



Massonia elandsmontana (Hyacinthaceae: Scilloideae), a new species from the Swartland of Western Cape, South Africa



J.C. Manning^{a,b}

^a Compton Herbarium, South African National Biodiversity Institute, Private Bag X7, Claremont 7735, South Africa

^b Research Centre for Plant Growth and Development, School of Life Sciences, University of KwaZulu-Natal, Pietermaritzburg, Private Bag X01, Scottsville 3209, South Africa

ARTICLE INFO

Article History:

Received 17 December 2020

Revised 12 April 2021

Accepted 12 April 2021

Available online xxx

Edited by JS Boatwright

Keywords:

Massonieae

New species

Southern Africa

Taxonomy

ABSTRACT

Massonia elandsmontana is described for a population of plants from Elandsberg Nature Reserve at the western foot of the Elandskloof Mountains near Hermon in the Swartland of Western Cape, South Africa. The hypocrateriform white flowers with tepals lacking sigmoid basal coiling, unequal filaments with dark anthers, and small capsules, are shared with a small group of species from the West Coast and adjacent interior of Western Cape. The new species is distinguished from these and others by its foliage, the adaxial surface pubescent with soft erect hairs, 0.5–1.0 mm long and the margins densely ciliate with minute bristles. It is one of several geophytic taxa endemic to Swartland Alluvial Fynbos vegetation on Elandsberg Nature Reserve.

© 2021 SAAB. Published by Elsevier B.V. All rights reserved.

1. Introduction

Massonia Thunb. ex Houtt. (Hyacinthaceae subfamily Scilloideae tribe Massonieae; alternatively Asparagaceae subfamily Scilloideae tribe Hyacintheae) is a genus of some 30 species endemic to southern Africa, where it is centred in the Greater Cape Floristic Region (Manning et al., 2004; Manning, 2018, 2020b). It is diagnosed among the genera in subtribe Massoniinae by consistently having two leaves, a capitate-corymbose or rarely subspicate inflorescence with the lower bracts as long as or longer than the flowers, a campanulate or hypocrateriform perianth with ecaudate tepals, and firm-textured capsules exposed by the withered perianth at maturity (Manning et al., 2004; Manning, 2020a).

Although the taxonomy of the genus has not yet been fully resolved, especially in the Eastern Cape, the species occurring in the Core Cape Floristic Region were recently revised by Manning (2018) and are relatively well understood. Fifteen species are currently recognised from the Core Cape Region, of which 13 are endemic to the region. The capitate-flowered species of sect. *Massonia* are separated from one another largely by differences in the shape and dimensions of the corolla, and the development of sigmoid coiling at the base of the tepals is diagnostic for some species. Characters of the androecium are also taxonomically valuable, notably the relative lengths of the inner and outer series of stamens, the degree of basal fusion of

the filaments, and the colour of the anthers and pollen (Manning, 2018). Although the development of pustules and hairs on the leaf adaxial surface was much used in the past to differentiate species, field work has shown that most taxa with pubescent foliage also include occasional populations or individuals with glabrous leaves (Manning, 2018). When developed, however, the form of the leaf ornamentation and vestiture is constant within species.

Although one or more species of *Massonia* are known from most parts of the Core Cape Region, with the obvious exception of the dry basin of the Little Karoo, no species has been recorded until now from the Swartland region of the western forelands. This is surprising as the fynbos and renosterveld communities of the Swartland are rich in geophytes (Mucina and Rutherford, 2006), including numerous species of the allied genus *Lachenalia* J.Jacq. ex Murray. It was thus not unexpected when an unusual *Massonia* was discovered in 1997 by landowner and conservationist Elizabeth Parker on Elandsberg Nature Reserve at the foot of the Elandskloof Mtns near Hermon on the eastern fringes of the Swartland. The single specimen collected by Parker was past flowering, however, and although its densely pubescent foliage was distinctive its identity has remained uncertain until it was recently relocated in flower, at which time it became evident that it represented an undescribed species, named here for its only known station.

Massonia elandsmontana is one of a significant handful of geophytic species restricted to the fynbos and renosterveld communities in the area, several of these species endemic or nearly endemic to Elandsberg Nature Reserve, which represents the most significant

E-mail address: j.manning@sanbi.org.za

conservation area of Swartland Alluvial Fynbos and Renosterveld vegetation units. These endemic or near-endemic geophytes include *Brunsvigia elandsmontana* Snijman (Amaryllidaceae), *Lotononis complanata* B.-E.van Wyk (Fabaceae), *Pelargonium elandsmontanum* E.M.Marais ex J.C.Manning & Goldblatt (Geraniaceae), *Moraea villosa* subsp. *eldandsmontana* Goldblatt, *Thereianthus elandsmontanus* J.C.Manning & Goldblatt and *T. bulbifer* J.C.Manning & Goldblatt (Iridaceae).

2. Materials and methods

This work is based on field and herbarium studies in the Western Cape, South Africa. All relevant herbarium specimens in BOL, NBG, PRE and SAM (acronyms after Thiers 2018) were consulted. Descriptions and illustrations are based on fresh and/or herbarium material.

3. Taxonomy

Massonia elandsmontana J.C.Manning, sp. nov. Type: South Africa, Western Cape, Worcester (3319): Bo-Hermon, Elandsberg Nature Reserve, 500 m S of Secretarybos Road and 100 m W of Bosplaas Road, (–AC), 5 Oct 2020 [fruiting], J. Manning 3800 (NBG, holo.; PRE, iso.).

Deciduous geophyte. *Bulb* subglobose to ovoid, 20–30 mm diam., outer tunics leathery, greyish to pale brown. *Leaves* 2, opposite, blades spreading-appressed, broadly elliptic to suborbicular, 30–60 × 25–45 mm, upper surface green, ± densely pubescent with erect hairs mostly 0.5–1.0 mm long, margins densely ciliate with short stiff bristles 0.2–0.3 mm long. *Inflorescence* a condensed, subcapitate raceme, few[5- to 10]-flowered], flowers protruding shortly above leaves; bracts oblanceolate, 12–15 × 2–5 mm, apiculate-aristate, margins minutely ciliate distally; pedicels at anthesis 3–4 mm long, elongating to 10 mm in fruit. *Flowers* white, lily-scented; perianth tube narrowly cylindrical, 7–8 × 1.5–2.0 mm; tepals arising ± at same level, spreading or weakly suberect, without sigmoid coiling, straight or ± incurving distally, linear, 5–6 × 1 mm, conduplicate, margins entire, apex penicillate. *Filaments* suberect, white, filiform, unequal, outer ± 8 mm long, inner 6.0–6.5 mm long, connate at base for 0.8–1.0 mm, mouth not occluded by interstaminal gibbosities or invaginations; anthers ± 1 mm long at anthesis, blackish purple with blue pollen. *Ovary* oblong-conical, pale yellow, 2 mm long, tapering and weakly contracted to style, with 3 ovules per locule; style white, 14 mm long, weakly differentiated from ovary, erect, slender. *Capsules* oblong, 3-winged when fully formed but often only two locules fertilised, cordate-intrusive basally, (7–)8–10 × (5–)7–8 mm. *Seeds* globose, ±1.8 mm diam., smooth, glossy black. *Flowering time*: May. *Figs. 1, 2.*

Distribution and ecology: a highly local endemic from the western foot of the Elandsbloof Mtns of Western Cape, known from a single population on the Elandsberg Nature Reserve (Fig. 3); on seasonally moist, stony, loamy alluvium in Swartland Alluvial Fynbos (Mucina and Rutherford, 2006). The population occupies a very restricted habitat in relatively open shrubland dominated by *Eriocephalus africanus* L. (Asteraceae), occurring at the interface between two thicker fynbos communities dominated respectively by *Leucospermum calligerum* (Salib. ex Knight) Rourke (Proteaceae) on drier sandy soils and *Leucadendron corymbosum* P.J.Bergius (Proteaceae) on seasonal wetland, and a third renosterveld shrubland community dominated by *Elytropappus rhinocerotis* (L.f.) Less. (Asteraceae) on heavier clay soils. The population comprises an estimated 30 to 40 plants, of which ± 10 were in flower in each of the two seasons that they were studied in the field. Extensive searches over the adjacent veld did not reveal further sub-populations and it seems that the species is restricted to this single locality, a situation that is mirrored in *Brunsvigia elandsmontana* and *Pelargonium elandsmontanum*, both of which occupy the same vegetation type.

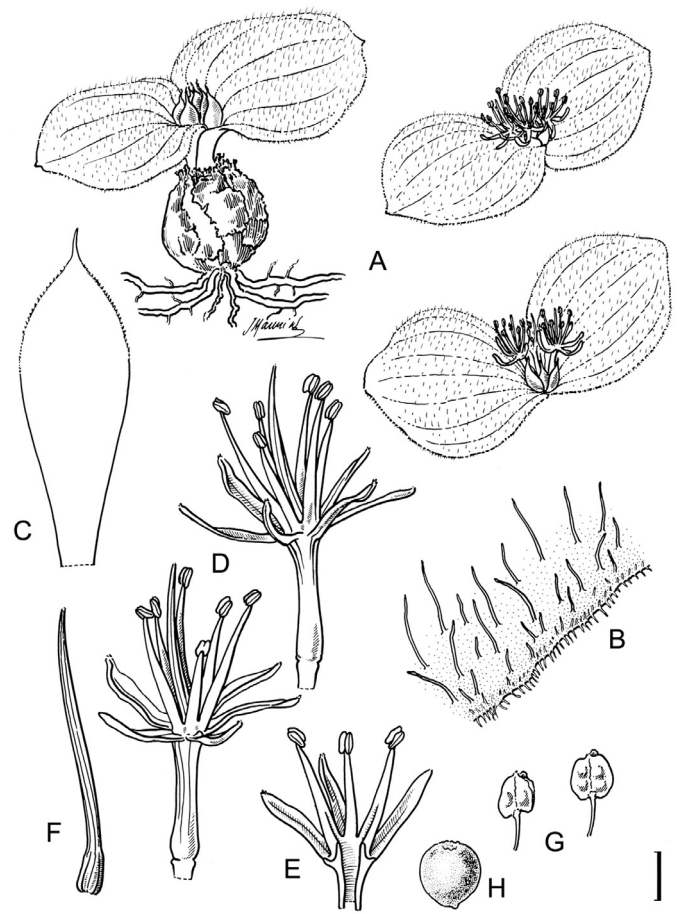


Fig. 1. *Massonia elandsmontana*. A, flowering plants and plant in bud; B, detail of leaf surface and margin vestiture; C, bract; D, flowers; E, half-perianth detail showing unequal stamens and mouth of perianth tube not occluded; F, gynoecium; G, capsules; H, seed. Vouchers: Western Cape, Elandsberg Nature Reserve, Manning 3584 (A–F) and Manning 3800 (G, H). Scale bar: A, G, 10 mm; C–F, 2 mm; B, H, 1 mm. Artist: J. Manning.

Seed set seems to be relatively low, with most capsules developing only 1 or 2 seeds in one or two locules but the seeds that are developed are evidently well-formed and plump. This suggests some form of pollinator limitation.

Diagnosis: the species is distinctive in the genus in its pubescent foliage, the otherwise smooth adaxial surface covered with short, erect hairs 0.5–1.0 mm long and the margins densely ciliate with shorter bristles, with a few-flowered inflorescence of small, white, hypocrateriform flowers with slender perianth tube 7–8 mm long.



Fig. 2. *Massonia elandsmontana*, flowering plant. Voucher: Western Cape, Elandsberg Nature Reserve, Manning 3584. Photographer: J. Manning.

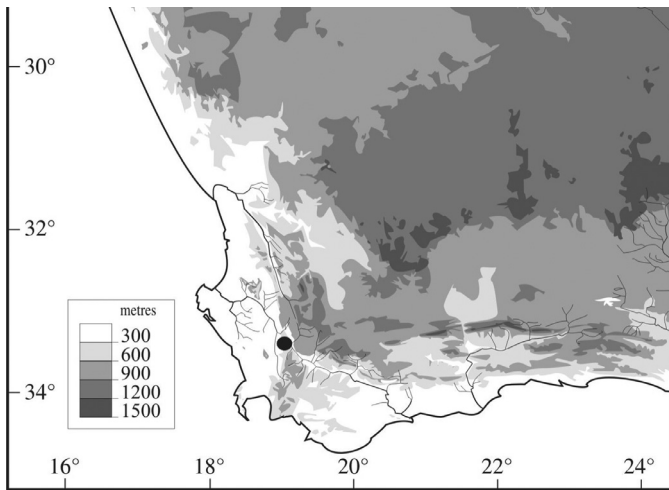


Fig. 3. Distribution of *Massonia elandsmontana*.

The narrow, spreading tepals without sigmoid coiling, unequal filaments with blackish anthers and blue pollen, and the style weakly differentiated from the ovary place *M. elandsmontana* in a small alliance of species from the West Coast and near-interior of western Cape that includes the two coastal species *M. inaequalis* W.F.Barker ex Martt.-Azorín et al. and *M. dregei* Baker and the inland-montane *M. pygmaea* Schlecht. ex Kunth. The very small capsules, up to 10 mm long, are also consistent with this alliance. *Massonia elandsmontana* is readily distinguished from these species by the distinctive vestiture of the leaves, viz. the combination of longer, softer hairs on the otherwise smooth (not pustulate) adaxial surface with short marginal bristles. It is most likely to be confused with *M. pygmaea*, which is florally very similar, but that species has characteristic foliage with a pustulate or muricato-pustulate adaxial surface and minutely setulose margins.

Conservation notes: *Massonia elandsmontana* is known from a single small population on the Elandsberg Nature Reserve, comprising less than 50 individuals. Although the species has a minimal area of occupancy, its only known population lies within a formal conserva-

tion area, without evident threats. A conservation status of Critically Rare (known from a restricted area but without any known threat) is proposed.

Additional specimen seen

South Africa. Western Cape. **3319 (Worcester):** Bo-Hermon, Elandsberg Nature Reserve, Secretarybos Road, (–AC), 2 Aug 1997 [past flowering], *E. Parker 160* (NBG); 500 m S of Secretarybos Road and 100 m W of Bosplaas Road, 27 May 2016, *J. Manning 3584* (NBG).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

Elizabeth Parker assisted with field work; Michelle Smith prepared the distribution map; and Luvo Magoswana prepared the electronic figure. Material was collected on a permit from CapeNature CN35–28–15073.

References

- Manning, J.C., 2018. The genus *Massonia* Thunb. ex Houtt. (Hyacinthaceae: Scilloideae) in the core cape region. *S. Afr. J. Bot.* 121, 329–354.
- Manning, J.C., 2020a. Systematics of *Ledebouria* sect. *Resnova* (Hyacinthaceae: Scilloideae: Massonieae), with a new subtribal classification of massonieae. *S. Afr. J. Bot.* 133, 98–110.
- Manning, J.C., 2020b. Validation of massonia sect. whiteheadia (hyacinthaceae: scilloideae). *Bothalia* 50 (1), a5. <https://doi.org/10.38201/btha.abc.v50.i1.5>.
- Manning, J., Goldblatt, P., Fay, M., 2004. A revised generic synopsis of Hyacinthaceae in sub-Saharan Africa, based on molecular evidence, including new combinations and the new tribe Pseudoprosperaeae. *Edinb. J. Bot.* 60, 533–568.
- Mucina, L., Rutherford, M.C. (Eds.), 2006. *The Vegetation of South Africa, Lesotho and Swaziland*. Strelitzia 19. South African National Biodiversity Institute, Pretoria.
- Thiers, B., 2018. Index Herbariorum: a Global Directory of Public Herbaria and Associated Staff. New York botanical Garden's virtual herbarium. <http://sweetgum.nybg.org/ih>.