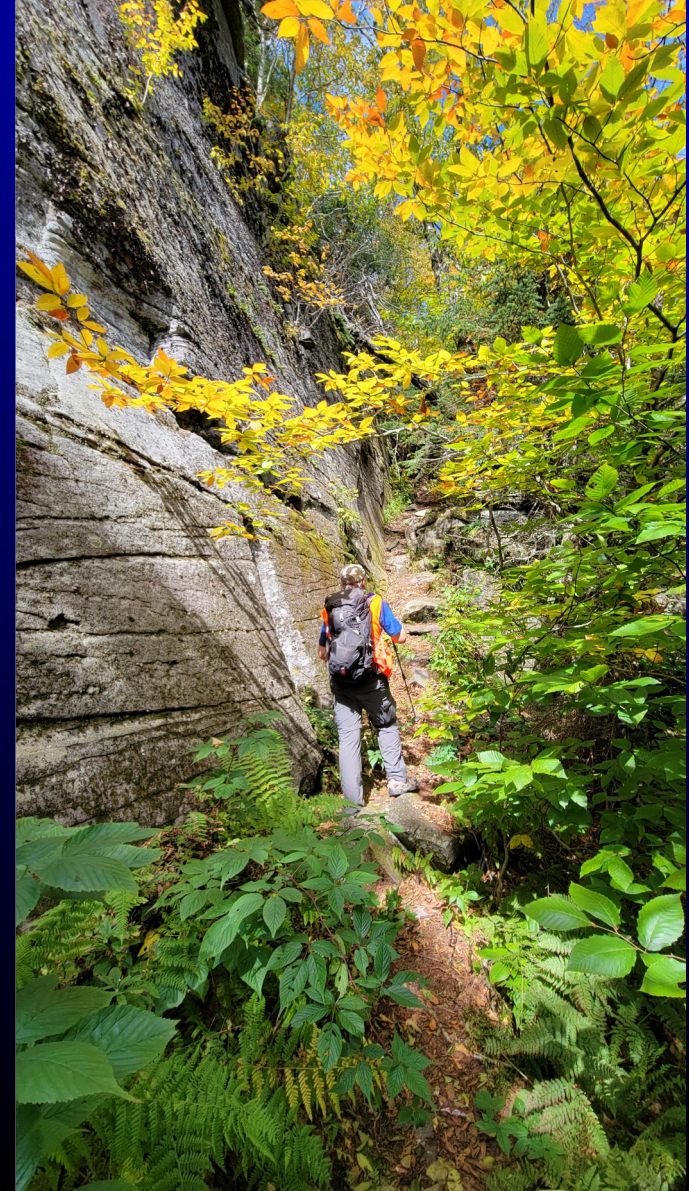


# Unofficial trails in OSM in New York: Metrics and Analysis

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# Why New York?

Personal familiarity:

- I live and hike here.
- I'm familiar with land management policies.
- I'm familiar with available GIS resources.
- Substantial but manageable data set.

# Why not Federal land?

Next to no Federal land in the state.  
(New York had the idea first.)

But - lots of similarly managed state land.

- Adirondack Park bigger than any National Park in Lower 48.
- High Peaks Wilderness approximately same size as Rocky Mountain or Grand Teton NP.

# Agency focus: NYS Department of Environmental Conservation

- Multiple state agencies manage land (think NPS, USFS, USFWS, BLM, ...)
  - Department of Environmental Conservation
  - Office of Parks, Recreation, and Historic Preservation
  - Department of Transportation, Department of Education, ....
- NYSDEC the largest.
  - 16,020 km<sup>2</sup> (6,185 square miles) of managed land.
  - 9,286 km (5,770 miles) of trail in the official GIS data.

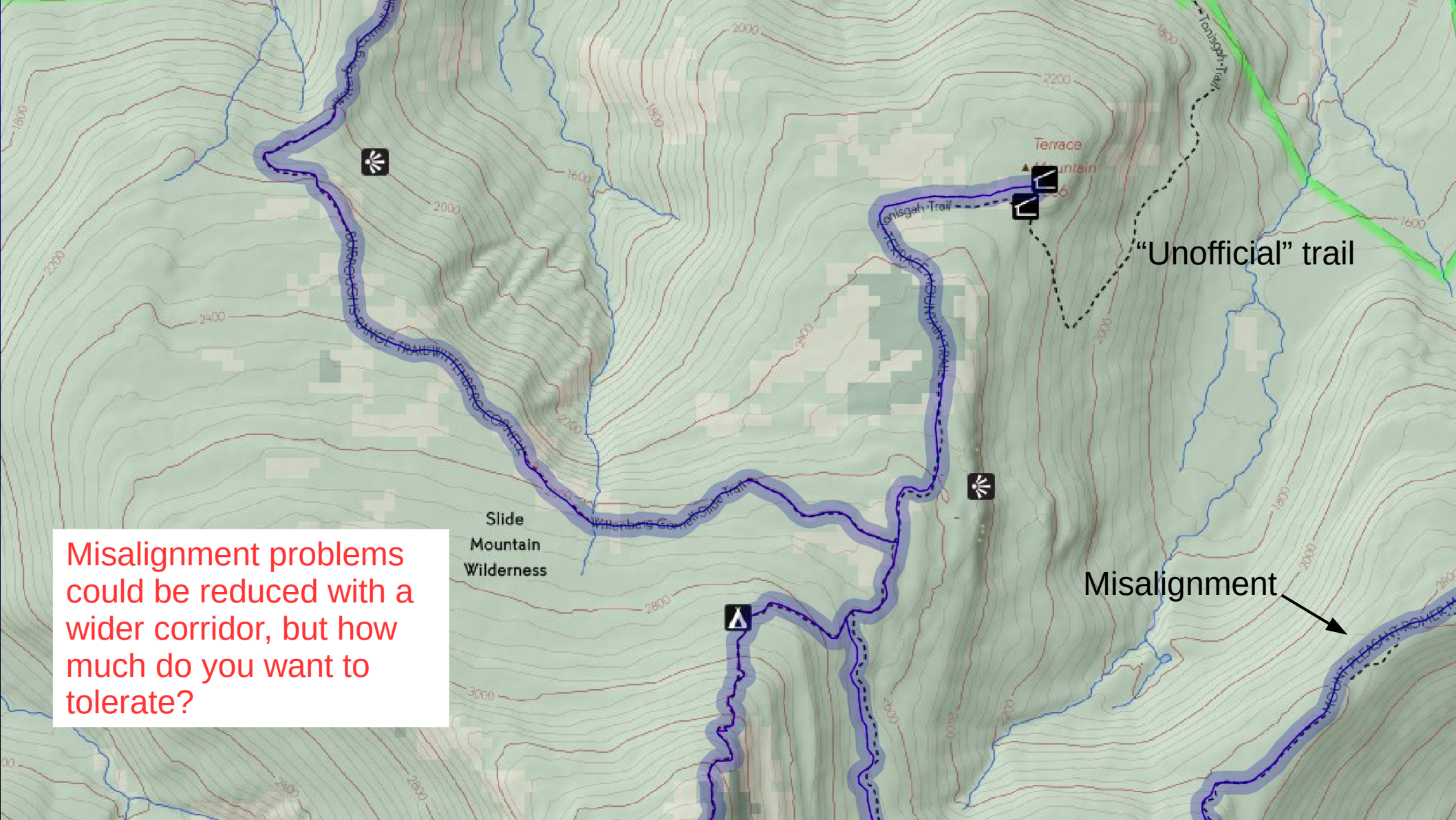
# Data preparation for NYS DEC trails

Data sets for DEC-owned land area and for DEC roads and trails downloaded from state.

OSM data for the region.

Data imported into PostGIS tables.

Define the 'corridor' of a trail as the land area running 30 m (about 100 ft) either side of the mapped center line.



Misalignment problems could be reduced with a wider corridor, but how much do you want to tolerate?

“Unofficial” trail

Misalignment

# Metrics

Isolated segments of OSM ways marked as `highway=path`, `footway`, `cycleway`, `bridleway`, `track`.

Intersected these with NYS DEC land boundaries.

Intersected with trail corridors and classified into 'inside' and 'outside'.

Report on segment identification and geometry.

# Statistics

- OSM has 5,613 km (3,488 miles) of trail mapped on NYSDEC properties.
- Of this, 3,837 km (68.4%) lies within the trail corridors.
- 1,776 km (31.6%) does not align with the authoritative trail data.

This is a huge problem, right?

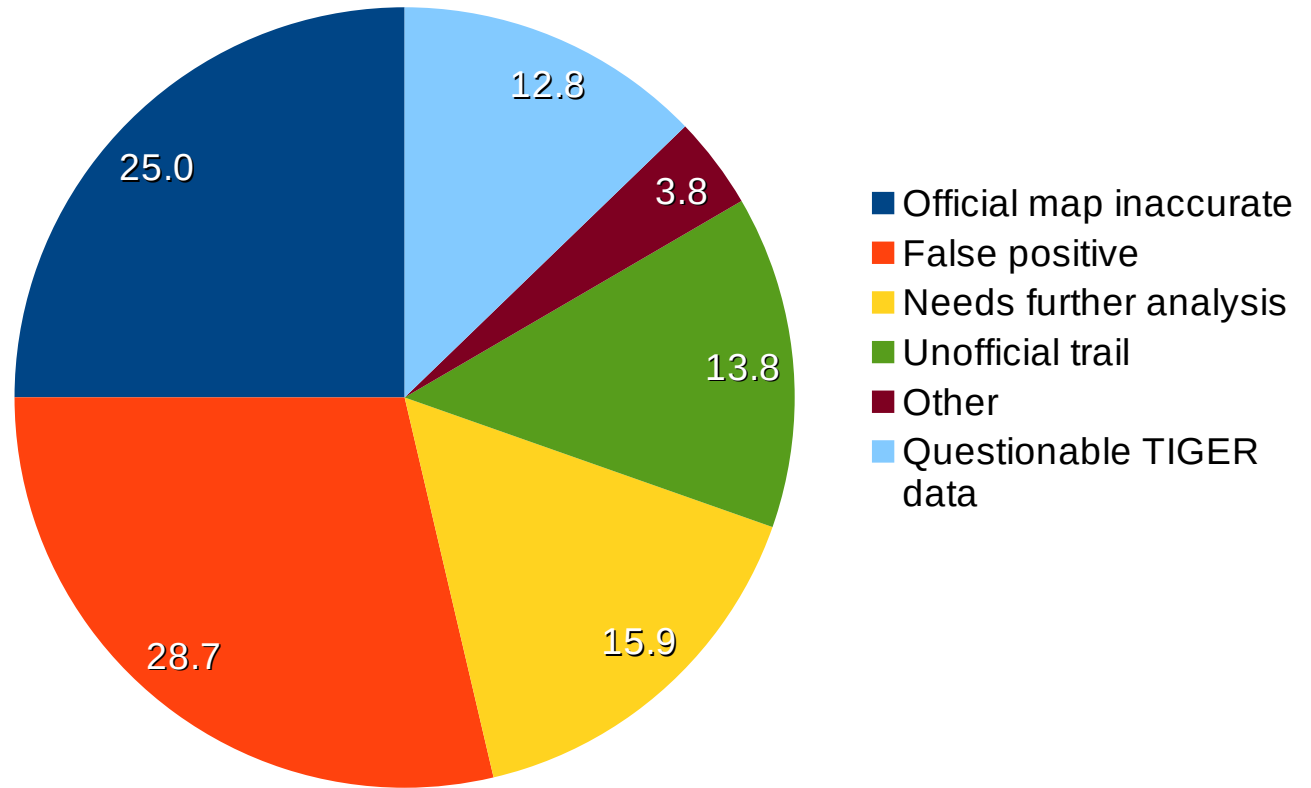
*Well, maybe...*



# Analysis

Did a “deep dive” into the 25 longest unaligned segments, accounting for a little under 10% of the total mileage.

Top 25 unmatched trails (145 km total) - analysis



# Discussion

Many false positives were tracks maintained on DEC land by agencies other than DEC and not in DEC's GIS.

In over a third of the remaining mileage, OSM data was better than the "authoritative" data.

(Verified against tracks in Strava, AllTrails, OSM uploads, and Kevin's personal GPS logs.)

## Not just one agency

Similar data quality observed from other Federal and State agencies.

In fact, in this data set, one segment of North Country National Scenic Trail also failed to match NPS data – but did match Finger Lakes Trail Conservancy.

I've seen similar issues with Appalachian Trail centerline from ATC, and so on.

## Data dross

Most of the remaining unaligned data came in from imports in the early days of OSM. (TIGER and others.)

Some describes logging tracks (predictably mistagged as **residential**). About half are verified by users' GPS tracks, but are 'condition and access constraints unknown.' The other half cannot be seen on "leaves down" aerials and may be "TIGER hallucinations."

# Difficult category: “Class II trail.”

Some wilderness trails are intentionally unmarked and unpublished in the GIS data! (All of the “unofficial” segments in the top 25 fell in this category.)

## High Peaks Wilderness Unit Management Plan:

Trailless peaks are those mountain summits without marked or maintained trails. The term "trailless" is a misnomer because most of the summits have well-worn footpaths or "herd paths". [p. 56]

A pilot program, begun in 1997, in cooperation with the 46'ers and the Adirondack Mountain Club to reduce undesired trails on the aforementioned summits was very successful. The most environmentally sound route up Tabletop Mountain was selected, minimally marked with rock cairns, and all extraneous routes were closed and brushed-in. The latter also helped reduce impacts at nearby Indian Falls which was traditionally the point of departure from the Van Hoevenberg Trail to Tabletop. Similar efforts were undertaken on Street and Nye Mountains in 1998. [p. 147]

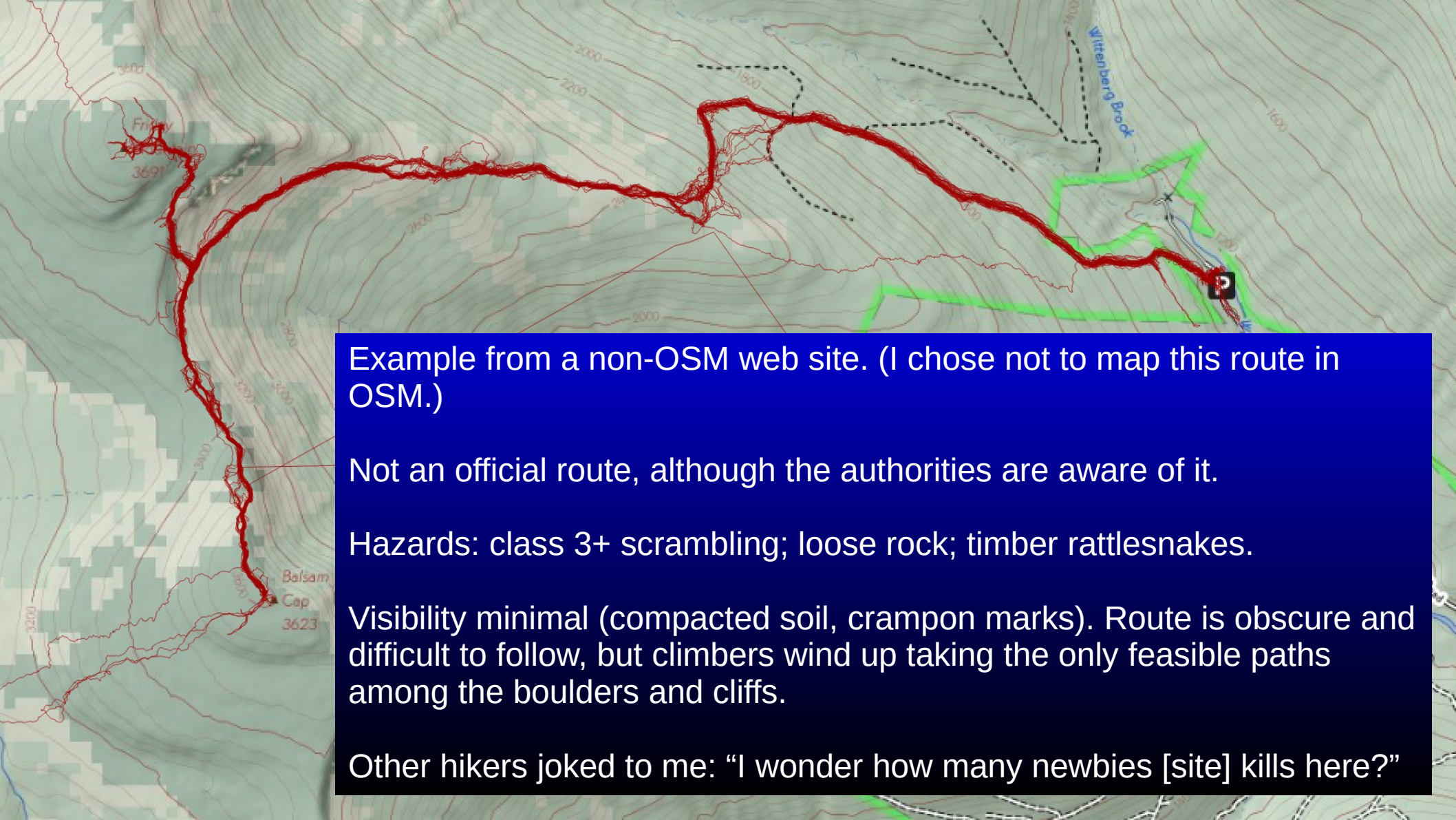
# Tentative conclusion:

## OSM is largely self-policing

Mapping in OSM is much more work than uploading a GPS log and trip report to a web site.

“Many eyeballs” watching the trails.

Biggest single problem is dead data, not rogue mappers.



Example from a non-OSM web site. (I chose not to map this route in OSM.)

Not an official route, although the authorities are aware of it.

Hazards: class 3+ scrambling; loose rock; timber rattlesnakes.

Visibility minimal (compacted soil, crampon marks). Route is obscure and difficult to follow, but climbers wind up taking the only feasible paths among the boulders and cliffs.

Other hikers joked to me: "I wonder how many newbies [site] kills here?"