

# Resolving Visitor Impact Management Problems on the Appalachian Trail: Sustainable Camping Management at Hawk Mountain – A Collaboration Success

Prepared by Jeff Marion, Johanna Arredondo, and Jeremy Wimpey

How should the A.T. community respond to increasing use? For example, in Georgia the number of thru-hikers increased from around 1,000 in 2006 to 3,000 in 2015. The thru-hiker “bubble” continues to expand, with north-bound starts currently ranging from 50-70 hikers/day. Combined with even larger numbers of non-thru hikers, the demand for camping has seen a dramatic increase, contributing to resource and social problems with camping impacts and crowding. Redistributing or limiting overnight use is certainly one management option, but substantial success can also be achieved by applying other tools from the visitor impact management toolbox. Principal among these is the ability to shift camping from less sustainable to more sustainable locations – this has been the focus of the management efforts at Hawk Mountain reported here.

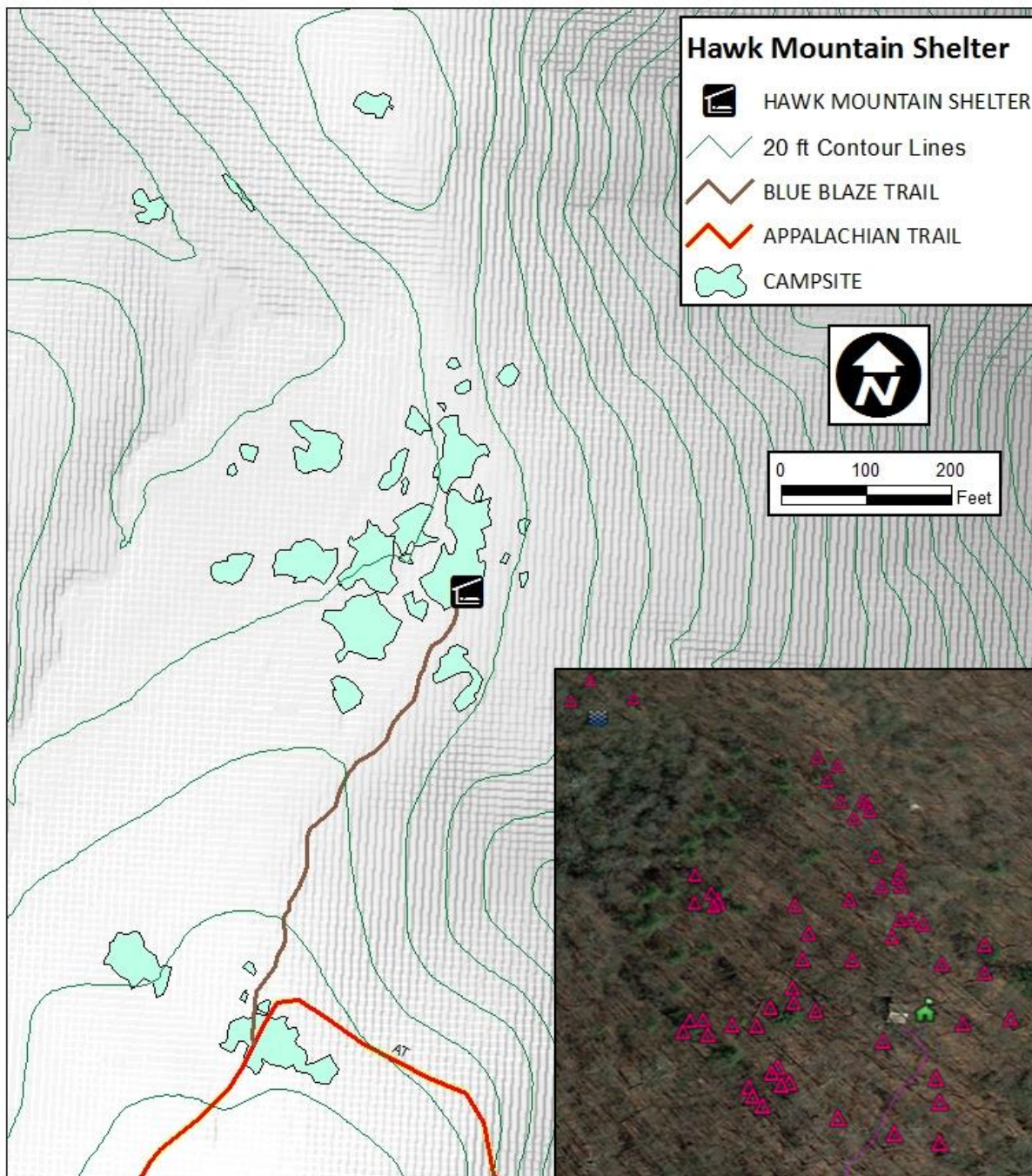
The Hawk Mountain Shelter, often the first or second overnight destination for north-bound thru-hikers, is located on U.S. Forest Service lands on the Chattahoochee-Oconee National Forest. The shelter and associated campsites are situated in a flat to gently-sloped forested area (grades <7%) that was visited by up to 100 campers/night during the spring peak use season. This high-density camping area typifies visitor impact management problems frequently found in other popular camping areas: campsite proliferation and expansion in site size over time, loss of vegetative cover, soil exposure and erosion, and damage and felling of trees (Table 1, Figure 1). These common resource impacts are also accompanied by equally problematic social and experiential impacts, including crowding, conflict, loss of opportunities for solitude, and noise.

**Table 1.** Campsite condition data collected in 2016 by the Virginia Tech/U.S. Geological Survey A.T. research project. Funding was provided by the NPS Appalachian Trail Park Office.

Impact Indicator	Shelter Campsites (N=16)		Side-hill Campsites (N=30)	
	Mean	Sum	Mean	Sum
Site Size (ft <sup>2</sup> )	2,658	42,533	231	6,934
Vegetation Lost (ft <sup>2</sup> )	1,512	24,197	174	5,215
Exposed Soil (ft <sup>2</sup> )	1,621	25,940	224	6,715
Damaged Trees (N)	6	92	0	1
Tree Stumps (N)	10	163	0	3
Trees w/Exposed Roots (N)	6	89	0	7

A collaborative effort between the Appalachian Trail Conservancy (ATC), the U.S. Forest Service, scientists, and the Georgia Appalachian Trail Club (GATC) led to the development and implementation of the Hawk Mountain Camping Improvement Project, which is shifting camping from flat areas surrounding the shelter to earthen “side-hill” tent pads constructed in sloping topography less than a mile away along the AT. The project was informed by recreation ecology research and management experience at Isle Royale National Park.<sup>1</sup> Sustainable side-hill campsite construction promotes the spatial concentration of camping activities by creating expansion-resistant tenting spots in sloped terrain (Figure 2).

<sup>1</sup> Marion, Jeffrey L. and Tracy Farrell. 2002. Management practices that concentrate visitor activities: Camping impact management at Isle Royale National Park, USA. *Journal of Environmental Management* 66(2): 201-212.



**Figure 1.** The Hawk Mountain Shelter and camping area with ATC campsite monitoring locations illustrated on the inset aerial photo.

Research and management experience have shown that side-hill campsites are substantially more effective than regulations and educational messaging in resolving the types of camping resource and social impacts often present at high-use camping areas.<sup>2</sup> Terrain slopes greater than 15% are optimal for side-hill campsite construction. Dr. Jeremy Wimpey provided a slope classification map (Figure 3) that assisted a USFS contractor to locate and identify potential locations for side-hill campsite construction.

<sup>2</sup> Daniels, Melissa L. and Jeffrey L. Marion. 2006. Visitor evaluations of management actions at a highly impacted Appalachian Trail camping area. *Environmental Management* 38(6): 1006–1019.

Agency and club monitoring efforts have revealed substantial and increasing numbers of campsites, total area of camping related disturbance, resource impacts, and crowding. These resource and social impacts were judged by agency and ATC staff and GATC members to be unacceptable, and based on the successful application of side-hill camping at other A.T. high density camping locations (e.g., Slaughter Gap, GA; Annapolis Rocks, MD; Shenandoah NP, VA), a proposal to shift camping to side-hill sites was developed, justified, and announced by the USFS for public comment in September 2015. In 2016, A.T. research staff assessed the aggregate area of intensive camping disturbance at Hawk Mountain at 42,533 ft<sup>2</sup> and tallied 92 damaged trees and 163 felled trees (Table 1).

Thirty new side-hill campsites and an access trail were constructed by a contractor from a professional trail building firm (Figures 4 & 5). This work was generously funded by three ATC Board of Directors members, and completed using a combination of mechanized construction and hand labor. GATC volunteers conducted additional work to complete the project over the winter of 2015/16: including tent pad smoothing, creation of site borders, rock steps, and streamside rockwork to harden the water source area, installation of bear proof food storage boxes, and construction of an above-ground moldering privy. Representative photos of the shelter area and side-hill campsites are included in Figure 5.

The campsites were opened 3/1/2016 and A.T. Caretakers were posted to the area to help shift campers to the new side-hill campsites. Camping around the shelter may be phased out over time, and the shelter may be relocated to sloping terrain. The constructed “footprint” of intensive camping impact for the 30 new side-hill campsites totals 6,934 ft<sup>2</sup>, 16% of the former aggregate area of camping impact at the shelter (a 6x reduction)(Table 1). It is not known if the side-hill camping area has sufficient capacity to replace the shelter campsites; a determination will be made once the shelter campsites are fully closed.

The sloped topography surrounding the new sustainable campsites is expected to effectively deter campsite proliferation, expansion, and associated resource impacts. Campsites built to accessible standards and those most suitable for hammock camping are

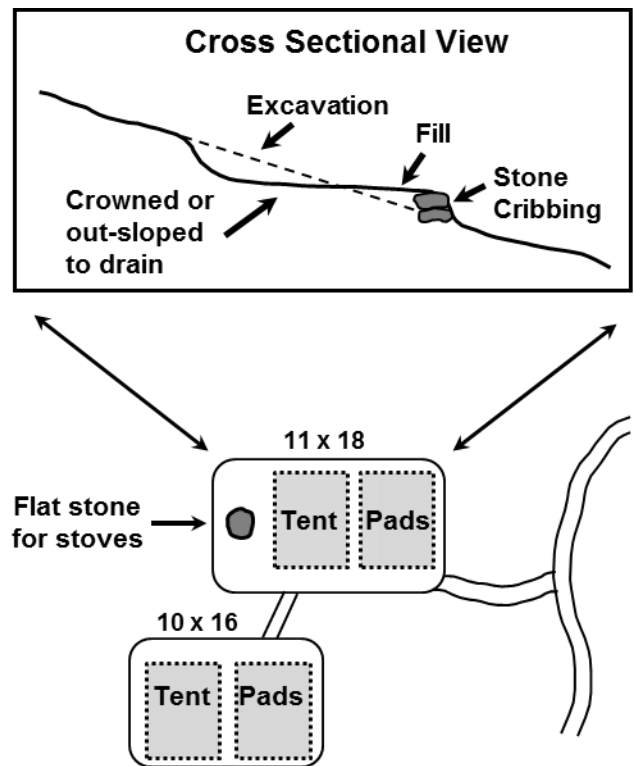


Figure 2. Side-hill campsite diagram.

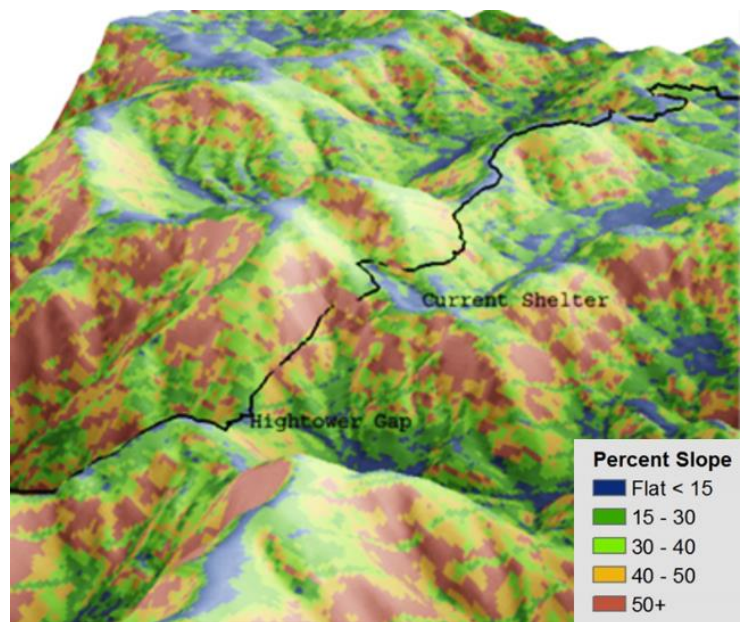
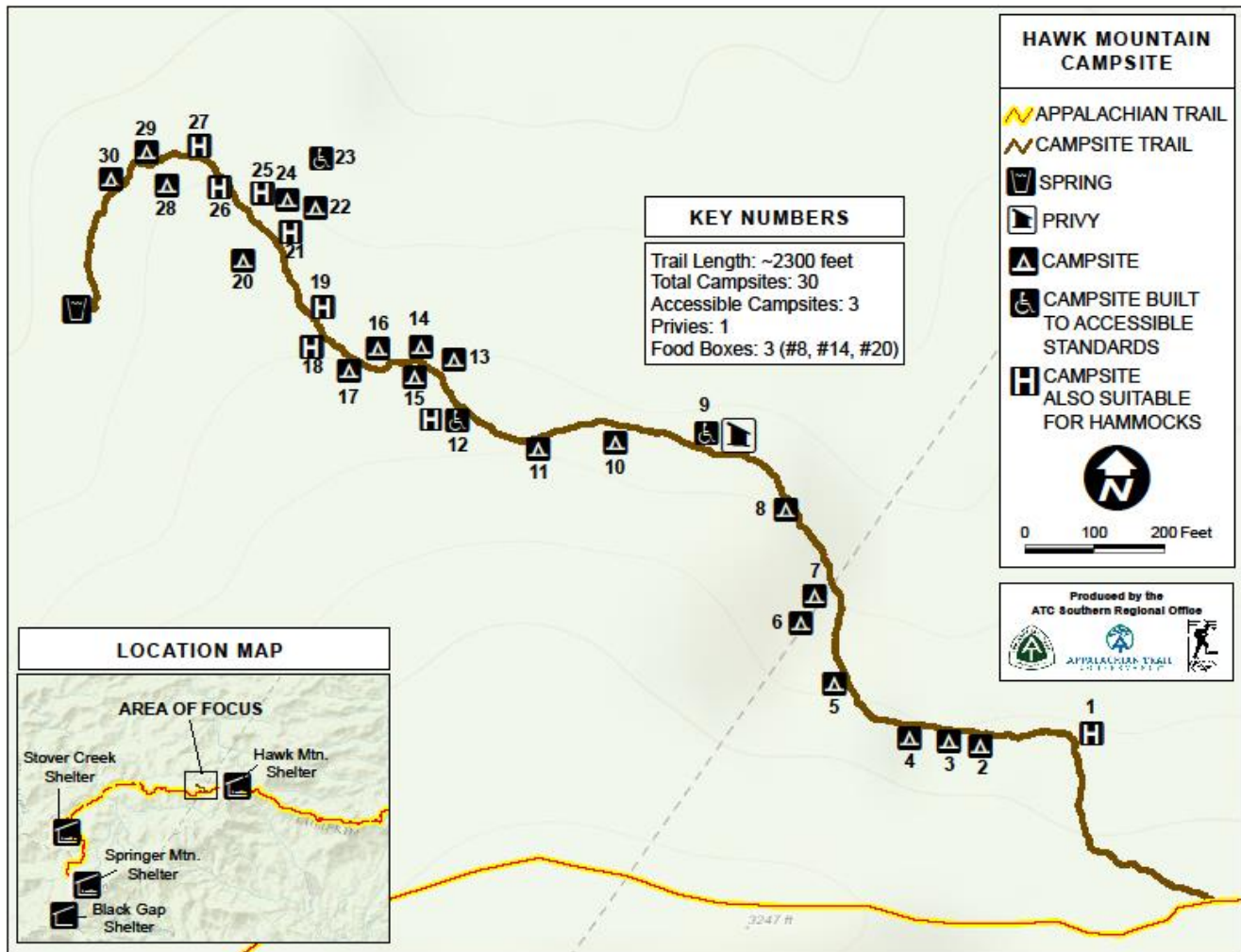


Figure 3. A topographic slope map derived from GIS LiDAR data indicating optimal slope gradients (>15%, green) for locating side-hill campsites.

noted on the area's site map (Figure 4). Additionally, we suggest creation of one or two group campfire sites within the area and a regulation prohibiting campfires at the individual sites. To avoid tree damage and felling in the new area we suggest strong educational messaging asking visitors to leave woods tools (axes and saws) at home and to use only dead and downed wood that can be broken by hand. A regulation prohibiting woods tools might also be considered.



**Figure 4.** Thirty side-hill campsites were constructed near Hawk Mountain along the AT. These were located in sloping terrain to deter campsite proliferation and expansion.



**Figure 5.** Photos illustrating: a) the flat camping area near the Hawk Mountain Shelter, in comparison to b) and c), sustainable side-hill campsites constructed in sloping terrain; d) mechanized construction of the side-hill sites; and e) GATC volunteers at work.