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of Madagascar VII: A new species of *Senecio* L.
(Compositae)

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Novelties from the Northern Mountains Complex of Madagascar VII: A new species of *Senecio* L. (Compositae)

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ABSTRACT

A new species of *Senecio* L. (Compositae) is described from the medium altitude moist evergreen forest of the northern mountains of Madagascar. The species presents morphological affinities with *S. francoisii* Humbert and *S. hadiensis* Forssk. but differs, among other characters, in having discoid capitula (vs radiate capitula). According to IUCN Red List Categories and Criteria, a preliminary risk of extinction status of “Vulnerable” is assigned to the new species. A line drawing and field pictures are also provided.

KEY WORDS

Asteraceae,
Senecioneae,
Madagascar,
new species.

RÉSUMÉ

Nouveautés du complexe des Montagnes du Nord de Madagascar VII : Une nouvelle espèce de Senecio L. (Compositae).

Une nouvelle espèce de *Senecio* L. (Compositae) est décrite de la forêt humide sempervirente de moyenne altitude des montagnes du nord de Madagascar. L'espèce présente des affinités morphologiques avec *S. francoisii* Humbert et *S. hadiensis* Forssk. mais diffère, parmi d'autres caractères, par la présence de capitules discoïdes (vs capitules radiés). Selon les Catégories et Critères de la Liste Rouge de l'UICN, un statut préliminaire du risque d'extinction de « Vulnérable » est attribué à la nouvelle espèce. Un dessin au trait et des photos sont aussi fournis.

MOTS CLÉS

Asteraceae,
Senecioneae,
Madagascar,
espèce nouvelle.

INTRODUCTION

The Malagasy species of *Senecio* L. (Compositae, Senecioneae) were thoroughly revised by Henri Humbert (1887-1967), who devoted part of his life to the study of the Compositae in Madagascar (Humbert 1923, 1963), becoming the foremost specialist in the family. In the treatment of *Senecio* for the *Flore de Madagascar et des Comores* (1963), he accepted 82 species, 78 of them endemic to Madagascar (c. 95%), that were classified in 17 informal groups. After Humbert's treatment two new species were described, i.e., *S. cedrorum* J. Raynal and *S. meuselii* Rauh. A few years later, Jeffrey (1992) proposed a narrower circumscription of this highly diversified genus and transferred several species to allied genera. For example, the species of Humbert's groups I, II, and VI were placed under the genus *Hubertia* Bory, and those of group XIII transferred to *Humbertocalia* C. Jeffrey (see Rabarimanarivo *et al.* 2023). Moreover, Jeffrey (1992) proposed the replacement name *Senecio pleistophyllus* C. Jeffrey for the illegitimate *S. multibracteatus* Baker. After these taxonomic and nomenclatural actions, 58 species of *Senecio* are currently accepted for Madagascar (Madagascar Catalogue 2023), which includes annual, perennial, suffrutescent, and scrambling plants.

Since Humbert's times, plant collecting has remarkably been increased due to the research and conservation projects led by institutions such as Kew Royal Botanical Gardens, Missouri Botanical Garden, Conservatoire et Jardin botaniques de Genève and Muséum national d'Histoire naturelle in Paris. This material is essential for improving the knowledge of the species distributions but also for better understanding the morphological variability of the poorly known taxa. Likewise, the prospection of remote areas implies the potential collection of species that still remain unrecorded. Herein, we describe a new species from the mountains of northern Madagascar. The new species was first collected in November 1966 by Philippe Morat (1937-) and never studied by Humbert. It was recollected between 2000 and 2007 during expeditions organized by the Missouri Botanical Garden in the Ambohimiravavy, Biempoko, Sorata, and Tsaratanana massifs. It is known so far from seven collections in medium altitude moist evergreen forest (*sensu* Gautier *et al.* 2018).

MATERIAL AND METHODS

This study is based on the examination of herbarium specimens kept at G and P and available literature. Additionally, digital herbarium specimens or supplementary information were obtained from MO and TAN. The preliminary conservation status of the new species was assessed following IUCN Red List Categories and Criteria (IUCN 2012). We calculated extent of occurrence (EOO) and area of occupancy (AOO) (with a 2 × 2 km grid) using the online "GeoCAT" software (<http://geocat.kew.org>; Bachman *et al.* 2011).

TAXONOMY

Family COMPOSITAE Giseke
Tribe Senecioneae Cass.
Genus *Senecio* L.

Senecio marinae J. Calvo & Callm., sp. nov.
(Figs 1; 2)

Senecio marinae sp. nov. can be distinguished by its scrambling or ascending habit with stems 1-4 m long, the oblanceolate to obovate, fleshy, glabrous leaves, usually somewhat tricuspidate apically, the synflorescences with subumbelliform divisions, the discoid capitula with 10-11 involucre bracts, and the glabrous achenes. It mostly differs from the similar species *S. francoisii* Humbert and *S. handiensis* Forssk. in having discoid capitula.

TYPE. — Madagascar. Boeny Region [Prov. Mahajanga]: Bealanana, Mangindrano, Ambohimiravavy, Antsahivo, W du campement 01, Matsabory, 14°24'12"S, 49°03'56"E, 1980 m, 20.X.2005, Wohlhauser, Callmänder & Buerki 785 (holo-, G[G00398286]!; iso-, MO[MO-3401237] image!; P[P02473236]!; TAN).

PHENOLOGY. — The new species has been found in bloom in October and November.

DISTRIBUTION AND ECOLOGY. — *Senecio marinae*, sp. nov. is known at elevations of 1365-2375 m in Ambohimiravavy, Biempoko, Sorata, and Tsaratanana massifs. The new species grows on plateaux and ridges in open forests (chablis) rich in Bamboo in medium altitude moist evergreen forest and at the transition between these forests and the ericoid mountain thicket (*sensu* Gautier *et al.* 2018).

ETYMOLOGY. — The epithet *marinae* honors Marina Rabarimanarivo, botanist at the Missouri Botanical Garden in Antananarivo who contributes immensely to the Madagascar Catalogue project (Madagascar Catalogue 2023) and understood that the collections from high altitudes in Northern Madagascar represented a new species when she evaluated the genus *Senecio* for the project in 2009.

CONSERVATION STATUS. — *Senecio marinae*, sp. nov. has an estimated EOO of c. 1319 km², an AOO of 24 km², and five locations encompassed within the COMATSA Nord and Tsaratanana protected areas. Fires are known to occasionally enter pristine forests in those protected areas and are also known along pastures and summit zones (Goodman *et al.* 2018). Due to the plausible threats to its habitat for slash-and-burn agriculture and fires caused by lightning, *S. marinae*, sp. nov. is assigned to a preliminary risk of extinction status of "Vulnerable" [VU B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)] using the IUCN Red List Categories and Criteria (IUCN 2012).

ADDITIONAL SPECIMENS EXAMINED. — Madagascar. Diana Region [Prov. Antsiranana]: Marotolana, Ambanja, Tsaratanana massif, S slopes, 14°02'53"S, 48°57'04"E, 2211-2365 m, 5.XI.2000, Antilahimena *et al.* 653 (G!, K, MO[MO798854] image!, P[P02473228]!, TAN image!); Tsaratanana, XI.1966, Morat 2256 (TAN image!); Manambato, à 10 km à vol d'oiseau du fkt. Antsahavalany, [Sorata], 13°43'28"S, 49°22'43"E, 1559 m, 25.X.2007, Randriambololo-mamonjy *et al.* 103 (MO[MO3401222] image!, P[P04276661]!, TAN). — Sava Region [Prov. Antsiranana]: 22 km à l'E de Bealanana, montagne de Beampoko, 14°13'41"S, 49°08'14"E, 1991 m, 17.XI.2005, Randrianarivelo *et al.* 329 (MO, P[P02473238]!, TAN); plateau entre Beampoko et Ambohimiravavy, 14°12'07"S, 49°07'05"E, 2220 m, 9.XI.2005, Randrianarivony *et al.* 74 (G!, MO, P[P02473237]!, TAN); Andrafaikona, forêt dense humide de Sorata, 1.X.2007, 13°40'57"S, 49°26'33"E, 1364 m, Razakamalala *et al.* 3634 (MO[MO3185014] image!, P[P04276663]!, TAN).

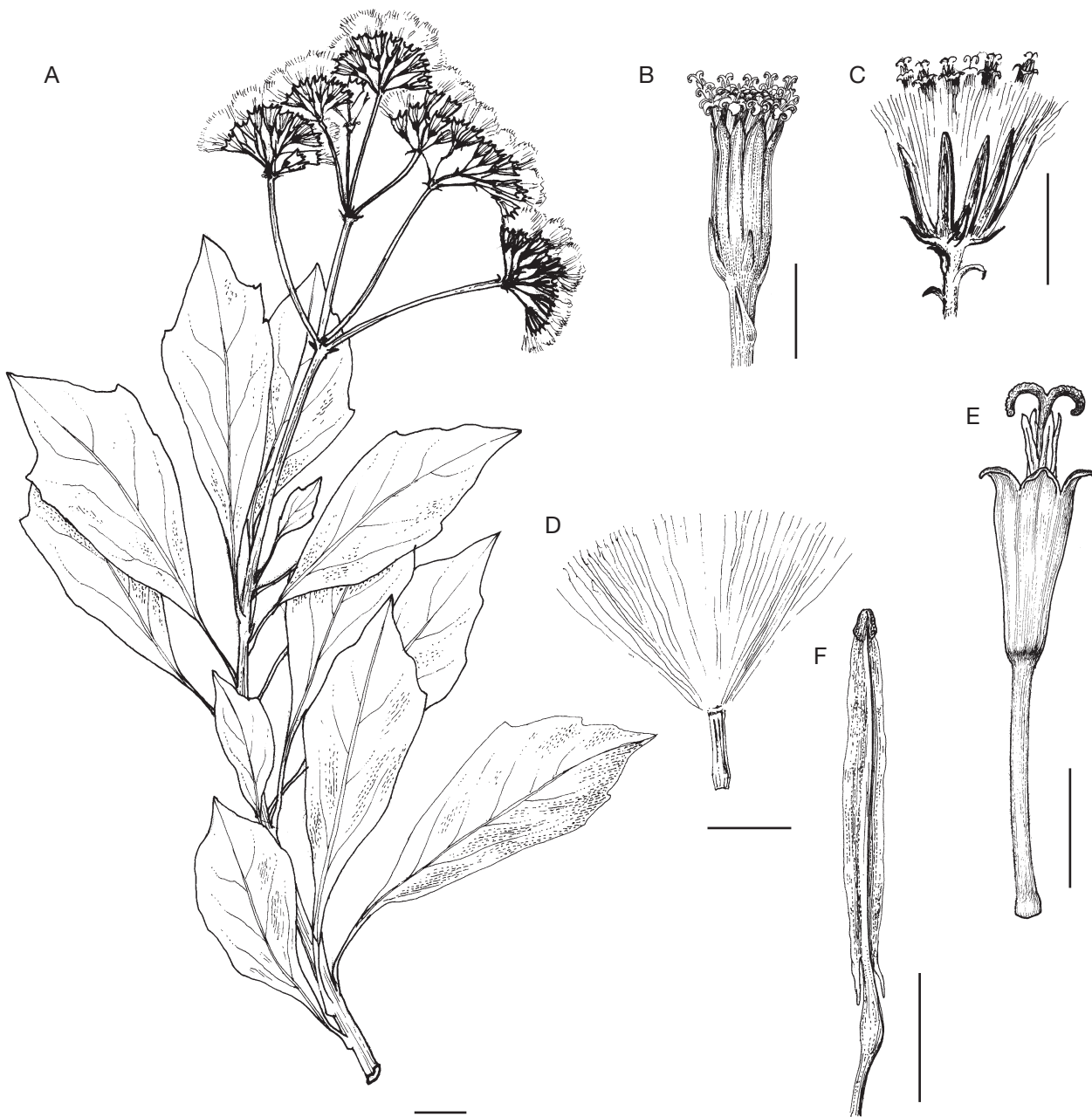


FIG. 1. — *Senecio marinae* J. Calvo & Callm., sp. nov.: **A**, flowering stem; **B**, capitulum at an early stage; **C**, capitulum at an advanced stage; **D**, achene with pappus; **E**, floret (ovary and pappus removed); **F**, anther (notice the caudate base). **A**, **C**, **D**, *Antilahimena et al.* 653; **B**, **E**, **F**, *Wohlhauser et al.* 785. Drawing: Roger Lala Andriamiarisoa. Scale bars: A, 1 cm; B, C, 6 mm; D, 2 mm, E, 1.5 mm, F, 0.5 mm.

DESCRIPTION

Suffrutescent subshrub, scrambling or ascending, 1–4 m tall. Stem terete, smooth, fistulous (at least upper parts), glabrous, with leaves only on upper part as plant ages. Leaves alternate, simple, pseudopetiolate; laminae oblanceolate to obovate, usually somewhat tricuspidate apically, 6–13 × 2.3–5.5 cm, base attenuate, apex acute, margins entire, glabrous on both faces, with venation barely noticeable, fleshy, shiny in living plants; pseudopetioles 1–2.5 cm long, glabrous. Synflorescences corymbiform in overall shape, with divisions subumbelli-

form; synflorescence bracts linear-subulate. Capitula discoid on peduncles 6–10 mm long with 1–3 bracteoles. Involucres cylindrical, 8–9 × 4–5 mm, glabrous; receptacles flat, somewhat fimbriate; involucre bracts 10–11, linear-oblong, 5.8–7.4 × 0.6–1 mm, glabrous; supplementary bracts (calyculus) 3–5, linear-subulate, 1.5–2.3 × c. 0.3 mm, glabrous. Florets c. 22, hermaphrodite; corollas 5.7–6.2 mm long, tubular, limbs c. 2.7 mm long, 5-lobed, yellow; filament collars balustriform; anthers 1.5 mm long (including appendage), bases caudate, a half as long as the filament collar, yellowish,



FIG. 2. — Field pictures of *Senecio marinae* J. Calvo & Callm., sp. nov.: **A**, habit; **B**, synflorescence; **C**, detail of the capitulum; **A-C**, Wohlhauser et al. 785. Photographs: S. Wohlhauser.

appendages *c.* 0.3 × 0.2 mm; style branches truncate with a crown of sweeping trichomes, yellowish. Achenes cylindrical, *c.* 1.7 × 0.3 mm (immature), *c.* 9-ribbed, glabrous; pappus 5.8-6.2 mm long, barbellate, white.

NOTES

In its habit and leaf morphology, *Senecio marinae*, sp. nov. presents morphological affinities with both *S. francoisii* Humbert and *S. hadiensis* Forssk. [synonym of *S. petitianus* A. Rich.]. These species are characterized by having a scrambling or ascending habit, fleshy, pinnatinerved leaves, and radiate capitula. Humbert (1963) treated them as the only members of his informal *Senecio* group XIV. The new species, however, clearly differs in having discoid capitula. In addition, *S. marinae*, sp. nov. differs from *S. francoisii* in stem length (1-4 m vs 0.2-0.3 m in *S. francoisii*), leaf size (6-13 × 2.3-5.5 cm vs 3-8 × 1.2-2.5 cm in *S. francoisii*), and involucre bract length (5.8-7.4 mm vs 5-5.4 mm in *S. francoisii*). With respect to *S. hadiensis*, the new species further differs in the involucre bract length (5.8-7.4 mm vs 3.7-4.2 mm in *S. hadiensis*). The variety with discoid capitula described from Comoros under the name *S. petitianus* subvar. *discoideus* Humbert, can be also differentiated by the remarkable shorter involucre bracts; it has not been recorded in Madagascar. It is interesting to note that *S. francoisii*, the Malagasy populations of *S. hadiensis*, and the new species display caudate anther bases.

The new species seems to be restricted to the northern mountains of Madagascar, whereas *S. francoisii* is distributed through the central-east Madagascar and *S. hadiensis* in the centre and south-east part of the island. Their distributions areas do not overlap.

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