but one giant leap for spruce restoration in West Virginia.

Over the course of four weeks, the ERT braved steep slopes and stormy weather to complete a 165-acre pre-commercial pilot project that will pave the way for a much larger integrated restoration project. Our work area near the Cranberry

Glades encompassed a wide variety of habitats, including spruce-birch wetlands, rich cove forests, and beech brush so dense it was impenetrable to all but the bravest workers. We had to adapt our work style to fit this new terrain, and we even developed a new release protocol that incorporated volunteers from the Gauley's Youth Conservation Corps crew.



*By mid-summer the rain had set in, but it takes more than that to stop this team!*



*We got some help at the end of our project, and they were nice enough to bring the sunny weather back with them!*

With help from that intrepid band of local high school students, the ERT managed to exceed its goals and get the ball rolling on spruce restoration in this vital landscape. From these humble beginnings, the Gauley Ranger District plans to steadily scale up its restoration work, culminating in the Gauley Integrated Spruce Restoration project that will cover up to 19,000 acres. The ERT is proud to have been a part of this huge undertaking!

**By Ben Rhodes, TNC Ecological Restoration Coordinator**

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# Mined Land Reforestation at Sharp’s Knob in the Monongahela National Forest

Since 2010, Green Forests Work has partnered with the United States Forests Service - Monongahela National Forest and many others to restore 706 acres of mined land in the Mower Tract of the Greenbrier Ranger District. In 2018, efforts expanded into the Marlinton Ranger District at Sharp’s Knob (Figure 1), where 35 acres were reforested and eight new wetlands will be created (Table 1).

The Sharp’s Knob project was a collaboration between Green Forests Work, the United

Acres Reforested	Wetlands Created	Trees Planted	Number of Volunteers
35	8	14,800	57

*Table 1: Summary of 218 reforestation effort at Sharp’s Knob*

States Forests Service - Monongahela National Forest, The American Chestnut Foundation, the National Forest Foundation, Snowshoe Resort, the Appalachian Regional Reformation Initiative, Office of Surface Mining Reclamation and Enforcement, The Nature Conservancy , Appalachian Forest Heritage Area, Green Bank Elementary Middle School, Natural Resource Conservation Service Plant Material Center, Central Appalachian Spruce Restoration Initiative and many others. These projects in the Monongahela National Forest aim to create young forest habitat for GoldenWinged Warblers and other migratory songbirds, restore red spruce-northern hardwood forests, and improve water quality.



*A host of native plants were identified at the Marlinton Ranger District site in the fall following the planting season. This is already a major improvement in the site’s diversity, as it was previously primarily nonnative grasses.*





*Children from a local school help to plant red spruce along the dozer rips*

## METHODS

To mitigate soil compaction, the site was ripped in the winter of 2017 with a D9 bulldozer equipped with two four-foot ripping shanks mounted behind the tracks. Ripping was conducted on an 8'x8' spacing and trees were planted along the rips. The site was primarily professionally planted in the spring of 2018 and two volunteer planting events were held for staff of Snowshoe Mountain and local school children (Figures 2-3).

## RESULTS

Approximately 14,800 trees were planted at the site, with more than 3,200 planted during the two volunteer events. The following species were planted at the sites: American chestnut (provided by TACF), red spruce, speckled alder, mountain ash, quacking aspen, black cherry, hazelnut, sugar maple, yellow birch, American plum, elderberry, and serviceberry. A follow-up visit at the Marlinton Ranger District site in October 2018 revealed that a host of native plants have taken root in the loosened soil (Figure 4).



*A Snowshoe Mountain staff member plants a tree with Marlinton District Ranger Cynthia Sandeno*



*Sharp's Knob was transformed in just two days of planting, native vegetation was allowed to take root and the newly planted native trees*

**By Amy Coleman, USFS-MOF South Zone Ecologist**

# CASRI Celebrates Partnerships and Progress at Conference in November

ELKINS, WEST VIRGINIA —In November, the Central Appalachian Spruce Restoration Initiative (CASRI), with financial support from The Nature Conservancy's (TNC) Central Appalachians program and the West Virginia Highlands Conservancy, held the 'Partnerships for Connectivity' conference at the Canaan Valley Resort & Conference Center in Davis, West Virginia. Nearly 60 participants from CASRI partner groups, non-profit organizations and state and federal agencies were in attendance at the two-day conference.



Picture caption

The conference celebrated decades of success restoring the red spruce-northern hardwood ecosystem in Central Appalachia by gathering managers, practitioners, scientists and leaders in the field to discuss the latest research findings, problem-solve common management challenges and network to advance new and emerging partnerships.

“Our partners are continuing to ramp up work planting trees using novel, innovative tools for restoration,” stated Kathryn Barlow, conference organizer and Central Appalachians public lands manager for TNC’s Central Appalachians program. “We gathered to strengthen our partnership, celebrate past work and look for new ways to work together around our shared vision.”

Long-term partnerships are invaluable to continued success in receiving funds for restoration at-scale as well as moving forward with innovative restoration methods and tools. These strong partnerships will enable the network to continue to advance landscape resilience and connectivity of red spruce forests across the region.

“Our conference focused on a few themes: the influence of soil factors on restoration success, ecosystem persistence in the face of climate change and how we work together with partners to enhance connectivity in this landscape,” Barlow said. “The only way we can get to scale in this region is by working together.”

The meeting opened with remarks and reflections on long-term partnerships from Clyde Thompson, forest supervisor of the Monongahela National Forest; Thomas Minney, state director of The Nature Conservancy in West Virginia; and John Schmidt, field supervisor of the West Virginia Field Office of the U.S. Fish and Wildlife Service. The fea-



Thomas Minney and John Schmidt during the opening remarks of the 2018 CASRI conference

tured dinner speaker was Rodney Bartgis, former TNC WV state director, who spoke on “Shades of Death: How temporal and spatial landscape connectivity enabled our spruce ecosystem to survive insects, fire, drought, ax, acid rain and climate change.”



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Laura Bray, program coordinator for the Pennsylvania Environmental Council, a first-time participant, found the opening panel to be particularly moving.



CASRI partners transferred their

“As someone who works with a diverse set of partners to plan and implement projects that restore native forests on legacy mine lands in Pennsylvania, I found to the opening panel to be of great value,” Bray said. “Each leader shared their unique perspective on what makes CASRI a success, but it was one of Clyde Thompson’s early remarks that stuck with me. He reminded the group, ‘The number of trees planted is not the best metric of success.’ That is to say, ‘It is not what we do; it is why we do it.’ At the end of the day, it is our love for people and the natural world that drives this work; trees are a byproduct.”

Throughout the conference, attendees were able to sit down with some of the area’s leaders in conservation and restoration, including partners from West Virginia University, the Monongahela National Forest, Virginia Polytechnic Institute and State University, the Appalachian Mountains Joint Venture, the U.S. Department of Agriculture, the Department of Natural Resources, TNC, the Office of Surface Mining Reclamation and Enforcement, the University of Maryland, the U.S. Forest Service and the West Virginia Division of Forestry.

“I thought the CASRI meeting was a great opportunity for networking with partners, as well as looking at different approaches to spruce restoration,” stated Kyle Crafts, wildlife biologist for the Monongahela National Forest. “For example, soil is an area that could be easily overlooked when performing restoration activities. It was great to see the soils viewpoint and how it plays a role in this restoration work.”

Field trips to local spruce restoration sites were also available and were led by Mike Powell, director of lands at TNC WV, and Dawn Washington of the Canaan Valley National Wildlife Refuge. The CASRI partnership is open to anyone interested in red spruce restoration and conservation. Interested parties are encouraged to contact Katy Barlow at [kathryn.barlow@tnc.org](mailto:kathryn.barlow@tnc.org) to become more involved with the network activities.



Conference participants got out into the field after the conclusion of the days presentations

**The Nature Conservancy Press Release January, 15th, 2019**



## 2018 CASRI Accomplishments

The following represents a summary of accomplishments for 2018 as reported by the CASRI partners.

### Tree Plantings

- **MOWER TRACT, Mower 18 PLANTING**—The U. S. Forest Service (USFS), in partnership with American Forests, Green Forests Work (GFW), and Natural Resource Conservation Service (NRCS), planted 41,000 red spruce and 53,700+ native hardwood seedlings and wetland shrubs of 28 species on 96 acres of reclaimed mine land that was deep ripped in 2017. (I.B.4, II.A.2, II.C.1, II.C.3, II.D.3, V.A.2)
- **SHARP'S KNOB**—The USFS planted 14,800 native trees over 35 acres at Sharp's Knob
- **CVNWR SPRING PLANTING** - Canaan Valley National Wildlife Refuge, with the help of over 50 volunteers, planted 5,000 red spruce seedlings on 20 acres adjacent to Cheat Mountain salamander habitat. (I.B.4, II.A.2, II.C.1., II.E.3)
- **CVNWR ASPEN PLANTING**- Canaan Valley National Wildlife Refuge planted around 685 quaking aspen and enclosed them in cages on 0.5 acres north of the North Branch of the Blackwater River. (I.B.4, II.A.2)
- **CVNWR CANAAN FIR PLANTING**—Canaan Valley National Wildlife Refuge and volunteers planted 25 Canaan Fir trees on 0.1 acres near Refuge Visitor Center.
- **TNC staff and volunteers** planted 2,035 spruce seedlings at Canaan Valley State Park, 835 at Blackwater Falls State Park, and 4,000 at Cranesville Swamp Preserve.

### Spruce Release

- **NON-COMMERCIAL SPRUCE RELEASE** —The Nature Conservancy's Ecological Restoration Team (ERT) non-commercially released 137 acres of red spruce on the Greenbrier Ranger District and 165 acres on the Gauley Ranger District of the Monongahela National Forest.

### Native Seed Collection & Propagation

- **NRCS AND U.S.F.S. NATIVE SEED COLLECTION AND PROPAGATION**— The U.S. Forest Service and the Natural Resource Conservation Service (NRCS) collected, cleaned and propagated seeds for use in restoration activities. The species included: speckled alder, mountain ash, serviceberry, red and common elderberry, wild raisin, milkweed, winter-berry holly, hawthorn, summer grapes, chokeberry, and mountain holly.
- **WV HIGHLANDS CONSERVANCY SEED COLLECTION**—The West Virginia Highlands Conservancy collected seeds from 24 species of native plants. 15 species are in production for use in restoration projects in 2019 and 18 were put into production for use in 2020.

## Habitat Restoration

- **MOWER TRACT, MOWER 19 DEEP RIPPING-** 100 acres of mine land were deep ripped on the U.S.F.S. Greenbrier Ranger District, in partnership with Green Forests Work(GFW), in preparation for planting of red spruce and native hardwoods in the spring. (II.C.3, II.E.1, II.E.4)

## Monitoring

- **WVNFS NESTBOX MONITORING**—The U.S. Forest Service Greenbrier Ranger District checked West Virginia northern flying squirrel (WVNFS) nest box lines in the Upper Greenbrier North project area, Middle Mtn. Cabins, Burner Mtn., and Bennett Run (FR 112). WVNFS Nest boxes were also checked in the South Zone in the spring and fall of 2018.
- **CVNWR CHEAT MOUNTAIN SALAMANDER SURVEYS**—Canaan Valley National Wildlife Refuge conducted annual Cheat Mountain Salamander surveys with 15 volunteers. This year's survey focused on an around underpass on 3-mile ski trail, an area on Cabin Mountain, and an area north of Forest Road 80. Thirty Cheat Mountain salamanders were uniquely marked with fluorescent elastomers, bringing the total marked salamanders up to 47. A total of 93 tail snips (29 at the cross country ski trail, 31 north of FR80, and 33 on Cabin Knob) have been collected and were sent to WVU to be genetical-

## Research

- **Characterizing Red Spruce Advanced Regeneration in a High Elevation Stand in West Virginia-** Aaron Lutz WVU

## Education

- **CVNWR Wild School** - Canaan Valley National Wildlife Refuge engaged students during Wild School with in classroom sessions and a Refuge field trip in which the theme was wetlands. Students were taught the importance of Canaan fir and red spruce and how it relates to wetlands (IV.A.3).
- **DISCOVER NATURE DAY**— The U.S. Forest Service's Seneca Rocks Discovery Center played host to the 7th annual Discover Nature Day in 2018. The CASRI booth had educational activities based around red spruce and saw over 500 visitors.
- **NNIS EDUCATION & OUTREACH**—The Potomac Highlands Cooperative Weed & Pest Management Area, which covers much of the red spruce ecosystem in WV and VA and includes many of CASRI's partners, organized garlic mustard and Japanese stiltgrass pulls, educational classes, and outreach programs in 2018. For more information go to <http://www.phcwpma.org/>.

## Media

- **OUTDOOR RECREATION ENTHUSIASTS PLANTED TREES IN TUCKER COUNTY TO CELEBRATE EARTH DAY**—12WVBOY covered the Earth Day red spruce planting that occurred at CVNWR. The planting was held in conjunction with The Nature Conservancy.
- **PLANT THE TOWN RED: RESTORING WEST VIRGINIA'S RED SPRUCE ECOSYSTEMS**—An article posted on Highland Outdoors details a volunteers experience planting trees at CVNWR and how the experience changed his view .
- **LAND GIFT MORE THAN DOUBLE THE SIZE OF BEAR ROCKS PRESERVE AT DOLLY SODS**—Outdoor Pursuits in the Charleston Gazette-Mail reported on the land gift that expanded the size of TNC's Bear Rocks Preserve.
- **BEAR ROCKS PRESERVE IS A CORNERSTONE OF A DIVERSE AND COMPLEX ECOSYSTEM OF WINDSWEPT HEATH BARRENS** — The Nature Conservancy explains their plans for protecting and restoring Bear Rocks Preserve.
- **STUDY BY WVU Ph.D. CANDIDATE LINKS RED SPRUCE RECOVERY TO CLEAN AIR ACT**—The Register-Herald article discussed Justin Mathis' Ph.D. research on the implications that the Clean Air Act have had on the growth of red spruce trees.
- **RELCLAIMING HABITAT IN THE MONONGAHELA NATIONAL FOREST**—13WOWK was on the scene for a red spruce and American chestnut planting on the Monongahela National Forest.
- **SHARP'S KNOB RESTORATION PROJECT #FORESVERWILD**—SnowshoeMountain produced a video for their YouTube page about the restoration that is occurring at Sharp's Knob and the importance of continued environmental stewardship.
- **ONCE DEGRADED, WEST VIRGINIA'S MONONGAHELA NATIONAL FOREST IS RETURNED TO GLORY**—The restoration process and benefits of the Mower Tract restoration work was highlighted in this World Resources Institute article.
- **FORMER WEST VIRGINIA COAL MINES TURNED INTO CARBON-SUCKING FORESTS**—VOANews ran a video and article on how mineland ripping has changed how the Monongahela does red spruce restoration.
- **RESTORING A SPRUCE FOREST**—This TNC article explores the intersection of the Potomac Highlands Cooperative Weed and Pest Management Area and CASRI and how the work of each group often complements and enhances the work of the other.
- **FACEBOOK**—CASRI has a very active Facebook page with 678 likes, 70 of which are from this year.
- **CASRI WEBSITE**—The newly remodeled CASRI website was launched in December (<http://www.restoreredspruce.org/>)