

Circumscriptions of and relationships among many genera and suprageneric taxa of the diverse grass tribe *Poeae* remain controversial. In an attempt to clarify these, we conducted phylogenetic analyses of more than 2400 new DNA sequences from two nuclear ribosomal regions and five plastid regions, focused particularly on *Poeae* chloroplast group 1, which includes the subtribes Agrostidinae, Anthoxanthinae, Aveninae, Brizinae, Calothecinae, Koeleriinae (sometimes include in Aveninae), Phalaridinae and Torreyochloinae. Deep branches in the combined plastid and combined ITS+ETS trees are generally well resolved, the trees are congruent in most aspects, branch support across the trees is stronger than in trees based on only ITS and fewer plastid regions, and there is evidence of conflict between data partitions in some taxa. This study advances our understanding of the complicated evolutionary history of this diverse group of grasses. For example, we demonstrate that *Trisetum* and *Calamagrostis* are polyphyletic, that *Deyeuxia* s.s. and *Ammophila* are embedded in *Calamagrostis*, that some species of *Deyeuxia* sect. *Stylagrostis*, from South America, are embedded in *Deschampsia*, and that neither Agrostidinae nor Calothecinae are monophyletic as currently circumscribed. The results indicate that extensive taxonomic revision of multiple genera will be required to produce a classification of these grasses that reflects evolutionary history.



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MOLECULAR PHYLOGENETICS OF COOL-SEASON GRASSES IN THE SUBTRIBES AGROSTIDINAE, ANTHOXANTHINAE, AVENINAE, BRIZINAE, CALOTHECINAE, KOELERIINAE AND PHALARIDINAE (POACEAE, POOIDEAE, POEAE, POEAE CHLOROPLAST GROUP 1)

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Trisetum spicatum (L.) K. Richt.

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