

# Lichens of Purgatory and Ridges Mountains: Further Explorations in the Uwharrie Mountains of North Carolina, USA

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The Uwharrie Mountains is an ancient range of isolated peaks (monadnocks) formed ca. 500 mya from the eruptions of a chain of volcanic islands in shallow seas that today stretch SSW - NNE in the Piedmont ecoregion of central North Carolina, USA. To date only one preliminary checklist exists for the lichens of the Uwharries, documenting 78 taxa from the southern and central portions of the range.

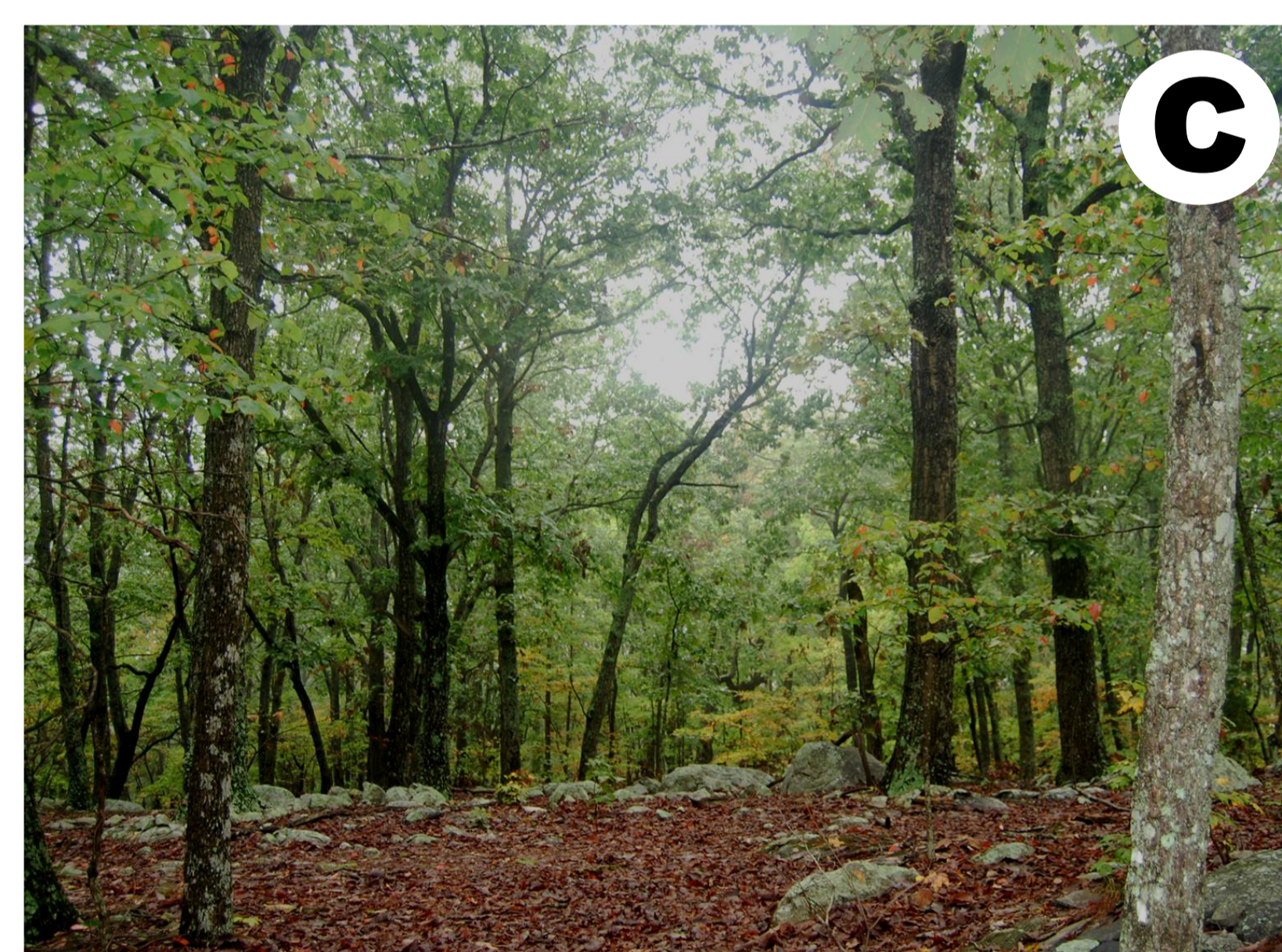


Fig 2. Sampled Plots. A: RM1; B: RM2; C: PM3

Table 1. Environmental characteristics of the lichen plots sampled in Ridges and Purgatory Mountains.

Character	RM-1	RM-2	PM-3
Forest type	Basic Oak-Hickory	Piedmont Monadnock	Piedmont Monadnock
Rock type	Mafic volcanic	Mafic volcanic	Felsic volcanoclastic
Canopy cover (%)	81	71	67
Elevation (m)	222	251	285

Fig 4. Cluster Analysis showing exclusive and shared species per plot

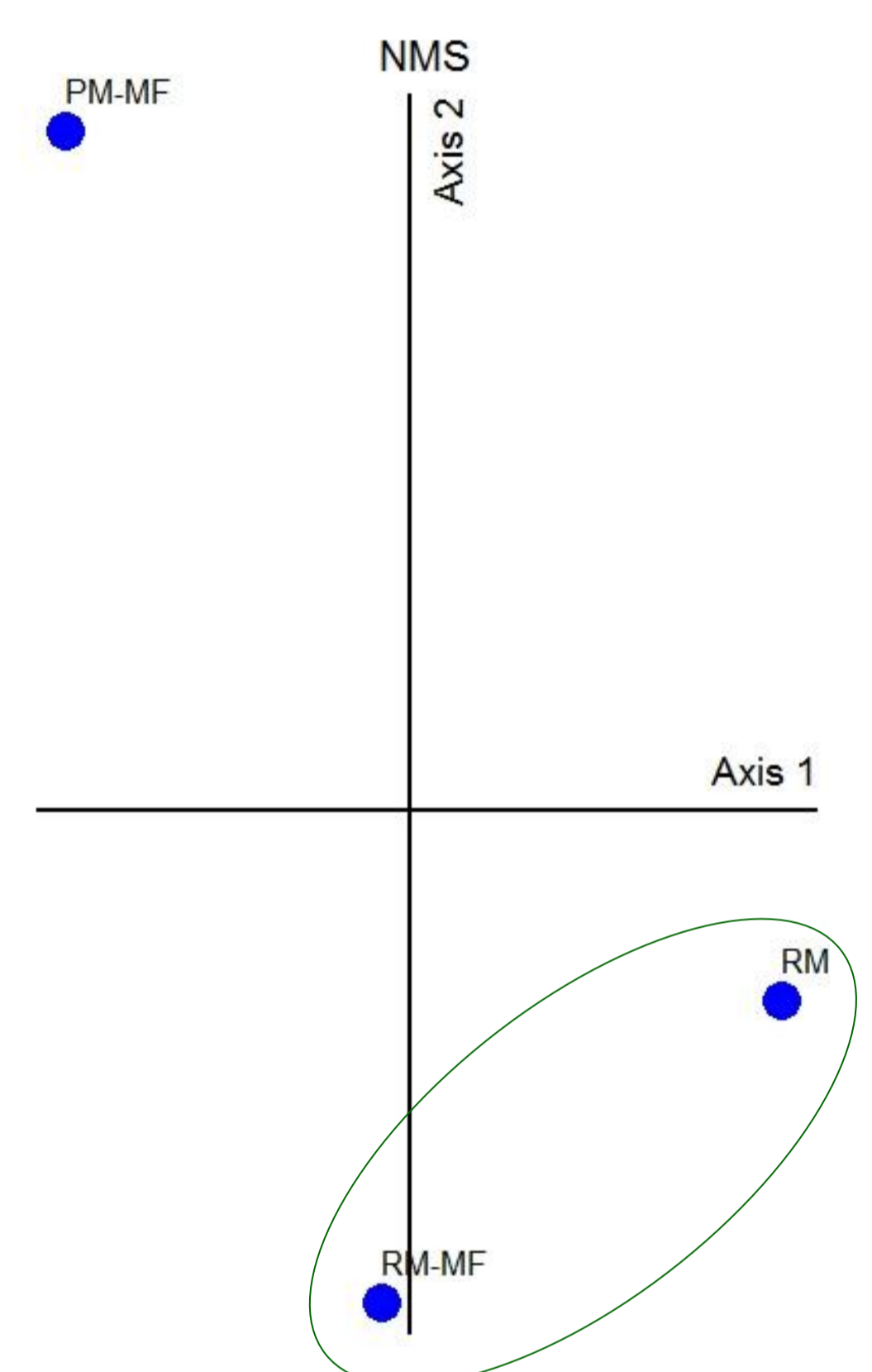
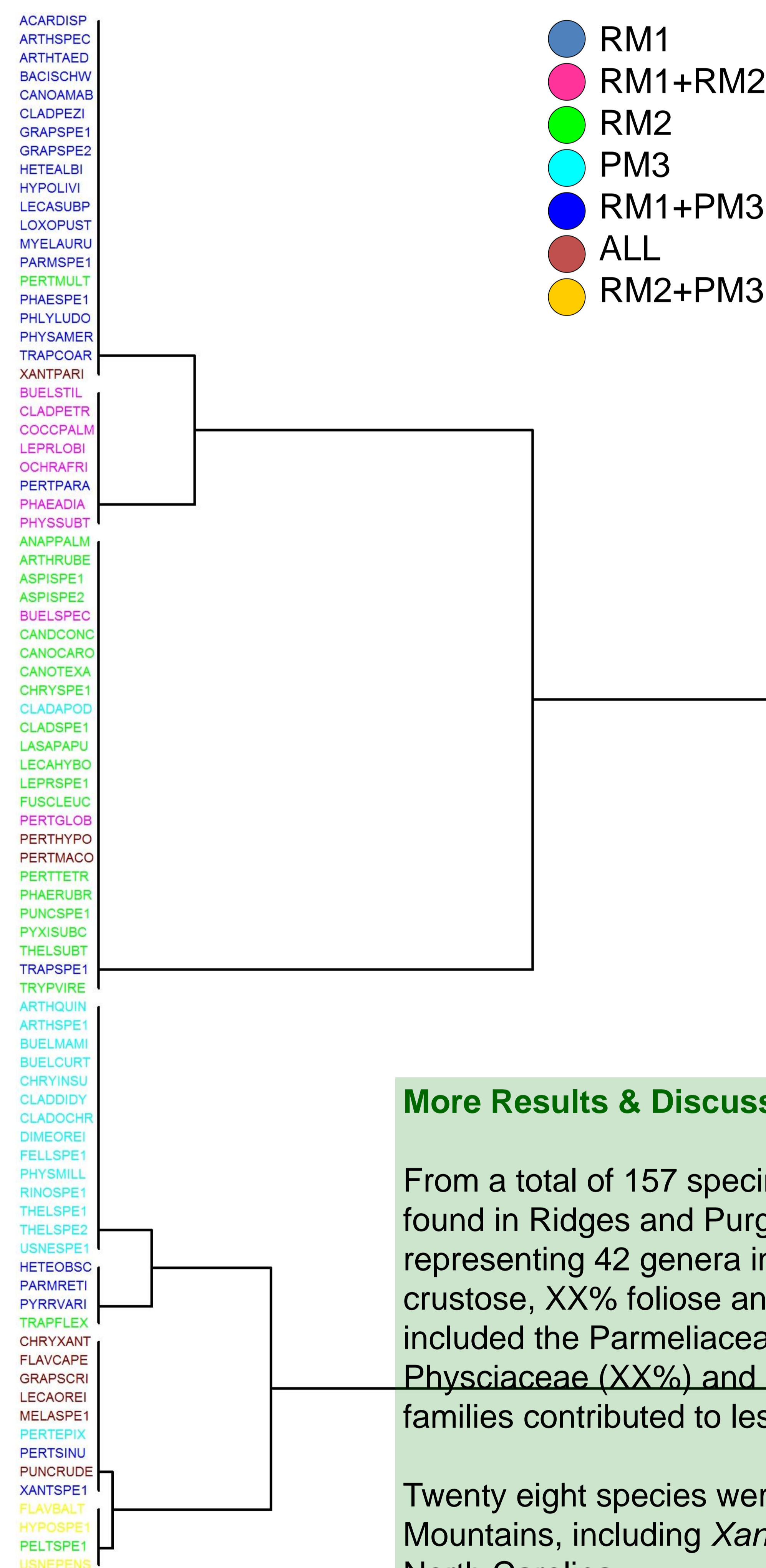


Fig 3. NMS analysis of sampled plots based on presence/absence of the identified species.

Table 3. Jaccard similarity indices from pairwise comparisons of the three plots.

	RM-2	PM-3
RM-1	0.20	0.14
RM-2		0.19

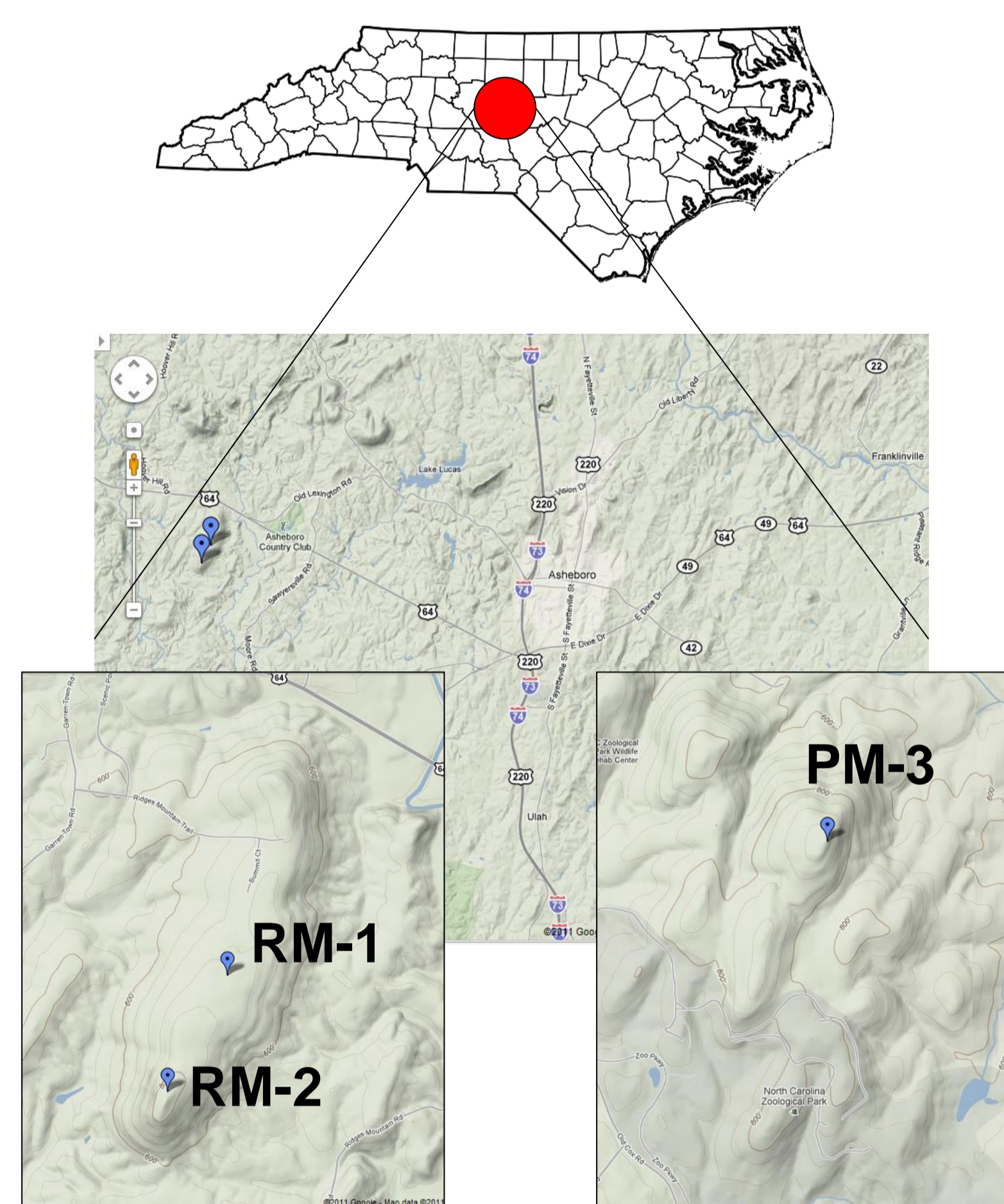


Fig 1. Maps depicting plot locations on Ridges Mountain (left) and Purgatory Mountain (right).

## Materials and Methods

Three habitats on two monadnocks were sampled using 20 x 50 m plots. Two were on Ridges Mountain: (1) Basic Oak-Hickory Forest with mafic volcanic rocks (Fig1: plot RM-1), (2) Piedmont Monadnock Forest in a mafic volcanic boulderfield (Fig1: plot RM-2); (3) Piedmont Monadnock Forest with felsic rocks in Purgatory Mountain (Fig1: plot PM-3). Specimens were curated and deposited at NCU and determined using standard laboratory techniques.

From these collections checklists for the three plots were compiled and analyzed using Jaccard similarity test, Non multidimensional Scaling and Cluster analyses.

## Results & Discussion

Lichen species are substantially different and just XX% is shared among plots; being *Graphis scripta*, *Flavoparmelia caperata*, and *Punctelia rudecta* among the species that are present in all three plots.

RM1 and RM2 share XX species; RM1 and PM3 share XX species; RM2 and PM3 share XX species.

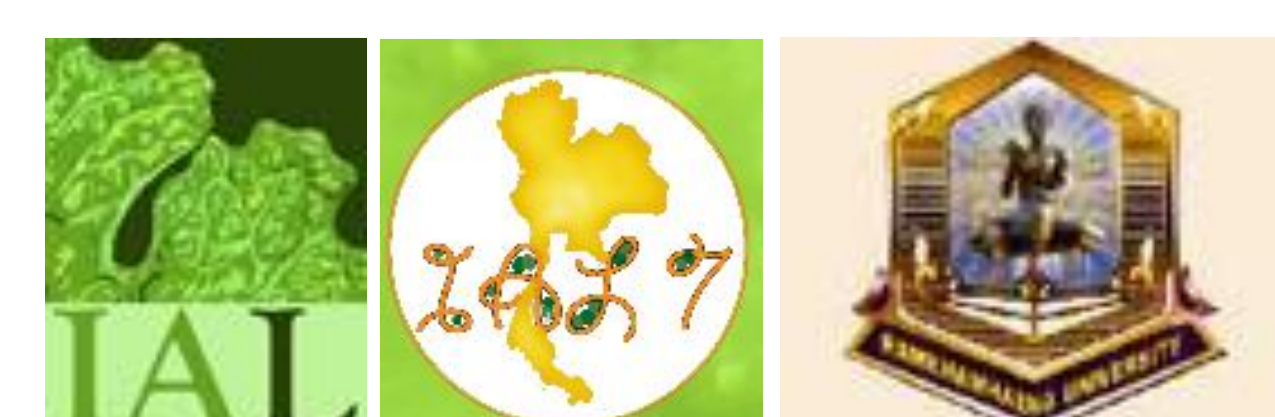
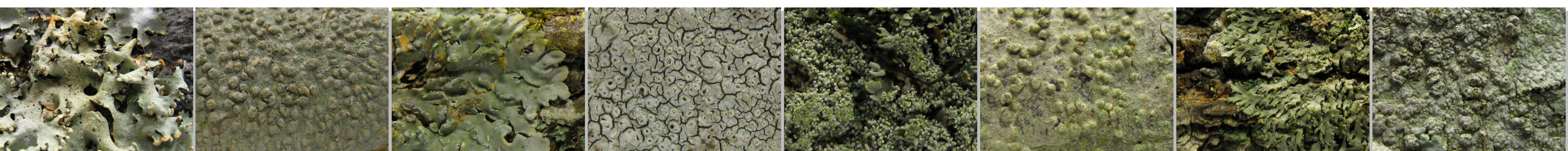
Even when RM1 and RM2 have the highest amount of unique specie, they are similar based on the amount of species shared, which is higher than the ones shared with PM3.

The Uwharries are a substantially interesting area due to unique geographic features...

## More Results & Discussion

From a total of 157 specimens collected, **84** lichen species were found in Ridges and Purgatory Mtns combined (~45 spp. per plot) representing 42 genera in 24 families. The combined biota is XX% crustose, XX% foliose and X% fruticose. The largest families included the Parmeliaceae (XX% of the combined biota), Physciaceae (XX%) and Pertusariaceae (XX%); the remaining families contributed to less than XX% of the collected biota each.

Twenty eight species were found to be new to the Uwharrie Mountains, including *Xanthoria parietina*, reported here as new to North Carolina.



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