

# Revising the tree-dwelling spider genus, *Neodietrichia*

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## Introduction

*Neodietrichia* (Araneae: Linyphiidae) is a genus of tree-dwelling dwarf spiders located throughout North America. Because of their small size, rarity, and preferred habitat, they are rarely collected. They were first described in the early 1900's with a single species: *Neodietrichia hesperia*. However, since then, further specimen collection and identification has suggested that this genus is more diverse than initially thought. While it is clear that this genus contains more than one species, the number of species remains unknown.

## Methods

*Neodietrichia* were either collected (Blossom Hollow Nature Preserve in 2017 and in 2020) or received from loans. We have also begun a community-science project to help in collection via SciStarter. Morphometrics were conducted on all specimens to determine morphological similarities and differences among specimens. Measurements included Tml (ratio of length from patella to trichobothrium on tibia to tibia length), carapace length, width, body size, all leg lengths, number of teeth, etc. These data, along with biogeographic considerations, helped us hypothesize taxonomic relationships. Once designated, we illustrated the relevant structures of likely species using both a dissecting scope and previously taken images.

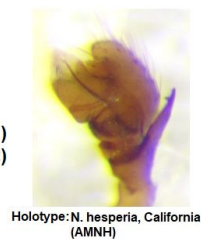
## Methods (continued)

Cluster analyses were performed in order to help suggest species delimitations.

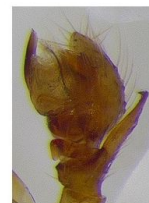
## Results

Sometimes there was a distinct separation in our cluster analyses (**Fig. 1**) and sometimes our data displayed a gradual gradation from one form to another, suggesting a species complex rather than morphologically-distinct species (**Fig. 2**). We propose the existence of eight species within two forms of this complex, as shown by the discernable male genitalia (palps) shown below in **Figure 3**. We also focused heavily on the differences among the tibial apophyses (pointy extensions of the palp) as seen below.

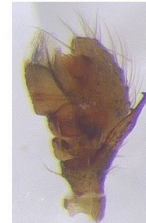
Form A:  
Species:  
*N. hesperia*,  
*N. n. sp. 1* (Maine1)  
*N. n. sp. 2* (Maine2)



Holotype: *N. hesperia*, California (AMNH)



Maine (MCZ104521)



Maine (MCZ140958)

Form B:  
Species:  
*N. n. sp. 3* (Indiana)  
*N. n. sp. 4* (Maine3)  
*N. n. sp. 5* (NH)  
*N. n. sp. 6* (Manitoba)  
*N. n. sp. 7* (Alberta)



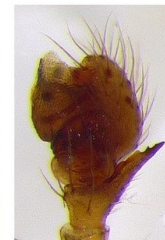
Indiana (Milne12E8)



Maine (MCZ118484)



New Hampshire (MCZ21047)



Manitoba (CNC1030079)



Alberta (UGuelphC04)

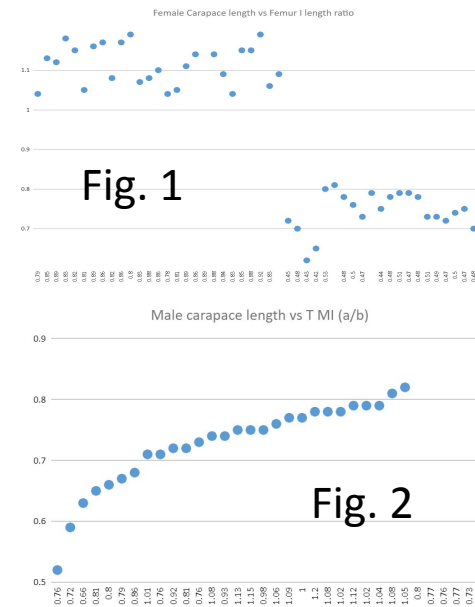


Fig. 1

Fig. 2

Fig. 3

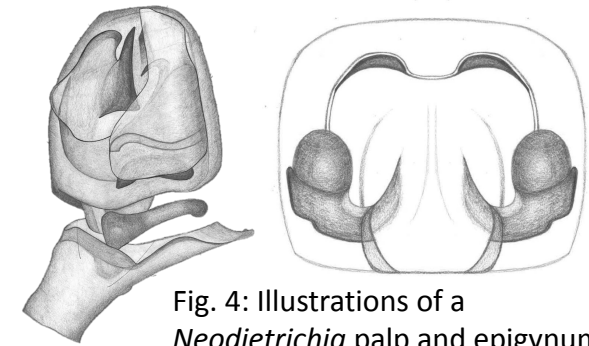


Fig. 4: Illustrations of a *Neodietrichia* palp and epigynum done by the first author.

## Conclusion

We have separated this genus into 8 different species. We currently have 11 illustrations completed across 5 different species. We have reason to believe that this is a species complex because of the slight morphological variation we see among different populations of a large geographic area. Sometimes, as seen in the females, this variation is so slight that populations are morphologically indistinguishable. What would aid this revision is further fieldwork to collect more specimens, and the use of such specimens for molecular analysis. Until then, we continue to make educated guesses and illustrate relevant structures to help future researchers better identify specimens within this genus.

## Acknowledgements

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