

Notes on African plants

VARIOUS AUTHORS

BRASSICACEAE

HELIOPHILA CORNELLSBERGIA, A NEW SPECIES FROM THE RICHTERSVELD

Heliophila cornellsbergia B.J. Pienaar & A. Nicholas sp. nov. *H. patenti* Oliv. et *H. diffusae* (Thunb.) DC. var. *diffusae* et var. *flacca* (Sond.) Marais affinis; a *H. patenti* floribus multo maioribus et fructu globoso, inflato differt; a *H. diffusae* et varietatibus foliis non divisis differt.

Herba annua. *Caulis* unum ad aliquot. *Folia* simplices, integra, estipulata, anguste-lanceolata ad elliptica, 10–40 × 2–8 mm. *Flores* albi. *Petala* 2,9–4,5 × 1,4–2,5 (–2,8) mm. *Fructus* globosus, 3,0–4,0(–4,5) × 3,0–3,8(–4,0) mm, valvis inflatis.

TYPE.—2817 (Vioolsdrif): (–CA) Richtersveld, Cornellsberg in Stinkfontein Mountains, southern slopes to a neck south of the top, 1977.09.06, Oliver, Tölken & Venter 715 (PRE, holo.; K, MO).

Soft, patently hairy, annual herb, (110–)155–290 mm high. *Stems* one to several, erect, lax, patently pubescent. *Leaves* simple, alternate, entire, exstipulate, narrow-lanceolate to obtusely elliptic, marginally pubescent, midrib ventrally visible, 10–40 × 2–8 mm, larger leaves near the stem base, both stem and leaves often tinted purple. *Racemes* few to many-flowered, lax, axis elongating in fruit. *Pedicels* in flower 3–11 mm long, in fruit 6–10(–12) mm long, initially ascending, recurved (almost drooping) when mature, patently pubescent. *Flowers* white, drying cream. *Sepals* (2,0–) 2,1–2,5 × 1,0–1,4 mm, membranous, dark cream in colour; outer 2 cucullate, inner 2 saccate, margin broadly transparent, tinted purple apically. *Petals* 2,9–4,5 × 1,4–2,5(–2,8) mm, obovate above, claw with lateral papillate appendage. *Filaments* 1,6–1,9 mm and 1,2–1,7 mm long, the 2 shorter filaments basally papillate. *Anthers* (0,5–)0,6–0,7(–0,8) mm long. *Ovary* globose, 0,4–0,6 mm in diameter, 2 ovules, style as long as ovary; stigma capitate, papillate. *Fruits* globose, 3,0–4,0(–4,5) × 3,0–3,8(–4,0) mm, puberulent, valves inflated, faintly 1-nerved, tinged purple when mature; style persistent, filiform, 2,0–3,0 mm long. *Seeds* 1 or 2, 0,8–1,0 mm in diameter, narrowly winged. Figures 1 & 2.

CAPE.—2817 (Vioolsdrif): Rosyntjesberg, (–AC), Oliver, Tölken & Venter 302 (PRE); Cornellsberg (–CA), Oliver, Tölken & Venter 715 (K, MO, PRE).

Heliophila cornellsbergia is endemic to mountainous areas of the Richtersveld. Found in stoney places, in well drained clayey loam soils, it occurs on the southern slopes of mountains where it may grow in open or shaded areas. Oliver, Tölken & Venter record it as locally common. The Richtersveld is a mountainous area that borders on the Namib Desert. For much of the year it is

a harsh, extremely dry area in which only succulent plants and plants with underground storage organs survive. Good rains in August–September transform parts of the Richtersveld into a carpet of flowers, as in Namaqualand. It is at this period that one finds an abundance of annuals, such as *Heliophila cornellsbergia*.

The specific epithet *cornellsbergia* is derived from the isolated locality in which this new *Heliophila* species was collected. Cornellsberg is a peak in the Stinkfontein Mountain range. Oliver, Tölken & Venter collected the type specimen on the southern slopes, towards the neck of this peak.

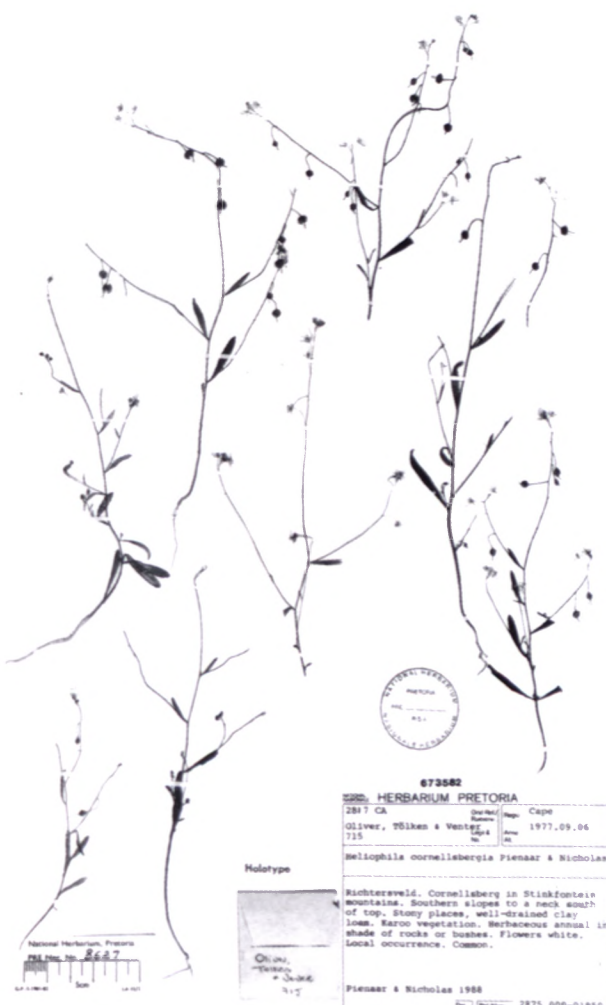


FIGURE 1.—Holotype (Oliver, Tölken & Venter 715) of *Heliophila cornellsbergia* housed at PRE (Photograph by A. Romanowski).

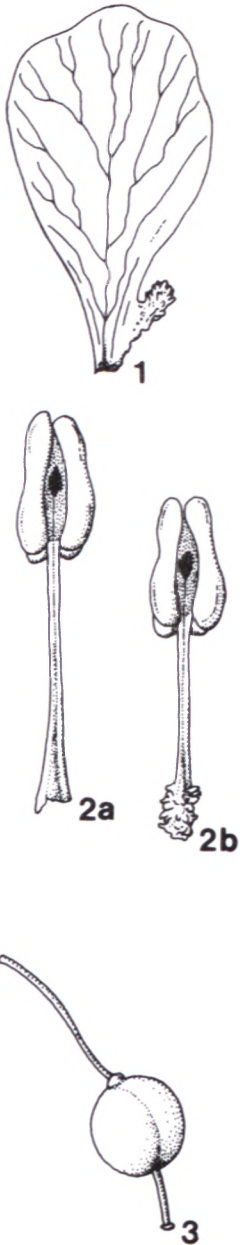


FIGURE 2.—1, petal with claw and basal appendage, $\times 13$; 2, stamens, 2a, longer stamens without basal papillae, $\times 29$; 2b, shorter stamen with basal papillae, $\times 30$; 3, mature globose fruit, $\times 3$. All drawings based on Oliver, Tölken & Venter 302 (PRE). Drawings by G. Condy.

Although the material of this new *Heliophila* species is limited, the authors find it desirable to name this taxon for two reasons: a, the remoteness of the area in which this species occurs, making it unlikely that it will be collected again in the near future; b, the distinctive, unique morphology of *H. cornellsbergia*.

Heliophila cornellsbergia most closely resembles *H. patens* Oliv., another *Heliophila* species of restricted distribution. *H. patens* has so far only been recorded from the Piketberg and a collecting site somewhere between Knechtsvlakte (this name is probably an orthographic error and should be Knersvlakte) and Sandveld near Vanrhynsdorp (Figure 3). However, *H. cornellsbergia* differs from *H. patens* in a number of structurally important and taxonomically significant ways. Of particular note are the larger flowers, recurved, inflated, globose, 1 or 2-seeded fruits and pubescent stems, leaves, pedicels and fruits of *H. cornellsbergia*; *H. patens* has obovate to subcircular, laterally flattened fruits with at least two seeds (Table 1; Figure 4). Although *H. cornellsbergia* appears to be allied to *H. patens*, the relationship between these two species is probably distant. Using Marais's (1970) key to *Heliophila* in the *Flora of southern Africa*, *H. cornellsbergia* keys out to *H. diffusa* (Thunb.) DC.,

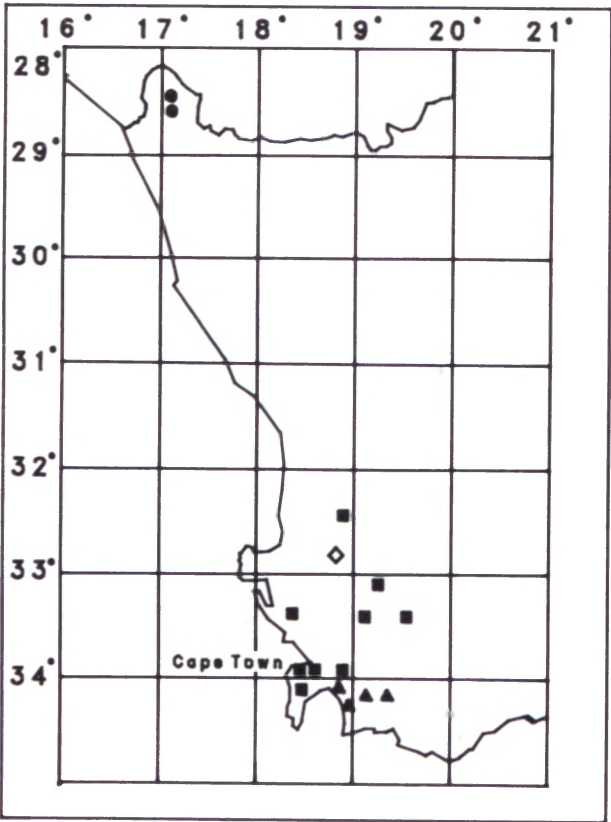


FIGURE 3.—Distribution of *Heliophila cornellsbergia*, ●; *H. patens*, ◇; *H. diffusa* var. *diffusa*, ■; and *H. diffusa* var. *flacca*, ▲.

TABLE 1.—Comparison of selected characters in *Heliophila cornellsbergia*, *H. patens*, *H. diffusa* var. *diffusa* and *H. diffusa* var. *flacca*

Character	<i>H. cornellsbergia</i>	<i>H. patens</i>	<i>H. diffusa</i> var. <i>diffusa</i>	<i>H. diffusa</i> var. <i>flacca</i>
Plant height (mm)	155–290	150–220	100–445	235–450
Vestiture	*pubescent	glabrous	glabrous	glabrous
Leaf length (mm)	23–45	7–30	20–55	20–45
*Leaf width (mm)	3–8	0,4–1,0	12–52	14–23
Petal length (mm)	*3,5–5,0	3,0–4,0	1,5–3,2	2,0–4,0
Ovule number	*1	2(–4)	1–8	1–8
Fruit length (mm)	5–8	4,5–6,5	*7–15	4,5–6,5
Fruit width (mm)	3–8	2–3	2–4	1,8–3,0

* important diagnostic characters.

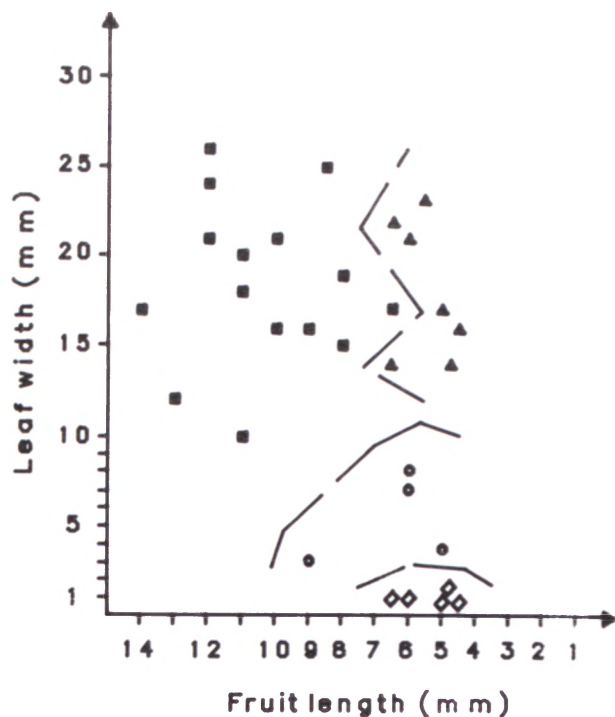


FIGURE 4.—Scatter diagram (leaf width \times fruit length) illustrating the distinctness of *Heliophila cornellsbergia*, \diamond ; *H. patens*, \circ ; *H. diffusa* var. *diffusa*, \blacksquare ; and *H. diffusa* var. *flacca*, \blacktriangle . Solid symbols = pinnately compound leaves, unfilled symbols = simple undivided leaves.

which has two varieties, viz. var. *diffusa* and var. *flacca* (Sond.) Marais. This species differs from *H. cornellsbergia* in having pinnately compound leaves, 1–8-seeded, flat fruits and glabrous vegetative parts. Although allied to *H. diffusa*, the relationship is not considered close.

In his southern African flora treatment, Marais (1970) places *H. patens*, *H. diffusa* var. *diffusa* and var. *flacca* following one another, and there is little doubt that *H. cornellsbergia* should be placed with this complex. It is probable that a long period of isolation on the mountains of the Richtersveld could explain why it differs fairly markedly from its nearest relatives, which occur some distance to the south (Figure 3).

SPECIMENS EXAMINED

Heliophila cornellsbergia B.J. Pienaar & A. Nicholas

CAPE.—2817 (Vioolsdrif): Rosyntjiesberg (–AC), Oliver, Tölken & Venter 302 (PRE); Cornellsberg (–CA), Oliver, Tölken & Venter 715 (PRE, holo.; K, MO, iso.).

Heliophila patens Oliv.

CAPE.—3218 (Clanwilliam): Piketberg (–DD), *Bohus* 7530* (BOL, NBG, PRE, SAM, isotypes), *Schlechter* 3482 (PRE), 5183 (BOL). Without precise locality: between Knechtswalke & Sandveld (possibly 3118BC?), *Leipoldt* 3963* (BOL, PRE).

Heliophila diffusa (Thunb.) DC. var. *diffusa*

CAPE.—3218 (Clanwilliam): Elandsdoo (–BD), *Adamson* s.n. (BOL 27121), *Lewis* s.n. (BOL 27120). 3318 (Cape Town): Kapokberg (–AD), *Bohus* 12599* (PRE); Lions' Head & Rump (–CD), *Pillans* 3924* (PRE), *Ecklon & Zeyher* 71* (SAM); Devils Peak (–CD), *Ecklon & Zeyher* 70* (SAM); Hercules Pillar (–DB), *Compton* 13673* (NBG); Tigerberg (–DC), *Esterhuysen* 17509 (PRE); Groot Drakenstein Mts, Duiwelskloof (–DD), *Esterhuysen* 14046* (BOL); Seven Sisters Mtn, Paarl (–DD), *Esterhuysen* 23928 (BOL). 3319 (Worcester): Kleinvlei Bridge (–AB), *Acoks* 19884* (PRE); Elandsdoo (–AC), *Compton* 16179 (NBG); Steendal, Tulbagh (–AC), *Zeyher* s.n. (SAM 14059)*; Theronberg (–BC), *Compton* 11788* (NBG). 3418 (Simonstown): Constantiaber (–AB) *Compton* 13916 (NBG). Precise locality unknown: *Ecklon & Zeyher* s.n. (PRE 23076); Braakfontein (?), *Schlechter* 3840 (PRE).

Heliophila diffusa (Thunb.) DC. var. *flacca*

CAPE.—3318 (Simonstown): Helderberg (–BB), *Parker* 4247* (NBG); Jonkershoek (–DD), *Compton* 15339* (NBG), *Lewis* 3132* (SAM). 3419 (Caledon): Grabouw (–AA), *Stokoe* s.n.* (SAM 64258); Caledon (–AB), *Ecklon & Zeyher* 69* (K 142686, holo.; SAM, iso.); Caledon near hotspots (–AB), *Zeyher* s.n. (K 142686), *Zwarteberg*, *Zeyher* 1894 (PRE).

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REFERENCE

MARAI, W. 1970. Cruciferae. In *Flora of southern Africa* 13: 1–118. Government Printer, Pretoria.

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* Specimen cited in *Flora of southern Africa* by Marais (1970).
MS. received: 1988.03.28.