



## New circumscription of *Trichomanes cupressoides* Desvaux (Hymenophyllaceae), an endemic filmy fern from the Seychelles (Indian Ocean), and new insights into the genus *Abrodictyum* C.Presl in the western Indian Ocean

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### Abstract

The filmy fern *Abrodictyum cupressoides*, initially reported from Madagascar and the Seychelles (*locus classicus*), is often confused in the field and in collections with similar local species, especially the pantropical *A. rigidum*. A comparative morphological investigation of Malagasy and Seychellois specimens finds strong differences between *A. cupressoides* and *A. rigidum* as well as between Malagasy and Seychellois *A. cupressoides*, suggesting three distinct morpho-species. A molecular phylogeny based on *rbcL* sequences focused on the genus *Abrodictyum* shows the polyphyly of both *A. cupressoides* and *A. rigidum*, and reveals that *A. cupressoides* should be excluded from *Abrodictyum*, would belong to *Trichomanes* and is restricted to the Seychelles. A new description for Seychellois *Trichomanes cupressoides* is thus proposed. In addition, generic treatments for Malagasy *T. pachyphlebium*, *T. madagascariense*, *T. boivinii* and African *A. guineense* are discussed.

### Résumé

La fougère Hyménophyllacée *Abrodictyum cupressoides*, initialement reportée à Madagascar et aux Seychelles (la localité du type), est souvent confondue sur le terrain et en collection avec les espèces proches, particulièrement le supposé *pantropical* *A. rigidum*. Une étude comparative morphologique sur les spécimens seychellois et malgaches montre de fortes différences aussi bien entre les deux localités qu'entre les taxons supposés *A. cupressoides* et *A. rigidum*. Une phylogénie moléculaire sur le genre *Abrodictyum* et basée sur le gène *rbcL* montre la polyphylie des deux espèces *A. cupressoides* et *A. rigidum*. Elle révèle qu'*A. cupressoides* devrait être exclu du genre *Abrodictyum*, appartiendrait au genre distinct *Trichomanes* et serait restreint aux Seychelles. Une nouvelle description pour le seychellois *Trichomanes cupressoides* est donc proposée. En outre, le traitement générique des taxons malgaches *T. pachyphlebium*, *T. madagascariense*, *T. boivinii* et de l'africain *A. guineense* est discuté.

### Introduction

*Abrodictyum* Presl (1843: 20) (Hymenophyllaceae) comprises at least 23 species (Ebihara *et al.* 2006) mostly distributed in the understory of palaeotropical rainforests with a few neotropical taxa. In the Malagasy region (Madagascar and neighbouring islands in western Indian Ocean: Comoros, Mascarenes and Seychelles) six species are reported (Roux 2009), five of which are endemic to the region, with one restricted to Madagascar (Table 1). Most species exhibit the same general growth-form and morphology with clustered, large, highly divided fronds on a short-creeping to

per pinnule, up to 26 per pinna, free, cylindrical, more often slightly bilabiate with a dilated mouth; receptacle short to long-exserted.

**Distribution and habitat:**—Endemic to the Seychelles (Mahé and Silhouette islands), terrestrial in the understory of rainforests from sea level to the highest summits (up to 800 m) but restricted to wet and shady micro-habitats in the lowland belt, especially at the lower edge of granite boulders (receiving the shade and water catchment of the large rocks). It is more widespread in the understory of lower montane forests, above 500 m.

**Specimens examined:**—See Annex 1.

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## Annex 1. Specimens examined at P and SEY; details and photos of specimens available at

<http://science.mnhn.fr/institution/mnhn/collection/p/item/search/form>

### *Trichomanes cupressoides*

SEYCHELLES. **Mahé Island:** *Awmack* 393, 524 (SEY); Mare aux Cochons, August 1895, *Brauer* 3, 4 (P01627088); Séchelles et 3 frères, *s.d.*, *Commerson ? s.n.* (P00065003); Jasmin Peak, January 1970, *Fosberg* 51965 (P01472766); *Fosberg & Mason* 52003 (SEY); Morne Blanc, November 1982, *Friedmann* 4370 (P01214236); *Humboldt* 1882 (P01427008, P01427009); Casse Dent, November 2006, *Janssen & Mougale* 3225 (SEY, P00591042); Souvenir, November 1961, *Jeffrey* 515 (P01627093, SEY); *Morel* 45 (SEY); Ravins derrière la ville de Mahé, February 1840, *Pervillé? s.n.* (P01472767); 1841, *Pervillé? s.n.* (P01472768, P01627089); Congo Rouge, May 1970, *Procter* 3923 (P01627091, SEY); Casse Dent, sur la route de Congo Rouge, March 2003, *Rouhan* 135 (P00696126); January 1876, *s.c. s.n.* (P01627094); 1903, *s.c. s.n.* (P01627092); *Senterre & Malbrook* 4995 (SEY). **Silhouette Island:** Mont “Corgate”, November 1973, *Bernardi* 14647 (P01627090)

Note:—The specimen P00065003 was first registered as isotype of *Trichomanes cupressoides* but it is from a different collection.

### *Abrodictyum «cupressoides»*

MADAGASCAR: **Antananarivo:** Réserve Spéciale d’Ambohitantely, December 1997, *Rakotondrainibe* 4413 (P00134489), 4477 (P00134550). **Antsiranana:** PN de la Montagne d’Ambre, lac Maudit, March 1992,