

candollea

Journal international de botanique systématique



2010 Année Internationale de la Diversité Biologique



CONSERVATOIRE ET JARDIN BOTANQUES
DE LA VILLE DE GENÈVE

65₍₂₎



Editions des Conservatoire
et Jardin botaniques

DÉPARTEMENT DE LA CULTURE

VILLE DE
GENÈVE



Directeur:

Pierre-André Loizeau

Rédacteur:

Patrick Perret

Rédacteur-adjoint:

Patrick Bungener

Comité de lecture:

David Aeschimann, Beat Bäumlér, Cyrille Chatelain, Alain Chautems, Philippe Clerc,
Laurent Gautier, Daniel Jeanmonod, Catherine Lambelet, Mathieu Perret, Michelle Price,
Lorenzo Ramella, Fred Stauffer

avec la collaboration d'experts étrangers spécialement désignés

Toute correspondance doit être adressée à:

All correspondence should be submitted to:

Rédaction «Candollea-Boissiera»
Conservatoire et Jardin botaniques de la Ville de Genève
Case postale 60
CH-1292 Chambésy
candollea.cjb@ville-ge.ch

candollea

Journal international de botanique systématique

Distribution of *Cyperus chamaecephalus* Cherm., a forest undergrowth species with inconspicuous inflorescences

Laurent Gautier, Louis Nusbaumer, Isabel Larridon & Martin W. Callmander

9 décembre 2010

65₍₂₎

2. GAUTIER, Laurent, Louis NUSBAUMER, Isabel LARRIDON & Martin W. CALLMANDER: Distribution of *Cyperus chamaecephalus* Cherm., a forest undergrowth species with inconspicuous inflorescences

Introduction

While conducting floristic and vegetation surveys in Manongarivo Special Reserve (NW Madagascar) in 1999 (GAUTIER, 2002; MESSMER & al., 2002), a specimen of a rather frequent *Cyperaceae* species was collected in the undergrowth of a plot at 1200 m elevation in montane forest. It was only in the late afternoon while pressing the specimen for later routine identification of sterile vouchers that it became apparent that the specimen was fertile, bearing inconspicuous inflorescences concealed among the sheets of the basal rosette of leaves. More adequate material of the species was collected the next morning on the same location. It was later identified using “Flore de Madagascar et des Comores” (CHERMEZON, 1936) as *Cyperus chamaecephalus* Cherm., and confirmation was made possible by means of a scanned image of the holotype kindly provided by Stockholm Herbarium (S), collected by Karl Afzelius in 1912 in Moramanga, the only material cited in the Flore. The species has since been further collected in the framework of flora and vegetation surveys conducted by CJB and Département de Biologie et Ecologie végétales of Antananarivo University in Loky-Manambato (Daraina) region as well as in Montagne d’Ambre (TRIGUI, 2010).

Cyperus chamaecephalus Cherm. in Bull. Soc. Bot. France 72: 20. 1925.

Typus: MADAGASCAR. **Prov. Toamasina:** Moramanga, vid bäck i urskogen [near streams in pristine forest]; [18°57’S 48°13’E], [1000 m], 18.XII.1912, *Afzelius s.n.* (holo-: S [S-G-6606]; isotype: S) (scanned images seen).
= *Cyperus* sp. 1 in GAUTIER (2002: 117).

Observations. – The distribution of *C. chamaecephalus* has been very poorly documented. In “Flore de Madagascar et des Comores” (CHERMEZON, 1936), the species being only known from the type. Due to its inconspicuous fertile parts, the species

has certainly often been overlooked by plant collectors. Nevertheless, a few specimens have slowly accumulated in herbaria. The recent collections from northern Madagascar clearly show that this species is rather widely distributed in the undergrowth of lowland and montane rainforests, from ca. 300 m to 1200 m elevation (Fig. 1). It displays a classical Eastern/Central Domain distribution of HUMBERT (1955). It is noteworthy that the species has been able to reach Montagne d’Ambre in the North (TRIGUI, 2010), an isolated volcanic massif of recent origin covered with rainforest but separated by a dry vegetation gap of at least 100 km, with the two humid massifs of the Daraina region possibly acting as stepping-stones for dispersal (NUSBAUMER & al., 2010). *Cyperus chamaecephalus* has not been recorded in the Sambirano Domain. The species could be absent there due to the more seasonal rainfall regime in that area.

Cyperus chamaecephalus is part of a group of rainforest-dwelling species which are unusual in the genus (SIMPSON, 1992). Furthermore, this species displays an atypical inflorescence position for the family: the stem is only a few centimeters long (Fig. 2). As a consequence all leaves are positioned in a basal rosette and inflorescences are at ground level, among the litter of the forest undergrowth. Implications for pollination and dispersal have been questioned by SIMPSON (1992) for another species of the group sharing similar features, drawing attention to the low probability of wind pollination and the possibility of autogamy or insect pollination. Regarding seed dispersal, the mechanisms proposed by SIMPSON (1992) (wind, water drops, or passing animals) would only allow dispersal over short distances. Presence in Daraina and Montagne d’Ambre could only be explained by a much more humid climatic past with continuous rainforest, or alternatively by long distance dispersal through avian endozoochory. However, these features are very unusual in *Cyperaceae* and would be worth studying in detail.

Addresses of the authors: LG, LN: Conservatoire et Jardin botaniques de la Ville de Genève, ch. de l’Impératrice 1, C. P. 60, 1292 Chambésy. Switzerland.
Email: laurent.gautier@ville-ge.ch

IL: Isabel Larridon, Research Group Spermatophytes, Department of Biology, Ghent University, K. L. Ledeganckstraat 35, 9000 Gent, Belgium.

MWC: Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri, 63166-0299, U.S.A. and Conservatoire et Jardin botaniques de la Ville de Genève, ch. de l’Impératrice 1, CP 60, 1292 Chambésy. Switzerland.

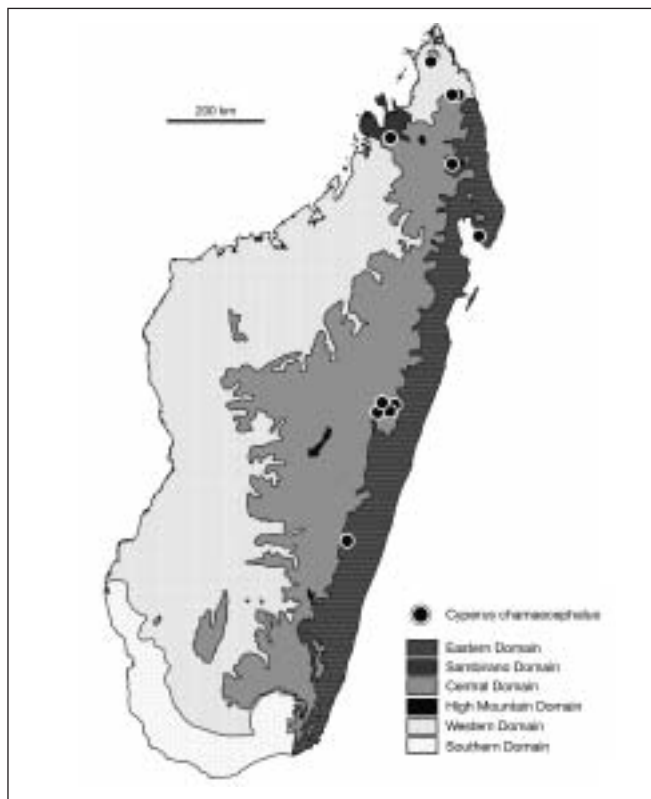


Fig. 1. – Distribution of *Cyperus chamaecephalus* Cherm. on the phytogeographical map of HUMBERT (1955).

Conservation status. – With an EOO of 103.666 km², an AOO of 90 km² and 8 subpopulations, 6 of which in the protected area network (Montagne d’Ambre, Loky-Manambato [Daraina], Manongarivo, Marojejy, Masoala, Andasibe-Périnet), *Cyperus chamaecephalus* is assigned a preliminary status of “Least Concern” (LC) following the IUCN Red List Categories and Criteria (IUCN, 2001) (calculation following CALLMANDER & al., 2007).

Other specimens. – **MADAGASCAR. Prov. Antsiranana:** Manongarivo, Ambahatra, cours supérieur, crête entre les deux bras de l’Ambahatra, forêt dense de montagne, versant, 13°59’S 48°26’E, 1200 m, 13.III.1999, *Gautier & al. 3556* (G, TAN, P, MO, K, WAG); Montagne d’Ambre, partie centrale, 12°36’ 45’’S 49°09’54’’E, 1160 m, 6.XI.2007, *Gautier & al. 5141* (G, TEF, P, MO, K, WAG); Daraina, forêt de Binara, 13°13’40’’S 49°35’30’’E, 862 m, 13.XII.2005, *Nusbaumer & Ranirison 1780* (G, TEF, P, MO); Daraina, forêt d’Antsahabe, forêt dense humide sempervirente, haut de versant, 29.XI.2004, *Nusbaumer & Ranirison 1294* (G, TEF, P, MO, K); Daraina, forêt d’Antsahabe, 13°13’36’’S 49°33’09’’E, 1040 m, 29.XI.2004, *Nusbaumer & Ranirison 2289* (G); Contreforts occidentaux du Massif de Marojejy (N-E), près du col de Doanyanala (limite des bassins de la Lokoho et de l’Androranga), [14°28’S 49°32’E], [ca. 1100 m], 25.I-25.II.1949, *Humbert 23032* (P). **Prov. Fianarantsoa:** Ifanadiana, [21°18’S 47°38’E], [c. 430 m], XII.1962,

Bosser 18814 (P). **Prov. Toamasina:** Moramanga, Ambohibary, Ampitambe, Sahaivo forest, 18°50’ 28’’S 48°17’32’’E, 1074 m, 9.XI.2006, *Antilahimena & Edmond 4919* (MO, P, TAN, TEF); Moramanga, Parc National de Mantady, 18°50’S 48°30’E, 995 m, 29.XII.1992, *Beentje 4774* (K); Périnet, rocher ombragé et humide, forêt ombrophile, [18°56’S 48°26’E], [c. 1000 m], XII.1962, *Bosser 16912* (P); Analanjirofo, Masoala Peninsula, ca. 3 km NE of Antalavia, along Antalavia River, 15°47’S 50°02’E, 260-380 m, 13-16.XI.1989, *Schatz & al. 2789* (GENT, MO, P).

References

- CALLMANDER, M. W., G. E. SCHATZ, P. P. LOWRY II, M. O. LAIVAO, J. RAHARIMAMPIONONA, S. ANDRIAMBOLOLONERA, T. RAMINOSOA & T. CONSIGLIO (2007). Application of IUCN Red List criteria and assessment of Priority Areas for Plant Conservation in Madagascar: rare and threatened Pandanaceae indicate new sites in need of protection. *Oryx* 41: 168-176.
- CHERMEZON, H. (1936). Cyperaceae: 29^e famille. In: HUMBERT, H. (ed.), *Flore de Madagascar et des Comores*. Imprimerie Officielle, Tananarive.
- GAUTIER, L. (2002). Liste commentée des phanérogames de la Réserve Spéciale de Manongarivo, Madagascar. In: GAUTIER, L. & S. M. GOODMAN (ed.), *Inventaire floristique et faunistique de la Réserve Spéciale de Manongarivo (NW Madagascar)*. *Boissiera* 59: 105-239.
- HUMBERT, H. (1955). Les territoires phytogéographiques de Madagascar. *Année Biol.* ser. 3, 31: 439-448.
- IUCN (2001). *IUCN Red List Categories and Criteria: version 3.1*. IUCN Species Survival Commission. IUCN, Gland and Cambridge.
- MESSMER, N., L. GAUTIER & C. CHATELAIN (2002). Etude de la structure et de la composition floristique de la végétation de la Réserve Spéciale de Manongarivo, Madagascar. In: GAUTIER, L. & S. M. GOODMAN (ed.), *Inventaire floristique et faunistique de la Réserve Spéciale de Manongarivo (NW Madagascar)*. *Boissiera* 59: 241-309.
- NUSBAUMER, L., P. RANIRISON, L. GAUTIER, C. CHATELAIN, P.-A. LOIZEAU & R. SPICHER (2010). Loky-Manambato: point de rencontre des principales unités phytogéographiques de Madagascar. In: VAN DER BURGT, X., J. VAN DER MAESEN, & J.-M. ONANA (ed.), *Systématique et Conservation des Plantes Africaines*: 253-264. Royal Botanic Gardens, Kew.
- SIMPSON, D. A. (1992). A new species of *Cyperus* and a reassessment of *Cyperus rufostriatus* (Cyperaceae) from Madagascar. Notes on Madagascar Cyperaceae I. *Kew Bull.* 47: 745-751.
- TRIGUI, S. M. (2010). *Etude floristique et biogéographique des altitudes supérieures de la Montagne d’Ambre (Nord de Madagascar)*. Mémoire de Master. Université de Genève.

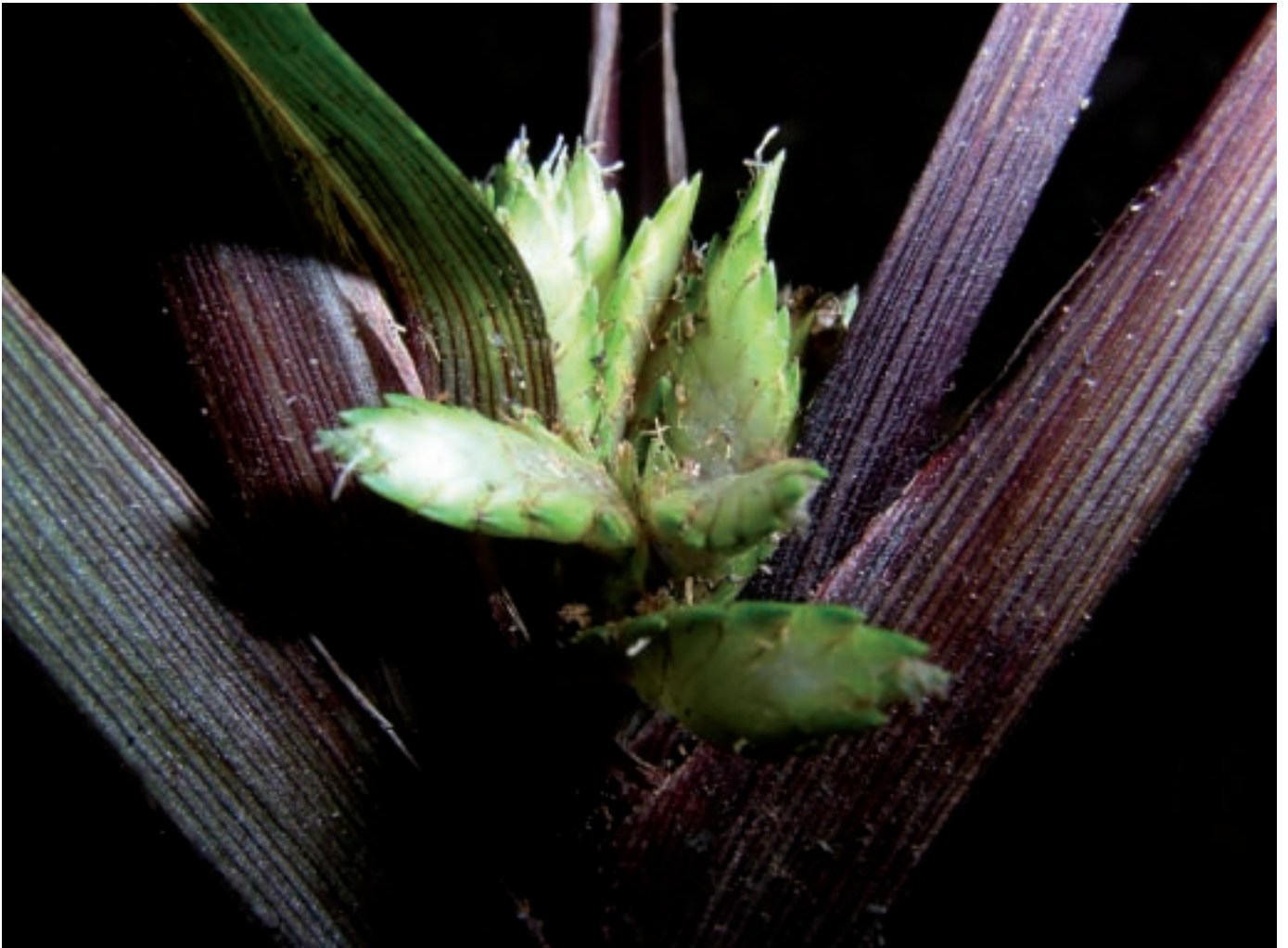


Fig. 2. – Field photograph of *Cyperus chamaecephalus* Cherm., in Antsahabe forest (Daraina) corresponding to collection Nusbaumer & Ranirison 1294. [Photo: Louis Nusbaumer]