

# Konnarock Volunteer Trail Crew

## 2017 Season Report



## 2017 At a Glance

In its 35<sup>th</sup> season, the Appalachian Trail Conservancy's storied Konnarock Volunteer Trail Crew tackled 11 major trail relocation and rehab projects along the Appalachian Trail from Georgia through Central Virginia. These projects were planned and implemented in partnership with 8 A.T. Trail Clubs and 8 National Forest Ranger Districts in 4 states.



Volunteer recruitment in 2017 was good, with 83% of volunteer positions filled. Several weeks filled up early and had short waiting lists. 164 volunteers contributed **7,574 hours** with the leadership and support of 6 seasonal staff: 4 Crew Leaders and 2 Camp Coordinators.

To read more detailed descriptions of each project, visit the Konnarock Trail Crew blog at [www.konnarockcrew.blogspot.com](http://www.konnarockcrew.blogspot.com). For complete photo albums visit [www.flickr.com/photos/atconservancy/albums](http://www.flickr.com/photos/atconservancy/albums).

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## Special Groups



University of Central Missouri filled two crews with students participating in the Alternative Week of Off-Campus Learning (AWOL) program.



University of South Dakota students came an impressive distance to complete a week of Konnarock as part of the AWOL program.

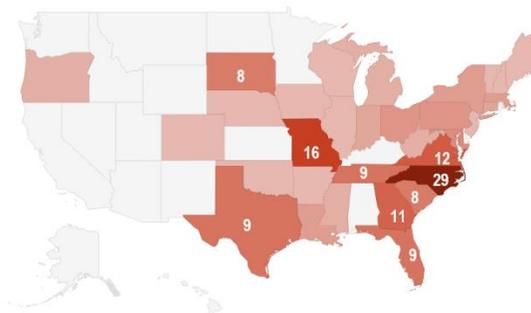


Tech professionals from Cisco Systems completed the Backbone Rock Relocation Week 1.

## Who are these Konnarock volunteers?

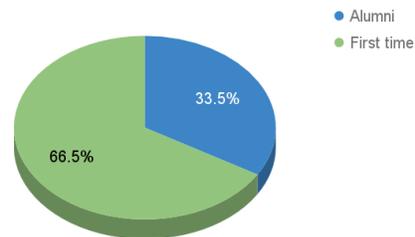
In addition to the excellent trail-building accomplished in a Konnarock season, the program strives to provide top-notch training and a rewarding experience for volunteers from all walks of life. One of our greatest strengths is the diversity of ages, experience levels, and backgrounds Konnarock volunteers bring together for the common goal of improving the Trail.

### 2017 Volunteers by State

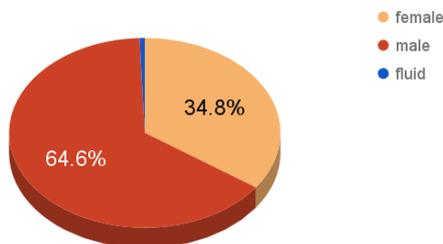


In 2017 we had 163 volunteers representing 32 states, and one volunteer from Portugal.

109 first-time Konnarock volunteers joined the crew for the first time this year. Alumni volunteers are valued for their experience and ability to share their skills with new volunteers.

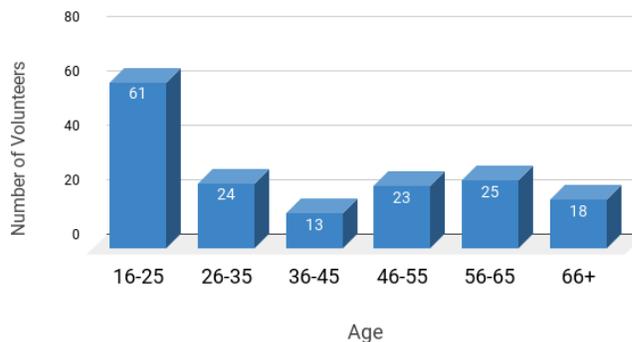


### 2017 Volunteers by gender



College-age volunteers made up about a third of the 2017 cohort, but each age group was well represented.

### 2017 Volunteers by Age



## Highcock Knob Relocation

### A.T. Maintaining Club:

Natural Bridge Appalachian Trail Club

### Agency Partner:

George Washington & Jefferson National Forests, Glenwood Pedlar Ranger District

**Crew volunteers:** 24

**Crew volunteer hours:** 888

**Club volunteers:** 25

**Club hours (approximate):** 416



### About the Project

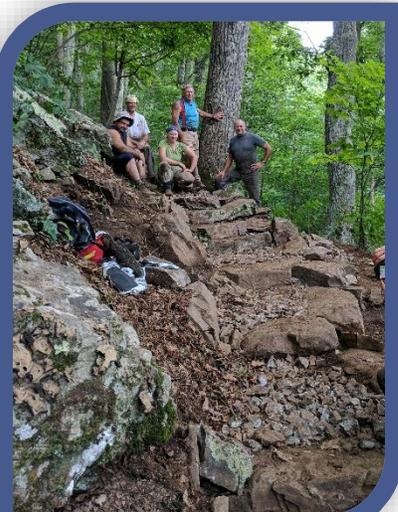
This A.T. relocation project is located in the James River Face Wilderness in Central Virginia, near the summit of Highcock Knob. Several very steep portions of Trail have eroded away to a jumble of bare rocks which pose a safety concern, particularly for a hiker on the northbound descent in wet weather.

In 2015, Konnarock and NBATC completed the first portion of this relocation—about an eighth of a mile which is already open to hikers. In 2016 and 2017 the crews made significant progress on the longer final portion. About three weeks of work remain, and the project will likely be completed next year.

### Work Accomplished

	June 23-27	July 1-5	July 12-17	TOTAL
<b>Rock Steps</b>	21	12	13	<b>46</b>
<b>Rock Crib</b>	30	76	55	<b>161 ft<sup>3</sup></b>
<b>Junk Crib</b>	30	22	5	<b>57 ft<sup>2</sup></b>
<b>Sidehill</b>	426			<b>426 ft</b>
<b>Tread Definition</b>		270		<b>270 ft</b>
<b>Crush &amp; Fill</b>	108	112	78	<b>298 ft<sup>3</sup></b>
<b>Drainage Ditch</b>	6			<b>6</b>
<b>Grade Dip</b>	4	1		<b>5</b>

Moving the Trail to a more sustainable sidehill alignment has not been easy, thanks to obstacles like two areas without enough mineral soil to support a full bench tread, affectionately dubbed “The Pit of Despair” and “Pit of Despair 2.0”. Konnarock and NBATC volunteers used their famous ingenuity and stonework expertise to build durable cribbing and steps that gracefully wraps the trail around boulders and over the gaps.



The uphill hike to the work site each day was one of the toughest of the 2017 season, not improved by a midsummer heat wave, and crews were limited to 8 volunteers to respect Wilderness group size limits. Nonetheless, morale and productivity remained high thanks to excellent support from NBATC volunteers.

## Sinking Creek Mountain Relocation

### A.T. Maintaining Club:

Roanoke Appalachian Trail Club

### Agency Partner:

George Washington & Jefferson National Forests, Eastern Divide Ranger District

**Crew volunteers:** 25

**Crew volunteer hours:** 976

**Club volunteers:** 9

**Club hours (approximate):** 148

### About the Project

As the A.T. climbs out of the Sinking Creek Valley in Central Virginia, it becomes steeper and steeper until the final pitch just before the crest of Sinking Creek Mountain. Hikers can debate whether the climb is an enjoyable challenge or a brutal ordeal, but RATC's trail maintainers determined years ago that it was unsustainable, erosion-prone, and hazardous in wet weather. This relocation project replaces that final steep, fall-line section with one long sidehill switchback.

Sinking Creek Mountain was the site of the largest prehistoric rockslides in the east, so it should be no surprise that there are many rock fields to traverse on its upper slopes. Since the relocation was started in 2016, RATC has worked on the more straightforward sidehill digging year-round, and saved the most technical rock work for the Konnarock Crew.



### Work Accomplished

	May 27-31	July 12-16	June 20-24	TOTAL
<b>Rock Steps</b>	13	22	19	<b>54</b>
<b>Rock Crib</b>	36	131	79	<b>246</b>
<b>Junk Crib</b>	24	82	15	<b>121 ft<sup>2</sup></b>
<b>Tread Definition</b>	76			<b>76 ft</b>
<b>Crush &amp; Fill</b>	33	189	81	<b>303 ft<sup>3</sup></b>



This year's Konnarock crews completed cribbing and steps to cross the rock fields on the lower end of the switchback, and an impressive stone crib wall to reinforce the corner of the switchback. A long staircase was installed where steep alignment could not be avoided, and remarkable amounts of crushed rock were produced to fill the structures. This relocation is now over halfway completed, with work to continue in 2018.

## Thomas Knob to Rhododendron Gap Rehab

### A.T. Maintaining Club:

Mount Rogers Appalachian Trail Club

**Agency Partner:** George Washington & Jefferson National Forests,  
Mount Rogers National Recreation Area

**Crew volunteers:** 8

**Crew volunteer hours:** 320



### About the Project

The Mount Rogers High Country in Southwest Virginia is an extremely popular destination thanks to its scenic grasslands and herds of wild ponies. Unfortunately, high traffic, open country, and heavy precipitation is a perfect recipe for erosion and social trails. It's not unusual to find over 100 people camped along the mile of A.T. between Thomas Knob Shelter and Rhododendron Gap, making this remote and sensitive area a real maintenance challenge for MRATC. In many spots, the original treadway has become so braided with social trails it is impossible to tell which route is the original A.T.

This year's Konnarock crew picked up where last year's crew left off, with one week to armor damaged sections of trail and establish a single, obvious, and inviting path. Large rocks, many of which took almost the whole crew to move, were harvested locally and installed as steps to slow erosion. Gargoyles and junk cribbing were installed to stabilize trampled areas and block access to social trails.

This project is about 4 miles from road access, making it the most remote Konnarock project of 2017. Unique this year, the crew backpacked in the first day for four nights in the backcountry rather than camping near the vehicles. This would not have been



possible without the support of MRNRA personnel, who drove the crew's tools and food in to the site with a UTV, and the support of MRATC volunteers who kept an eye on camp during the day to keep curious ponies and humans away. Konnarock will continue work in this area in 2018.

### Work Accomplished

	July 1-5 (TOTAL)
<b>Rock Steps</b>	<b>19</b>
<b>Junk Crib</b>	<b>82 ft<sup>2</sup></b>
<b>Tread Definition</b>	<b>4 ft</b>
<b>Crush &amp; Fill</b>	<b>101 ft<sup>3</sup></b>

# Buzzard Rock Rehab

**A.T. Maintaining Club:**

Mount Rogers Appalachian Trail Club

**Agency Partner:**

George Washington & Jefferson National Forests

Mount Rogers National Recreation Area

**Traditional Crew volunteers:** 14

**Hardcore volunteers:** 23

**Crew + Hardcore volunteer hours:** 912



## About the Project

Buzzard Rock Rehab was the 2017 Damascus Hardcore project in May, and also benefitted from a traditional Konnarock week in June. This project addresses eroded portions of trail on the slopes of Whitetop Mountain in Southwest Virginia, a northbound hiker’s first glimpse of the scenic Mount Rogers High Country.

Hardcore is an opportunity for long distance hikers to participate in two days of work on a major trail construction project immediately after the annual Trail Days festival. 2017 was the 17<sup>th</sup> year of the Damascus Hardcore program, but only the second year that Hardcore took place in the Mount Rogers area with Konnarock leadership. Tennessee Eastman Hiking and Canoeing Club, which created the Hardcore program, MRATC, and ALDHA supported the Hardcore week.

Hardcore requires extra preparation and complex logistics. Experienced Konnarock

volunteers were recruited to lead small crews of Hardcore volunteers. Rainy weather kept the number of thru hiker participants smaller than usual this year, but the crew still accomplished an impressive amount of essential rehab work, which was completed in June.

## Work Accomplished

	May 19-23	June 23-27	TOTAL
<b>Rock Steps</b>	77	37	<b>114</b>
<b>Rock Waterbars</b>	6	2	<b>8</b>
<b>Junk Crib</b>	33	278	<b>311 ft<sup>2</sup></b>
<b>Tread Definition</b>	429		<b>429 ft</b>
<b>Crush &amp; Fill</b>	51	59	<b>110 ft<sup>3</sup></b>
<b>Drainage Ditch</b>	156		<b>156 ft</b>



## Backbone Rock Relocation

### A.T. Maintaining Club:

Tennessee Eastman Hiking & Canoeing Club

### Agency Partner:

Cherokee National Forest, Watauga Ranger District

**Crew volunteers:** 10

**Crew volunteer hours:** 400

**Club volunteers:** 4

**Club hours (approximate):** 32



### Work Accomplished

	May 3-7 (TOTAL)
Rock Crib	23 ft <sup>3</sup>
Junk Crib	3 ft <sup>2</sup>
Log Steps	8
Log Crib	25 ft <sup>3</sup>
Sidehill	1,044 ft
Crush & Fill	70 ft <sup>3</sup>
Grade Dip	9

### About the Project

Typically the Konnarock Crew only works on the Appalachian Trail, but the Backbone Rock project is a relocation of a blue-blazed access trail just south of the Tennessee-Virginia state line. It was determined that since the Backbone Rock Trail connects the A.T. with an impressive rock formation and a popular recreation area, located just 3 miles from Damascus, VA, it was an important access point. The existing trail was brutally steep, creating an unpleasant hiking experience as well as an unsustainable tread surface. After the work of the 2015 and 2016 Konnarock Crews along with TEHCC volunteers, about 1,000 feet remained to be built of the relocation in 2017.

Following the tradition of locating the first project of the season near Konnarock Base Camp, this project was selected as an ideal "Super Crew" project for Week 1, with both crews working together. All the volunteers were tech professionals from Cisco Systems, a first for the Konnarock program. This corporate partnership came with advantages and disadvantages, and is a model the crew hopes to refine in future years.

While some of the Cisco volunteers were inexperienced in the outdoors, they were brave enough to take on the grueling uphill 2-mile hike to the work site and gained confidence with hand tools over the course of the week. An encounter with a 3-foot timber rattler and a thunderstorm added more color to the experience. The Konnarock staff's leadership and focus on safety ensured a rewarding experience for this nontraditional group of volunteers, as well as a successful completion of the project. The new and improved Backbone Rock Trail is now open to the public.



# Jerry Cabin to Big Butt Rehab

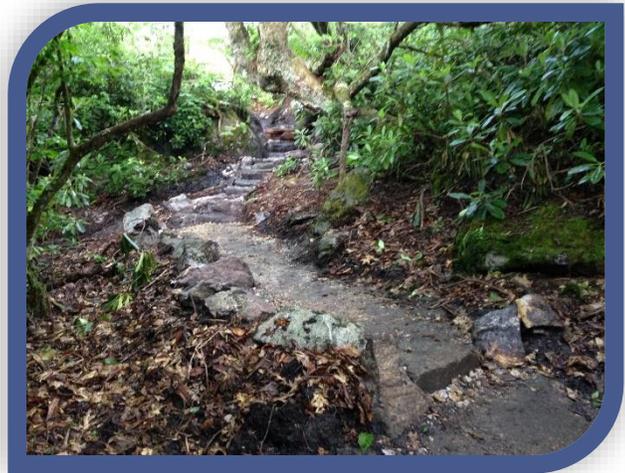
**A.T. Maintaining Club:**

Carolina Mountain Club

**Agency Partner:** Cherokee National Forest,  
Nolichucky Unaka Ranger District

**Crew volunteers:** 21

**Crew volunteer hours:** 816



## About the Project

For this intensive rehab project, Konnarock returned to the Tennessee-North Carolina border south of Erwin, a region longtime volunteers remembered from the Rocky Fork Relocation. This new rehab project focused on a remote and muddy section near the south end of the relocation, Big Butt Mountain.

Heavy annual rainfall makes this area a lush habitat for brightly colored mushrooms and salamanders. It also means that trail sections with poor drainage can quickly become deep, slippery mudholes enlarged as hikers attempt to go around. The crew's efforts centered around the muddy area at the base of an aging set of ladder-style log steps.

## Work Accomplished

	May 27-31	June 7-11	June 15-19	TOTAL
<b>Rock Steps</b>	11	7	2	<b>20</b>
<b>Rock Waterbars</b>		2		<b>2</b>
<b>Rock Crib</b>	37	4		<b>41 ft<sup>3</sup></b>
<b>Junk Crib</b>	5	32	15	<b>52 ft<sup>2</sup></b>
<b>Log Steps</b>		7	20	<b>27</b>
<b>Tread Definition</b>	81	552	699	<b>1,332 ft</b>
<b>Crush &amp; Fill</b>	18	145	65	<b>228 ft<sup>3</sup></b>
<b>Drainage Ditch</b>		42		<b>42 ft</b>
<b>Grade Dip</b>	2	4	13	<b>19</b>

Over the course of three weeks, Konnarock crews harvested large rocks to construct cribbing which, when backfilled with crush, created a solid tread surface elevated above the mud. They built several stone staircases, including one to replace the old log steps. Over 1,300 feet of tread was re-dug, with grade dips and waterbars to improve drainage.

The muddy area has been transformed into a solid and sustainable trail that more

closely matches the hiking experience along the recently-built Rocky Fork Relocation. Another relocation project is planned in this area soon, to replace multiple short sections south of Big Butt.



## Brown Fork Gap Relocation

**A.T. Maintaining Club:**

Smoky Mountains Hiking Club

**Agency Partner:** Nantahala National Forest, Cheoah Ranger District

**Crew volunteers:** 15

**Crew hours:** 552

**Club volunteers:** 2

**Club hours (approximate):** 24



### About the Project

Located about 2.5 miles north of Stecoah Gap in the southwest corner of North Carolina, this relocation is the first of two scheduled projects to move the A.T. off a steep section of fall line alignment just north of the infamous Jacob's Ladder. The relocations will replace the fall line section with two long switchbacks making for a much less steep, more optimal grade. Fans of A.T. history will be glad to hear there is no plan to relocate the Trail off of Jacob's Ladder itself due the narrow property corridor as well as its value as an original AT route flagged by Benton MacKaye and Myron Avery.

Crew 2 took on this project the final two weeks of the season, finishing strong with sweaty, muddy days of digging broken only by the occasional break to set up the griphoist and pull out a stump. One memorable work day in the final week of the season was lost to a storm: the crew hiked in the steep 2.5 miles in the pouring rain, hunkered down in Brown Fork Shelter for a while, and finally determined the weather was not going to clear up enough for any safe or high-quality trailbuilding to take place. This setback only made the volunteers more determined for the final work day to be as productive as possible. SMHC volunteers who worked alongside the crew were a great boost to volunteer morale and motivation.

### Work Accomplished

	July 28- Aug. 1	August 5-9	TOTAL
<b>Sidehill</b>	<b>225 ft</b>	<b>305 ft</b>	<b>530 feet</b>
<b>Grade Dip</b>	<b>1</b>		<b>1</b>



This project is off to a solid start. Approximately 2,000 feet of this relocation project remain to be built, so the Konnarock Crew will return to Brown Fork Gap in 2018.



## South of Stecoah Gap Rehab

### A.T. Maintaining Club:

Smoky Mountains Hiking Club

**Agency Partner:** Nantahala National Forest,  
Cheoah Ranger District

**Crew volunteers:** 8

**Crew volunteer hours:** 320

**Club volunteers:** 2

**Club hours (approximate):** 32

### About the Project

This one-week project centered on the southern side of the trailhead parking lot at Stecoah Gap in North Carolina's Nantahala National Forest. The famously steep terrain in this area, combined with a narrow corridor of A.T. lands, requires two long staircases connected by a landing reinforced by cribbing. The existing structures were built of railroad ties in various stages of rot and misalignment. The crew's goal for the week was to remove the existing structures and replace them with properly spaced and leveled steps and cribbing built from locally-harvested timbers.

Due to the number of steps needed, much of the week was spent procuring materials. Logs had to be carried to the site, debarked, split, and cut to length before installation. The entire crew was new to trail work, a group of student volunteers from the University of South Dakota's AWOL program. AWOL stands for Alternative Week of Off-Campus



### Work Accomplished

May 11-15	
<b>Log Steps</b>	<b>43</b>
<b>Log Crib</b>	<b>10 ft<sup>3</sup></b>
<b>Tread Definition</b>	<b>384 ft</b>
<b>Crush &amp; Fill</b>	<b>20 ft<sup>3</sup></b>
<b>Grade Dip</b>	<b>2</b>

Learning. With Konnarock staff leadership, the students took to the work with gusto and enjoyed learning about a new area of the country as they made a highly visible improvement to the A.T.

With support from SMHC, this project was completed in the one week allotted, and the new steps and cribbing should remain safe and durable for decades to come.



## Yellow Mountain Rehab

### A.T. Maintaining Club:

Nantahala Hiking Club

**Agency Partner:** Nantahala National Forest,  
Nantahala Ranger District

**Crew volunteers:** 17

**Crew volunteer hours:** 680

**Club volunteers:** 4

**Club hours (approximate):** 29



### About the Project

This project took Konarock's Crew 2 down to the very southern end of NHC's A.T. section, just 6 trail miles north of the Georgia border in North Carolina's Nantahala National Forest. About a mile of trail was punctuated with problem areas, thanks in part to a number of seeps and dense shade which made it hard for the tread to drain or dry out.

Over the course of two crew weeks, just about every structure in the trailbuilding arsenal was employed to dry out and support these wet and rocky areas. Both rock and log waterbars were built to divert rainwater and seeps off the trail, and step stones and turnpikes elevated the tread above muddy sections. Cribbing, backfilled with a great deal of crushed rock produced on site, now supports areas where the trail traverses obstacles

like bedrock and large tree roots.



This project was such a long drive from Konarock Base Camp, it made sense for the crew to stay in the area rather than returning to Konarock Base Camp between weeks. A lot more work can be completed when the crew spends less time on the road, but there are extra logistics to consider, long hours for the crew leaders, and the challenge of recruiting volunteers for a two-week stint. Thanks goes out to NHC for their hospitality, and to Gooder Grove Hostel for donating a comfortable place for the crew to rest and recover between weeks.

### Work Accomplished

	May 11-15 & May 19-23 (TOTAL)
<b>Rock Steps</b>	<b>13</b>
<b>Rock Waterbars</b>	<b>2</b>
<b>Rock Crib</b>	<b>70 ft<sup>3</sup></b>
<b>Junk Crib</b>	<b>13 ft<sup>2</sup></b>
<b>Log Steps</b>	<b>4</b>
<b>Log Waterbars</b>	<b>1</b>
<b>Sidehill</b>	<b>148 feet</b>
<b>Tread Definition</b>	<b>310 feet</b>
<b>Crush &amp; Fill</b>	<b>107 ft<sup>3</sup></b>
<b>Step Stones</b>	<b>2</b>
<b>Turnpike</b>	<b>10 feet</b>



# Jump Off Rehab

**A.T. Maintaining Club:**

Nantahala Hiking Club

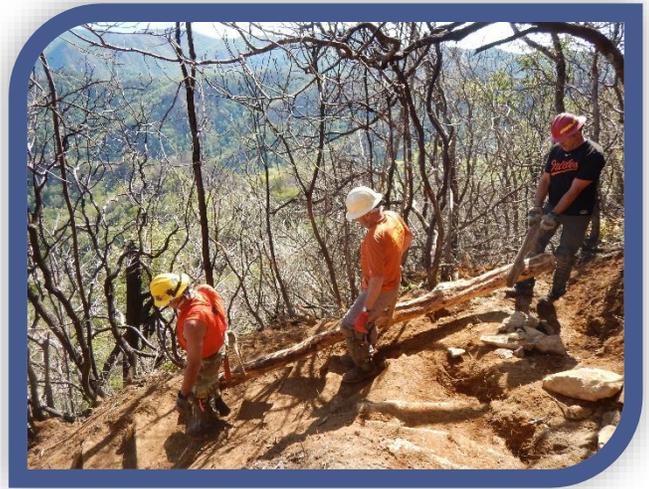
**Agency Partner:** Nantahala National Forest,  
Nantahala Ranger District

**Crew volunteers:** 19

**Crew volunteer hours:** 712

**Club volunteers:** 10

**Club hours (approximate):** 80



## About the Project

This project required one of the most unusual structures the Konnarock Crew has built in many years. The Jump Off is an iconic vista on a narrow fin of rock about 4 miles south of the Nantahala River. Wildfires in the fall of 2016 consumed log structures that supported the Trail on steep and rocky terrain. Most urgent was a “floating” portion of tread across a precarious slope, which seemed to be held together only by a handful of dead rhododendron roots.

With characteristic ingenuity, Konnarock crews packed in a rock drill, rebar, and quite a few black locust logs. After drilling into the bedrock below the trail, rebar pins were installed to support log stringers along the edge of the trail, then upright split log “pickets” were inserted to hold in rock and mineral soil fill. In addition to this major structure, the crews rebuilt several staircases and crib walls, and improved the footing on the Jump Off itself. The safe and successful completion of this project--in spite of full sun exposure, steep terrain, and tight working quarters--is a testament to the dedication of NHC and

Konnarock volunteers as well as the crew leaders’ leadership.

## Work Accomplished

	July 20-24	July28-Aug. 1	August 5-9	TOTAL
<b>Rock Steps</b>			15	<b>15</b>
<b>Log Crib</b>			85	<b>85 ft<sup>3</sup></b>
<b>Junk Crib</b>			5	<b>5 ft<sup>2</sup></b>
<b>Log Steps</b>	21	17	16	<b>54</b>
<b>Tread Definition</b>	60	3	100	<b>163 feet</b>
<b>Drainage Ditch</b>			10	<b>10 feet</b>
<b>Crush &amp; Fill</b>	95			<b>95 ft<sup>3</sup></b>
<b>French Drain</b>		1		<b>1</b>
<b>Native Pavers</b>			27	<b>27 ft<sup>2</sup></b>



## Justus Mountain Relocation

### A.T. Maintaining Club:

Georgia Appalachian Trail Club

**Agency Partner:** Chattahoochee-Oconee  
National Forest, Blue Ridge Ranger District

**Crew volunteers:** 14

**Crew volunteer hours:** 544

**Club volunteers:** 8

**Club hours (approximate):** 288



### About the Project

Started in 2016, this 0.9 mile relocation will eliminate the abrupt ascent and descent up and over Justus Mountain by skirting around it at a much more sustainable and pleasant grade. Last year's Konnarock crews and GATC had already built much of the trail where straightforward sidehill digging was possible, so this year's crews spent much of their time on rock work. Giant boulders and bedrock slabs in the landscape will make this section interesting for the hiker, but require steps, cribbing, and in the case of a slab affectionately named "Sharkie", some chiseling away at bedrock to create footholds.

As per recent Konnarock tradition, the crew stayed in Georgia for two consecutive weeks to cut down on travel time and maximize efficiency. GATC volunteers came out to work alongside the crew, and also provided a great deal of hospitality to make the longer trip comfortable.

During both work weeks, the crews camped on the property of GATC member Jason Gotch, a short drive from the work site, and GATC members Tom and Vivian Lamb provided legendary cookouts at the end of each week. Approximately 100 feet of trail remains to be built before the relocation can be opened, which includes some technical rock work.



### Work Accomplished

	June 7-11 & June 15-19 (TOTAL)
<b>Rock Steps</b>	<b>24</b>
<b>Rock Crib</b>	<b>112 ft<sup>3</sup></b>
<b>Junk Crib</b>	<b>144 ft<sup>2</sup></b>
<b>Sidehill</b>	<b>480 feet</b>
<b>Tread Definition</b>	<b>1,277 feet</b>
<b>Crush &amp; Fill</b>	<b>204 ft<sup>3</sup></b>

## What is Konnarock Worth?

Many things that happen on the Konnarock Crew are priceless: skills are learned, partnerships flourish, the community of devoted A.T. stewards grows stronger and more diverse. However, there are two ways to pin a dollar value on the work accomplished in a Konnarock season: by looking at the value of volunteer time, or at the value of the structures built.

**Value by Time:** According to the nonprofit advocacy coalition [Independent Sector](#) an hour of volunteer labor is currently valued at \$24.14 in the U.S. The hours listed below do not include Club volunteers (who report their hours separately), or ATC staff time.

Project	Volunteer Hours	x \$24.14
Highcock Knob Relocation	888	\$21,436.32
Sinking Creek Mountain Relocation	976	\$23,560.64
Thomas Knob to Rhododendron Gap Rehab	320	\$7,724.80
Buzzard Rock Rehab	912	\$22,015.68
Backbone Rock Relocation	400	\$9,656.00
Jerry Cabin to Big Butt Rehab	816	\$19,698.24
Brown Fork Rehab	552	\$13,325.28
South of Stecoah Gap Rehab	320	\$7,724.80
Yellow Mountain Rehab	680	\$16,415.20
Jump Off Rehab	712	\$17,187.68
Justus Mountain Relocation	544	\$13,132.16
Pre & Post-Season Base Camp Clean-Up	454	\$10,959.56
<b>TOTALS</b>	<b>7,574</b>	<b>\$182,836.36</b>

**Value by structure:** Using values established by the National Park Service, we can calculate the value of work completed by the 2017 crews.

	NPS Value	x Quantity Completed in 2017	Value
Rock Steps	\$199.20 each	286	\$56,971.20
Rock Checksteps	\$199.20 each	19	\$3,784.80
Rock Waterbars	\$199.20 each	12	\$2,390.40
Rock Crib	\$24.35 per cubic foot	653 ft <sup>3</sup>	\$16,900.55
Junk Crib	\$24.35 per square foot	788 ft <sup>2</sup>	\$19,187.80
Log Steps	\$90.92 each	136	\$12,365.12
Log Waterbars	\$81.87 each	1	\$81.87
Log Crib	\$500.00 per cubic foot	120 ft <sup>3</sup>	\$60,000.00
Sidehill	\$7.65 per foot	2,636 feet	\$20,165.40
Tread Definition	\$3.83 per foot	4,245 feet	\$16,258.35
Crush & Fill	\$3.09 per cubic foot	1,536 ft <sup>3</sup>	\$4,746.24
Step Stone	\$133.34	2	\$266.68
Turnpike	\$43.37 per foot	10 feet	\$433.70
Drainage Ditch	\$3.70	214 ft	\$791.80
Grade Dip	\$48.90 each	37	\$1,760.40
French Drain	\$299.20	1	\$299.20
<b>TOTAL</b>			<b>\$216,405.51</b>