

# Invasive garlic mustard (and Japanese barberry) along Catskill Mountain hiking trails: current state & implications

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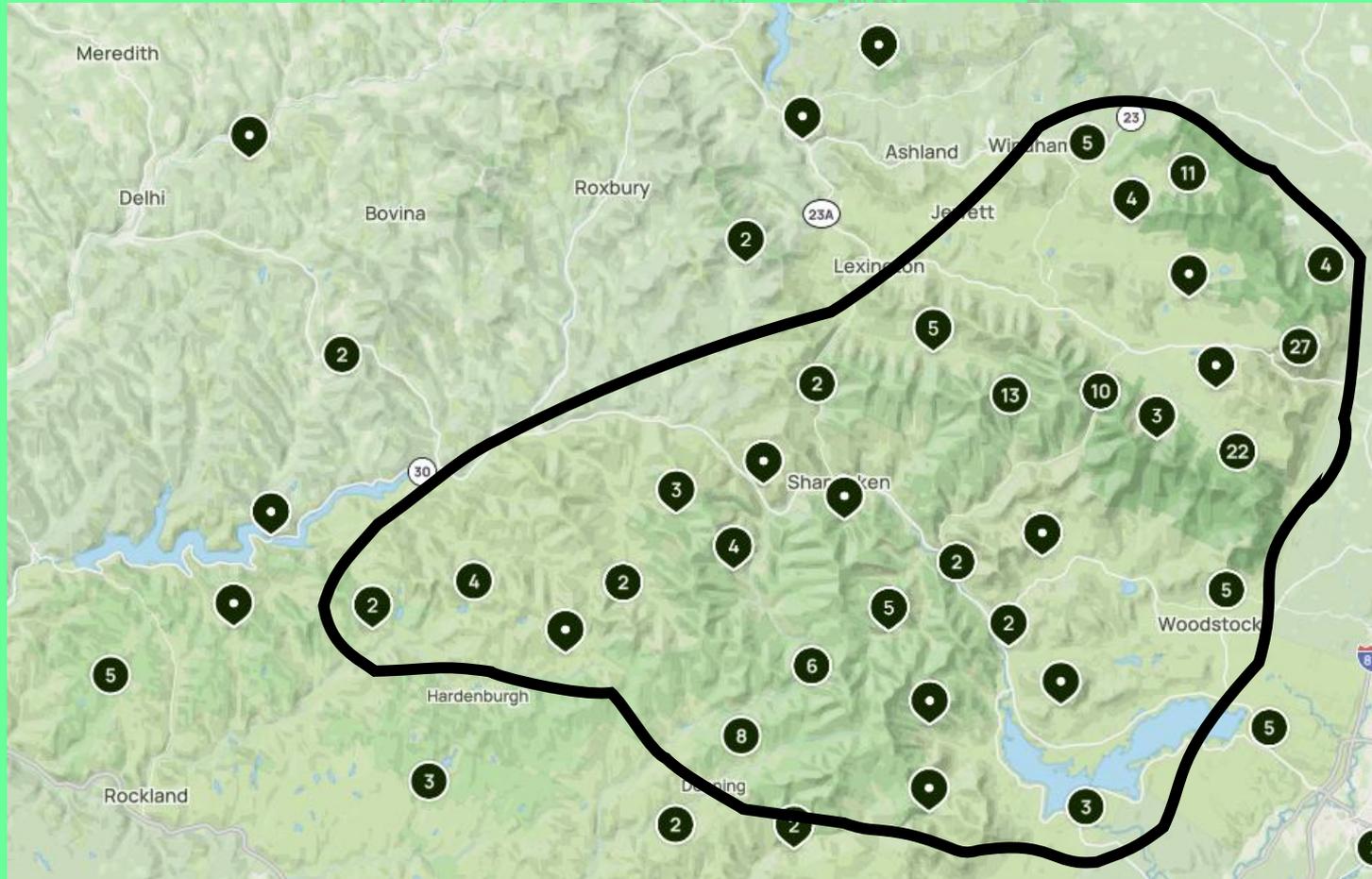


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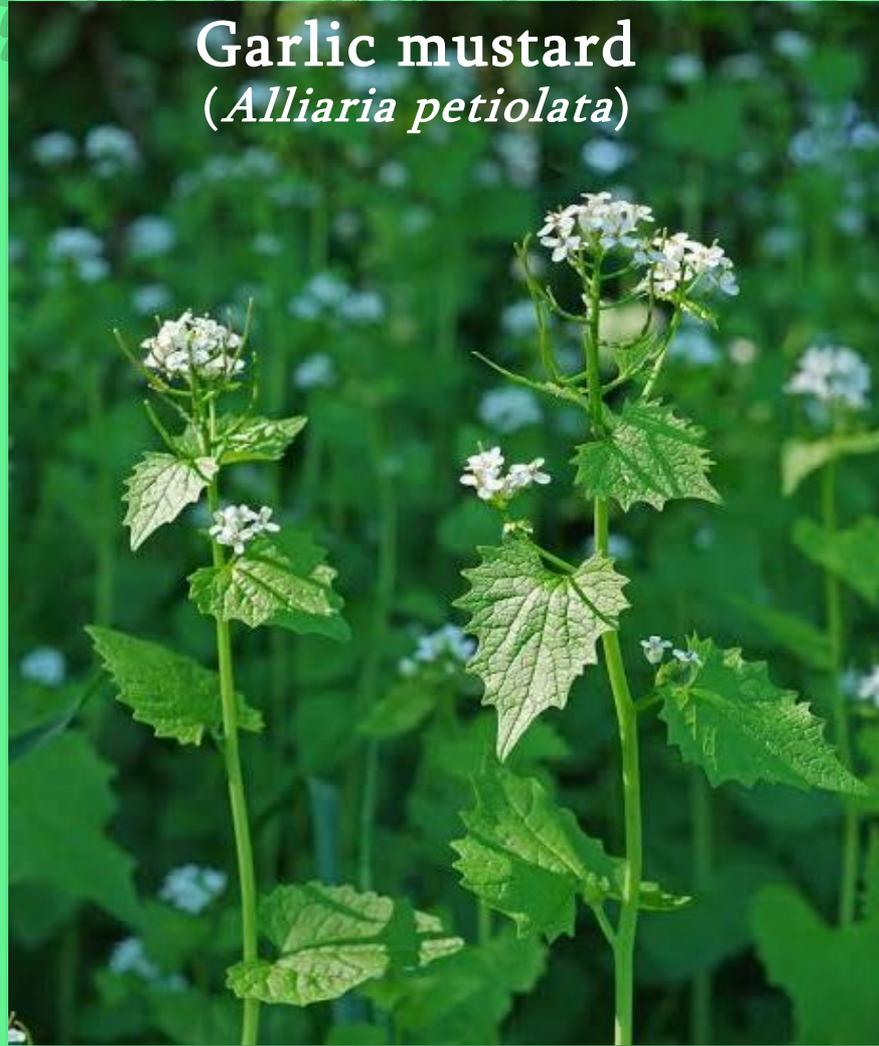
# Catskill Forest hiking trails

Potential avenue for non-native introduction



# The players

Garlic mustard  
(*Alliaria petiolata*)



# The players



- **geolocation and quantitation**

# The players

- geolocation only



Japanese barberry  
(*Berberis thunbergii*)

# The players



Japanese barberry  
(*Berberis thunbergii*)

Williams, S. C., Linske, M. A., & Ward, J. S. (2017). Environmental entomology, 46(6), 1329-1338.

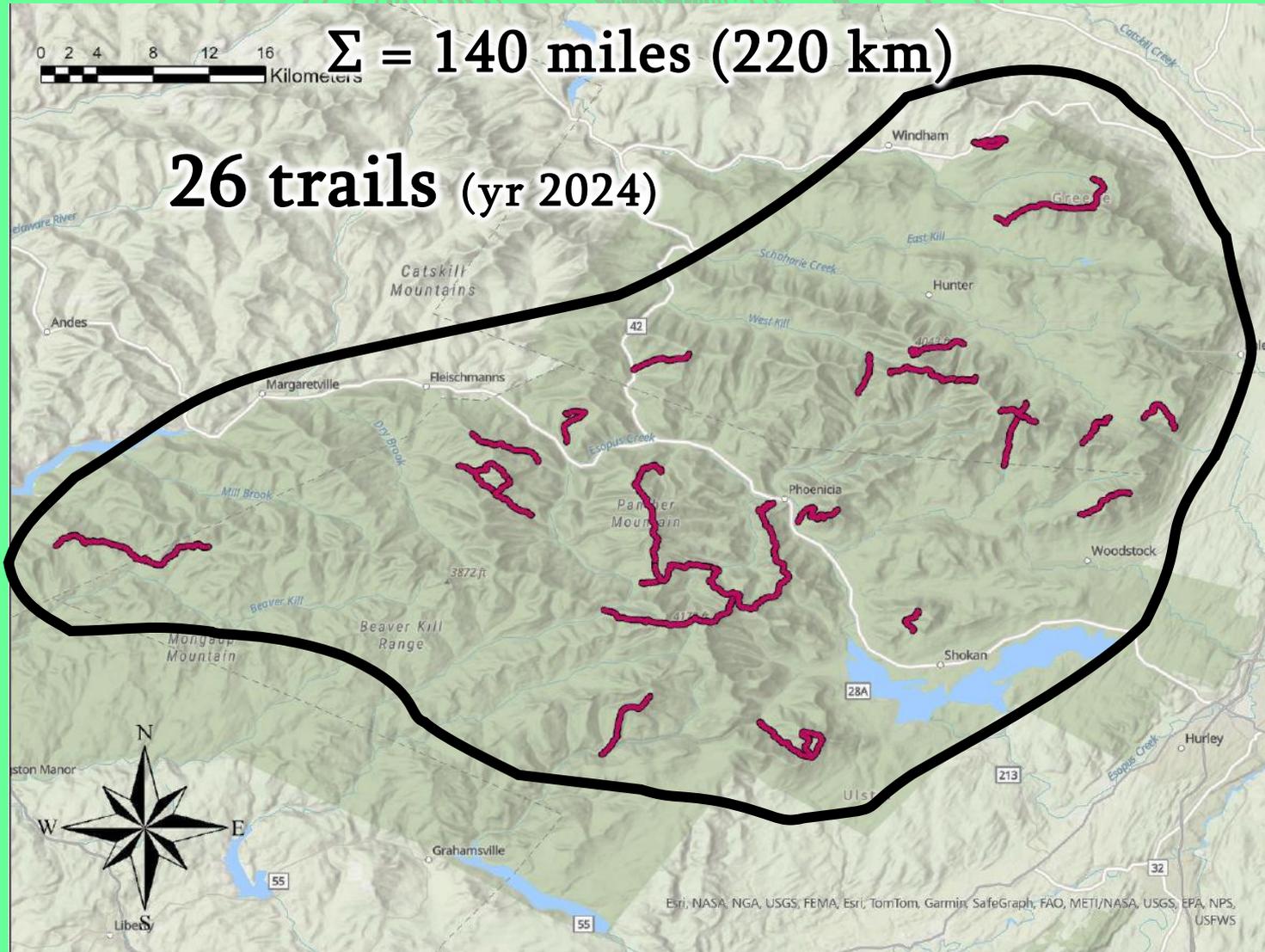
# The players



Periwinkle aka myrtle  
(*Vinca minor*)

(Rochester Hollow only)

# Trails surveyed within Catskill Forest



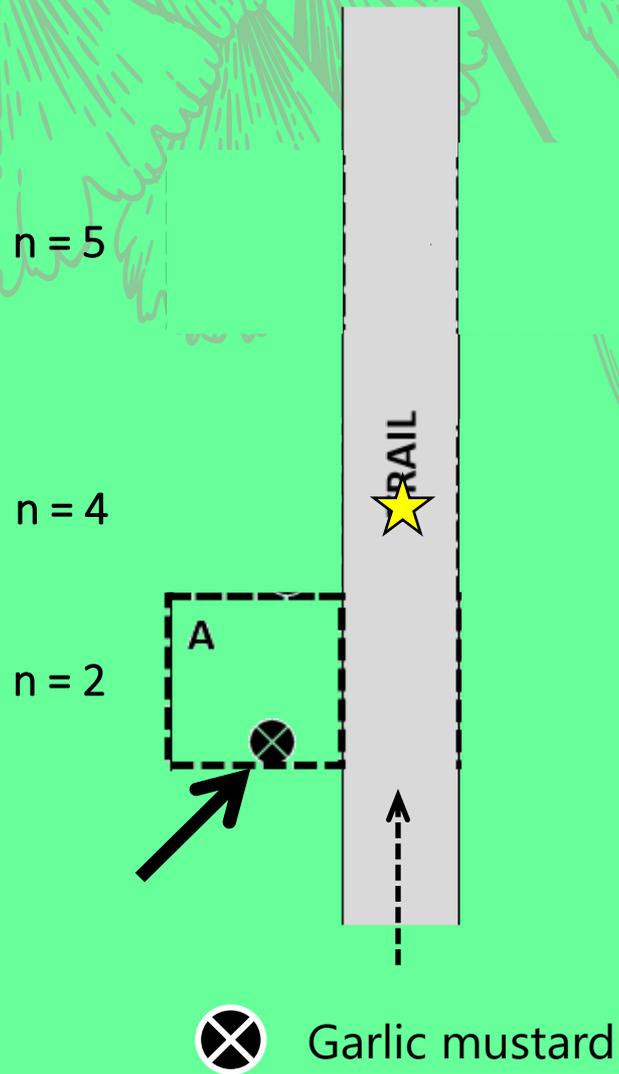
# Trails surveyed within Catskill Forest

Trail censused	2023	2024	2025
Ashokan High Point	■	■	■
Becker Hollow to Hunter Mtn	■	■	■
Big Hollow Rd Trail head - Black Dome	□	■	□
Big Pond-Touch Me Not	□	■	□
Devil's Path to Hunter Mtn from 214	□	■	■
Devil's Path to Orchard Point from 214	□	■	■
Diamond Notch to falls	□	■	□
Elm Ridge (SR 23)	□	■	□
Fox Hollow to Panther Mtn	■	■	■
Giant Ledge intersection from Woodland Valley	■	■	■
Giant Ledge from Oliverea	■	■	■
Shaft Rd herd path toward Mt Sherrill	□	■	□
Huckleberry Point	□	■	□
Lost Clove to tri-trail intersection	□	■	□
McKenley Hollow to Balsam Mtn	□	■	□
Mink Hollow from north to saddle	□	■	□
Mink Hollow South to Plateau Mtn	□	■	□
Mount Tremper from Phoenecia	■	■	■
Overlook Mtn	□	■	□
Peekamoose Mtn	□	■	□
Prediger to Dolan's Notch	□	■	□
Rider Hollow to Balsam Mtn	□	■	□
Rochester Hollow	□	■	□
Romer Mountain	■	■	■
Ticetonyk Mtn	■	■	■
Woodland Valley to Wittenburg Mtn	□	■	□

# Abundance metric: reproductive stems



# Trail censusing



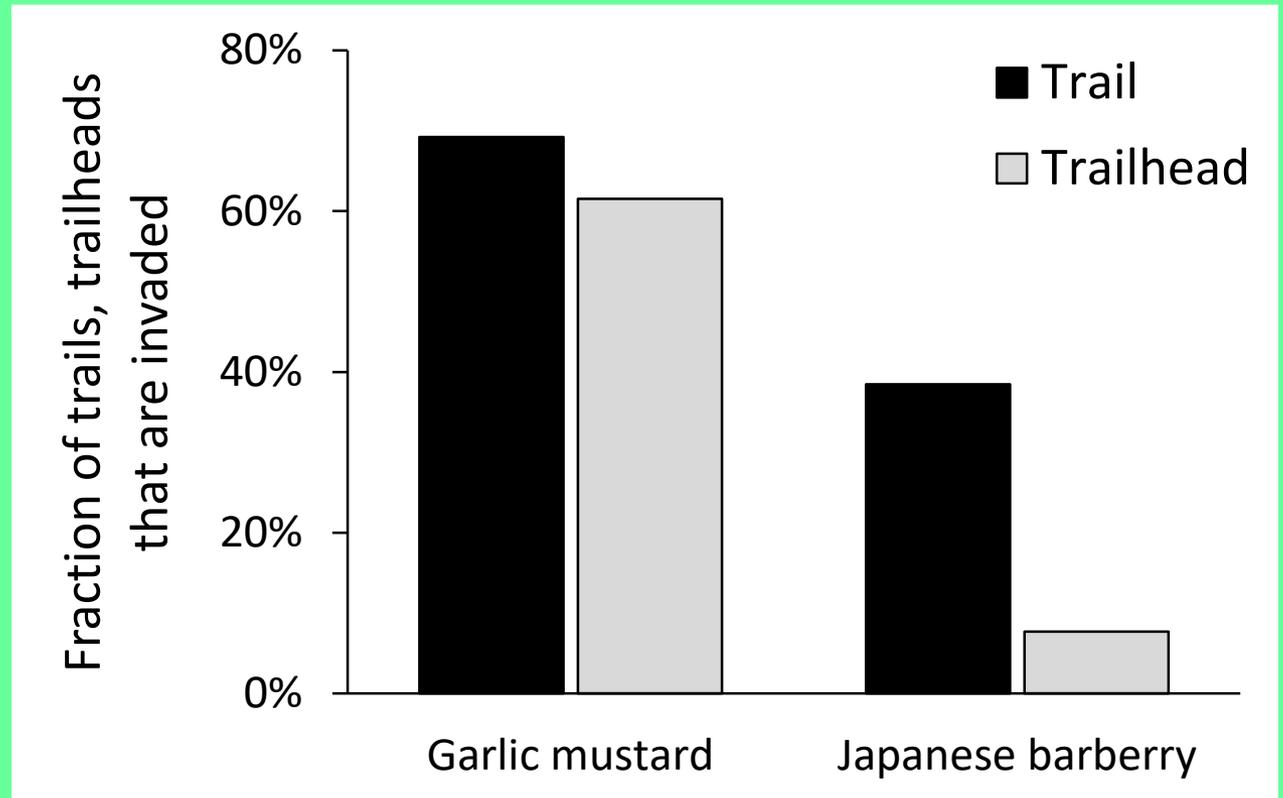
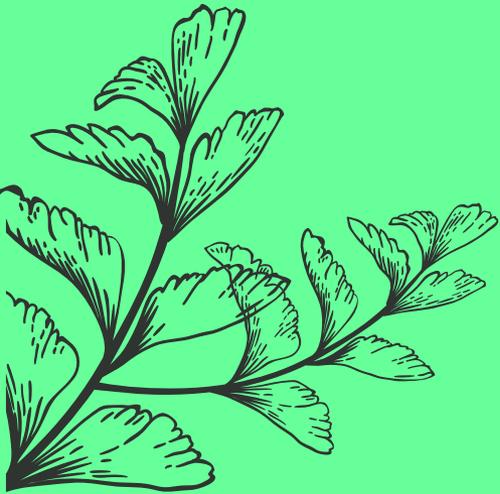
# **Data collection, analysis and presentation**

ArcGIS, Survey123, Excel, R, and SigmaPlot

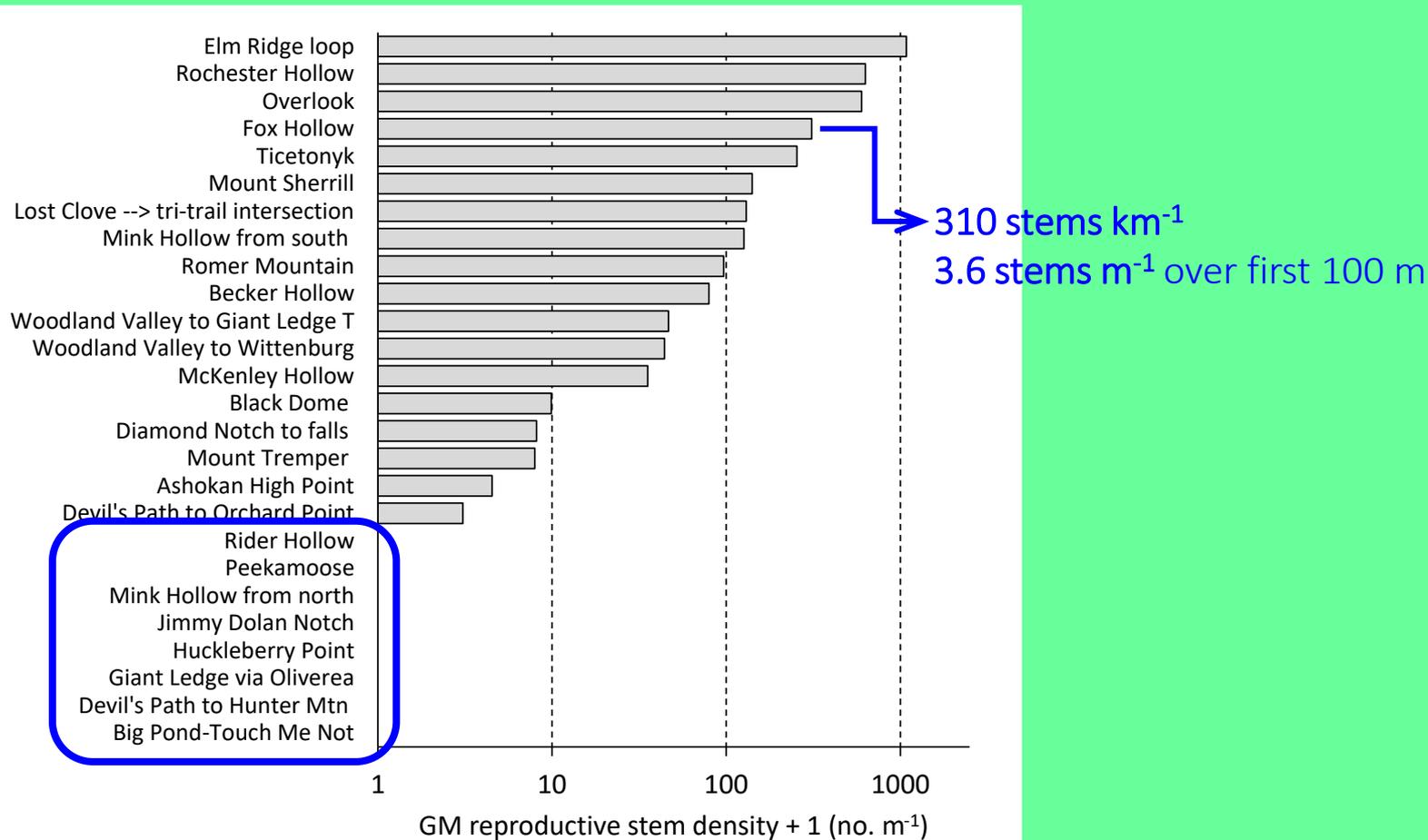
- 1. Is non-native plant presence and abundance similar on all trails?**
- 2. Have non-natives spread up trail?**
- 3. Is there evidence for “jump” dispersal?**

# Results

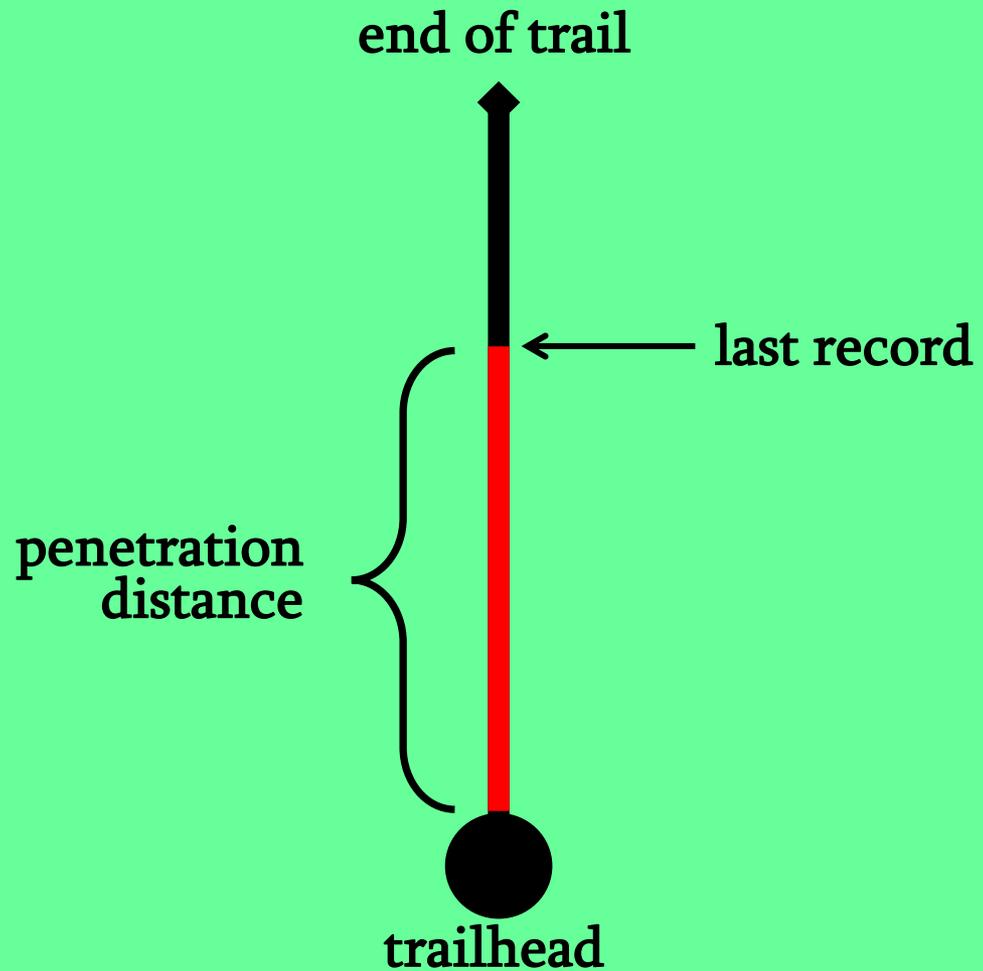
## 1. Widespread at trail level



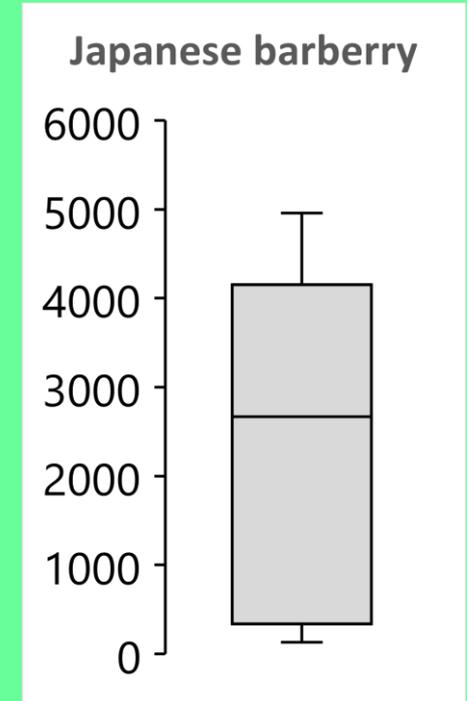
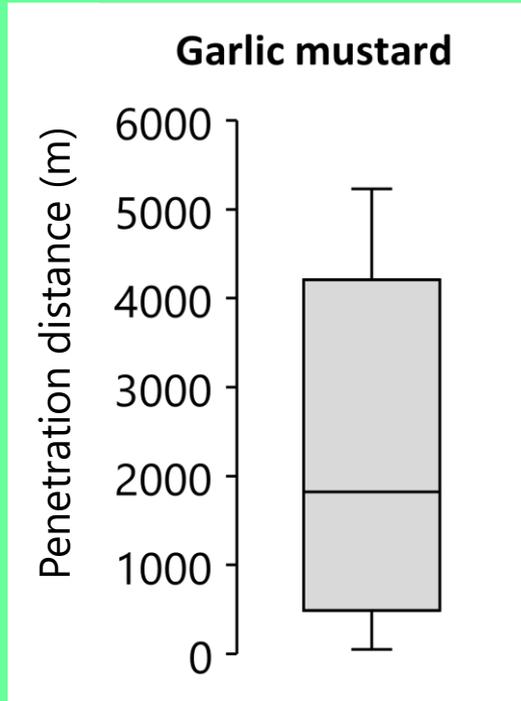
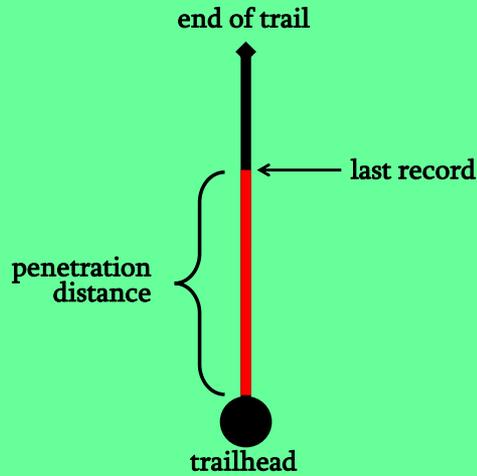
## 2. Garlic mustard: range of invasion intensities



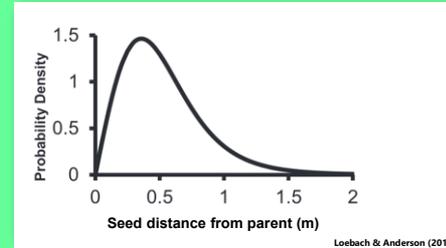
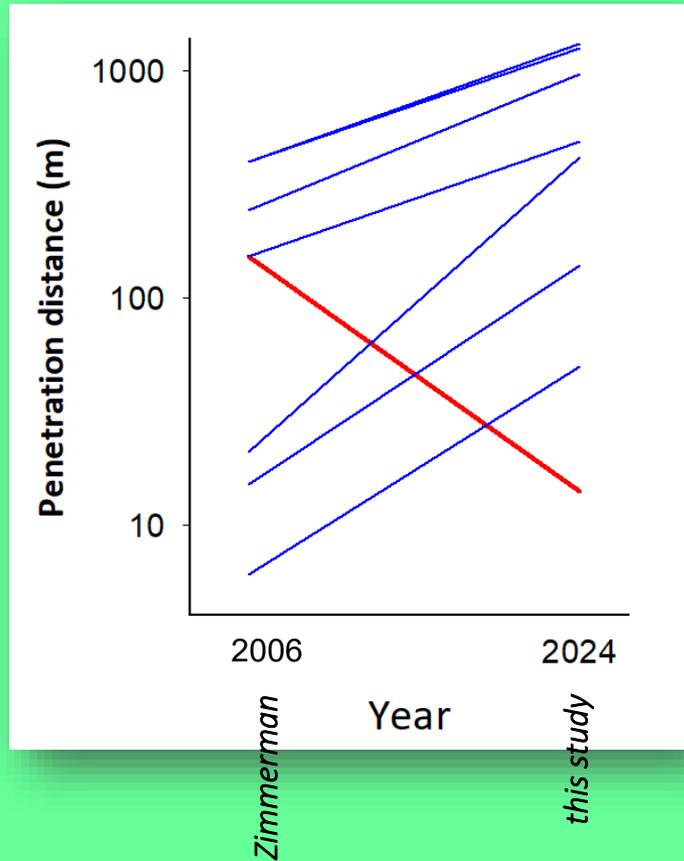
# 3a. Deep penetration into trails



# 3a. Deep penetration into trails



# 3b. Garlic mustard: deeper penetration since 2006

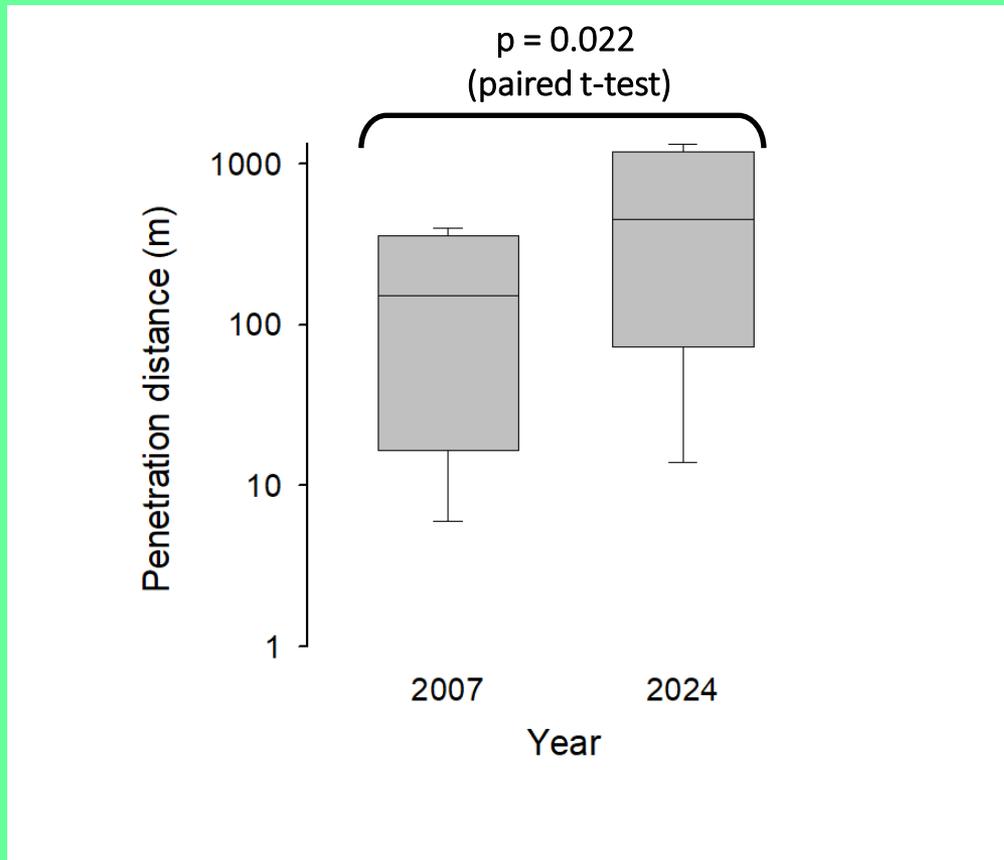


Trail	Change in penetration distance (2007-2024; m)
Ashokan High Point	-138
Becker Hollow to Hunter Mtn	728
Black Dome	335
Devils path E to Orchard Pt	44
Diamond notch	398
Ticetonyk Trail	868
Woodland Valley to Giant Ledge	927
Woodland Valley to Wittenburg	125

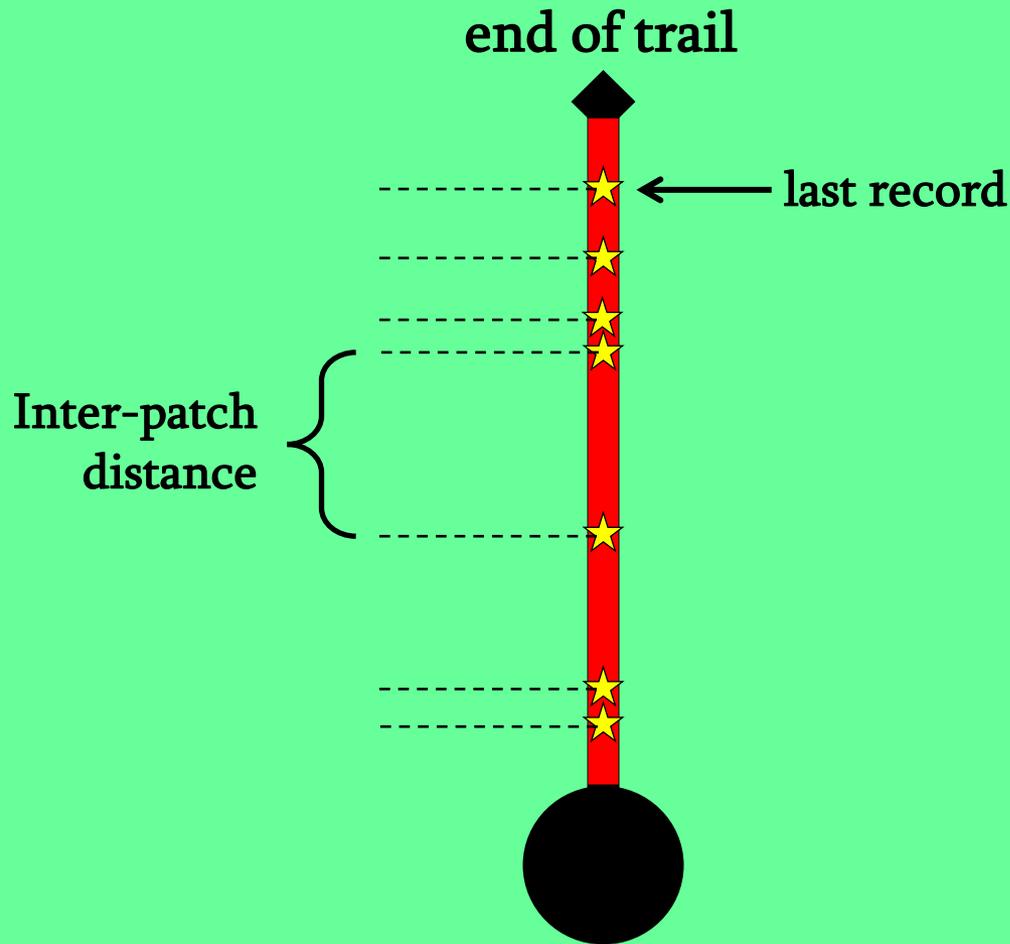
median = +400 m



## 3b. Garlic mustard: deeper penetration since 2006



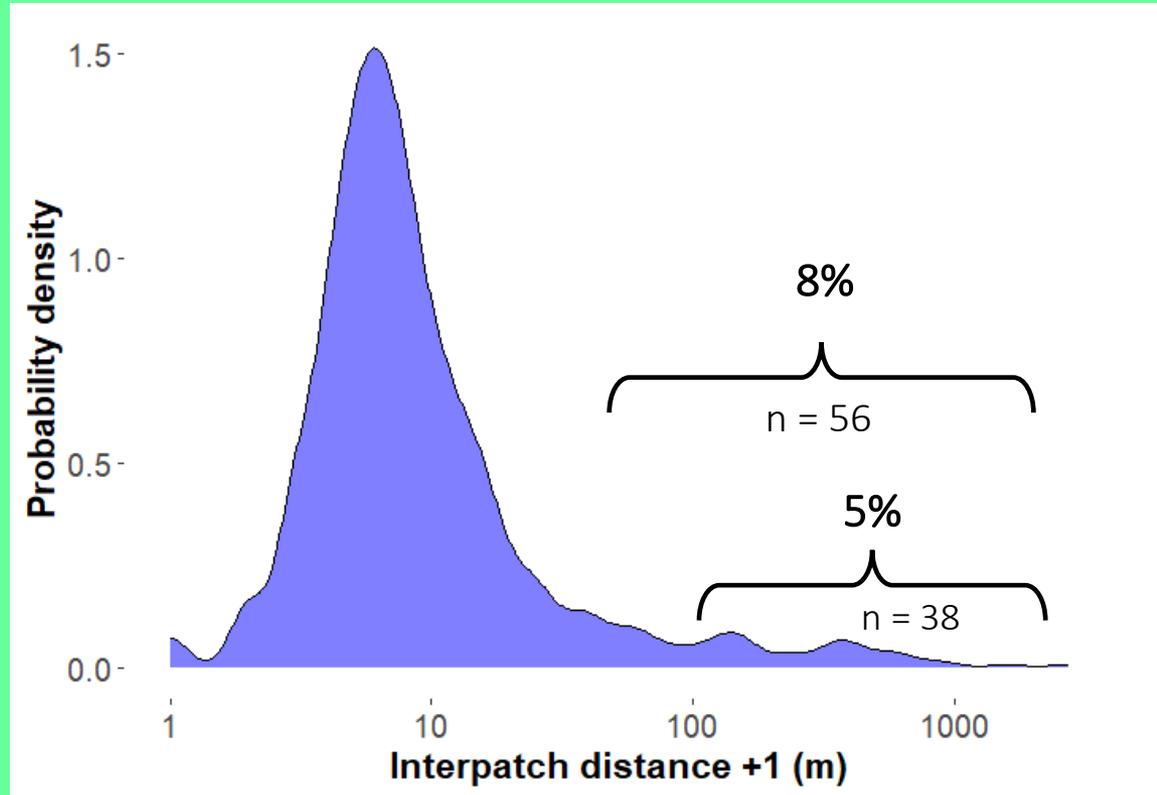
# 4. Garlic mustard jump dispersal?



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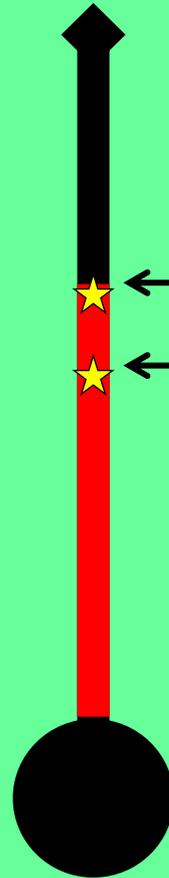
end of trail



# 4. Garlic mustard jump dispersal?



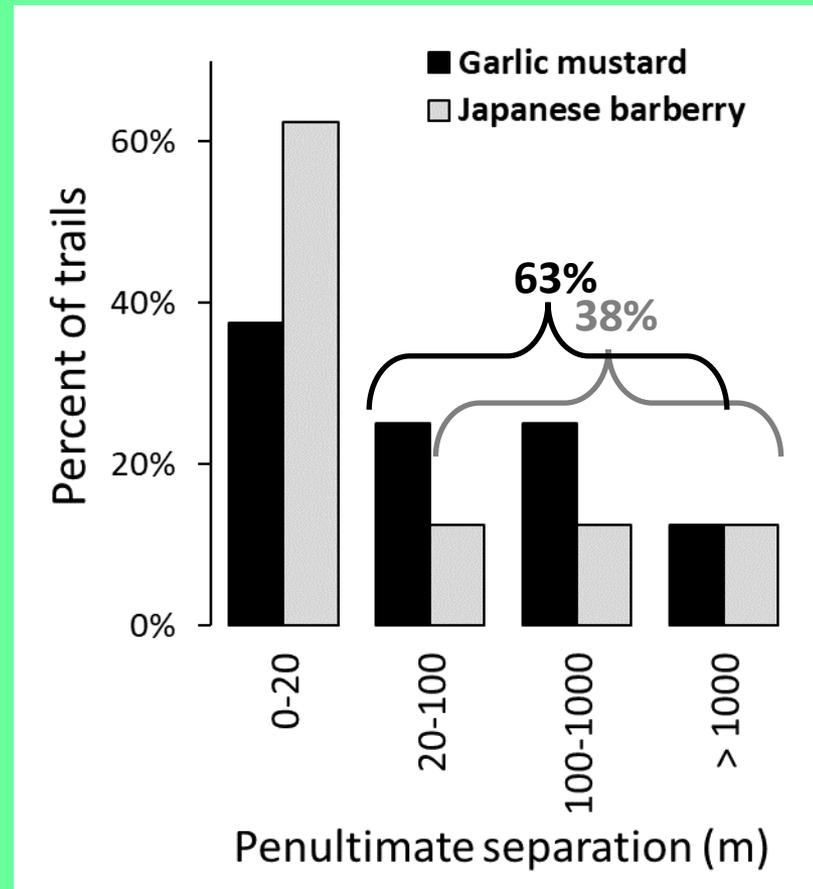
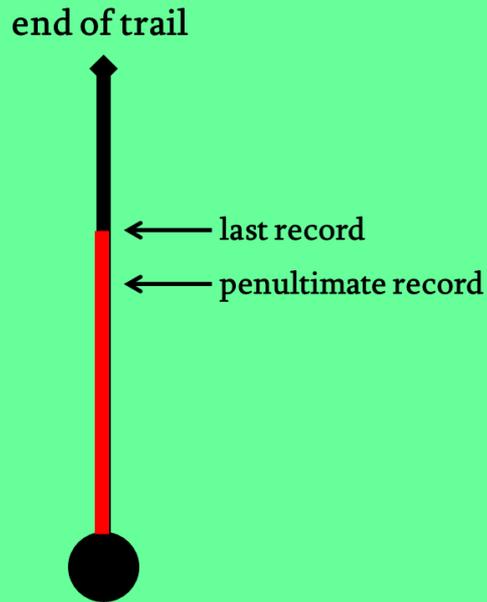
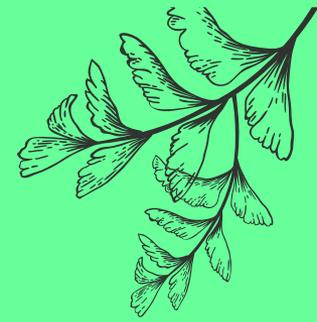
end of trail



← last record

← penultimate record

# 4. Garlic mustard jump dispersal?



# Management implications

- **mulch/fill at trailheads?**
- **online sales**
- **bushwhacking**

# Online sales

Garlic mustard: two sellers (on etsy)

1. ships from New York
2. "Wild Crafted in the Appalachian Mountains"



# Social media & bushwhacking

relatively  
RANDOM

HOME / LIFE'S ADVENTURES / PROSE & POETRY / DISTRACTIONS / FOCAL POINT / ABOUT US

BY CRAIG DEATS / LIFE'S ADVENTURES / DECEMBER 1, 2015

## NO TRAILS, NO PROBLEM...TACKLING THE CATSKILL MOUNTAIN BUSHWHACKS

<https://www.relativelyrandom.com/2015/12/no-trails-no-problem-tackling-the-catskill-mountain-bushwhacks/>



**The Bushwhackos-Catskills**  
Private group · 216 members

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About Discussion

About this group

This group is for all those who bushwhack or are interested in bushwhacking in and around the Catskill Mountains.



The Hiker Trash Husbands

Jan 14

## Bushwhacking North Dome through Mink Hollow - One of the Trailless Catskill 3500 Peaks

<https://www.hikertrashhusbands.com/home/bushwhacking-north-dome-through-mink-hollow-one-of-the-trailless-catskill-3500-peaks>



# Catskills Trail Conditions

Public group · 25.9K members

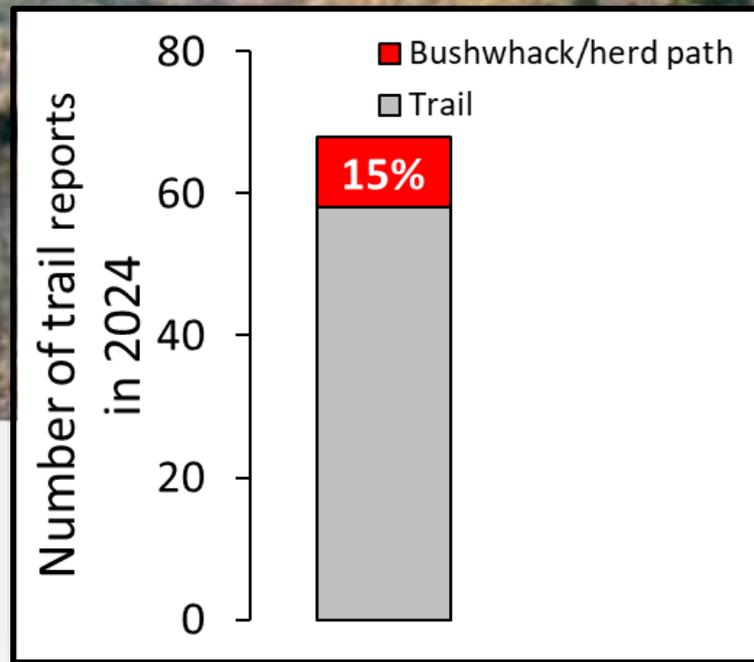


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# Social media & bushwhacking



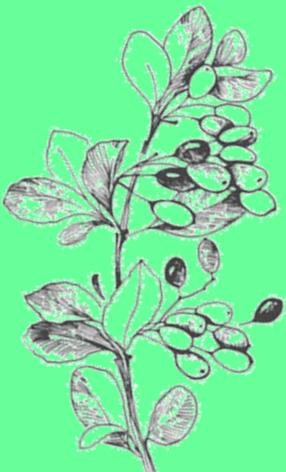
STRAVA heat map for Rocky, a formerly "trail-less" area



Department of  
Environmental  
Conservation

# To summarize...

1. Garlic mustard, Japanese barberry → lower elevation communities
2. Deeper garlic mustard penetration
3. Hikers involved in garlic mustard spread (?)



# Thank you

Catskill Science  
Collaborative

J. Damon

J. Ginsberg

# Questions?



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