# **CENTRAL AFRICAN CYNODONTEAE (POACEAE: CHLORIDOIDEAE)**

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## **Introduction**

The grass tribe Cynodonteae is the largest tribe of subfamily Chloridoideae and at present this tribe includes about 850 species in 94 genera (Peterson et al. 2016 & Soreng et al. 2017) and has been largely supported as a monophyletic clade (Peterson et al. 2014). So far, 25 subtribes have been recognized in this tribe, (Peterson et al. 2016, Peterson et al. 2017 & Saarela et al. 2018) with about seven genera still ungrouped (*incertae sedis*). Members of this tribe have no clear morphological similarity and Cynodonteae is thus characterized by a wide range of morphological variation, almost as wide as that of the entire subfamily (Alice 2001, Kellogg 2015 & Saarela et al. 2018).

Members of the tribe Cynodonteae generally constitute annual or perennial herbs whose leaf blades are linear to ovate, with a ciliate or ciliolate ligule or a ligule composed of a line of hairs. Their inflorescence comprises racemes that are solitary, digitate or scattered along an axis, or the spikelets are borne directly on the main axis. Their spikelets include 1 to many fertile florets, disarticulating above the glumes. Their glumes are herbaceous, 1–3-veined (5–12-veined in *Lepturus*), shorter than the floret or exceeding and enclosing it, sometimes the lower glume is absent; their lemmas may vary from membranous to leathery, keeled or rounded, 1–3-veined, with lateral veins near the often ciliate margins. The floret apex is entire or 2–3(–5)-lobed, and may be awned or awnless. Their fruits are inform of a caryopsis which sometimes have a free pericarp. They have a Kranz leaf anatomy, with short and stout micro hairs. Their chromosome numbers ranges from x= 9 to 10 (Jacobs 2007).

In tropical Africa, Poaceae have been fairly well studied, apart from Central Africa. The family has not been treated yet within the *Flore d’Afrique centrale* which covers the Democratic Republic of the Congo, Rwanda and Burundi and houses well over 700 species of grass. This Flora series shows renewed activity (Sosef 2016) and the family Poaceae is amongst the major families that are being prepared. A general introduction to the Poaceae as well as the treatment of the subfamilies Bambusoideae, Oryzoideae, Pharoideae and Puelioideae has been published, with other subfamilies like Panicoideae and Andropogoneae being in progress (pers. comm. Marc Sosef, Editor-in-Chief at Meise Botanic Garden). In line with these efforts, this study aims to realize the taxonomic treatment of tribe Cynodonteae for Central Africa.

In the region covered by *Flore d’Afrique centrale* there are about 55 species of this tribe in 22 genera (as recorded by Meise Botanic Garden). Through a funding from Meise Botanic Garden, I will obtain further in-depth training in taxonomy, guided by their grass specialist Dr. Marc Sosef. During this training, I will prepare the treatment of the Cynodonteae for this Flora series, by studying the taxa at BR and BRLU, with short visits to GENT, LG and WAG (at L). The grant requested from IAPT, will allow me to examine further these species, and notably their type material, at the Royal Botanic Gardens, Kew and the British Museum, both at London. This is essential to secure the quality of the work, and would also allow me to collaborate with the Kew grass specialists Dr. M. Vorotsova and Dr. W.D. Clayton.

Through detailed morphological observations, I hope to shed more light on the relationship of some members of this tribe, especially species of subtribe Eleusininae, whose relationships are still unclear according to previous work such as in the molecular work of Peterson et al. (2016).

Moreover, the phylogenetic placement of *Acrachne racemosa* (B. Heyne ex Roem. & Schult.) Ohwi is still unclear since it has been previously described as being closely related to *Dactyloctenium* (an unplaced genus) with high support (BS = 98, PP = 1.00) in some studies e.g. (Peterson et al. 2016), whereas this species also shows affinities to a member of the Eleusininae subtribe (Peterson et al. 2016, Peterson et al. 2015 & Soreng et al. 2017). This relationship has been described as being as a result of rapid radiation and hybridization. During my visits to the above-mentioned herbaria, I hope to sample material for a molecular phylogenetic study of this particular subgroup, to be performed using other funds (not granted yet).

Thus, I hope to facilitate travel to London and Paris for further study on the species of this tribe through the IAPT grant. This will boost the work on the taxonomic treatment of this tribe and provide an updated taxonomic treatment of members of Central African Cynodonteae. This as a result, will boost my skills in taxonomic analysis of grasses.

**Objectives**

1. To provide a comprehensive taxonomic treatment of the tribe Cynodonteae of Central Africa to be published in *Flore d’Afrique centrale*.
2. To investigate the relationship between members of this tribe found in Central Africa through detailed morphological observations.

**Methodology**.

* Literature and detailed herbarium studies on Central African Cynodonteae at Meise Botanic Garden (BR)
* Additional observations and comparison with type material at BM, BRLU, K, LG, P and WAG (at L)
* Collecting material for future DNA studies at the herbaria mentioned above.

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