

## A molecular perspective on generic concepts in the *Hypotrachyna* clade (Parmeliaceae, Ascomycota)

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### Objectives

The present study aims to clarify the phylogenetic positions of *Cetrariastrum*, *Everniastrum* and *Parmelinopsis* and also test the hypothesis that the morphological characters have evolved independently within the clade as adaptations to ecological conditions.

### Material and methods

In the present study, the generic delimitation in the *Hypotrachyna* clade is revised using a molecular phylogeny of nuclear ITS, LSU and mitochondrial SSU rDNA sequences of 88 hypotrachynoid taxa. Morphological and chemical features are also revised in each group.

### Results

118 sequences are newly generated for this study. Our phylogenetic analyses show the polyphyly of *Hypotrachyna* as currently circumscribed which falls into four well-supported and one unsupported clade. *Cetrariastrum*, *Everniastrum* and *Parmelinopsis* are nested within *Hypotrachyna* s. lat., the latter being also polyphyletic and nested in one of the *Hypotrachyna* clades. *Cetrariastrum* is monophyletic but clustered within *Everniastrum*. Two alternative hypotheses tests significantly rejected the monophyly of these three genera.

### Conclusions

As a consequence, the genera *Cetrariastrum*, *Everniastrum*, and *Parmelinopsis* are reduced to synonymy with *Hypotrachyna*. Further, we here propose an alternative classification to recognize the well-supported clades at subgeneric level and leave the remaining species unclassified within the genus. Five new subgenera are proposed: *Hypotrachyna* subgen. *Cetrariastrum*, *Hypotrachyna* subgen. *Everniastrum*, *Hypotrachyna* subgen. *Longiloba*, *Hypotrachyna* subgen. *Parmelinopsis*, and *Hypotrachyna* subgen. *Sinuosa*. Forty nine new combinations are proposed.