

A new species of *Heliotropium* L. (Boraginaceae) from Madagascar

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ABSTRACT

A new species of Boraginaceae, *Heliotropium perrieri* J.S. Mill., is described from Madagascar. It is a glabrous annual herb with flowers borne individually in the axils of leafy bracts and glabrous, reticulate nutlets and a member of *Heliotropium* sect. *Orthostachys*. It is known from only four collections, all made from the area just south of Mahajanga. As it is known from a single, highly threatened locality and has not been collected since 1929, it is provisionally listed as critically endangered.

KEY WORDS

Heliotropium,
Boraginaceae,
Madagascar,
conservation.

RÉSUMÉ

Une nouvelle espèce d'Heliotropium L. (Boraginaceae) de Madagascar.

Une nouvelle espèce de Boraginaceae, *Heliotropium perrieri* J.S. Mill., est décrite de Madagascar. C'est une herbe annuelle, glabre, à fleurs solitaires à l'axe d'une bractée foliacée et glabre, à nucules réticulées qui appartient à la section *Orthostachys* du genre *Heliotropium*. Elle est connue seulement par quatre collections, toutes provenant de la région située au Sud de Mahajanga. Comme elle n'existe que dans cette localité très menacée et qu'elle n'a pas été récoltée depuis 1929, elle est provisoirement considérée en danger d'extinction.

MOTS CLÉS

Heliotropium,
Boraginaceae,
Madagascar,
conservation.

Boraginaceae have not been treated comprehensively for Madagascar since the early and incomplete coverage by DE CANDOLLE (1845). In the course of studies for the preparation of a treatment for the Flore de Madagascar et des Comores, several species of Boraginaceae have been newly described (MILLER 2001a, 2001b, 2002). The following new species was discovered

during review of collections of *Heliotropium* L. from Madagascar.

Heliotropium is a nearly ubiquitous genus of perhaps 280 species most common in tropical to warm temperate regions, with its greatest concentration of species in dry tropical regions. The genus has two centers of diversity in South America and the Middle East, each with about 80

species. The infrageneric classification of *Heliotropium* remains open to question, and treatments for the South American species (JOHNSTON 1928) and those from the Middle East (RIEDL 1967) differ in their definition of subgenera and sections.

Heliotropium sect. *Orthostachys* R. Br. is the largest in the genus with about 130 species, most of which occur in the New World (AL-SHEHBAZ 1991). While JOHNSTON (1928) and RIEDL (1967) recognized the group at different ranks, they both included those species with anthers that are pubescent to glandular at the apex, frequently connate at the apex, and with fruits that divide at maturity into four single-seeded nutlets. JOHNSTON (1930) published notes on several of the species from Africa and Madagascar and described several new taxa, but the species of *Heliotropium* sect. *Orthostachys* have not been comprehensively reviewed for the African region. The following new species was discovered during review of historical collections for preparation of a treatment of Boraginaceae for the Flore de Madagascar et des Comores.

***Heliotropium perrieri* J.S. Mill., sp. nov.**

Herba annua usque ad 15 cm alta, caulibus erectis. Folia alterna, sessilia vel petiolo usque ad 3 mm longo insidentia; lamina lanceolata usque anguste elliptica, 10-20 mm longa, 2-5 mm lata, apice acuta, basi attenuata usque cuneata, margine integra, adaxialiter glabra vel sparse strigosa, abaxialiter strigosa. Inflorescentia e floribus solitariis ex axillis bractearum foliacearum ortis constans. Flos sepalis lanceolatis, 1.7-2 mm longis; antheris sessilibus, ad apicem connatis. Fructus ovoideus, c. 1 mm longus, maturitate in 4 nuculas reticulatas ad secedens.

TYPUS. — *Perrier de la Bâthie* 4420, Madagascar, Prov. Mahajanga, bords un peu sales de la plaine de Marovoay, sur les sables très humides, fl., fr., Jan. 1910 (holo-, P!; iso-, MO!, P!).

Annual herb, the stems erect, to 15 cm tall, with sparse, appressed hairs, > 0.5 mm long. Leaves alternate; blades lanceolate to narrowly elliptic, 10-20 mm long, 2-5 mm wide, the apex acute, the base attenuate to cuneate, the margin entire, slightly thickened or minutely revolute, the

adaxial surface glabrous to sparsely strigose, evenly strigose on the midrib, the abaxial surface evenly strigose, the hairs from a basal cystolith, the midrib impressed on the adaxial surface, raised on the abaxial surface, the secondary and tertiary venation obscure; petioles short and the leaves sessile or rarely to 3 mm long, sparsely strigose. Flowers bisexual, borne individually in the axils of leafy bracts, on short pedicels 1-2 mm long, these strigillose; sepals lanceolate, 1.7-2 mm long, 0.5 mm wide, the apex attenuate, strigillose; corolla white with a yellow throat, 3-3.5 mm long, the 5 lobes spreading, elliptic to ovate, 1.3-2 mm long; anthers sessile, inserted near the base of the corolla, c. 0.5 mm long, connate at the apex; ovary globose, c. 0.3 long, 0.3 mm wide, the stigma nearly sessile, c. 0.3 mm long. Fruits depressed ovoid, c. 1 mm long, c. 2 mm wide, 4 lobed and separating into 4 nutlets at maturity, these tan, glabrous, reticulate on the dorsal surface, the sessile stigma persistent. — Fig. 1.

Heliotropium perrieri is distinctive among the Malagasy species in its annual habit, its solitary flowers, and in having four rounded nutlets with a reticulate outer surface. In Madagascar, *H. perrieri* is most easily confused with *H. baclei* DC., which differs in being perennial, evidently pubescent, and having the flowers evenly distributed along the stems in the axils of leaves as opposed to having flowers borne at the apex of stems in the axils of leafy bracts.

DISTRIBUTION. — *Heliotropium perrieri* is known only from Mahajanga province near Antanimena where it occurs on wet, salty soil. — Fig. 2.

CONSERVATION STATUS. — Provisional IUCN Red List Category: Endangered (EN B1abi-iv + B2abi-iv). With a very limited Extent of Occurrence and Area of Occupancy, in a highly disturbed area, this species must be considered at significant threat. It is not known whether it survives in disturbed areas or whether it grows only at the margin of undisturbed wetlands. The species has not been collected since 1929.

PARATYPES. — MADAGASCAR: *Perrier de la Bâthie* 1369, Prov. Mahajanga, plateau d'Antanimena, entre le Betsiboka et le Mahavavy, 16°29'S, 46°11'E, fl., fr.,

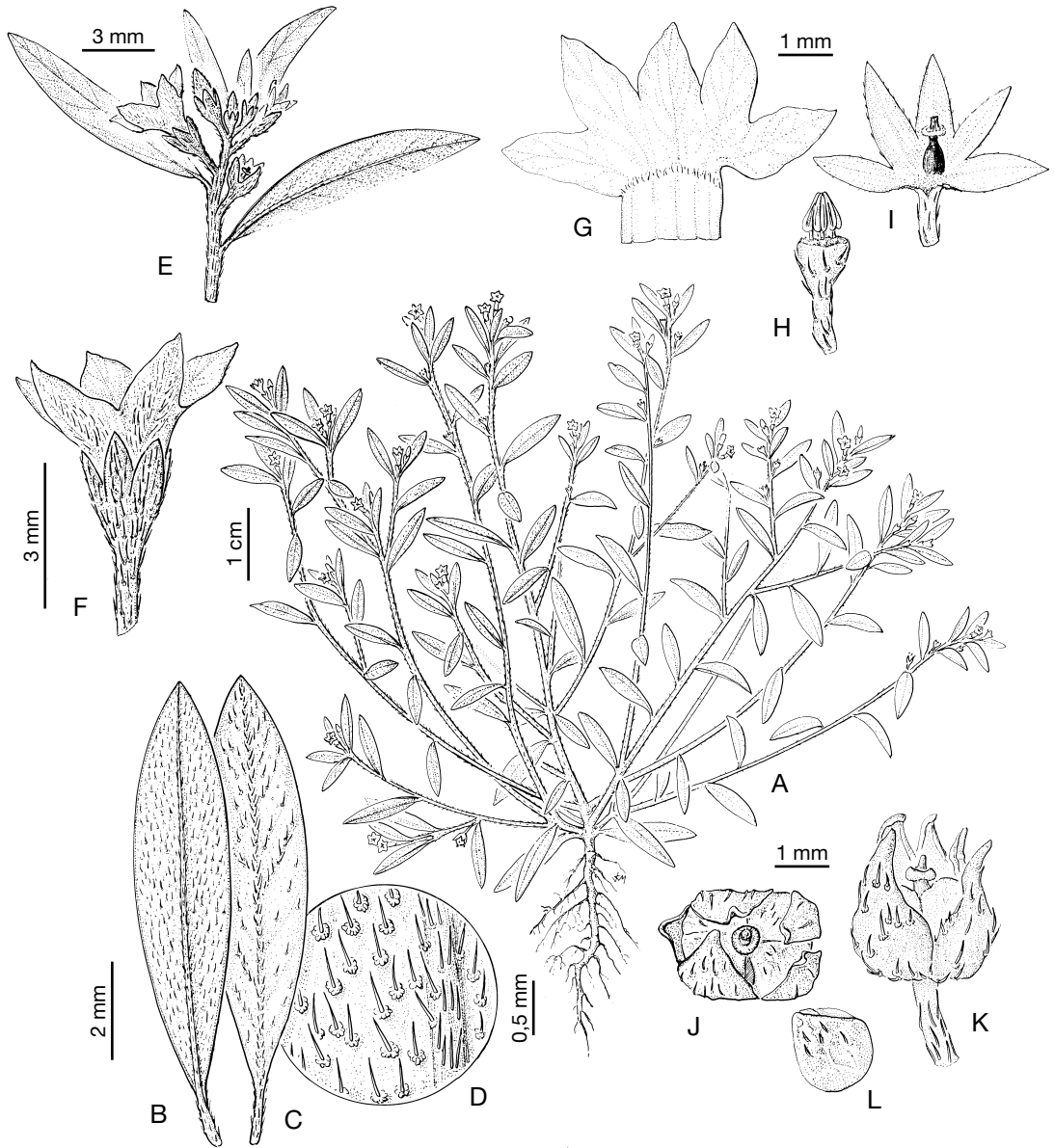


Fig. 1. — *Heliotropium perrieri* J.S. Mill.: **A**, habit; **B**, adaxial surface of leaf; **C**, abaxial surface of leaf; **D**, close up of hairs with evident basal cystoliths on adaxial leaf surface; **E**, flowering branch tip; **F**, close-up of flower; **G**, flower with open corolla; **H**, pedicel with gynoecium showing united anthers; **I**, open calyx showing gynoecium with conical stigma; **J**, whole fruit with persistent calyx, viewed from above; **K**, fruit enclosed in persistent calyx; **L**, single nutlet showing dorsal surface. A-L from *Perrier de la Bâthie* 1369.

Oct. 1901 (P!); *Perrier de la Bâthie* 12343, Prov. Mahajanga, Antanimena, 16°29'S, 46°11'E, fl., fr., Feb. 1919 (P!); *Perrier de la Bâthie* 16826, Prov. Mahajanga, Antanimena, 16°29'S, 46°11'E, fl., fr., Oct. 1929 (P!).

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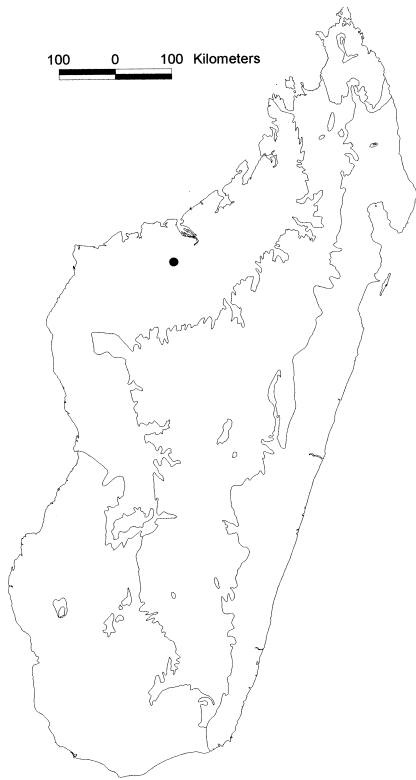


Fig. 2. — Distribution of *Heliotropium perrieri* in Madagascar.

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