New York Natural Heritage Program

Facilitating Conservation of New York's Biodiversity

To: DEC Division of Lands and Forests, Forest Preserve management
From: New York Natural Heritage Program (contact: Max Henschell mhensche@esf.edu)
Date: December 2, 2022
Re: Effects of informal trail use on natural communities in Catskill Park

Contents

Executive Summary

Here we review our findings of the effects that informal trails (ITs) have on significant natural communities in Catskill Park. Generally, we see the most damage in two topographic types: steep slopes and summits. On steep slopes, the use of vertically aligned trails leads to the loss of vegetation. Once the vegetation has been lost, the exposed soil is susceptible to erosion and incision of the trail tread, sometimes to bedrock. At the summits, multiple trails leading to the canister fragment the natural community – in many cases being Mountain Spruce-Fir Forest or Mountain Fir Forest. These trails converge at the canister, the place where recreationists spend the most on the trail. This has led to areas as large as 1200 m^2 being devoid of vegetation and often exposing mineral soil, rocks, and tree roots. During our work on the peaks, we also encountered a high-elevation deciduous forest dominated by stunted birch (*Betula* spp.) and black cherry (*Prunus serotina*), with a depauperate herbaceous layer. This natural community is currently categorized as Beech-Maple Mesic Forest but given its structure and composition may represent a new natural community. The Ecology program at NYNHP will discuss the potential of elevating these areas to a new, uncommon to potentially rare natural community in our classification.

Due to their size, the overall effect of ITs on the condition of the matrix natural community occurrences may be considered negligible, though the ecological conditions immediately surrounding the IT can be quite poor and include invasive species, disturbance of wildlife, and excessive erosion due to vertically aligned trails. The most significant damage is in the montane forest communities – Mountain Spruce-Fir Forest and Mountain Fir Forest – typically found above 3500' in the Catskills. Of the 15 "trailless" peaks in Catskill Park, 11 of the summits are covered by one of these montane forest communities. Most of these community occurrences are small so the sustained use and multiple trails within these communities is quickly degrading their quality. These forests are also the habitat of Bicknell's Thrush (*Catharus bicknelli*). Of the two records NYNHP has of this species on "trailless" peaks, neither were detected on surveys within the last three years. Suitable habitat was found on four peaks, which can be surveyed next spring for Bicknell's Thrush.

Introduction

The Catskills high peaks have experienced an enormous increase in recreational use over the last three years, in part due to the COVID-19 pandemic and an increase in hiking challenges in the region. Of the 35 highest peaks associated with these challenges, 17 are considered "trailless" in that there is no designated trail to the summit (Figure 1). The increase in use of these peaks has resulted in the development of informal trails (ITs) which are used by most people completing the hiking challenges and the tracks of which are freely available on outdoor recreation phone apps (e.g., AllTrails). This use has also resulted in increased foot traffic through significant examples of natural communities as recognized by the New York Natural Heritage Program.

The most common natural communities in Catskill Park are the matrix forests: primarily Beech-Maple Mesic Forest (S3), Hemlock-Northern Hardwood Forest (S3), and Spruce-Northern Hardwood Forest (S3S4). These communities occur in large blocks (400 – 38,000 acres) and are typically found in the valleys and low slopes of the Catskill Mountains. All the ITs associated with the Catskill Park peak hiking challenges begin in one of these natural communities. Above

3500', montane communities such as Mountain Spruce-Fir Forest (S2S3) and Mountain Fir Forest (S2) become the dominant forest (Figure 1). These communities are typically much smaller than the matrix forests within Catskill Park (40-2000 acres). Given their small size and the increased recreational use of the summits, these communities are the most threatened communities associated with the trailless peaks. Our task over the last three years was to document the ecological conditions within all natural communities through which the ITs pass, focusing on the montane communities.

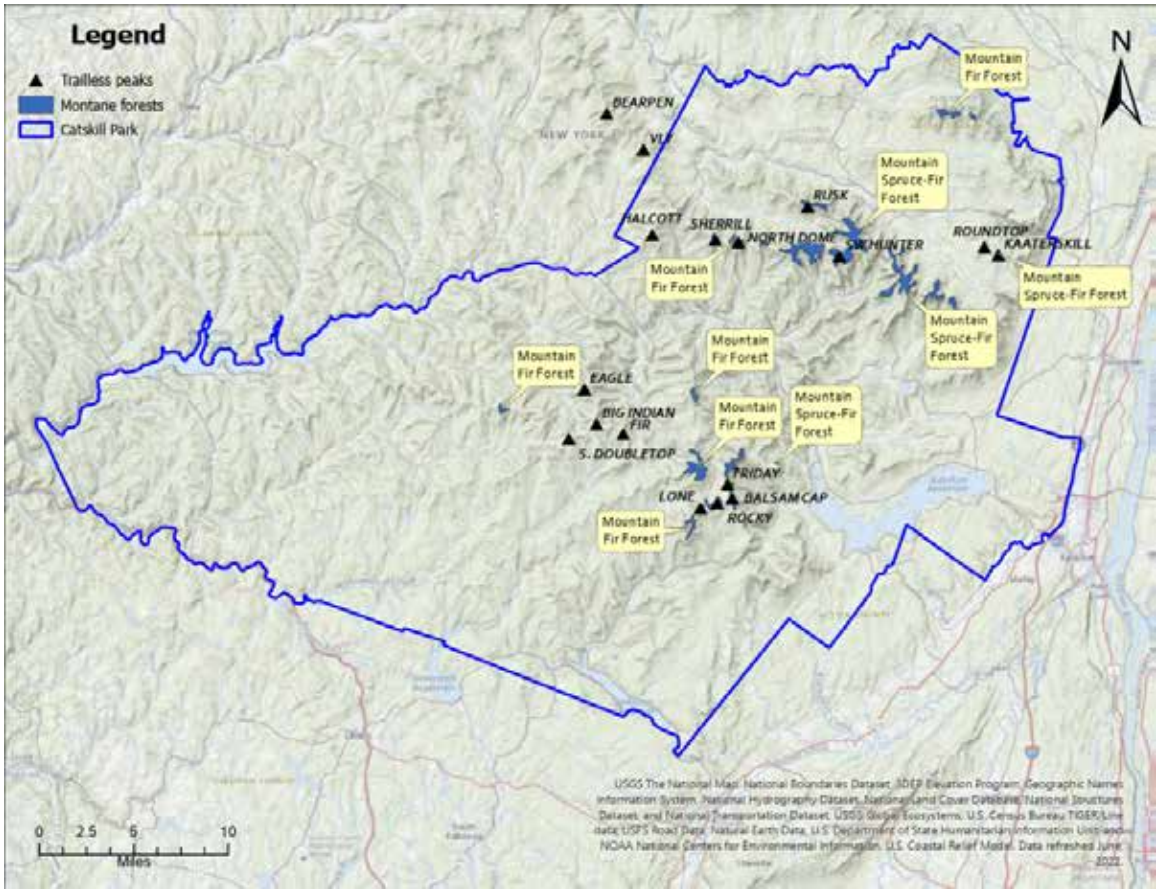

Figure 1 The trailless peaks of the Catskill Mountains and significant montane communities on these peaks, as recognized by the New York Natural Heritage Program

Big Indian Wilderness

Big Indian Mountain

We surveyed this peak in October 2021 via an out and back bushwhack from the Pine Hill West Branch Trail. At the time of the survey the lower end of the bushwhack trail heading upslope from the Pine Hill West Branch Trail was undetectable. Although the short bushwhack from the trail to the summit is now well-defined with damage limited to its thread (Figure 2), until the relatively gently sloping area adjoining the summit. Here the herd paths proliferated, greatly fragmenting, and damaging the understory (Figure 3). The area is moderate quality mixed forest that is not of occurrence quality as

it is recovering from past distances but would greatly benefit from the establishment of one formal trail to the summit.

The IT access to passes through mid-age Beech-Maple Mesic Forest with locally significant patches of balsam fir (*Abies balsamea*) and red spruce (*Picea rubens*) saplings and may transition to a more mixed forest such as Mountain Spruce-Fir Forest as it recovers.

Figure 2 One of a series of moderate impact herd paths en route near Big Indian's summit. Trampling has locally destroyed the understory herbaceous, shrub, seedling, sapling, and moss layers along the most impacted areas. Establishing one formal trail for this short bushwhack may allow the vegetation of the impacted areas to recover.

Figure 3 Trampled area near Big Indian summit with impacted understory vegetation and soil conditions. The herbaceous, shrub, seedling and sapling and moss layers have been destroyed.

Figure 4 Well-established herd path on the col between Big Indian and Fir Mountain. The herd path becomes cryptic locally but is generally well defined. Overall, its impact is generally low away from the steeper areas with some local areas experiencing moderate impacts see below.

Eagle Mountain

We surveyed this peak in June 2020. The IT passes through a deciduous montane forest found commonly on the lower elevation 3500′ peaks. This community is currently included within NYNHP natural community classification as a high elevation variant of Beech-Maple Mesic Forest, but may represent an undescribed natural community in New York. The IT is less than 200 m long and covers relatively level terrain. The damage to the natural community is limited to the trail tread and the area near the canister (Figure 5). We also surveyed for Bicknell's Thrush in the Mountain Spruce-Fir Forest to the northwest of the canister, but none were detected. NYNHP does have an occurrence of Bicknell's Thrush here with a last detect date of 2000.

Figure 5 The canister at Eagle Mountain. Recreational use has led to the loss of vegetation around the canister and has exposed roots of trees. Note the thick vegetation in the background of the photo; this is the expected cover when undisturbed.

Fir Mountain

We surveyed this peak in October 2021 in combination with Big Indian. We accessed it via an out and back bushwhack from the Pine Hill West Branch Trail along the herd paths leading to and from Big Indian's summit. The bushwhack leading east through the col between the summits is a distinct but low impact trail along more than 80% of its length, in some more level areas the paths diverge into a network of paths crisscrossing among themselves. Damage reached moderate levels in the steepest sections of the thread as it descends from Big Indian and ascends to Fir (Figure 6), until the relatively gently sloping area approaching the summit. As the upper slope leveled out the herd paths proliferated, the high level and large extent of trampling greatly fragmented and damaged the understory (Figure 7) of the forest at and adjoining the summit.

The IT access through the col and up to Fir's summit passes through a moderate quality mid-age, high elevation variant of Beech-Maple Mesic Forest with locally significant patches of balsam fir (*Abies balsamea*) and red spruce (*Picea rubens*) saplings in its understory. Like the upper elevations of Big Indian this forest may transition to a more mixed canopy forest such as Mountain Spruce-Fir Forest as it recovers. The col and summit areas would greatly benefit from the establishment of a single formal trail.

Figure 6 Moderate impact herd path on the gentle sloping approach to Fir Mountain from the west. The understory herbaceous vegetation and moss have been trampled exposing bare organic soil and roots.

Figure 7 Summit of Fir with significant damage from trampling. The understory herbaceous, woody and moss vegetation has been destroyed by the maze of herd paths.

South Doubletop

We surveyed this peak in September 2022 following the predominant IT loop to and from the upper and lower reaches of Pine Hill West Branch trail.

The herd paths traveling west from the trail to the summit vary from locally cryptic to very well defined. The trails become more defuse on the steep slopes and cliffs on the east side of the summit and have low to locally moderate impacts to the trail thread along their path.

Community data were gathered in a few locations to update the Beech-Maple Mesic Forest occurrence (Figure 8-Figure 10) on the slopes and to assess the potential statewide significance of the Mountain Fir Forest (S2) on the summit. Overall impacts to the Beech-Maple Mesic Forest were confined to herd path tread areas traversing the steeper bushwhack sections. As the IT turns southeast on the lower slopes and towards the formal trail it becomes largely cryptic. No trampling impacts were detected along this section of surveyed area. Conversely, the Mountain Fir Forest on the summit has experienced significant impacts on the state-owned portion from the extensive herd path

network (Figure 12), this peak would benefit from remaining off the formal 3500 list. The establishment of one formal trail with blockage of the remaining network of herd paths may allow this area to recover overtime.

Figure 8 Variable aged Beech-Maple Mesic Forest along a cryptic section of bushwhack trail heading southeast towards Biscuit Brook at 2950'. The mid slope hardwood forest is very good to excellent quality with many large DBH trees, in particular yellow birch (Betula alleghaniensis) and sugar maple (Acer saccharum).

Figure 9 Larger diameter trees within the stunted yellow birch (Betula alleghaniensis) dominated high elevation variant of Beech –Maple Mesic Forest on upper slope bushwhack to South Doubletop.

Figure 10 Highly impacted herd path on the upper slope of the bushwhack route heading south off the South Doubletop summit at 3750′. This level of impact is typically on the steep areas on the upper section of this route. Establishment of a formal trail may decrease the impacts of this route. The path traverses through stunted American beech (Fagus grandifolia) dominated Beech-Maple Mesic Forest.

Figure 11 Trampled area of Mountain Spruce-Fir Forest at 3485′ on the east end of the bushwhack from Biscuit Brook trail. A maze of herd trails was present in this small but diverse patch of conifer co-dominated forest.

Figure 12 Mountain Fir Forest on the summit of South Doubletop highly impacted by trampling via a network of herd paths. The understory vegetation and moss layers have been destroyed in these areas. An established trail may help these impacted areas but continuing the keep the peak off the 3500′ summit list may be desirable until substantial recovery of the understory occurs. Photos above and below.

Halcott Mountain Wild Forest

Halcott Mountain

We surveyed the IT's on Halcott Mountain on September 23. There are two tracks to the summit on AllTrails, a northern route and a southern route (Figure 13). The northern route is barely discernable in many areas between 2000' and 3100'. Once on the ridgetop at 3140', the trail that leads to the summit of Halcott Mountain is easily found due to trampling of *Rubus* sp. and *Dryopteris* sp.

Figure 13 Trails up Halcott Mountain, as recorded on September 23.

The area around the canister of Halcott Mountain is like that on many of the peaks; there is an area approximately 20m in diameter of trampled vegetation, leading to exposed soil, rocks, and roots in the immediate vicinity of the canister (Figure 14).

Figure 14 The summit of Halcott Mountain. Note the loss of vegetation near the canister. The wall of vegetation in the background of the photo is the undisturbed state of this natural community.

The south route is much more heavily used than the north route. It is generally in good condition, without areas of major erosion. It is steep in some areas, particularly near the summit, and may experience erosion with continued use.

Hunter-Westkill Wild Forest

Mt. Sherrill

We reached the summit of Mt. Sherrill from two different routes. We ascended from Shaft Rd. (SR 42) in June and followed an informal trail from Shoemaker Rd. in September. The route from Shaft Rd. leaves from a marked DEC parking lot and follows forest roads to a developing informal trail. The trail is difficult to see and follow until about 2850′ when multiple paths consolidate into an established trail. The trail ascends through Beech-Maple Mesic Forest with some smaller stands of Hemlock-Northern Hardwood Forest on north-facing slopes. Close to the summit, we encountered a very diverse old forest – potentially Mountain Spruce-Fir Forest or Spruce-Northern Hardwood Forest – that differs from the expected Mountain Fir Forest mapped in 2001. There is little damage to natural communities along this route (Figure 15), though close to the summit, the trail again branches into multiple paths, some of which are

unnecessary detours. The summit area close to the canister is trampled and devoid of vegetation.

Figure 15 Trail erosion and damage to natural communities is minimal along most of the route.

The trail from Shoemaker Rd. is much less established. It begins as a path along West Kill and disappears once one ascends away from the river. There is a stream crossing (Figure 16) at approximately 1600′ that could be difficult in flood season. The mapped route continues onto private land at this point, but we ascended through State property. Most of the route passes through Beech-Maple Mesic Forest with some extensive areas of Hemlock-Northern Hardwood Forest (Figure 17). For most of the route, the "trail" was little more than crushed leaf litter and slightly disturbed plants akin to a deer trail. It becomes a somewhat visible path at about 3000′ to ascend through a series of ledges, but it is much less established than the approach from Shaft Rd.

Figure 16 The trail to the summit of Mt. Sherrill crosses Bennett Brook west of Shoemaker Road.

Figure 17 An extensive area of Hemlock-Northern Hardwood Forest at approximately 2550′ elevation.

From 3000-3200', the trail passed through an area that was actively being foraged by bears (Figure 18). Black cherry (*Prunus serotina*) is the dominant canopy tree in this area, and abundant fruits covered the ground. One bear was observed during the hike though there was evidence of multiple bears using the area. The area above each ledge is somewhat flat, and there are several consecutive ledges with potential caves at their bases. Not only is this forest type unusual and in need of further study, but bear presence is another reason to reroute the trail. As noted previously, the summit area is somewhat damaged though its natural community is somewhat less ecologically sensitive than the expected Mountain Fir Forest.

Figure 18 Close to this area, a bear was observed foraging the fruits of black cherry, Prunus serotina.

North Dome

We surveyed North Dome from two approaches in late July 2022. The first begins at a DEC parking lot at mile 2.75 along Spruceton Rd. (SR 6) and follows a mapped informal trail. An actual trail or path was not found, though occasional evidence of foot traffic – scraped moss, exposed soil, and sliding rocks – was observed in the steepest areas (Figure 19). The mapped route follows Hagadone Brook and crosses through several conifer plantations in various stages of recovery (Figure 20) before turning southeast and climbing to a ridge that ascends to North Dome summit through Beech-Maple Mesic Forest. On this ridge, a clear path emerges and can be followed to the summit. The summit community is Mountain Fir Forest, as previously mapped. The path crosses the summit, descends into the saddle between North Dome and Mt. Sherrill (Figure 21, left), and is expected to be continuous to the summit of Mt. Sherrill.

Figure 19 The impacts of foot traffic include (a) removal of leaf litter and nonvascular plants and (b) sliding rocks and exposed roots.

Figure 20 One of many conifer plantations along the informal trail to the summit of North Dome.

Figure 21 Trails may prevent damage to sensitive communities. Compare (a) an established trail winding through Mountain Fir Forest to (b) a ledge area where multiple paths ascend through diverse herbaceous communities.

The second route follows the Devil's Path for approximately 1.1 miles before turning west and ascending along a series of ledges to the east edge of North Dome's summit. There is an extensive area of Hemlock-Northern Hardwood Forest along the Devil's Path, an inclusion within the matrix Beech-Maple Mesic Forest community. Much of the route between the Devil's Path and the summit is covered with a thick carpet of *Laportea canadensis*, wood nettle (Figure 22) which can become locally abundant especially in wetter area of slopes. Both the steepness of the ledges and the understory plant diversity increases as one nears the summit. This route joins the path described above as the community transitions to a conifer-dominated forest.

Figure 22 Extensive areas of wood stinging nettle (Laportea canadensis) cover the lower slopes of North Dome.

The existing path through the Mountain Fir Forest has already left its mark and is probably preventing further damage to these sensitive communities. At the summit of North Dome, there is a bit of erosion and trampling near the canister, but much of that area is taken up by large boulders. The greatest potential for damage seems to be within the transition zone between the deciduous and conifer forests, especially ascending through ledges (Figure 21, right). Here, less steep areas which would be easier for hikers to ascend are also the areas where soil and water collects to provide habitat for ground layer herbaceous plants and tree seedlings. The observed ground layer vegetation is more diverse here than in other areas of the forest.

Southwest Hunter

We surveyed Southwest Hunter in July 2022. The trail to Southwest Hunter is for the most part level with very little erosion (Figure 23, left). The IT, however, is vertically aligned for the last ~150 m to the summit and is deeply eroded (Figure 23, right). The Mountain Spruce-Fir Forest at the summit has experienced extensive trampling, leading to the loss of small trees, shrubs, and herbaceous plants within ~20 m of the canister (Figure 24)

Figure 23 left: Relatively level approach to SW Hunter. right: up-slope trail to SW Hunter summit is deeply eroded.

Figure 24 Loss of vegetation and exposed soil at the summit of SW Hunter

Kaaterskill Wild Forest

Kaaterskill High Peak

We surveyed this trailless peak in June 2020. The IT on the south face coming from Kaaterskill High Peak Snowmobile Trail passes through Beech-Maple Mesic Forest (S3?) for approximately 200 m before entering steep Mountain Spruce-Fir Forest (S2S3). The IT is vertically alignd or near-so for much of its course, resulting in areas of deep erosion to bedrock in some areas (Figure 25). The area at the summit is crisscrossed with trails resulting in extensive damage to the Mountain Fir Forest at the summit including loss of vegetation and exposed bedrock and tree roots (Figure 25). The Forest is missing the herbaceous, sapling, and shrub layers expected in this natural community. We also surveyed for Bicknell's Thrush but did not detect any. The lack of saplings and shrubs may have reduced the habitat suitability for Bicknell's Thrush on the Peak. This species was last detected here in 2001.

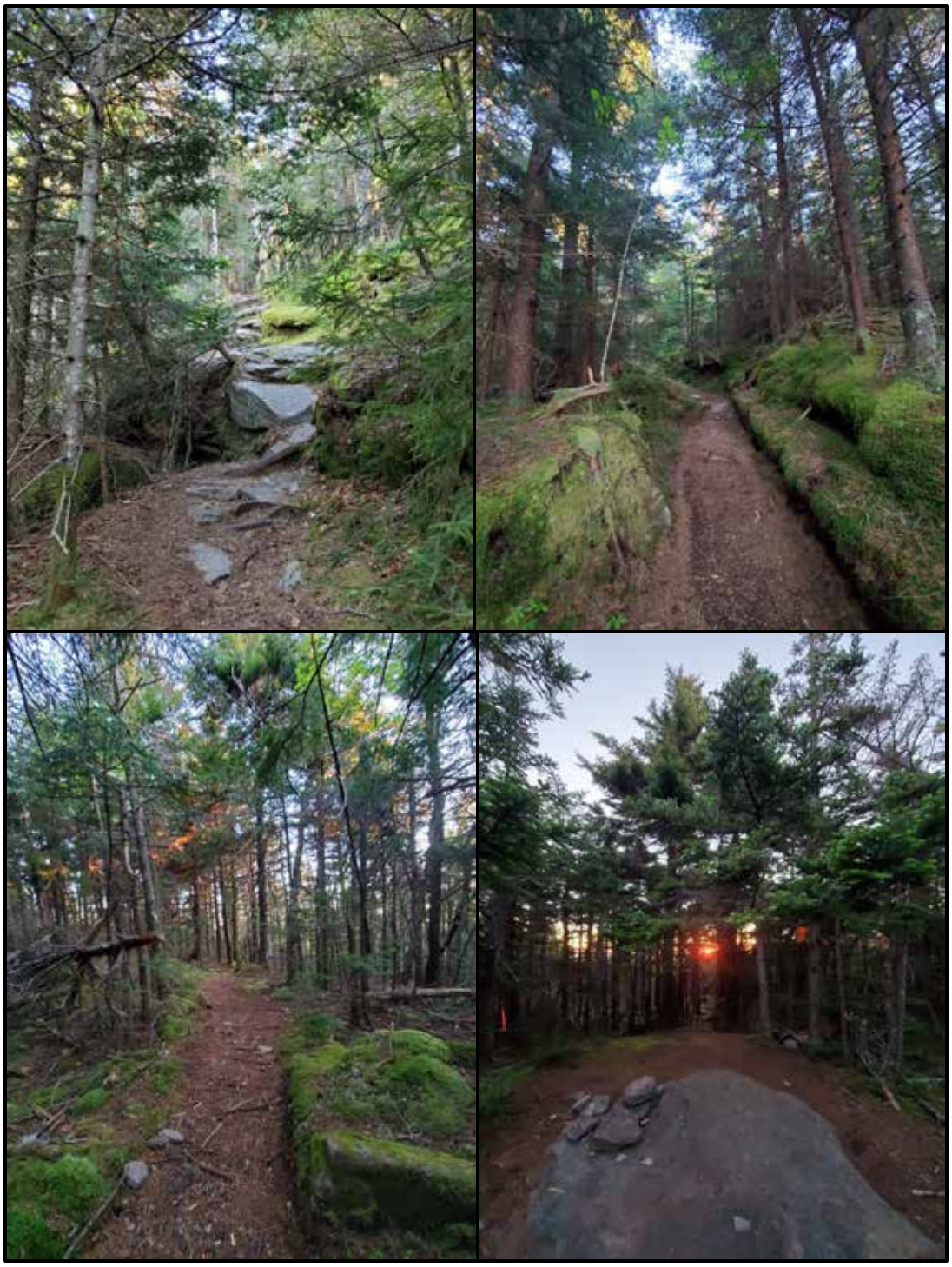

Figure 25 clockwise from upper left: The IT is deeply eroded along its steepest sections, exposed bedrock and roots within the Mountain Spruce-Fir Forest. The tread of the IT is well below the grade of the surrounding natural community. Areas of level trail are still below the surrounding forest. The IT at the summit of Kaaterskill High Peak has resulted in the loss of vegetation and the exposure of bedrock around the canister.

Roundtop

We surveyed this trailless peak in September 2022. We climbed the peak along the IT on the northwestern approach and completing the loop via the bushwhack route west from the summit returning to the snowmobile trail. The IT was variously undetectable with cryptic IT trails heading upslope from the snowmobile trail as it passed through the Beech-Maple Mesic Forest. The IT became more distinct around 2940′ with impacts reaching moderate levels but generally limited to the tread **(**Figure 26**).**

As the IT continues upslope it passes through a high-quality Spruce – Northern Hardwood Forest beginning around 2980′. Here the slopes become quite gentle, and the IT becomes a maze of paths through this conifer dominated forest with the impacts increasing to moderately high levels. As a result, substantial areas of understory herbaceous, mosses, seedlings and saplings have been destroyed **(**Figure 27**).** Due to the relatively small size of the patch the IT bisects, these trampling impacts have degraded it significantly. However, most of its acreage falls outside of areas accessed by IT or formal trails so the overall impact to the occurrence is low.

Beyond 3000′ feet the IT becomes a well-defined trail all the way along its route to the summit. There the herd paths diverge again into a maze of paths seeking the high point now marked by a cairn (Figure 28). The summit supports a small patch of Mountain – Spruce Fir Forest with now significant impacts from the maze of ITs. Away from trampled areas there is a small but relatively high-quality remnant of the forest in more intact condition (Figure 29). This area features good diversity and some understory conifer regeneration and may recover to some degree with the establishment of a single formal trail to the summit.

From the summit we followed the IT trail northwest descending the steep slopes enroute back to the snowmobile trail. The IT was well defined in this section, passing through a high elevation variant of Beech –Maple Mesic Forest in its upper reaches. In steep areas above 3050′, there were moderate impacts from trampling and erosion with loss of litter cover and organic matter resulting in bare soil and no understory vegetation. These impacts were limited to the tread or areas less the 3 meters wide in some rocky spots.

Data were gathered to update the existing Beech-Maple Mesic Forest, Spruce – Northern Hardwood Forest and Mountain – Spruce Fir Forest occurrences. Time constraints did not allow the collection of data in the Hemlock – Northern Hardwood Forest on the lower western slopes this year.

Figure 26 Herd path with moderate trampling impact through the Beech-Maple mesic forest on the lower slopes of the northern bushwhack approach to Roundtop Mountain.

Figure 27 Roundtop Herd path and trampling in Spruce – Nortehern Hardwood Forest along northern bushwhack access. High impact with loss of moss, herbaceous and understory tree and shrub layers

Figure 28 Roundtop summit showing extensive, high impact trampling resulting in the loss of the understory shrubs, seedling and sapling trees, bryophyte and herbaceous layers.

Figure 29 Untrampled area of Mountain Spruce-Fir Forest just below the Roundtop summit. Small but very good quality forest that may increase in extent with the establishment of a formal trail.

Rusk Mountain Wild Forest

Rusk Mountain

We surveyed this peak via the IT following the eastern edge of Ox Hollow out and back. The bushwhack route has become a well-defined trail for its entire length with moderate and higher impacts along much of the trail thread. The impacts are highest in the steepest trail sections and at the summit surrounding the canister. A significant network of herd paths occurs on the upper, level areas surrounding the summit and on the beginning of the bushwhack route leading to East Rusk Mountain.

Data were collected to update the occurrence of Beech-Maple Mesic Forest and Mountain Spruce-Fir Forest. Areas of the Beech-Maple Mesic Forest surveyed were of good to excellent quality with a range of composition, structure, and tree age classes. Impacts to this forest type were limited to the trail tread or narrow swathes bordering them in some very local areas (Figure 30 – Figure 32). The Mountain Spruce-Fir Forest bordering the primary herd path approach from the south and to the east have been moderately (on level areas approaching the summit) to high impacted (near canister; Figure 33). Establishment of a formal trail to summit of both Rusk and East Rusk

Mountains may allow this community to recover from the currently significant level of disturbance and vegetation destruction from trampling impacts.

Figure 30 Herd path through Beech-Maple Mesic Forest with moderately high impact on bushwhack ascent at between 2600 – 2650′. This is the representative impact level for the lower elevation sections of the bushwhack trail.

Figure 31 Moderately high impact trampling on steep upper slope ascent at 2800′ traversing the higher elevation area of Beech-Maple Mesic Forest. Exposed roots and the loss of the moss, herbaceous and understory shrub, seedling and sapling layers.

Figure 32 High elevation, stunted yellow birch (Betula alleghaniensis) dominated variant at the upper limit of the Beech-Maple Mesic Forest on the shoulder slopes of Rusk Mountain at 3620′. This variant is typically located within and characteristic of the transition zone to the conifer-dominated and co-dominated forest types associated with the Catskill High Peaks.

Figure 33 Summit area immediately surrounding the canister with extensive trampling impacts. The herbaceous, moss, shrub, seedling, sapling layers have been destroyed. Nearly the entire gently sloping summit area on the south side is impacted by a maze of herd paths.

Slide Mountain Wilderness

Balsam Cap

In late August 2022, we climbed the east face of Balsam Cap via an informal trail that begins at the end of Moon Haw Road in West Shokan. A consistent trail was not located on the lower mountain, but there is some evidence of foot traffic (bare patches) as one ascends the north-facing slope above South Branch Wittenberg Brook. At 2200′ a clear trail begins and follows the east-west ridge to the cliff area directly beneath the summit of Friday Mountain. Most of the route, up to this point, passes through Beech-Maple Mesic Forest in various successional stages. The trail keeps to the northern side of the ridge and crosses extensive stands of Hemlock-Northern Hardwood Forest. The trail becomes increasingly visible as it ascends; damage is generally minimal, but there are some areas where moss and leaf litter have been scraped away, and roots are exposed (Figure 34).

Figure 34 : The impact of foot traffic ranges from (left) minimal through dry areas with little vegetation compared to (right) erosion and exposed roots in moist areas with a moss layer and abundant seedlings.

At approximately 3200' the trail forks; the south fork follows the base of the cliffs, ascends to the saddle between Balsam Cap and Friday Mountain, and follows a second ridge to the summit of Balsam Cap, and the north fork ascends through the cliffs to Friday Mountain. Along the north-south ridge, the trail passes through Mountain Spruce-Fir Forest. No damage to this natural community was observed. The area near the summit canister is small compared to other summits; there is a nearby (0.1 mi) rocky outcrop with a view to the west which probably minimizes damage to the summit community.

Friday Mountain

We climbed Friday Mountain via the route described above in mid-September 2022. Though several online guides indicate that there is an informal trail which begins further to the north, such a trail was not found, and our second climb suggests that a direct ascent to the east-west ridge will minimize damage to ground layer plants.

Uncompacted rock fragments cover the lower mountain, are frequently hidden by leaf litter and moss, and easily slide underfoot to cause erosion.

Unlike the trail to Balsam Cap, the fork above 3200' towards Friday Mountain has areas of extensive erosion and root damage (Figure 35). After the trail turns north, it passes through several ledges before ascending directly to the summit of Friday through Mountain Spruce-Fir Forest. Some of the worst damage includes exposed and broken tree roots (Figure 35) and a trampled area with the stumps of several cut saplings at the summit canister (Figure 36).

Figure 35 Damage caused by hiking through sensitive Mountain Spruce-Fir Forest near the summit of Friday Mountain includes (a) erosion and exposed roots as well as (b) broken roots and stems used as steps and handholds.

Figure 36 The area surrounding the summit canister at Friday Mountain.

It should be noted that there is also an informal trail that ascends the west face of Balsam Cap and Friday Mountain. Surveys were not conducted here this year due to time constraints but should be considered for next season. The suggested route crosses several significant natural communities – Mountain Fir (S2), Mountain-Spruce Fir (S2S3), and Spruce-Northern Hardwood Forests (S3S4).

Lone Mountain

We surveyed the IT in October 2022 via the Fisherman's Path route to the ridgeline bushwhack route that begins roughly 750 after the path crosses Donovan Brook on the south shore of East Branch Neversink River. The herd path is locally cryptic but well-defined overall, ascending an easy-to-follow ridgeline and is generally low impact aside from scattered short steep sections of trail. Above 3400′ the herd path becomes more defined with moderate impacts generally limited to the tread until the gently sloping areas surrounding the summit.

Data were collected in a couple locations along the ridgeline to update the Beech-Maple Mesic Forest occurrence. The surveyed area remains in very good to excellent condition with impact impacts from the herd path (Figure 37). Due to time constraints, only qualitative data were gathered in the Mountain Fir Forest on the summit this year (Figure 38-Figure 39).

Figure 37 Well-defined low impact herd path on lower ridgeline bushwhack approach through a large patch of Hemlock – Northern Hardwood Forest on the ascent to Lone Mountain at 2605′.

Figure 38. Well-defined moderate to moderately high impact herd path traversing a Mountain Fir Forest, on the upper approach to Lone Mountain at 3619 (left)′. left moderate impact herd path through the Beech-Maple mesic Forest at 3460′ (right).

Figure 39 Summit at canister with high impact trampling causing root exposure, damage to soil organic layer and the loss of herbaceous, moss, shrub, seedling, and saplings from the understory. The summit Mountain Fir Forest is highly fragmented and impacted by the maze of trampled herd paths.

Rocky Mountain

We surveyed the IT in October 2022 via Lone Mountain which was accessed from the Fisherman's Path route via the ridgeline bushwhack route beginning roughly 750 m after the path crosses Donovan Brook on the south shore of East Branch Neversink River. Due to time constraints a return loop was made back via Lone and the western section of the Fisherman's Path. As a result, the herd path descending the drainage down to the north along the east end of the Fisherman's Path from the col was not assessed. A well-defined herd path is present (along 90% of its length) as it leaves Lone's summit, descends into the col and ascends Rocky (Figure 40). Some local areas quickly become a maze of crisscrossing paths of limited or moderate impact as they weave a route upslope to Rocky. Where the herd path follows a dominant path the impact level increases within the tread path but not beyond, except in the flatter areas with taller conifer dominated canopies. Above 3300' the herd path becomes more defined with moderate impact generally limited to the tread until the gently sloping areas surrounding the summit (Figure 41). In the final 200 meters approaching and including the summit herd paths proliferated with the one exiting the summit to the northeast becoming pronounced trail with moderate to high impacts within the tread. Extensive trampled areas adjoining the summit and access to the viewpoints are having significant local impacts to the Mountain Spruce –Fir Forest occurrence (Figure 42-Figure 43). Rocky would also benefit from the establishment of a formal trail to protect the summits and col from further impacts from ever increasing visitation.

Data were gathered in the Mountain Spruce-Fir Forest near Rocky's summit. Away from the trampled areas the forest appears to be in very good condition with strong regeneration of both red spruce (*Picea rubens*) and balsam fir (*Abies balsamea*) in more open canopied areas. The forest features a range of canopy structure and DBH size, and a good compliment of standing snags, with the largest living trees exceed 30 cm.

Figure 40 Well-defined herd path traversing the Mountain Spruce-Fir Forest in the col between Lone and Rocky Mountains. Many herd paths crisscross the col becoming cryptic in some areas. The main path is well defined along more than 90% of its length.

Figure 41 Moderately high impact herd path on the gentle shoulder slope of the Rocky Mountain summit. This level of impact is typical in the more level areas on the bushwhacks through conifer dominated and co-dominated communities on Lone and Rocky.

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Figure 42 Mountain Spruce-Fir Forest on summit of Rocky Mountain. The forest is heavily impacted by trampling in the more level areas adjoining the summit and along the upper bushwhack herd path approaches. Establishment of a formal trail may facilitate the rec

Figure 43 Trampled area at Rocky Mountain summit canister. All understory vegetation has been eliminated and impacts to the organic top layer of soil are occurring.