

## Notes on African plants

VARIOUS AUTHORS

### ASTERACEAE–GNAPHALIEAE

#### *METALASIA HELMEI*, A NEW MEMBER OF A SMALL CLADE FROM THE WESTERN CAPE?

The genus *Metalasia* R.Br. of the Asteraceae, tribe Gnaphalieae, was revised by Karis (1989). At that stage, 52 species and three subspecific taxa were recognized. An unknown *Metalasia* was recently collected by the second author on the Kwadousberg to the east of Worcester, in the Western Cape. After thorough investigation, it turned out that this newly collected plant does not fit into any currently known species of *Metalasia*, and that it constitutes a distinct, undescribed species.

#### *Metalasia helmei* P.O.Karis, sp. nov.

Fruticulus sine brachyblastis axillaribus. *Folia* basi plerumque  $\pm$  applanata versus apicem canaliculata, non tortilia, 3.2–6.5 mm longa. *Synflorescentiae* (4–)8–18 mm latae, densae, capitulis (2–)10–25. *Capitula* floribus 5. *Bracteae* involucri  $\pm$  15, 6- vel 7-seriatae, intrinsecus gradatim longiores, erectae autem intimae erecto-patentes, extimae foliaceae vel subfoliaceae, intrinsecus scariosae vel petaloideae, brunneae vel atrobrunneae, intimae albae. *Cypselae* anguste oblongae vel anguste ovoideae, 2.2–3.0 mm longae, glabrae, costis 5–10 inaequaliter distributis. *Pappi* setae serratae, apicaliter clavatae.

TYPE.—Western Cape, 3319 (Worcester): Worcester Div., Kwadousberg, Farm Witvlakte 175, on plateau at head of Keurboskloof, 1 400 m. S 33°31' E 19°43', (–DA), 10-10-2005, *Helme* 3647 (NBG, holo.!; BOL!, K!, MO!, PRE!, S!).

Sparsely to well-branched shrublet up to 0.4 m high. *Branches* mostly erect, sometimes ascending, without brachyblasts, young whitish tomentose, older becoming less tomentose and with leaf scars; foliage on young shoots dense to very dense, but becoming less so with age. *Leaves* involute-ericoid, not twisted, very narrowly triangular to narrowly triangular or ovate-acuminate, upper part 3.2–6.5  $\times$  0.75–1.0, base 1.0–1.9 mm, acute or rounded apically, mucronate, tips straight or sometimes declinate, glabrous beneath, erect-spreading or rarely spreading, straight or occasionally subsquare, or slightly curved, often slightly involute and  $\pm$  flat at base and more involute and canaliculate towards tip. *Synflorescences* (4–)8–18 mm wide, campanulate, dense, with (2–)10–25 capitula arranged in obscure clusters or sometimes solitary. *Capitula* 5-flowered, sessile, free from one another. *Involucre* hairy for  $\frac{3}{5}$ – $\frac{2}{3}$ , cyathiform but conspicuously widened at petaloid part, apically 2.3–3.6 mm wide, slightly wider at anthesis; bracts  $\pm$  15 in 6 or 7 series, gradually longer inwards, hyaline margins often absent or sometimes narrow or obsolete, outermost-inner erect, innermost erect-spreading; outermost

$\pm$  half as long as innermost and foliaceous to subfoliaceous, narrowly ovate or elliptic, acute, mucronate; outer scarious, brown to dark brown (sometimes reddish), elliptic to narrowly elliptic to narrowly oblanceolate, acute to obtuse, mucronate or not; inner scarious to subpetaloid, brownish to whitish, oblanceolate or narrowly oblong, obtuse; innermost petaloid, white, narrowly oblanceolate, with folded and/or plicate apical margins. *Corolla* narrowly cylindrical, 3–4 mm long, purple or reddish above. *Cypselae* narrowly oblong to narrowly ovoid, 2.2–3.0 mm long, with  $\pm$  5–10 unevenly distributed ribs, brown, glabrous. *Pappus* bristles slightly serrate, apically clavate. *Flowering time*: August–October. Figure 1.

*Diagnostic characters*: *Metalasia helmei* is a small shrublet immediately recognized by its mostly erect-spreading, untwisted and rather short leaves, by the 5-flowered capitula, and the dark brown, scarious, erect, outer involucre bracts which contrast with the innermost white ones which are erect-spreading. Furthermore, the fruits have 5–10 unevenly distributed ribs, and the pappus bristles are apically clavate. *M. helmei* is similar to many other small, shrubby *Metalasia* species in habit, but in its foliage it is most similar to *M. agathosmoides* Pillans which also has 5-flowered capitula, but the latter differs by its axillary brachyblasts, and the apically concave, pink, petaloid, involucre bracts.

#### DISCUSSION

Karis (1989) made a morphologically-based cladistic analysis of *Metalasia*, and *M. agathosmoides* formed a clade with *M. fastigiata* (Thunb.) D. Don on account of, among other things, the nonhomoplasious feature 'cypselas with 5–7 endocarpous ribs'. Regrettably, this description is erroneous since the reinforced cells of the fruit, constituting the ribs, are formed by the seed coat and not by the innermost layer of the carpels. However, it is obvious that *M. helmei* shares these fruit features with *M. agathosmoides* and *M. fastigiata*, but it shares the unusual foliage (Figure 1) with the former alone. Consequently, it is highly probable that *Metalasia helmei* and *M. agathosmoides* are sister species. There is a slight disjunction between *M. helmei* and the more widely distributed *M. agathosmoides* which has its closest locality at the Bonteberg, some 20–25 km to the northeast (Figure 2). As can be seen from the map, the disjunctions between the (known) populations of *M. agathosmoides* are more pronounced than between the species. Karis (1989, data from the herbarium sheets) reported a range in altitude



FIGURE 1.—*Metalasia helmei*, Helme 3138 (S). A, portion of plant; B, branch with leaves; C, leaf from above (left) and from side (right); D, capitula; E, F: all involucral bracts from one capitulum, with E, outermost from upper left, to innermost F, on lower right; G, three cypselae, each displayed from the ventral (left) and lateral (right) sides (note ribs). H, I, pappus: H, bristle; I, tip magnified. Scale bars: A, 10 mm; B, 2 mm; C–G, 1 mm; H, 0.5 mm; I, 0.1 mm. Artist: Emma Hultén.

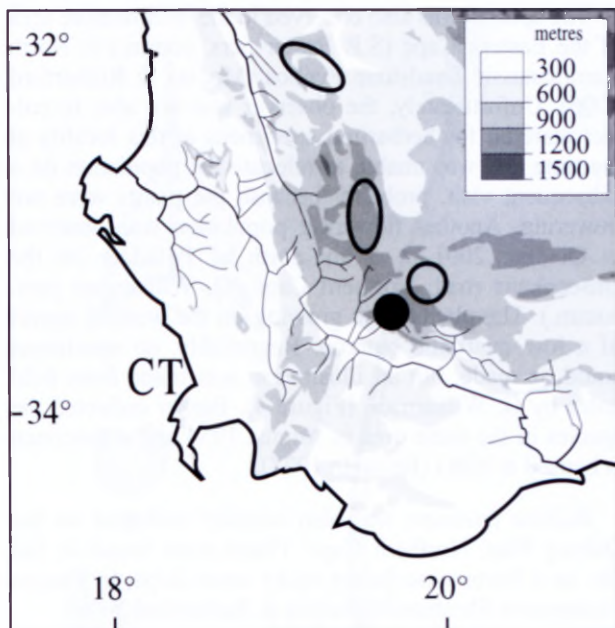


FIGURE 2.—Known distribution of *Metalasia helmei*, ●; and *M. agathosmoides*, ○, 0 (data from Karis 1989).

for *M. agathosmoides* of 1 250–1 700 m, but Karis subsequently collected material of this species at 900–950 m in the Cedarberg. *M. fastigiata* is also 5-flowered, as in *M. helmei* and *M. agathosmoides*, but differs from both those species by its larger size, by the twisted, rather sharp-pointed leaves, as well as the synflorescences with more numerous capitula. *M. fastigiata* also displays a much wider ecological range. A study based on molecular and morphological data (Stångberg & Karis in prep.) might indicate whether the *M. agathosmoides-fastigiata* clade now should be extended to contain also *M. helmei*, and, if the latter is sister to *M. agathosmoides*. If so, the high altitudinal range might be due to common ancestry. *Metalasia compacta* Zeyh. ex Sch.Bip. has leaves that approach those of *M. helmei*, i.e. with a  $\pm$  flat and slightly involute base, but more conspicuously involute towards the tip. However, *M. compacta* differs by its robust habit, its pure white-tomentose younger branches, its twisted leaves, as well as its 6-flowered capitula that are arranged in larger synflorescences.

**Distribution and habitat:** *Metalasia helmei* is known only from the Kwadousberg, where it is fairly common in Sandstone Fynbos on well-drained, deep, coarse white sands from 1 400–1 800 m (Figure 2). The upper parts of this 12 km<sup>2</sup> range receive a light dusting of snow on average twice every winter. The area is relatively arid, and rainfall probably ranges for 400–700 mm per annum. The habitat is not under any direct threat, although there are old agricultural lands near the type locality, and there are estimated to be more than 10 000 plants. The entire known range of this nonresprouting species constitutes a single locality. Due to having less than five localities and occupying an area of less than 5000 km<sup>2</sup>, it qualifies for Rare in terms of the Orange List criteria (Victor & Keith 2004).

#### *Additional material examined*

Western Cape.—3319 (Worcester): Worcester Div., Kwadousberg, Blaaskloof 182, summit ridge near jeep track, 1 700 m, (–DA), 24 Oct. 2004, *Helme 3138* (NBG!, S).

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