FSA contributions 6: Orchidaceae: Holothrix

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1408000 HOLOTHRIX


Scopularia Lindl.: t. 1701 (1834)
Monotris Lindl.: t. 1701 (1834)
Tryphia Lindl.: t. 1701 (1834)
Saccidium Lindl.: 302 (1835)
Bucculina Lindl.: 209 (1836)
Deroemera Rchb.f.: 29 (1852); Rendle: 277 (1895) as Deroemeria.

Terrestrial or lithophytic tuberous herbs. Leaves two, one sometimes much reduced (or absent?), ovate or orbicular, flat on ground, sometimes withered before flowering. Scape arising between two leaves, erect, unbranched, usually pubescent, with or without bracts. Inflorescence a spike, usually secund or subsecund. Flowers resupinate (except in H. majubensis), from 1.5 up to 25 mm long. Sepals subequal, sometimes connate, green, smaller than petals. Petals free or partly adnate to lip, green, cream, white or marked with red or purple, entire or with apex fimbriate, if entire then apices either thickened and fleshy or whole petal membranous; lip fleshy or membranous, entire or divided into three to many lobes, sometimes fimbriate, coloured as for petals, produced into a spur. Column usually small, simple and erect, fused basally to lip, in one species forming an open arch; anther sacs above stigma, rostellum much reduced. Pollinia two, in anther sacs, granular, each with a short caudicle and separate viscidium; viscidia naked, often resting on small flaps of tissue on either side of column.

Species about 55, distributed from Arabia through eastern and West tropical Africa, and the Cameroons, to South Africa; also in Madagascar, the Comoro Islands and Socotra. There are 23 species in southern Africa, with the greatest concentration in the Western Cape (see Guide for authors to Bothalia, p. 208: figure 1).

All measurements of lip and petal breadth are taken across the base of the lobes where these occur, except where otherwise stated. In undivided petals and lip the breadth is taken at the broadest point. Length is the total length of lip or petal. Scape length is also the total length of the scape, including the flowering portion.

In some of the species, details of flower colour, inflorescence and papillae are given. This has been possible where living or pickled specimens were seen. It is of interest to note that in all these the anther sacs are usually a darker and contrasting colour to the rest of the column, and to the flower as a whole.

Holothrix is derived from the Greek words for 'completely hairy', and refers to the squamous or hispid vegetative parts of the type species.

Key to southern African species of Holothrix

1a Scape with bracts:
  2a Petals entire ................................................................. 19. H. cuveri
  2b Petals divided:
    3a Flowers dimorphic ................................................... 20. H. burchelli
    3b Flowers not dimorphic .............................................. 21. H. randii
    4a Lip lobes filamentous; Gauteng and Northern Province 22. H. schlechteriana
    4b Lip lobes thickened, Northern, Western and Eastern Cape:
      5a Spur ⅛ to nearly equal length of lip; scape with a covering of short, fine, somewhat velvety hairs ........................................ 23. H. grandiflora
      5b Spur ⅛-⅓ of length of lip; scape usually glabrous but sometimes with a few short hairs at base

1b Scape without bracts:
  6a Petals divided at apex into 3 or 5 lobes:
    7a Spur ⅔-2 times length of lip; petals 5-lobed; Namaqualand (Northern Cape) ......................................................... 12. H. filicornis
    7b Spur ⅔-⅔ equal length of lip; petals 3-lobed; Eastern Cape, KwaZulu-Natal, Lesotho, Mpumalanga 13. H. scopularia
  6b Petals entire:
    8a Petals green or cream, carnose at apices:
      9a Flowers not resupinate ............................................. 7. H. majubensis
      9b Flowers resupinate .................................................. 1. H. pilosa
    10a Petals linear, lip lobes short and triangular with obtuse apices
    10b Petals broader at centre than at apex; lip lobes various:
      11a Lip entire or three-lobed:
        12a Spur longer than lip ............................................ 2. H. longicornis
        12b Spur shorter than lip

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FIGURE 1.—A–E, Holothrix pilosa, Schelpe s.n.: A, habit; B, plant with leaf before shrivelling and tubers; C, flower, side view; D, flower, front view; E, column. F–J, H. villosa var. villosa, Esterhuysen s.n.: F, habit; G, flower, side view; H, flower, front view; I, lip from above; J, column. A, E–H, I, drawn by K. Immelman; B–D, J, drawn by G. Condy. Scale bars: A, B, F, 10 mm; C–E, G–J, 1 mm.
1. Holothrix pilosa (Burch. ex Lindl.) Rchb.f. in Oti botanica hamburgensia: 119 (1881); G.J. Stewart et al.: 60 (1982). Type: Swellendam Div., on a dry hill east of Breede River, Burchell 7483 (K!).

Saccidium pilosum Lindl.: 302 (1835).

Leaves large, succulent, upper surface glabrous, rarely with hairs, undersurface densely pilose with long, fine hairs, usually withered at anthesis; upper leaf reduced in size. Scape without bracts, 160–550 mm long, densely pilose with long, fine hairs, recurved at base of scape, at right angles to scape at its apex. Inflorescence secund. Sepals 2.5–5.0 × 1.0–2.5 mm, glabrous, edges noticeably paler than bright green centre. Petals entire, carnos, coarse at apices, narrowly linear, 5.5–10.0 × 0.5–1.0 mm, creamy white with a green centre; lip divided into 3–5–8 short, broad, obtuse, carnos, lobes, long and narrow, 5.5–9.0 × 4.5–9.0, cream with green veins. Spur broadly conical, straight or slightly curved, 1.5–5.5 mm long. Anther sacs yellow. Figure 1A–E.

H. pilosa occurs in the southern Cape region (Figure 2) from Bredasdorp (Western Cape) to Port Elizabeth (Eastern Cape), and grows in semi-arid, stony localities. Flowering time: November to March.

The long, linear petals and long narrow lip, which together form a narrow cylindrical tube, are characteristic of this species. The inflorescence is strictly secund.

Vouchers: Linder 1704 (BOL); Long 938 (PRE); Mair 1225 (BOL); Thode A26392 (PRE).


Leaves with dense, short, fine, retrorse hairs. Scape without bracts, 65–154 mm long, with dense, short, re-

FIGURE 2.—Distribution of Holothrix pilosa, □, H. longicornu, ●.
curved hairs. *Sepals* 1.5–2.5 × 1.0 mm, glabrous, connate at base. *Petals* entire, carnose at apices, 2.5–3.5 × 0.5 mm; *lip* carnose, divided into 3–5 short, broadly linear lobes, 2.5–3.0 × 1.0–1.5 mm. *Spur* narrowly conical, straight, longer than lip, 3–4 mm long.

*Holothrix longicornua* is probably closely related to *H. cernua* (No. 5) and *H. brevipetala* (No. 4), all three species having recurved, hispid hairs on the scape. However, the short lip lobes (Figure 8N) distinguish it from the former, and the long, straight spur distinguishes it from both. Only the type has been seen but, as there are a number of plants in the type gathering, and they consistently show these characters, it can be regarded as a species separate from both the above-mentioned species.

Voucher: the only specimen of this species is the type, which was collected in October. The habitat is not known.


*Leaves* densely to very sparsely pilose with long, fine hairs, small, sometimes withered at anthesis. *Scape* without bracts, slender, 40–290 mm long, densely to very sparsely pilose with long, fine hairs at right angles to scape. *Inflorescence* usually lax with small flowers. *Sepals* 0.8–2.5 × 0.5–1.0 mm, usually glabrous or with a few long hairs. *Petals* entire, with carnose apices, 1.5–4.0 × 0.3–1.0 mm, creamy green; *lip* carnose, entire or three-lobed with outer lobes from very short to half as long as central lobe, 1.8–3.5 × 0.5–1.5 mm, creamy green. *Spur* slightly curved, 0.8–1.8 mm. *Anther sacs* pale yellow-green. Figure 3A–F.

*H. exilis* occurs in the coastal regions of the Western and Eastern Cape from the Saldanha area, the Cape Peninsula and Riversdale to Kei Mouth (Figure 4). Flowering time: October to March.

*H. exilis* can be distinguished from *H. villosa* (No. 6) by the side lobes of the lips which are up to 0.4 times the length of the central lobe, or absent, while *H. villosa* has side lobes (always present) from 0.6 to 1.0 times the length of the central lobe.

The variety *H. exilis* var. *brachylabris* was described by Bolus on the basis of an unlobed rather than a three-lobed lip. However, the length of the side lobes varies in a continuous rather than a disjunct manner in the species, from scarcely discernable to well defined. The variety is therefore not upheld.

Vouchers: Flanagan 1298 (PRE); Glass 6237 (BOL); Hall 1162 (BOL); Jeppe s.n. (PRE).


*H. parvifolia* Lindl.: 283 (1835), partly as to part of description (see also *H. cernua*, No. 5), non *H. parvifolia* Lindl. (1836) which is *H. villosa* (No. 6).

*Holothrix hispida* sensu Schlr.: 443 (1898); Bolus: t. 17 (1913); Bolus: t. 13 (1918) all excl. syn. L.f. (1782) and Thunb. (1794, 1823), non (L.f.) T.Durand & Schinz which is *H. cernua* (No. 5).

*Leaves* densely covered with small squamules or stout hairs, sometimes withered at anthesis. *Scape* without bracts, stout, 60–310 mm long, with stout, hispid, reflexed hairs. *Sepals* 1.0–2.5 mm, densely pilose. *Petals* entire, carnose at apices, 2.5–3.5 × 0.5–1.5 mm, yellow-green; *lip* and petals sometimes warty, lip carnose, oval in outline with 3–5 short, broad lobes (Figure 8Q), 2.5–3.5 × 2.0–3.5 mm, yellow-green. *Spur* slightly curved, 1.0–2.0 mm.

*H. brevipetala* occurs in the Western and Eastern Cape (Figure 4). It grows in sand and shallow soil in rock crevices. Flowering time: can be found in flower from August to April, usually between October and January.

The squamules or stout hairs on the leaves of this species, and the reflexed hairs on the scape, are similar to those of *H. cernua*. However, the lip lobes are much shorter and relatively broader than the linear lobes of *H. cernua*.

Vouchers: Brumyn 141/75 (PRE); Glass s.n. (34859 in PRE); Schlechter 464 (BOL); Welty Dow 2339 (BOL).

5. *Holothrix cernua* (Burm.f.) Schelpe in Orchid Review 74: 394 (1966); Immelman: 456 (1981); J.L. Stewart et al.: 60, t. 1.13 on p. 63 [not t. 1.13 on p. 62 which is *H. secunda* (No. 9)]. Type: Cap. bon. spei, Burmann f. s.n. (G!).

*Orchis cernua* Burm.f.: 30 ('26') (1768).

*Orchis hispida* L.f.: 401 (1782). *H. hispida* sensu (L.f.) T.Durand & Schinz: 5: 70 (1895) Type: Cape of Good Hope, Sparrman 34 (LINN, microfiche in PRE!).

*Orchis timidula* Thunb.: 4 (1794); Thunb.: 6 (1823). *H. parvifolia* Lindl.: 283 (1835) partly excl. part of description which fits *H. brevipetala* (No. 4) Lectotype: C.B.S., in arenosis depressis extra Cap, in summitate Taefelberg (sic?) et rubus lateris occidentalis ejusdem montis, Thunberg a (UPS, microfiche No. 21201 in PRE!).

FIGURE 4.—Distribution of *Holothrix exilis*, □, and *H. brevipetala*, ●.
Monotris secunda Lindl.: 303 (1835) non Orchis secunda Thunb. H. monotris (Lindl.) Reichh.: 119 (1881). Type: between Mossel Bay and Gouritz River, Burchell 6369 (K!).

H. gracilis Lindl.: 207 (1836); Bolus: 116 (1888). Type: Table Mountain, Drège 1253a (P!).

H. harveyana Lindl.: 206 (1836); Hook. f.: 103 A (1837). Type: Cape Peninsula, low sandy moist places, called 'The Flats' which extend almost from Table Bay to False Bay (Cape Flats), Harvey s.n. (TCD?).

H. squamulosa Lindl.: 206 (1836); Bolus: t. 18 (1913), t. 11 (1918). H. squamulosa var. typica Schltr.: 442 (1898). Type: Cape Province, mountains near De Liefde, Koratra, Drège 1235c (K!).

H. squamulosa var. hirsuta Bolus: 236 (1888). Type: Cape Peninsula, moist sandy places on Cape Flats, especially after burning; sometimes on old thatched roofs near Rondebosch, Bolus 7022b (BOL!).

H. squamulosa var. scabra Bolus: 114, t. 23a (1888). Type: Cape Peninsula, moist sandy places on Cape Flats, especially after burning; sometimes on old thatched roofs near Rondebosch, Bolus 7022a (BOL!).

H. squamulosa var. glabra Bolus: t. 18 (1913). Type: Cape Peninsula, moist sandy places on Cape Flats, especially after burning; sometimes on old thatched roofs near Rondebosch, Bolus 7022c (BOL!).

Leaves with a dense covering of squamules or small, stiff hairs, rarely glabrous with hairs on the margins only, sometimes withered before anthesis. Scape without bracts, slender or stout, 90–240 mm long, with long, hispid, deflexed hairs. Sepals 1.5–3.0 x 0.5–1.5 mm, densely hisprous. Petals entire, carnose at apices, 3.5–7.0 x 0.5–1.5 mm, cream to lime-green; lip carnose, 3–5 or (6 or 7) lobes (Figure 8D), central lobe the longest, lobes comprising 1/3 to 1/2 the length of whole lip, colour as for petals. Scape curved, 1.5–4.0 mm long. Anther sacs chestnut-brown (Figure 5A–D).

H. cemua is found mainly in the Western Cape, from the Gilberg to the George area, but extends also along the southern Cape lowland as far east as Grahamstown in the Eastern Cape (Figure 6). It grows in sandy or stony places, often flowering after fire. Flowering time: July to January.

Vouchers: Bolus 11383 (BOL); Galpin 4587 (PRE); Hall 1107 (BOL); Oliver 4587 (PRE).


Leaves with very many long, straight hairs. Scape without bracts, 30–365 mm long, densely to sparsely pilose with long, straight hairs at right angles to scape. Sepals 1.0–2.5 x 0.5–1.5 mm, glabrous or with short, straight hairs. Petals entire, carnose at apices, 1.5–4.5 x 0.5–1.5 mm, cream to yellow-green; lip carnose, divided into three subequal lobes, 1.4–4.0 x 0.5–3.0 mm. Spur broadly conical, curved, 2.0–5.5 mm long. Column green. Anther sacs yellow-green. Figure 1F–J.

H. villosa is probably the commonest species of Holothrix in southern Africa, as well as the most widespread. The typical variety occurs in western Northern Cape and throughout the Western Cape, and in the western part of Eastern Cape (Figure 7). It has recently been found (disjunctly) as far north as Gauteng (Johannesburg) and the Northern Province. It grows in rock crevices and in fynbos on hillsides. Flowering time: August to December.

The 3-lobed lip and patent hairs on the scape will distinguish H. villosa from the occasional specimens of H. cemua (No. 5) which do not have squamules on the leaves.

Vouchers: Bolus 11638 (BOL); Esterhuysen 22291 (BOL); Galpin 4588 (PRE); Leistner 435 (PRE); Oliver 5058 (PRE); Verter 10276 (PRE).

H. condensata Sond.: 76 (1847), Bolus: 36 (1911), Bolus: t. 12 (1918).

H. lithophila Schltr.: 446 (1898). Type: in rock crevices on mountain above Vogelgar lagoon, Schelchter 9536 (B!, one flower at K!)

Leaves often broader than long, slightly to densely pilose with long, fine hairs. Scape 85–240 mm long, with long fine hairs at right angles to scape, without bracts, usually stout with inflorescence dense. Sepals 1.5–3.5 × 1.0–2.5 mm, glabrous to fairly densely pilose with short, fine hairs, broad, often more than half the length of petals. Petals entire, camose, 3.5–7.0 × 1.5 mm, green or yellowish green; lip camose, with three broadly linear lobes 1/3 to 1/2 length of lip (Figure 8E), lip 3.5–6.5 × 1.5–3.5 mm. Spur broadly conical, curved, 2.0–5.5 mm long.

H. villosa var. condensata has been found in the western Northern Cape, the southern Western Cape, and as far east as Humansdorp in the eastern Eastern Cape (Figure 7). It grows in moist areas, and is either lithophytic or grows in shallow soil in rock crevices. Flowering time: October to January.

Vouchers: Andreea 843 (PRE); Esterhuyse n.s. (BOL); Leighton 748 (BOL); Pillans 3508 (PRE).


Leaves, up to 35 × 25 mm, fairly thick-textured, thinly woolly on margin only. Scape without bracts, up to 55 mm long, with dense to sparse white, woolly hairs. Inflorescence dense, second; flowers non-resupinate. Sepals ± 2.0 × 1.2 mm, broadly ovate, sparsely hairy. Petals entire, camose, ± 2.8 × 1.0 mm, white; lip with undivided portion 1.5 × 2.0 mm, white (Figure 8B); lobes 3, ± equal, 1.0 × 0.6 mm. Spur conical, slightly recurved, 1 mm long.

To date the new species is known only from the type locality (Figure 7), where it is fairly plentiful. Archer & Archer (1996) expect that it will be found on similar northern faces of neighbouring mountains in northern KwaZulu-Natal and southern Mpumalanga. Its habitat is rather vulnerable to erosion since the plants grow in exposed soil in cracks in vertical sandstone cliffs. Flowering time: December and January.

The species is well distinct from all other known species by its non-resupinate flowers.

In the genus, the non-resupinate flowers of Holothrix majubensis are the main distinguishing character. It is postulated that the non-resupination is an adaptation to the pollinator: due to the inflorescences arching outwards and downwards, the flowers are placed in the correct position for pollination. Non-resupinate flowers are also known in the unrelated Habenaria Willd.

8. Holothrix thodei Rolfe in Dyer, Flora capensis 5: 3: 100 (1912); J.L. Stewart et al.: 60 (1982). Type: [Orange] Free State, Witsieshoek, summit of QuaQua Mountains in stony and grassy places, 7500 ft, Thode 48 (BOL!).

Leaves with a dense covering of small, stout, squamous hairs, withered at anthesis. Scape without bracts, 100–240 mm long, densely covered with stout, scabrid, reflexed hairs. Sepals 1.5–3.5 × 0.5–1.0 mm, with dense short hairs, usually connate. Petals entire, camose, 3.5–5.0 × 0.5–1.5 mm, yellow or yellow-green; lip camose, with three lobes (Figure 8K), outer pair of lobes 1/3–1/2 the length of central lobe, 2.5–4.5 × 1.5–3.5 mm, colour as for petals. Spur slightly curved, 0.5–2.5 mm.

This montane species occurs in Lesotho and the Drakensberg of the Free State and KwaZulu-Natal, with one record from near Engcobo, Eastern Cape (Figure 7). It is recorded from basalt-derived soils in rocky grasslands or crevices in rocks. Flowering time: January and February.

Although it has a flower very similar to H. exilis (No. 3), H. thodei has thick, scabrid hairs (squamules) on the scape like those of H. cernua. It also has a completely different distribution.

Vouchers: Jacobs n.s. (BOL); Jacot Guillard, Getlin & Mzamane 32 (PRE); Killick 1304 (PRE); Schelpe 297 (BOL); Trausfield 961 (NU).

9. Holothrix secunda (Thum.) Rchb.f. in Otia botanica hamburgensia 2: 119 (1881); Bolus: t. 37 (1911); J.L. Stewart et al.: 62, t. 1.13 on p. 62 [not 1.13 on p. 63 which is H. cernua (No. 5)] (1982). Type: Thunberg s.n. (UPS, holo., microfiche no. 21243 at PRE!).

Orchis secunda Thunb.: 4 (1797); Thunb.: 6 (1823).

Trophy major Sond.: 82 (1847). Type: Braakfontein, 2000–4000 ft, Zeyher s.n. (K!).

Leaves glabrous, succulent. Scape without bracts, 45–300 mm long, slightly to densely pilose with short, fine hairs. Inflorescence subsecund. Sepals 1.5–3.5 × 1.0–2.0 mm, glabrous. Petals entire, camose, adnate to lip at their bases, 2.5–7.0 × 0.5–2.0 mm, creamy white to yellowish to yellow-green; lip camose, divided into five subequal lobes, lobes linear, lip with a few papillae at entrance to spur, 3.5–8.5 × 1.5–4.0 mm, colour as for petals. Spur slightly curved, 1.5–4.5 mm. Column cream and lime-green. Anther sacs deep reddish mauve. Figure 3G–J.

H. secunda is mainly distributed in the western Northern Cape and in Western Cape, with a few records from Eastern Cape (Figure 9). It does not, however, occur on the Cape Peninsula. It grows in dry areas in the shade of bushes, on stony soil, in rock crevices and on ledges. Flowering time: June to October.

The glabrous leaves, and the petals, which are adnate to the lip at their bases, will distinguish this species from others having a 5-lobed lip and camose petals. Thunberg did not designate a type, but there is only one specimen
Bothalia 26,2 (1996)

The type, collected at Heidelberg in Gauteng, was not seen; it was probably destroyed in Berlin. Three other specimens exist which match the description of *H. micrantha*: two from Killamey near Johannesburg (PRE!, J!) and one from Modderfontein (K!). The description is taken from the Killamey specimen. Flowering time: September and October.

This rare species is very similar to *H. incurva* (No. 10) but is smaller, has a slightly denser spike, and a different distribution and flowering time. When more specimens are found, it may prove to be only a variant of that montane species.

Voucher: Montley 2015 (J).


Leaves glabrous or with a few, scattered hairs, margins with a dense fringe of short hairs. Scape 72–170 mm long, densely villous with short, fine hairs at right angles to the scape, without bracts. Sepals 2.0–4.5 x 1.5–2.0 mm, densely villous with fine short hairs. Petals entire, with car­nose, much-attenuated apices, 5.0–9.5 x 1.5–1.0 mm; lip car­nose, with 5 linear lobes (Figure 8J), 3.5–4.5 x 1.5–2.0 mm, yellow or greenish yellow. Spur broadly conical, curved, 1.0–1.5 mm long.

This montane species is distributed in the high-lying areas of the Eastern Cape, KwaZulu-Natal, the Free State and Lesotho (Figure 9), and grows on basalt ledges and rocky crevices. Flowering time: December to April.

Vouchers: Hilliard & Burtt 9803 (NU); Prescott s.n. (BOL); Schelpe 7677 (BOL); Stewart 1947 (NU).


Leaves pilose, withered at anthesis. Scape without bracts, 72–170 mm long, with long, straight hairs. Sepals 1.5–2.0 x 0.5–1.0 mm, with a few hairs at apices. Petals entire, with car­nose apices, 3.0–4.5 x 0.5–1.0 mm; lip car­nose, divided into five linear, acute lobes (Figure 8G), 3.5–4.5 x 1.5–2.0 mm. Spur broadly conical, curved, 1.0–1.5 mm long.

The type, collected at Heidelberg in Gauteng, was not seen; it was probably destroyed in Berlin. Three other specimens exist which match the description of *H. micrantha*: two from Killamey near Johannesburg (PRE!, J!) and one from Modderfontein (K!). The description is taken from the Killamey specimen. Flowering time: September and October.

This rare species is very similar to *H. incurva* (No. 10) but is smaller, has a slightly denser spike, and a different distribution and flowering time. When more specimens are found, it may prove to be only a variant of that montane species.

Voucher: Montley 2015 (J).


Leaves glabrous, large. Scape without bracts, 65–260 mm long, glabrous. Sepals ovate, acute, 1.5–2.0 x 0.5–1.0 mm, glabrous, green tinged with red. Petals with three filiform lobes 1/2–2/3 as long as petals; petals 3.0–8.0 x 0.5–1.0 mm, greenish white; lip 4.5–9.0 x 1.5–2.5 mm, greenish white, divided into five filiform lobes (Figure 8C), lobes comprising 1/3–3/4 of total lip length. Spur slightly curved and pendulous. 1.25–2.0 times length of lip, 7–11 mm long. Ovary twisted, green tinged with red.

18. Holothrix scopularia (No. 13), is unusual among the species of South African *Holo­thrix* in having divided petals, but no bracts on the scape. The two species always have three-lobed petals, instead of the variable number of petal lobes of the other species with divided petals and a bracteate scape. The extremely long spur, the different distribution and habitat, and the less strongly secund spike of *H. filicornis*, how-
ever, make it easy to distinguish this species from *H. scopularia*.

Vouchers: Olivia Tolklen & Venter 652, 702, 823 (PRE); Tolklen 3293 (BOL); Van der Westhuizen s.n. (in liquid preservative in BOL, labelled H.M.F. 20 and 21); Williamson 2562, 2565 (BOL).


*Scopularia secunda* Lindl.: 207 (1836) non Orchis secunda Thunb. (1823).

*H. multisecta* Bolus: 170, 190, t. 7 (1890); T.Durand & Schinz: 71 (1895), as *H. multisecta*. Type: Stockenstrom, Elandsberg summit, Scully 391 (K!, BOL).

*H. burchelli* sensu Kraenzl.: 589 (1899) non Lindl. (1835).

Leaves moderately to densely pilose with long, straight, slender hairs, often withered at anthesis. *Scape* without bracts, 110–340 mm long, densely pilose with long, straight, slender hairs at right angles to *scape*. **Inflorescence** strongly secund. **Sepals** 1.5–4.0 × 1.0–2.0 mm, glabrous or with a few long hairs. **Petals** three-lobed, 3.0–11.0 × 0.5–2.5 mm, cream or pinkish cream, sometimes wine-colored; **lip** 5–12-lobed (Figure 8M, R), 2.0–13.0 × 1.5–4.5 mm, colour as for petals. **Spur** curved, 1.0–4.5 mm long.

*H. scopularia* occurs in the high mountain areas of the Eastern Cape, KwaZulu-Natal and Lesotho, and also (disjunctly) in Mpumalanga (Figure 10). It grows in damp places and on mossy boulders, usually in a sheltered position or under bushes and trees, and has also been recorded from rocks just above high tide (at Knysna). **Flowering time**: July to November.

The circinnate spur and the petals which are basally adnate to the lip, are characteristic of this species.

Vouchers: Bayliss 35/1652 (PRE); Long 1018 (PRE); McLoughlin s.n. (BOL); Parker 1059 (BOL); Sim 920 (NU).

15. **Holothrix orthoceras** (Harv.) Rchb.f., in Otia botanica hamburgensia: 119 (1881); Bolus: t. 23 (1911); J.L.Stewart et al.: 62, t. 1.11 (1982). Type: Howieson's Poort, and on the Katberg, Hutton s.n. (TCD!, lecto., here designated: K!).

*Tryphya orthoceras* Harv.: 4, t. 105 (1863).

Leaves glabrous, reticulated with white or silver. **Scape** without bracts, 60–280 mm long, densely pilose with fine, short hairs. **Sepals** 1.5–3.5 × 0.5–1.0 mm, glabrous. **Petals** entire, membranous, base of each petal rolled into a tube with its edge hooked into edge of opposite petal, 3.5–7.5 × 1.0–2.0 mm, white, apices attenuate; **lip** papillate at entrance to spur, 4.0–8.5 × 2.0–5.5 mm, white with or without purple veins, membranous, divided into five to many lobes, outer pair of lobes broadly linear and acute, two or more times as long as triangular central lobes. **Spur** acute, straight, 2.5–6.5 mm long. **Anther sacs** purple. Figure 5E–H.

This fairly common species occurs in forests in the Eastern Cape, KwaZulu-Natal, Mpumalanga and the Northern Province (Figure 11). **Flowering time**: March to May, but also occasionally in October and November.

*H. orthoceras* is similar to the rarer *H. macowaniana* (No. 18) but differs in having silver-veined leaves and a longer outer pair of lobes on the lip. It is also often confused with *H. parviflora*, but its straight spur, and the triangular rather than rectangular lobes in the centre of the lip, will distinguish it.

Vouchers: Allsop s.n. (PRE); Bokelman s.n. (PRE); Botha s.n. (PRE); Hilliard & Burt 6519 (NU); McLoughlin 626 (BOL).

![Figure 11 — Distribution of Holothrix orthoceras](attachment:holothrix_orthoceras.png)

*H. parviflora* occurs from around the Cape Peninsula (Western Cape) to Stutterheim (Eastern Cape), then (disjunctly) in southern KwaZulu-Natal (Figure 10). It grows in damp places and on mossy boulders, usually in a small-leaved position or under bushes and trees, and has also been recorded from rocks just above high tide (at Knysna). **Flowering time**: July to November.

The circinnate spur and the petals which are basally adnate to the lip, are characteristic of this species.
16. Holothrix mundii Sond. in Linnaea 19: 77 (1847); Bolus: t. 13 (1896); Bolus: t. 10 (1918); J.L.Stewart et al.: 60, t. 1.2 (1982). Syntypes: Swellendam area, Mund s.n. (K!), and in Worcester area, Winterhoekberge, 4000-5000 ft, among ericas, Zeyher s.n.

Leaves glabrous, small. Scape without bracts, 60-160 mm long, with short, fine, slightly reflexed hairs. Inflorescence condensed (Figure 8A). Sepals 1.0-2.0 x 0.3-0.5 mm, glabrous. Petals entire, membranous, 1.5-2.5 x 0.3-0.5 mm, white; lip membranous, divided into seven lobes on the same pattern as H. aspera (central lobe and outer pair longer than other four lobes), papillate at entrance to spur, 1.5-3.5 x 0.5-2.0 mm, white. Spur straight, 0.5-1.5 mm long. Column very short, green. Anther sacs bright pinkish mauve.

H. mundii is distributed from the Cape Peninsula through the southern Western and Eastern Cape as far east as Port Elizabeth (Figure 11). Flowering time: September to November.

H. mundii is very similar to H. aspera (No. 17) in the shape of its lip, but can easily be distinguished by the condensed inflorescence, as well as by the smaller flowers and straight spur. It is one of the smallest species in southern Africa, and the only one with a condensed inflorescence.

Vouchers: Bolus 4971 (PRE); Esterhuysen 19033 (BOL); Fair s.n. (BOL); Muir s.n. (PRE).


Bucculina aspera Lindl.: 209 (1836).

Holothrix confusa Rolfe: 105 (1912). Syntypes: mountainsides about Clanwilliam, Leipoldt in MacOwan & Bolus s.n. (Herb. Norm. Aust. 1757); stony places on Blaauberg, Schlechter 8465 (K!, BOL!); near Oliphant’s River Mountains, Schlechter 5036 (K!); near Piekenskloof and near Modderfontein, Schlechter 5077; Hex River Valley, Wolley Dod 4054 (K!, BOL!).

Leaves glabrous. Scape without bracts, 30-250 mm long, nearly glabrous to moderately pubescent with short, fine hairs. Sepals 1.0-3.5 x 0.8-2.5 mm, glabrous. Petals entire, broad, membranous, 3.5-6.5 x 1.0-4.0 mm, white.
with bright green bases and two broad maroon or purple stripes; lip membranous, divided into seven unequal lobes, usually densely papillate at throat, 3.0–8.5 x 1.0–6.0 mm, colour as for petals. Spur very broad, strongly curved and bent forward under lip, 2.0–5.0 mm long. Column arched over entrance to spur, lime-green. Anther sacs purple or maroon. Figure 12A–D.

A species of semi-arid areas, H. aspera occurs in the Western Cape and in southern Namaqualand, with one record from the Springbok District, Northern Cape (Figure 11). It is found in sandy or rocky ground or in crevices in rocks. Flowering time: June to October.

This species cannot be confused with any other from the Western Cape or the Namaqualand area. The column differs from the usual state in Holothrix, forming an open arch across the mouth of the spur. The lip is densely papillate under and in front of this arch. The attitude of the spur is also unique, being doubled up like a penknife under the spur (and also curved), rather than gently curved or circinate as in other species.

Vouchers: Acocks 17032 (PRE); Bolus s.n. (BOL); Esterhuysen 3394a (BOL); 5567 (PRE).


Leaves glabrous, small. Scape without bracts, 50–60 mm long; glabrous or with short, fine hairs at right angles to scape. Sepals 1.5–3.0 x 0.5 mm, glabrous. Petals entire, membranous, with attenuate apices, 3.0–4.5 x 0.5–1.5 mm, white, membranous, divided into very shallow, broad, triangular lobes, number of lobes indeterminate (Figure 8P). Spur narrowly conical, straight, 3.5–6.5 mm long.

This small and probably not very common species has a restricted distribution in the forests of the southern Eastern Cape (Figure 11). Flowering time: August to October.

Vouchers: Glass 6204b (BOL); MacOwan s.n. (BOL); Scully s.n. (20503 in SAM).


Denemera culveri (Bolus) Schltr. 144 (1907).

H. culveri var. integra Bolus: 147 (1905). Type: Barberton, Culver 84a (BOL; K!).

Leaves withered at anthesis, apparently only one present. Scape with bracts, slender, ± 140 mm long, with a few short hairs at base. Sepals 2.5 x 0.8 mm, glabrous. Petals entire, membranous, oblong, 4.0 x 1.5 mm, white; lip membranous, entire or with small acute lobe on either side of broadly oval central limb (Figure 8O), 3.5 x 3.0 mm, white. Spur straight, acute, half as long as lip, 1.5 mm long.

Only the type specimen has ever been collected, from near Barberton, Mpumalanga (Figure 11), on rocky slopes at 2000 ft. Flowering time: September.

Voucher: type only.

H. culveri is unique among the southern African species of Holothrix in having bracts on the scape and entire, delicate petals. H. squammata (A.Rich.) Rchb.f. from Uganda and Ethiopia, however, has the same combination of characters. Bolus states that there were spurs on the side-sepal of Culver 84a, but this was not seen; possibly a strip of tissue was torn off the ovary when the sepal were dissected.

20. Holothrix burchellii (Lindl.) Rchb.f. in Otia botanica hamburgensia: 119 (1881); Bolus: t. 39 (1911); J.L.Stewart et al.: 66, t. 1.22 (1982). Type: Zoetmelks Rivier, Burchell 6709 (K!).

Scopularia burchellii Lindl.: 304 (1835).

Leaves glabrous. Scape with bracts, 150–500 mm long, with short, deflexed hairs, stout. Inflorescence secund, with dimorphic flowers. Sepals 2.5–5.0 x 1.0–2.5 mm, glabrous. Petals divided at apex into 5–10 filiform lobes, longer on upper than lower flowers of spike, petals 3.5–18.0 x 1.0–3.5 mm, cream-coloured; lip 3.0–9.0 x 1.5–4.0 mm, cream-coloured, divided into 5–13 lobes, lobes longer on upper than lower flowers of spike. Spur curved, smaller on upper than lower flowers, 3.0–6.0 mm long. Anther sacs pale chestnut to tan in colour. Figure 12E–H.

This species occurs in the Western Cape at Piketberg, and then at Bredasdorp and from there as far east as the Queenstown and Stutterheim Districts in Eastern Cape (Figure 13). Flowering time: August to November.

A striking feature of H. burchellii is the dimorphic flowers, the upper having greatly elongated petal and lip lobes compared to the lower. The spur and column of the upper flowers are smaller, but in the same proportion to the size of the flower (excluding the lobes of lip and petals) as in the lower flowers. The upper flowers are said to be sterile, but the author has seen them produce cap-
sules with seed in them, and the column and pollinia are no different in structure from those of the lower flowers.

Also, although the flowers are generally described as 'dimorphic' this is not strictly correct, as the transition from short- to long-lobed flowers is not abrupt, and there are about four or five intermediate flowers.

Vouchers: Bolus 11382 (BOL); Schelpe 7133 (BOL); Schieben & Ellis 12387 (PRE); Sidey 1255 (PRE).


*H. reckii* Bolus: t. 21 (1913). Type: Transvaal (Gauteng), Koedoespoort, Reck 1003 (BOL!, PRE!).

*Leaves* glabrous, withered at anthesis. *Scape* with bracts, 170–420 mm long, minutely pilose with short, fine, sinuous hairs. *Sepals* 2.5–4.5 x 1.5–2.0 mm, glabrous. *Petals* divided into 7–11 fine, filamentous lobes, 6.0–13.5 x 3.0–5.0 mm, white; *lip* divided into 8–15 fine, filamentous lobes (Figure 8F), 10.0–13.5 x 3.0–6.0 mm, white. *Spur* curved to nearly circinnate, 3.5–8.0 mm long.

This species is found at Zebediela (Northern Province) and in Gauteng in the districts of Pretoria and Johannesburg (Figure 13), and occurs also in Tanzania and Zimbabwe. It grows on grassy slopes and rocky ledges. Flowering time: September to December.

*H. randii* is very similar to *H. schlechteriana* (No. 22) but differs in the fine, hair-like lobes of the lip and petals, in its white (not cream or greenish) petals, and in its distribution. It also tends to have a more strongly curved spur but this does not hold for all specimens.

Vouchers: Bolus 14082 (BOL); Codd 6162 (PRE); Howlett s.n. (PRE); McLaughlin 144 (BOL).


*Leaves* glabrous, large. *Scape* with bracts, stout, 135–700 mm long, moderately to densely pilose with short, fine, velvety hairs. *Sepals* 2.0–6.0 x 0.5–2.5 mm, glabrous. *Petals* divided at apex into 4–9 filiform lobes, 2.5–10.0 x 1.0–2.5 mm, green to pale greenish cream to yellow-ochre; *lip* divided into 5–11 lobes (Figure 8H), divided into 7–11 fine, filamentous lobes (Figure 8I), 10.0–13.5 x 3.0–6.0 mm, white. *Spur* curved to nearly equal length of lip, 2.5–5.5 mm long.

This species occurs in a number of scattered localities. It has been recorded from Springbok in the Northern Cape, from Caledon, Montague and Laingsburg, in the Western Cape and it extends into Eastern Cape as far as Steynsburg and King William's Town (Figure 14). It grows in dry areas shaded by rocks or bushes. Flowering time: October to February.

For characters distinguishing this species from *H. randii* (No. 21), see under that species.

Vouchers: Acocks 12071, 16511 (PRE); Ehrens 1962 (PRE); Hardy & Bayliss 1115 (PRE); Theron 1399 (PRE).


*Scopularia grandiflora* Sond.: 79 (1847).

*Leaves* glabrous, large, often withered at anthesis. *Scape* with bracts, stout, 190–510 mm long, glabrous or with a few minute hairs at base. *Sepals* 4.5–9.0 x 1.5–4.5 mm, glabrous. *Petals* divided into 5–9 lobes, 10.0–22.0 x 1.5 mm, white with bases green or pale lilac; *lip* 12.5–25.5 x 3.5–6.5 mm (breadth taken at base of flared section), divided into 13–26 lobes (Figure 8I); limb often flared out into a broad distal section; colour as for petals. *Spur* very broadly conical, slightly curved, 1/3–1/4 length of lip, 3.0–4.5 mm long. *Column* with an apiculus.

The records for this species are scattered, and come from the west coast, from Bredasdorp, and from Ladismith in Western Cape and from Port Elizabeth (the type) in Eastern Cape (Figure 14). It grows in hollows and crevices in rocks, under semi-arid conditions. Flowering time: March.

*H. grandiflora*, the tallest representative of the genus in southern Africa, is similar to *H. schlechteriana*. It can usually be distinguished by the shorter spur to lip ratio, the longer petals, and the nearly glabrous scape; it also generally has a larger number of lip lobes and a flared distal section of the lip. The flowering time is later, being in March, while *H. schlechteriana* flowers mainly from October to December and occasionally in January and February.
Although the type has not been seen, the description by Sonder (1847) is detailed and clearly refers to this species.

Vouchers: Bruyn 1282 (NBG); Gauthrie s.n. (BOL); Hall 352Lc (BOL); Schelpe 7663 (BOL).

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INDEX TO TAXA

Bucculina Lindl., 125
aspera Lindl., 136
Deroemera Rchb.f., 125
culvern (Bolus) Schltr., 137
deroemera, 125
Holothrix Richt. ex Lindl., 125
aspera (Lindl.) Rchb.f., 136
brachylabris Sond., 129
brevipetala Immelman & Schelpe, 129
burchelli (Lindl.) Rchb.f., 137
burchelli sensu Kraenzl. non Lindl., 135
cemua (Burm.) Schelpe, 129
consensus Sond., 133
conflusa Rolfe, 136
culvern Bolus, 137
var. integra Bolus, 137
exilis Lindl., 129
var. brachylabris (Sond.) Bolus, 129
filicominis Immelman & Schelpe, 134
gracilis Lindl., 131
grandiflora (Sond.) Rchb.f., 138
harveyana Lindl., 131
hispidula (L.F.) Durand & Schinz, 129
hispidula sensu Schltr., 129
incura Lindl., 134
limeliana Rchb.f., 135
var. parrifolia (Lindl.) Rolfe, 135
lithophila Schltr., 133
longicornu G.J.Lewis, 127
macowaniana Rchb.f., 137
majubenesis C.Archer & R.H.Archer, 133
micrantha Schltr., 134
mononis (Lindl.) Rchb.f., 131
mulitsecta Bolus, 135
mundi Sond., 136
orthoceras (Harv.) Rchb.f., 135
parrifolia (Lindl.) Rchb.f., 135
parvifolia Lindl. (1835), 129
parvifolia Lindl. (1836), 129, 131
pi losa (Burch, ex Lindl.) Rchb.f., 127
randii Rendle, 138
tecckii Bolus, 138
rupicola Schltr., 134
schlechtneriana Schltr ex Kraenzl., 138
scopularia (Lindl.) Rchb.f., 135
seconda (Thunb.) Rchb.f., 133
squamulosa Lindl., 131
var. glabrata Bolus, 131
var. hirsuta Bolus, 131
var. neagra Bolus, 131
var. typica Schltr., 131
Bothalia 26,2 (1996)

thodei Rolfe, 133
villosa Lindl., 131
var. villosa, 131
var. condensata (Sond.) Immelman, 133
Monotris Lindl., 125
secunda Lindl. non Orchis secunda Thunb., 131
Orchis
cernua Burm.f., 129
hispida Thunb. p.p., 129, 131
hispidula L.f., 129
secunda Thunb., 133, 135

Saccidium Lindl., 125
pilosum Lindl., 127
Scopularia Lindl., 125
burchellii Lindl., 137
grandiflora Sond., 138
secunda Lindl., 135
Tryphia Lindl., 125
major Sond., 133
orthoceras Harv., 135
parviflora Lindl., 135
secunda Lindl., 135