

Addendum to the 2019 Visitor Use Study of the Catskill Trail-less Peaks Over 3,500'

STRAVA HEAT MAPS AND ANALYSIS OF VISITATION FOR 2019,
2020 & 2021

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Summary of Developments Since 2019

In 2019, the first baseline data collection effort was undertaken on the informal trail (IT) networks on 17 trail-less peaks over 3,500' in the Catskill Mountains. The objective of this effort was to document the lineal extent and spatial distribution of the IT networks on Forest Preserve peaks that historically were managed as trail-less areas. To begin to understand more about these IT networks, STRAVA heat map data was collected to determine which IT routes people were using and where to focus the monitoring efforts. During 12 weeks in the summer of 2019, over 39 miles of IT's were assessed using an IT monitoring protocol that was developed by the National Park Service. Over the course of the past two years, several major developments occurred that have impacted the levels of visitation and the visitor use patterns that were documented in the original study area.

- In the Spring of 2020, Covid-19 emerged and a global pandemic ensued. Public lands experienced unprecedented levels of visitation while people took to the outdoors in record numbers.
- Over the course of the past 3 years, hundreds of new IT corridors have become established. 2020, 2021 and 2022 STRAVA heat map information indicates that the majority of ITs that were included in the monitoring effort in 2019 are rapidly transitioning into more entrenched and incised IT's as a result of the significant increase of visitation to the trail-less peaks.
- In January of 2021, the private landowner of Graham and Doubletop made the decision to close those mountains to public use. In an effort to provide alternative hiking destinations for aspiring Catskill 3,500' Club members, an agreement was reached between the Catskill 3,500' Club and the NYSDEC to temporarily designate South Doubletop in the Big Indian Wilderness and Millbrook Ridge, in the Balsam Lake Wild Forest to replace Graham and Doubletop. Ultimately, these peaks were removed as required peaks for aspiring Catskill 3,500' Club hikers after March 21st, 2021.
- Sustained visitation to the South Doubletop summit continues through today and has resulted in rapid proliferation of new ITs to that summit. Several other hiking clubs are developing challenges that are continuing to drive people in record numbers to South Doubletop in the Big Indian Wilderness and Roundtop in Kaaterskill Wild Forest where this heavy new use is rapidly and adversely impacting the natural resources in those areas.
- Significant improvements to STRAVA mapping and route recording features are now available. These improvements will dramatically improve the accuracy of future data collection efforts on the IT networks. The new "Standard" map feature offers improved contour, hill shade and label information that makes it easier to see the exact location of the IT networks in comparison with the "Satellite" map feature that was used in the 2019 report. STRAVA now offers the ability to create custom GPS Routes from IT heatmap information. This feature will eliminate the need to geo-reference IT's and will increase the efficiency of future assessments. (See Appendix for examples of new features).

2022 Research Priorities

The primary research priority for the 2022 field season is to continue the monitoring effort to evaluate the patterns of use that occurred during the pandemic while assessing the acceptability or unacceptability of the associated impacts to natural resources. Field work will involve evaluation of the largest and most established IT'S. New IT networks that developed over the course of the past two years will also be assessed and their condition classes recorded. Sections of IT will be categorized as sustainable or unsustainable based on observed grades, alignments, and drainage characteristics. An assessment of the preferred IT approach to the individual summits will be undertaken to identify a sustainable route in areas with very braided IT networks. This information will inform where field work should occur should the decision to establish formal trails in adversely impacted areas is made.

Ultimately, the data collected will be used to determine if a management interventions such as formal trail establishment will be required to prevent future adverse impacts to natural resources from occurring.

Catskill Park State Land Master Plan (CPSLMP) and Trail-less Peaks Management

Environmental Conservation Law, Articles 3-0301 (1) (d) and 9-0105 place the responsibility for the care, custody and control of the forest preserve in the NYSDEC. DEC adopted a Catskill Park State Land Master Plan to protect natural resources and manage public use of forest preserve lands, including the trailless peaks.

According to the Catskill Park State Land Master Plan:

- The Biodiversity Act of 1993 mandates that DEC identify, manage, and conserve plants, animals and ecological communities that are rare in New York State, and that are located on State-owned lands. Pg. 13
- Where public use of existing trails or facilities endangers rare plants, animals or communities, these trails or facilities will be modified, relocated, or closed. Pg. 24
- Allows for the continued use of canisters on trailless peaks but has the provision that their continued use will be evaluated on an individual basis through the UMP process. Pg. 103
- Requires that new trails on trailless peaks can only be proposed if there is serious environmental degradation, i.e., multiple herd paths. Pg. 10

Observations Since 2019 Based on STRAVA Heat Map Information

Lowest Priority Areas

Four peaks are displaying visitor use patterns that appear to be currently acceptable meaning that visitor use is mainly concentrated to a single IT corridor leading to the

summit and that IT corridor is relatively short in distance. The lowest monitoring priority peaks for the 2022 field season are Vly, Bearpen, SW Hunter, and Eagle.

Medium Priority Areas

Rusk and Halcott both have summits that have several ITs approaches and while concerning, it appears that hikers are staying within a loosely defined main IT corridor on the approach and descent on both of these mountains. These mountains are lower monitoring priorities for 2022 because the extent of dispersal of use on these peaks is not as extreme as several of the peaks listed below. IT herd path evaluation on these peaks should be a priority for the 2023 field season.

Highest Priority Areas

STRAVA heat map information from 2020 and 2021 indicates that nine peaks are showing significant increases in the number new and duplicative ITs. Visitor use in these areas has resulted in duplicative summit approaches and extensively braided and redundant IT networks. The peaks contained in the list below have a combination of concerning new visitor use patterns and known element occurrences for rare, endangered and threatened species. Consequently, these peaks have been classified as the highest monitoring priorities for 2022.

Region 3

Big Indian Wilderness (1993, currently being updated)

- South Doubletop
- Fir
- Big Indian

Slide Mountain Wilderness (1998)

- Rocky
- Lone
- Balsam Cap
- Friday

Region 4

Hunter Mountain Wild Forest (1995) does not include Sherrill and North Dome.

Hunter-Westkill Wilderness UMP has not been completed

- Sherrill
- North Dome

Kaaterskill Wild Forest (1987)

- Kaaterskill High Peak

Peak Specific Monitoring Goals for the Highest Priority Peaks

Big Indian Wilderness

1993 Big Indian Wilderness UMP: Guidance for Trail-less Peaks

No known reference or management proposals for the trail-less peaks in the 1993 UMP. An update to this plan is underway and specific management recommendations will be included in the draft plan for the 3 trail-less peaks in this unit.

Big Indian/ Fir/ South Doubletop

Natural Heritage surveyed the summit of Big Indian and Fir in October of 2021 and will revisit the area prior to 5/30/22 to build on the initial biological survey work. Preliminary field work suggests that the forest below the highest elevation areas are an extensive Element Occurrence quality beech maple mesic forest. At the initial site visit, Natural Heritage was quick to conclude that the summits have been significantly impacted by trampling and that high visitation levels are degrading the wilderness condition of the summits. Initial observations strongly suggest that the upper elevation forests deserve enhanced protection from the onslaught of visitation.

Heat map data shows that the IT network on BI and Fir is beginning to consolidate into large sections of class 3 IT's. At this time, there is ample evidence of multiple class 2 and class 3 IT summit approaches on all three "trail-less" peaks within the unit. Heat map data shows that there is a preferred or more heavily used IT that leads to each summit and impact acceptability assessments will be conducted on the preferred IT approaches to each peak. The Big Indian Wilderness area is a likely candidate for formal trail proposals if the 2022 impact acceptability assessments determine that there are unacceptable and adverse impacts occurring.

If management interventions are deemed necessary, any formal trail network would be designed to reduce dispersed use and concentrate users to sections of the existing IT corridors that have more sustainable, and acceptable alignments and that also avoid locations of known occurrences of rare, threatened and endangered species.

Areas of Interest for 2022 Monitoring

- The IT network from Burnham Hollow to the summit of Fir will be evaluated. Data in this area was not collected during the 2019 study and over the course of the past 2 years a IT has developed leading to Fir.
- Heat map data has indicated that a new IT is likely emerging on the southern slopes of South Doubletop over Pigeon brook. This IT has not been evaluated and baseline data will be collected in this area over the course of the 2022 field season.

- An IT network has rapidly become established on the slopes leading to the summit of South Doubletop. According to heat map records, this area saw almost no visitation up until 2020 when it was listed as a replacement peak for Doubletop. Doubletop had one of the highest occurrences of rare, threatened, and endangered species of all of the peaks surveyed in 2019. Because of its proximity to Doubletop, South Doubletop will be incorporated in the 2022 biological inventories of the area to determine if species of conservation significance are being impacted by IT proliferation in that area.
- Summit approach IT's on both Big Indian and Fir need to be assessed and sustainable and unsustainable sections of IT's will be evaluated and documented.
- Sustainable sections of the preferred route IT from Fir to Pine Hill West Branch Trail will be evaluated and documented.



Slide Mountain Wilderness

Lone, Rocky, Balsam Cap and Friday

1998 Slide Mountain Wilderness UMP: Guidance for Trail-less Peaks

d. Public Use Management Objectives (5) Page 34

“Ensure that the trail-less areas, especially summits above 3500’ feet in elevation remain trail-less.”

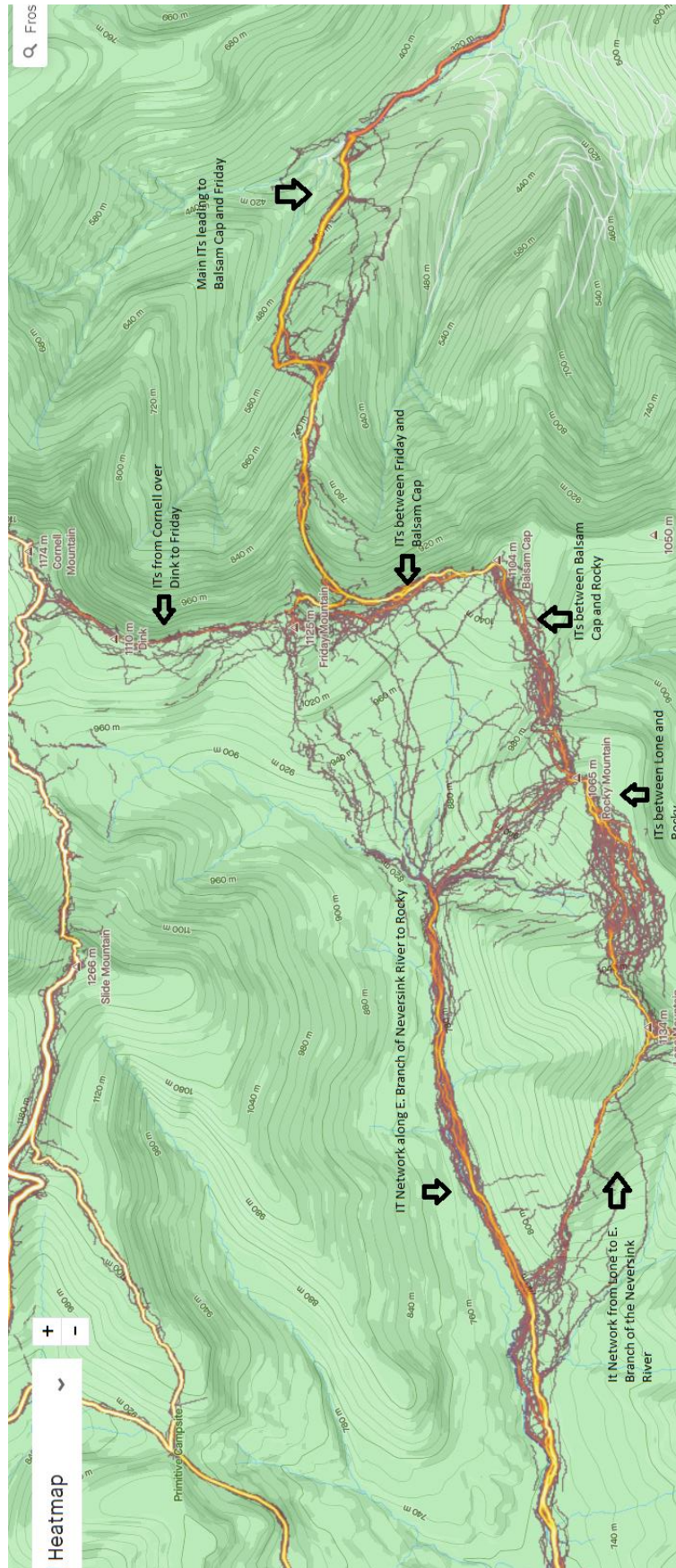
Areas of Interest for 2022 Monitoring

2020 and 2021 heat map information for the Slide Mountain Wilderness indicates that the area is experiencing rapid proliferation of an extensive and very dispersed IT network. In comparison to the other “trail-less” areas, heat maps are showing concerning patterns of IT expansion and establishment on an around all 4 summits. It is also clear from heat map information that extensive lengths of IT have transitioned to class 3 ITs since this area was last monitored in 2019. The cumulative or aggregated impacts to natural resources including the anticipated total area of trampling disturbance is highly likely to require a management intervention to prevent adverse impacts to natural resources.

Slide Mountain Wilderness provides critical nesting habitat for the Bicknell Thrush. While little research has been done on the species tolerance of habitat disturbance resulting from IT network development, it is anticipated that hiker use concentrated into a single corridor is likely much less disruptive to their nesting and mating behavior and can also benefit the species by reducing opportunities for nest predation.

Portions of the IT network with impact susceptible alignments and features will be documented during the 2022 field work. Highest priority areas for NH monitoring and impact acceptability assessments will occur on IT networks on and near the summit areas:

- Between Balsam Cap and Friday
- Between Balsam Cap and Rocky
- Between Rocky and Lone
- Sustainable and unsustainable sections along the main IT leading to Balsam Cap and Friday need to be evaluated and documented.
- Sustainable and unsustainable sections of the IT networks along East Branch of the Neversink River to Lone and Rocky will be evaluated and documented
- New IT’s from Cornell over Dink and to Rocky will be evaluated and documented.
- The preferred summit approach IT’s on all peaks needs to be evaluated and sustainable and unsustainable sections of IT need to be evaluated and documented.



Hunter West-Kill Wilderness

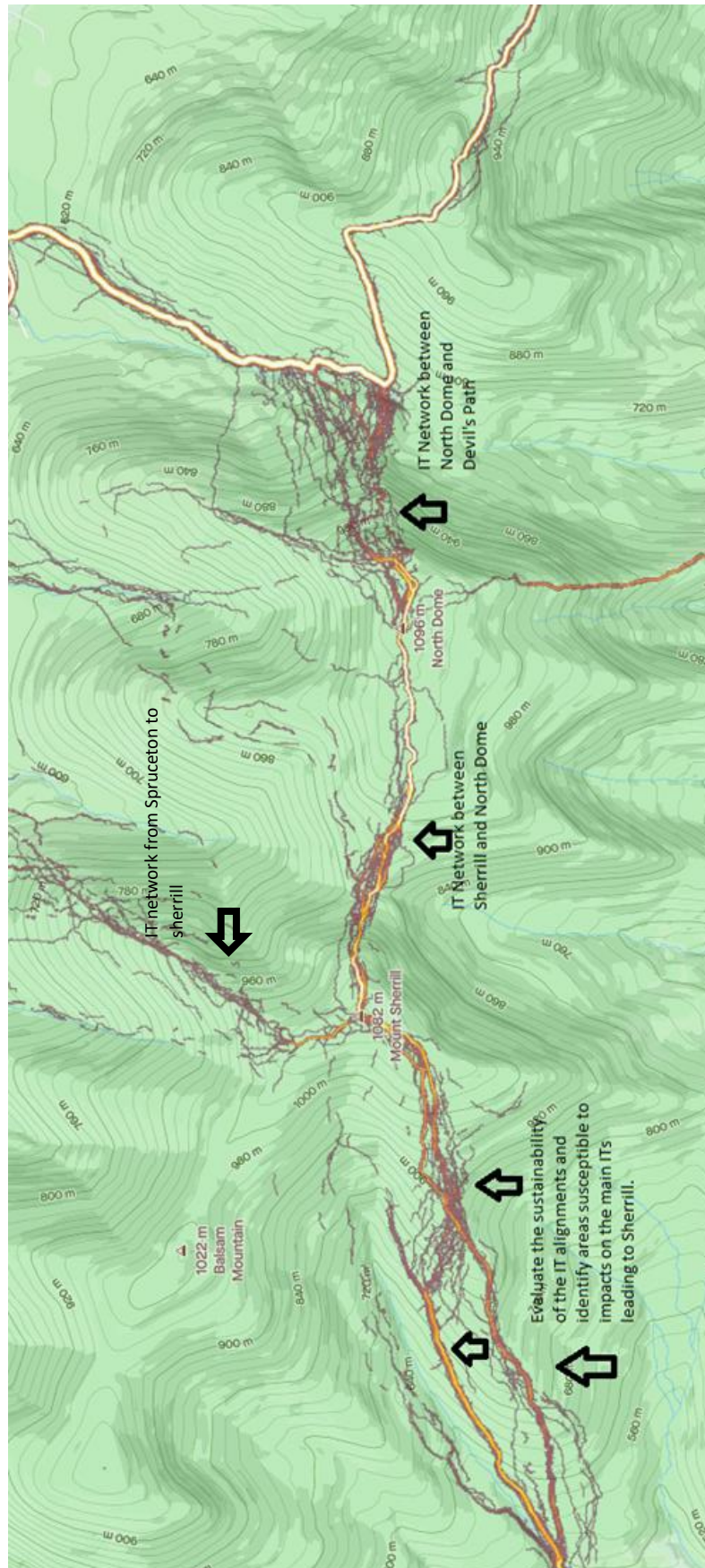
1995 Hunter Mountain Wild Forest UMP

North Dome and Sherrill did not fall within the geographic scope of the 1995 UMP. The Hunter-Westkill Wilderness UMP has not been completed at this time.

Areas of interest for 2022 monitoring

Highest priority areas for NH monitoring and impact acceptability assessments will occur on IT networks in the following areas:

- Between North Dome and Sherrill
- Between North Dome and Devils Path
- Between Spruceton Rd. and Sherrill
- From Shaft Rd To Sherrill
- A preferred approach to both summits will be identified and sustainable and unsustainable sections of the preferred IT need to be documented.



Kaaterskill Wild Forest

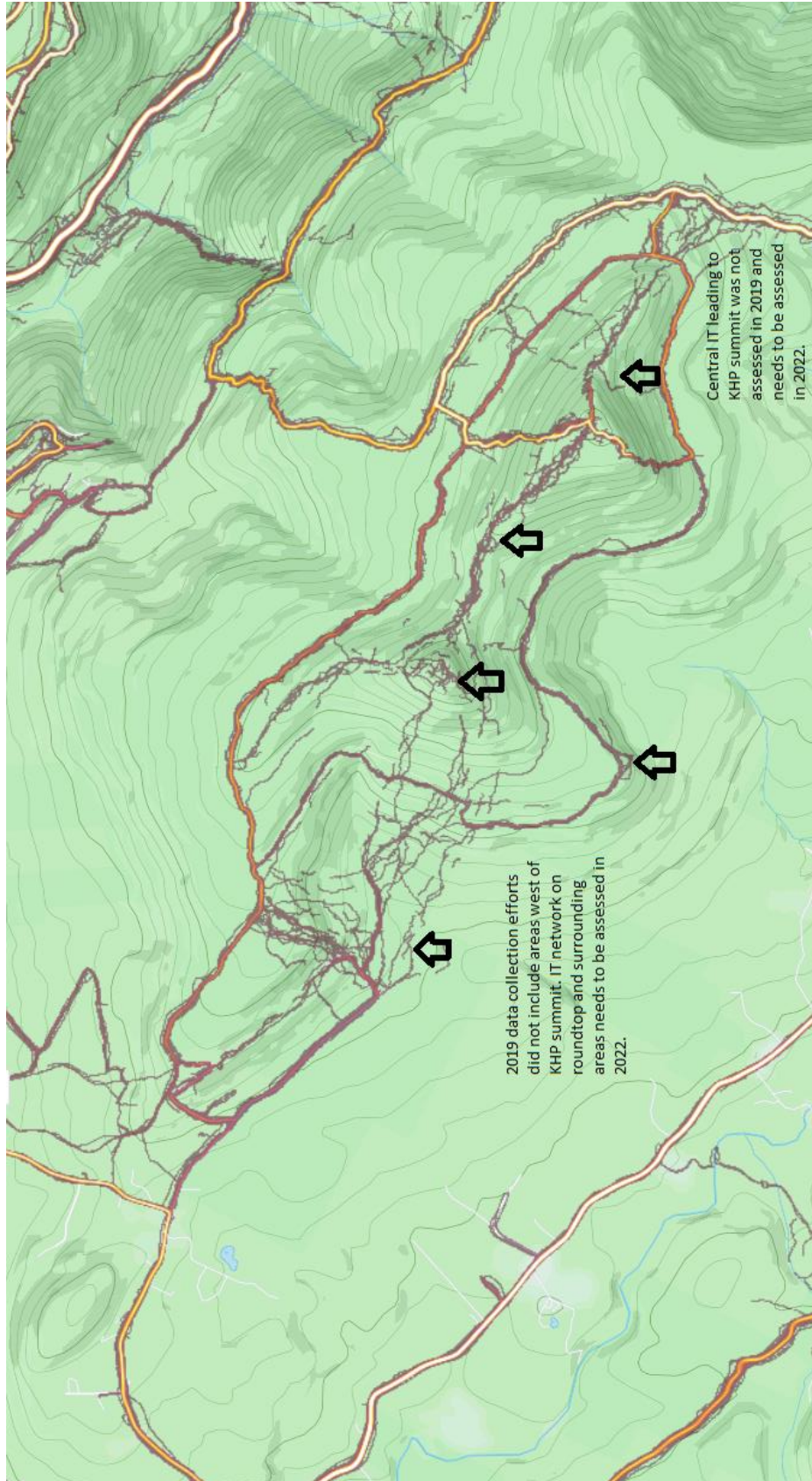
1987 Kaaterskill Mountain Wild Forest UMP Guidance for Trail-less Peaks

No known reference or management proposals for the trail-less area on Kaaterskill High Peak (KHP) in the 1987 UMP.

Areas of Interest for 2022 Monitoring

Highest priority areas for NH monitoring and impact acceptability assessments will occur on IT networks in the following areas:

- IT network west of KHP in the Roundtop area needs to be evaluated as it was not part of the monitoring effort in 2019. Heat map collection for the Roundtop area began in 2022 and should be collected on an annual basis moving forward to monitor new and shifting patterns of visitation.
- KHP heat map data indicates that on the eastern side of the summit, the use is concentrated to two well established ITs. Sections of sustainable and unsustainable IT on the northernmost, and southernmost ITs leading to KHP summit need to be documented and identified.
- Central IT on eastern side of KHP summit will be investigated as it was not part of the data collection effort in 2019.
- Sustainable and unsustainable sections of the preferred IT approaching and on the KHP summit will be identified and documented.



Additional Data Collection/ Research Objectives for 2022

- Evaluate the impact acceptability of the IT networks on the “trail-less” peaks to comply with the management directive set forth in the CPSLMP and to prevent unacceptable and avoidable impacts to natural resources from occurring or continuing to occur. Formalized, sustainably designed trails will need to replace unsustainable and redundant herd path networks if impacts to natural resources are found to be unacceptable.
- Continue to collect STRAVA Heat Map information of trail-less peaks on an annual basis. Heat map data should be collected in August for consistency purposes as variation in heat map activity does occur over the course of seasons in a given year.
- Monitor activity on the trail-less peaks on NYSDEC owned lands under 3500’ and over 3,000’. Currently, the peaks that fall within this category are displaying light to no activity on heat maps with the exception of Roundtop, Sleeping Lion and Van Wyck. In anticipation of potential changes in visitation, heat map data for all peaks over 3,000 on public land have been collected and archived for future comparison.
- Consult experts on the Bicknell Thrush to develop Best Management Practice (BMPs) that can be implemented to support species vitality and abundance on and around the “trail-less” peak summits. Work with NYSDEC Wildlife staff to determine present day species distribution and potential impacts of IT’s on nest predation.

Future Planning Considerations

- The predictive power of crowd sourced data generated from recreation-based apps such as STRAVA remains untapped by land management agencies such as NYSDEC. Further investigate how data from various apps can be harnessed to strategically enhance monitoring and management efforts on all DEC managed lands.
- Consider a variety of alternatives to the traditional marked trail model that would be consistent with the management zone objectives for wilderness and wild forest areas.
- Coordinate with NY Natural Heritage staff to conduct and complete biological inventories on trail-less peaks to identify the locations of Rare, Threatened and Endangered species that may be impacted by IT’s.

- Identify messaging that has been successfully used in other Parks to communicate how ITs can adversely impact the environment and why they should be allowed to atrophy and re-vegetate in certain situations.

Key Takeaways

- The trail-less peak monitoring and data collection effort presents a significant opportunity to engage in a Visitor Use Management project in the Catskills. Existing visitation data can be used to inform management decisions and build stakeholder consensus in support of management proposals that are designed to enhance recreational experiences and protect the environment.
- The rapid rate of change that has been observed and documented on the trail-less peaks requires a time sensitive response outside of the conventional and lengthy UMP planning process. The development of a stand-alone guidance document for Trail-less Peaks Management in the Forest Preserve is a potential tool that could be used to address the progression of natural resource degradation in a timely manner.
- Management interventions on some, or all trail-less peaks are highly likely given the results from monitoring efforts conducted by DEC staff, the results from the STRAVA heat map analysis, the preliminary biological monitoring observations from NY Natural Heritage and the CPSLMP directives for trail-less peak management.

APPENDIX

Ex of new features in STRAVA include custom GPS track creation based on heat map data. First image is an active route creation project. Second image displays the individual GPS tracks to South Doubletop based off of the heat map information



STRAVA

Dashboard Training Explore Challenges

My Routes

Learn more about [sharing & exporting routes](#) to a variety of devices.

Create New Route

Cycling Running Walking



S. Doubletop Rt C

1.85mi 766ft
Distance Elevation Gain

Est. Moving Time 35:48

Created on October 19, 2021



S. Doubletop Rt B

1.56mi 733ft
Distance Elevation Gain

Est. Moving Time 30:11

Created on October 19, 2021



S. Doubletop Rt. A

1.52mi 779ft
Distance Elevation Gain

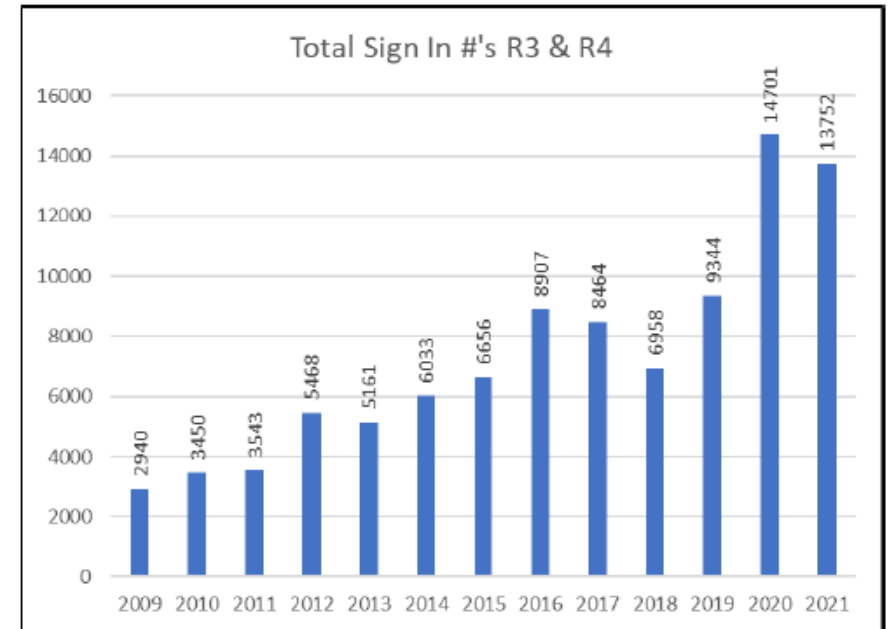
Est. Moving Time 29:22

Created on October 19, 2021

2009-2021 Canister Sign in Analysis

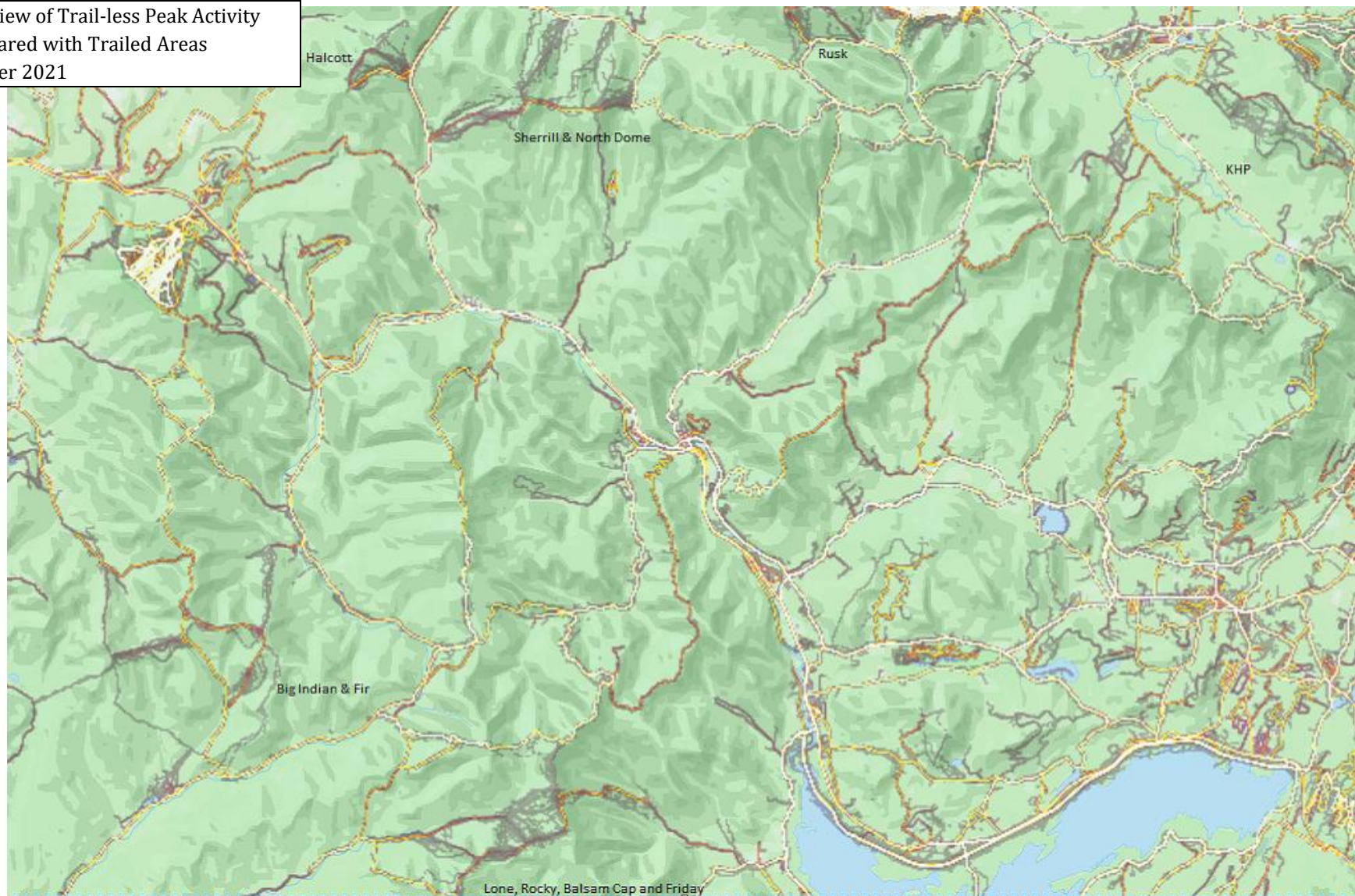
Percentage Increase or Decreases in Sign In Rate by Trail-less Peak					
Peak	2009	2020	% Increase 2009-2020	2021	% Increase or decrease 2020-2021
SW Hunter	301	1565	420%	1409	down 9.9 %
Vly	228	1417	539%	1402	down 1.05%
Rusk	197	1199	508%	1045	down 12.8%
Balsam Cap	221	1249	465%	1151	down 7.8%
Friday	244	1202	436%	1122	down 6.6 %
Halcott	201	1159	476%	1168	up 0.77%
Fir	226	1069	373%	1065	down 0.37%
North Dome	155	1009	551%	1065	up 5.5%
Rocky	214	1013	373%	1029	up 1.57%
Lone	248	1017	318%	1067	up 4.9%
Big Indian	334	1240	271%	1131	down 8.7 %
Sherrill	181	957	428%	1110	up 16%
KHP *	N/A	1356	N/A	1547	up 14%
Eagle *	N/A	1229	N/A	1205	down 1.9 %

* Canisters were added to KHP and Eagle in 2020

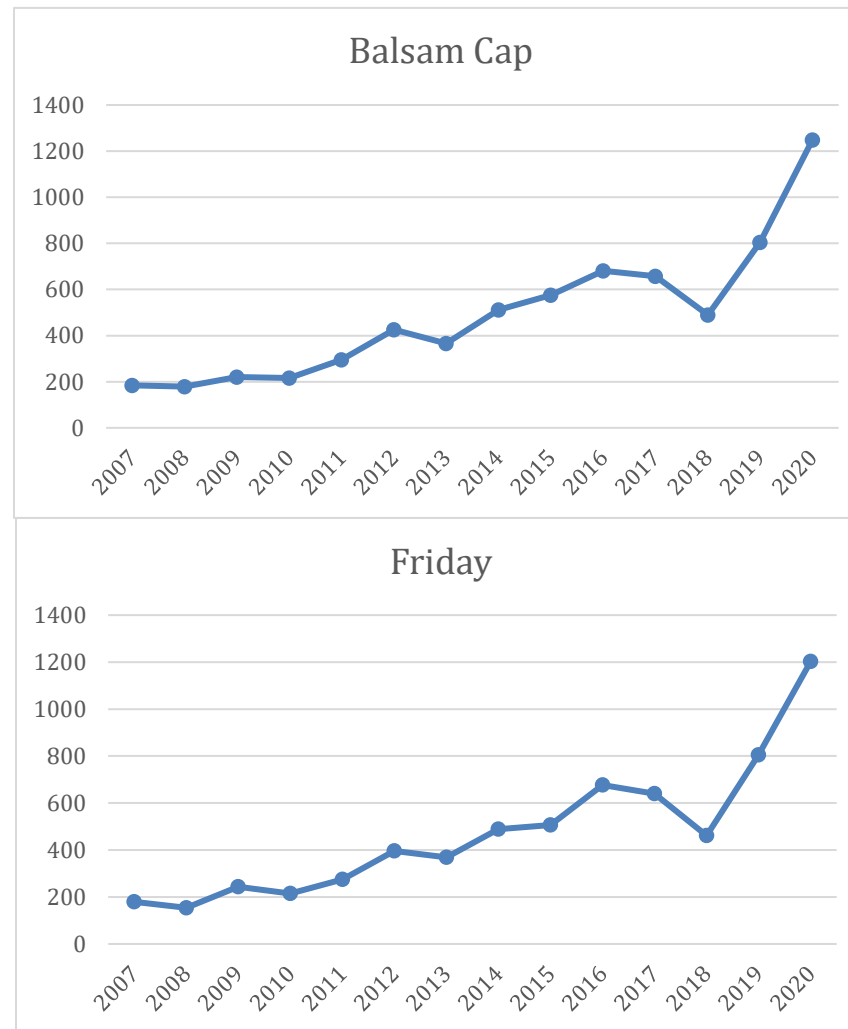


There was a 6.4% decrease in the overall sign in rate at 13 peaks in R3 and R4 from 2020-2021. KHP and Eagle sign in rates are NOT included in this chart.

Overview of Trail-less Peak Activity
Compared with Trailed Areas
October 2021

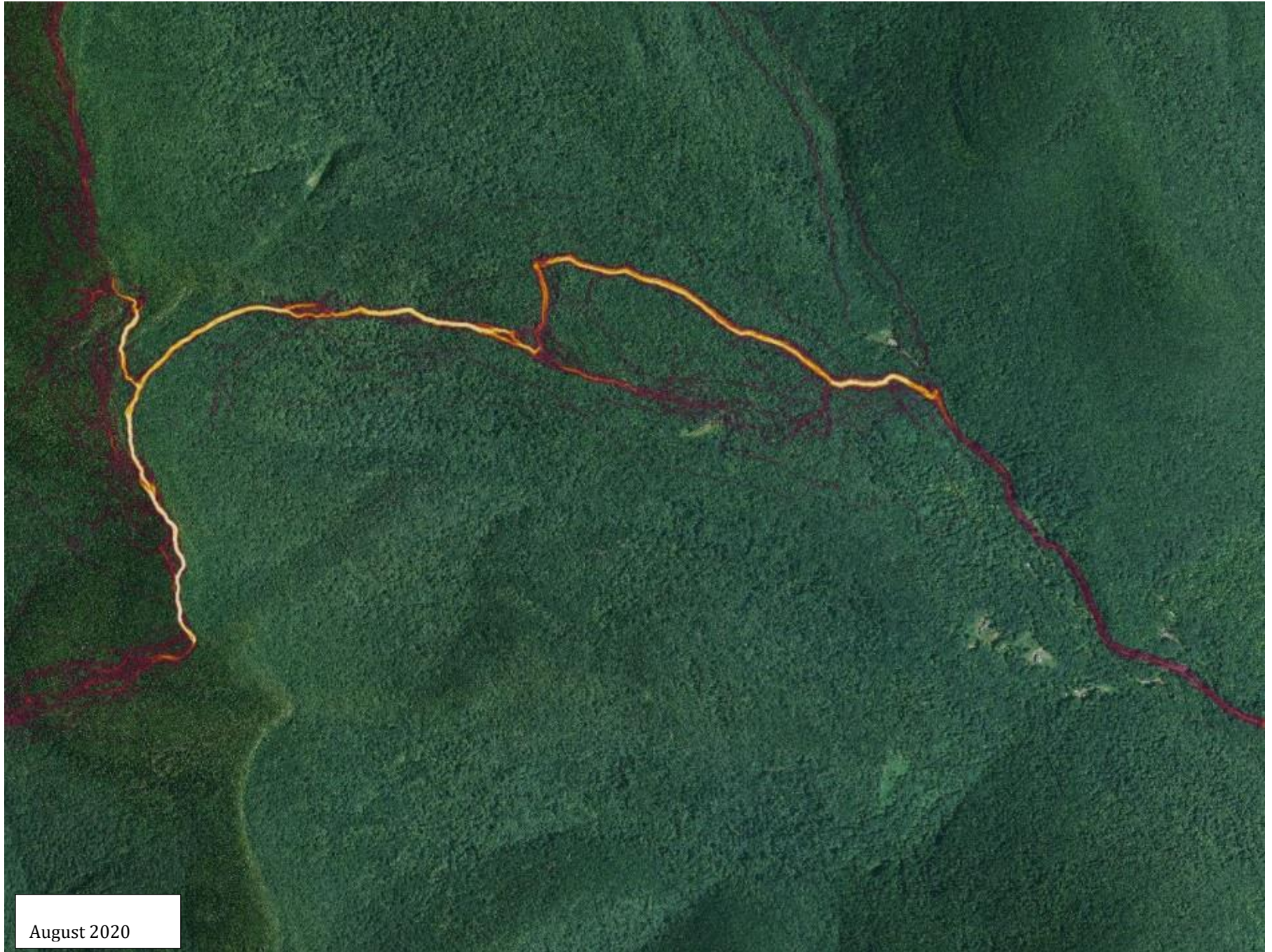


Balsam Cap and Friday





August 2019



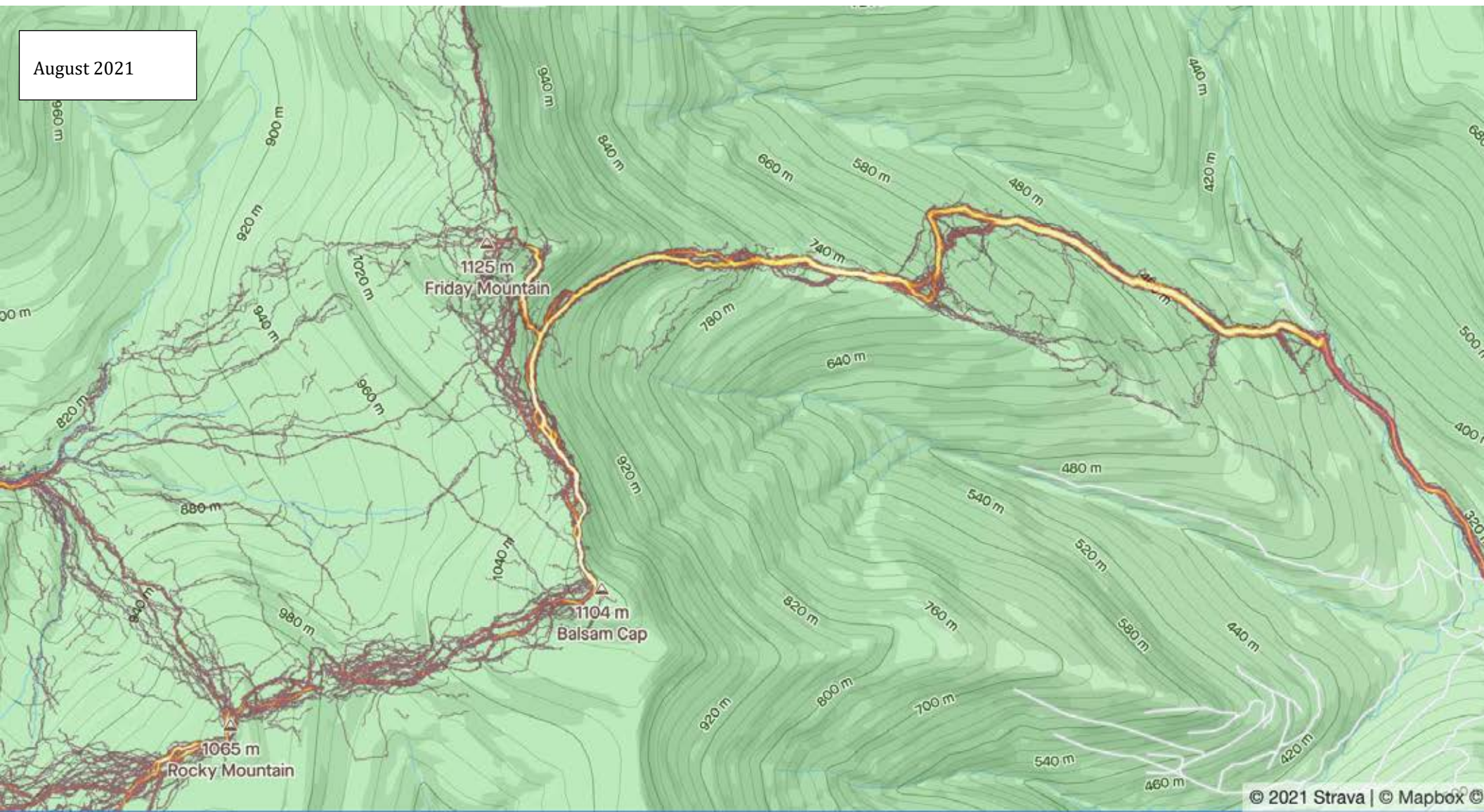
August 2020

August 2021



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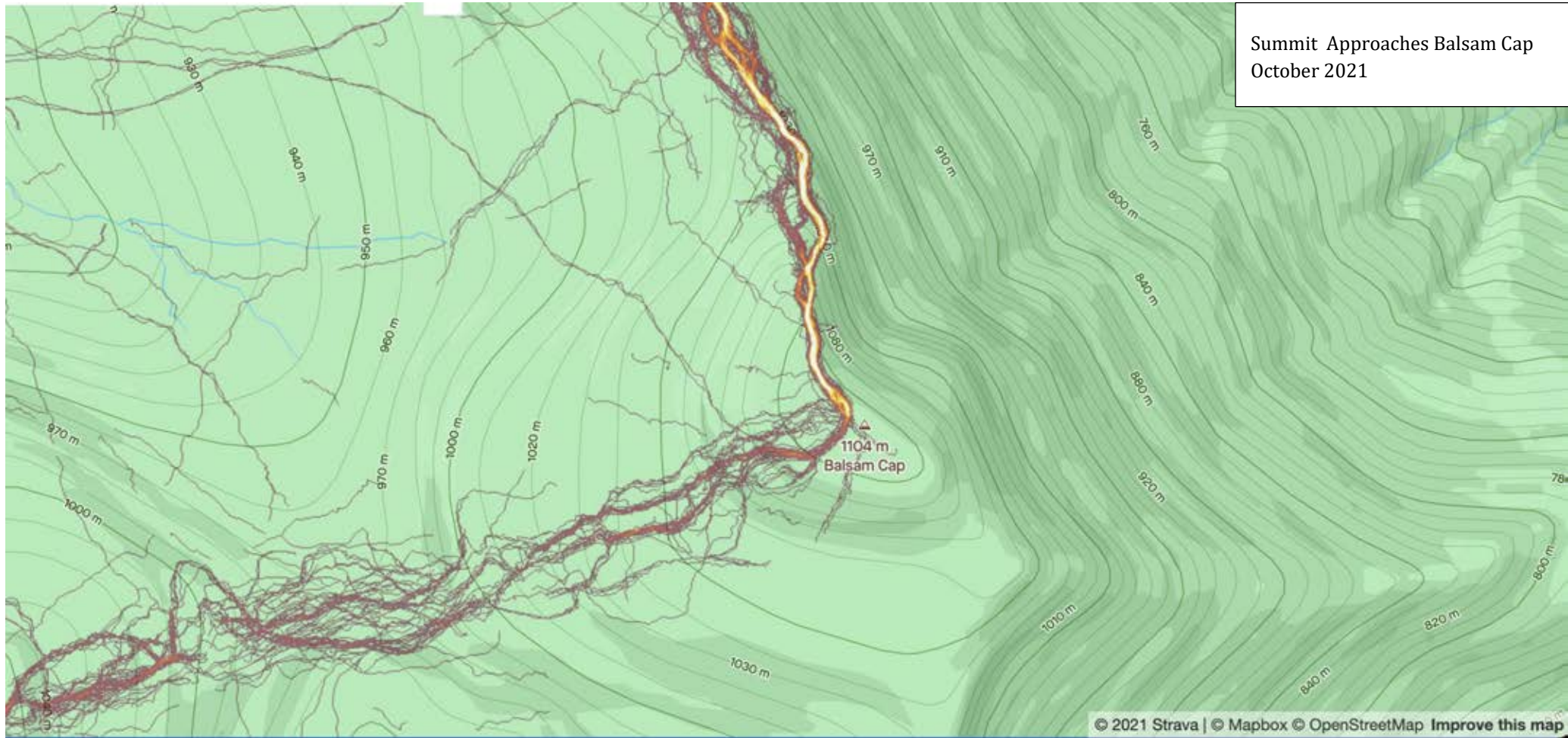
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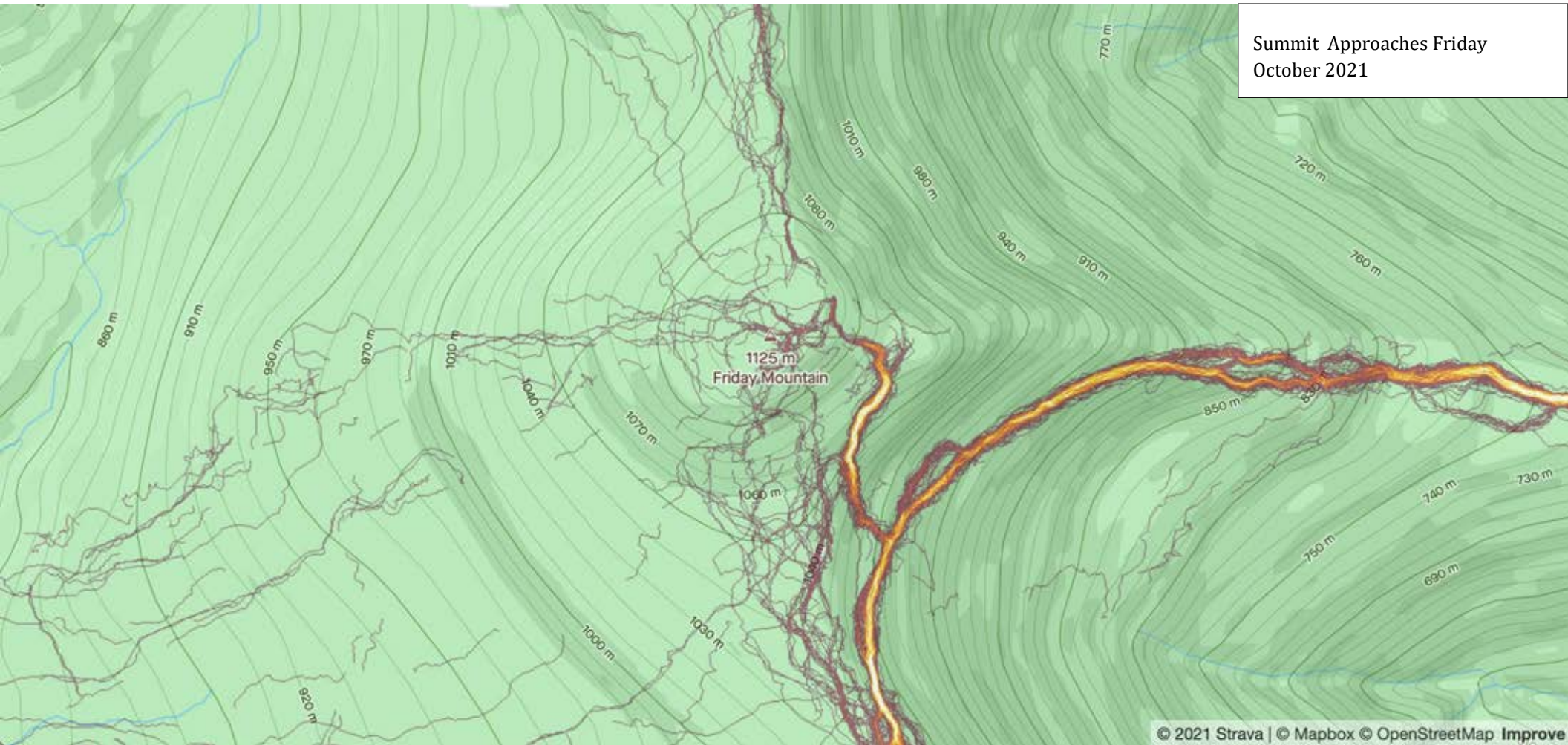
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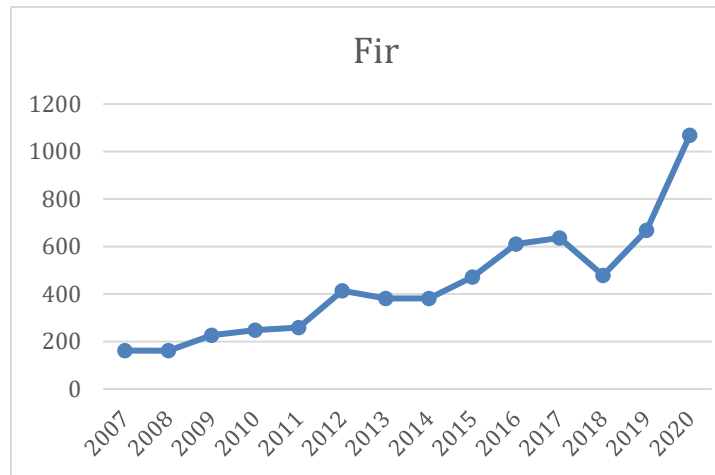
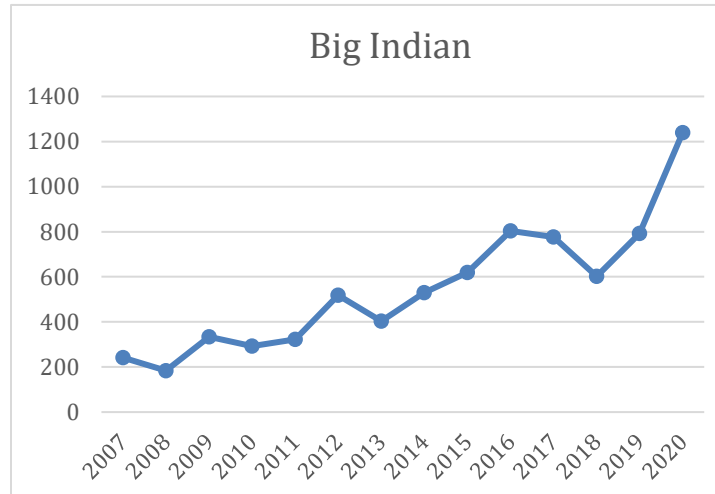
Summit Approaches Balsam Cap
October 2021

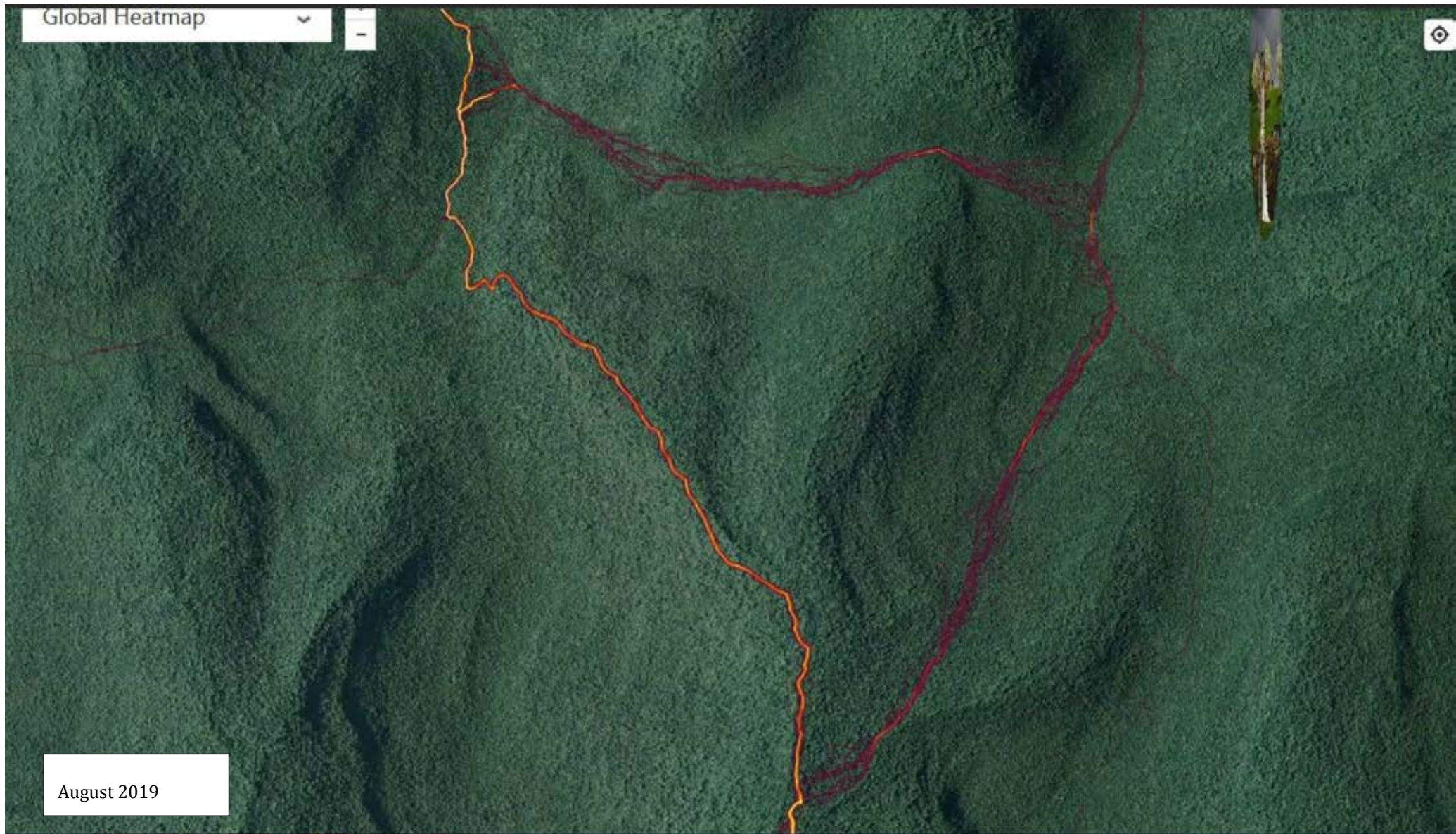


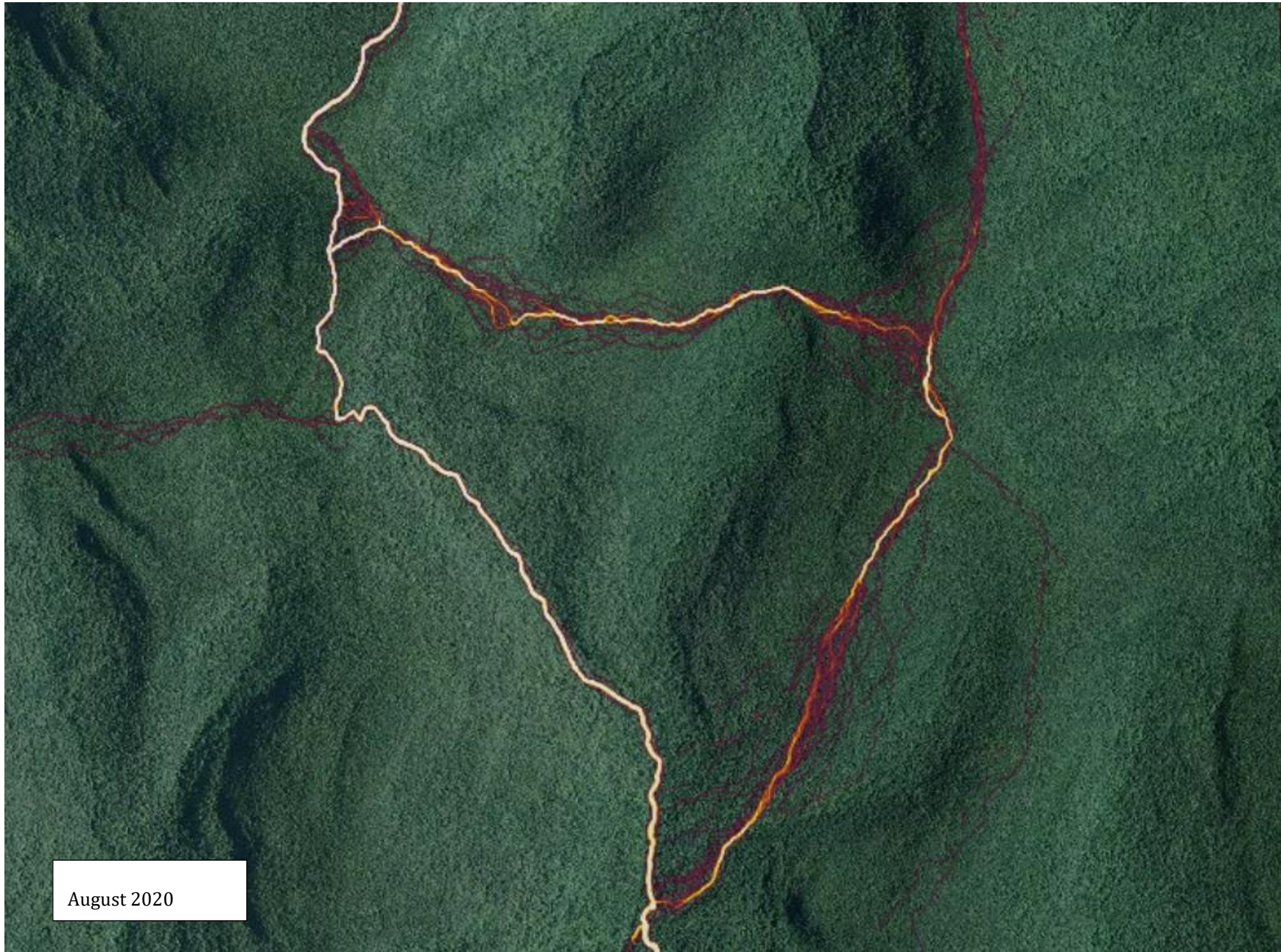
Summit Approaches Friday
October 2021



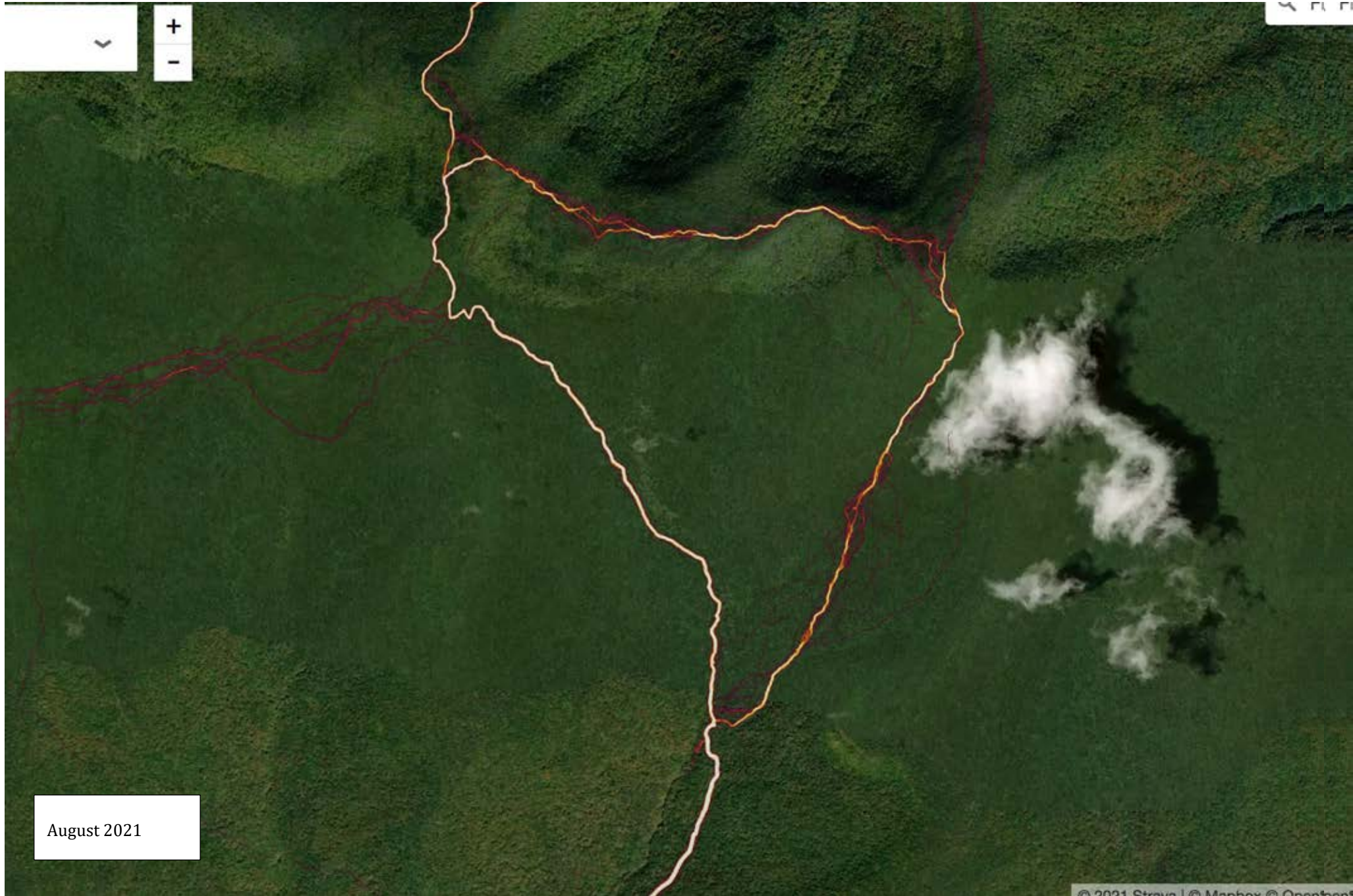
Big Indian & Fir



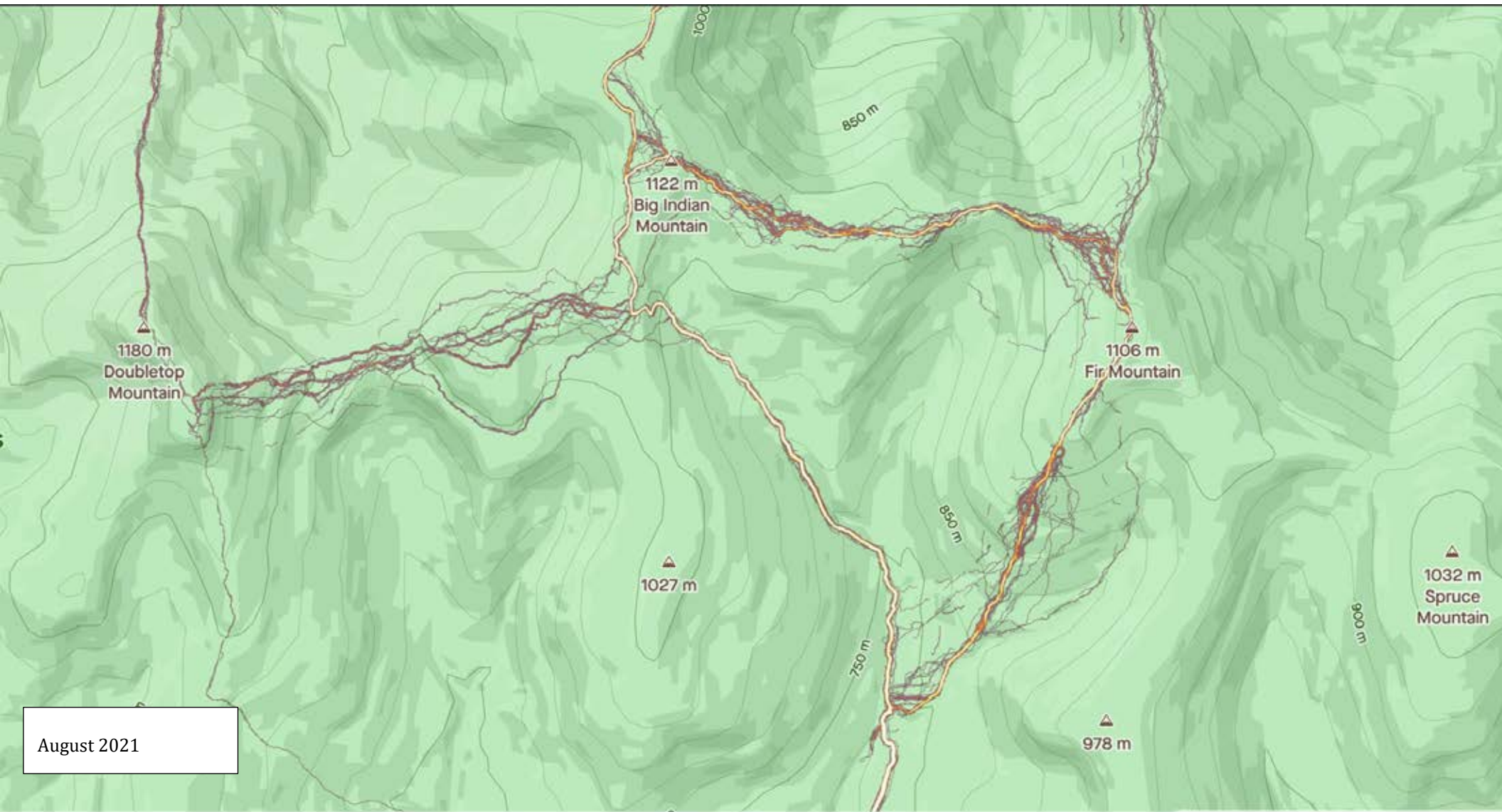


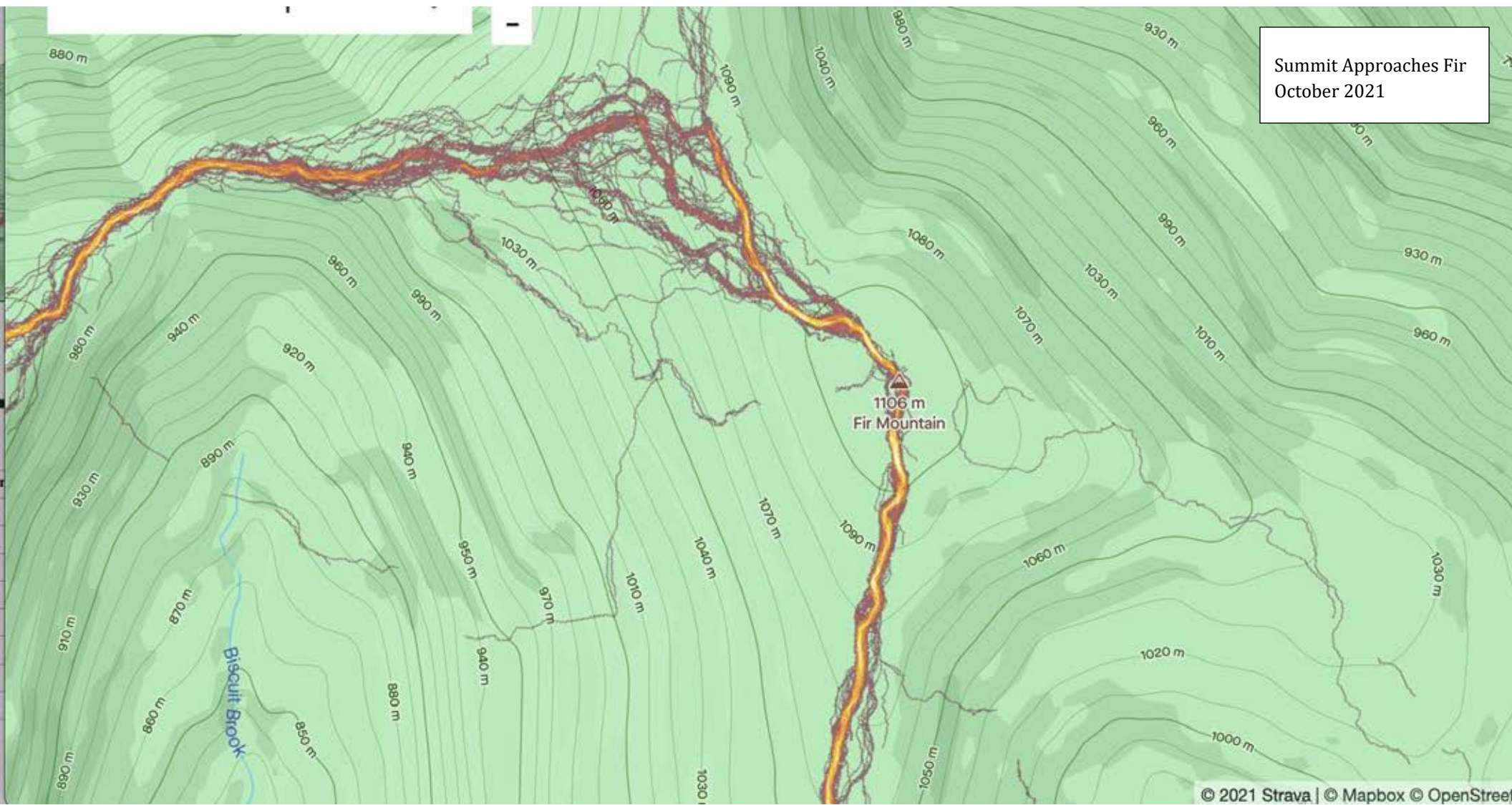


August 2020



August 2021

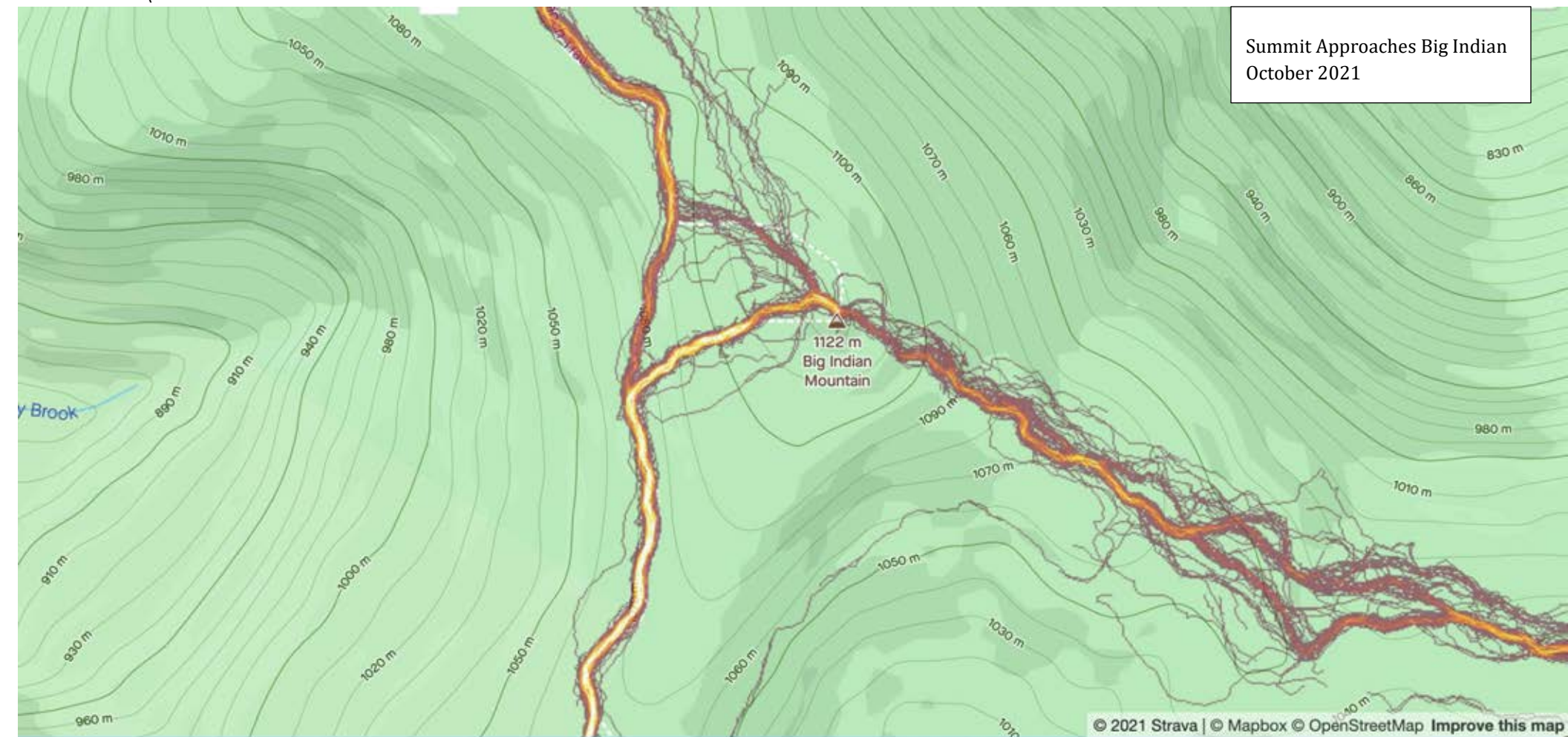




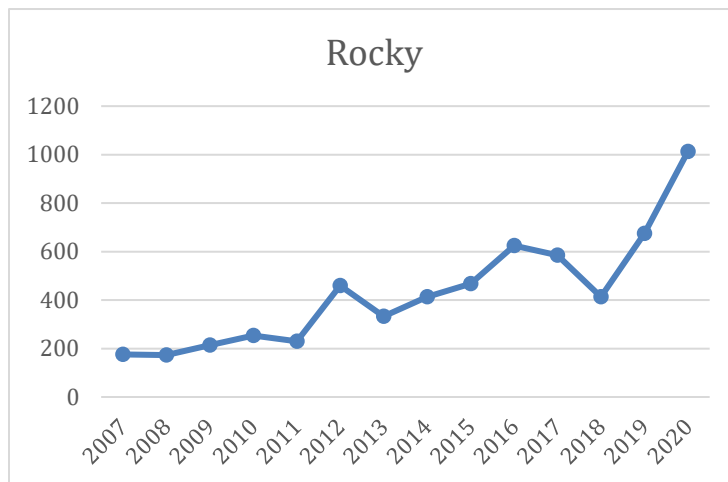
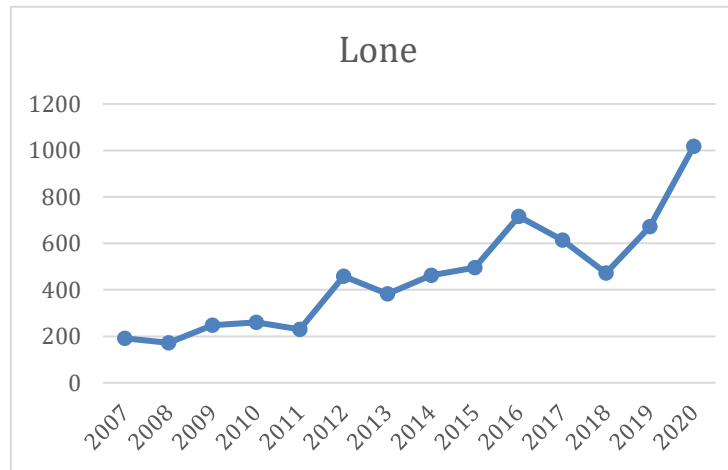
Summit Approaches Fir
October 2021

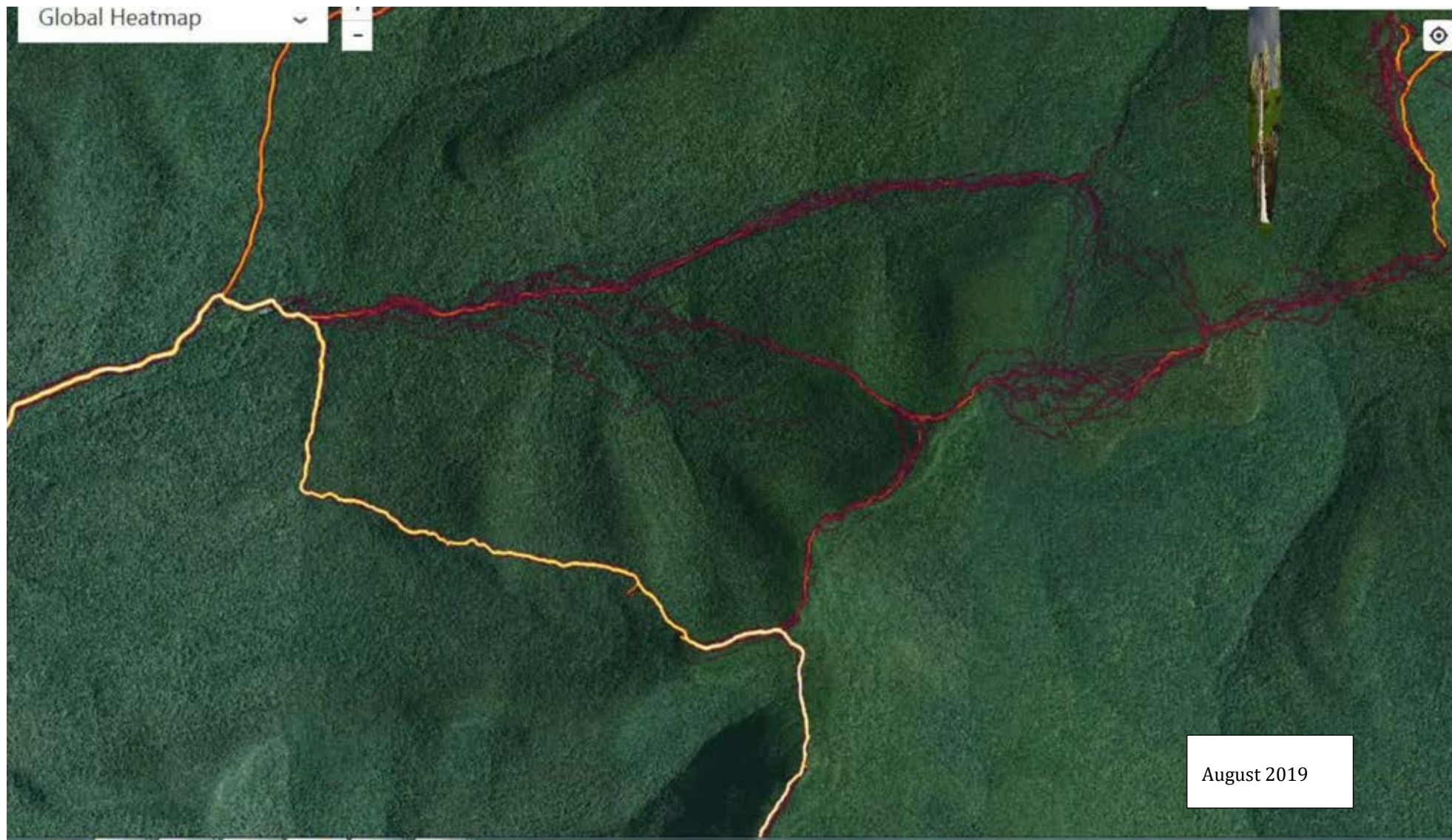
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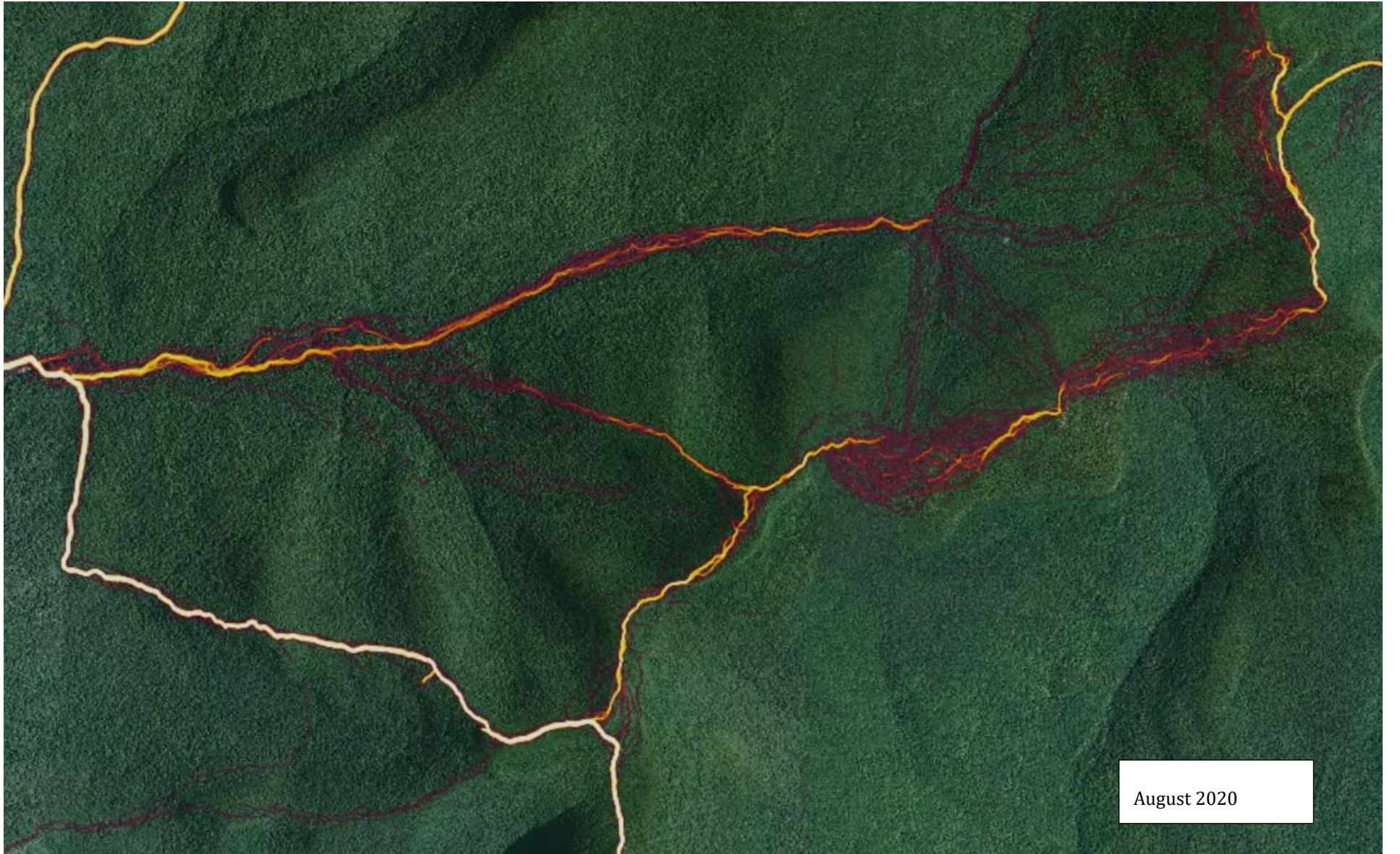
Summit Approaches Big Indian
October 2021



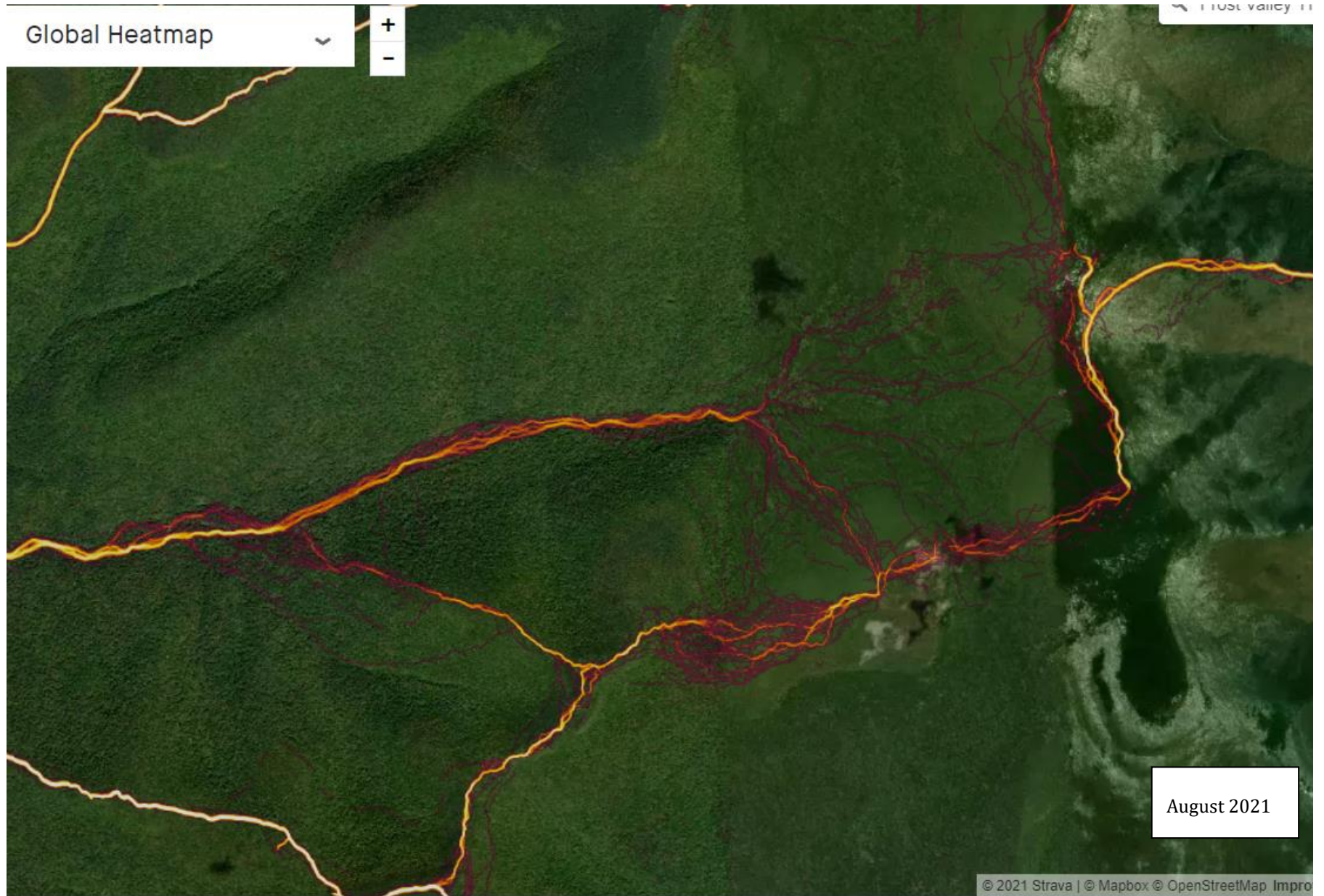
Lone and Rocky

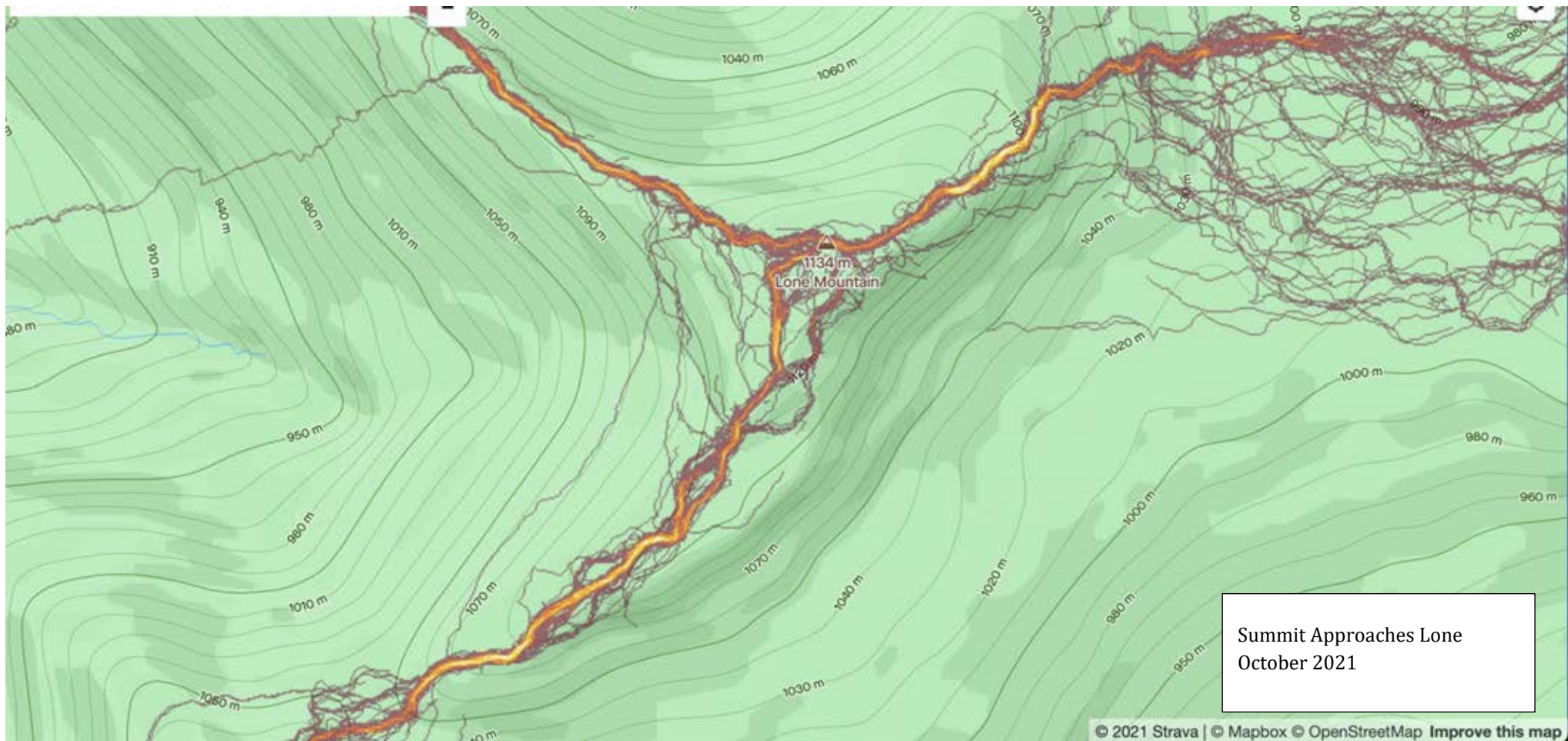


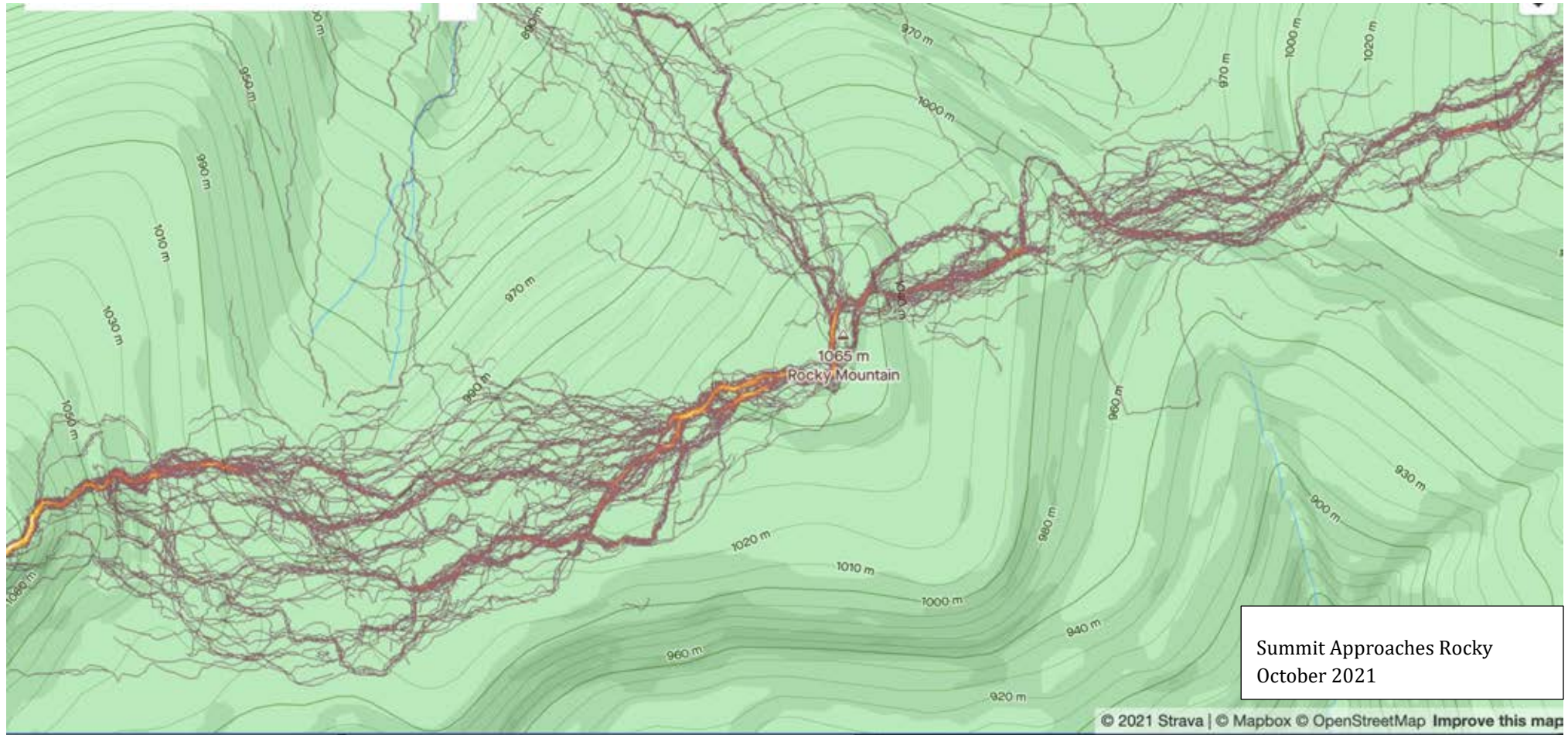




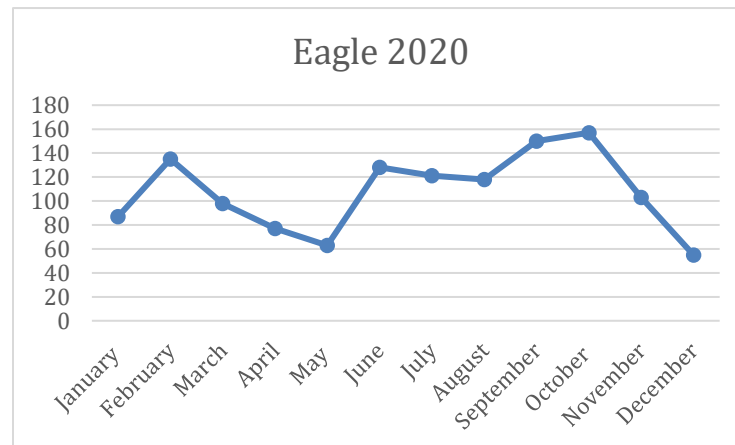
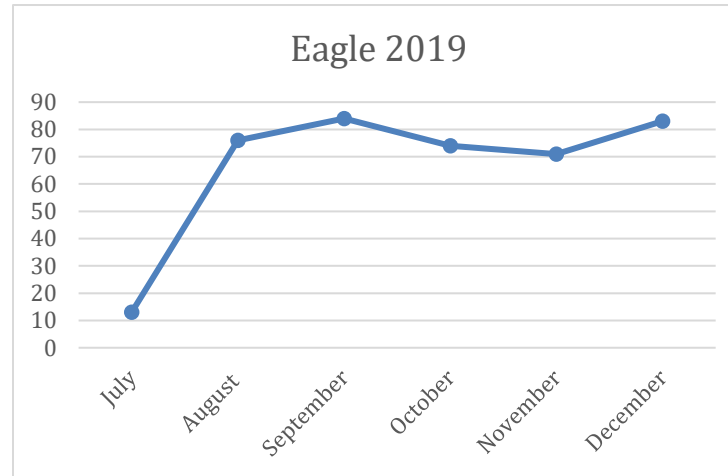
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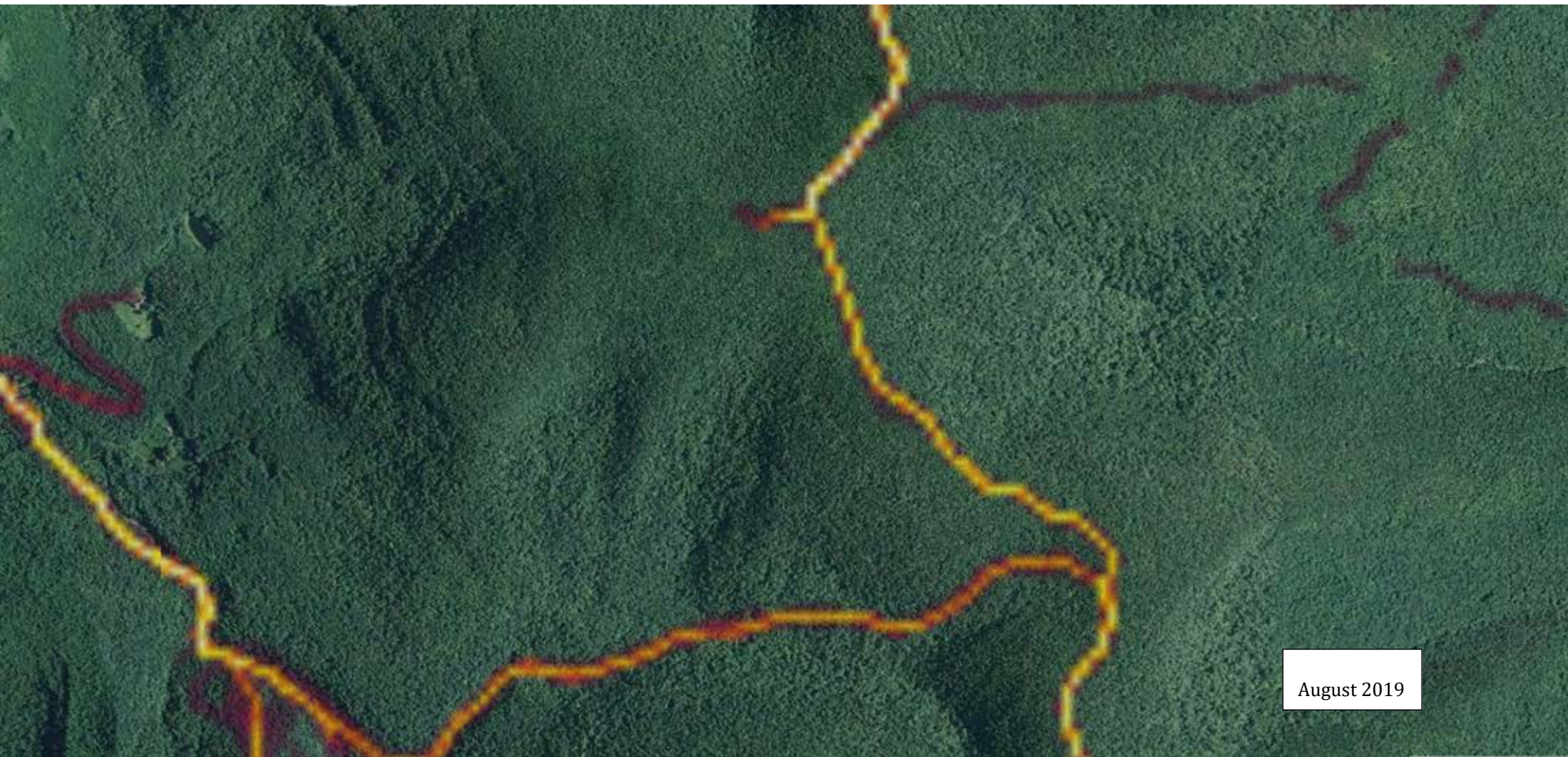




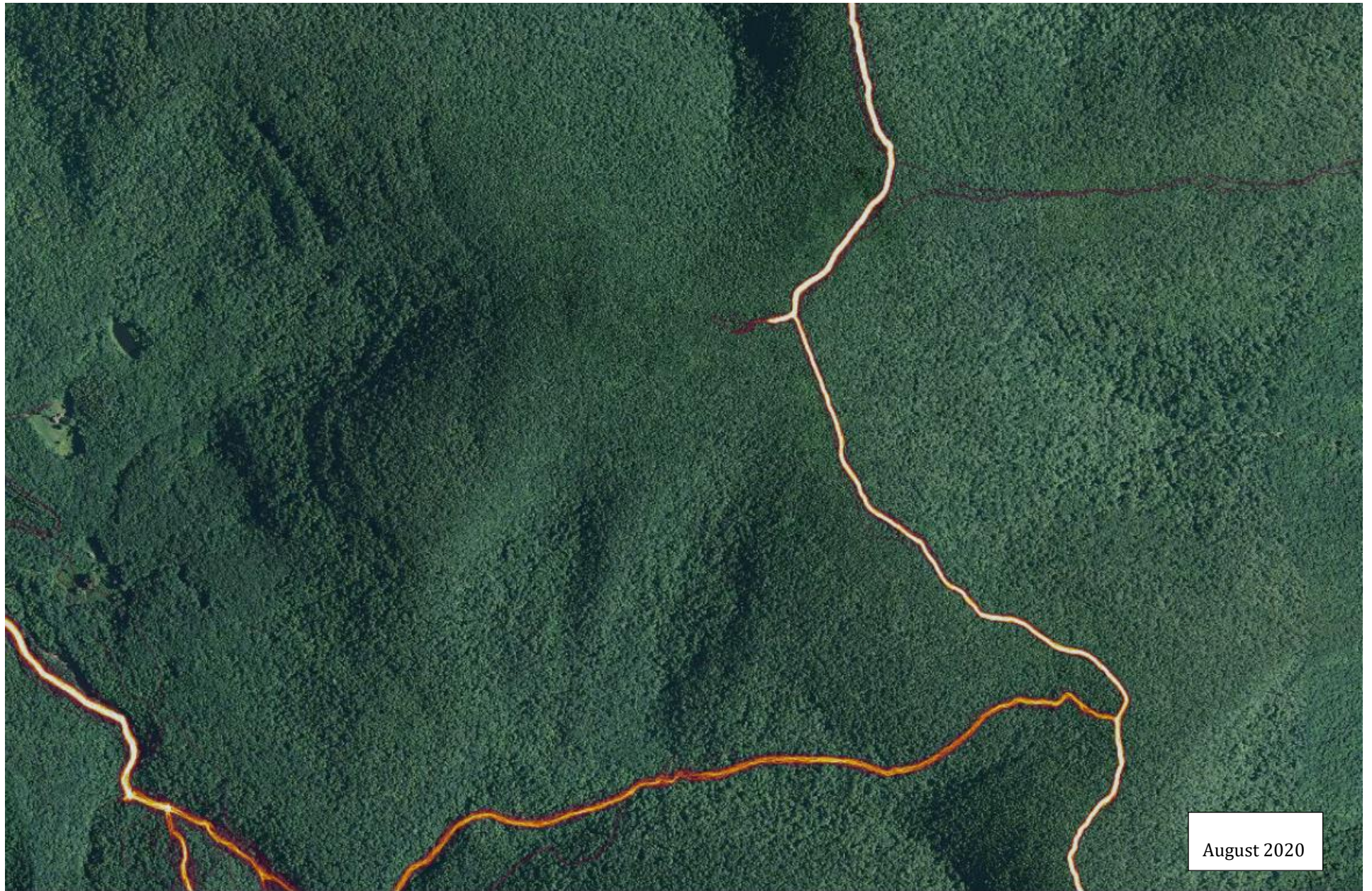


Eagle





August 2019

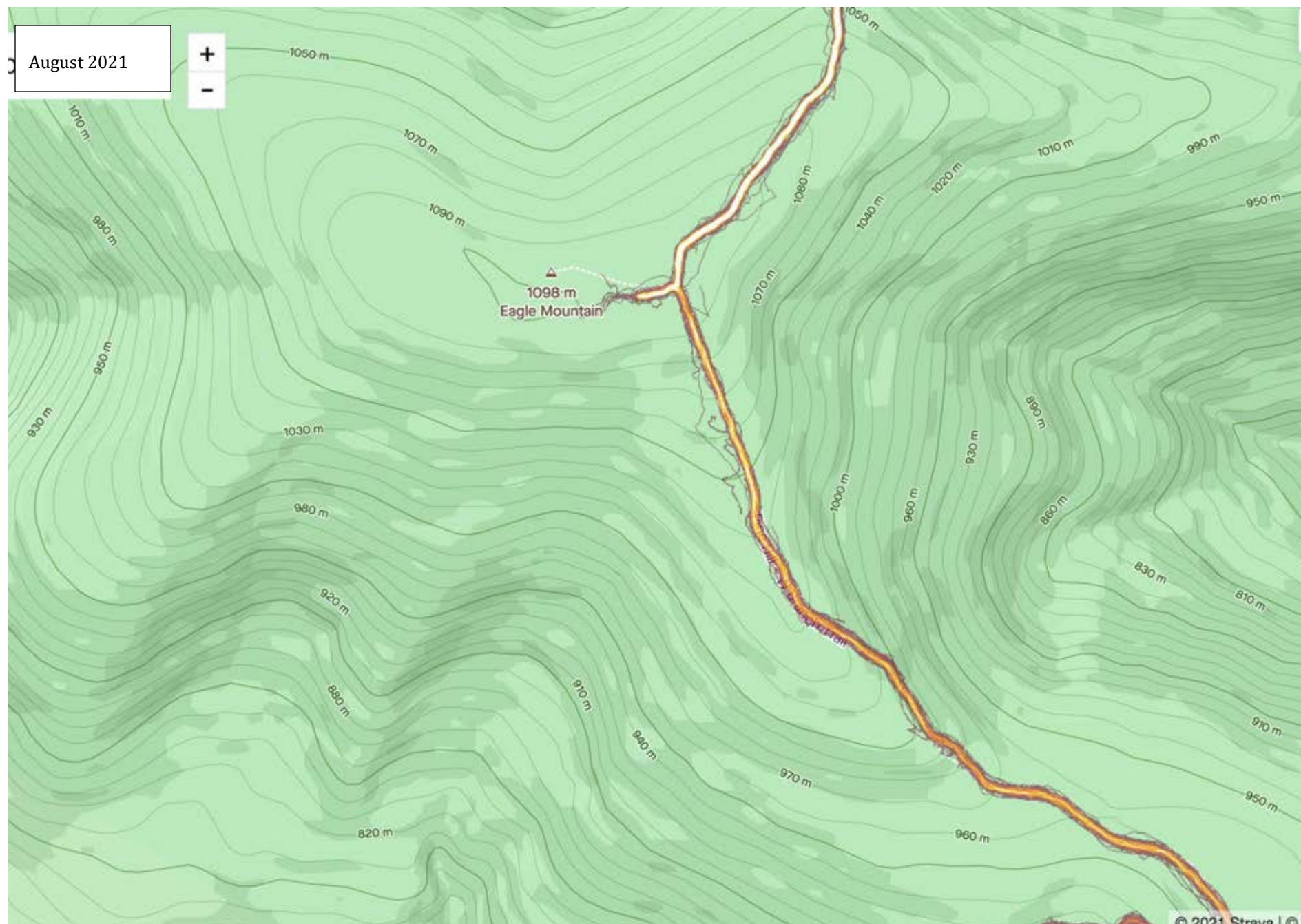


August 2020



August 2021

August 2021



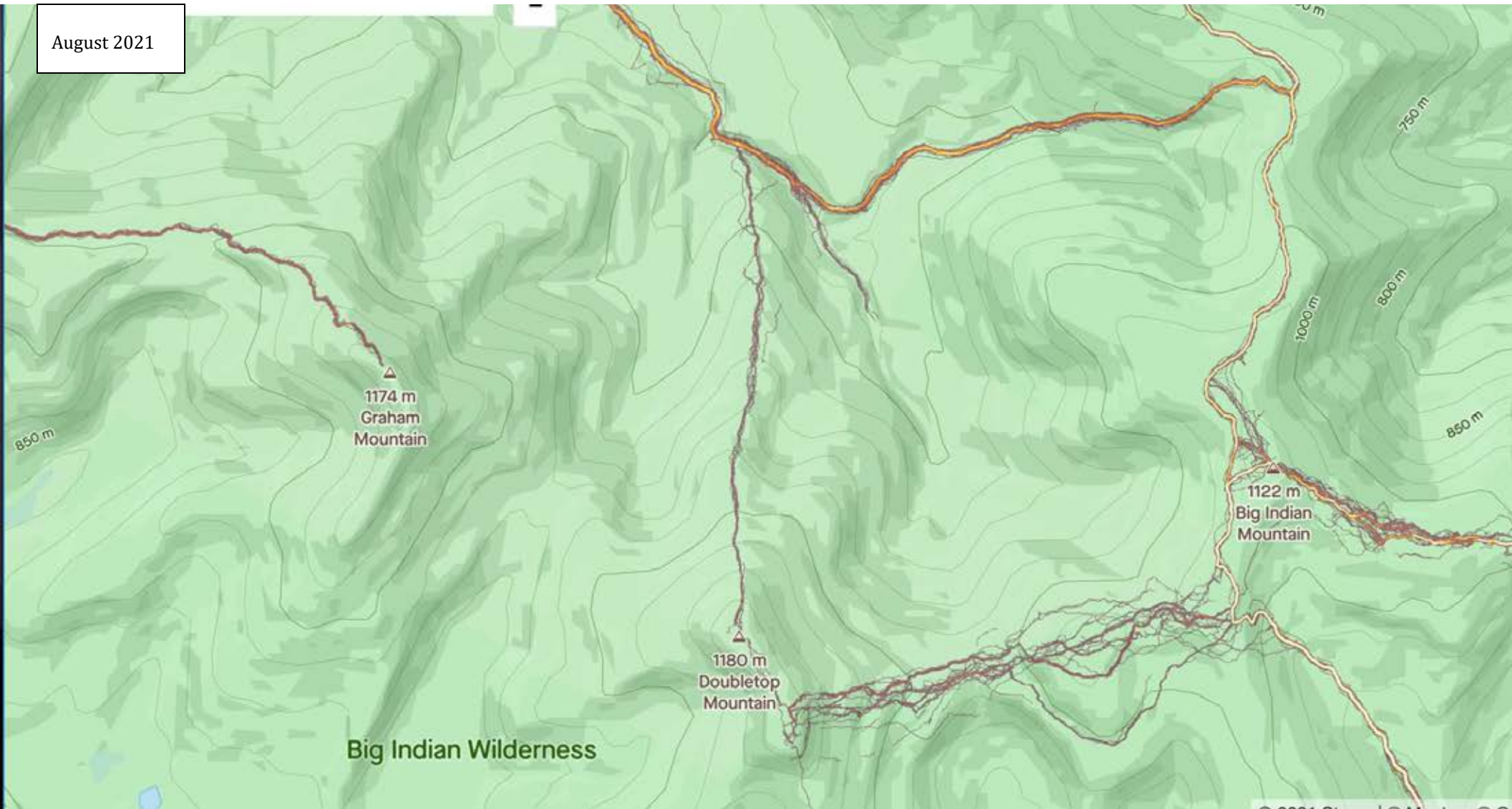
South Doubletop



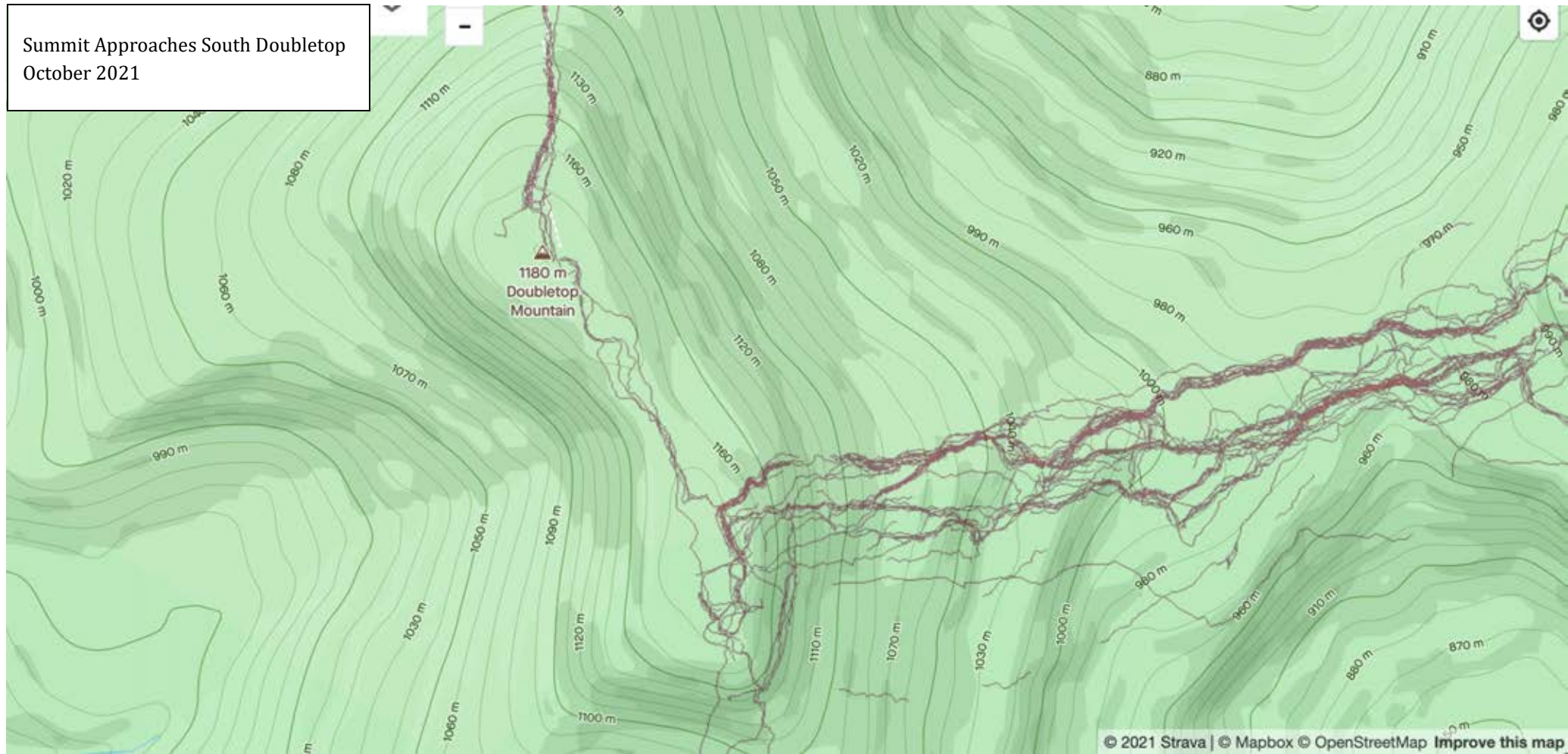
August 2021



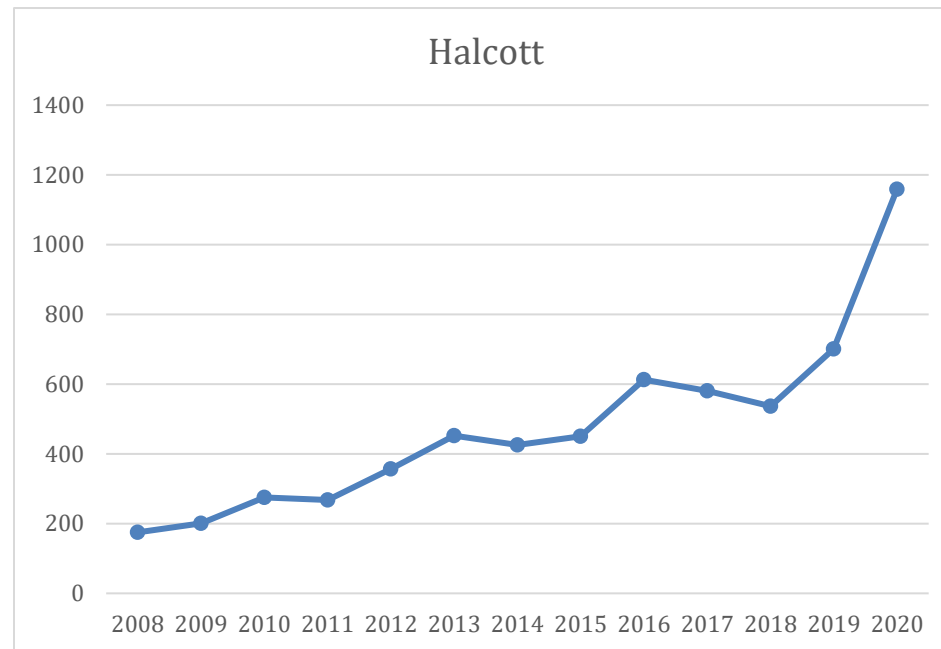
August 2021



Summit Approaches South Doubletop
October 2021



Halcott





August 2019

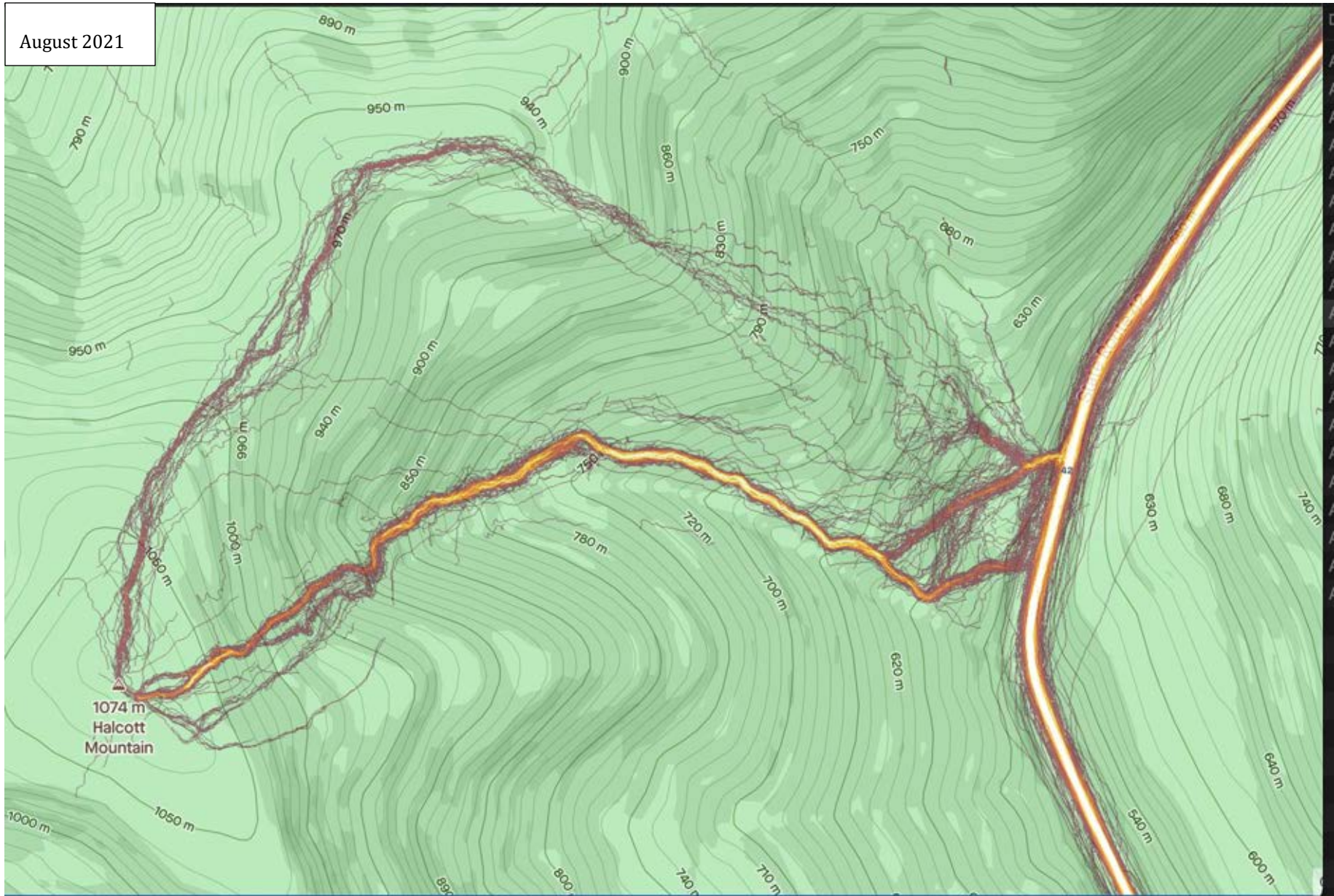


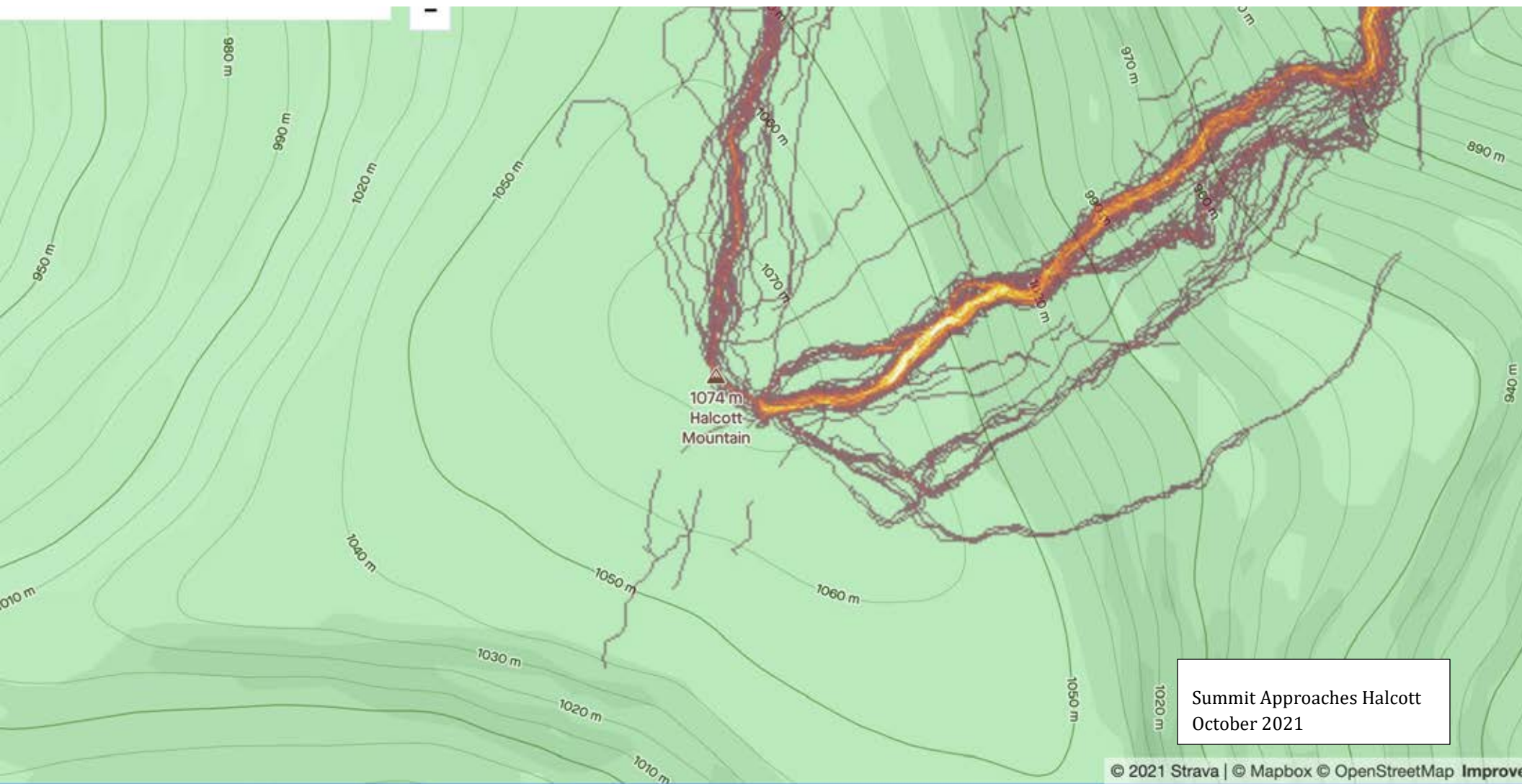


August 2021

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August 2021

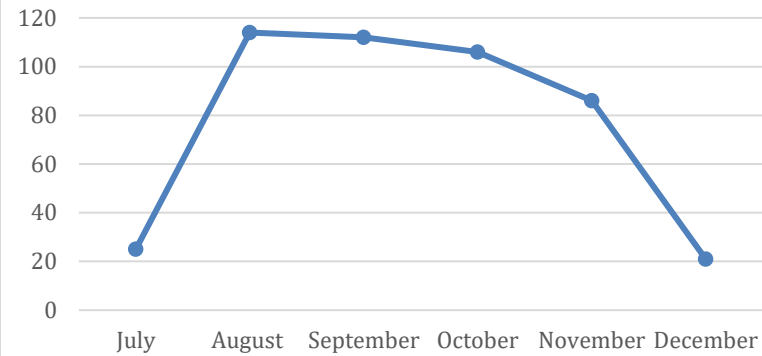




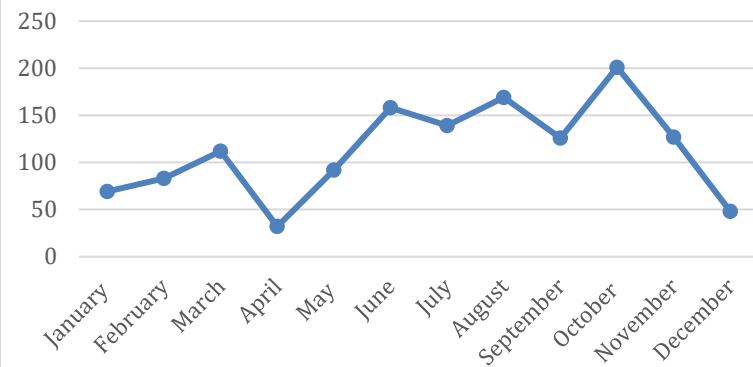
Kaaterskill High Peak

A canister was installed on the KHP summit in July of 2019 so there is no sign in data for the months prior to that.

KHP 2019

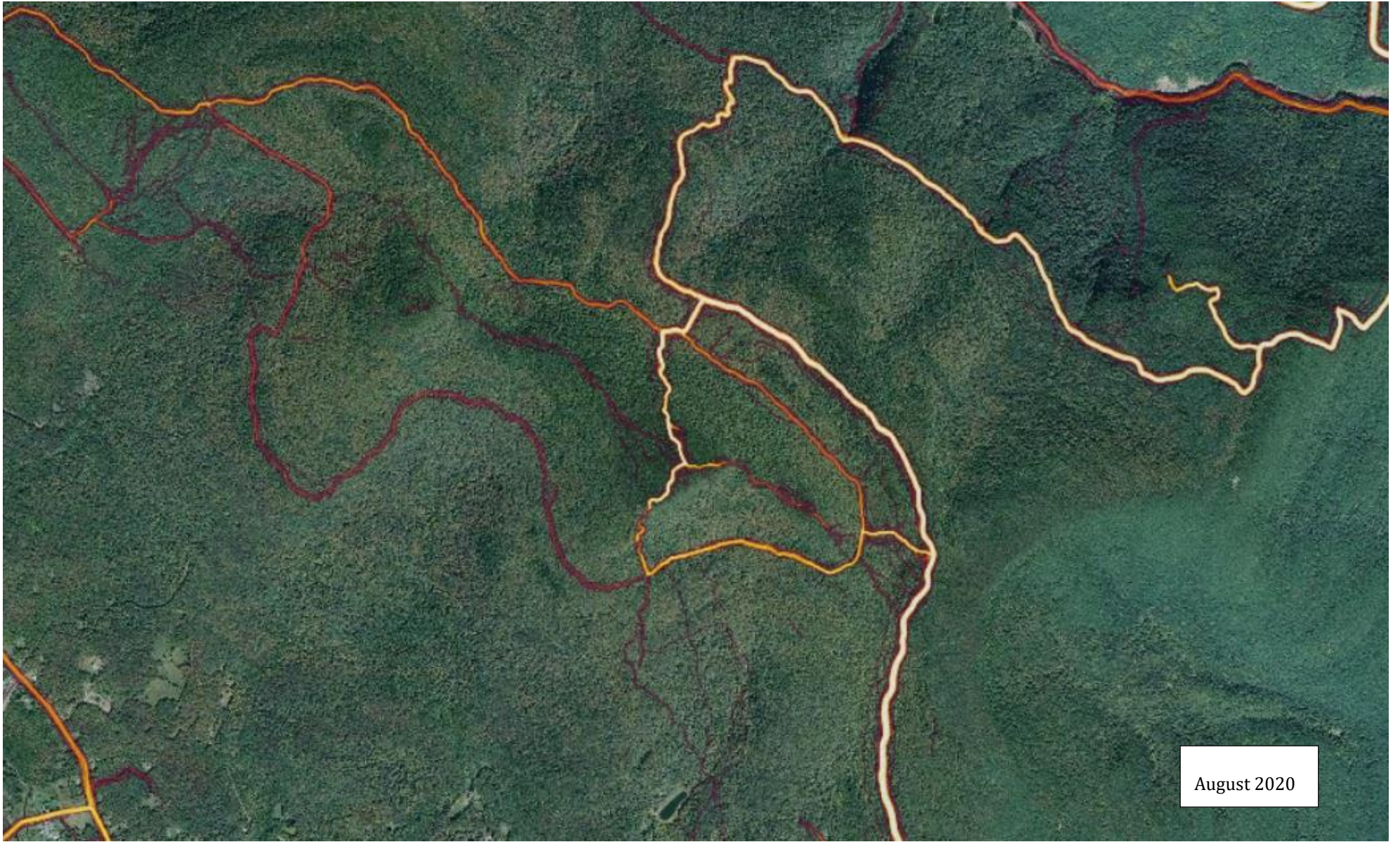


KHP 2020





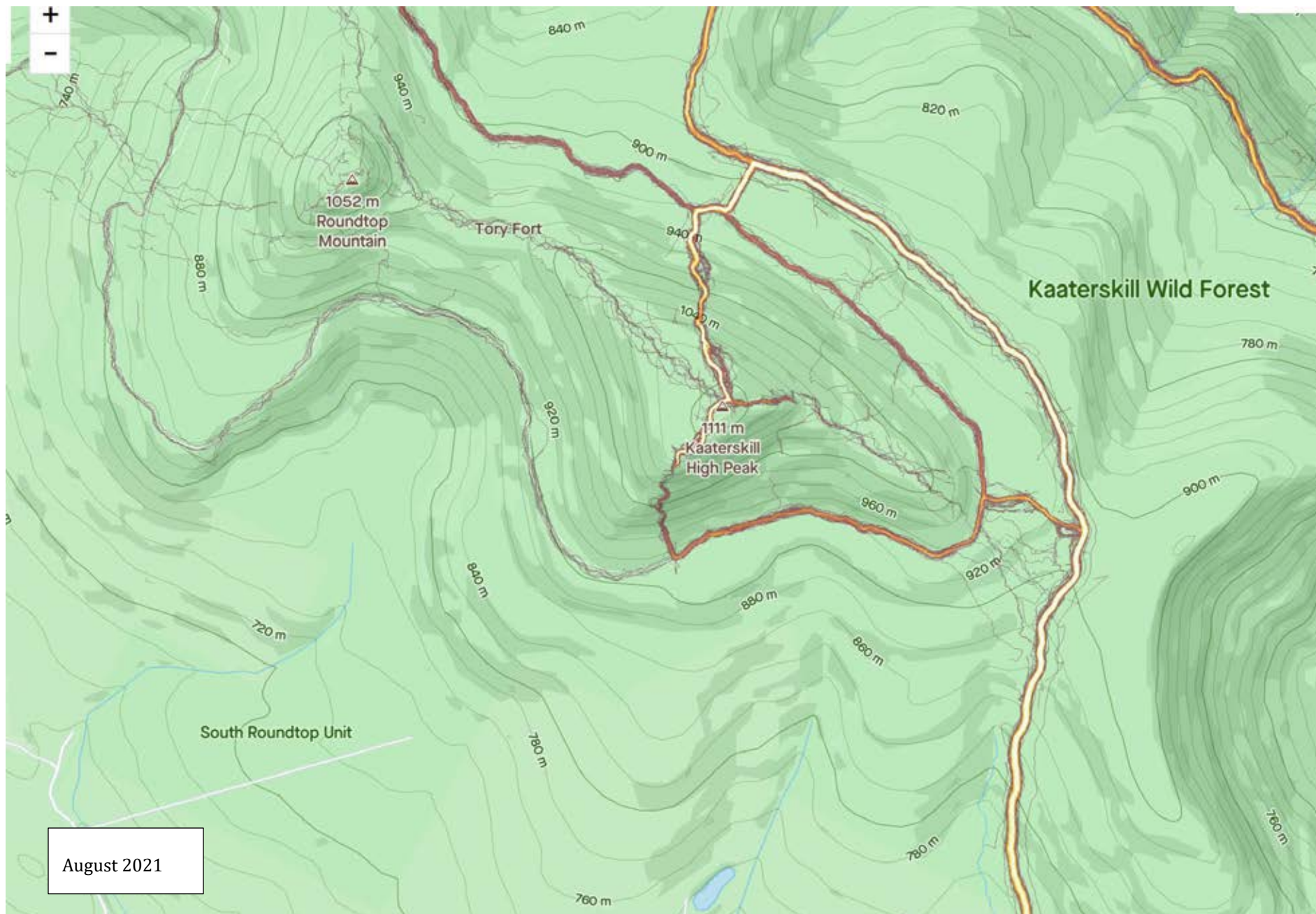
August 2019



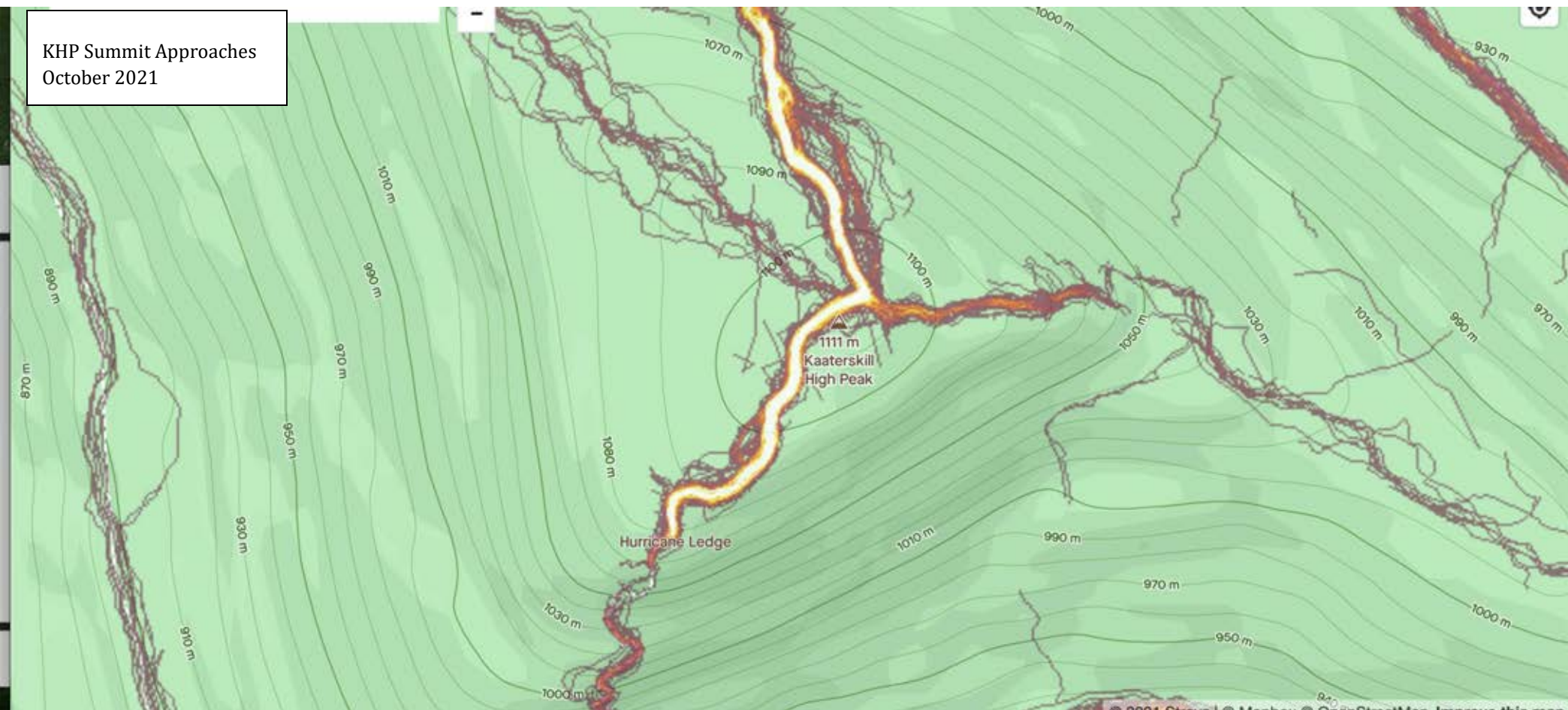
August 2020



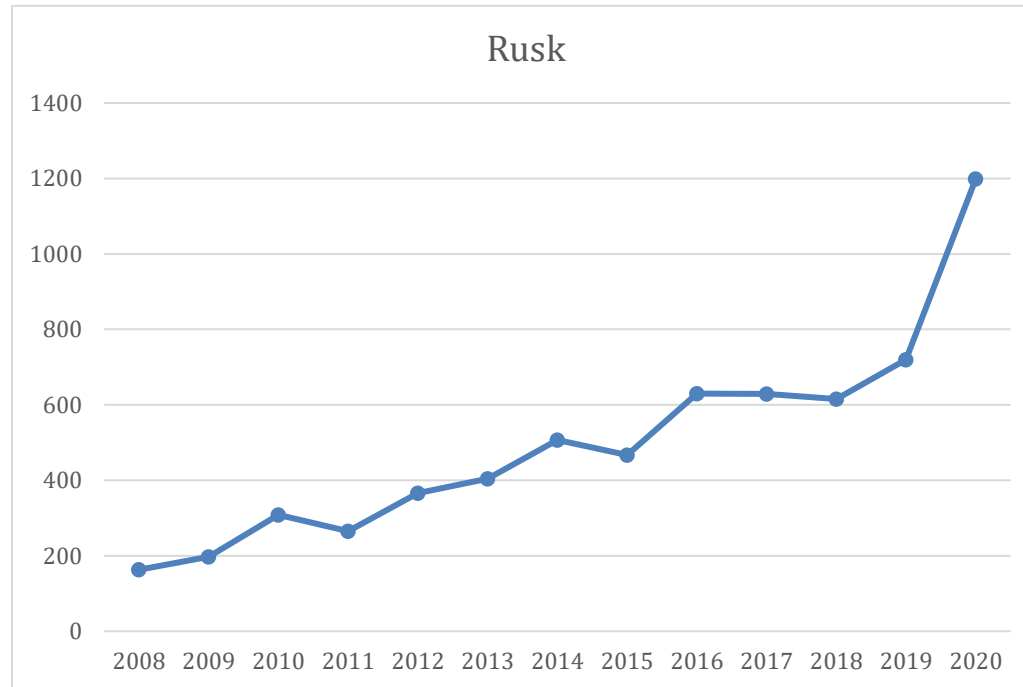
August 2021



KHP Summit Approaches
October 2021



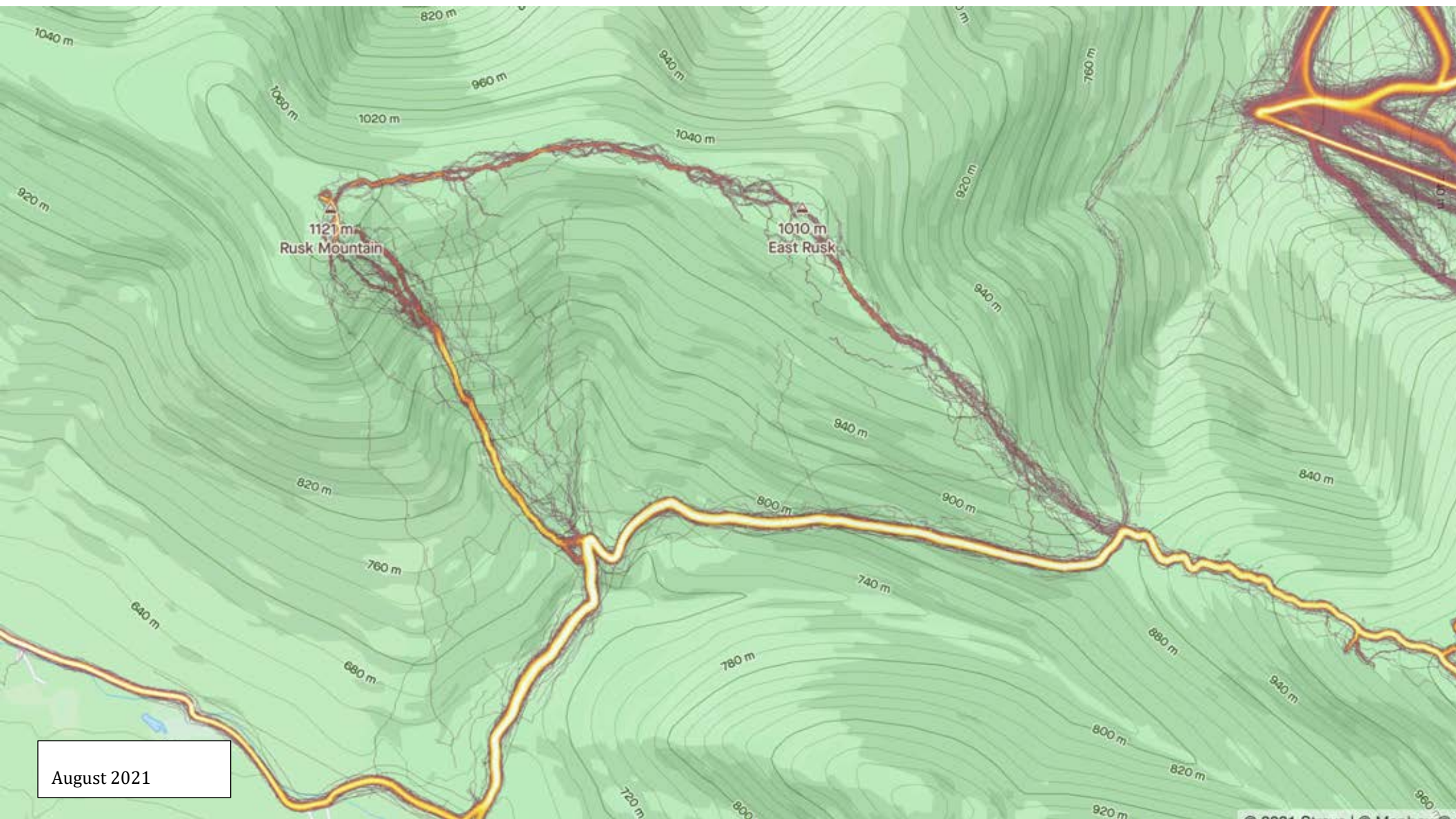
Rusk



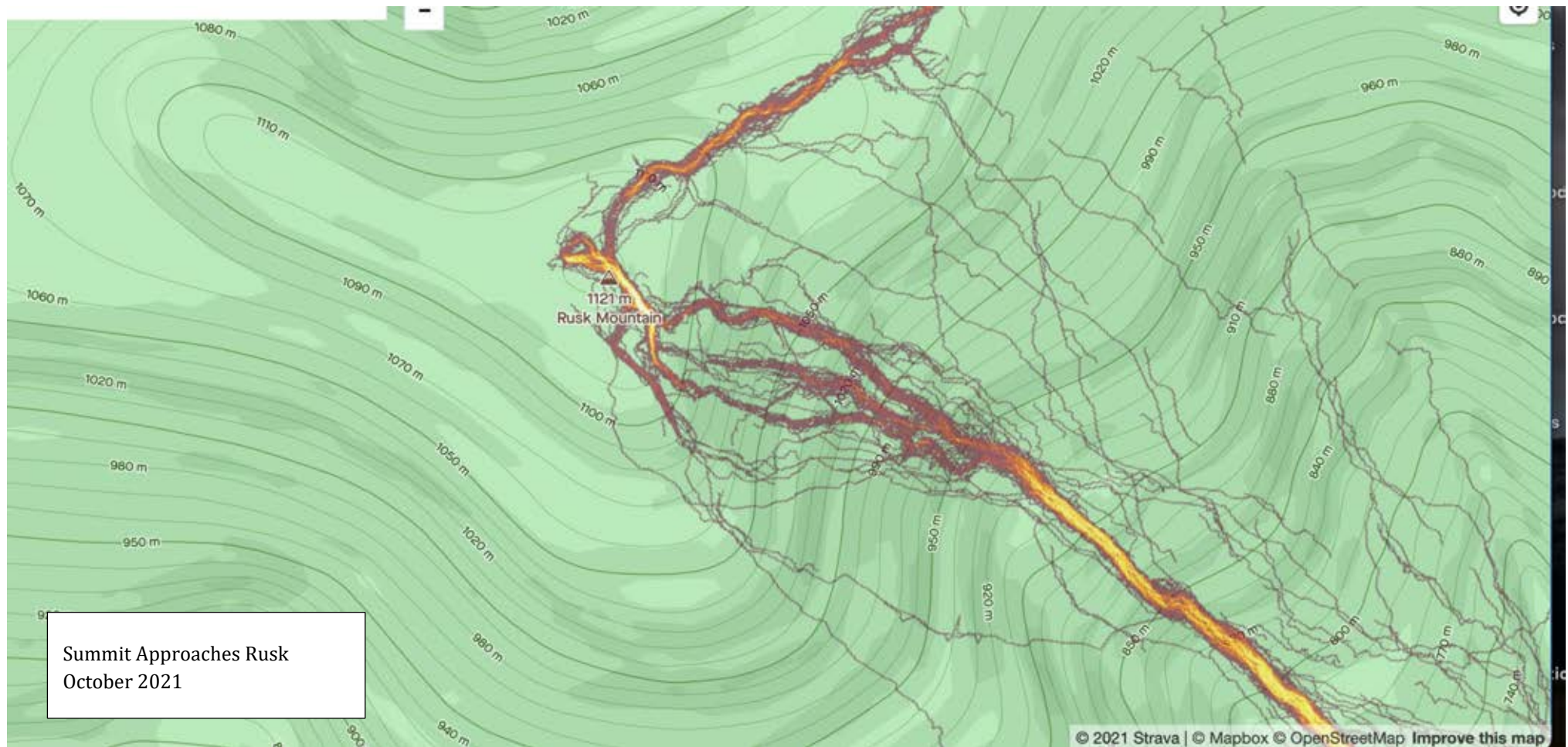


August 2019

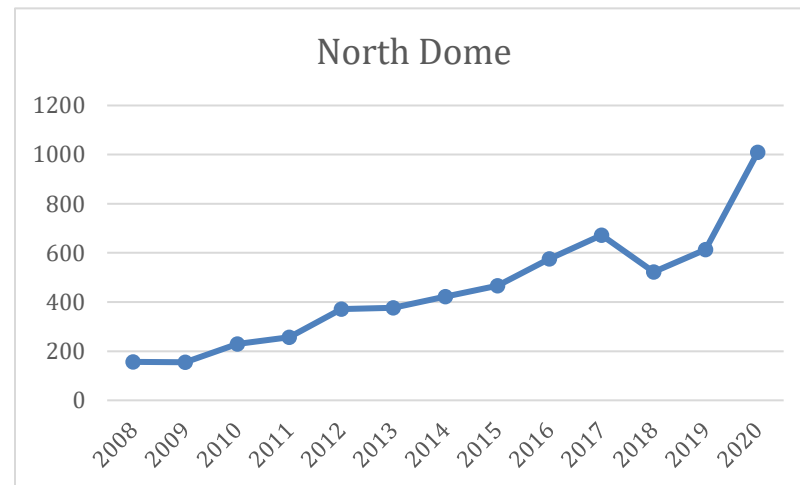
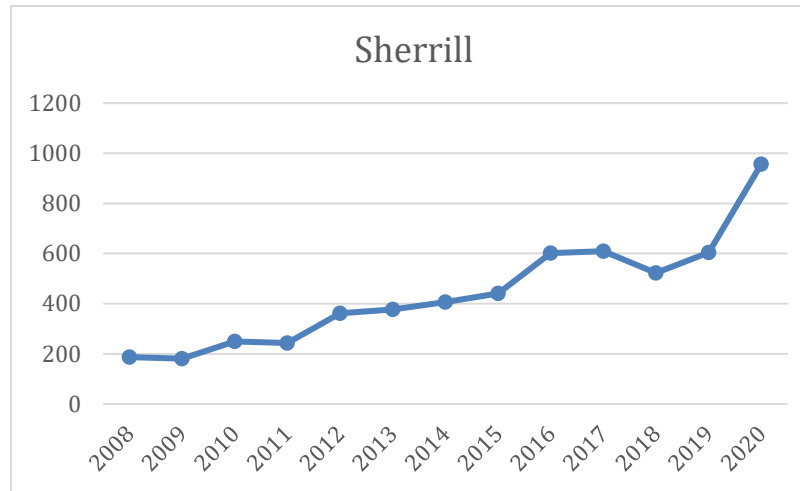


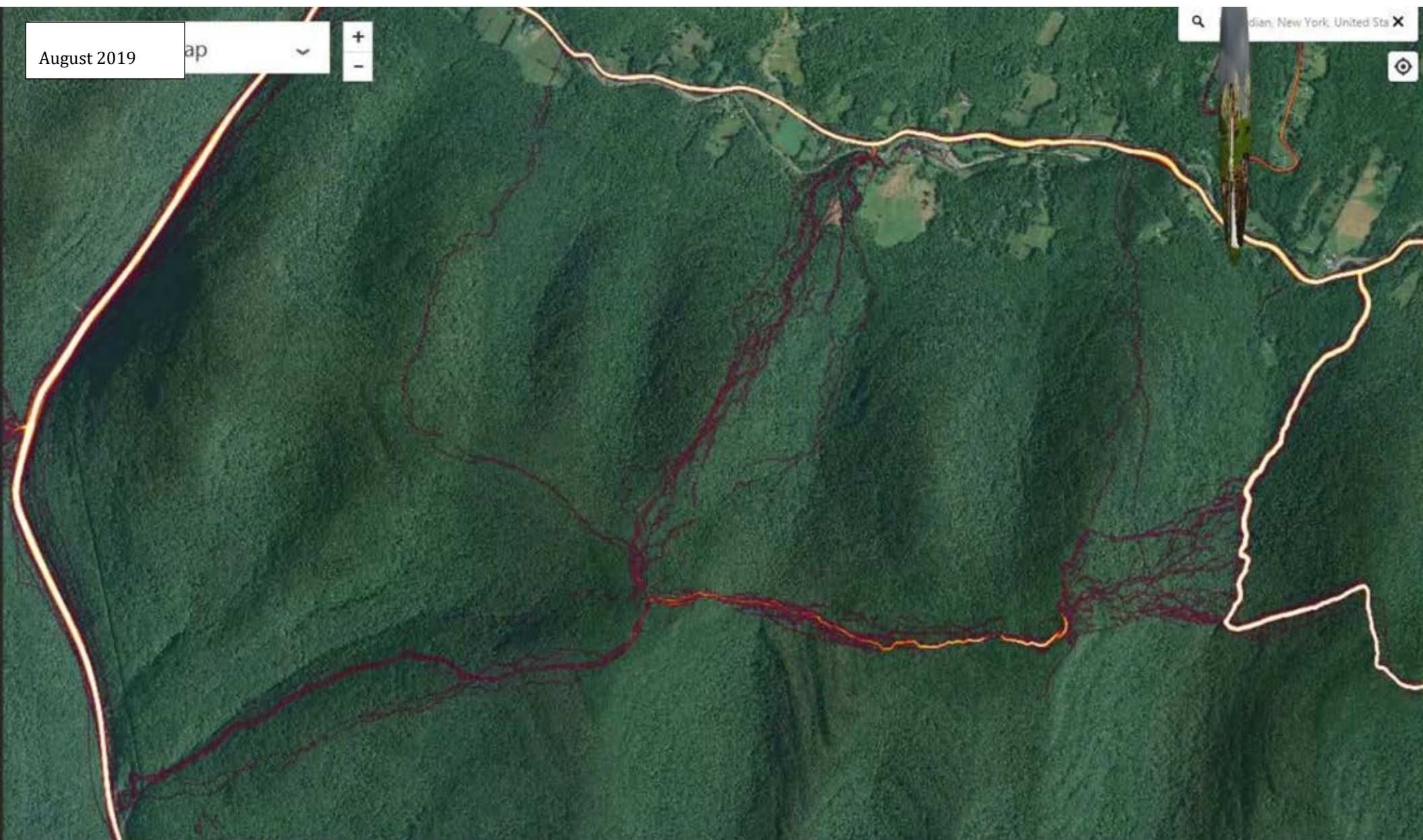


August 2021



Sherrill and North Dome





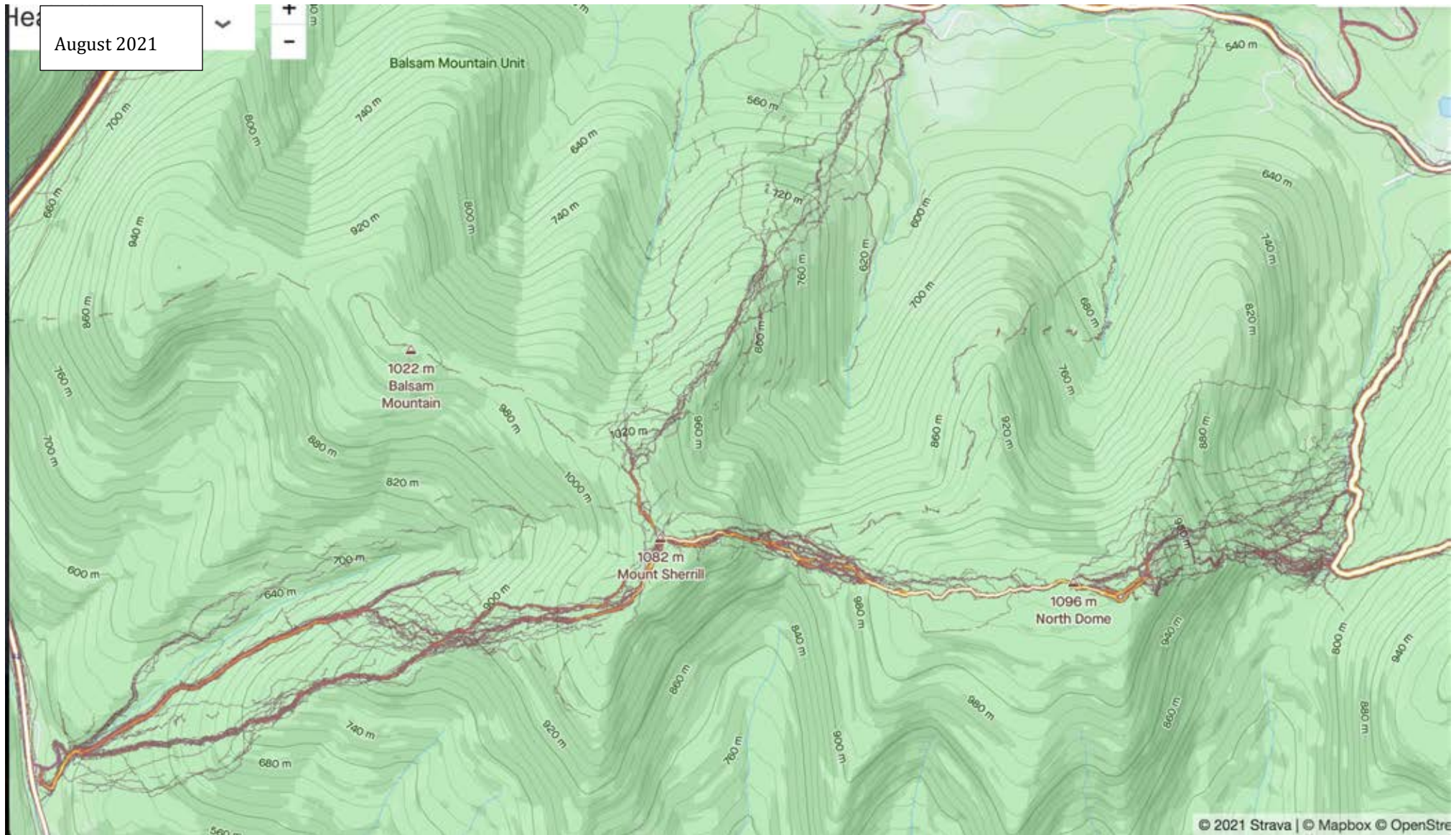
August 2020



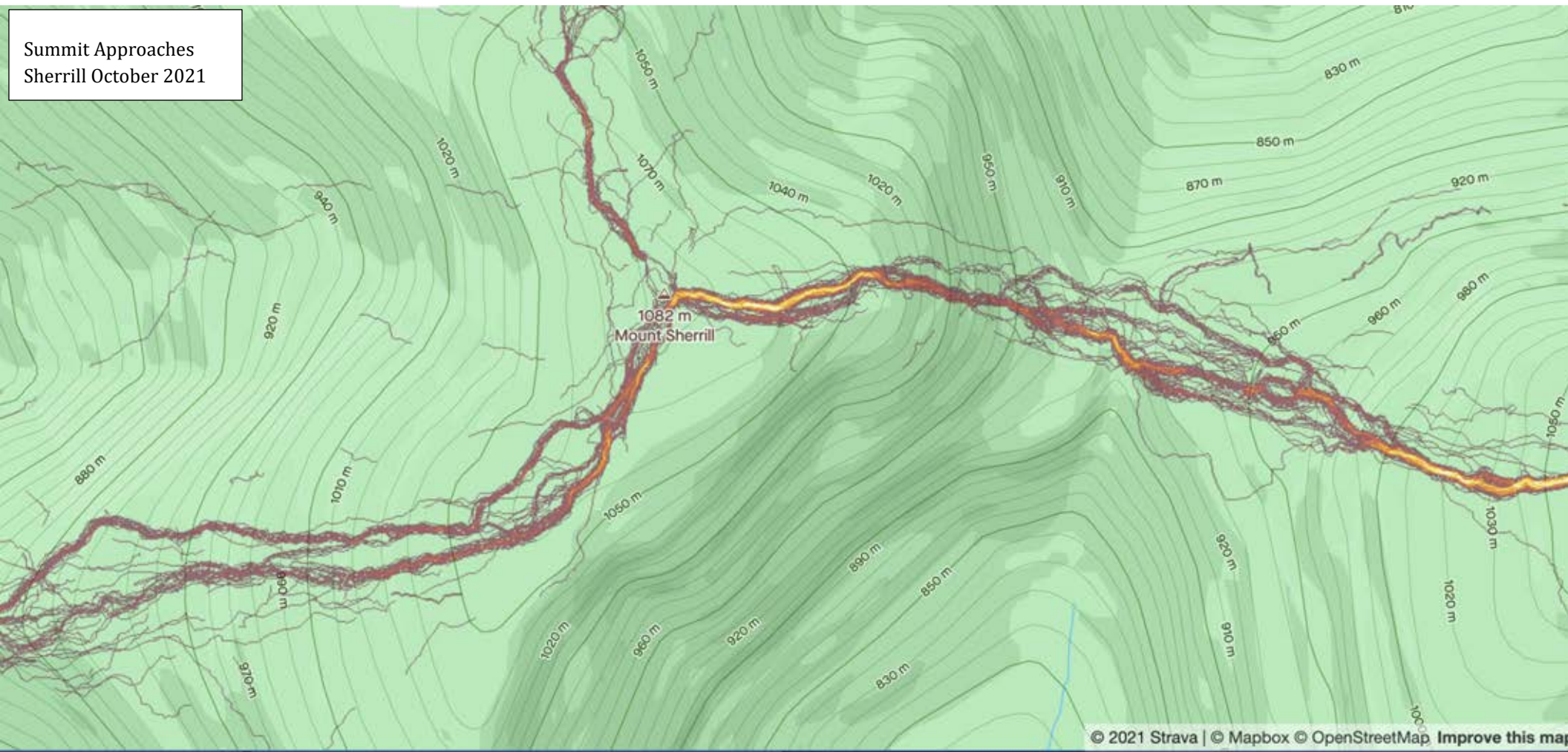
August 2021



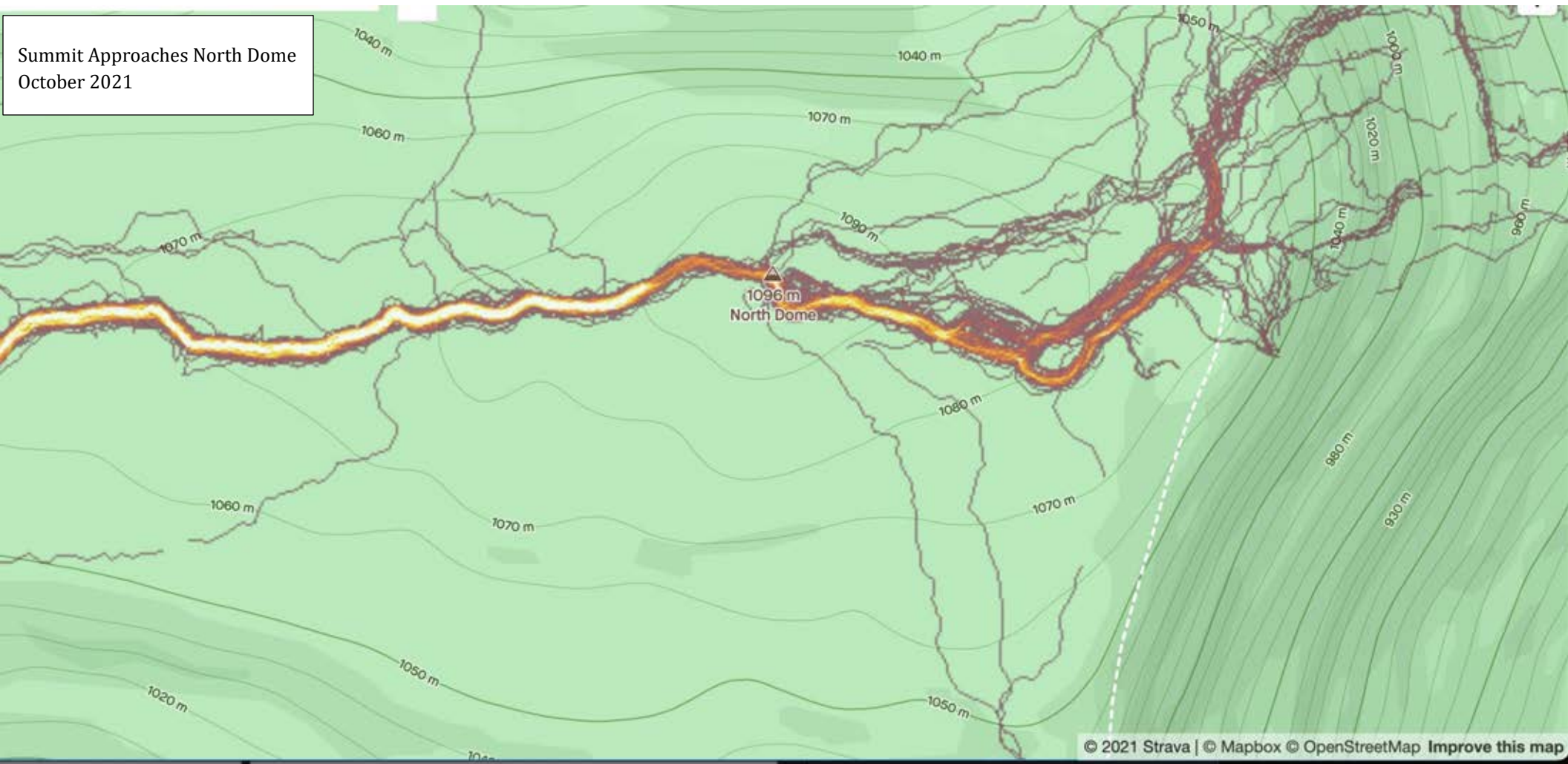
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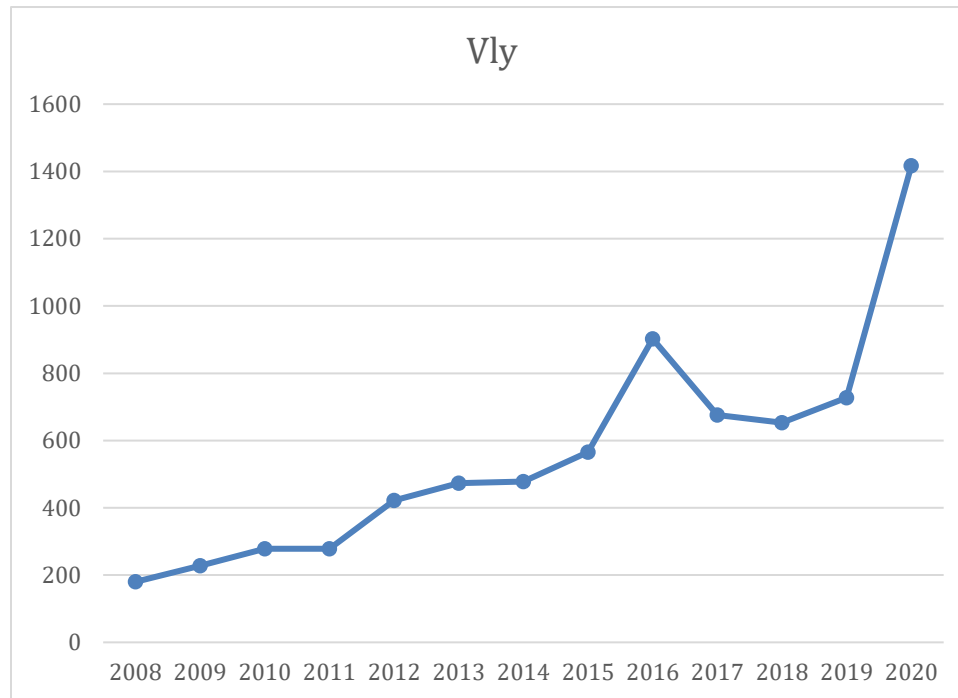
Summit Approaches
Sherrill October 2021



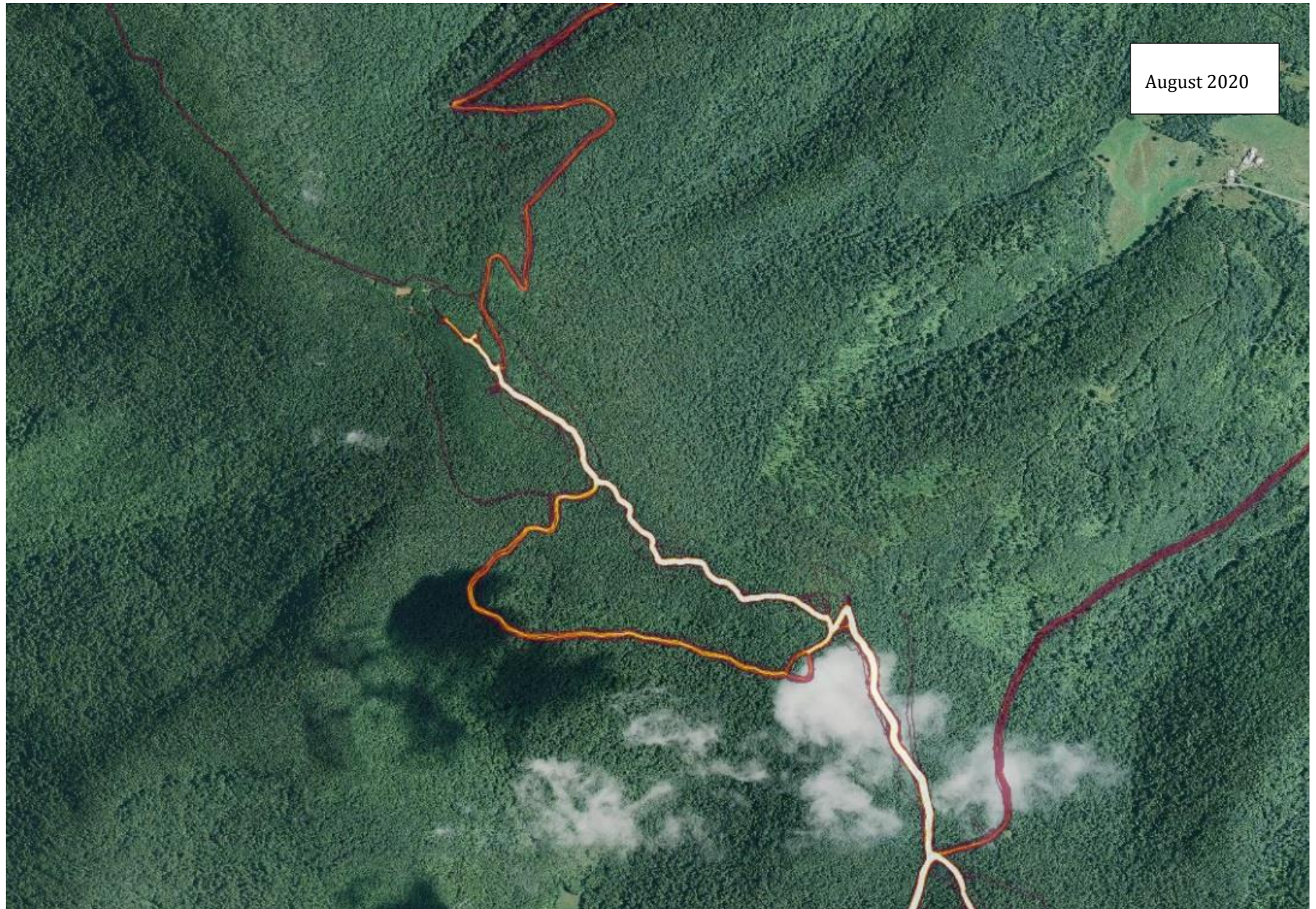
Summit Approaches North Dome
October 2021



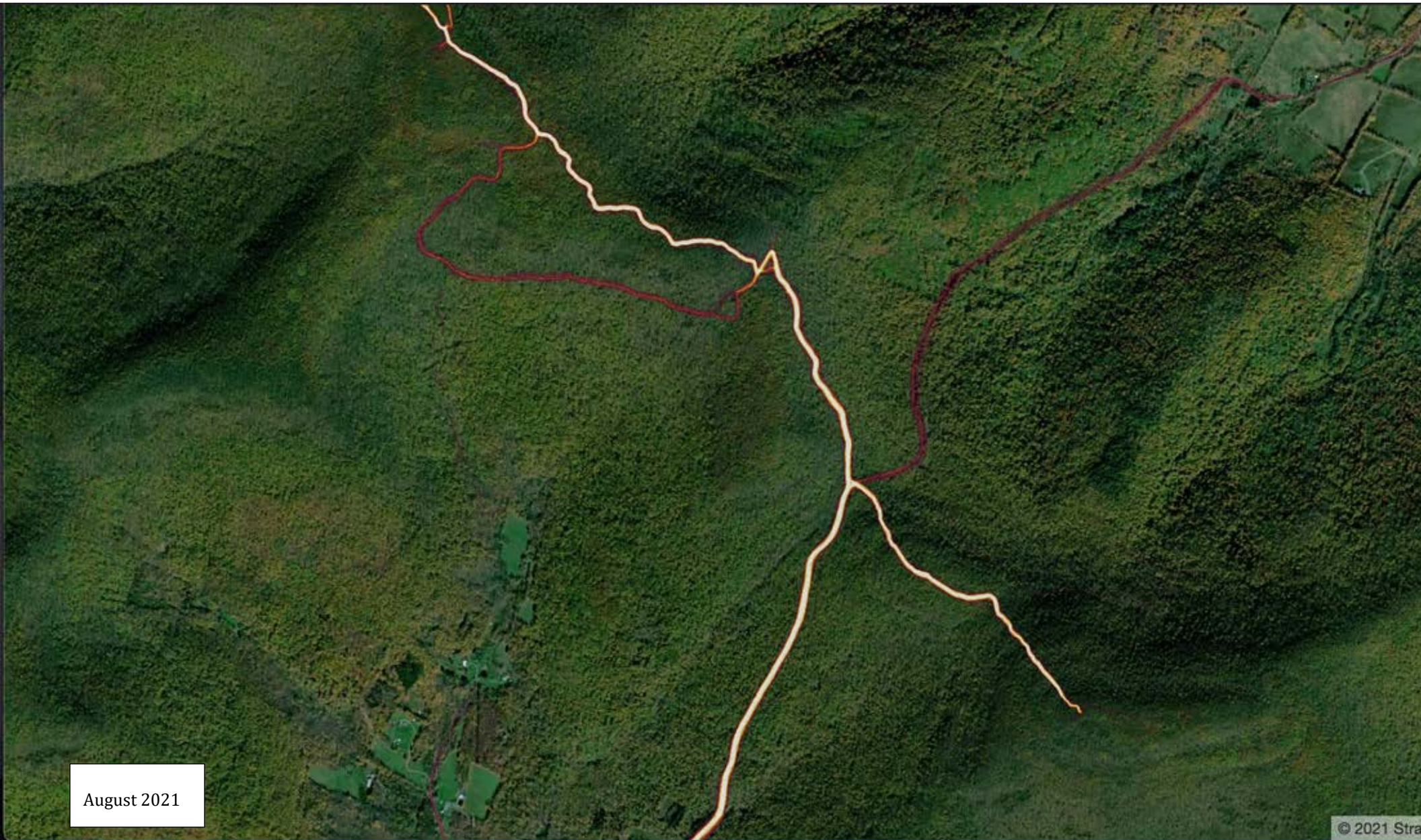
Vly (& Bearpen)



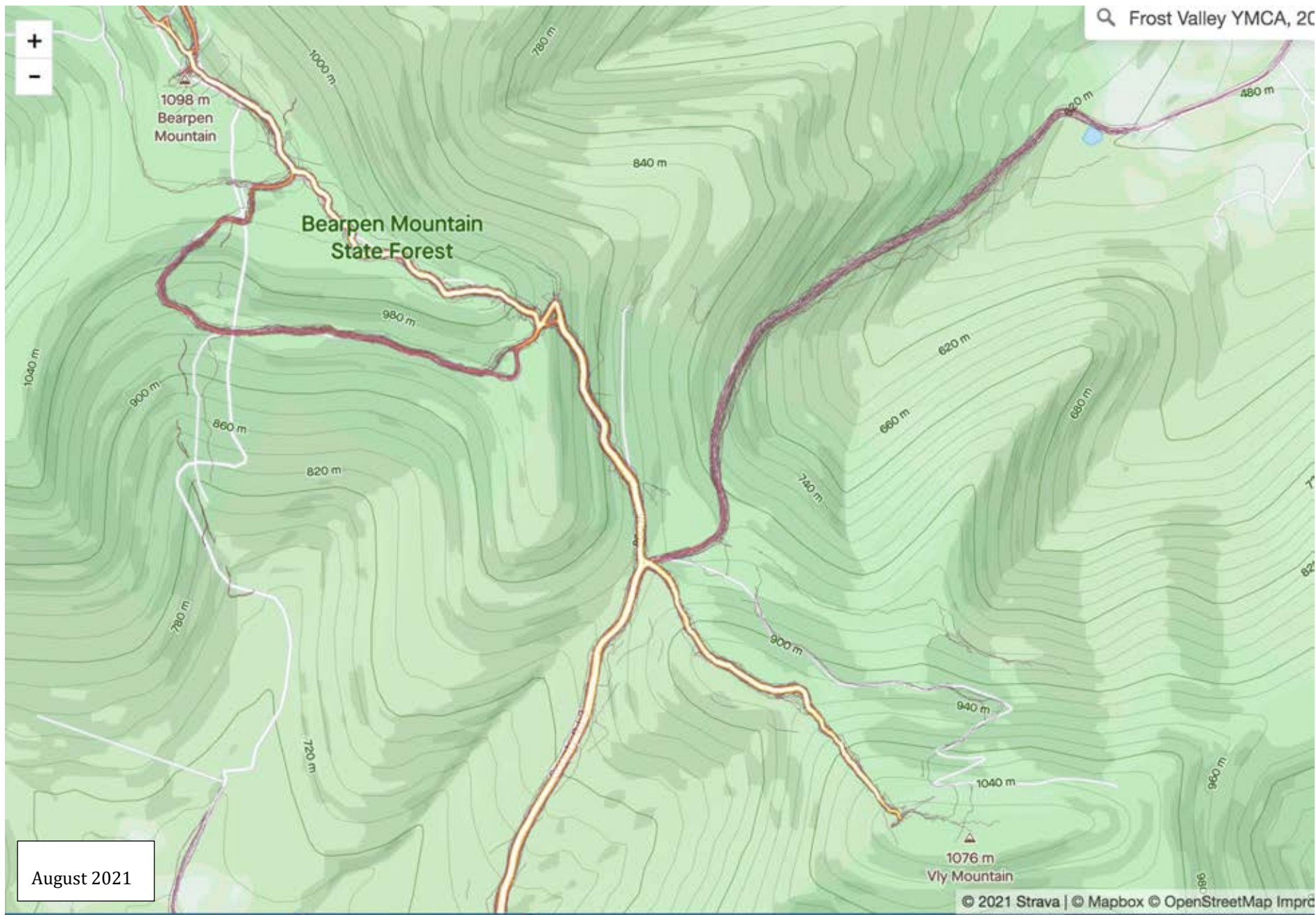


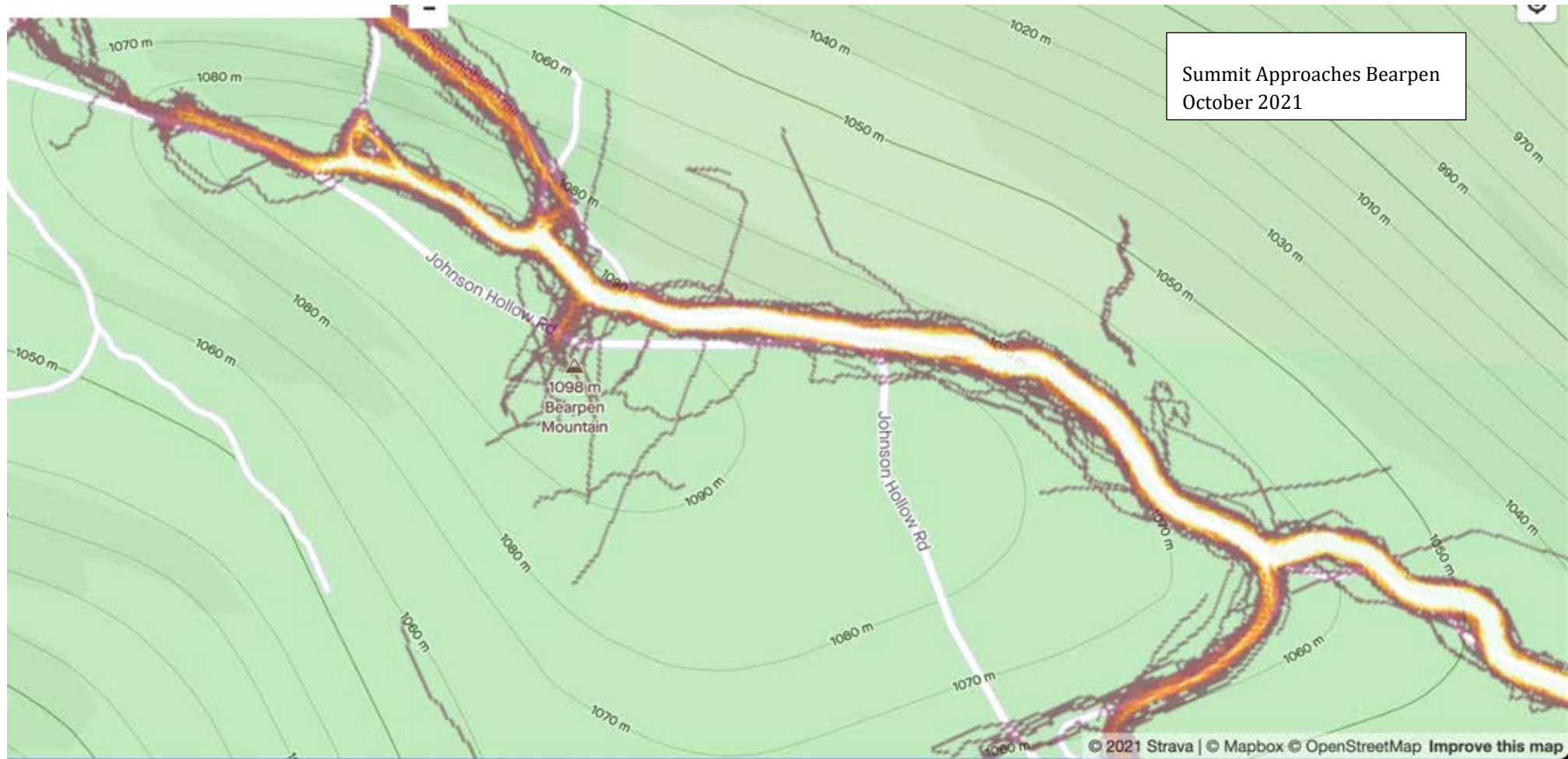


August 2020



August 2021

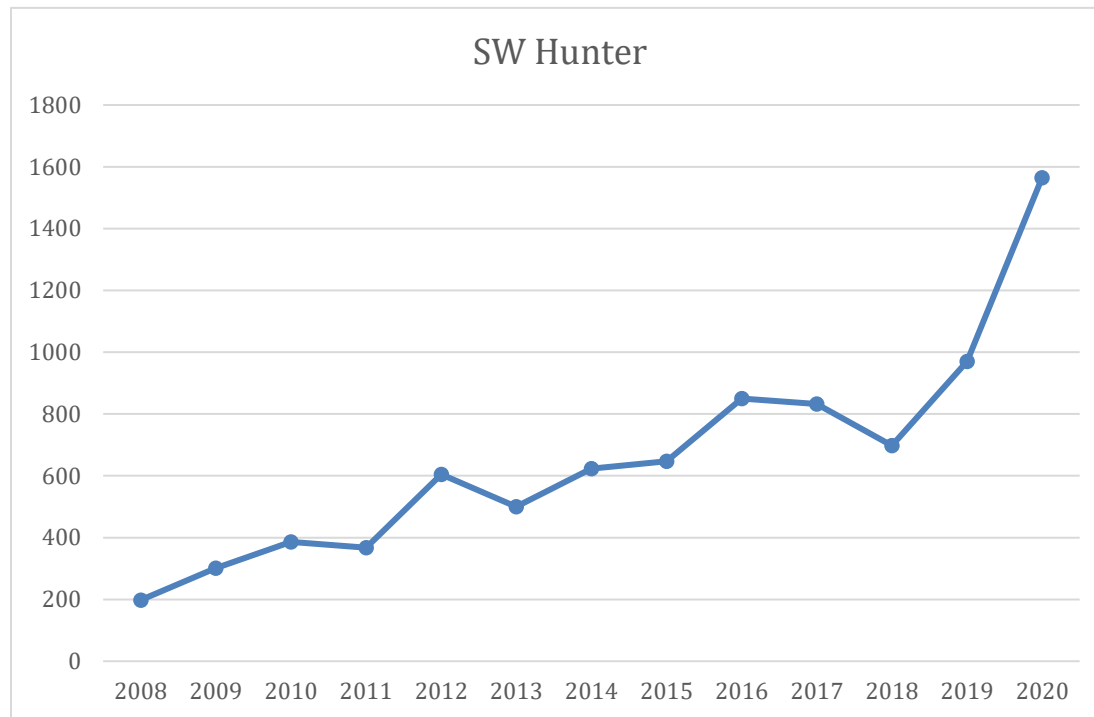






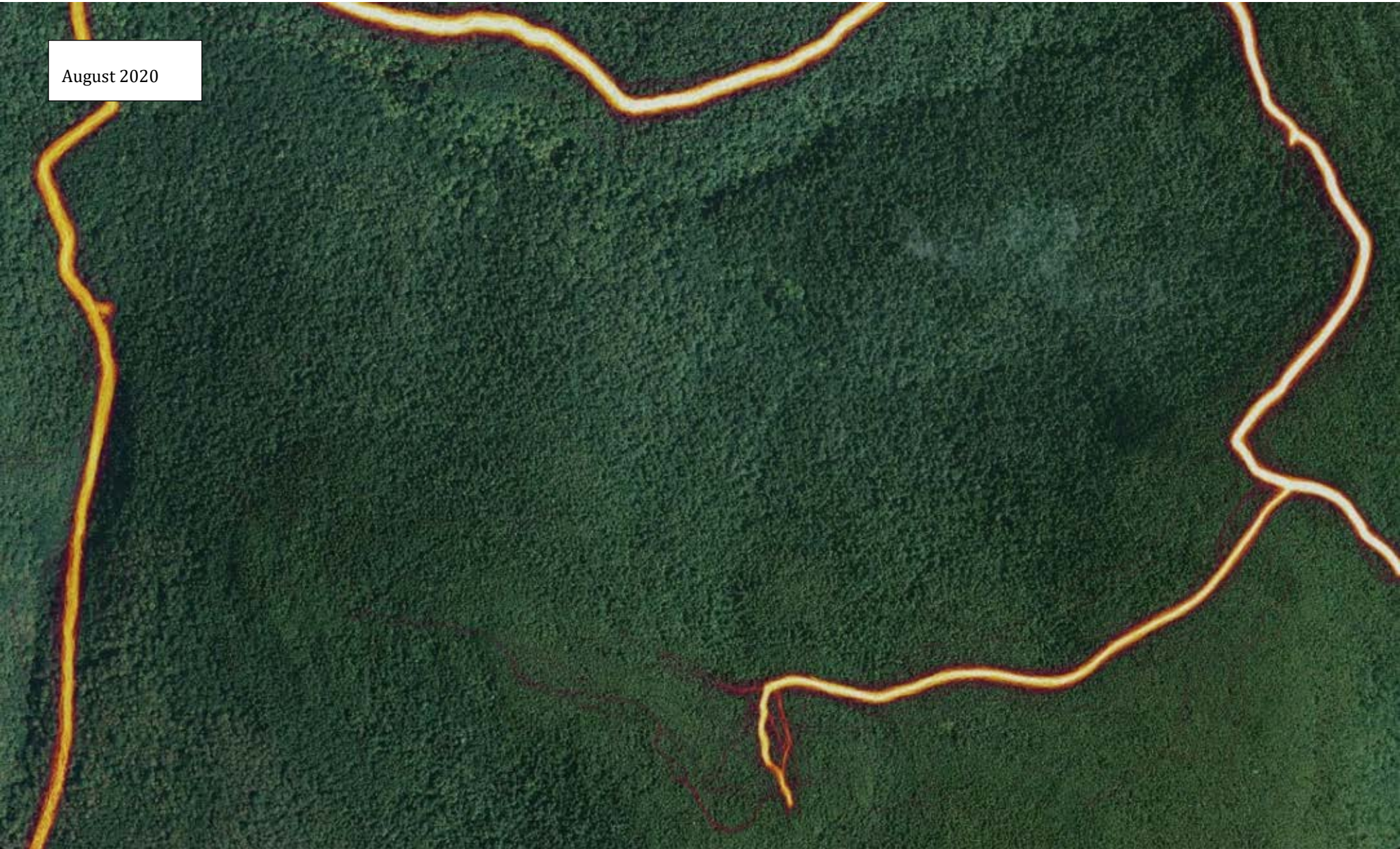
Summit Approaches Vly
October 2021

Southwest Hunter



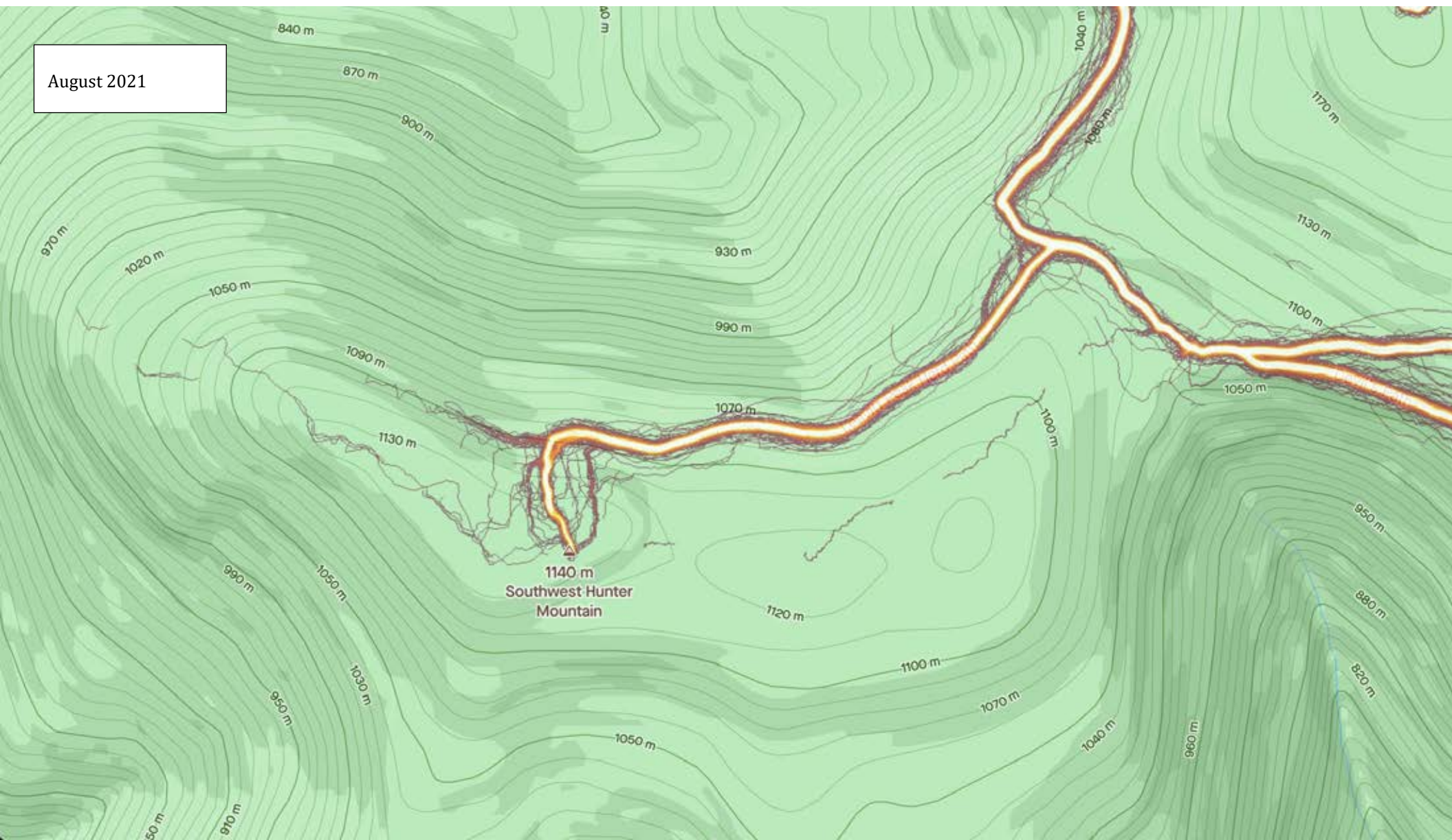
August 2019

August 2020

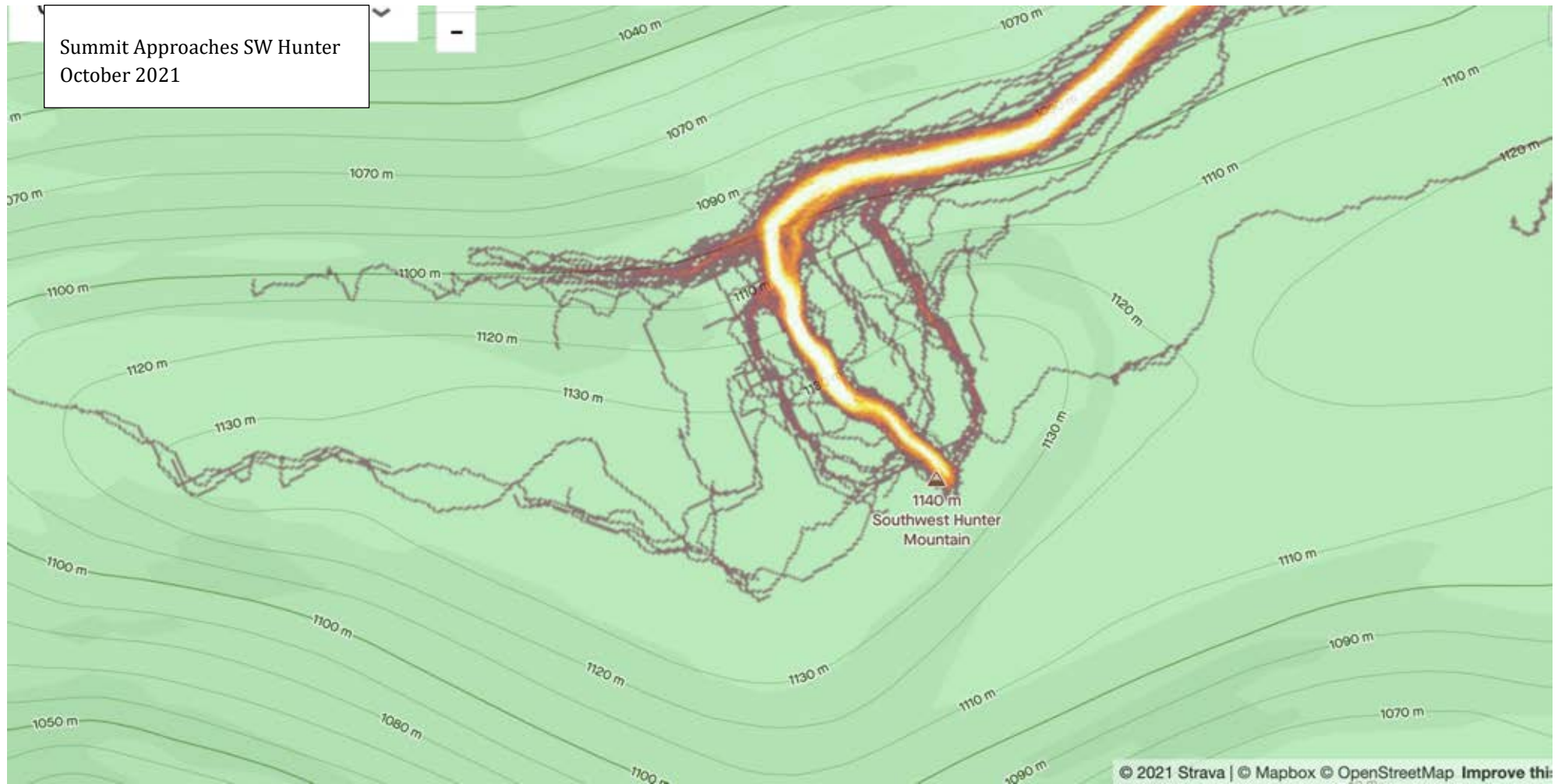


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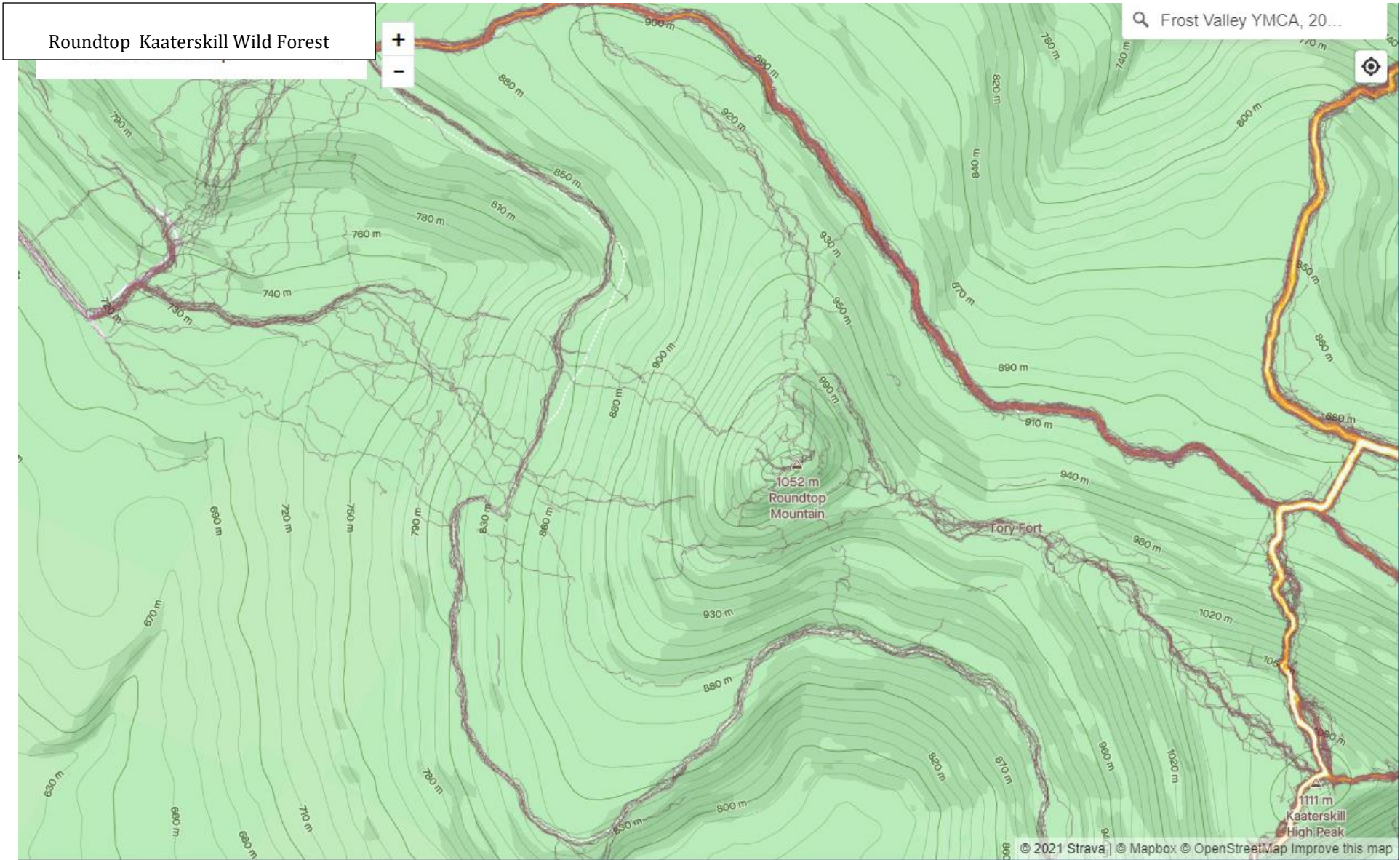
August 2021



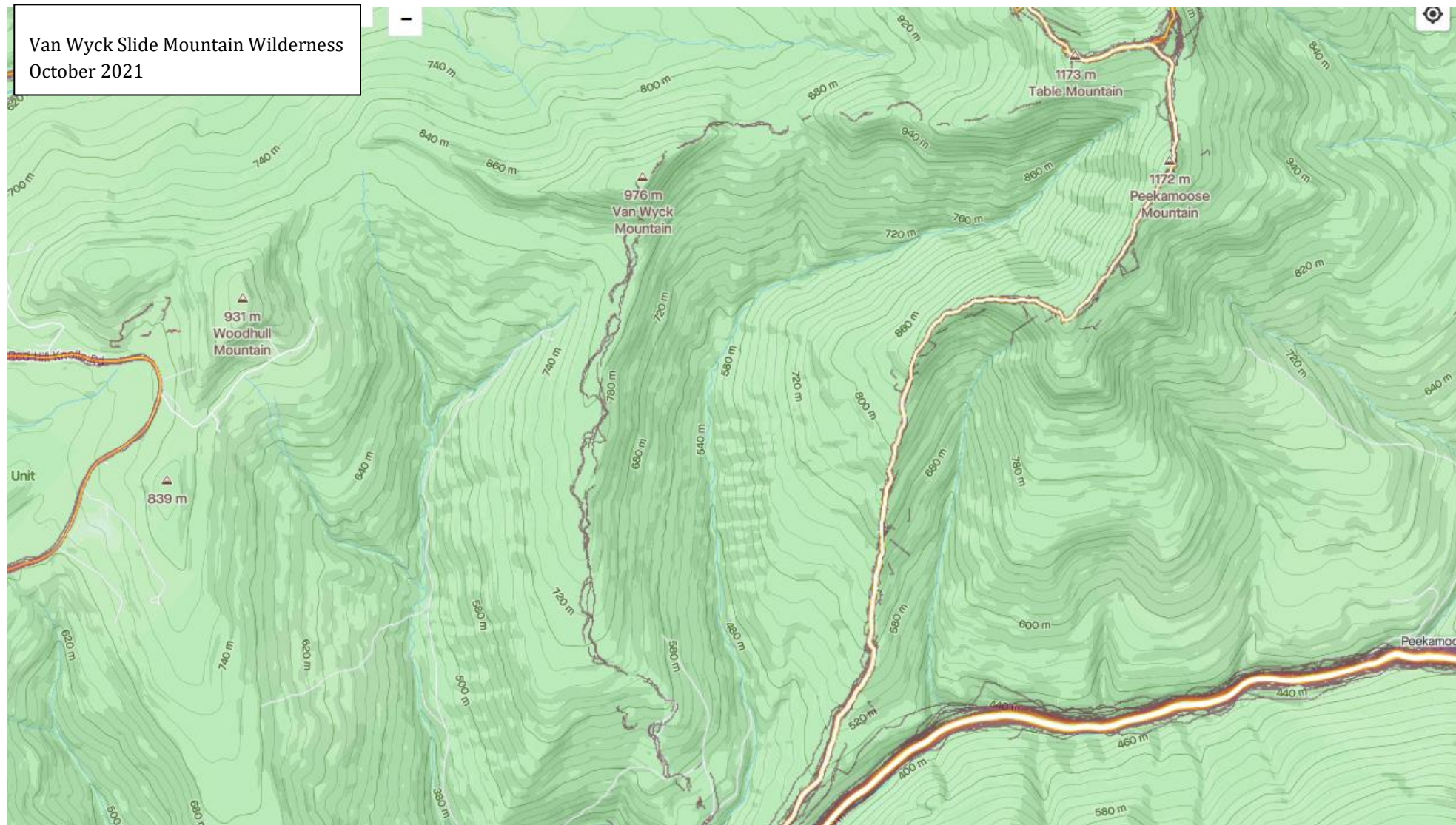
Summit Approaches SW Hunter
October 2021



Additional Peaks over 3,000' to Include
in the Monitoring Effort Beginning in
2021



Van Wyck Slide Mountain Wilderness
October 2021



Sleeping Lion Halcott Wild Forest
October 2021

Global Heatmap

