

Visitor Use Study of the Trail-less Peaks over 3,500' in the Catskills

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Conservation, Region 3 and Region 4 Division of Lands & Forests

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Executive Summary

This study was undertaken to assess the condition and location of visitor created, informal trails (IT's) on the trail-less peaks over 3,500' in the Catskills. In the mid-1960's New York State Department of Environmental Conservation (NYSDEC) made the decision that a number of peaks over 3,500' would be managed as trail-less areas. In September of 1965, the NYSDEC gave formal approval to the Catskill 3500 Club to maintain canisters that had been previously affixed to trees on a number of the trail-less peak mountain summits.¹ Hikers signed notepads placed inside the canisters and this created a system that documented hiker accomplishments and laid the groundwork to estimate visitation to the trail-less areas. Since then, canister sign-in information has been annually collected and provided to the NYSDEC by dedicated volunteers from the Catskill 3500 Club through participation in Volunteer Stewardship Agreement with the NYSDEC. Canisters were added to Kaaterskill High Peak and Eagle in late summer of 2019. Canisters are now present on the summits of 15 of the 17 trail-less peaks over 3,500 in the Catskills. Canister sign in data has been crucial in assessing how visitation patterns to the trail less peaks have changed over time however, additional baseline data was needed to inform strategic management decisions in the trail-less areas. This study represents one of the first data collection efforts focused on the determining the spatial distribution and lineal extent of the IT networks that have gradually formed on the historically trail-less Catskill peaks over 3,500'.

Natural resource concerns related to the potential impacts of IT's on native vegetation and rare, threatened and endangered species have grown as the data collected has shown increases in public use of these undeveloped areas. The purpose of this study was to collect baseline data that will be used to identify indicators and protocols that can be incorporated into long term monitoring program. The baseline data collection that resulted from this study will serve to develop an simple and acceptable inventory protocol for the assessment of IT impacts. In the future, this data will be used to

¹ White, Carol. (2008) Catskill Peak Experiences: Mountaineering Tales of Endurance, Survival, Exploration and Adventure from the Catskill Club. Black Dome Press

evaluate the effectiveness of any necessary management intervention. This baseline data will also assist land managers and natural resource planners in their efforts to determine when the carrying capacity of an area has been exceeded or when natural resource impacts to a given area have become unacceptable.

A total of 39.24 miles were surveyed using the trail condition class rating system and route finding experience system developed by the National Park Service (NPS) on the 17 trail-less peaks over 3,500' within the Catskill Park over the course of this 12-week study. Definitions of the NPS survey methods that were applied in the field are provided in the Study Methods section of the report. The results are as follows:

- Lone and Rocky Mountains contained the longest distance ITs, representing 17% of the total length of the IT data that was collected. Rocky had the lowest recorded visitation of all the peaks in 2018.
- SW Hunter contained the shortest distance of ITs, representing 2% of the total length and it also had the highest recorded visitation in 2018.

The first NPS survey method that was applied in the field to IT's was the IT Condition Class Rating System. The results were as follows:

5.76 miles were Condition Class 0,
10.88 miles were Condition Class 1,
13.45 miles were Condition Class 2,
8.15 miles were Condition Class 3 (Table 6).

- The majority of the ITs that were assessed were classified Condition Class 2, representing around 37% of the informal trails.

The six trail-less peaks with extensive Class 3 trail tread conditions over a mile long are:

Bearpen and Vly: 2.2. miles Class 3,
Graham :1.85 miles Class 3,
Big Indian and Fir: 1.26 Class 3
Kaaterskill HP: 1.06 Class 3 (Table 6)

The second NPS survey method that was applied in the field was the Route Finding Experience (RFE). A total of 38.93 miles were surveyed for RFE. The results were as follows:

14.06 miles were route finding experience 1,
13.2 miles were route finding experience 2,
10.67 miles were route finding experience 3 (Table 7)

The largest percentage of trails were classified as a route-finding experience of 2, representing around 36% of the informal trails.

Field staff observed IT networks of varying conditions on all of the Catskill trail-less peaks that are over 3,500'. IT related impacts have been noted, recorded and detailed in this study. There are a number of peaks where Condition Class 3 IT networks traverse areas where sensitive communities or endangered, threatened or critically imperiled species have been detected and recorded by NY Natural Heritage.

The NYSDEC is charged with periodically monitoring and assessing impacts to natural resources on state lands as required by the agency's stewardship obligations under two Master Plans: the Catskill Park State Land Master Plan (CPSLMP) and the Strategic Plan for State Forest Management (SPSFM). The CPSLMP grants decision making authority to the NYSDEC to protect the natural resources in the trail-less peaks on Catskill Forest Preserve land which include 13 of the trail-less peaks evaluated in this study. The SPSFM addresses at-risk species and natural communities and charges the Department with protecting and in some cases managing known occurrences of endangered plants, wildlife and natural communities on state forest lands which include Bearpen and Vly peaks. ²The surveys of the IT networks collected in this report will facilitate further analysis of the severity of the impacts and proximity of IT trail networks

² Strategic Plan for State Forest Management,(2011) The New York State Department of Environmental Conservation. Statewide Plan. Pg 115.

to sensitive communities and endangered species to evaluate the need and efficacy of any future management actions³.

At this time there is no evidence of serious environmental degradation that would require an immediate management intervention. However, the conditions on two trail-less peaks warrant additional monitoring to assess how visitor use of IT networks could potentially be impacting known occurrences of sensitive vertebrate and vascular plant species. IT routes on Doubletop and Kaaterskill High Peak should be evaluated for alternative options for sustainably designed trail routes if the current impacts to natural resources are determined to be unacceptable. In the future, addressing the IT network impacts will be a significant management challenge that will require an adaptive monitoring approach coupled with targeted monitoring in partnership with NY Natural Heritage. This study represents the first step in identifying and locating areas where IT impacts from visitor activities may require more targeted fieldwork and biological inventories. The next phase of this effort will require the NYSDEC to target these locations for future monitoring.

Introduction

The purpose of this report is to provide an overview of the preliminary baseline data collection efforts that took place on the IT's on 17 trail-less peaks over 3,500' in the wilderness, wild forest, private land and state forest areas in the Catskill's during the summer of 2019. The NYSDEC will use this baseline data to inform future management decisions as protocols for monitoring visitor use patterns in the Catskills are developed. Baseline data provides land managers with the necessary information for developing resource and visitor management policies and management actions. When an area is routinely assessed, a monitoring program can be used to identify when unacceptable changes to biophysical or social indicators have occurred which can trigger a management intervention to prevent further resource degradation or risks to visitor safety.

³ Wimpey. J. , Marion J.L.2011 Formal and Informal Trail Monitoring Protocols and Baseline Conditions: Great Falls Park and Potomac Gorge. Final Report for the USDI National Park Service, Chesapeake & Ohio Canal National Historic Park, George Washington Memorial Parkway.

This report will provide the baseline data necessary to select the appropriate indicators and standards as required by monitoring frameworks such as the Limits of Acceptable Change (LAC) and the Visitor Experience & Resource Protection (VERP) frameworks. The monitoring effort utilized STRAVA Global Heatmaps software and GPS tracks from AllTrails and Catskill Mountaineer to identify which areas on the trail-less peaks over 3,500' that were receiving the highest levels of hiker use. Data collection efforts in the field then targeted areas where there was a correlation between AllTrails and Catskill Mountaineer GPS tracks and where visitor use appeared to be the most concentrated on the STRAVA global heat maps.

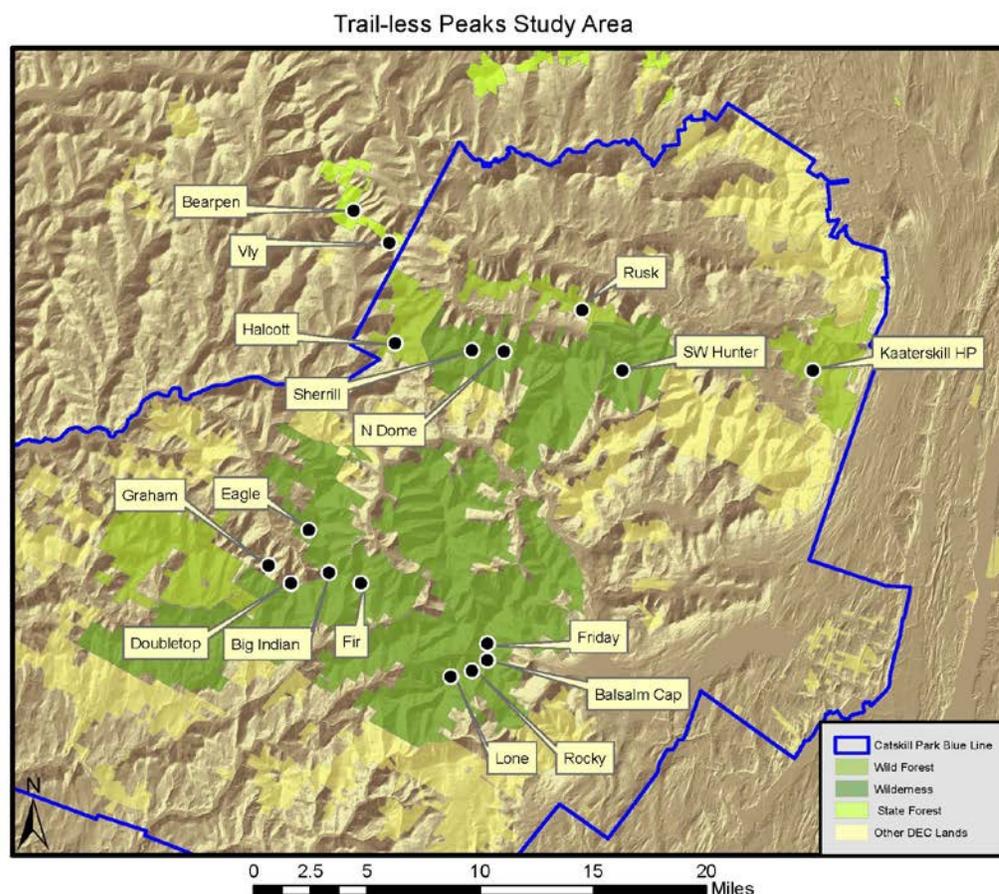
This paper begins with an outline of project objectives, a brief introduction to the management history of the study area and is followed by a discussion of natural resource impacts and management considerations associated with IT's. The subsequent section will then outline the process behind the data collection and mapping efforts. The conclusion of the paper will discuss the results and recommendations for future monitoring efforts as well as limitations and challenges associated with the first visitor use assessment of the 17 trail-less peaks over 3,500' in the Catskills. Finally, the appendix contains the STRAVA Global Heat Maps, Trail Condition Class Maps and Route-Finding Maps and GPS track maps from AllTrails and Catskill Mountaineer for the 17 peaks trail-less peaks that were inspected. In addition, several photos of the natural resource conditions on select summit peaks in proximity to Catskill 3,500' canisters are included in the appendix.

Project Objectives

- Document to the extent possible, the lineal extent and general condition of the most popular Informal Trails (ITs) in Wilderness, Wild Forest, Private lands and State Forests trail-less Catskill Peaks over 3,500' through field inspections.
- Record and measure the de-vegetated and impacted areas on peak summits on the trail-less peaks over 3,500' in the Catskills.

- Utilize new data collected from crowd sourcing apps such as STRAVA to understand visitor use and identify which areas on a trail-less peak are currently receiving the highest aggregated hiker use.
- Consult the Element Occurrence record information from NY Natural Heritage to determine the known locations of sensitive species and identify where data gaps on certain peaks may exist.
- Make management recommendations that will protect the natural resources and strengthen the stewardship efforts on the trail-less peaks over 3,500' in the Catskills.
- Provide recommendations to improve any data collection methods for future monitoring efforts.

Figure 1. Map of Study Area



Study Area

Figure 1. GPS tracks and waypoint data were recorded along the most frequented IT networks on each of the 17 trail-less peaks. The study area covered roughly 144,290.5 acres. The peaks included:

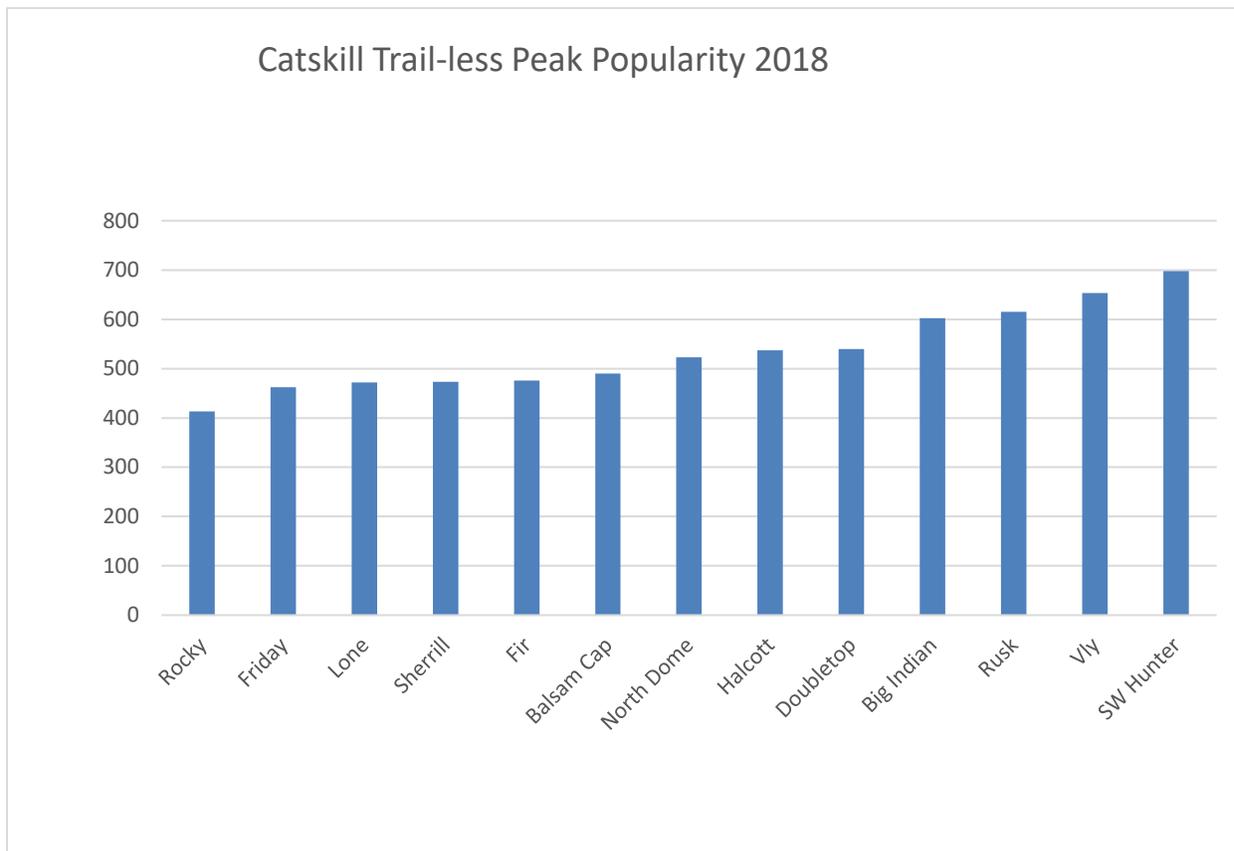
Table 1. Trail-less Peaks

Peak Name	Elevation (Feet)	DEC Region Location	Land Classification
Graham	3,868'	3	Private
Doubletop	3,860'	3	Private
SW Hunter	3,740'	4	Hunter-West Kill Wilderness
Lone	3,721'	3	Slide Mtn. Wilderness
Big Indian	3,700'	3	Slide Mtn Wilderness

Peak Name	Elevation (Feet)	DEC Region Location	Land Classification
Friday	3,694'	3	Slide Mtn. Wilderness
Rusk	3,680'	4	Rusk Mtn. Wild Forest
Kaaterskill High Peak	3,655'	4	Kaaterskill Wild Forest
Balsam Cap	3,623'	3	Slide Mtn. Wilderness
Fir	3,620'	3	Big Indian Wilderness
North Dome	3,610'	4	Hunter-West Kill Wilderness
Eagle	3,600'	3	Big Indian Wilderness
Bearpen	3,600'	3	Bearpen State Forest
Sherrill	3,540'	4	Hunter-West Kill Wilderness
Halcott	3,537'	4	Halcott Mtn. Wild Forest
Vly	3,529'	4	Bearpen State Forest
Rocky	3,508'	3	Slide Mtn Wilderness

*Peaks in Table 1 are listed from highest to lowest elevation.

Table 2. Popularity by Peak According to 2018 Canister Sign in Information



*Canister visitation records for 2018 were not available for Bearpen, Kaaterskill High Peak (HP), Eagle and Graham. Canisters were placed on the summits of Eagle and Kaaterskill High Peak late in the summer of 2019.

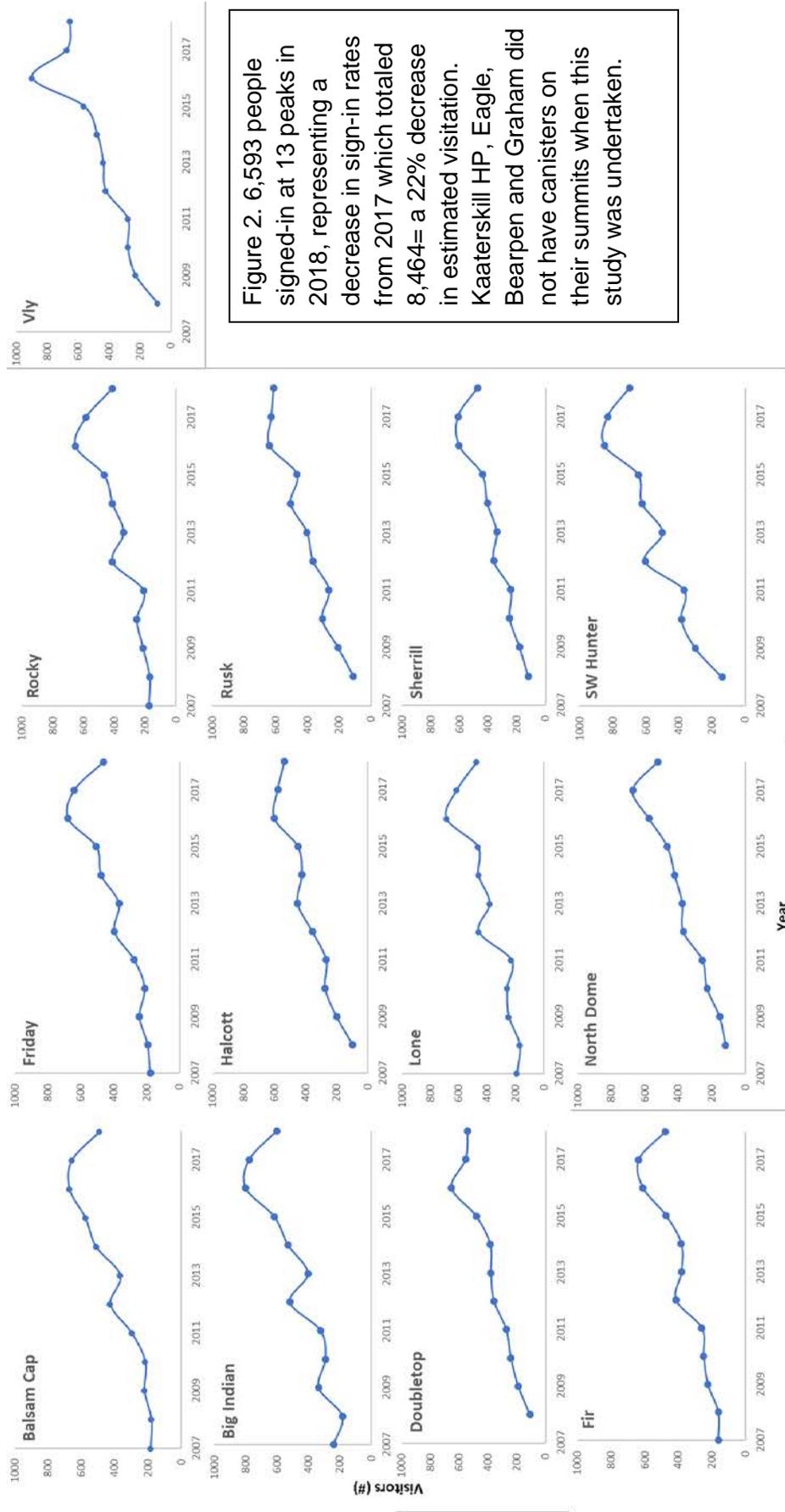


Figure 2. 6,593 people signed-in at 13 peaks in 2018, representing a decrease in sign-in rates from 2017 which totaled 8,464= a 22% decrease in estimated visitation. Kaaterskill HP, Eagle, Bearpen and Graham did not have canisters on their summits when this study was undertaken.

Canister Sign in Rates 2007-2018

Management History

The Catskill Park, located in the southeastern portion of New York State, was established in 1885 and currently includes portions of Delaware, Greene, Sullivan, and Ulster counties. The park's 705,500 acres are composed of 41% public forest preserve, 53% private land, and 6% NYC owned watershed lands⁴. Within the forest preserve, 98 mountain peaks are over 3,000 ft with 35 above 3500' ft. Of those 35 peaks above 3,500' ft, 17 of those peaks are trail-less. Of the 17 trail-less peaks, 10 are in wilderness, 3 are in wild forest, 2 are on state forest lands outside of the boundary of the Catskill Park, and 2 peaks are located on private land.

While hiking trails have never been constructed or marked on the trail-less peaks, ITs have become established by the repeated hiker use of visitor created informal trails. Historically, the NYSDEC did not designate trail networks to allow visitors to experience and discover remote, spontaneous and challenging bush-wack hikes. For many years, these trail-less peaks experienced relatively low levels of visitation compared with many other popular areas as these bush-wack hikes typically required a higher level of navigational competency and greater familiarity with backcountry travel ⁵. Today, these areas are no less dangerous or challenging but technological advancements in navigational technology have made crowd sourced GPS-tracks more accessible to the general public. Hikers of all experience levels can now download GPS tracks advertised by various crowd sourced apps directly to their phones or GPS units and simply follow the popular IT paths directly to many of the trail-less peak summits.

The proliferation of hiking challenges coupled with the advancement in social media tools has resulted in increased hiker visitation to the trail-less areas. Consequently, there is a compelling reason to begin baseline data collection in these areas so that thoughtful and deliberate management decisions can be made to protect natural resources and the quality of visitor experiences to these special places.

⁴ New York State.(2008).Catskill Park State Land Master Plan. NYSDEC, Albany.

⁵ It should be noted that these technological navigation apps and options should never be a substitute for a map and a compass. <https://www.dec.ny.gov/outdoor/28708.html> HIKE SMART for more information.

The 13 trail-less peaks located on Forest Preserve lands are managed in accordance with the Catskill Park State Land Master Plan (CPSLMP). According to the CPSLMP,:

- The CPSLMP allows for continued use of canisters but has the provision that their continued use will be evaluated on an individual basis through the UMP process.⁶
- The CPSLMP was amended to include the provision that new trails could only be proposed if there is serious environmental degradation, i.e. multiple herd paths.⁷

Thus, the CPSLM gives the authority to the NYSDEC to evaluate the natural resource conditions on these peaks and mark or designate trails in trail-less area in cases where there is serious environmental degradation. Continued monitoring of these IT networks will be an important aspect of future stewardship of the trail-less areas and for making a determination for when a management intervention is appropriate and required.

IT's: Management Concerns and Considerations

Management Concerns

ITs present a number of problems for effective and sustainable land management. ITs are not professionally or sustainably designed and these types of trail networks can have adverse impacts on natural resources particularly if and when there are substantial increases in hiker visitation. ITs typically become established when hikers ascend peaks taking the shortest distance between two points; oftentimes along fall line alignments. Unplanned IT trails often cut up steep slopes rather than following the contours along gentler gradients. As a result, ITs can have significantly more impacts to natural resources compared to sustainably designed trails. These types of IT routes predispose the trail to undesirable tread conditions resulting in erosion and muddiness, particularly in areas with steep grades. In many cases, IT field work assessments revealed that on some summits there is a wide dispersal of potential natural resource impacts including

⁶ Catskill Park State Land Master Plan. 2009. NYSDEC. Page 103

⁷ See above reference

but not limited to; trampling of sensitive vegetation, pulverization and loss of organic litter, exposure, compaction and soil erosion, and potential disturbances to wildlife.⁸

Management Considerations

ITs that experience increasing use require several management considerations. Land managers must decide if the impacts that ITs are having on the landscape are acceptable and unavoidable or unacceptable and avoidable.⁹ Unacceptable ITs develop as shortcuts, are duplicative, and can fragment ecologically sensitive areas. In cases where an IT leads to a scenic overlook or a water feature that does not have an existing marked trail, the existence of an IT may concentrate and contain impacts to a single trail corridor which reduces the impact to the resource. Once ITs have become established, research has shown that it is difficult to deter their use and recovery of these areas requires a long period of time.¹⁰ Educational messaging is one approach that can be used to promote hiking practices that hikers can utilize to minimize their impacts in trail-less areas. The Leave No Trace Center for Outdoor Ethics recommends providing signage in trail-less areas that encourages people to disperse use and to travel on durable surfaces when they are available. Leave No Trace has developed language that has been placed on signage in a trail-less corridor in Denali National Park that could potentially be adapted to educate users of the trail-less peaks in the Catskills.¹¹ (Sample LNT language for trail-less areas in Denali is included in the Appendix).

Study Methods

IT monitoring protocols have been developed for Denali National Park, Acadia National Park and Great Falls Park and Potomac Gorge that were applied to the monitoring effort of the IT networks on the 17 trail-less peaks in the Catskills. The

⁸ Marion, Jeff. 2011. "Research and Management of Informal (Visitor-Created) Trails in protected Areas". Patuxent Wildlife Research Center.

⁹ See previous citation.

¹⁰ Marion, Jeff. 2011. "Formal and Informal Trail Monitoring Protocols and Baseline Conditions: Great Falls Park and Potomac Gorge. Final Report for USDI, National Park Service Chesapeake & Ohio Canal National Historic Park, George Washington Memorial Gateway.

¹¹ Marion, Jeff 2011. "Informal Trail Monitoring Protocols: Denali Park and Preserve". Final Report for the National Park Service, Department of the Interior. Pg 60

baseline data collection effort undertaken for this study utilized the trail condition class rating system and route-finding experience survey that was applied to Acadia and Denali National Parks and Great Falls Park and Potomac Gorge. Details of the two types of survey methods that were applied in the field are provided below. (Trail Condition Class and Route Finding Experience maps for each of the peaks are included in the Appendix)

- Prior to the fieldwork on the trail-less peaks, STRAVA global heatmaps were generated for the 17 trail-less peaks to identify IT corridors that were receiving the heaviest use. These maps were then compared to downloadable GPS tracks that are offered on apps such as All Trails, and Catskill Mountaineer. Staff determined that there was a definitive correlation between the STRAVA global heatmap corridors that indicated heavy use and the GPS tracks for the trail-less peaks that are available from various programs offered online. Data collection occurred on the IT corridors that staff hypothesized were receiving the heaviest use before fieldwork started.
- The NPS Point sampling survey technique was used as it is the survey method that lends itself to rapid trail condition assessments in the field. The beginning and end points of each trail segment along an IT was recorded for a tread condition class. When the condition class changed, a new waypoint was taken to signal the change in the tread condition along the IT. This was the method used to collect baseline data for the trail condition class assessment.
- The NPS Route-Finding Experience survey was applied by a second field staff person to inventory the hikers experience as they moved through the IT corridors. This data is useful to demonstrate at which points along an IT visitors are actively engaging in route finding decision-making while hiking as opposed to traveling along visually obvious trails for long distances¹².

¹² Marion, Jeff 2011. "Informal Trail Monitoring Protocols: Denali Park and Preserve". Final Report for the National Park Service, Department of the Interior. Pg. 60

Table 3. Trail condition class rating descriptions applied to ITs

Trail Tread Condition Class	Description
Class 0	<p>Trail barely distinguishable or discontinuous; no to minimal disturbance of ground vegetation and/or organic litter. Ground vegetation rooted within the tread is irregularly trampled.</p> 
Class 1	<p>Trail distinguishable and continuous; some loss of tread vegetation cover (0-25%) and/or minimal disturbance of organic litter. Vegetation is trampled down and compressed. Soil exposure is similar or slightly more than surrounding areas. The trail is lightly impacted compared to surrounding areas.</p> 
Class 2	<p>Vegetation cover is 25- 75% lost, and/or organic litter is pulverized within the center tread. There is some bare soil. The area is moderately impacted when compared to surrounding areas.</p> 

Class 3

Vegetation and organic litter cover 75- 100% lost. The tread surface is predominately exposed soil with some pulverized organic litter. This area is heavily impacted when compared to surrounding areas.



Table 4. Route finding experience rating descriptions applied to ITs

These data are used to inform land managers of a visitor's engagement in decision making along a specific route. This survey is performed by recording tracks on a Garmin GPS. When a RFE changes, a new track is started.

Route Finding Experience	Description
1	More time is spent off the trail than on the trail. The route of interest is difficult to piece together and often requires bushwhacking.
2	Most time is spent on the trail but requires frequent decisions on which path to take. Must remain alert to stay on trail. Gaps in the trail may exist with the need to occasionally back track and/or bush-wack.
3	Trail is easy to navigate and are almost always on trail.

IT Spatial Distribution

Spatial distribution and arrangement of hiker use for each trail-less peak was determined through a heatmap that was generated by STRAVA software (<http://www.STRAVA.com/heatmap>). STRAVA heatmaps show "heat" made by

aggregated, public activities over the last two years” and is updated monthly. ¹³ The most trafficked route determined from the heatmaps was compared with GPS tracks that are offered online by the Catskill Mountaineer (<http://catskilmountaineer.com/>), and the most frequently recorded route posted via All Trails (<https://www.alltrails.com/>) to focus the data collection efforts in areas that were likely to be experiencing highest concentrated use.

IT Lineal Extent Data Recording

Once a high use corridor was identified, handheld GPS devices were used to record the track of the IT's discovered on the ground. In addition to the track, categorical rating systems for trail condition classes and route-finding experiences were recorded on an ordinal scale. A new IT segment was designated and assessed when a change in the condition class of the tread of the IT was noted. To avoid capturing highly localized changes, these classifications were designated for segments that were longer than 20 feet. Segments that were less than 20 feet were grouped into the classification being recorded.

GPS tracks were then processed and converted to ESRI ArcMAP 10.3 Shapefiles using Minnesota Department of Natural Resources (Version 6.1.0.6. DNR 2011). Shapefiles were edited in ArcMap 10.3 to provide the most accurate representation of the trail followed. The editing consisted of eliminating existing trails from the segments and snapping endpoints as classifications changed.

Study Results

Visitor Use and Summit Impact Recording

The sign in collection information for 2018 from the canisters at the 13 peaks¹⁴ indicates a total of 6,598 people signed in at the canisters in 2018, a decrease in visitation from 2017 which totaled 8,464 in 2017.¹⁵

- The SW Hunter canister had the highest recorded visitation at 698 visitors in 2018, a decrease in visitation from 832 visitor sign in's in 2017.
- In 2018, the lowest visitation according to the canister sign ins was recorded at Rocky where 413 people signed in, a decrease from 585 sign-ins in 2017.
- The two peaks that showed the most dispersed use were Halcott and Rusk. Some portions of these peaks had established ITs, however, the lineal extent of trail in these areas was low in comparison to other trail-less peaks due to very dispersed use.

Data suggests that the overall visitation trends on the trail-less peaks over 3,500' in the Catskills is beginning to slightly decrease since peak visitation in 2016 but more data will need to be collected and analyzed to confirm a long-term decrease in visitation to these areas.

The area of trampling at the summit was calculated by taking a GPS segment outlining the de-vegetated area surrounding the canisters located on peak summits. Areas that were measured for trampling were identified by the presence of pulverized organic material, exposed roots and soil, and decrease in vegetation coverage. In GIS, a polygon was created by following the outline of the of the segment. The area was then calculated in square feet.

¹⁴ At the time this report was written canister data for Kaaterskill HP and Eagle was not available. Bearpen and Graham do not have canisters as of February 2020.

¹⁵ Annual VSA Report for the Catskill 3500 Club, 4/27/19. Submitted Jim Bouton Canister Chairman

The summits of these peaks were typically composed of mountain spruce-fir and the IT's leading to most summits meandered through beech-maple mesic forests. The impacted or de-vegetated areas were concentrated in the location surrounding the canister at most summits. Less significant summit impacts were detected on Kaaterskill High Peak, Eagle and Bearpen summits which did not have canisters at the time the field visit for this study occurred. Canisters were placed on Eagle and Kaaterskill High Peak summits during the summer of 2019. Graham does not have a canister and the summit conditions show significant man-made impacts and un-natural conditions in comparison to other peak summits due to the presence of an old building and associated cement block debris.

Element Occurrences of Threatened and Endangered Species

Three separate Geographic Information System (GIS) layers were consulted to obtain the information in Table 5: the New York Natural Heritage Element Occurrence layer, the NYS Landcover dataset and the NY State Land Forest Stands layer. No single GIS layer available in the NYSDEC data selector contained species or land cover information for all 3 different land classifications of the trail-less peaks in the Catskills. Natural Heritage element occurrence data was incomplete for several of the peaks included in this study. When areas that were missing element occurrence data were identified, either the NYS landcover dataset or the State Forest stands layer were applied to those areas in GIS. The NYS landcover dataset provides useful information on the forest types that are known to occur in certain locations.

Forest type information can be useful in predicting which species may prefer to occupy a given area due to the presence of favorable habitat. For example, Bicknell Thrush is known to prefer spruce-fir forests at higher elevations. Using the NYS landcover data layer, staff were able to identify several peaks that were listed as high priority areas for future Bicknell Thrush monitoring as a result of this study. The State Forest Stands layer was consulted for species information for Bearpen and Vly as the NY Natural Heritage biological inventory records date back to 2009. The NYSDEC is working with Natural

Heritage to schedule biological inventory fieldwork to update the existing species occurrence records in areas where biological inventories are outdated or missing.

The majority of information contained in Table 5 lists species confirmed and/or predicted in the study area based on field observations from NY Natural Heritage. Species of greatest conservation need (SGCN) in the general area of the trail-less peak summits over 3,500' include bird species such as Bicknell Thrush, and plant species such as Climbing fern, and Jacob's Ladder.

Table 5. Number of visitors in 2018 and the area impacted around the canister at each over 3,500' trail-less Catskill peak.

(Peaks that do not have canisters are indicated by the "N/A".)

Peak	# of Visitors	Summit Impact (sq ft)	Important Species and Forest Types
Catskill Peaks over 3,500' on Private Land			
Doubletop	540	550	Beech-maple mesic forest; Northern Monkshood (Aconitum noveboracense); Jacob's Ladder (Polemonium vanbruntiae) <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Graham*	N/A	-	Northern Monkshood (Aconitum noveboracense) Beech-maple mesic forest <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Catskill Peaks over 3,500' on Forest Preserve Land			
Eagle*	N/A	740	Bicknell's thrush (Catharus bicknelli); Northern Monkshood (Aconitum noveboracense) <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Kaaterskill High Peak *	N/A	758	Mountain spruce-fir; Beech-maple mesic forest; Spruce-northern hardwood forest; Climbing fern (Lygodium palmatum); Bicknell Thrush Catharus bickinelli) <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
SW Hunter	698	1033	Mountain spruce-fir; Climbing fern (Lygodium palmatum); Bicknell's thrush (Catharus bicknelli) <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Rocky	413	1578	Mountain spruce-fir forest; Hemlock-northern hardwood forest; Beech-maple mesic forest; Hooker's Orchid (Plantanthera hookeri); Lake Emerald (Somatochlora cingulata) <i>GIS Source: Natural Heritage Element Occurrence Layer</i>

Lone	472	652	Mountain fir forest; Hemlock-northern hardwood forest; Beech-maple mesic forest <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Friday	462	375	Mountain spruce-fir; Beech-maple mesic forest <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Balsam Cap	490	737	Mountain spruce-fir forest; Hooker's orchid (Plantanthera hookeri), Nodding Pogonia (Triphoria trianthophoros) <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Rusk	615	593	Mountain spruce-fir; Beech-maple mesic forest <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Peak	# of Visitors	Summit Impact (sq ft)	Important Species and Forest Types
North Dome	523	338	Mountain fir forest; Beech-maple mesic forest <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Sherrill	473	692	Mountain fir forest; Beech- maple mesic forest <i>GIS Source: Natural Heritage Element Occurrence Layer</i>
Big Indian	602	570	Laurentian-Acadian Northern Hardwood Forest, Acadian-Appalachian Montane Spruce-Fir Forest <i>GIS Source: Natural Heritage Element Occurrence Layer and the NYS Landcover Dataset Layer</i>
Fir	476	226	Laurentian-Acadian Northern Hardwood Forest , Acadian- Appalachian Montane Spruce-Fir Forest <i>GIS Source: Natural Heritage Element Occurrence Layer and the NYS Landcover Dataset Layer</i>
Halcott	537	455	Laurentian- Acadian Northern Hardwoods Forest & Acadian Appalachian Montane Spruce Fir-Forest <i>GIS Source: Natural Heritage Element Occurrence Layer and the NYS Landcover Dataset Layer</i>
Catskill Peaks over 3,500' on State Forest Land			
Bearpen	N/A	104	Even aged, Northern Hardwood: Black Cherry (Prunus serotina), Sugar Maple (Acer saccharum), American Beech (Fagus grandifolia) <i>GIS Source: State Land Forest Stands Layer</i> <i>No Natural Heritage Element Occurrence hits, no known survey date</i>
Vly	653	93	Even aged, Northern Hardwood: Black Cherry (Prunus serotina) , Sugar Maple (Acer saccharum), American Beech (Fagus grandifolia) <i>GIS Source: State Lands Stands Forest Layer</i> <i>No Natural Heritage Element Occurrence hits, no known survey date</i>

Table 6. Mileage of the condition classes present on each of the trail-less peaks.

Peak	Condition Class 0 (mi)	Condition Class 1 (mi)	Condition Class 2 (mi)	Condition Class 3 (mi)
Balsam Cap and Friday	0.96	0.97	1.81	0.89
Bearpen and Vly	0	0.52	1.07	2.20
Big Indian and Fir	0.99	0.59	0.71	1.26
Doubletop	0	1.03	0.98	0.31
Eagle	0	0	0.16	0
Graham	0	0	0.13	1.85
Halcott	1.73	0.89	1.61	0.10
Kaaterskill High Peak	0	0.29	1.14	1.06
Lone and Rocky	1.67	2.61	2.40	0
North Dome and Sherrill	0.41	3.01	1.98	0
Rusk	0	0.80	0.73	0.48
SW Hunter	0	0.17	0.73	0
Total length of trail class	5.76	10.88	13.45	8.15

Table 7. Mileage of each route finding experience per trail-less peak.

Peak	Route Finding Experience 1 (mi)	Route Finding Experience 2 (mi)	Route Finding Experience 3 (mi)
Balsam Cap and Friday	0.85	2.14	1.64
Bearpen and Vly	0.54	1.06	2.19
Big Indian and Fir	1.39	1.92	0.16
Doubletop	0	1.70	0.70
Eagle	0	0	0.16
Graham	0	0	1.98
Halcott	2.67	1.03	0
Kaaterskill High Peak	0	0.81	1.58
Lone and Rocky	5.43	1.25	0

North Dome and Sherrill	1.87	2.69	0.81
Rusk	1.31	0.7	0
SW Hunter	0	0.90	0
Totals	14.06	14.2	10.67

Study Limitations

- There were only 12 weeks available to collect data across 17 of the trail-less over 3,500' Catskill high peaks so point assessments were used in lieu of more technical assessments such as line transect surveys as a result of the study time constraints and the large study area.
- The NYSDEC and the SUNY ESF partnership program for graduate and undergraduate internships is limited to the summer months when interns are available between spring and fall semesters. Data collection efforts were therefore limited to the summer months when interns were available and impacts to vegetation were the highest and most easily observed. Consequently, winter fieldwork and IT monitoring was not part of the initial study.
- STRAVA global heatmap data while very useful, under-represents the actual visitation to the trail-less areas as it shows the only the paths traveled by hikers that are using the app and not the paths traveled by all of the hikers visiting a given area.
- This study was completed before the 2019 canister sign in data was collected so staff are left to speculate if the visitor use on these trail-less peaks over 3,500 is continuing to decrease since peak visitor use in 2016.
- Staff recognize that there are fluctuations in the height and abundance of vegetation in these areas depending on the time of year. For consistency

purposes the dates of the summer field visits for each individual peak have been recorded and any future monitoring will be conducted during the same week of the year, resources and staff time permitting. (See Appendix, Table 7).

- Three separate GIS layers had to be used to obtain species and forest type information for this study. No single GIS layer available in the NYSDEC data selector contains information for all of the peaks in the various different land classifications:

NY Natural Heritage Element Occurrence Layer

The Natural Heritage Element Occurrence layer does not contain species specific information several peaks. As a result, we are left to speculate the relative species abundance and distribution in these areas until biological surveys can be conducted. The Natural Heritage Element Occurrence Layer was used for the majority of trail-less peaks on forest preserve. The peaks missing element occurrence data will be targeted for future monitoring by NY Natural Heritage. This layer was also used to obtain species information for Doubletop and Graham which are located on private land.

NYS Landcover Dataset

The NYS Landcover Dataset layer was the best alternative layer for forest cover type information for the peaks that were missing element occurrence data in the NY Natural Heritage layer. This layer shows the forest types in a certain location and this data can then be used to predict which species may find favorable habitat in these areas based on the presence of a given forest type.

The State Land Forest Stands Layer

The State Land Forest Stands layer Bearpen and Vly to obtain forest type information for these state forest lands. There are no Natural Heritage Element Occurrence hits on Bearpen and Vly peaks located in Mt. Pisgah State Forest. Older record from the State Lands Assessment Project : Biodiversity Inventory of Regions 3 & 4 State Forests and

Forest Preserve, Volume 1. (2009) ¹⁶indicate that these forests have not been surveyed since 2009.

Results

- IT assessment work on the trail-less peaks over 3,500' identified numerous areas where Class 3 and Class 2 ITs are bisecting or traversing areas that have been identified by NY Natural Heritage as containing vascular plants and vertebrate species that have been listed as threatened, vulnerable or species of special concern, or critically imperiled.
- Additional data collection will be required in targeted areas to:
 - A) Determine if the IT is having a detrimental impact on species that have been listed by NY Natural Heritage.
 - B) If re-routes in certain areas are necessary to protect species of greatest conservation need and concern or,
 - C) if IT impacts to natural resources are so significant in certain areas that formal trail designation may be the strongest option to protect the resource.

*Any trail construction or re-route would have to meet sustainable trail construction design standards

Management Recommendations

General

- Additional data collection will be required in targeted areas to determine if natural resource impacts are significant enough that formal, sustainable designed trail construction may be required.

¹⁶ State Lands Assessment Project: Biodiversity Inventory of Regions 3 & 4 State Forests and Forest Preserve, Volume 1: Project Description and Results Maps and Data Regions 3 and 4. (2009) New York Natural Heritage Program

- STRAVA global heatmap information for each area should be collected on an annual basis for comparison to the 2018 baseline map data to assess any changes to visitor use patterns. STRAVA IT corridors should be georeferenced and uploaded to GPS units for a higher level of accuracy.
- Future data collection efforts could focus on data collection in areas where new ITs are becoming established.
- Research work should continue to produce additional data for establishing a protocol for when a management intervention to establish a sustainably built trail is necessary. Protocol development should be informed by trail condition class data, route finding experience data, impact data on important species and any other applicable research parameters.
- Recreational Impacts to Bicknell Thrush as a result of forest fragmentation on the peak summits should be further investigated.

Specific Management Recommendations

1) Doubletop- 2 listed vascular plant species: Jacobs Ladder (Vulnerable), Northern Monkshood (Endangered)

Visitor sign in 2018- 540

High priority for vascular plant monitoring if permission can be obtained from private property owner. At this time a 0.3 mile section of class 3 informal trail bisects a known occurrence of Northern Monkshood which is currently listed as endangered in NY. There are two isolated populations of listed vascular plants near the summit that are at risk from trampling. STRAVA heat map evidence suggests that herd paths are beginning to expand towards the known locations of these isolated vascular plant populations. This peak is a strong candidate for sustainable trail construction due to the numerous populations of high risk species intersections with condition class 3 trail.

2) Kaaterskill HP- 2 listed species: Bicknell Thrush (Species of Special Concern), Climbing Fern (Endangered)

Visitor sign in 2019-N/A

High priority for monitoring as a canister was recently added in late 2019 and baseline data on summit impacts prior to canister installation was collected. Class 2 and Class 3 ITs transect the Bicknell Thrush habitat in numerous locations on the summit. There is a potentially dangerous section on the southern side of the summit where the argument for a sustainably constructed re-route would be defensible. In comparison to other trail-less peaks this area could be a strong candidate for construction of a sustainably designed trail based on the potential impacts that these IT networks could be having on listed species. Red trail markers have been placed on the IT that lies off of the southern portion of the summit on Kaaterskill High Peak. These markers should be removed.

3) Eagle- 1 listed species: Bicknell Thrush (Species of Special Concern)

Visitor sign in 2019-N/A

Similar to Kaaterskill HP, a canister was added to the summit of eagle late in the summer of 2019. Bicknell thrush have been identified in the area above 3,500' on this summit. Additional data collection and visitor use information will be required to make an informed management decision as to how the IT is or is not impacting this listed species.

4) SW Hunter- 2 listed species : Bicknell Thrush (Species of Special Concern) and Climbing Fern (Endangered)

Visitor Sign in 2018-698

A class 2-0.9 mile IT traverse's habitat with known occurrences of Bicknell Thrush and Climbing Fern. This IT experiences the highest sign in rate of all of the 17 trail-less peaks over 3,500' in the Catskills however it has gentler slopes and less dispersed hiker activity at the summit when compared with other the ITs on other summits. Hiker activity was concentrated to a single corridor.

5) Balsam Cap and Friday- 2 listed species Nodding Pogonia (Threatened), Hookers Orchid (Endangered)

Visitor sign in 2018- BC 490, Friday 462

There is 0.89 miles of class 3 IT trail that winds through Hookers Orchid habitat. The Nodding Pogonia population is isolated and could be extirpated. The Natural Heritage Element Occurrence map depicts the entire area surrounding the two summits as Hookers Orchid habitat which needs to be verified. The recommendation is to target the class 3 sections of ITs and evaluate their sustainability as trails as well as monitor for the endangered vascular plant.

6) Lone and Rocky- 1 listed species Hookers Orchid (Endangered)

Visitor sign in 2018- Rocky 413, Lone 472

These peaks can be characterized as having lower visitation rates, no class 3 IT designations and only a small element occurrence hit of Hookers Orchid on the summit of Rocky. These peaks are in close proximity to Bicknell Thrush habitat so they should ultimately be monitored. At this time they are ranked as a lower monitoring priority when compared with several other peaks.

7) Rusk- No listed species

Visitor sign in 2018- 615

Rusk has one of the higher levels of visitor dispersal when compared to other trail-less peaks and it has some very steep class 3 ITs on and along a number of approaches to the summit. These class 3 ITs should be monitored closely for erosion and any associated resource degradation. A biological inventory should be scheduled for 2021-2022 to update the existing biological inventory information that is currently available.

8) North Dome and Sherrill

Visitor sign in 2018- N dome- 523, Sherrill- 473

According to STRAVA, it appears that two new ITs are becoming established originating from Spruceton Rd and proceeding south to the summit of Sherrill. Condition class data and route finding experience survey information was not collected on these two ITs. The management recommendation is to prioritize data collection along these two ITs. It is also not clear when this area was last inventoried by NY Natural Heritage as the element occurrence layer only shows that there is beech/maple mesic forest in the area but there is a possibility that other species of concern may occur in this area. These two peaks should be scheduled for biological inventories when resources and staff time permit.

9) Halcott-

Visitor sign in 2018- 537

Visitor use on Halcott is comparable to the visitor use patterns that were observed on rusk mountain. Halcott had the lowest level of Condition Class 3 trail however it was one of the few peaks that it appears that visitation is increasing and widely dispersed. The IT network on this peak is extensive but at the time of field survey

the natural resource impacts were not severe. STRAVA heatmap data should be closely observed to ascertain where visitor use may begin to become concentrated. Again, Halcott was another peak where species specific information from Natural Heritage was vague. The element occurrence layer showed forest types on the peak but contained no species specific information and the area should be revisited by Natural Heritage to update the existing biological inventory.

10) Bearpen and Vly-

Bear pen N/A, Vly Visitor sign in 2018-653

After consultation with NY Natural Heritage, it does not appear that a biological inventory has occurred in this area since 2009. According to the 2018 State Forest UMP schedule, an update to the Mt. Pisgah UMP (which includes Bearpen and Vly and has not been finalized) is due in 2024. To meet green certification requirements, this area should be scheduled for a biological inventory with Natural Heritage. The summit of Bearpen is treeless so visitor use information through the use of a canister would be difficult to collect. The highest concentrations of use on the ITs run along old logging roads where natural resource impacts are relatively concentrated along those old roads.

Vly mountain in contrast, has several smaller IT networks that are becoming established that were not surveyed in the summer of 2018. These areas should be targeted for monitoring. The boundary line between private and state land on the ascent to Vly mountain needs to be defined. There are several sections of the IT on the ascent to Vly that appear to be on private land which should be re-routed off of private land and onto state land. Any new trail construction should meet sustainable design standards.

11) Big Indian and Fir

Big Indian 602, Fir 478

There is no data in the NY Natural Heritage Element Occurrence layer for Big Indian and Fir. The NYS landcover dataset was used to determine which forest types are present on these two peaks. Acadian-Appalachian Montane Spruce Forest and Laurentian- Acadian Northern Hardwood Forests are the predominant forest types. There is a high likelihood that Bicknell Thrush may be present in the vicinity of these two summits as spruce fir forest at high elevations is preferred habitat for this species. These two peaks should be high priorities for Natural Heritage to conduct biological

inventories to inform future unit management planning (UMP) efforts for the Big Indian wilderness UMP.

12) Graham

No canister

The IT that leads to the summit of Graham mountain is almost entirely class 3 trail. This summit is heavily impacted in comparison to the other peaks that were included in this study however, visitor dispersal is low and hiker use is concentrated on the class 3 trail leading to the summit. Nonetheless, Graham boasts the highest elevation of all of the trail-less peaks and could potentially contain habitat that would be suitable for Bicknell Thrush. Natural Heritage element occurrence data shows that the predominate forest type on this peak is comprised of Beech-Maple mesic forest with no known occurrences of spruce-fir forest types. It is unknown when this area was last surveyed and additional fieldwork may be useful in determining if this peak does have habitat that could accommodate Bicknell Thrush.

Acknowledgements

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Appendix

Table 7. Dates of 2019 IT Peak Field Visitation

Halcott	June 6, 2019
Bearpen/Vly	June 10, 2019
Halcott revisit	June 14, 2019
Kaaterskill HP	June 17, 2019
SW Hunter	June 24 th , 2019
Rusk	June 17 th , 2019
North Dome/ Sherrill	1, July, 2019
Balsam Cap and Friday	July 8, 2019
Big Indian and Fir	July 12, 2019
Graham	July 8 th , 2019
Doubletop	July 23 rd , 2019
Lone and Rocky	August 1 st , 2019
Eagle	August 6 th , 2019
Rusk revisit	August 14 th , 2019

Figure 14. A suggested “first draft” of revised Leave No Trace practices for avoiding the creation of ITs based on a dispersal strategy

Source: Marion ,Jeffery. "Informal Trail Monitoring Protocols: Denali National Park and Preserve. 2011.Final Report for The National Park Service, U.S. Department of the Interior.pg 60

Leaving No Trace of Your Visit to Denali Park

Denali National Park is managed as a six-million acre trail-less wilderness, where formal trails are not provided and managers actively seek to prevent the creation and proliferation of informal (visitor-created) trails. The management objective is to preserve opportunities for visitors to experience a remote and pristine Alaskan landscape influenced only by natural processes. When traveling through Denali wilderness you will need to develop and apply navigational and route finding skills and much of your cross-country hiking will be “off trail”. While wildlife trails may occasionally be found and used, an important management goal is “to not link them up” as a continuous trail network. That would compromise the unique Denali wilderness experience that few U.S. parks are capable of providing. Be aware that cross-country navigation will substantially slow your hiking speed and is physically challenging so allow ample time to reach your destination. The information and guidance below is provided to help you “leave No Trace” of your Denali Park visit. Accept the personal responsibility to help us achieve our stewardship objectives so your grandchildren can experience a pristine Denali Wilderness visit.

Disperse Your Activity in Pristine Areas

Will your recreational visit require off trail travel? If not, then stick to formal marked trails and recreation sites in developed park areas. Recognize that the resource impacts of your visit on formal trails and sites are quite low; when you venture away from these resistant trails and sites your potential for harming natural resources is substantially higher. Accept the personal responsibility to “Leave No Trace” of your visit if you must venture away from formal trails and recreational sites.

You may encounter informal (visitor-created) trails and sites, often only distinguishable from their formal counterparts by their lack of blazes, markings, or signs. Understand that off-trail traffic frequently leads to proliferation of these informal trail networks of trails or sites. Furthermore, studies show that visitor-created trails and sites are more susceptible to resource impacts because they lack professional design, construction and maintenance.

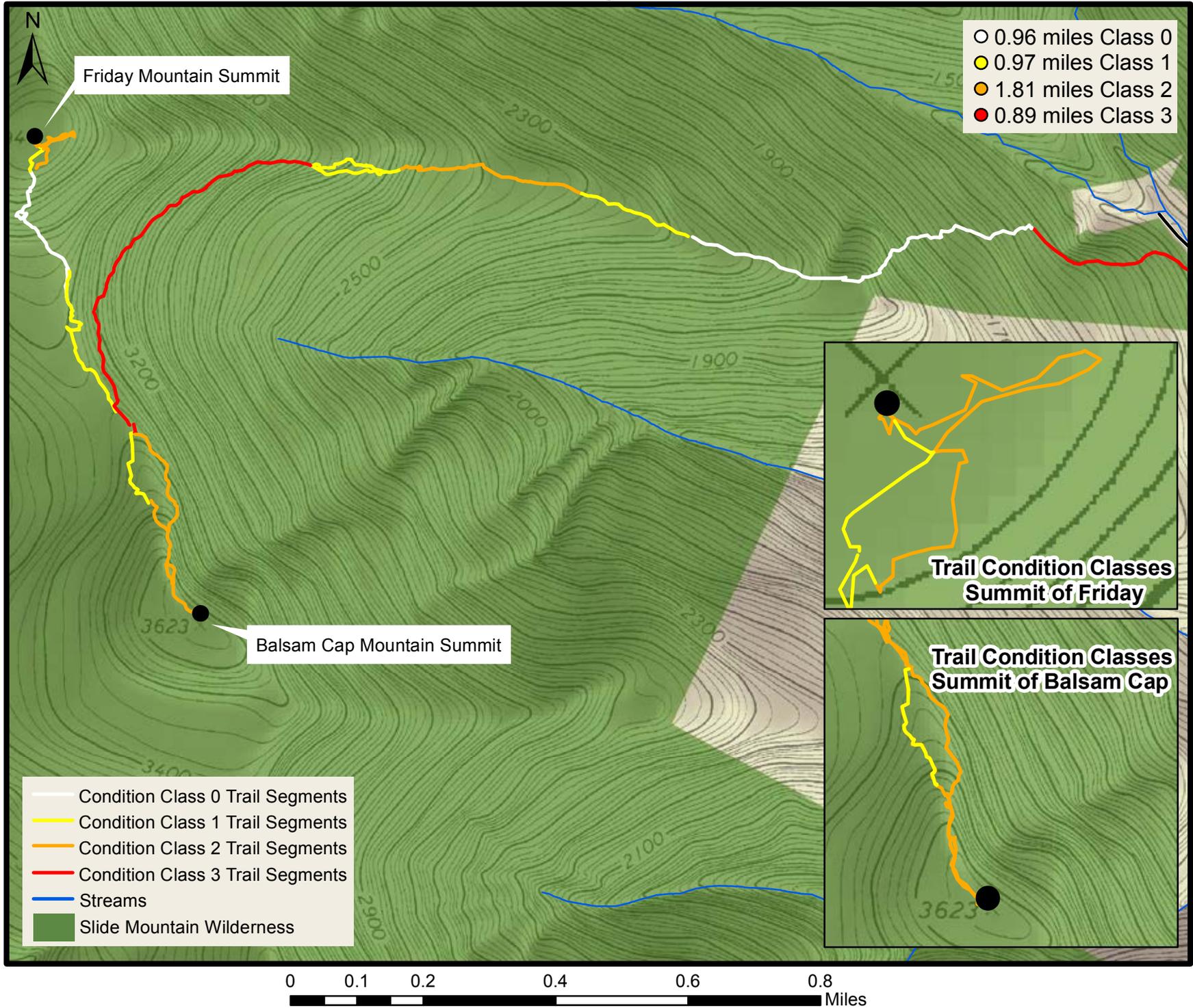
If your visit includes travel into low-use pristine areas, or far from formal trails and recreation sites in popular areas, disperse your footsteps and activities to avoid repeat traffic and visible impact. If each person takes a slightly different route, a distinct trail wont form because no single plant receives multiple footfalls. Your objective in these areas is to avoid concentrated hiking or recreational activity that leaves visible impacts to plants and soils. Do not use informal trails or recreation sites, including those that are lightly impacted, to promote their recovery. Research shows that even a few passes by hikers or more than one night of camping can substantially delay their recovery to natural conditions.

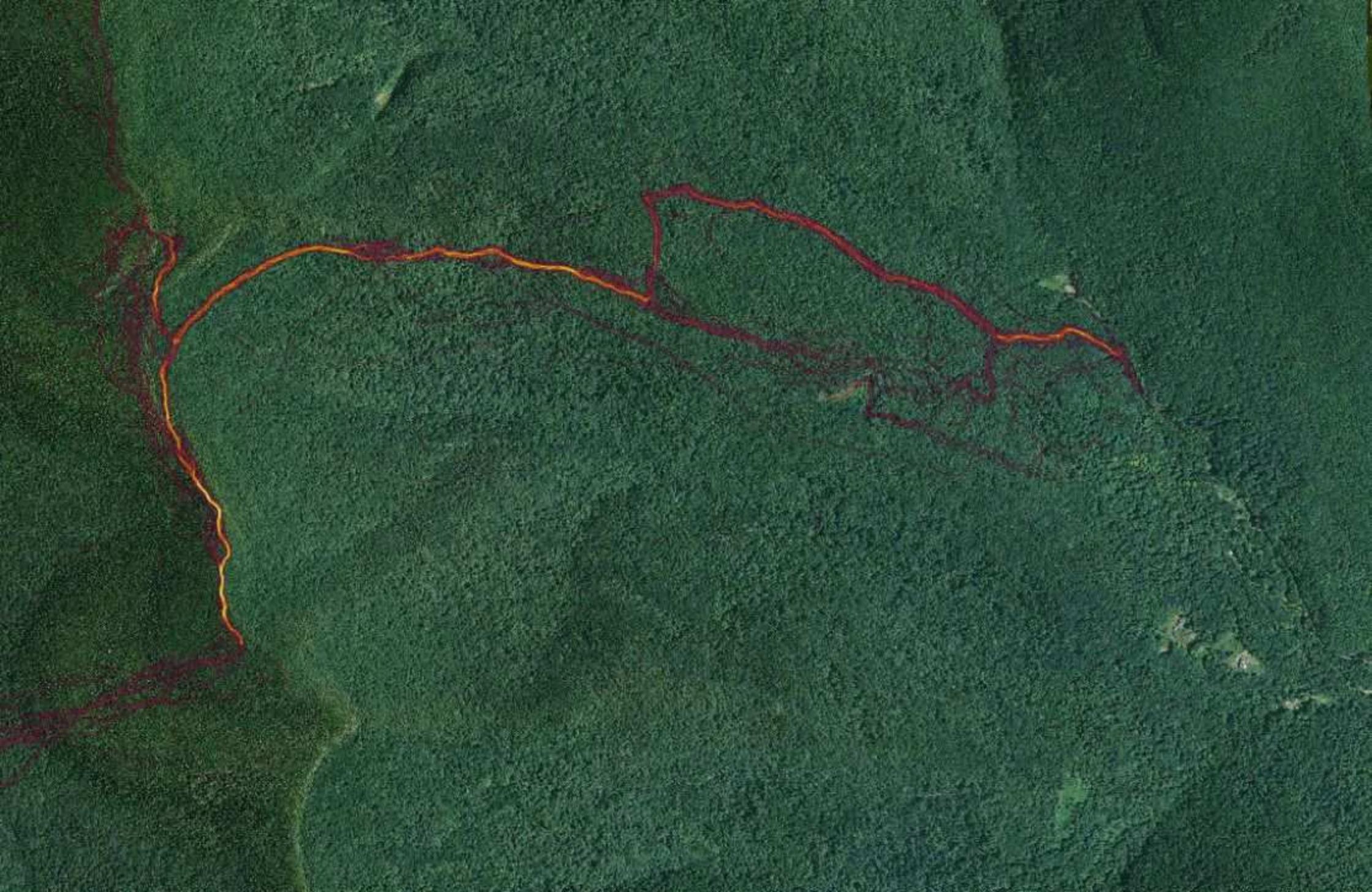
The degree of dispersal needed depends on the substrates your group encounters. Rock surfaces that lack plant or lichen cover can tolerate concentrated traffic, as can barren gravel shorelines or dry washes and snow or ice. Walking single file is acceptable only where there is little chance of trampling plants. If you must travel or camp on vegetation, look for dry grassy meadows or tundra- grasses have flexible stems and leaves that resist damage and recover quickly. In contrast, low woody shrubs and broad-leafed herbs are highly susceptible to trampling damage-avoid these. When in doubt, periodically examine the effects of your groups passage and minimize visible impact by increasing dispersal or use of durable surfaces.

Even low or inconsistent traffic along the same routes can lead to the development of trails. Cross-country hikers will discover that topography and vegetation often acts to concentrate their traffic to common routes with fewer obstacles. Resist the tendency if you see any evidence of trail formation and keep your group broadly dispersed, with single file traffic only on durable rock, gravel or snow surfaces. Recognize that dispersed off trail travel requires constant route finding vigilance and is considerably slower and more difficult than hiking on trails. Plan your schedule to allow plenty of time for off-trail hiking! Failure to disperse your groups traffic will accelerate the formation of continuous trails that will attract further use and impact.

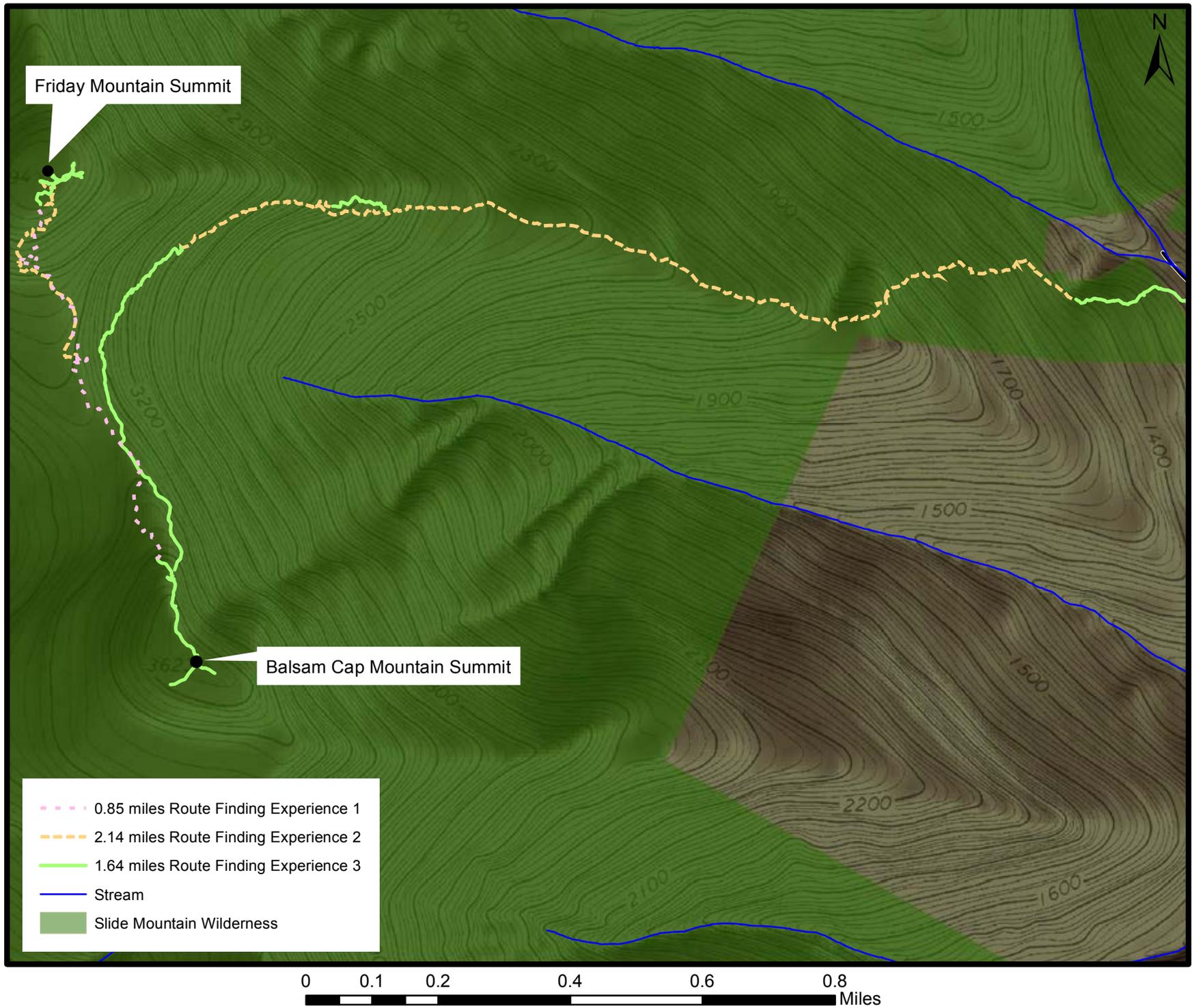
Condition Class, STRAVA, and Route Finding Experience Maps

Balsam Cap and Friday Trail Condition Classes





Balsam Cap and Friday Route Finding Experience



Maps, Profile, and GPS files





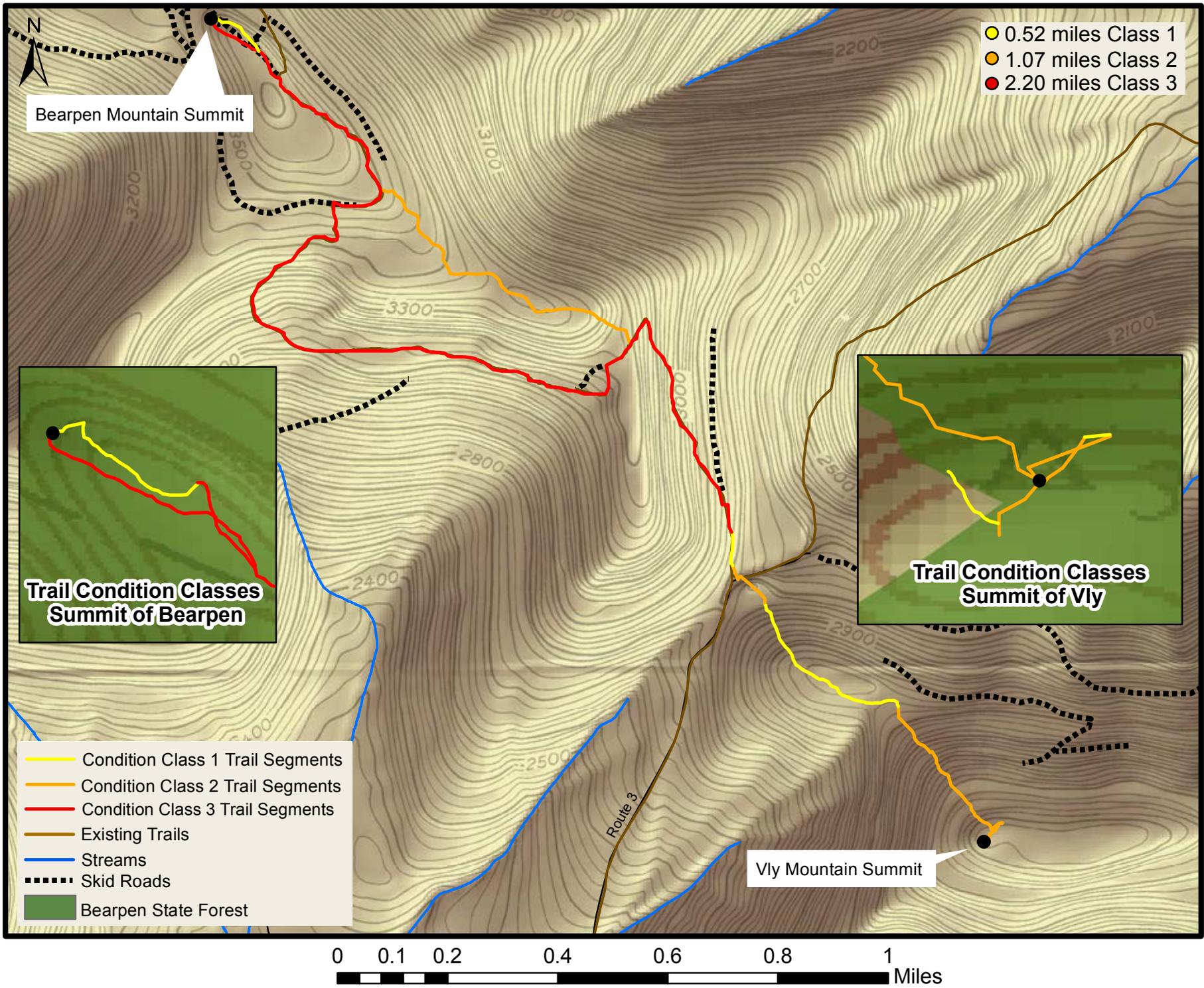
Friday Mountain

2508



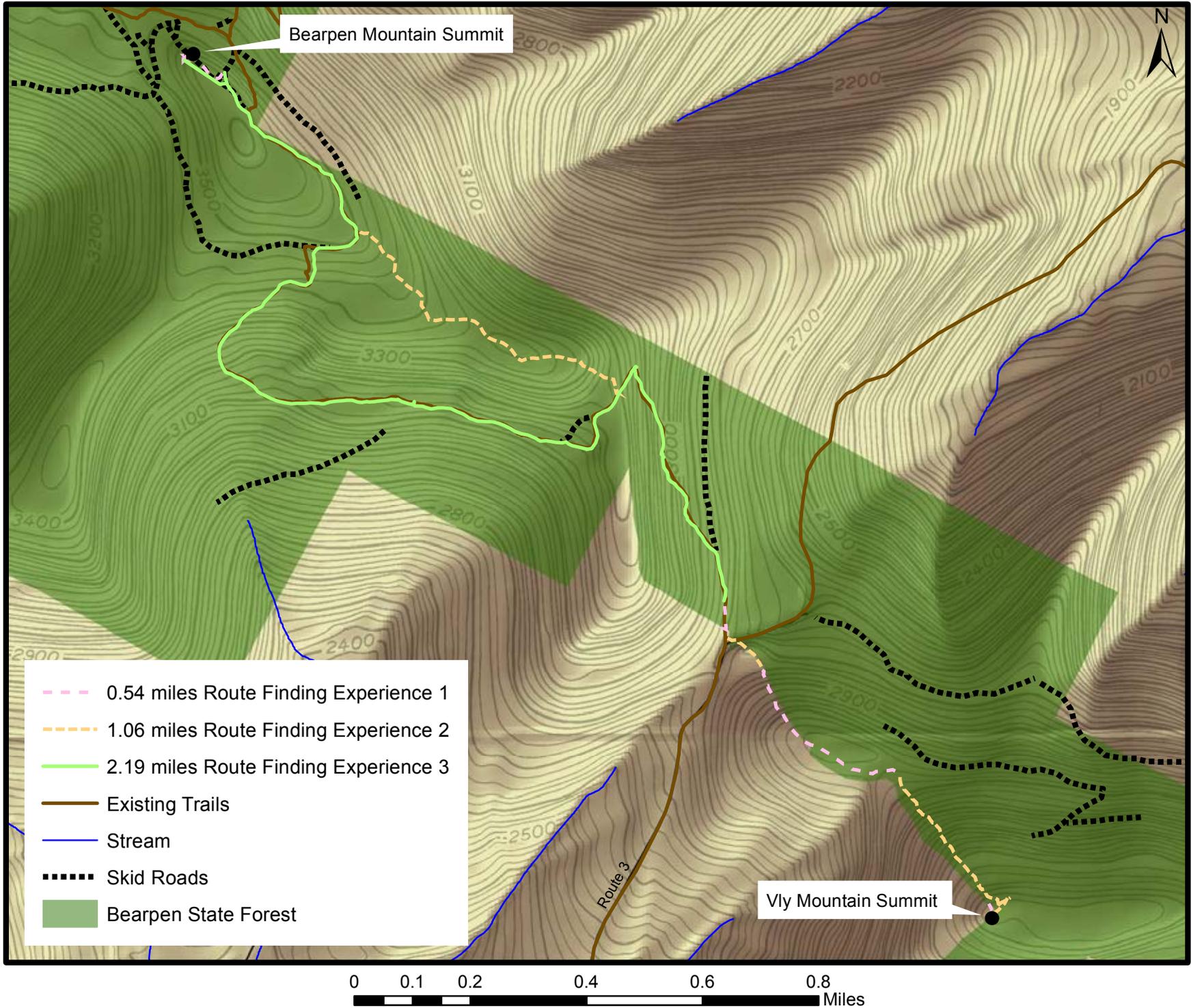
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Bearpen and Vly Trail Condition Classes





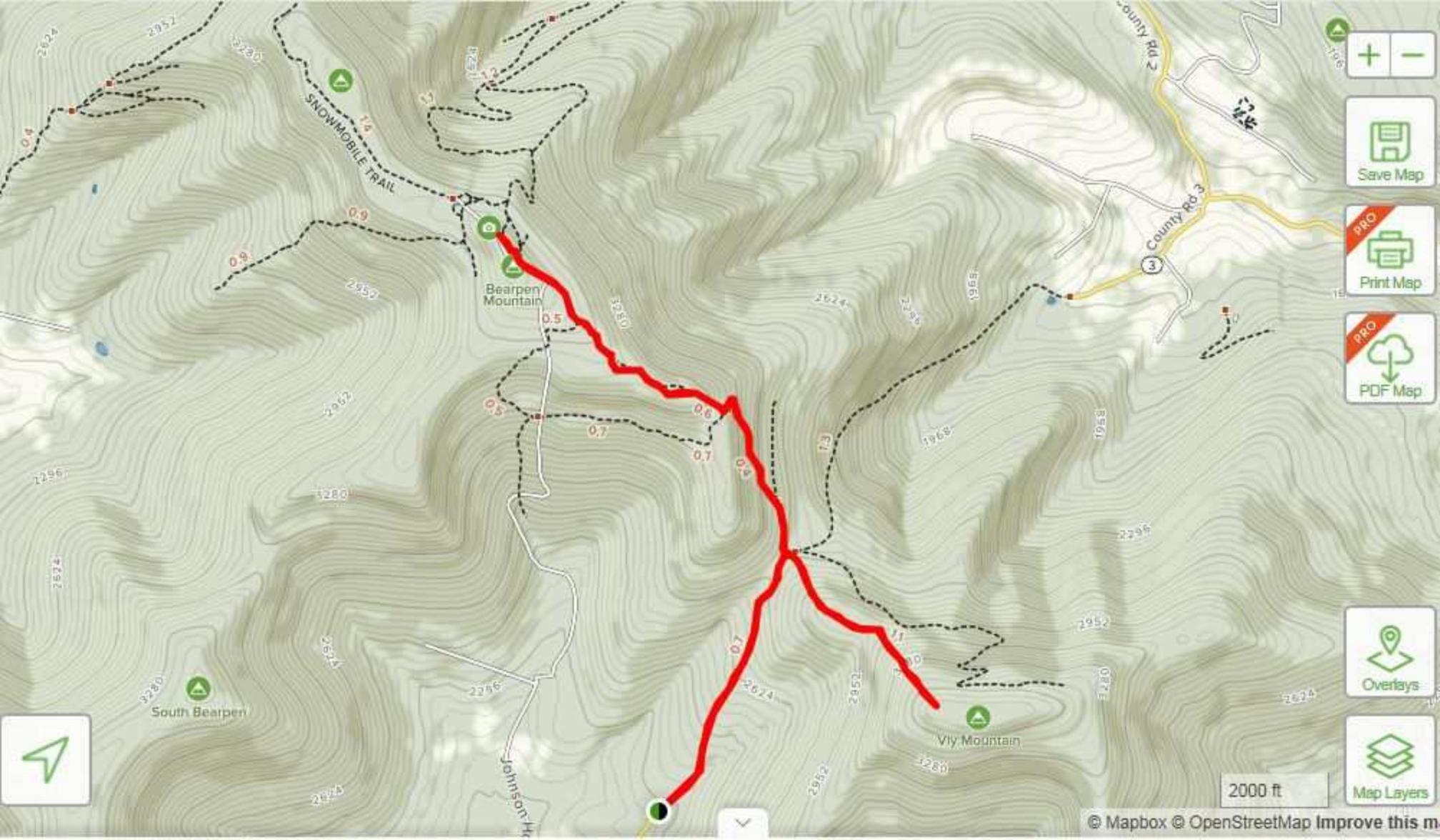
Bearpen and Vly Route Finding Experience



Maps, Profile, and GPS files

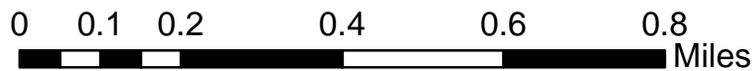
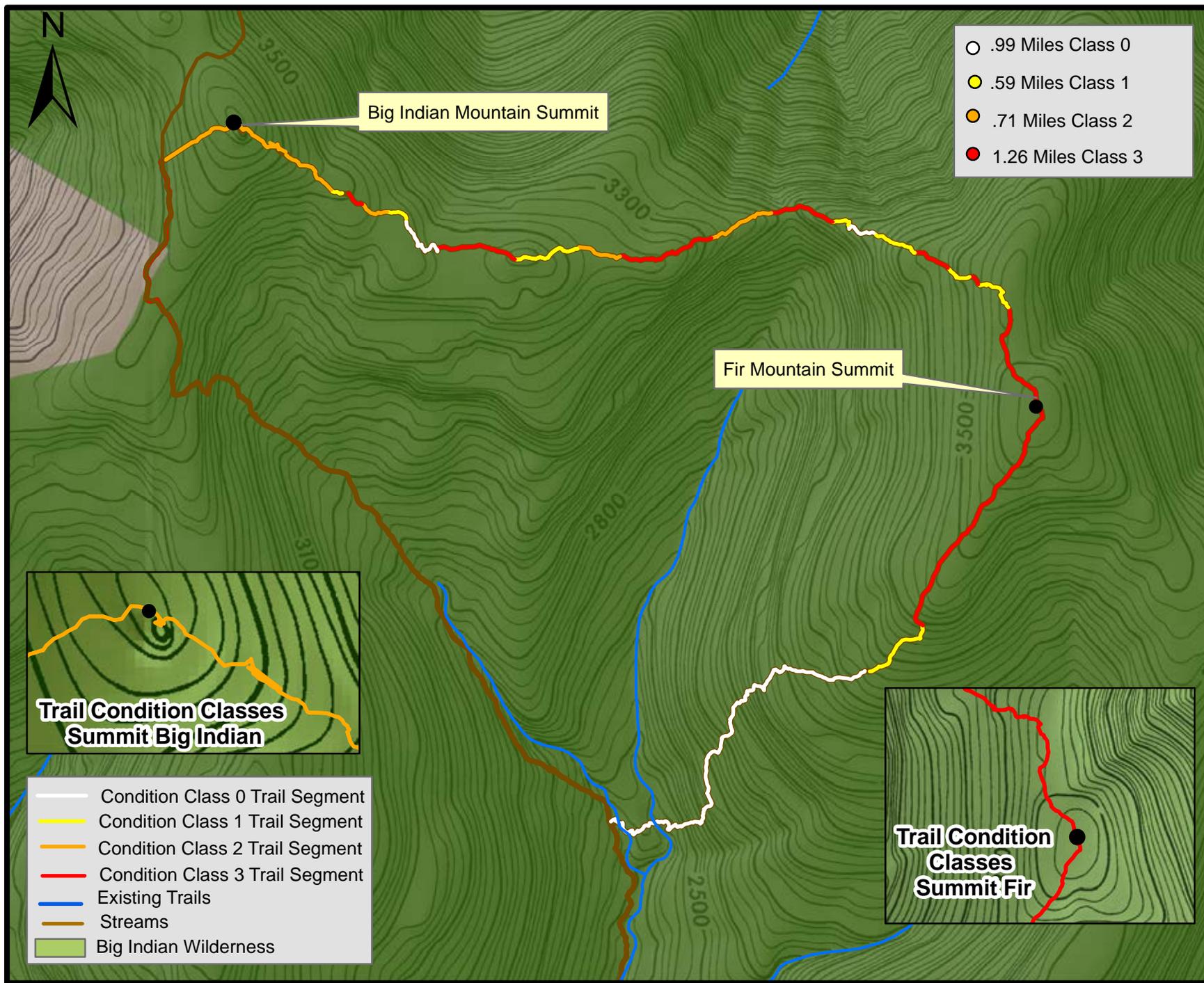


Vly and Bearpen Mountain

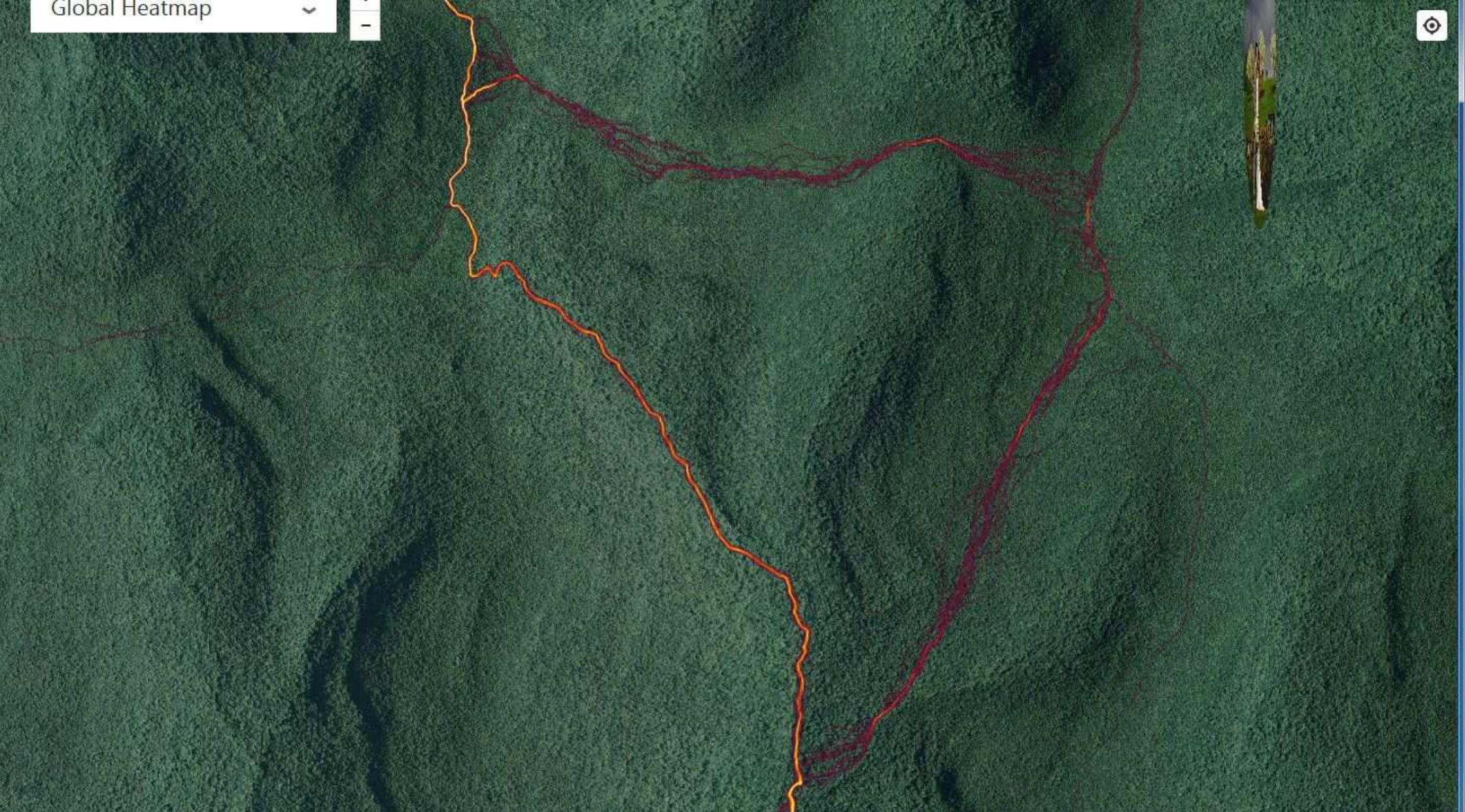


2000 ft

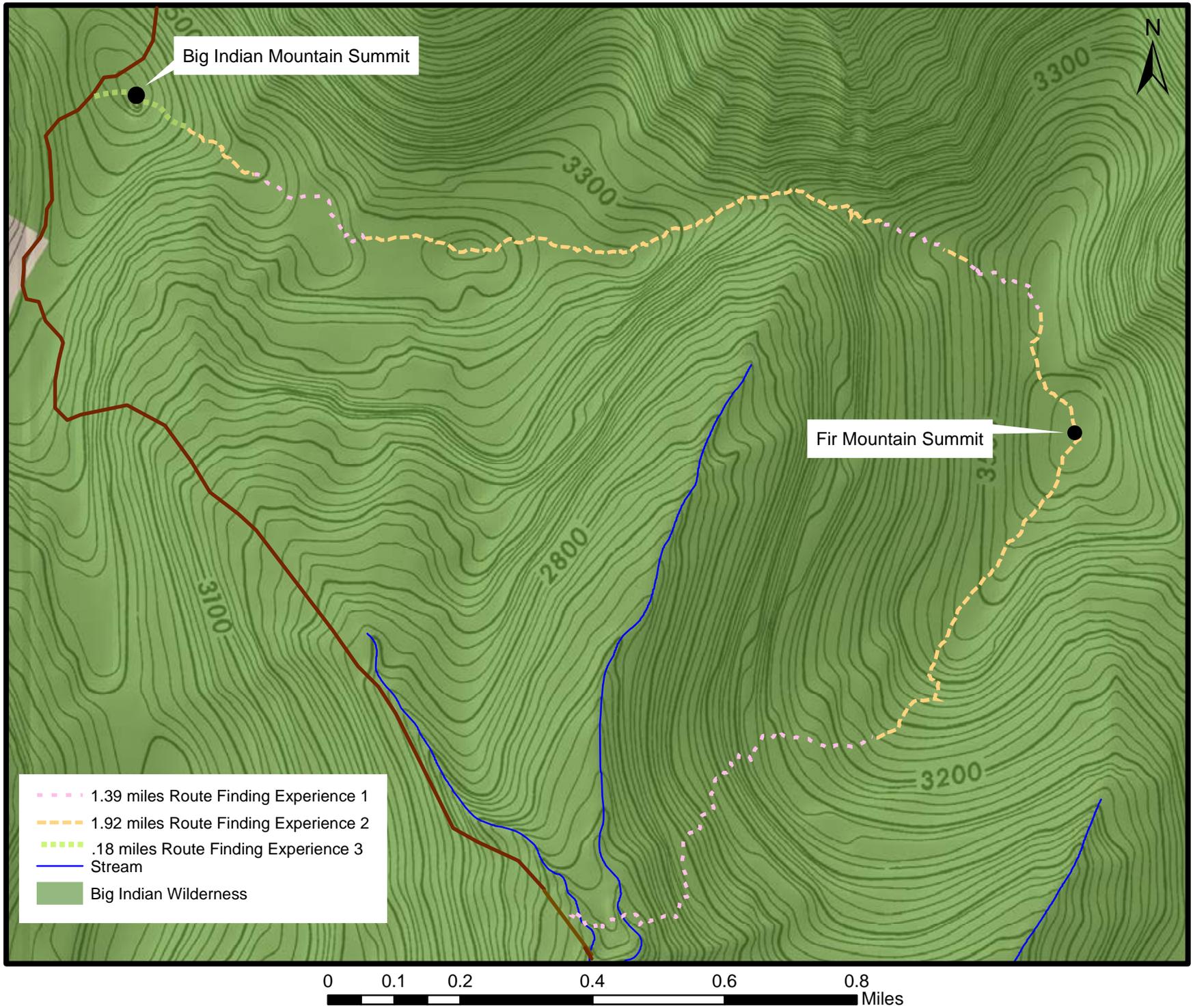
Big Indian and Fir Trail Condition Classes



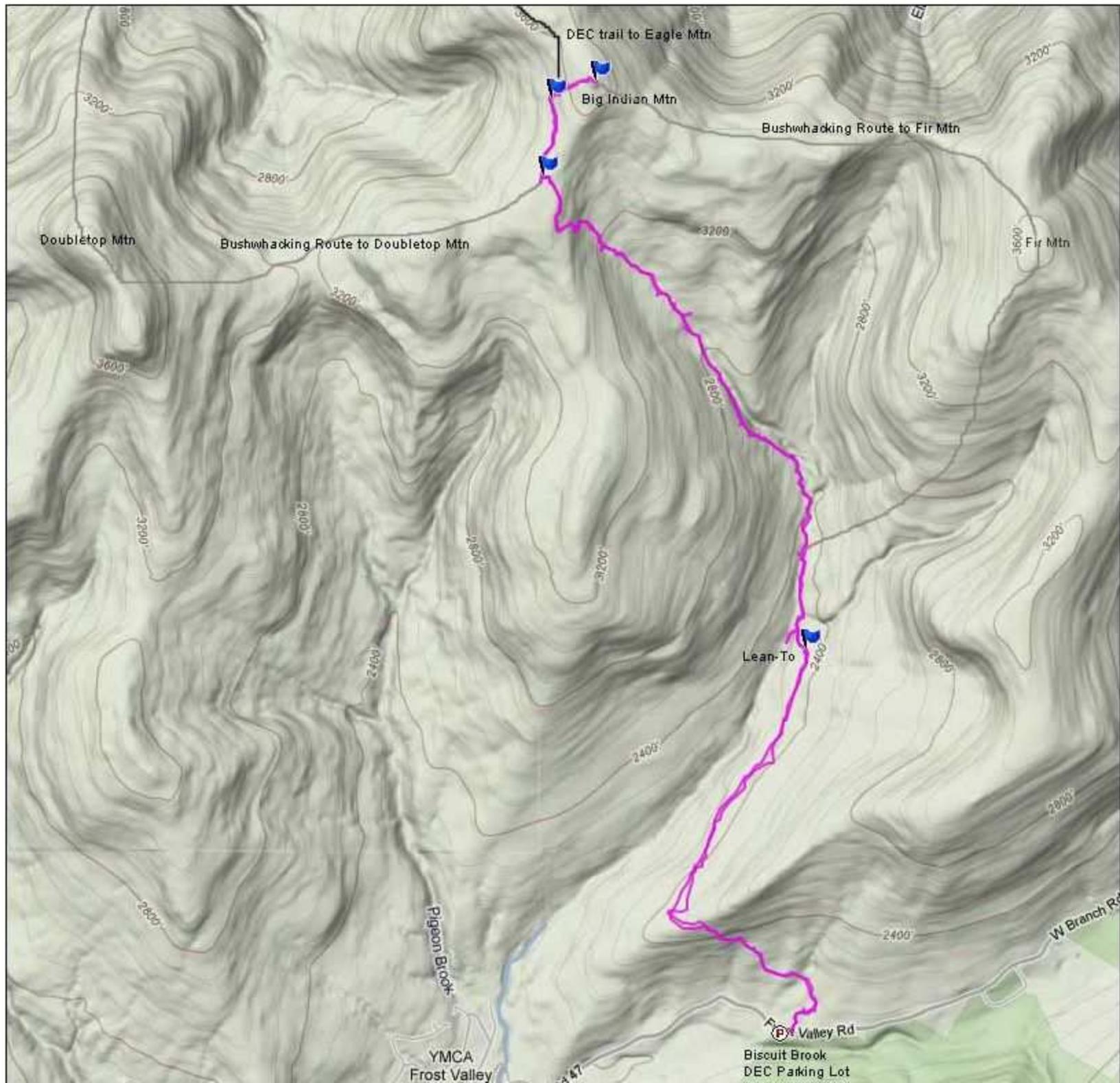
Global Heatmap

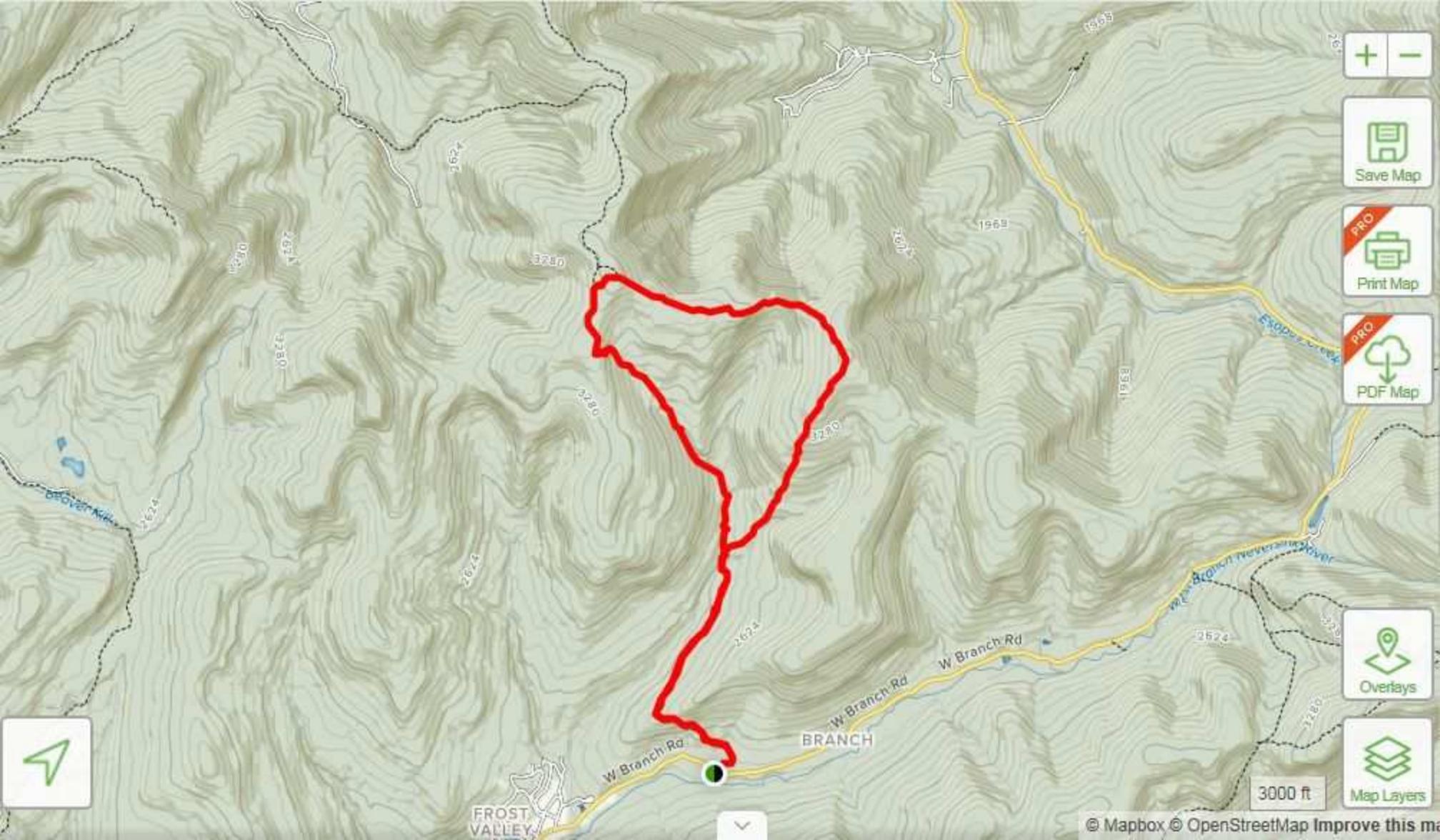


Big Indian and Fir Route Finding Experience



Maps, Profile, and GPS files





3000 ft

FROST VALLEY

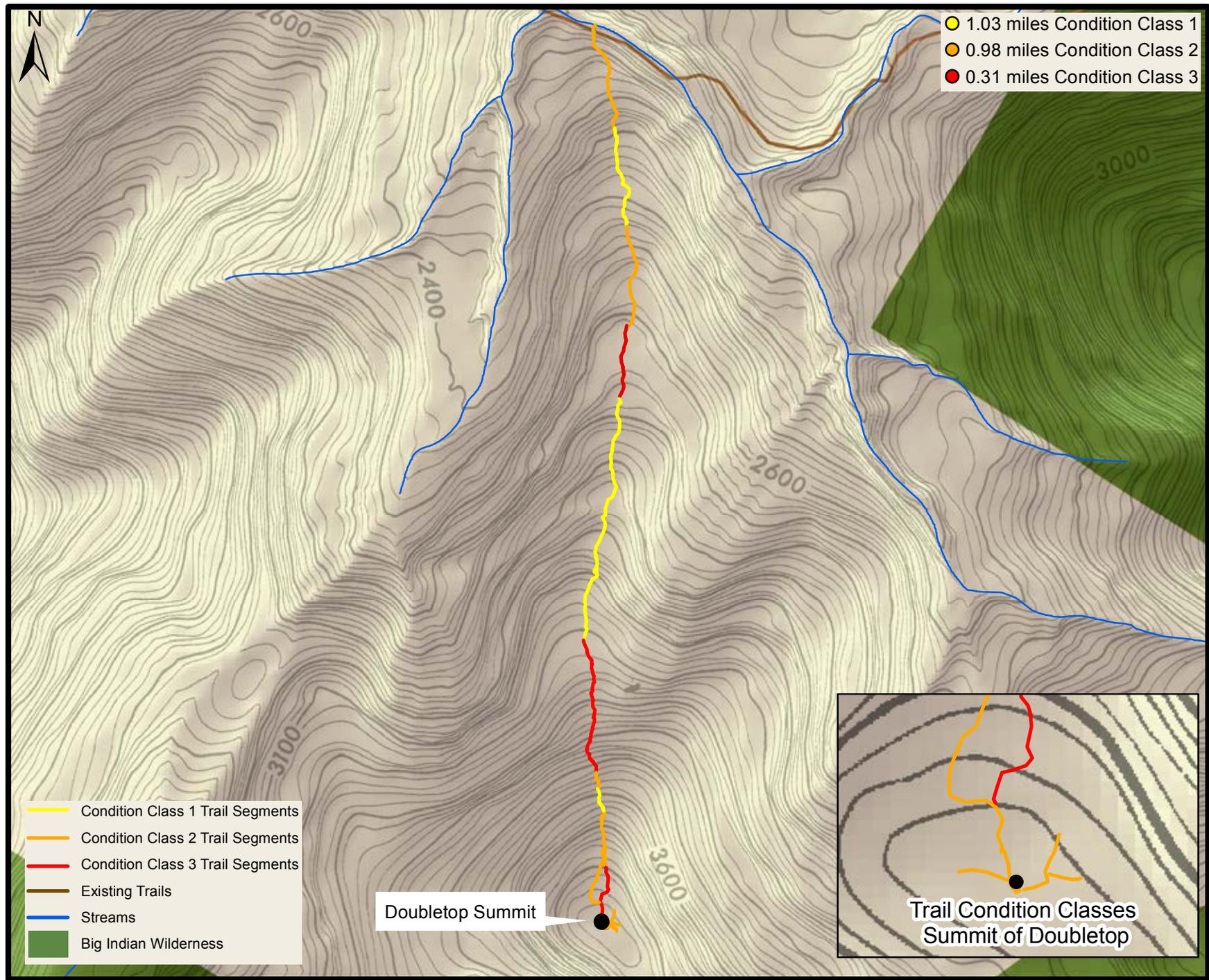
BRANCH

W Branch Rd

W Branch Rd

W Branch Rd

Doubletop Trail Condition Classes



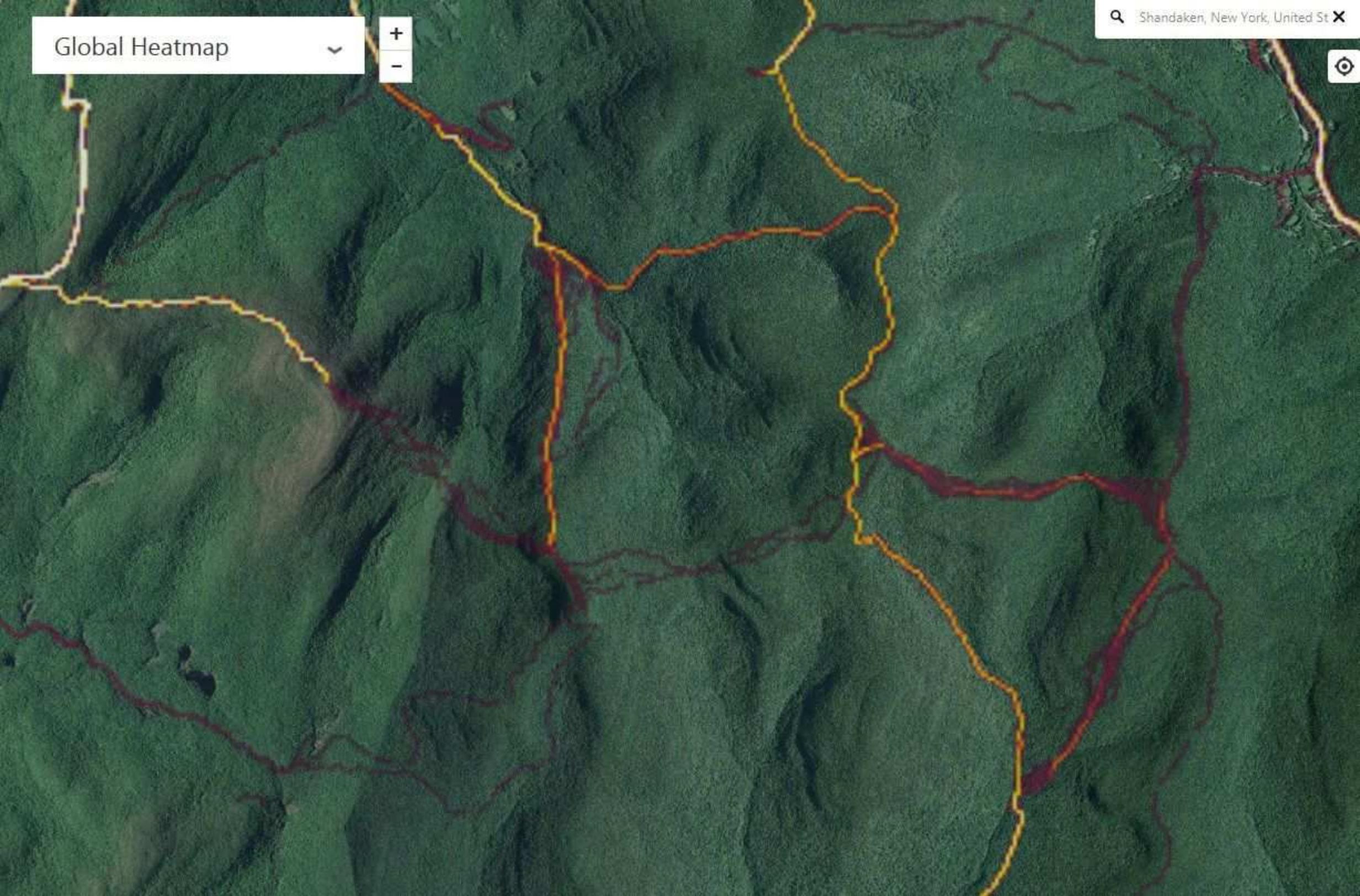
Doubletop Summit



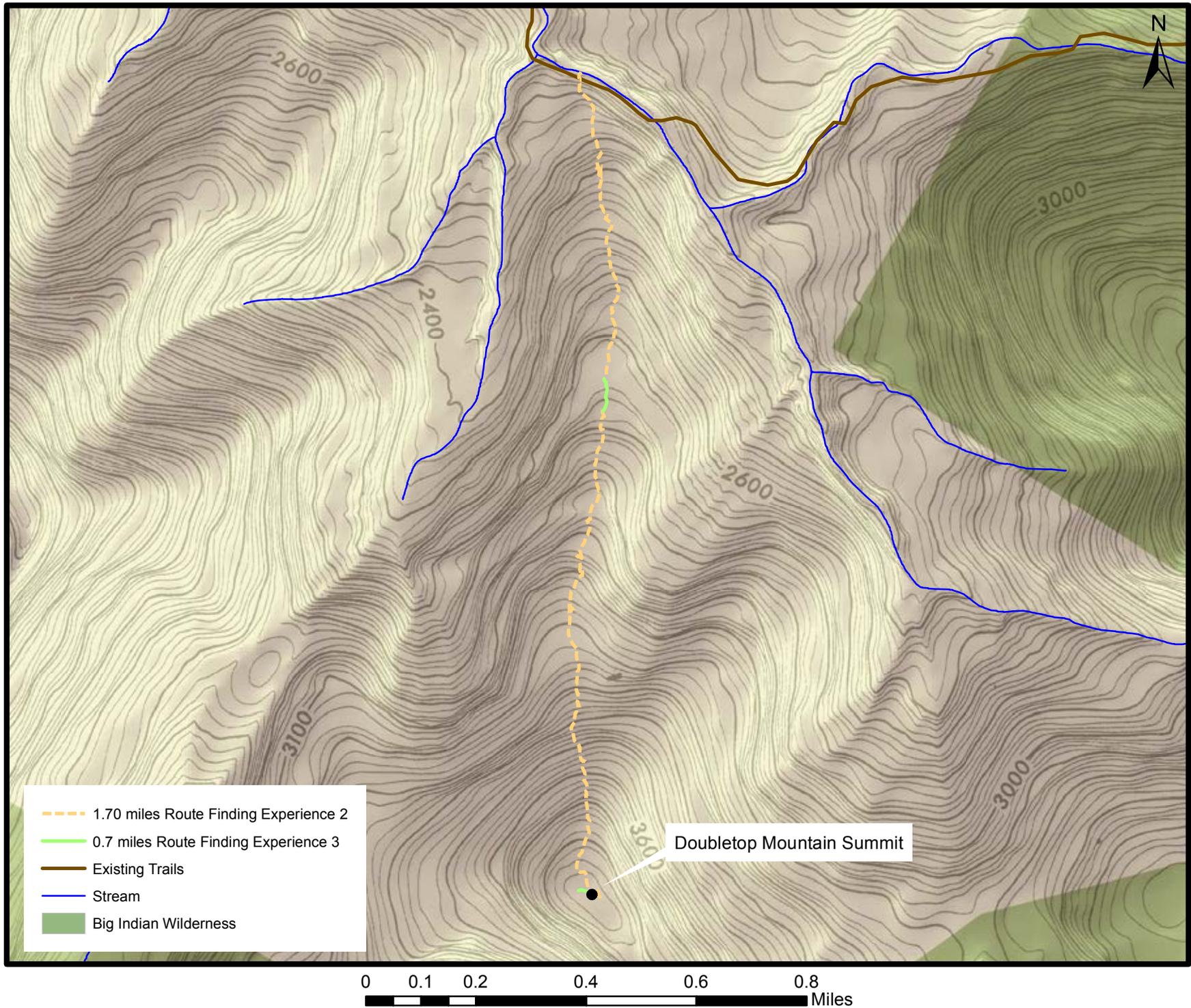
Global Heatmap



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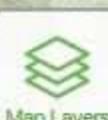
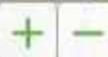
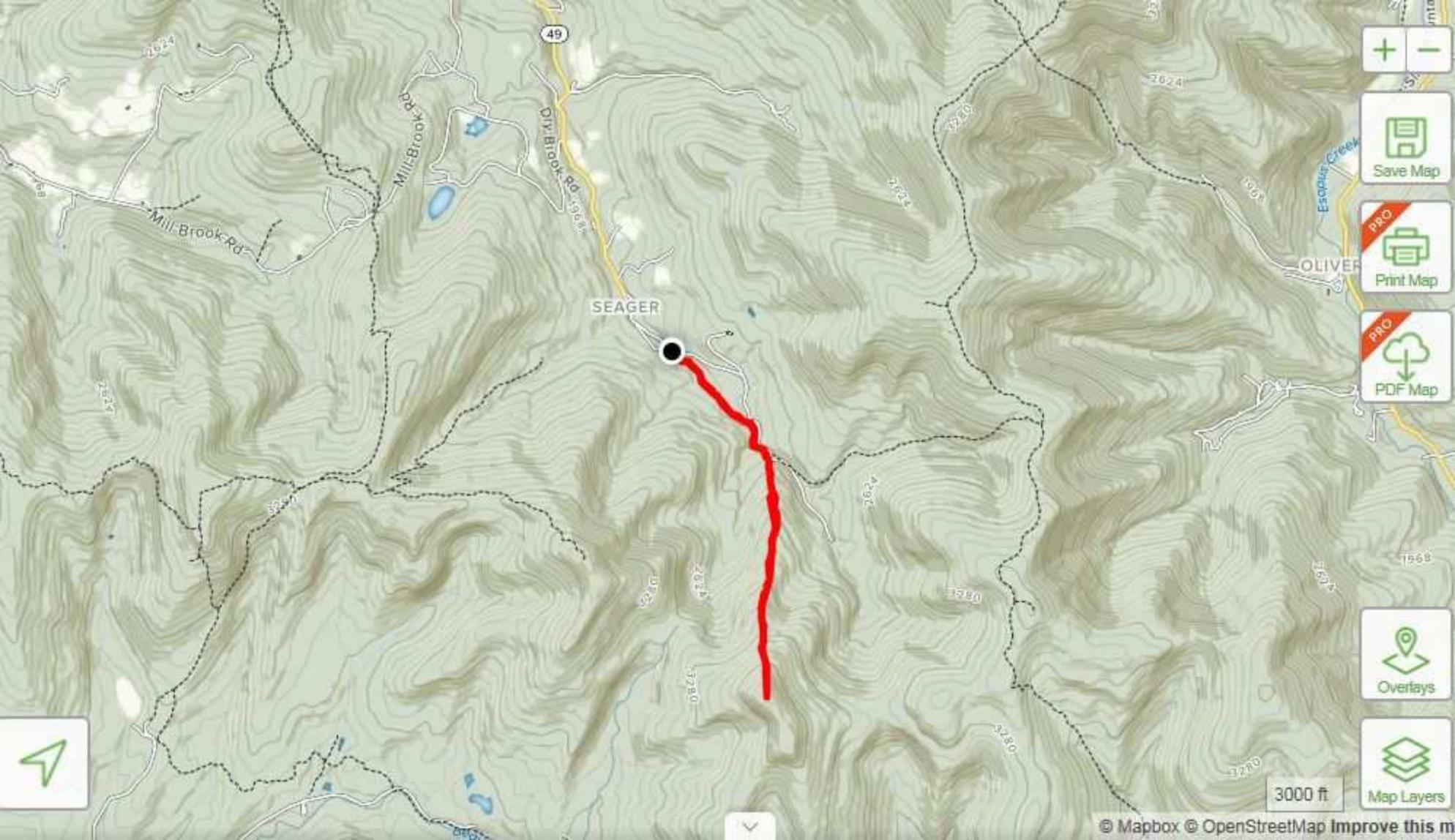


Doubletop Route Finding Experience

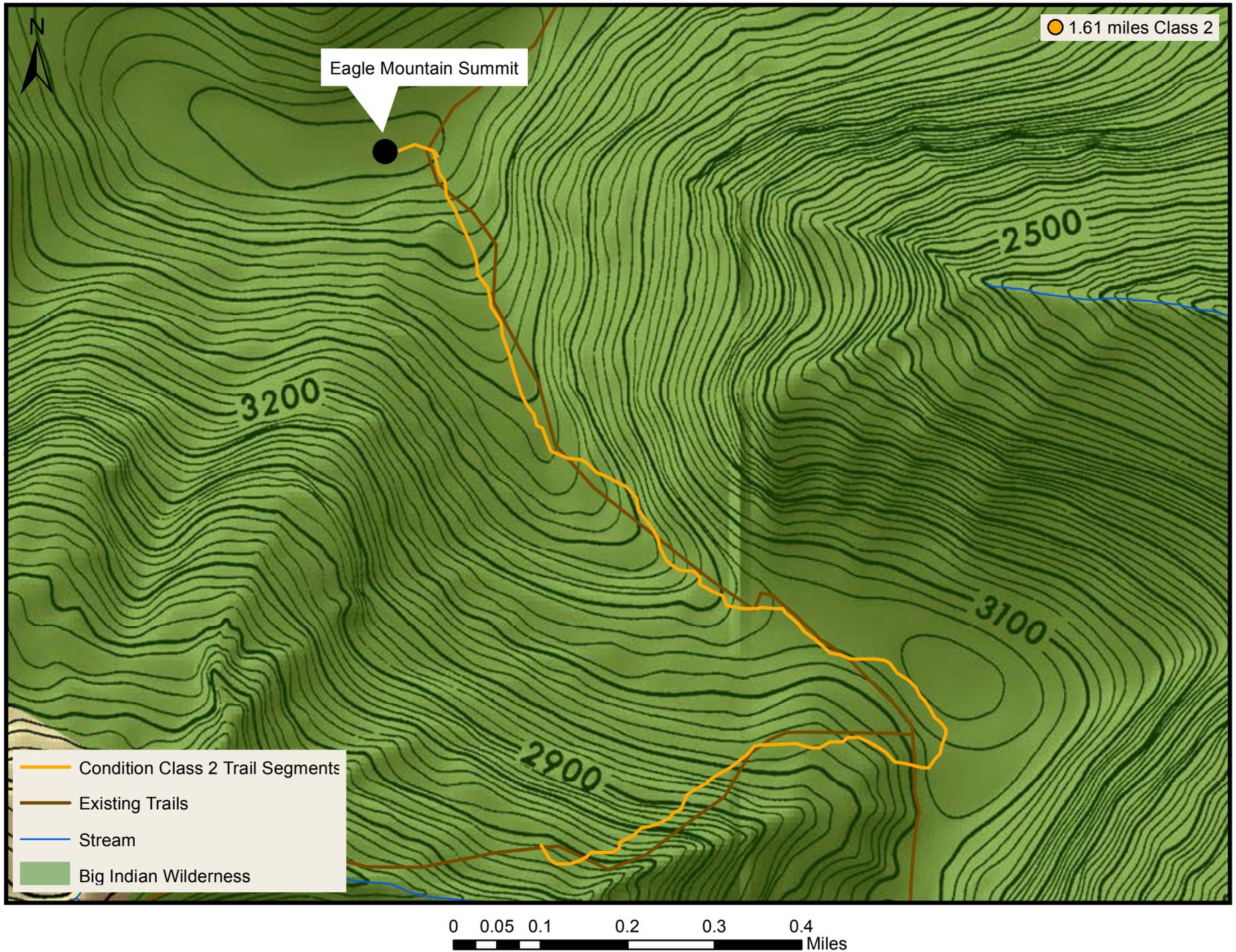


Maps, Profile, and GPS files



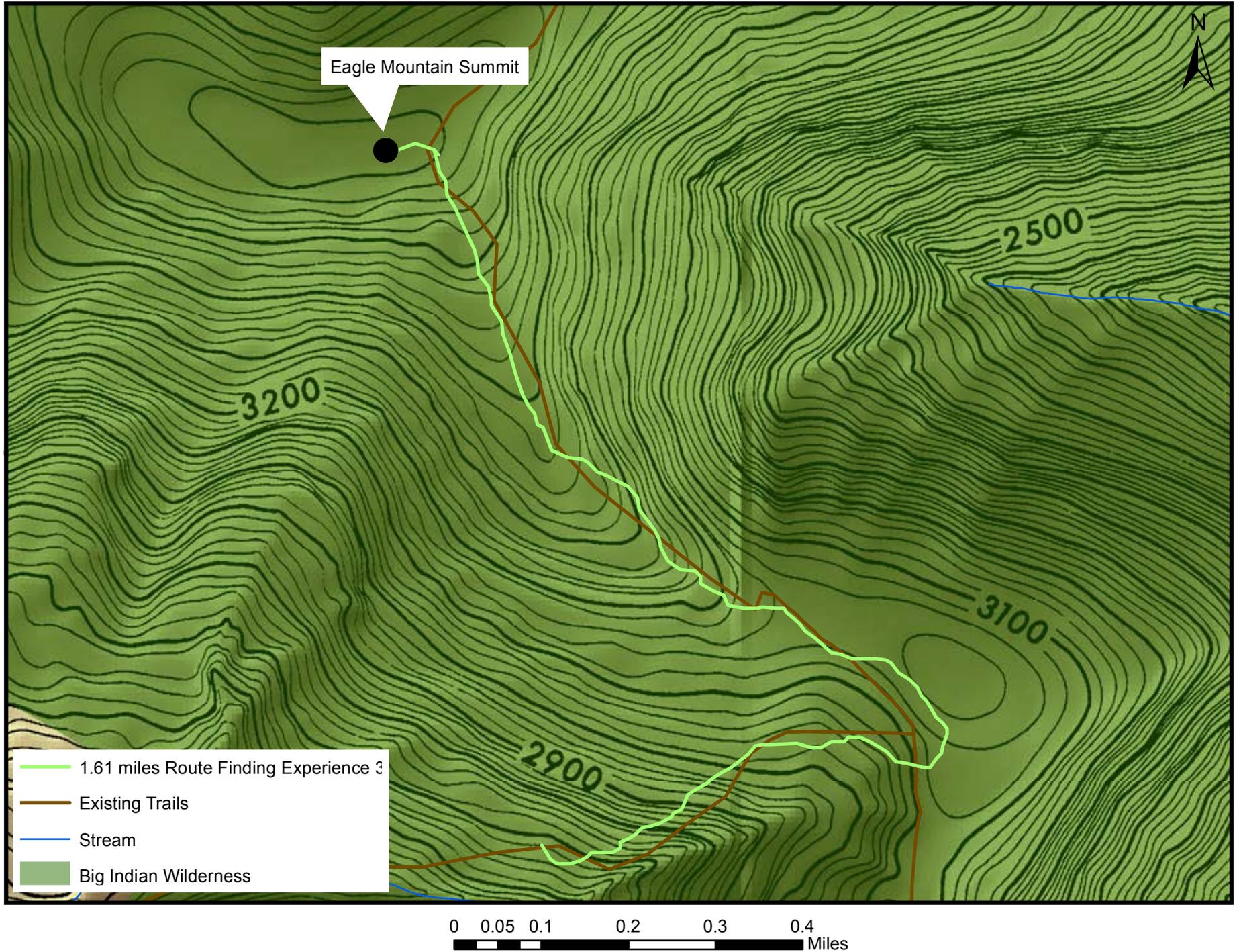


Eagle Trail Condition Classes



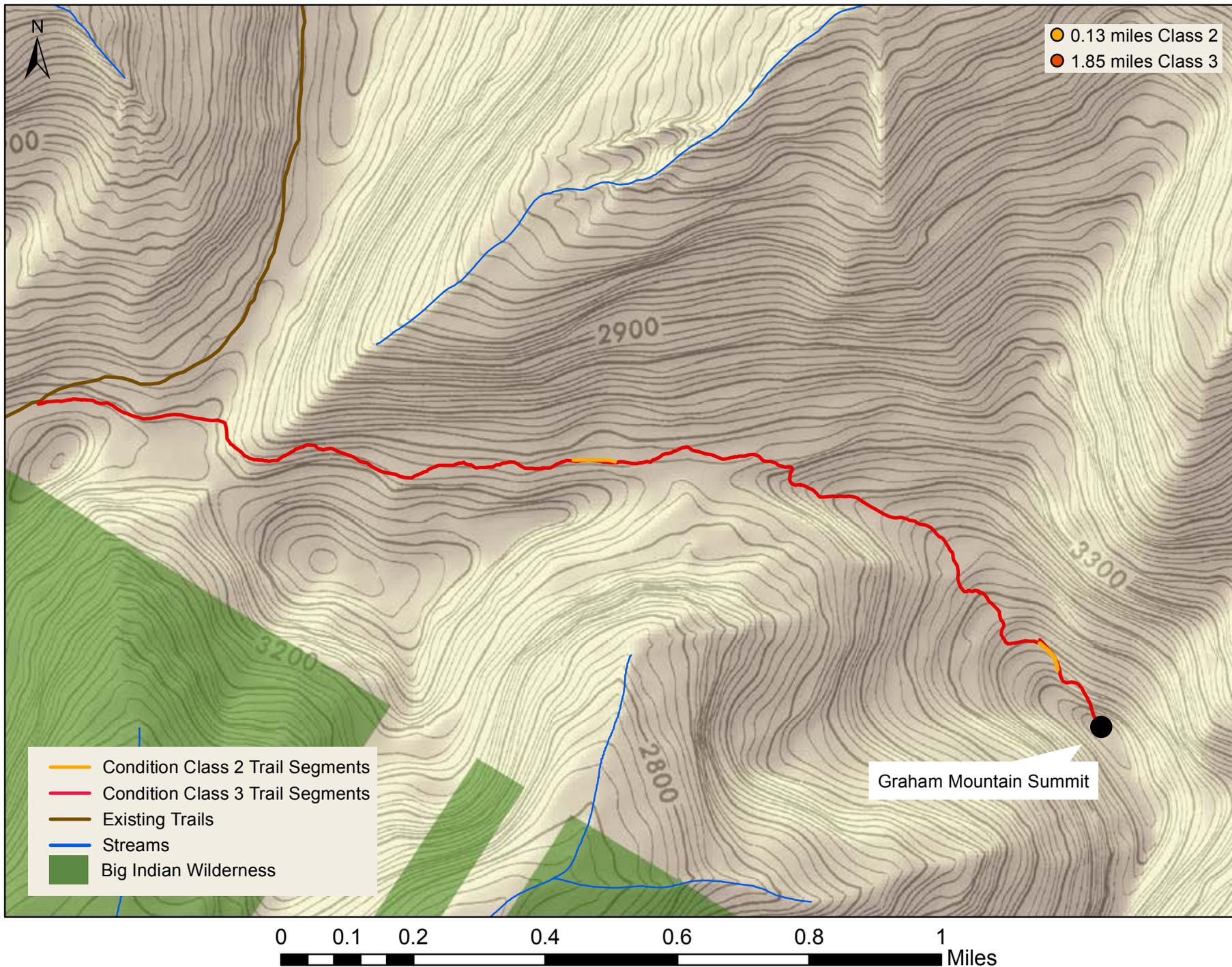


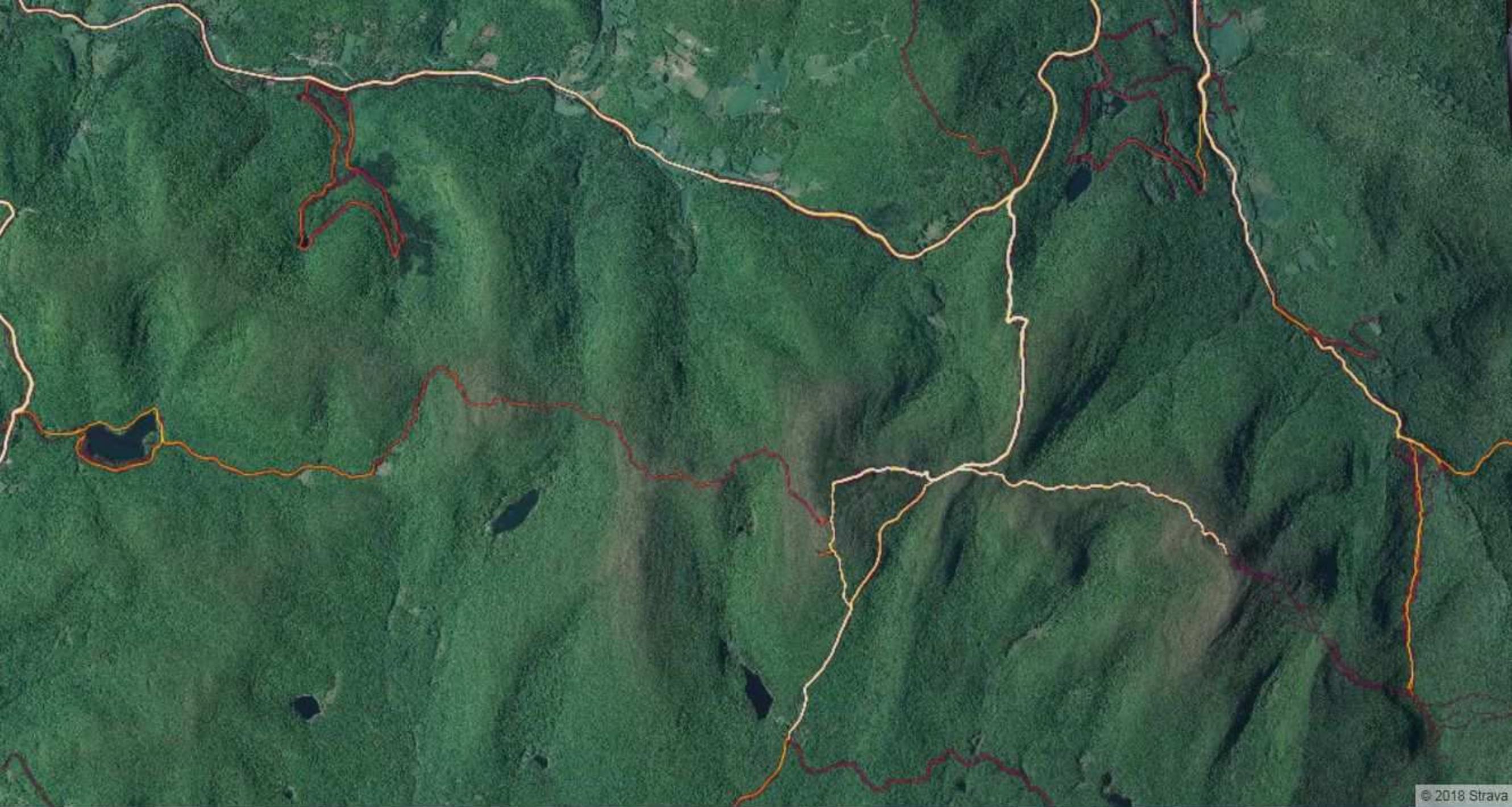
Eagle Route Finding Experience



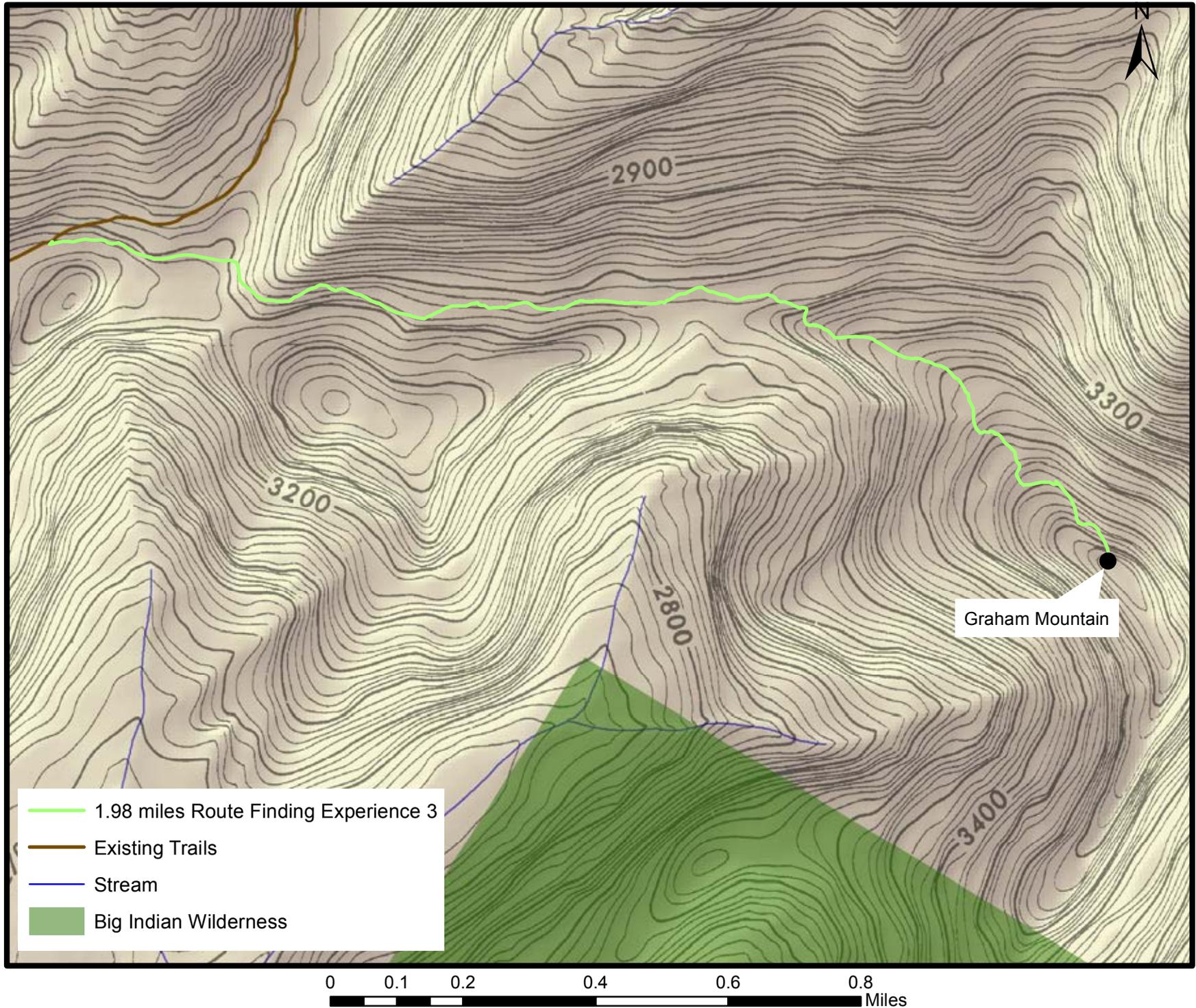


Graham Trail Condition Classes

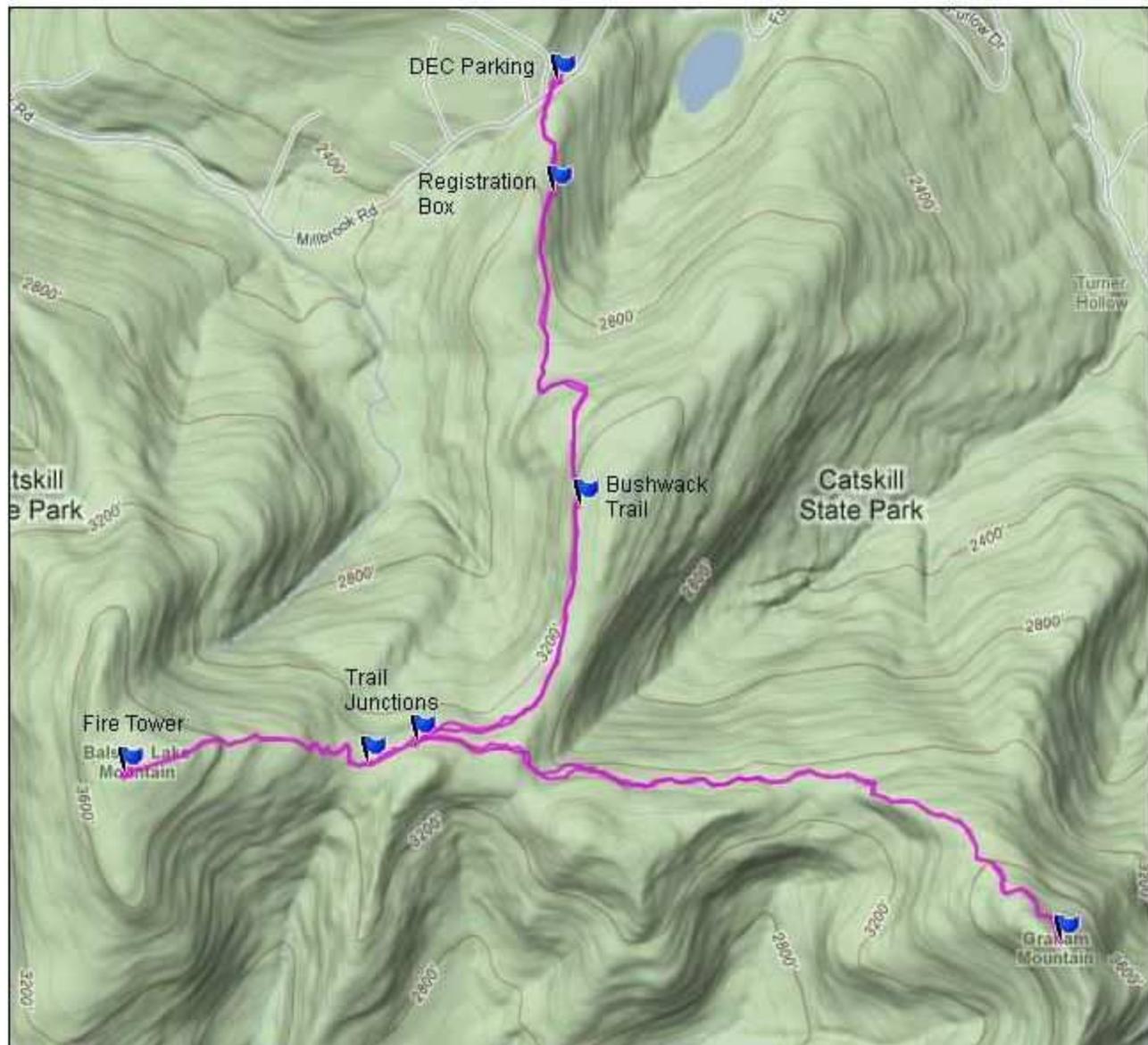




Graham Route Finding Experience

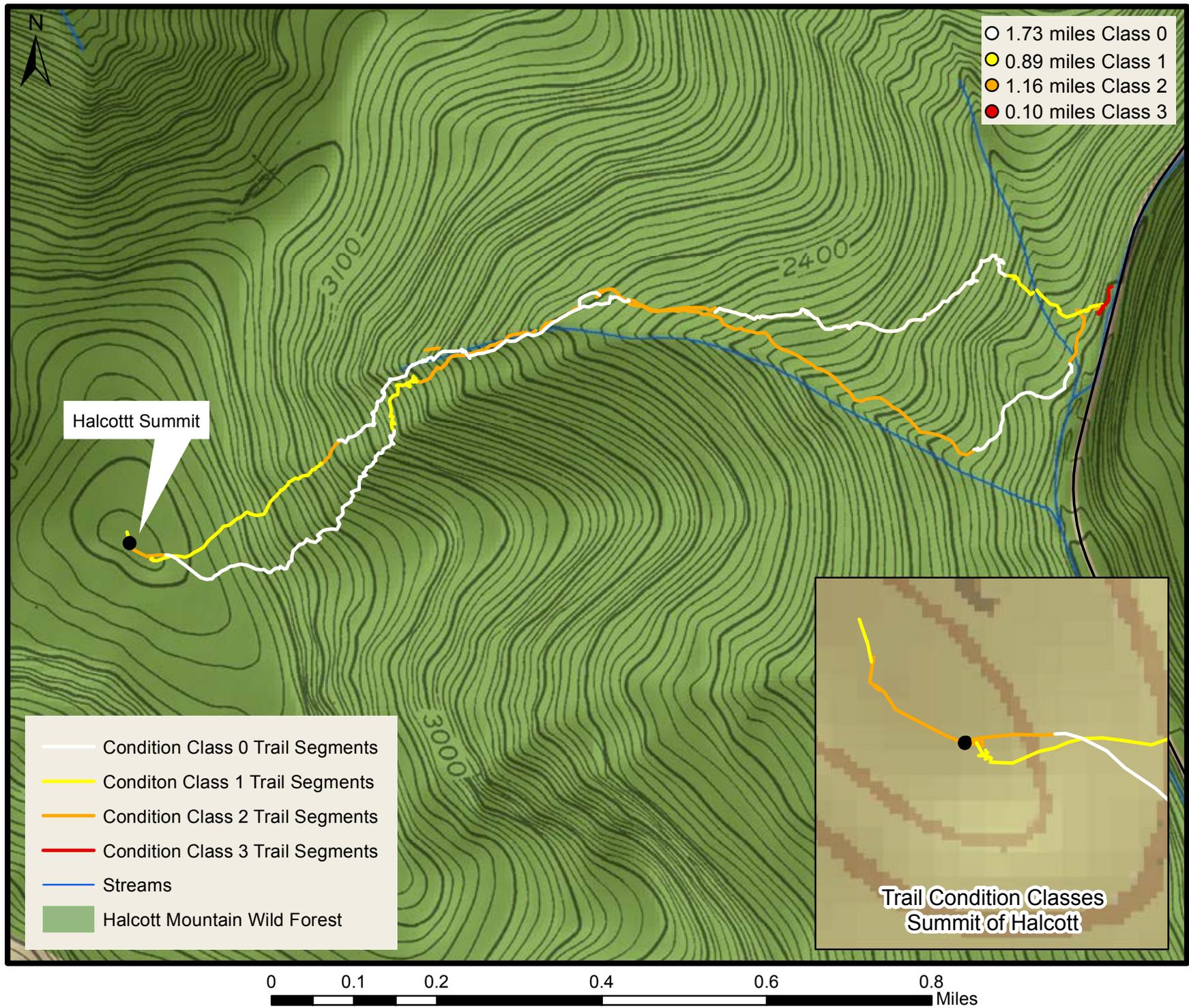


Maps, Profile, and GPS files



Graham Mtn & Balsam Lake Mtn Fire Tower

Halcott Trail Condition Classes



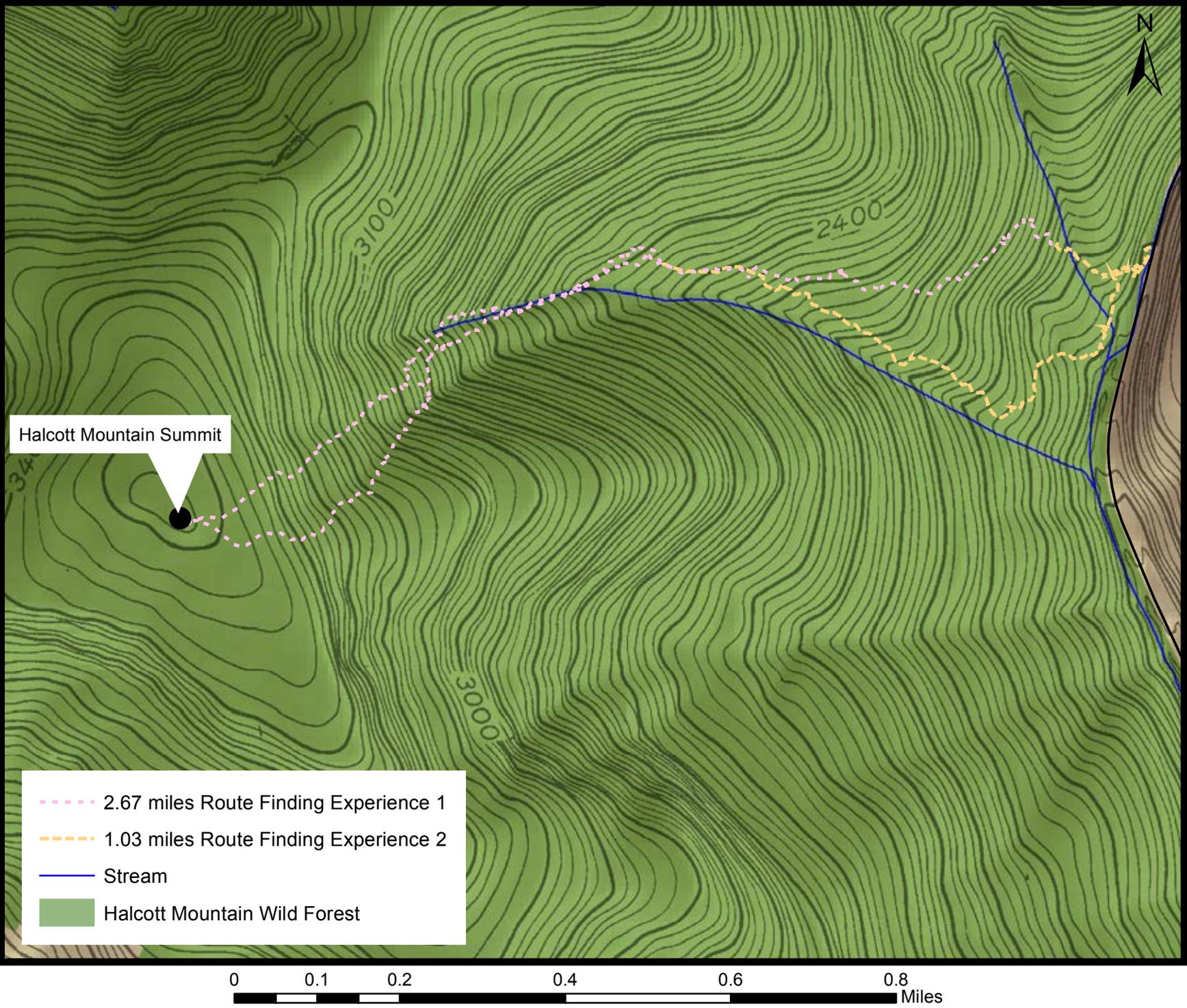
Global Heatmap



Median, New York, United Sta X



Halcott Route Finding Experience

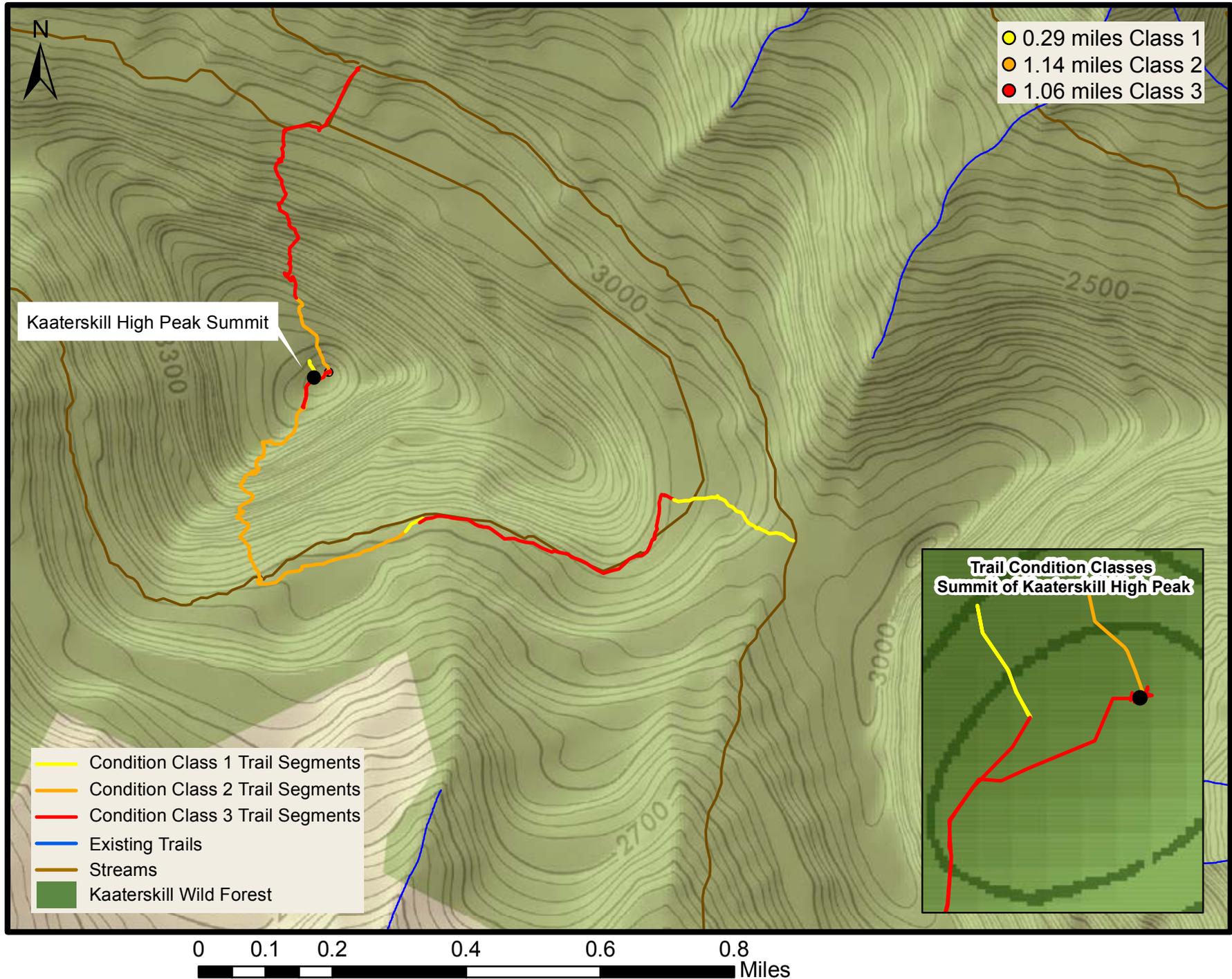


Map of Route to Halcott Mountain

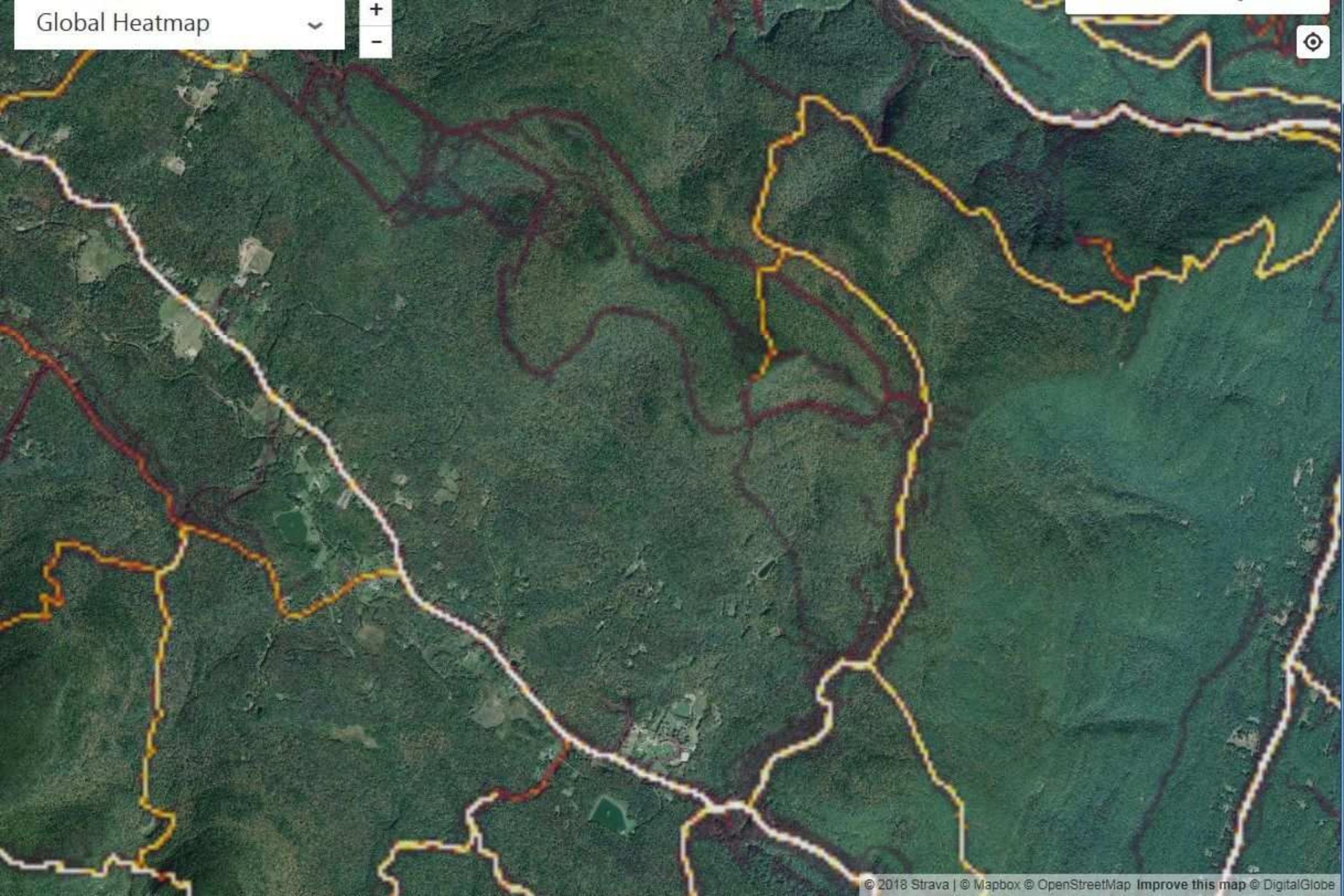




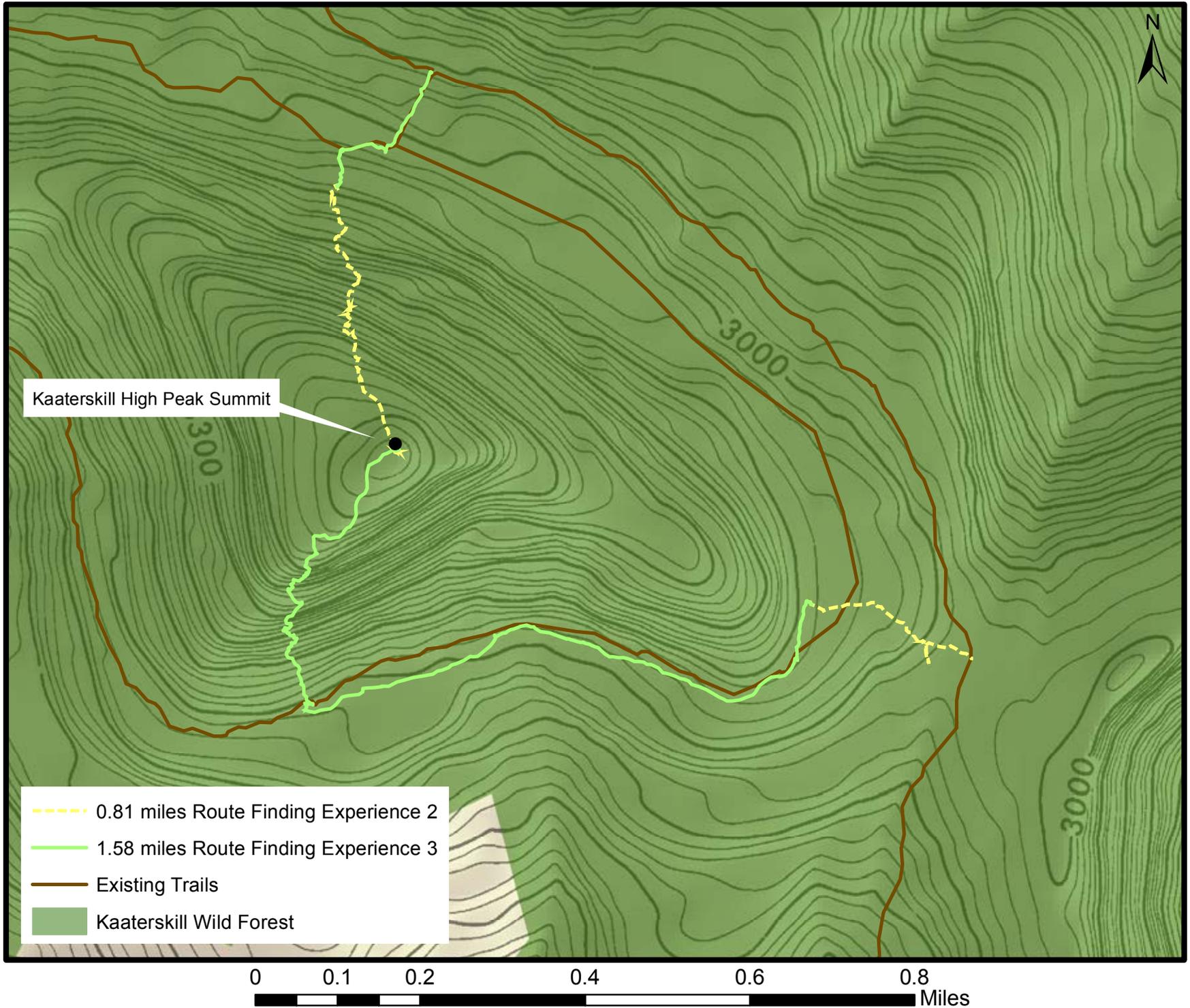
Kaaterskill High Peak Trail Condition Classes



Global Heatmap

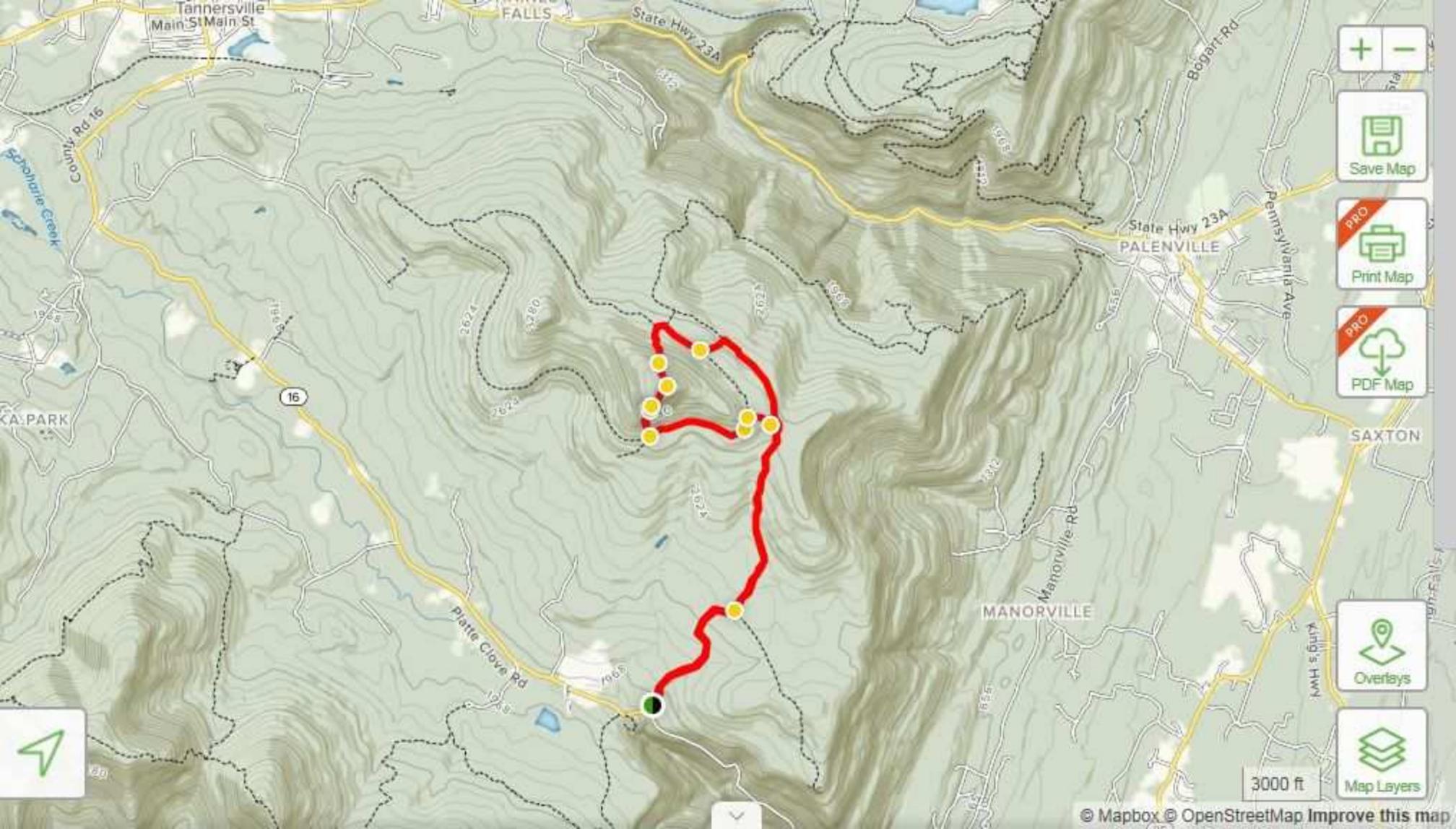


Kaaterskill High Peak Route Finding Experience



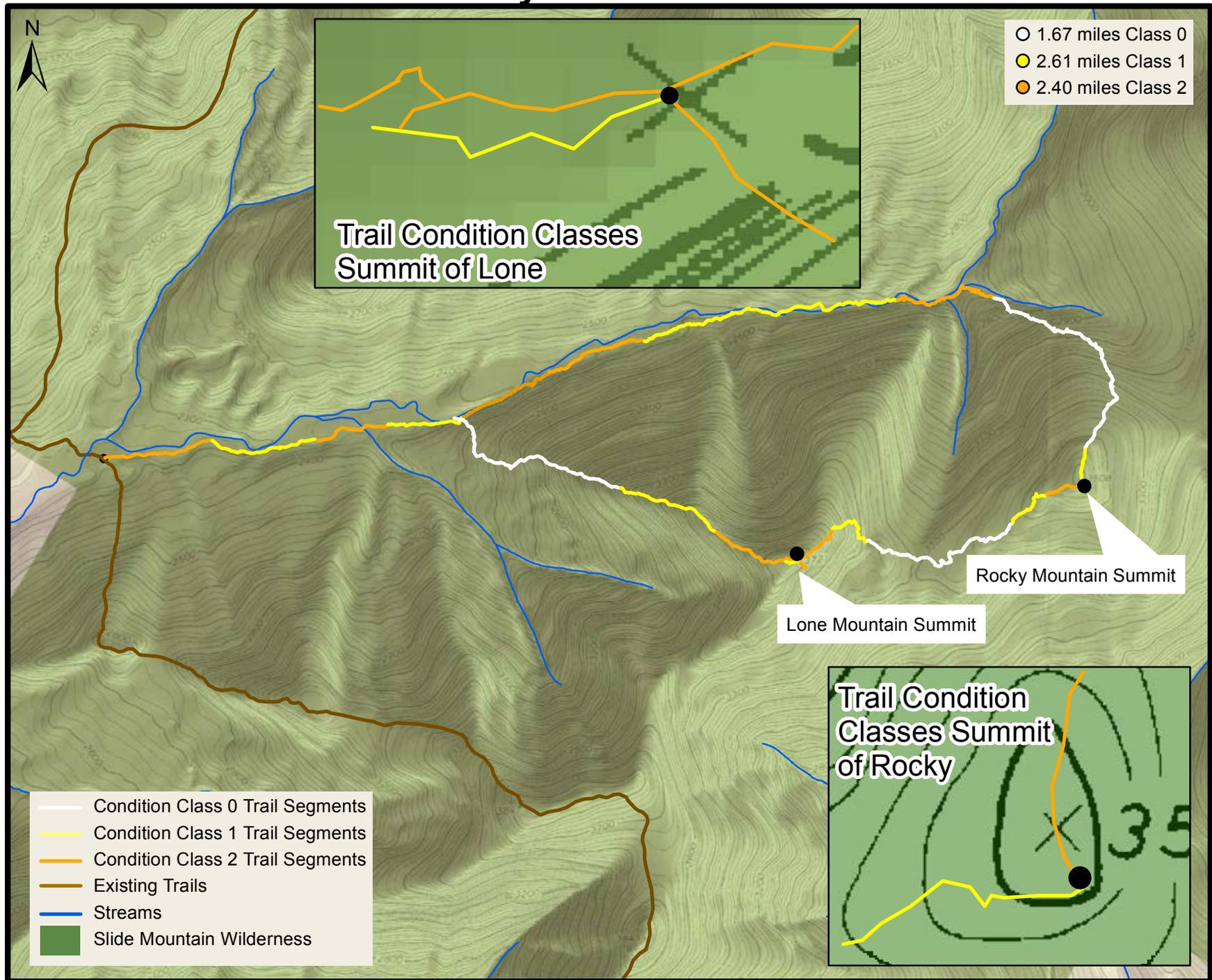


Kaaterskill High Peak (North Access)

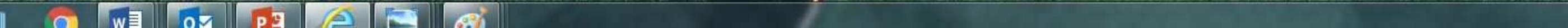
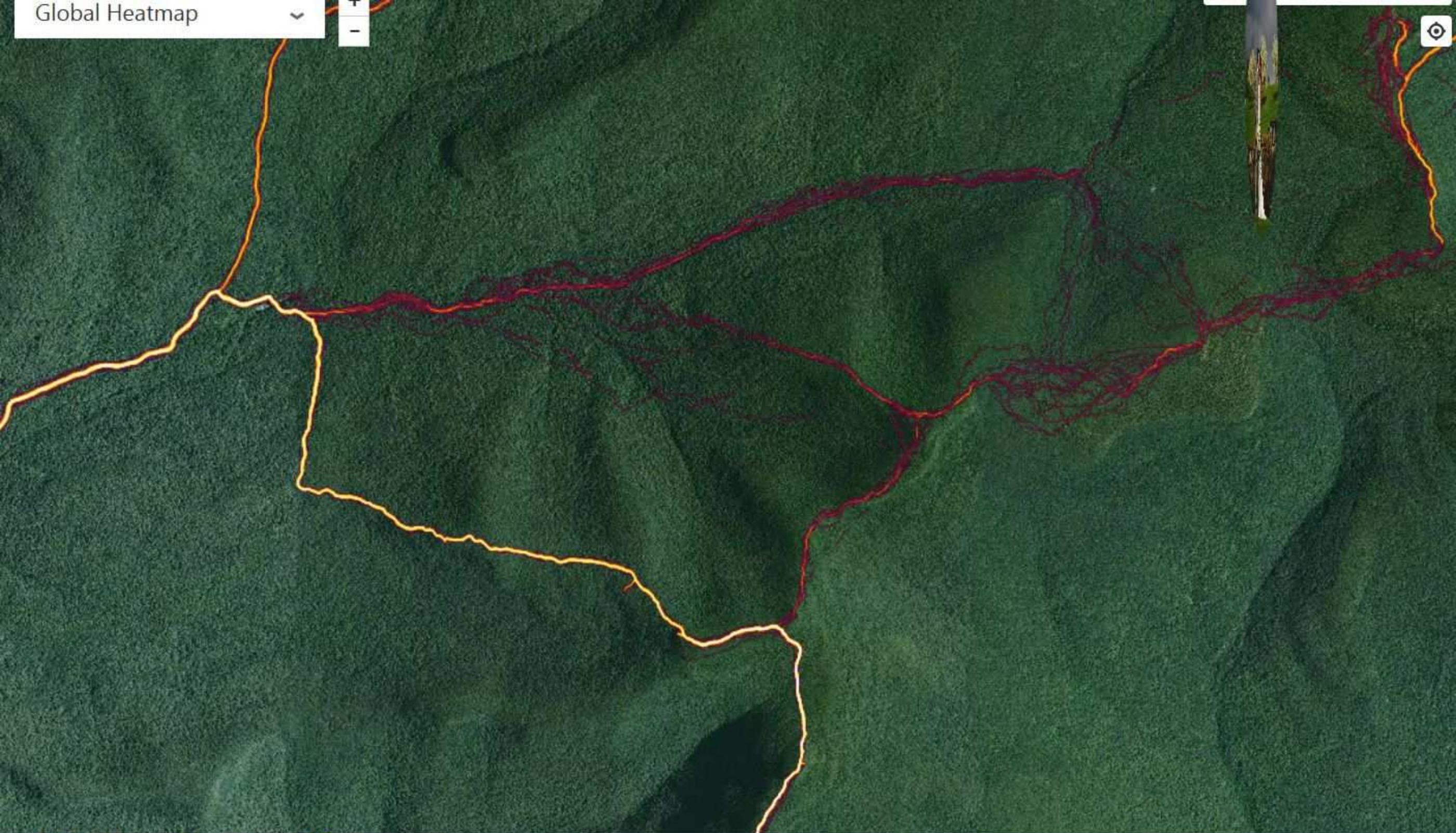


3000 ft

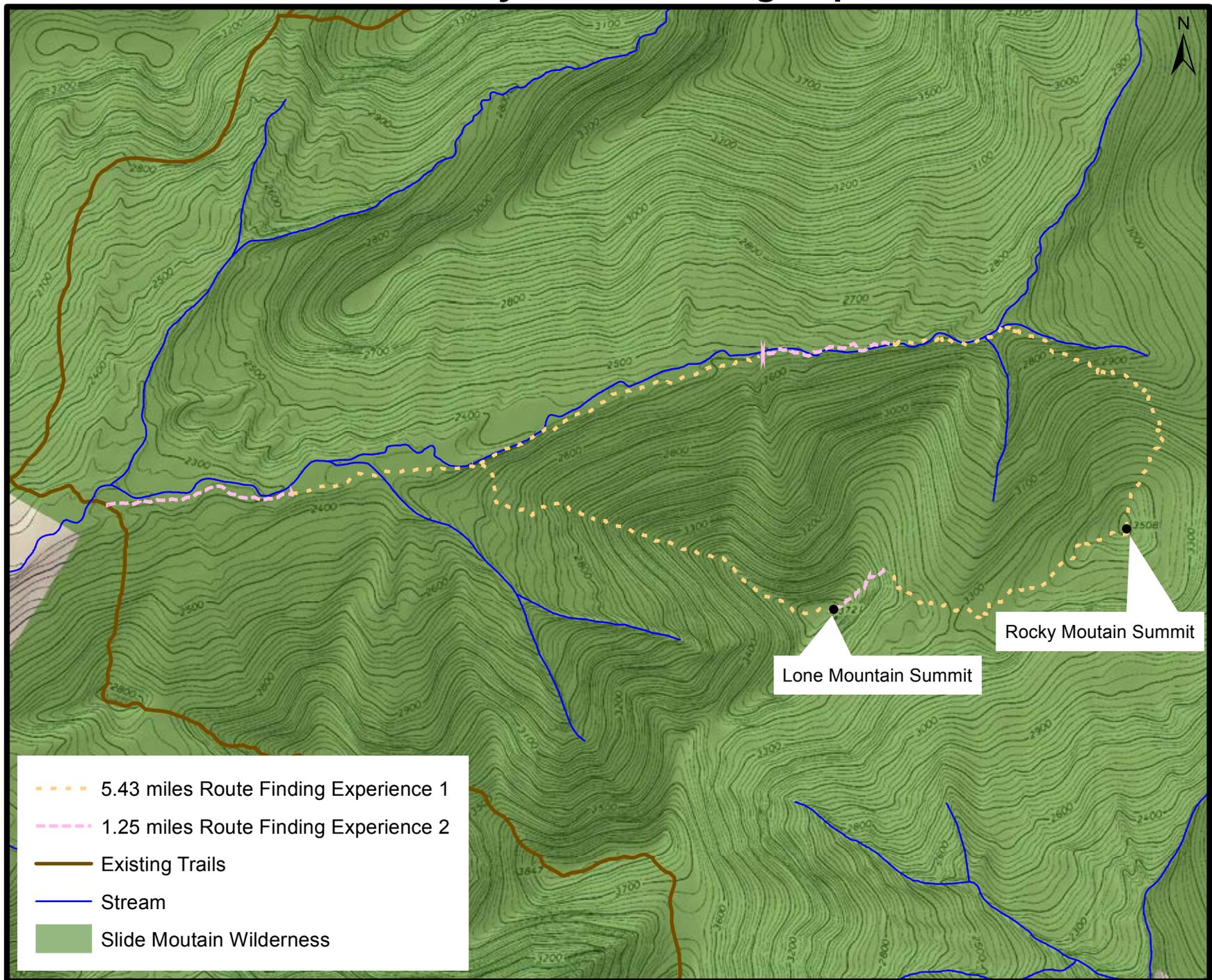
Lone and Rocky Trail Condition Classes



Global Heatmap

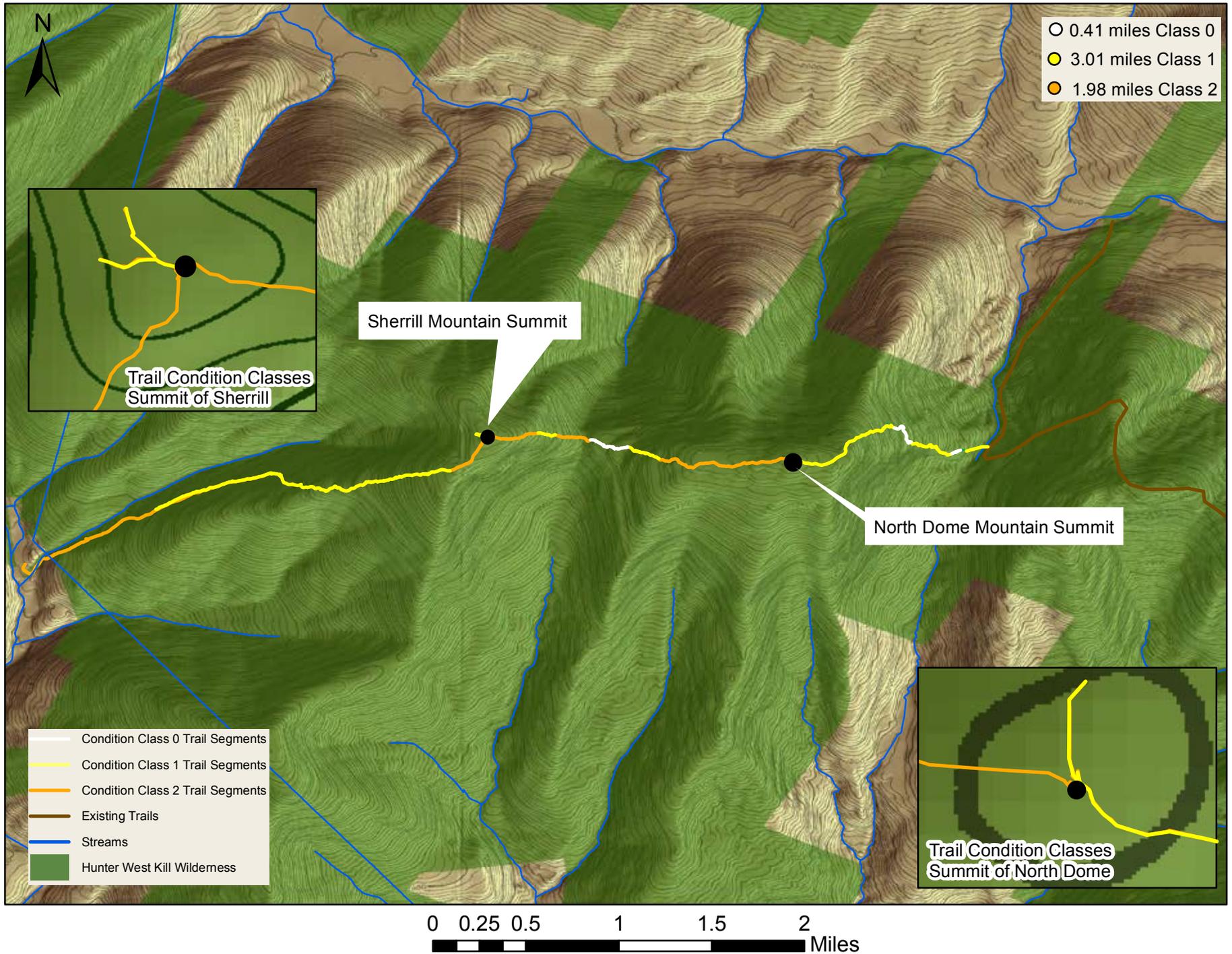


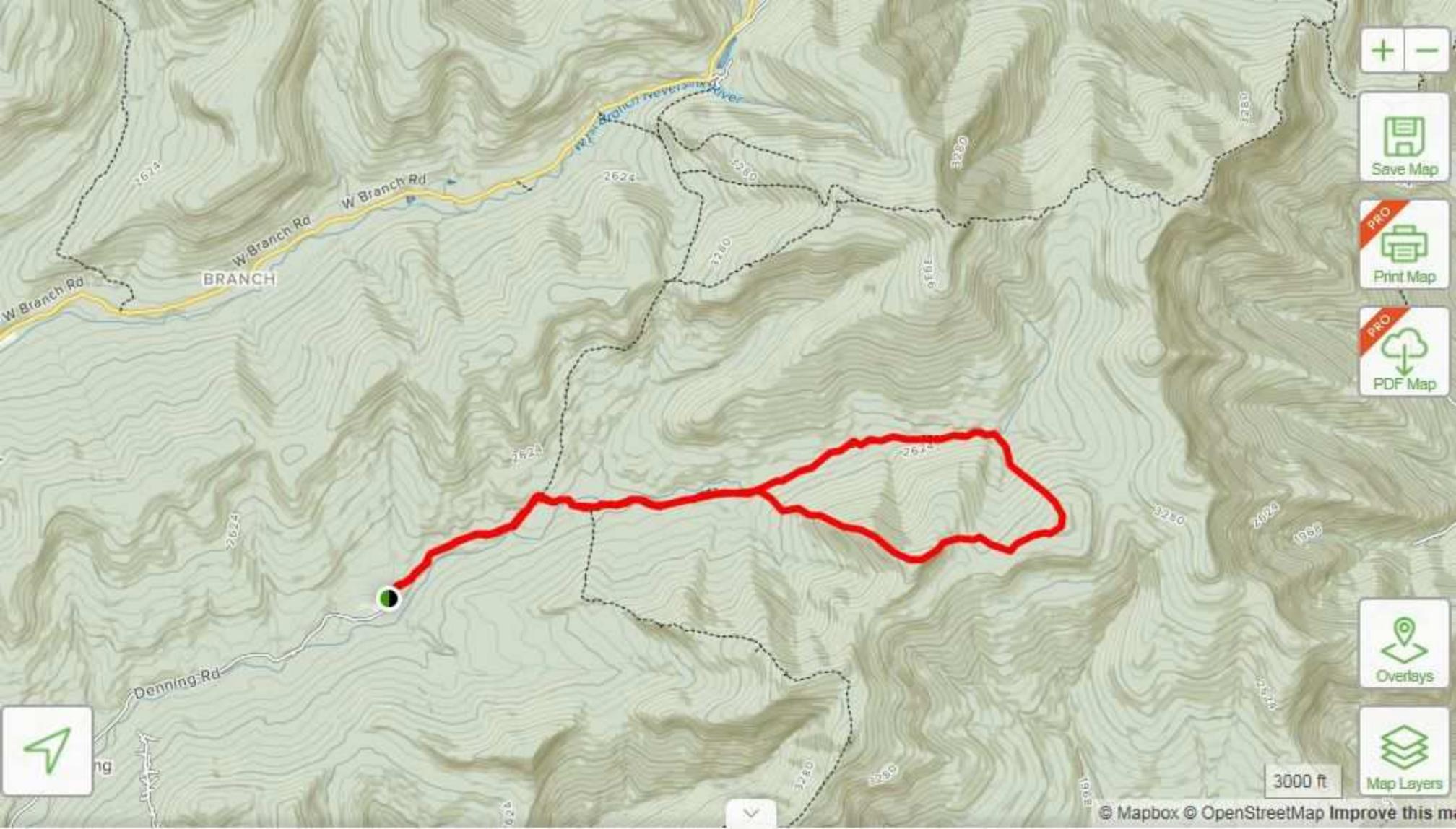
Lone and Rocky Route Finding Experience



0 0.25 0.5 1 1.5 2 Miles

North Dome and Sherrill Trail Condition Classes



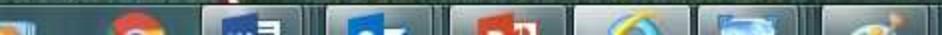
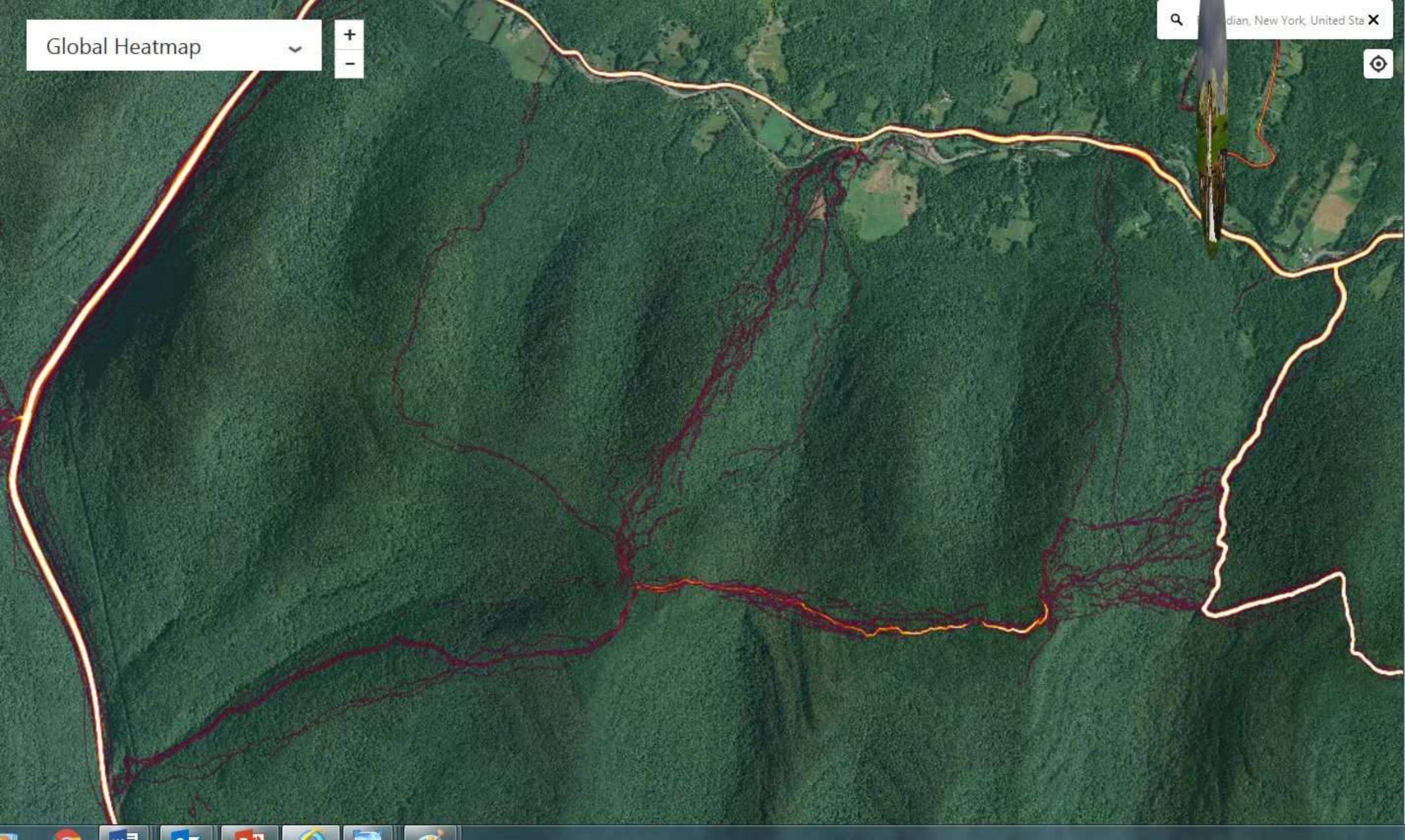


3000 ft

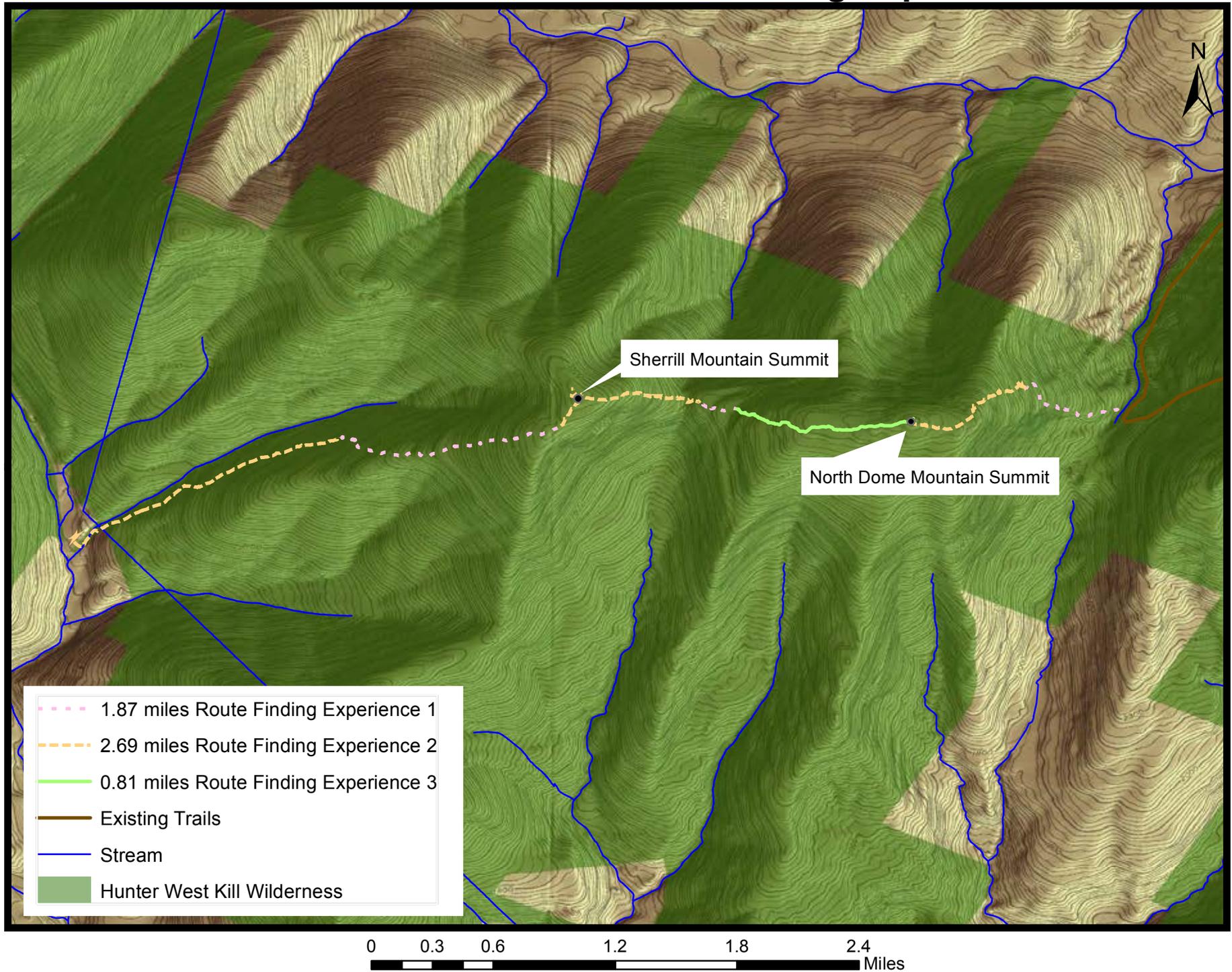
Global Heatmap



Search [Location] X

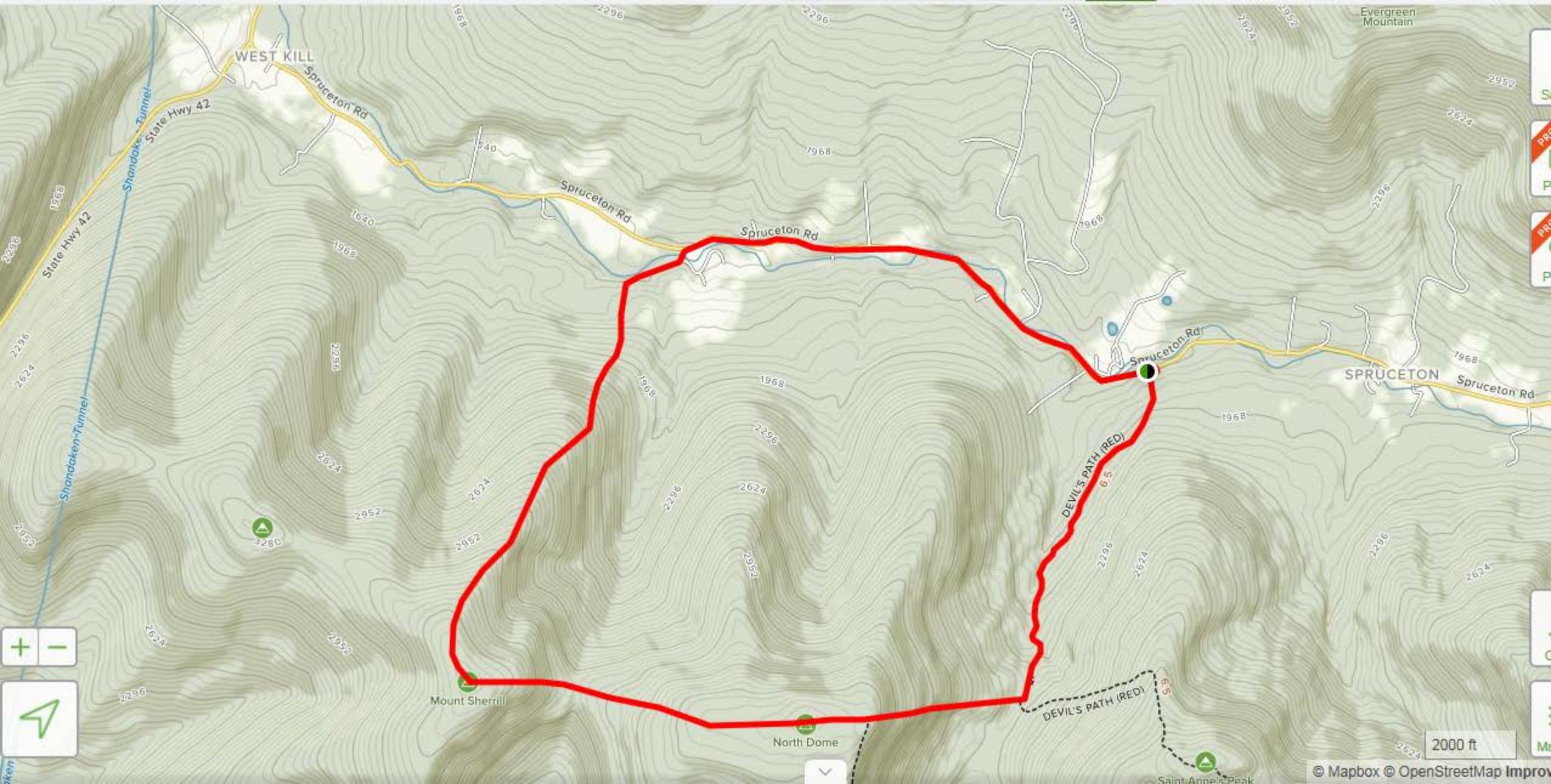


North Dome and Sherrill Route Finding Experience



Map of Route to North Dome and Sherrill Mountain





WEST KILL

Spruce Knob Rd

State Hwy 42

Spruce Knob Rd

Spruce Knob Rd

Spruce Knob Rd

SPRUCETON

Spruce Knob Rd

3280

2952

Mount Sherrill

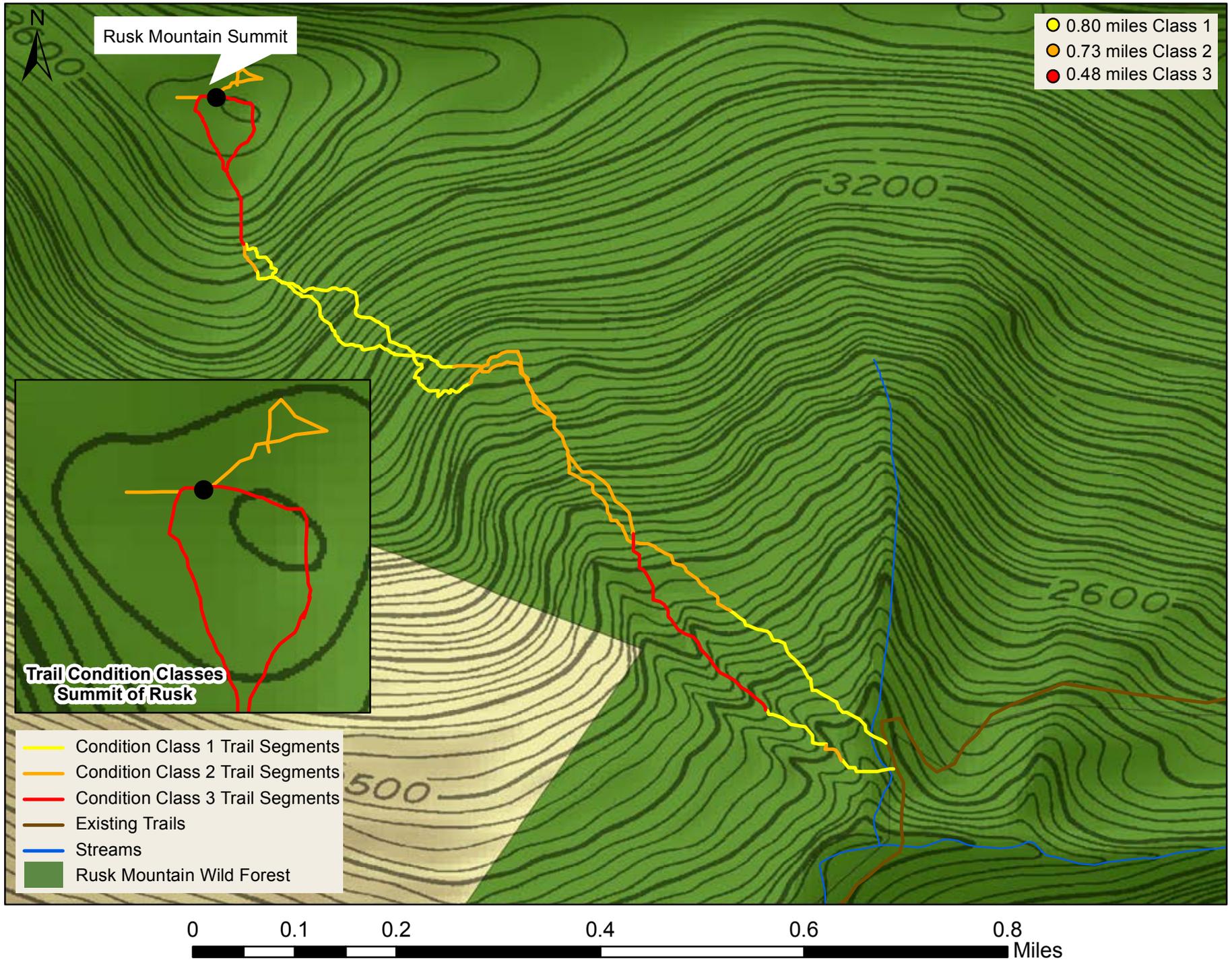
North Dome

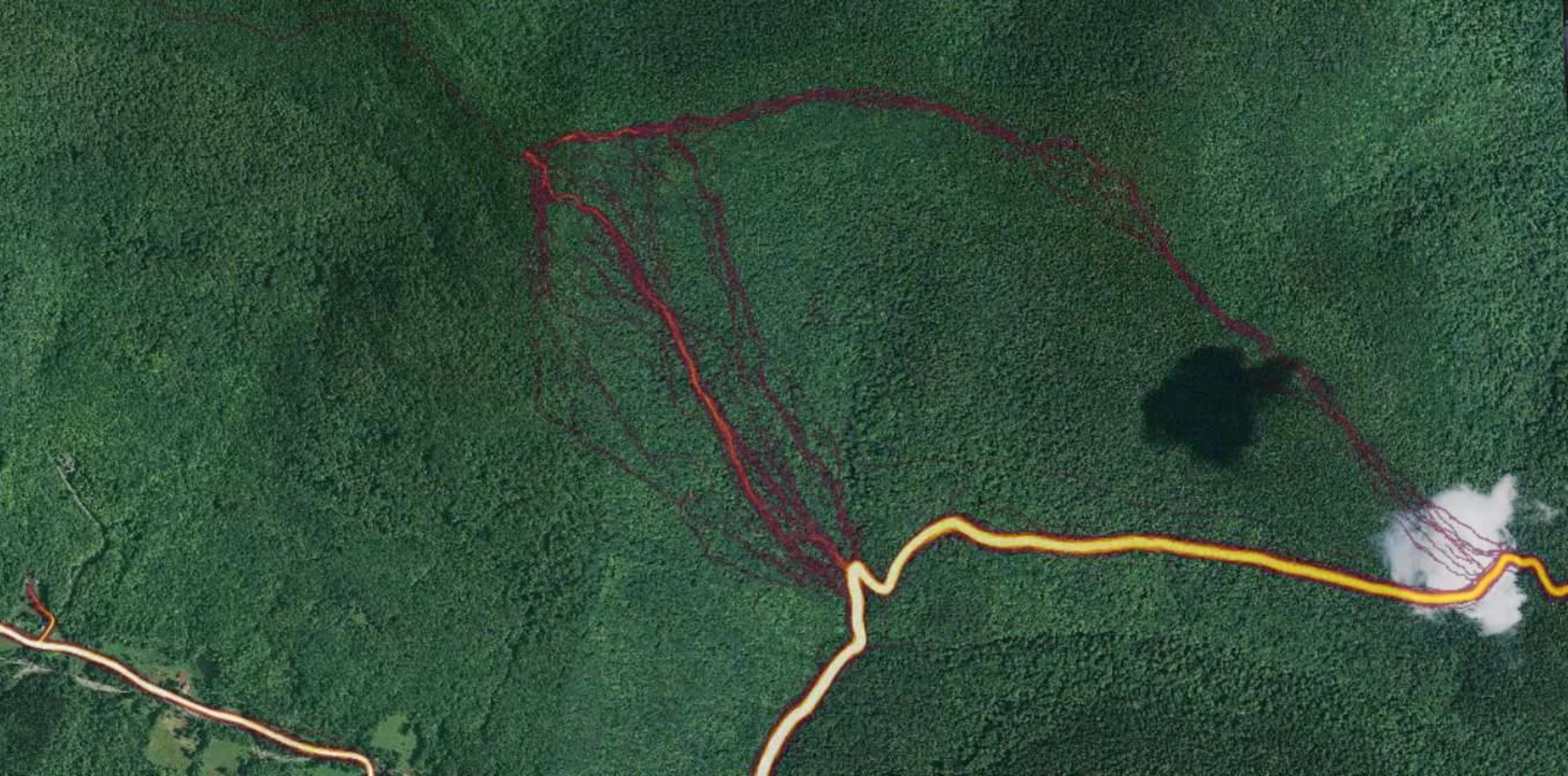
DEVIL'S PATH (RED)
5.9

Saint Anne's Peak

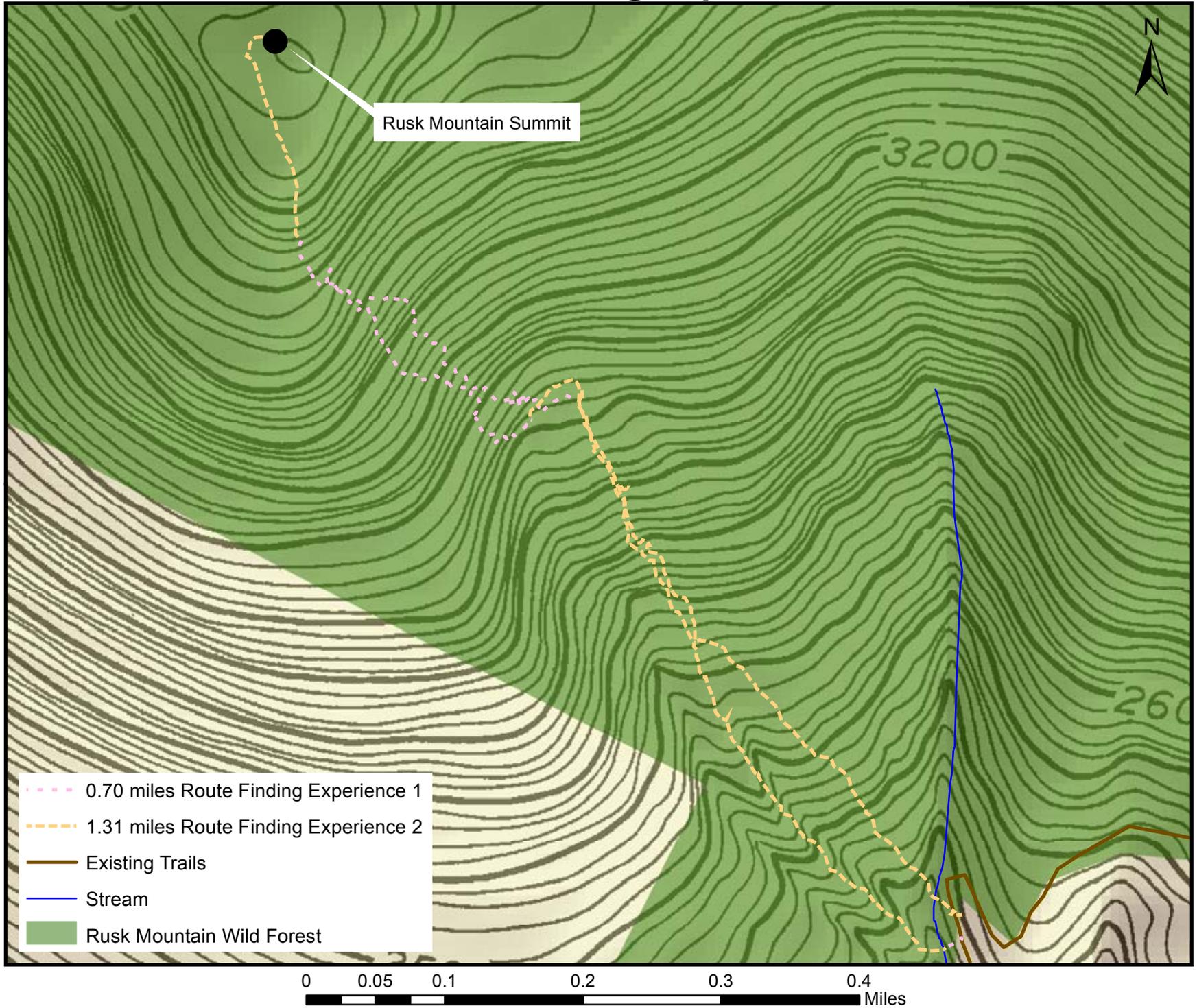
2000 ft

Rusk Trail Condition Classes

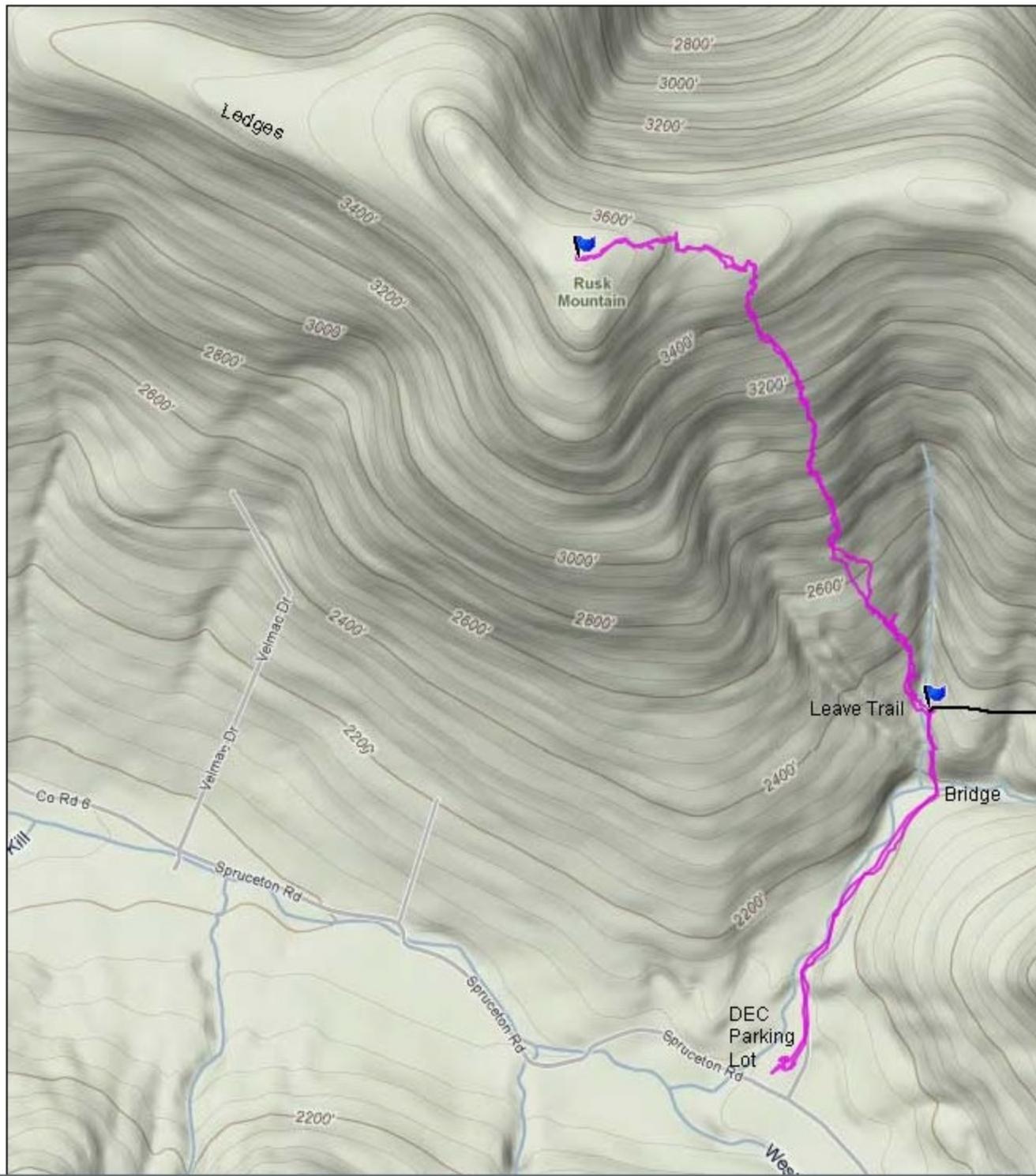




Rusk Route Finding Experience



Map of Route to Rusk Mountain





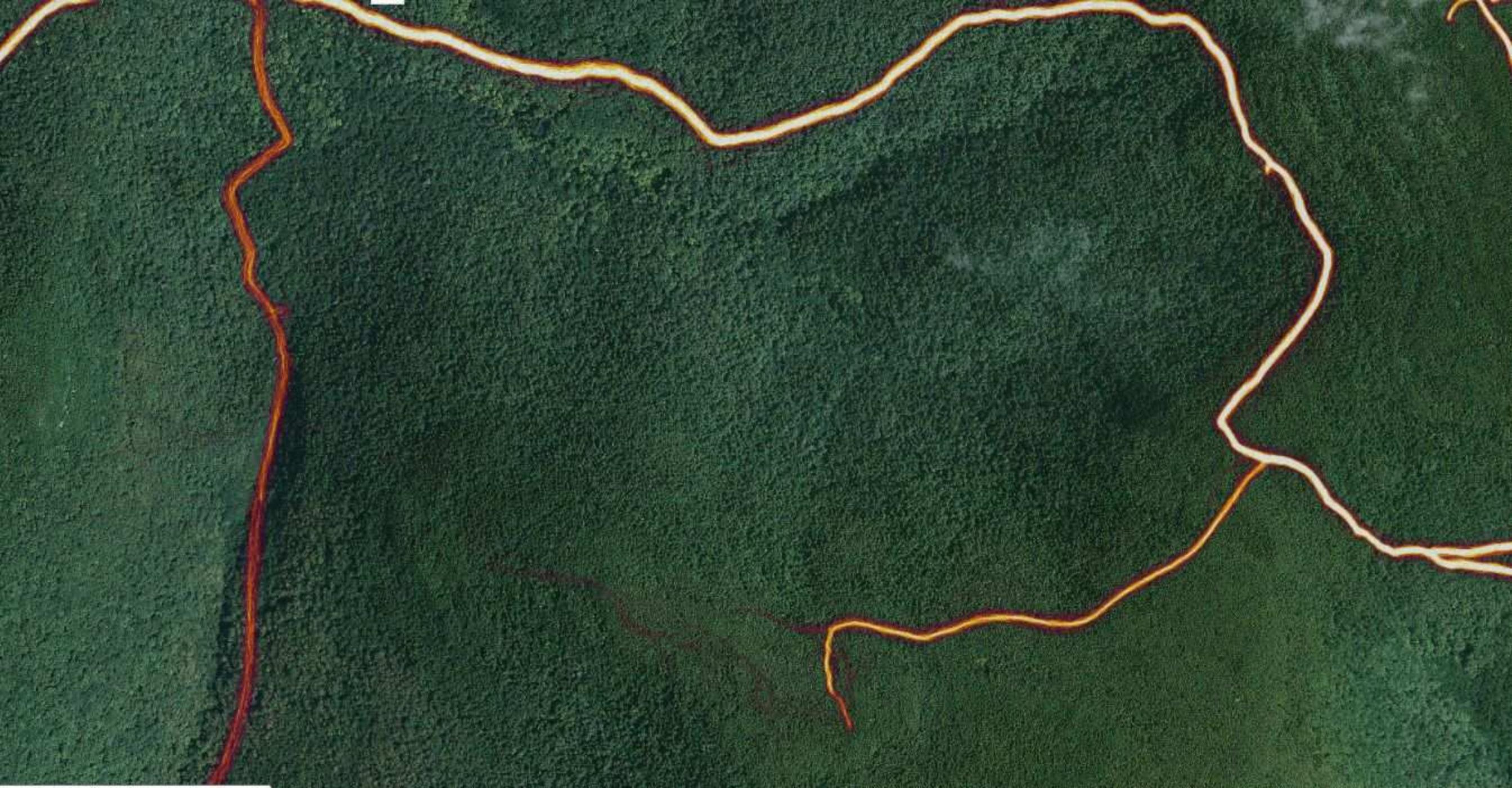
+ -



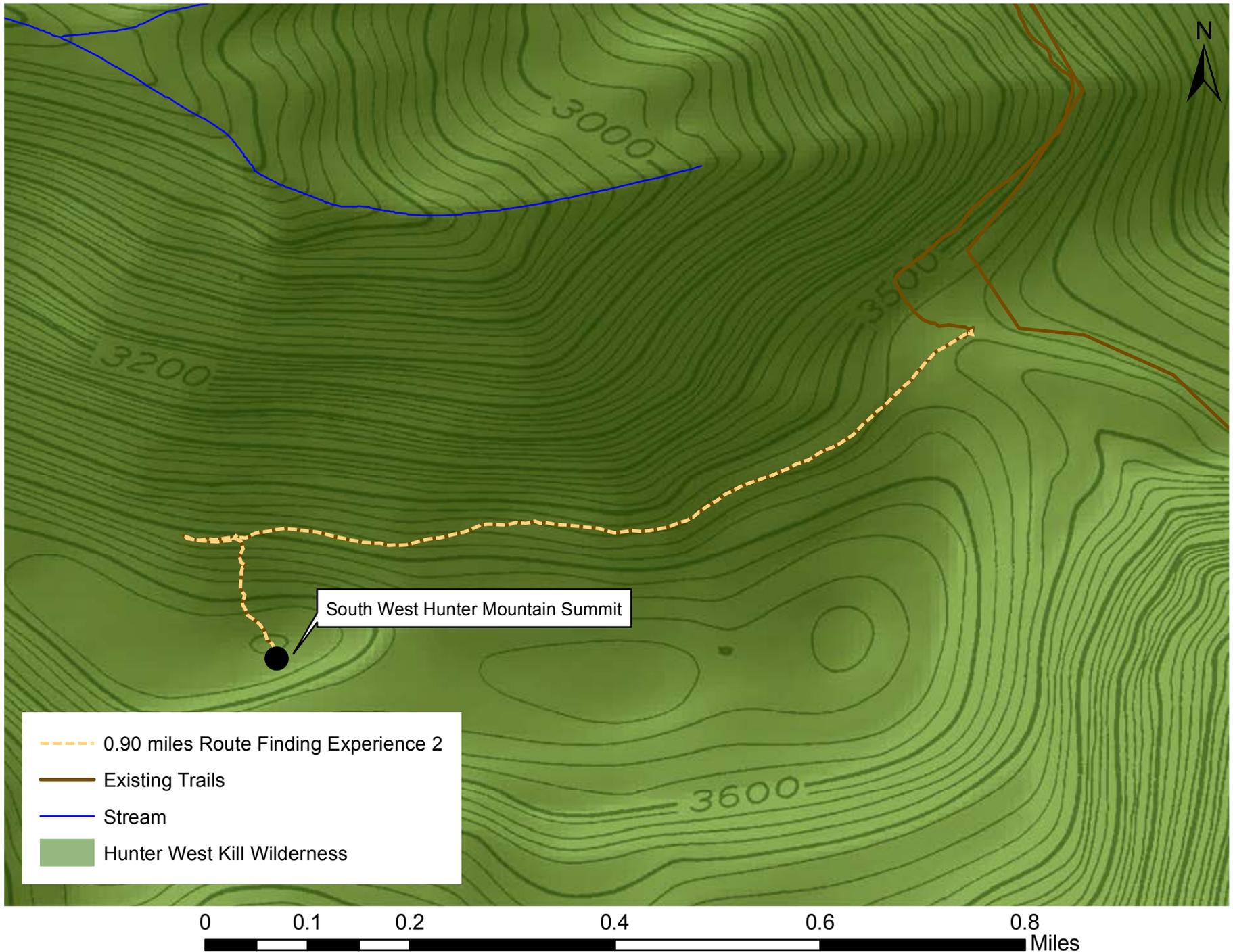
1000 ft

Southwest Hunter Trail Condition Classes



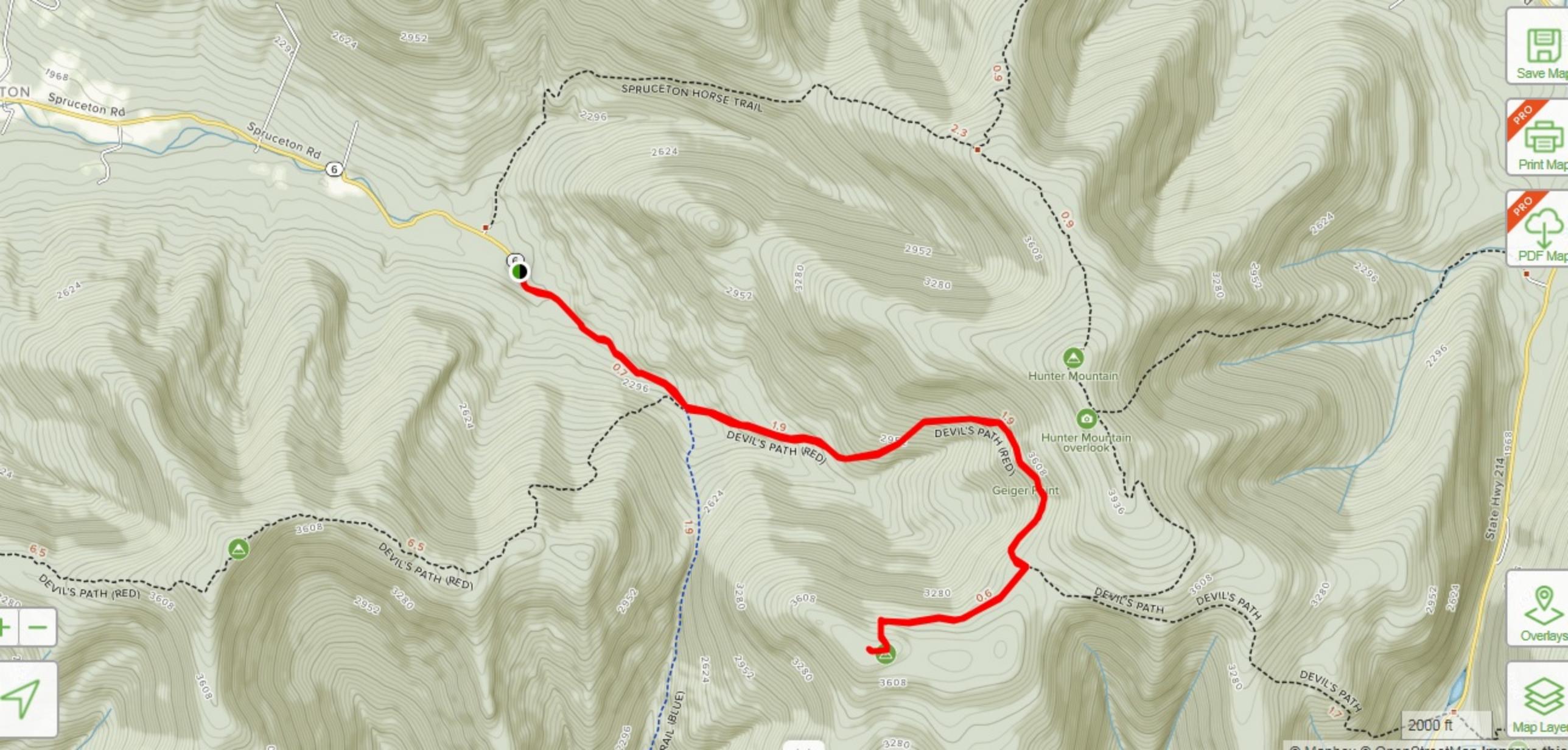


South West Hunter Route Finding Experience



Maps, Profile, and GPS files





Trail Photographs



Balsam Cap (Class 3)



Big Indian and Fir (Class 3)



Doubletop (Class 3)



Graham (Class 2)



Kaaterskill High Peak (Class 3)



Lone and Rocky (Class 2)



North Dome (Class 2)



Rusk (Class 1)

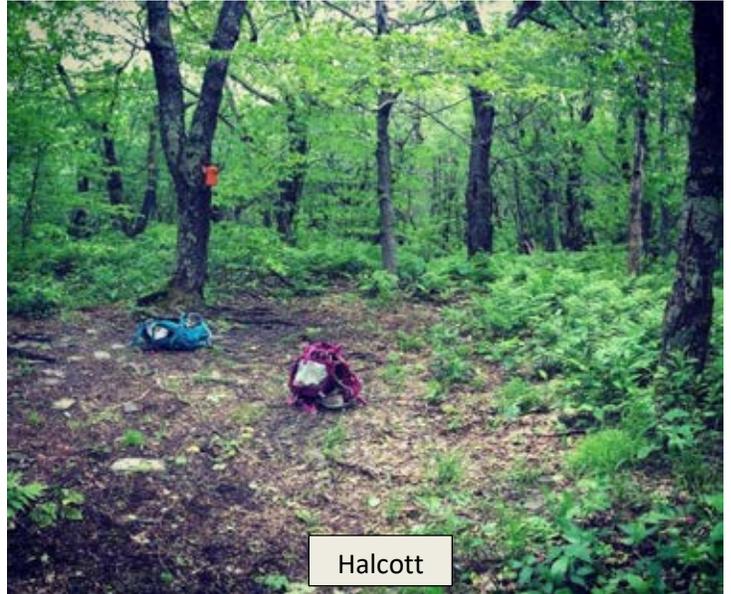


SW Hunter (Class 3)

Summit Photographs



Big Indian



Halcott



Kaaterskill High Peak



Sherrill



Rusk



SW Hunter