Novitates neocaledonicae. II. *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov. (Malvaceae, Sterculieae): a rare and threatened new species from New Caledonia

Martin W. CALLMANDER
Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166-0299 (USA)
and Conservatoire et Jardin botaniques de la Ville de Genève,
ch. de l'Impératrice 1, case postale 60, 1292 Chambésy (Switzerland)
martin.callmander@mobot.org

Jérôme MUNZINGER
IRD (Institut de Recherche pour le Développement), UMR AMAP, Laboratoire de Botanique,
et d'Écologie végétale appliquées, Herbarium NOU, 98848 Nouméa (New Caledonia)
and Institut de Recherche pour le Développement (IRD), UMR AMAP, CIRAD TA A51/PS2,
F-34398 Montpellier cedex 5 (France)
jerome.munzinger@ird.fr

Sven BUERKI
Department of Life Sciences, Natural History Museum,
Cromwell Road, London SW7 5BD (United Kingdom)
s.buerki@nhm.ac.uk

Porter P. LOWRY II
Missouri Botanical Garden, P.O. Box 299, St. Louis, MO, 63166-0299 (USA)
and Institut de Systématique, Évolution, et Biodiversité (UMR 7205 - CNRS, MNHN, UPMC, EPHE),
Muséum national d'Histoire naturelle, Sorbonne Universités,
57 rue Cuvier, 75231 Paris cedex 05 (France)
pete.lowry@mobot.org

Publié le 26 juin 2015

Callmander M. W., Munzinger J., Buerki S. &. Lowry II P. P. 2015 — Novitates neocaledonicae. II. *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov. (Malvaceae, Sterculieae): a rare and threatened new species from New Caledonia. *Adansonia*, sér. 3, 37 (1): 131-137. http://dx.doi.org/10.5252/a2015n1a8

ABSTRACT
A new species of *Acropogon* Schltr. (Malvaceae, Sterculieae) is described from New Caledonia. *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov. is endemic to three ultramafic massifs, Boulinda, Kopéto and Paéoua, along the north-western coast of Grande Terre. This rare, endangered species differs from other members of the genus by its large 5-lobed leaves whose abaxial surface is covered by erect to divergent stellate trichomes and the subspherical shape of its follicles, which bear a pointed apex. Line drawings and color photos are provided, along with a discussion of its morphological affinities and a preliminary risk of extinction assessment.

KEY WORDS
Acropogon,
Malvaceae,
New Caledonia,
taxonomy,
threatened species,
new species.

RÉSUMÉ

Novitates neocaledonicae. II. Acropogon moratianus *Callm., Munzinger & Lowry, sp. nov. (Malvaceae, Sterculieae) : une espèce nouvelle rare et menacée de Nouvelle-Calédonie.*

Une nouvelle espèce d'*Acropogon* Schltr. (Malvaceae, Sterculieae) est décrite de Nouvelle-Calédonie. *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov. est endémique de trois massifs ultramafiques, Boulinda, Kopéto et Paéoua le long de la côte nord-ouest de la Grande Terre. Cette espèce rare et en danger diffère des autres espèces du genre par ses grandes feuilles à cinq lobes dont la surface abaxiale est recouverte par des trichomes étoilés, dressés ainsi que par la forme subsphérique de ses follicules à apex pointus. Des dessins au trait et des photos couleurs sont fournis pour la nouvelle espèce. La discussion porte sur ses affinités morphologiques et l'évaluation préliminaire de son risque d'extinction.

MOTS CLÉS
Acropogon,
Malvaceae,
Nouvelle-Calédonie,
taxonomie,
espèce menacée,
espèce nouvelle.

INTRODUCTION

The endemic New Caledonian genus *Acropogon* Schltr. (Malvaceae, subfam. Sterculioideae, tribe Sterculieae) comprises 24 currently recognized species (Morat *et al.* 2012), including several narrow endemics, each of which occurs in an area of less than 100 km^2 and is restricted to a single vegetation type and/or substrate, a pattern seen in many groups (see Wulff *et al.* 2013; Ibanez *et al.* 2014) present in this floristically rich southwest Pacific archipelago (Morat 1993; Lowry 1998). For example, *A. paagoumenensis* Morat & Chalopin is endemic to maquis vegetation on serpentinites at the western base of the Dôme de Tiébaghi in north-western Grande Terre (New Caledonia's main island), whereas *A. calcicola* Morat & Chalopin is restricted to sclerophyllous forests on calcareous substrates around Goapin in the center of the island (Morat & Chalopin, 2007). Some other species are geographically more widespread but nevertheless exhibit clear ecological preferences, such as *A. schistophilus* Morat & Chalopin, endemic to evergreen humid forests on the schistose massifs of the northeast, while a few such as *A. schefflerifolius* (Guillaumin) Morat have wider geographic ranges and ecological amplitudes.

Molecular phylogenetic studies have shown that *Acropogon* belongs to a monophyletic group that also includes the Austro-New Guinean genus *Brachychiton* Schott & Endl. and the endemic Australian genera *Argyrodendron* F. Muell. and *Franciscodendron* B. Hyland & Steenis (Wilkie *et al.* 2006). These results clearly demonstrate that *Acropogon* is not closely related to *Sterculia* L., as had been suggested previously by several authors who had treated *Acropogon* in synonymy (Guillaumin 1911, 1920 and subsequent publications; Baker 1921; Däniker 1933). Rather, the molecular evidence confirms the decision of Hutchinson (1967) to recognize *Acropogon* as a distinct genus, an interpretation that was followed by Morat (1986), who provided an extended diagnosis and revealed several additional diagnostic characters for the genus, including the lack of endosperm in the seeds and the fleshy nature of the cotyledons.

Morat (1986, 1988) and Morat & Chalopin (2003, 2005, 2007) contributed significantly to our knowledge of *Acropogon* by describing 15 new species, but they refrained from naming several additional entities that clearly represent novelties because they lacked adequate fertile material (Morat & Chalopin 2007). While conducting field work on the Paéoua massif near Népoui in north-western Grande Terre (Fig. 1), the authors of the present paper collected material of another as yet undescribed species of *Acropogon*, one that had not previously been recognized as such. Here we describe this new species as the second contribution in a new series entitled *Novitates Neocaledonicae* (Munzinger 2015). We provide a risk of extinction assessment of our new species based on the IUCN Red List Categories and Criteria (IUCN 2012), along with line drawings and color photos, a distribution map, and a comparison of its morphological features to those of other members of the genus. The addition of this novelty brings the total number of species of *Acropogon* to 25, making it the third largest endemic genus in the New Caledonian flora after *Pycnandra* Benth. (Sapotaceae) (see Swenson & Munzinger 2009), which has 57 currently recognized species (Morat *et al.* 2012), and *Pancheria* Brongn. & Gris (Cunoniaceae, see Hopkins & Bradford 2009; Hopkins *et al.* 2009), which has 27 species, including two of hybrid origin (Morat *et al.* 2012).

SYSTEMATICS

Acropogon moratianus
Callm., Munzinger & Lowry, sp. nov.
(Figs 2; 3)

Haec species inter congeneros foliis grandibus quinquelobis abaxialiter trichomatibus stellatis erectis usque divergentibus obtectis atque fructus folliculis subsphaericis apice acutis distinguitur.

Typus. — **New Caledonia**. Province Nord, Poya, Paéoua, le long de la piste menant au sommet, 21°10'19"S, 165°02'47"E, 541 m, 27.X.2010, fr., *Callmander, Buerki, Munzinger & Lowry 854* (holo-, P[P00722597]!; iso-, MO!, NOU!).

Paratypes. — **New Caledonia**. Province Nord, Haute Népoui, Pente W Paéoua, Oué Péoué, 900 m, 8.VII.1970, fr., *MacKee 22170* (P[P00722598], NOU[NOU027939, NOU054024]). — *Ibid. loc.*, 9.VII.1970, fr., *MacKee 22238* (P[P00722602], NOU[NOU027940]). — Massif du Boulinda, 650 m, 1.XII.1982, st., *Morat 7277* (MO, P[P00722599, P00722600]). — Boulinda, près du Pic Poya, vers 700 m, 7.XI.1984, st., *Morat 7863* (P[P00722601], NOU).

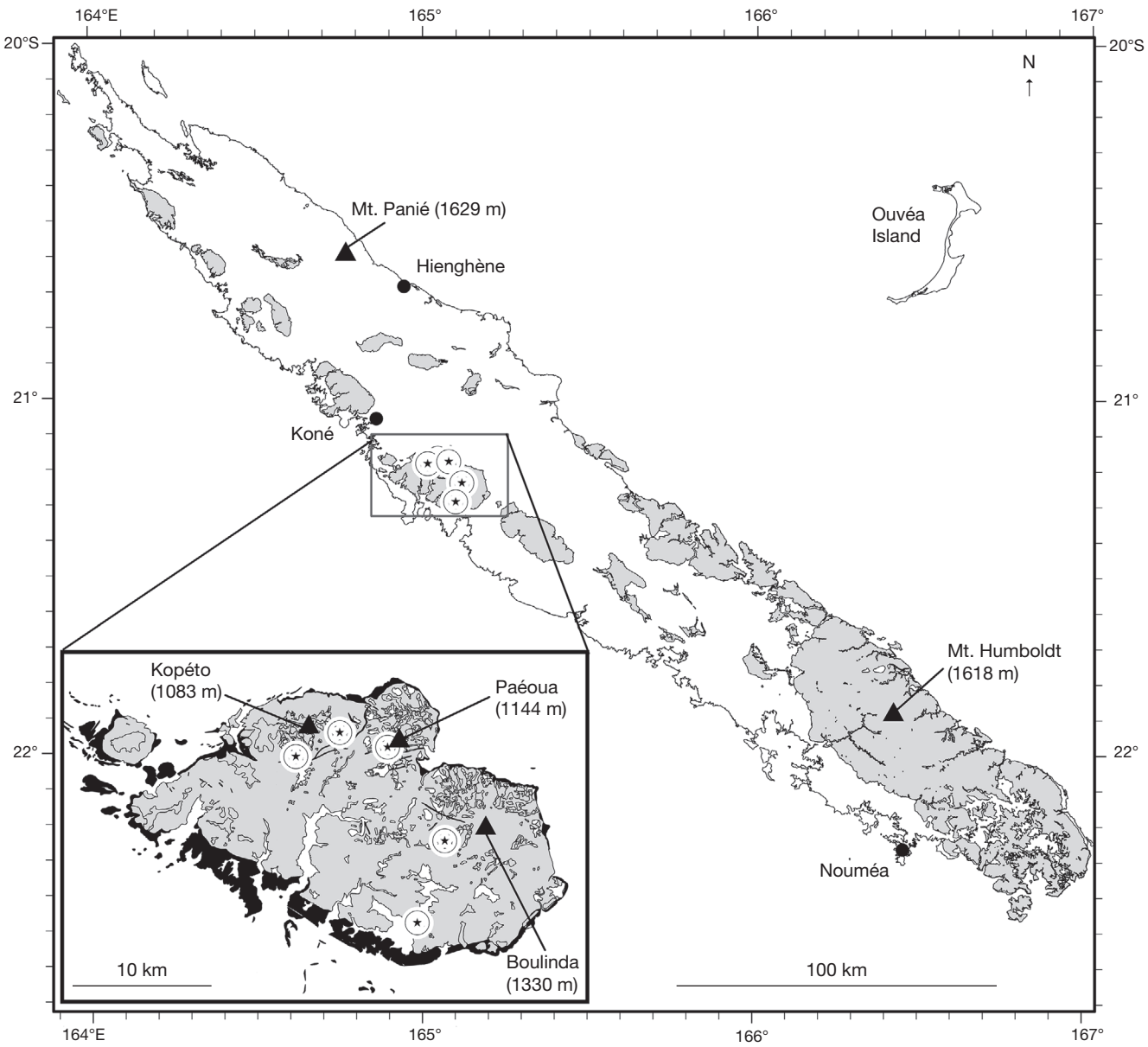

Fig. 1. — Distribution of *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov. in New Caledonia; ultramafic substrates are shaded, gray for peridotites and black for serpentinites; triangles indicate major mountain summits.

Distribution and ecology. — *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov. appears to be rare in the wild and is known only from forests in thalwegs (narrow, deep valleys) on three ultramafic massifs, Boulinda, Kopéto (Haute Népoui) and Paéoua, which form the largest group (*c.* 200 km^2) among the chain of ultramafic massifs along the north-western coast of Grande Terre (Barrière 2009). The Boulinda-Kopéto-Paéoua complex, which is surrounded by areas with basaltic and schistose substrates, has a remarkable variety of vegetation types (Jaffré & Latham 1974) and a highly distinctive local flora with several micro-endemics. A non-exhaustive list includes species from maquis and forests in thalwegs belonging to various families, including: Cunoniaceae (*Codia triverticillata* H. C. Hopkins & Pillon; Hopkins *et al.* 2007), Goodeniaceae (*Scaevola barrierei* A. S. Wulff & Munzinger; Wulff & Munzinger 2012), Myrsinaceae (now Primulaceae, *Maesa jaffrei* M. Schmid; Schmid 2006), Phyllanthaceae (*Phyllanthus nitens* M. Schmid, *P. stipitatus* M. Schmid and *P. tireliae* M. Schmid; Schmid 1991), Primulaceae (*Tapeinosperma boulindaense* M. Schmid; Schmid 2012), Rubiaceae (*Thiollierea dagostinii* Barrabé & Mouly and *T. rigaultii* Barrabé & Mouly; Barrabé *et al.* 2011), Rutaceae (*Medicosma verticillata* T. Hartley; Hartley 1985) Sapotaceae (*Pichonia grandiflora* Swenson & Munzinger; Swenson & Munzinger 2012) and Simaroubaceae (*Soulamea rigaultii* Jaffré & Fambart; Jaffré & Fambart 2002).

Etymology. — This new species is named in honor of our colleague Professor Philippe Morat, former Director (1986-2002) of the Laboratoire de Phanérogamie at the Muséum national

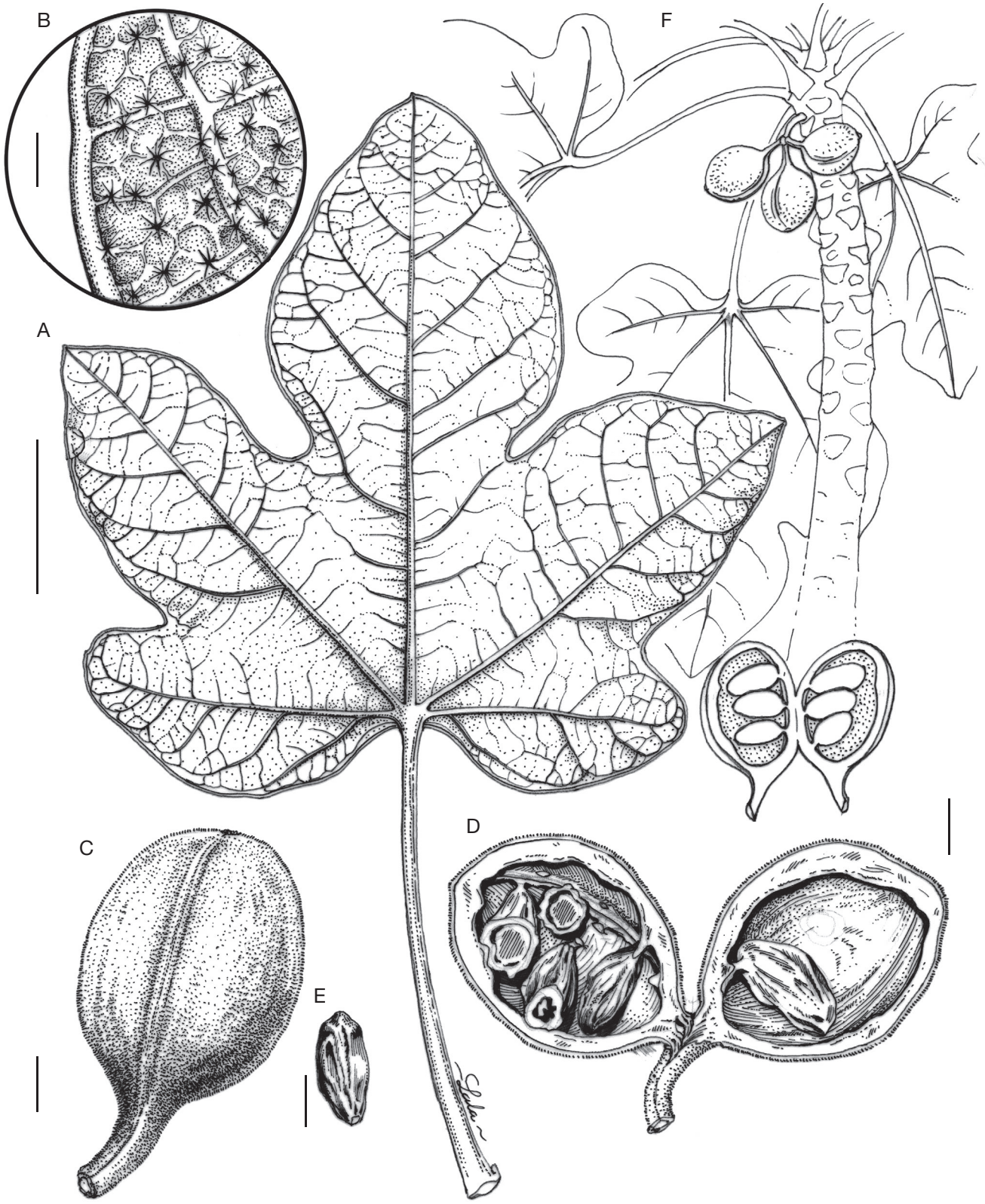

Fig. 2. — *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov.: **A**, leaf; **B**, details of abaxial leaf surface; **C**, single follicle; **D**, opened follicle; **E**, seed; **F**, habit. *Callmander et al. 854* (holotype, P). Scale bars: A, 10 cm; B, 1 mm; C-E, 1 cm. Drawings by Roger Lala Andriamiarisoa.

d'Histoire naturelle in Paris, and prior to that Director of the Laboratoire de Botanique et de l'Herbier (NOU) (1976-1985) at the Institut de Recherche pour le Développement (IRD, formerly ORSTOM) in New Caledonia. Professor Morat has described several novelties from Madagascar and New Caledonia, and has contributed to our understanding

Fig. 3. — *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov.: **A**, Upper part of the monocaulous treelet; **B**, detail of follicles, *Callmander et al. 854*. Photos by P. Lowry.

of these two remarkably rich floras through his numerous herbarium collections and scientific publications, including the description of 15 new species of *Acropogon* between 1988 and 2007. Prof. Morat further kindly assisted MWC in 2011, indicating that he agreed with the interpretation that the species described here represents another new, restricted range endemic of this distinctive and highly diverse genus.

Conservation status. — *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov. has an Extent of Occurrence (EOO) of 65 km² and an Area of Occupancy (AOO) of 45 km² (calculations following Callmander *et al.* 2007). As the two known two subpopulations are located in thalweg forest, one of New Caledonia's most highly impacted vegetation types (Jaffré *et al.* 2010), and are situated in unprotected areas where active nickel mining is taking place, we assign a preliminary status of Endangered [EN B1ab(i,ii,iii,iv)+2 ab(i,ii,iii,iv)] following the IUCN Red List Categories and Criteria (IUCN 2012).

Description

Treelet, monocaulous or sparsely branched, to 10 m tall; bark gray, with evident petiole scars. Leaves coriaceous, *c.* 60 cm in length, oriented almost vertically in the distal portion of the trunk, the lower ones becoming horizontally disposed; petiole (12-)26-38 cm long, 0.5-0.8 cm in diam., bulging at base, canaliculate, with slight longitudinal corrugations; blade 5-lobed, nearly orbicular, (25-)30-45 × (28-)40-46 cm, coriaceous, base cordate, apex broadly acute, puberulent on the abaxial surface with erect to divergent stellate trichomes, glabrous, smooth and shiny on the adaxial surface; primary and secondary veins visible on both surfaces, prominent abaxially. Inflorescence and flowers unknown. Infructescence inserted just below the most distal petioles, pendant, 10-13 cm long, robust, on a peduncle *c.* 6 cm in length. Fruit comprising 3 follicles, green prior to maturity, covered by dense brown indument, pedicel *c.* 1.5 cm long; each follicle subspherical to subovoid, 5 × (3-)4 cm, with a woody pericarp 0.5 cm thick, apex pointed. Seeds dark brown, 3 or 4 per locule, 2 cm long.

Remarks

Acropogon moratianus Callm., Munzinger & Lowry, sp. nov. can be easily distinguished from other members of the genus by its large 5-lobed leaves, whose abaxial surface is covered by erect to divergent stellate trichomes, and the subspherical shape of its follicles with a pointed apex. The very distinctive nature of the leaves and fruits provides adequate justification for describing this new species, even though no flowering material has yet been collected. While sterile specimens of *A. moratianus* Callm., Munzinger & Lowry, sp. nov. can be confused with *A. calcicola*, whose leaves are similar in shape (occasionally 5-lobed, although generally 3-lobed), our new species differs by its erect to divergent stellate trichomes on the abaxial surface of the leaves (vs spreading in *A. calcicola*) and by its habit (monocaulous to sparsely branched tree vs. almost always branched with a decumbent habit). Moreover, *A. calcicola* occurs on limestone and has a restricted distribution in the center portion of New Caledonia. Furthermore, *A. calcicola* differs from *A. moratianus* Callm., Munzinger & Lowry, sp. nov. by having fruit that comprise just one or two elongated follicles (Morat & Chalopin 2007: fig. 2). Material of *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov. also resembles *A. jaffrei*, a species that similarly occurs on the ultramafic massifs of north-western New Caledonia. However, *Acropogon moratianus* Callm., Munzinger & Lowry, sp. nov. can be distinguished by its stellate pubescence on the abaxial surface of the leaves (vs glabrescent in *A. jaffrei*) and its subspherical to subovoid follicles that are densely covered by brown indument (vs elongated and glabrous).

Acknowledgements

We thank Roy Gereau for translating the diagnosis into Latin, and Daniel and Irène Létocart for helping with the organization of the field work conducted on Paéoua in 2010. We are grateful to the team at the NOU herbarium (IRD, Nouméa), in particular Jacqueline Fambart-Tinel and Michèle Magat for assistance with specimens, and to Roger Lala Andriamiarisoa (Missouri Botanical Garden – Madagascar) for providing the fine illustration. MWC is especially grateful to Philippe Morat for sharing his knowledge on this elegant genus on several occasions. We thank the authorities of New Caledonia's Northern and Southern Provinces for providing collect permits and for other courtesies, as well as Wendy Applequist and Tanguy Jaffré for helpful comments on an earlier version of the manuscript. Field work was supported by funding from the Idaho Botanical Research Foundation.

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Submitted on 21 March 2014;
accepted on 8 July 2014;
published on 26 June 2015.