

# Synopsis of the genus *Disparago* (Asteraceae)

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## ABSTRACT

The genus *Disparago* comprises nine very distinct species and is here divided into four new, well-defined sections: **Monticarpa** Koekemoer, comprising three recently described species, *Disparago gongyloides* Koekemoer, *D. barbata* Koekemoer, *D. pilosa* Koekemoer; section **Laevicarpa** Koekemoer (*D. kolbei*) and section **Uniflos** Koekemoer (*D. tortilis*) which are both monotypic, and section **Disparago** which has four species (*D. ericoides*, *D. anomala*, *D. kraussii*, *D. laxifolia*). The previous revision (Levyns 1936a) included seven species of which six are retained. A key to the sections and the species and a diagrammatic key are given as well as diagnostic descriptions, synonyms, typification and notes on the distribution and habitat of each species.

## UITTREKSEL

Die genus *Disparago* bestaan uit nege baie duidelike spesies en word hier verdeel in vier nuwe, goed omskryfde seksies: **Monticarpa** Koekemoer, met drie onlangs beskryfde spesies, *Disparago gongyloides* Koekemoer, *D. barbata* Koekemoer, *D. pilosa* Koekemoer; seksie **Laevicarpa** Koekemoer (*D. kolbei*) en seksie **Uniflos** Koekemoer (*D. tortilis*) wat albei monotypies is en seksie **Disparago** met vier spesies (*D. ericoides*, *D. anomala*, *D. kraussii*, *D. laxifolia*). Die vorige hersiening (Levyns 1936a) het sewe spesies ingesluit waarvan ses behou word. 'n Sleutel tot die seksies, die spesies en 'n diagrammatiese sleutel word gegee sowel as diagnostiese beskrywings, sinonieme, tipifikasie en notas oor die verspreiding en habitat van elke spesie.

## INTRODUCTION

The genus *Disparago* is confined to South Africa and occurs in the fynbos of the southwestern Cape. It now comprises nine species: six retained from the previous revision (Levyns 1936a) and three recently described (Koekemoer 1991). The genus is remarkable in many ways—the biogeography, morphology, evolutionary development and speciation (Koekemoer in prep. a, b). There are many unanswered questions about *Disparago* and the genus holds challenging clues to a better understanding of the fynbos flora.

**Disparago** Gaertn., Fructibus et seminibus plantarum 2: 463, t. 173 (1791); DC.: 257 (1837); Cass.: 348 (1819); Less.: 362 (1832); Benth. 323 (1873); Harv.: 277 (1894); Schlr.: 203 (1900); Levyns: 95 (1936a); Dyer: 682 (1975). Type species: *Disparago ericoides* (Berg.) Gaertn. (= *Stoebe ericoides* Berg.).

*Wigandia* Neck.: 95 (1790) non Kunth; Less.: 362 (1832).

*Seriphia* et *Stoebes* spp. auctt.

The name *Disparago* is listed as conserved, although conservation against *Wigandia* was superfluous (Rickett & Stafleu 1960).

Shrublets or shrubs, usually profusely, sympodially branched, larger plants dense, upright or cushion-like and spreading; new shoots developing from below terminal

inflorescence of previous season. Leaves alternate, small, filiform, oblong or obovate; adaxial surface villous, hairs unicellular; margins entire, involute; apex mucronate, apiculate or obtuse. *Synflorescences* terminal. Heads solitary, in small clusters or in very dense globose, sub-globose or cylindrical aggregations; 1-flowered or up to 10-flowered; individual heads homogamous or heterogamous, composed of ray and/or tubular flowers. *Involucres* in 1–4 series, chaffy, lacking a distinct stereome, broadly or narrowly cymbiform; apices acute or acuminate; margins entire, sometimes undulate or with clavate outgrowths. *Ray flowers* 3-lobed, female or sterile, white or pink, ray 1.5–4.0 × 1.2–3.0 mm; cypselas fertile or sterile; surface glabrous, puberulous or villous. *Tubular flowers* 5-lobed, lobes erect or spreading star-like, male or hermaphrodite, white or pink; cypselas fertile or sterile, surface glabrous, puberulous or villous. *Pappus* present or absent, caducous or persistent, 3–15(–20), plumose or barbed bristles, free or connate in a ring or tube at base.

**Distribution:** the main area of distribution is the fynbos of the southwestern Cape, a winter rainfall area. One species, *D. tortilis*, is more widely distributed and spreads along the south and east coast to Umtamvuna in Natal where it occurs in relict fynbos areas. In the western Cape the genus does not occur further north than the Great Winterhoek mountains near Porterville. The inland boundaries of its distribution are along the mountains bordering the karoo or the transition between fynbos and other biomes.

## DISCUSSION

The original generic description by Gaertner (1791) included only species now accommodated in the section *Disparago*. The generic description given above was

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therefore expanded to include all the other species subsequently found.

*Disparago* can be distinguished from its closest relatives, *Stoebe* and *Elytropappus*, by the presence of ray flowers in some/all the heads of the synflorescence. Although the monotypic genus *Bryomorphe* also has ray flowers, it is distinguished by a moss-like habit. The leaf morphology of *Disparago* is very similar to that of *Stoebe* and it is therefore very difficult to identify sterile material. Most species of *Elytropappus* can be distinguished by the presence of glands on the leaves. Generic and infrageneric relationships will be discussed in a separate paper (Koekemoer in prep. a).

#### SPECIES TREATMENT

The genus *Disparago* can be divided into four natural groups which are here treated as sections. Section **Monticapra**: *D. gongylodes*, *D. barbata*, *D. pilosa*. Section **Laevicarpa**: *D. kolbei*. Section **Uniflos**: *D. tortilis*. Section **Disparago**: *D. anomala*, *D. ericoides*, *D. kraussii*, *D. laxifolia*.

#### Key to sections

- 1a Ray flowers sterile or reduced ..... section **Disparago**
- 1b Ray flowers female:
  - 2a Heads 1-flowered ..... section **Uniflos**
  - 2b Heads 5–8-flowered:
    - 3a Cypselas of both ray and tubular flowers fully developed; tubular flowers hermaphrodite ..... section **Laevicarpa**
    - 3b Cypselas of ray flowers fully developed, those of tubular flowers reduced; tubular flowers male ..... section **Monticapra**

In the two monotypic sections (*Uniflos* and *Laevicarpa*), the cypselas of both the ray and tubular flowers are fertile. The main differences between the sections are in the cypselas surface, the number of flowers per head and the arrangement of heads. Species in the section *Monticapra* have inflorescences similar to those of *Bryomorphe* and further investigation is needed to determine whether *Bryomorphe*, a monotypic genus, should be given generic status.

#### Key to species (see also diagrammatic key in Table 1)

- 1a Ray flowers female, cypselas fully developed:
  - 2a Heads 1-flowered ..... 5. *D. tortilis*
  - 2b Heads 5–8(–10)-flowered:
    - 3a Cypselas fully developed in ray and in tubular flowers .... 4. *D. kolbei*
    - 3b Cypselas fully developed in ray flowers, sterile in tubular flowers:
      - 4a Leaves obovate ..... 1. *D. gongylodes*
      - 4b Leaves linear or lanceolate:
        - 5a Pappus plumose, connate at base; leaves spreading; involucre tomentose ..... 3. *D. pilosa*
        - 5b Pappus barbed, loose; leaves appressed; involucre smooth ..... 2. *D. barbata*
  - 1b Ray flowers sterile, cypselas reduced:
    - 6a Cypela surface woolly ..... 7. *D. ericoides*
    - 6b Cypela surface puberulous:
      - 7a Pappus absent ..... 6. *D. anomala*
      - 7b Pappus present:
        - 8a Leaf tips obtuse; leaves more than half their length apart, mostly spreading; west of 20 degrees longitude; flowering in spring ..... 9. *D. laxifolia*
        - 8b Leaf tips mucronate; leaves less than half their length apart, mostly appressed at least near inflorescence; east of 20 degrees longitude; flowering in autumn ..... 8. *D. kraussii*

TABLE 1.—Diagrammatic key to the species of *Disparago*

	Alt. (m)	Flow. time	Synflor.	No. flow./head	Ray flowers	Tubular flowers	Cypselas		Pappus
							Ray flow.	Tub. flow.	
<i>D. gongylodes</i>	1200–1600	spring	semi-globose	± 7	female	functionally male	woolly	reduced	2–3 hairs caducous plumose
<i>D. barbata</i>	1500	spring	semi-globose	± 6	female	functionally male	puberulous	reduced	2–3 hairs caducous barbed
<i>D. pilosa</i>	1500	spring	semi-globose	± 8	female	functionally male	puberulous	reduced	± 10 hairs coalescent plumose
<i>D. kolbei</i>	1200–1900	spring	loose grouping of heads	4–6	female	hermaphrodite	glabrous	glabrous	8–12 hairs coalescent plumose
<i>D. tortilis</i>	0–1500	after rainy season	globose	1	female	hermaphrodite	puberulous	puberulous	5(–20) hairs not coalescent plumose
<i>D. anomala</i>	0–500	autumn	globose	2	sterile	hermaphrodite	reduced	puberulous	absent
<i>D. ericoides</i>	0–600	autumn	globose to roughly globose	2	sterile	hermaphrodite	reduced	woolly	15–20 hairs coalescent plumose
<i>D. kraussii</i>	0–300	autumn	globose	2	sterile	hermaphrodite	reduced	puberulous	(3–)5(–8) hairs not coalescent plumose
<i>D. laxifolia</i>	0–550	spring	globose	2	sterile	hermaphrodite	reduced	puberulous	5 hairs not coalescent plumose

Sectio 1. **Monticapra Koekemoer**, sect. nov., capitula heterogama, 5–8-flora; flores radii feminei; flores disci fungentes masculini; flores radii albi, flores disci vinacei; cypselae florum radii fertiles, florum disci steriles. Ad altitudines altas limitata. Typus sectionis: *D. gongyloides* Koekemoer.

Capitula heterogamous, 5–8-flowered; ray flowers female; tubular flowers functionally male; ray flowers white, tubular flowers wine-red; cypselas fertile in ray flowers, sterile in tubular flowers. Confined to high altitudes.

The name *Monticapra* was chosen in honour of Miss E. Esterhuysen (with all due respect), who like a 'mountain goat' explored remote mountains to discover the three species in this section.

1. **Disparago gongyloides Koekemoer** in Bothalia 21: 158 (1991). Type: Cape, Great Winterhoek Wilderness Area, *Esterhuysen* 35788 (BOL, holo.); NBG!, K!, PRE (2x!), S!, STE!.

Shrublets (50–)100–350 mm tall, profusely branched mainly from base. Leaves obovate, 2.5–3.5(–5.0) × 1–2 mm, involute at margins only, adaxial surface villous, apex obtuse; pedicel twisted near base. *Synflorescence* of 5–12 heads in a loose arrangement. *Involucro* of about 12 bracts in three series, outermost series foliaceous, inner series broadly cymbiform, narrowing to the innermost series; dark brown, often with reddish tint, margins often undulate in upper half, apex acuminate and often reflexed. Heads composed of two ray flowers and five tubular flowers. Ray flowers white, female, rays 3–4 × 1.5–2.5 mm; cypselas fertile, surface woolly. Tubular flowers pink, male; cypselas sterile, surface puberulous. *Pappus* present in ray and tubular flowers, plumose, of 2 or 3 caducous hairs, not connate, capillaries in pappus tips inflated and these tips obtuse and loosely coalescent, tips of capillaries acute in lower part.

*Distribution:* this species is only known from one area: the top of the Great Winterhoek Mountain near Porterville (Figure 1) where it grows very abundantly on coarse Table Mountain Sandstone, on flat areas where small *Restio* species are dominant.

#### Specimens examined

CAPE.—3319 (Porterville) Great Winterhoek Reserve, (–AA), *Esterhuysen* 34840 (PRE, BOL), 35788 (BOL, K, NBG, STE); Twentyfour Rivers Mountains, (–AA), *Esterhuysen* 21894 (BOL, PRE); Great Winterhoek Mountains, Farm Berghof, (–AA), *Koekemoer* 315, 440 (PRE); Great Winterhoek Reserve, 2 km from Zuurvlakte entrance, (–AA), *Koekemoer* 439 (PRE).

2. **Disparago barbata Koekemoer** in Bothalia 21: 158 (1991). Type: Cape, Matroosberg, SE slopes, *Esterhuysen* 28615 (BOL 48345, holo.); BOL 48346!, PRE!, S!.

Shrublets 200–400 mm tall, erect or trailing. Leaves filiform, 4–9 × 0.5–0.8 mm, spirally twisted, acute, spreading. *Synflorescence* of numerous heads crowded in ovoid secondary heads 10–15 mm in diameter, dark brown

and globular. Heads with three ray flowers and three tubular flowers. *Involucro* of about 12 bracts in 3 series, 4.5–6.0 × 0.6–1.3 mm, narrowly cymbiform, abaxial surface sparsely villous, margins entire, apex acuminate, often reflexed, usually tri-coloured: light brown near base, dark brown towards apex and tinted red in centre. Ray flowers female, ray 2.0–2.5 × ± 1.5 mm, white; cypselas fertile, puberulous, dorsiventrally flattened. Tubular flowers functionally male, purple-red; cypselas sterile, puberulous. *Pappus* present in ray and tubular flowers, of 2 or 3 bristles, barbed, caducous, not connate.

*Distribution:* this species is only known from the Matroosberg near De Doorns in the southwestern Cape (Figure 1).

#### Specimens examined

CAPE.—3319 (Worcester): Matroosberg SE slopes, (–BC), *Esterhuysen* 28615 (BOL, PRE, S); Matroosberg E slopes above De Doorns, (–BC), *Esterhuysen* 28119 (BOL).

3. **Disparago pilosa Koekemoer** in Bothalia 21: 159 (1991). Type: Cape, Roodeberg, near Matroosberg, N slopes, *Esterhuysen* 29721 (BOL 48349, holo.); BOL 48350!, NBG!, PRE!, S!.

Shrublets, up to 250 mm tall, profusely branched from base, branches woolly or sparsely villous, appearing 4-angled because of leaf arrangement. Leaves lanceolate, 2–6 × 0.5–0.9 mm, appressed or slightly spreading, not spirally twisted. *Synflorescence* with secondary heads composed of a few heads, loosely grouped. Heads with 3 ray flowers and 5 tubular flowers. *Involucro* 11–13, in 2 or 3 series, outermost broadly cymbiform, decreasing in width to the inner series which can be filiform, margins undulate, sometimes with membranous edge, apex acuminate, sometimes reflexed, adaxial surface villous in lower half, bicolorous, yellow-brown in lower half, black-brown in upper half with reddish tint near apex. Ray flowers female, white, 2.5–3.5 × 1.5–2.0 mm; cypselas fertile, surface puberulous. Tubular flowers functionally male, reddish pink, often with glands on surface of lobes; cypselas sterile. *Pappus* present in ray and tubular flowers, plumose, of about 10 hairs, connate in a ring at base.

*Distribution:* this species has only been collected on Matroosberg, Roodeberg, Roelofsberg and at the foot of Bokkeveld Sneekop in the Worcester District (Figure 1). It is reported to occur in sand in rocky areas.

#### Specimens examined

CAPE.—3219 (Wuppertal): Ceres Dist., northern base of Roelofsberg, (–CC), *Esterhuysen* 34675 (BOL, S); Waboomsrivier, Cold Bokkeveld, (–CC), *Hanekom* 624 (PRE). 3319 (Worcester) Ceres Dist., Rosendal & Bo-Rosendal, at foot of Bokkeveld Sneekop, (–AB), *Esterhuysen* 33928 (BOL, S); Ceres Dist., Roodeberg near Matroosberg, N slopes, (–BC), *Esterhuysen* 29721 (BOL, NBG, PRE, S); Matroosberg northern plateau, (–BC), *Esterhuysen* 27704 (BOL); Matroosberg near the top along pipeline, (–BC), *Koekemoer* 361 (PRE).

Sectio 2. **Laevicarpa Koekemoer**, sect. nov., capitula heterogama, 5–8-flora; flores radii feminei; flores disci hermaphroditi; flores et radii et disci: rosei; cypselae florum et radii et disci fertiles. Ad montes regionem

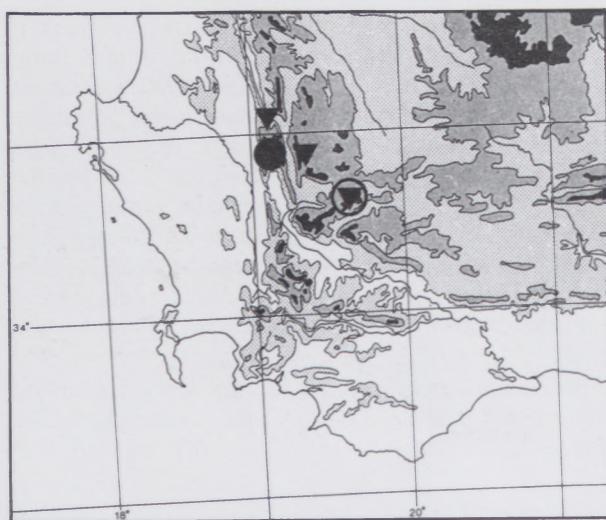


FIGURE 1.—Geographical distribution of *D. gongyloides*, ●; *D. barbata*, ○; and *D. pilosa*, ▼.

'Karoo' cognitam conterminos limitata. Typus sectionis: *D. kolbei* (H. Bol.) Hutch.

Capitula heterogamous, 5–8-flowered; ray flowers female; tubular flowers hermaphrodite; ray as well as tubular flowers pink; cypselas fertile in ray as well as tubular flowers. Confined to mountains bordering the Karoo.

The name *Laevicarpa* refers to the smooth surface of the cypselas in *D. kolbei*.

#### 4. *Disparago kolbei* (H. Bol.) Hutch.: 511 (1932).

*Amphiglossa kolbei* Bolus: 394 (1909). Type: Cape, Oudtshoorn Dist., Swartberg Pass, *Kolbe* 1477 (BOL, holo!).

*D. rosea* Hutch.: 511 (1932); Levyns: 99 (1936a). Type: Cape, Uniondale Dist., hills near Avontuur, *Fourcade* 1663 (BOL 48241, lecto!; here designated; GRA!, PRE!, K.).

The name *D. kolbei* was given to commemorate F.C. Kolbe, the collector of the type specimen and friend of H. Bolus.

Shrubs usually 100–300 mm tall, but old plants up to 700 mm tall and about 1.5 m in diameter. Leaves filiform to lanceolate, 2–4 × 0.3–0.5 mm, shorter leaves straight and appressed, longer leaves spirally twisted and spreading, often woolly. *Synflorescence* of 1–3(–5) heads. Heads with 2 or 3 ray flowers and 2 or 3 tubular flowers. *Involucro* of about 10 bracts in 3 series, outermost series ovate, about 1/3 as long as inner series of broadly cymbiform, light brown bracts. Ray flowers female, pink; cypselas fertile, surface glabrous, apical annulus usually well developed. Tubular flowers hermaphrodite, pink; cypselas identical to those of ray flowers. *Pappus* present in all flowers, of 8–12 plumose hairs, basally connate for about 1/5 of their length.

**Distribution:** this species is confined to the mountain ranges bordering the Karoo, stretching from Antoniesberg in the east to the Witteberge in the west (Figure 2).

#### Specimens examined

CAPE.—3320 (Ladismith): Witteberg, (–BC), *Compton* 2689 (BOL), 3335 (STE), 12201 (NBG); *Esterhuysen* s.n. (NBG); *Goldblatt* 3794 (K, PRE, S); Matjiesfontein, Witteberg near radio mast, (–BC), *Van Zyl* 3561 (PRE, STE); Anysberg, (–DA), *Esterhuysen* 17325 (BOL), 25986 (BOL, PRE); *Koekemoer* 305 (PRE); *Marshall* 19 (SAAS), 163 (STE); *Van Wyk* 1032, 1048 (PRE, STE); *Van Zyl* 3394 (PRE, STE); *Vlok* 451 (PRE, STE). 3321 (Ladismith): Elandskloof between Vleeland and Seweweekspruit, (–AD), *Moffett & Steensma* 3870 (STE). 3322 (Oudtshoorn): Swartberg Pass, (–AC), *Bond* 1556 (NBG); *Esterhuysen* 19683, 28823 (BOL); *Hafström & Acocks* 2338 (PRE, S); *Koekemoer* 299, 332 (PRE); *Colbe* 1477 (BOL); *Levyns* 6655 (BOL); *Markötter* 9946 (STE); *Schlechter* s.n. (BOL); *Stokoe* 9070 (BOL), 58107 (SAM), 65910 (PRE, SAM), 64077 (SAM); *Taylor* 6974 (PRE, STE); *Wall* 277 (S); Swartberg, Hattingskloof, (–AC), *Thompson* 1319 (PRE, STE); Swartberg, EVKOM-road on ridge, (–AC), *Pienaar* 38 (SAAS, STE). 3323 (Willowmore): Antoniesberg, N slopes, (–AD), *Esterhuysen* 24944 (BOL); Uniondale, hills near Avontuur, (–CA), *Fourcade* 1663 (BOL, GRA, PRE); Uniondale, hill N of Avontuur, (–CA), *Fourcade* 4611 (BOL, PRE, STE); Avontuur, hill NE of Avontuur, about 5 m from beacon, (–CA), *Koekemoer* 486 (PRE); Hoopsberg, accessed from Farm Hoogste Drift, lower slopes of western ridge, (–CB), *Koekemoer* 480 (PRE).

**Sectio 3. Uniflos Koekemoer**, sect. nov., capitula homogama, uniflora; flores radii feminei; flores disci hermaphroditi; flores radii et disci: rosei vel albi; cypselae florae et radii et disci fertiles. Sectio vulgaris. Typus sectionis: *D. tortilis* (DC.) Sch. Bip.

Capitula homogamous, 1-flowered; ray flowers female; tubular flowers hermaphrodite; colour of ray and tubular flowers similar: either pink or white; cypselas fertile in ray as well as tubular flowers. A widespread section.

The name *Uniflos* refers to the one-flowered heads of the species in this section.

**5. *Disparago tortilis* (DC.) Sch. Bip.** in Jahresbericht der Pollichia: 25(181) (1861). Type: C.B.S., Uitenhage, *Ecklon* 1576 (G-DC, lecto., here designated; microfiche PRE!).

*Stoebe tortilis* DC. 260 (1837).

*D. ericoides* auct. non Berg. nec Gaertn.: 463 (1791); Cass.: 348 (1825); DC.: 257 (1837); Harv.: 278 (1894); Levyns: 100 (1936a); R.A. Dyer: t. 1102 (1951).

The name *D. tortilis* has not been used extensively in the history of the genus. This taxon was widely known under a misapplied name, *D. ericoides*. Although the type specimen of *D. tortilis* is very poor, there is no doubt about its identity or about the identity of *D. ericoides*.

Shrubs up to 1 m tall, profusely branched, erect or bushy. Leaves filiform, 4–8(–10) × 0.5–0.8 mm, spirally twisted with 1–1½ twists, usually spreading, sometimes appressed, margins tightly involute, apex mucronate. *Synflorescence* usually with numerous, sometimes only about 5 heads, in usually globose aggregations, or if tubular then often interrupted at base. Heads 1-flowered, with either tubular or ray flower. *Involucro* of 6–8 bracts, in 2 series, narrowly cymbiform, in outermost series often chaffy in lower half and foliaceous in upper half. Ray flowers female, usually pink (various shades), occasionally white, 2.7–3.3 × 2.5–3.0 mm; cypselas fertile, surface puberulous, apical annulus often well developed. Tubular flowers hermaphrodite, usually pink, or white, glands sometimes

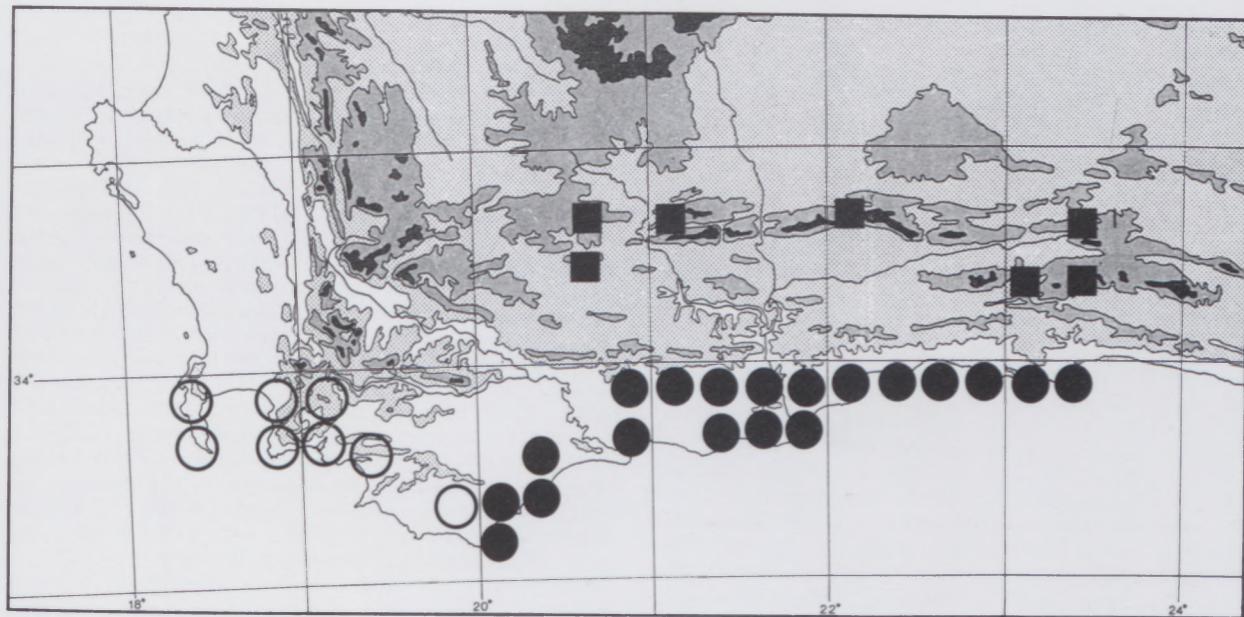


FIGURE 2.—Geographical distribution of *D. kolbei*, ■; *D. kraussii*, ●; and *D. laxifolia*, ○.

present on outside of lobes; cypelas fertile and identical to those of ray flowers. Pappus usually of 5 plumose hairs, not connate, occasionally up to 20 hairs in robust forms and then slightly connate at base.

*Distribution* of this species is disjunct: it is found from Jonkershoek and Simon's Bay along the south and east coasts (not more than 150 km inland) to the Dweza State Forest in Transkei and reappears around Port Edward and Port Shepstone, where it occurs in what appear to be relict fynbos areas (Figure 3). *D. tortilis* is very well adapted to the grassy fynbos of the eastern Cape and is a pioneer in disturbed areas.

#### Specimens examined

NATAL.—3030 (Port Shepstone): Murchison, (-AA), Medley Wood 3078 (NH); Oribi Gorge, (-CA), Mc Clean 578 (PRE, NH); Van Wyk 5415 (PRE); top of Horsemans Point, (-CB), Glen 473 (STE); Oribi Nature Reserve, footpath between Lukonka Point and Umfezi Point, (-CB), Abbott 1879 (NH); Fourman's Hill, (-CB), Koekemoer 264 (PRE); Umtamvuna Nature Reserve, Iron Crown, (-CC); Abbott 1929 (NH); Koekemoer 261 (PRE); Uvongo River tributary, Wichman's Farm, (-CD), Nicholson 1704 (PRE); Port Shepstone Sea Park, (-CD), Strey 8116 (PRE); Umzumbi, (-DA), Medley Wood 12857 (PRE). 3130 (Port Edward): Port Edward, (-AA), Acocks 10910 (PRE).

CAPE—3227 (Stutterheim): Dohne Research Station, (-CB), Perks s.n. (GRA A1370); Mount Coke, (-CD), Sim 1418 (GRA, NBG); East London, Bonza Bay, (-DD), Acocks 9552 (PRE). 3228 (Butterworth): Dwesa, (-BD), Abbott 2633 (NH); East London, Kei Mouth, (-CB), Flanagan 213 (BOL, GRA, NBG, SAM); Stutterheim, Kentani, (-CB), Pegler 260 (BOL, NBG); East London, Gonubi Springs, (-CC), Acocks 10986 (PRE); Kentani River mouth, (-CC), Galpin 5789 (PRE); Gonubi Springs, (-CC), Compton 17043 (NBG); Levyns 10826 (BOL). 3318 (Cape Town): Jonkershoek, (-DD), Kruger KR339 (PRE). 3319 (Worcester): Jonaskop, (-DC), Boucher 5012 (PRE). 3320 (Montagu): Witteberg, (-BC), Humber 9804 (PRE); Marloth Nature Reserve, (-CD), Taylor 7686 (PRE). 3321 (Ladismith): Garcia's Pass, (-CC), Leipoldt 16049 (BOL); Fourniesberg, (-DD), Koekemoer 475 (PRE). 3322 (Oudtshoorn): Swartberg, (-AC), Pienaar 41 (STE); Spitskop, (-AD), Koekemoer 331 (PRE); Meiringspoort, (-BC), Esterhuysen 24855 (PRE); Swartberg east, Magas, (-BC), Marshall 253 (PRE); Klein Moeras River, (-CC), Koekemoer 473 (PRE); Robinson Pass, (-CC), Koekemoer 476 (PRE); Waboomskraal, (-CD), Lewis 68721 (BOL); Kamanassie Mountains, Laudina, (-DB), Esterhuysen 18337 (BOL, PRE); Mannetjies Mountain, (-DB), Esterhuysen 6404 (BOL); Taylor 1469 (SAAS). 3323

(Willowmore): Slypsteen Mountain, (-AC), Esterhuysen 6305 (BOL, PRE), 6316 (PRE); Antonies Mountain, (-AD), Esterhuysen 24965 (BOL); Potjies River Height, (-CA), Hugo 1473 (PRE, STE); Thompson 964, 1335 (PRE, STE); Hill NE of Avontuur, (-CA); Fourcade 4607 (BOL); Koekemoer 485 (PRE); Langkloof, near Ongelegen siding on road to Karedouw, (-CB), Immelman 324 (PRE, STE); Hoopsberg, (-CB); Esterhuysen 6579 (BOL); Koekemoer 479 (PRE); Kouga Mountains, Farm Hoegee, (-DB), Oelofsen 43 (PRE); Tuschen Bij, Tsitsikama, (-DD), Fourcade 487 (STE); 7 miles east of Joubertina, (-DD), Ward 5697 (PRE); The Hoek, valley at foot of Outeniqua Mountains, (-DD), Esterhuysen 10606 (BOL); Joubertina, (-DD), Esterhuysen s.n. (BOL 48263). 3324 (Steyterville): Baviaanskloof Mountains, between Smitkraal and Wilgerhof, (-CB), Thompson 1945 (PRE, STE); between Patensie and Willowmore, (-CB), Koekemoer 281 (PRE); Karedouw Pass, (-CC/CD), Fourcade S.D. (STE); Assegai Bosch road to Karedouw, (-CD), Britten 1247 (PRE); Assegaaibosch, (-CD), Breyer 23313 (PRE); Levyns 5589 (BOL); Karedouw Pass, (-CD), Gillett 1499 (STE); Koekemoer 324 (PRE); Farm Goedehoop, (-DA), Stirton 9593 (PRE). 3325 (Port Elizabeth): Rietberg, above Kirkwood, (-AD), Nordenstam 282 (S); Somerset Oos, Kommadagga, (-BB), Bayliss BS-1589 (PRE); Zuurberg, above Slagboom, (-BC), J.R. & B.R. 452 (BOL, GRA); Zuurberg National Park, Brandrug, (-BC), Koekemoer 64, 169 (PRE); Addo Elephant Park, Zuurkop, (-BD), Archibald 3867 (PRE); Ferniebrae, (-BD), Koekemoer 63 (PRE); Zuurberg Inn, (-BD), Koekemoer 170 (PRE); Addo Elephant Park, Zuurkop, (-BD), Barnard 575 (PRE); Zuurberg Pass, (-BD), Nordenstam 355, 367 (S); Groendal Wilderness Catchment area, (-CA), Scharf 1172, 1455, 1608 (PRE); Port Elizabeth, 1 mile west of Rocklands, (-CA), Wisura 2858 (NBG); Port Elizabeth, (-CB), Cruden 441 (GRA); Couga Mtns, (-CB), Taylor 899 (NBG); Van Stadens Reserve, (-CC), Dahlstrand 1977, 2538 (STE), 3209, 3220 (PRE); Mkhoyana 20 (GRA); 18 km from Port Elizabeth on road to Van Stadens Pass, (-CC), Koekemoer 61 (PRE); Witteklip, (-CC), Rodin 1011 (P, PRE); near Port Elizabeth, (-DC), Tyson 2179 (PRE, SAM, STE); flats near Van Stadens River Mtn, (-CC), Ecklon & Zeyher s.n. (GRA); Blue Mtn, Loerie, (-CC), Dix 7 (GRA); Van Stadens Mtn, (-CC), Ecklon & Zeyher 51 (5.2) (SAM), 166 (4.2) (S); Zeyher 712 (NBG); Bethelsdorp, (-CD), Bolus s.n. (NBG, PRE); Van Stadens River, (-CD), Koekemoer 323 (PRE); Port Elizabeth, Springs Nature Reserve, (-CD), Olivier 2517 (GRA, PRE); Ten Top Hill, Groendal, (-CD), Olivier 3193 (PRE); Uitenhage, (-CD), Pappe s.n. (GRA); near 'Thees', Van Stadens River, (-CD), Scott Elliot 295 (NBG); Theescomb, (-CD), Bolus s.n. (BOL); Van Stadens Reserve, (-CD), Pienaar 57 (GRA); 14 km NW of Rocklands on Elands River rd, (-CD), Snijman 325 (NGB PRE); flats between Krakakamma and Van Stadens Mtn, (-CD), Ecklon & Zeyher 99 (5.2) (S); Uitenhage, (-CD), Pappe s.n. (GRA); Addo National Park, Zuurkop, (-DA), Archibald 3867 (BOL); Botha 5677 (GRA); 2 miles SW of Addo Drift, (-DB), Fries, Norlindh & Weimarck 761, 1175 (BOL); Alexandria, 6.5 miles N of Nanaga shop, (-DB), Acocks & Story 2795 (PRE); near Port Elizabeth golf course, (-DC), Britten 1789 (GRA); 8 miles from Port Elizabeth to Grahamstown, (-DC), Comins 751 (PRE); Markman Industrial Area, Port Elizabeth, (-DC), Dahlstrand 2835

(GRA, PRE, STE); Coega, (-DC), *Horn D.H.S.* (PRE); 26 km from Port Elizabeth on N2 to Grahamstown, (-DC), *Koekemoer* 278, 279 (PRE); 24 km from Port Elizabeth, (-DC), *Koekemoer* 280 (PRE); Parsons Vlei, (-DC), *Long* 36 (GRA); Redhouse, (-DC), *Long* 1062 (GRA); Koega, Farm Sonop, (-DC), *Olivier* 708 (NBG), 1582 (PRE); Redhouse, (-DC), *Paterson* 478 (GRA); between Port Elizabeth and Grahamstown, (-DC), *Story* 2821 (PRE); Port Elizabeth, Kabega Park, (-DC), *Olivier* 440 (GRA); Port Elizabeth golf course, (-DC), *Walters P(I)* (NBG); Port Elizabeth, (-DC), *West* 167 (GRA); Walmer, (-DC), *Ecklon s.n.* (BOL48256, STE); *Paterson* 1174 (BOL); Port Elizabeth, (-DC), *Drège* 149 (PRE); Algoa Bay, (-DD), *Zeyher* 2921 (P, S, SAM, STE). **3326** (Grahamstown): Aicedale, (-AC), *Bayliss BR-404* (PRE); Hofman's Bosch, (-AC), *Britten* 1016, 1137 (GRA); Alexandria, Hillary, (-AC), *Burtt Davy* 14245 (BOL); Tsitsikama National Park, (-AC), *Retief* 396 (PRE); Highlands road, Farm Atherstone, (-AD), *Boucher* 2484 (PRE, STE); Highlands road, near railway crossing, (-AD), *Brink* 213 (GRA, PRE, STE); Aicedale road near Grahamstown, (-AD), *Brink* 378 (GRA, PRE); Howieson's Poort, (-AD), *Batten s.n.* (NBG); *Comins* 1701 (GRA, NBG, STE), 1707 (GRA); *Rennie* 327 (BOL); Grahamstown, (-AD), *Guthrie* 3310 (NBG); Coldspring, (-AD), *Jacot Guillarmod* 8720 (PRE), 9569 (GRA, PRE); Highlands station, (-AD), *Burtt Davy* 7951 (BOL, PRE); near Coldstream station, (-AD), *Killick* 776 (PRE); between Grahamstown and Alexandria, 1 km from Salem, (-AD), *Koekemoer* 174 (PRE); Atherstone, (-AD), *Koekemoer* 277 (PRE); Grahamstown, Frasers Reserve, (-AD), *Shumane P28* (GRA); Salem, (-AD), *Zeyher* 291 (S, SAM); Albany, (-BC), *Erens PRE28359* (PRE); 5 km from Grahamstown on road to Port Alfred, (-BC), *Germishuizen* 1511 (PRE); on R67, 13 km from Grahamstown near Belmont Valley, (-BC), *Koekemoer* 272 (PRE); Grahamstown near Settlers Monument, (-BC), *Koekemoer* 273 (PRE); Gunfire Hill, (-BC), *Richardson* 21, 27 (GRA); Grahamstown, (-BC), *Britten* 1939-11 (NBG); *Dyer* 153 (GRA); *MacOwan* 1002 (BOL); *Marloth* 6130 (PRE); *Rogers* 27267 (GRA), 27367 (BOL, STE)); *Theron* 496 (PRE); *Tyson* 16837 (BOL); Signal Hill (-BC), *Levyns* 3765 (BOL); Grahamstown hills, (-BC), *Tyson* 16837 (SAM); Port Elizabeth, Vaal Vlei Estate, (-BC), *Mogg* 4702 (PRE); Bathurst, 8.7 miles WNW of Kleinemonde, (-BD), *Aocks* 21820 (BOL, PRE); Round Hill, (-BD), *Bolus* 4110 (PRE); Bathurst, Farm Hopewell, (-BD), *Compton* 19839 (NBG); Grahamstown, (-CA), *Britten* 6559 (PRE); Alexandria Dist., (-CB), *De Vos c-18446* (STE); Alexandria, near station, (-CB), *Galpin* 10634 (PRE); Alexandria, Nauaga, (-CB), *Bond* 1241 (NBG); Alexandria, NE of Nananga Post Office, (-CB), *Aocks* 12795 (PRE); Alexandria, (-CB), *Archibald* 4381 (GRA); Grahamstown, Barville Park near Kasouga, (-DA), *Bayliss* 8582 (GRA); 8 km from Port Alfred at Hayes siding,

(-DB), *Retief* 299 (PRE); Kowie West, (-DB), *Tyson s.n.* (BOL13299, PRE); betw. Grahamstown and Coega, (-DC), *Sidey* 1678 (PRE). **3327** (Grahamstown): near Bell, Dist. Peddie, (-AB), *Galpin* 7688 (GRA); Grahamstown, near war monument at Kaffirdrift Police Sta., (-AC), *Burrows* 2776 (GRA); East London, above Kwani River, (-BA), *Comins* 1519 (PRE); East London, The Springs, (-BA), *Rattray* 1370 (BOL). **3418** (Cape Town): Noordhoek Peak, (-AB), *Gillett* 3568 (PRE); above Chapmans Peak Drive, (-AB), *Whellan* 1786 (PRE); Palmiet River Mouth, (-BD), *Boucher* 1045 (PRE). **3419** (Caledon): Lebanon Reserve, Grabouw, (-AA), *Verdoucq* 87 (STE); Hermanus, Fernkloof, (-AD), *Orchard* 321 (PRE); Zwarteberg and Klein Rivers Mountain, (-AD), *Ecklon s.n.* (S); 2 miles W of Papiersvlei Post Office, (-BC), *Aocks* 22312 (PRE); Paardeberg Mountain, (-BC), *Stokoe* 64076 (PRE); The Kelders (-CB), *Van der Merwe* 2033 (PRE). **3420** (Swellendam): Bontebok Park, (-AB), *Liebenberg* 6751 (PRE, STE), 7179 (PRE); De Hoop, Oulande, (-AD), *Fellingham* 874 (PRE); *Van Wyk* 2179 (PRE); Potberg, (-BC), *Aocks* 23011 (PRE); Bredasdorp, Die Poort, (-CA), *Compton* 22609 (STE). **3421** (Riversdale): Langeberg, above Herbertsdale, (-BB), *Muir* 1259 (BOL); Skulpiesbaai, (-BC), *Van Schalkwyk* 84 (PRE). **3422** (Mossel Bay): Goukamma Nature Reserve, (-BB), *Heinecken* 217 (PRE). **3423** (Knysna): The Heads, (-BB), *Phillips* 1050 (SAAS); Tsitsikama Coastal Park, (-BB), *Retief* 396 (PRE); Plettenberg Bay, (-AB), *Rogers* 22690 (PRE); Ratels Bosch, Tsitsikama, (-BB), *Fourcade* 336 (BOL, GRA). **3424** (Humansdorp): E of Witelsbos, (-AA), *Hutchinson* 1418 (K); Humansdorp, (-BB), *Burtt Davy* 11984 (PRE); *Levyns* 3788 (BOL); *Rogers* 2946 (PRE); Cape St Francis, (-BB), *Thompson* 896 (PRE, STE); Kareedouw Pass, (-BB), *Gillett* 1373 (STE), 2023 (K); Humansdorp, Majo, (-BB), *Ecklon & Zeyher* 51 (4.2) (SAM); Port Elizabeth, Winterhoek Mtn, (-DC), *Fries, Norlindh & Weimarck* 1082 (BOL, S); Redhouse, (-DC), *Fries, Norlindh & Weimarck* 545 (BOL); Port Elizabeth, (-DC), *Fries, Norlindh & Weimarck* 21 (BOL). **3425** (Port Elizabeth): Cape Recief, (-BA), *Ecklon & Zeyher* 113 (93.7) (S).

#### Sectio 4. Disparago

Capitula heterogamous, 2-flowered; ray flowers sterile; tubular flowers hermaphrodite, colour of ray and tubular flowers similar: either white or pink; cypelas reduced in ray flowers, fertile in tubular flowers. Confined to coastal flats.

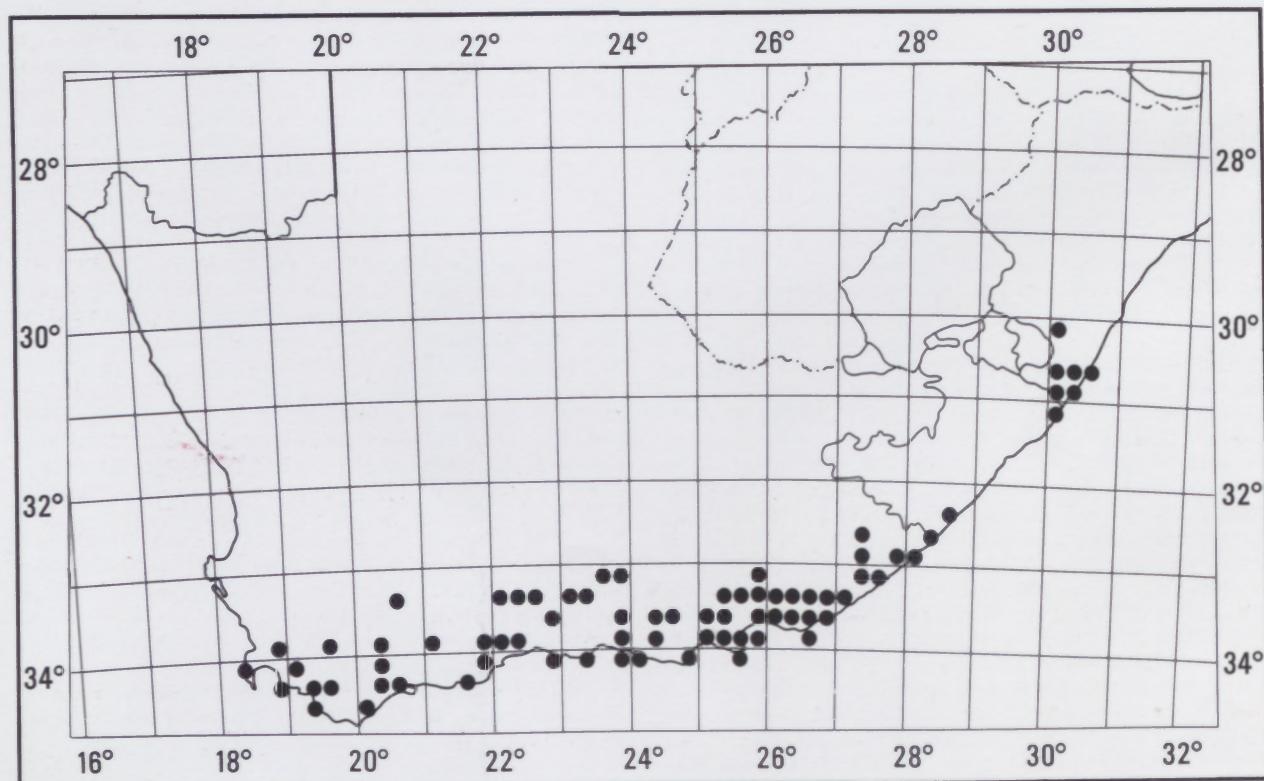


FIGURE 3.—Geographical distribution of *D. tortilis*.

**6. Disparago anomala** Schltr. ex Levyns in Journal of South African Botany 2: 101 (1936a). Type: Cape, Worcester, Papiersvlei, Schlechter 10443 (PRE, lecto!; here designated; G(2x)!; GRA!; PRE(4x)!, S!).

*D. anomala* Schltr. in sched.

*D. anomala* Schltr. ex Bolus & Wolley-Dod: 280 (1904), nom. nud.

The specific name refers to the absence of a pappus.

Shrublets very variable, 80–150 or 300–800 mm tall, profusely and densely branched and cushion-like or large open shrubs. Leaves filiform, 3–7(–10) × 0.4–0.6 mm, spirally twisted with 1–1½ twists, mucronate, mucro unobtrusive or to 0.8 mm long, margins fully involute. *Synflorescence*: heads in globose or subglobose aggregations. Heads 2-flowered or sometimes 1-flowered, usually 1 ray flower and 1 tubular flower. *Involucrum* in 2 series, inner series of 3 or 4 bracts, chaffy, 3–5 × 0.4–0.7 mm, usually bicoloured, outer series often only partly chaffy. *Ray flowers* sterile, 1.7–2.0 × 1.3–1.6 mm, usually white or sometimes pink; cypselas reduced, often not distinct from corolla. *Tubular flowers* hermaphrodite, ?lobes apparently not opening in star-like manner; cypselas pentagonal, apical annulus usually well developed, surface puberulous, hairs falcate. *Pappus* absent.

**Distribution:** *D. anomala* occurs on coastal flats in the southwestern Cape. It is very common in the Peninsula and spreads northwards to Blackheath and eastwards to the Breede River (Figure 4). It very often grows on calcrete ridges or calcareous soils.

#### Specimens examined

CAPE.—**3318** (Cape Town): Blackheath, (–DC), Boucher 5083 (STE); Raitt 44 (STE, PRE). **3418** (Simonstown): Peninsula, Witsand, (–AB), Penfold 228 (NBG); Boon Mountain, (–AB), Pillans 4919 (BOL); Salter 4277 (K); Klipfontein road, E of Mowbray, (–AB), Salter 280-15 (BOL); Buffels Bay, (–AB), Salter 280-15b (BOL); Rheboks Dam, Good Hope Nature Reserve, (–AB), Taylor 6732 (PRE); Sirkelsvlei, (–AD), Compton 19371 (NBG, STE); Bonteberg, (–AD), Compton 10627 (NBG); Buffels Bay, (–AD), Compton 13000 (NBG); Brightwater, (–AD), Compton 14571 (NBG); slope above Smitswinkel Bay, (–AD), Esterhuysen 32819 (BOL); Galpin 12785 (PRE); Gillett 1508 (K); Cape Point, (–AD), Gillett 3474 (STE); Good Hope Nature Reserve, (–AD), Koekemoer 354 (PRE); Smitswinkel Bay, (–AD), Levyns 4935 (BOL); Salter 4281 (PRE, K); Buffels Bay, (–AD), Salter 2933, s.n. (BOL); Good Hope Nature Reserve, near Gifkommetjie turnoff, (–AD), Taylor 6717a (STE); Smitswinkel Vlei, (–AD), Wolley-Dod 766 (K); Cape Flats, (–BA), Adamson 4256 (BOL); Cape Flats near beacon FO-ST2, (–BA), Taylor 3150 (PRE, STE); near Faure, (–BB), Galpin 12565 (PRE); W of Faure, (–BB), Salter 4326 (PRE, BOL, K); Die Punt, Pringle Bay, (–BD), Boucher 1461 (STE, PRE); Caledon, Hanglip, (–BD), Esterhuysen 33494 (BOL); Betty's Bay, (–BD), Levyns 10072 (BOL); Pringle Bay, (–BD), Levyns 10847 (BOL); Rooiels, (–BD), Parker 4180 (BOL, NBG). **3419** (Worcester): Houwhoek, (–AA), Bolus s.n. (PRE); Guthrie 3601 (NBG); Schlechter 7412 (BOL, G, P); S of Caledon, (–AB), Salter 9034 (SAM); Hawston, (–AC), Leighton 410 (BOL); Onrust River, (–AC), Schlechter 1986 (PRE), 10393 (BOL, G, GRA, PRE, S); border between Wortelgat and Walker Bay State Forest, (–AD), Bösenberg & Rutherford 226 (STE); near Shaw's Mtn, (–AD), Salter 9034 (BOL); Papiersvlei, (–AD/BC), Schlechter 10443 (G, GRA, PRE); Genadendaal, (–BA), Gillett 899 (STE); Flouhoogte, E of Stanford, (–BC), Hugo 1544 (PRE, STE); Die Skeiding, between Bredasdorp and Elim, (–BC/BD), Fellingham 249 (PRE, STE); Bredasdorp Mountain, (–BD/DB), Galpin 10479 (G, PRE); Gans Bay, (–CB), Hall 4610 (NBG, PRE); Die Kelders, (–CB), Koekemoer 347 (PRE); Hagelkraal, (–DA), Barker 5276 (NBG); Compton 19035 (STE); Hugo 1591 (STE), 1721 (PRE, STE); Lewis 63089 (SAM); Viljoenshof between Elim and Die Dam, (–DA), Koekemoer 348 (PRE); Van Wyk 799 (STE); Groot Hagelkraal, near Pearly Beach, (–DA), Van Wyk 1146 (PRE, STE); Elim, (–DB), Barker 5288 (NBG); Schlechter

7679 (BOL, G, GRA); Die Poort, between Bredasdorp and Elim, (–DB), *Bolus* 20538 (BOL); between Bredasdorp and Elim, (–DB), Gillett 1444 (STE); flats between Bredasdorp and Elim, (–DB), Levyns 4871 (PRE, BOL); Bredasdorp Forest Reserve, (–DC), Hugo 1643 (PRE, STE); 2 km from Elim, (–DC), Koekemoer 346 (PRE). **3420** (Bredasdorp): Bontebok Park, (–AB), Compton 21929, 22630 (NBG); De Hoop, Potberg, (–BC), Burgers 1759 (PRE, STE), 1815 (PRE); Potberg, Farm Albertsdale, (–BC), Compton 19531 (NBG); Potberg, (–BC), Koekemoer 182, 183 (PRE); Levyns 8180, 11554 (BOL); Lewis 63082 (SAM); Thompson 3766 (PRE, STE); Bredasdorp, Die Poort, (–CA), Compton 22609 (NBG); Bredasdorp, (–CA), Levyns 3523 (BOL); between Bredasdorp and Struis Bay, (–CA), Levyns 3534a (BOL); Bredasdorp, (–CA), Levyns 11547 (BOL); Bredasdorp, Heuningberg Nature Reserve, (–CA), Koekemoer 184 (PRE); Bredasdorp, 1 km from Struis Bay to Elim, (–CC), Koekemoer 343 (PRE).

**7. Disparago ericoides** (Berg.) Gaertn., Fructibus et seminibus plantarum 2: 463 (1791); Less.: 363 (1832). Type: 'e Cap. b. Spei', Thunberg s.n. (SBT; photocopy and fragment in PRE!).

*Stoebe ericoides* Berg.: 339 (1767); Thunb.: 169: (1800); Thunb.: 726 (1823); Spreng.: 442 (1826). *Seriphium ericoides* (Berg.) Pers.: 500 (1807).

*Stoebe torta* Spreng.: 442 (1826). Type not seen.

*D. lasiocarpa* Cass.: 42 (1825); DC.: 258 (1837); Harv.: 278 (1894); Levyns: 102 (1936a), synon. nov. Type not seen.

*Wigandia disparaginoides* Less.: 362 (1832). Type not seen.

*D. seriphoides* DC.: 257 (1837). Type: *Burchell* 705, not seen.

*D. hoffmanniana* Schltr.: 203 (1900). Type: in regio austro-occidentalis, in dictione Caledon, alt. c. 1500 ped., 21 December 1896, Schlechter 9801 (PRE, lecto! here designated; BOL!, GRA!).

Because of the nature and uniqueness of the cypselas of this species it is very easy to identify, even from a description. A fragment of the type specimen in the Bergius Herbarium and a drawing by Mr Lars Kers confirmed that this name was misapplied to *D. tortilis* for many years.

Small compact or larger open shrubs, 100–300(–800) mm tall, profusely branched. Leaves filiform, 2–8 × 0.3–0.6 mm, spirally twisted with 1–1½ twists, usually spreading but often appressed especially near inflorescence, mucronate, margins involute with margins touching. *Synflorescences* variable in robustness, number of heads and degree of aggregation. Heads with 1 ray and 1 tubular flower; flowers strongly honey-scented. *Involucrum* of 4–6 bracts, in 2 series; bracts in inner series narrowly cymbiform, acute, yellowish with reddish tinge near apex; outer series protected by 4–6 spathulate, foliaceous bracts. *Ray flowers* sterile, ray 2.5–3.5(–4.0) × 1.5–2.0 mm, in shades of pink, or white; cypselas reduced. *Tubular flowers* hermaphrodite; cypselas woolly, apical annulus a loose arrangement of hairs. *Pappus* of 15–20 plumose hairs, connate at base.

**Distribution:** from Cape Point northwards to Malmesbury, De Doorns and Montagu and eastwards to Potberg. It was also collected at Ystervark Point and Plettenberg Bay. The distribution is disjunct with gaps between Heidelberg and Riversdale and between Mossel Bay and Knysna (Figure 5).

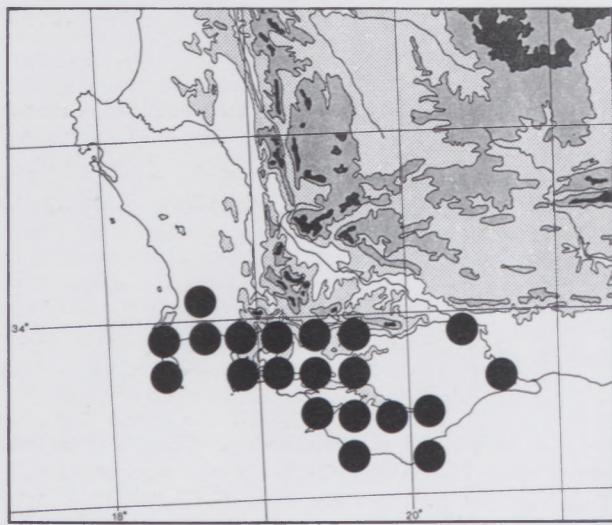


FIGURE 4.—Geographical distribution of *D. anomala*.

#### Specimens examined

**CAPE.**—**3318** (Cape Town): Springfontein, (-CB), Axelson 376 (NBG); Bokke River, (-CB), Hugo 974 (PRE, STE); near Melkbosch, (-CB), Wasserlau 775 (NBG); Kenilworth, (-CD), Bolus 3297 (PRE); Flanagan 2448 (PRE); top of Table Mountain, (-CD), Schonberg 4888 (PRE); S of Koeberg, (-CD), Pillans 6793 (BOL), s.n. (GRA); Farm Burgers Post, near Pella, (-DA), Boucher & Shepherd 4923 (PRE, STE); Koeberg, (-DA), Goldblatt 5313 (PRE); between Cape Town and Malmesbury, (-DA), Montgomery 382 (STE); Kraifontein, (-DC), Low 794 (STE); Stellenbosch, (-DD), Drège s.n. (PRE-12826). **3319** (Worcester): Waterval, Tulbagh, (-AC), Drège s.n. (GRA); De Doorns, Groot Kloof, (-BC), Stokoe 63085 (PRE); Matroosberg, N slope, (-BC), Esterhuysen 18713 (BOL); between Worcester and Rawsonville, (-CB), Esterhuysen 19677 (PRE, NBG); near Edelweiss garage, Breede River, (-CB), Walters 2394 (SAAS); Franshoek, Zachariashoek Catchment, (-CC), Kruger 887 (STE); La Motte Forest Station, Zachariashoek, (-CC), Viviers 104 (STE); Franshoek Pass, (-CC), Compton 12966 (NBG); Franshoek Pass, near Catspad memorial needle, (-CC), Koekemoer 352 (PRE); Audensberg, (-CD), Esterhuysen 28185 (BOL, PRE); Blaaskloof, W slope of Keeromsberg, (-DA), Esterhuysen 27583 (?BOL); Jonaskop, (-DC), Boucher 4244 (STE). **3320** (Montagu): Pypsteelfontein, Waboomsberg, (-CA), Moffett & Steensma 4118 (STE); between Swellendam and Barrydale, (-CC), Marsh 1135 (PRE, STE). **3418** (Cape Town): near Muizenberg, (-AB), Bolus 3297 (GRA); Peninsula, near Kommetjie, (-AB), Galpin 12783 (PRE); Noordhoek Mountain, (-AB), Gillett 3568 (STE); Simonstown, top of Redhill near Pinehaven, (-AB), Koekemoer 353 (PRE); S slopes of Chapmans Peak, (-AB), Pillans 3027 (PRE); Simonstown, Farm Bergvliet, (-AB), Purchell 90475 (BOL); Good Hope Nature Reserve, Olifantbos road near Klein Rondele, (-AB), Taylor 7632 (PRE, STE); Good Hope Nature Reserve, (-AB), Rodin 3304 (PRE); Kommetjie, (-AB), Penfold 237 (BOL); Smitswinkel, (-AD), Galpin 12782 (PRE); Red Hill, (-AD), Taylor 5686 (PRE, STE); near Platboom Street, Southern hills, Plot 33, (-AD), Taylor 6652 (PRE, STE); Helderberg, (-BB), Galpin 12308 (PRE); Palmiet River Mouth, (-BB), Levyns 5357 (BOL); Steenbras Valley, (-BB), Stokoe 2568 (PRE); Cape Flats, (-BC), Ecklon 1841 (S); near Palmiet River Mouth, (-BD), Boucher 1045 (STE); Betty's Bay, (-BD), Boucher 1446 (PRE, STE); Kogelberg, (-BD), Boucher 1780 (PRE, STE); Hangklip, (-BD), Compton 6071 (NBG); Rooiels, (-BD), Koekemoer 351 (PRE); Palmiet River Valley, (-BD), Stokoe 8718 (PRE); Palmiet River, (-BD), Stokoe 58132 (PRE, BOL); Kogelberg Reserve, (-BD), Van Wilgen 108 (PRE, STE). **3419** (Caledon): Viljoen's Pass, (-AA), Rodin 3099 (PRE); top of Viljoen's Pass, (-AA), Stokoe 65913 (PRE); Caledon (-AB), Bolus 9172 (PRE); Hermanus, (-AC), Compton 23223 (NBG); Kleinmond, (-AC), De Vos 541 (STE); Onrust River Mountain, (-AC), Esterhuysen 4916 (NBG, PRE); Botrivier, Kleinmond, (-AC), Taylor 3785 (NBG); Tulbach waterfall, (-AC), Ecklon 51 (I.II) (SAM-38472); Hermanus golf course, (-AC), Walters 55 (PRE); Onrust River, (-AD), Compton 4916 (NBG); Hermanus, (-AD), De Beer 23224 (PRE); Babylons Tower, (-AD), Esterhuysen 1941 (BOL); Hermanus, flats near Klein River, (-AD), Galpin 12764 (PRE); Shaw's Mountain Pass, (-AD), Hafström & Acocks 2251 (PRE); Fernkloof Nature Reserve, (-AD), Orchard 537 (PRE, STE); 1 km from Caledon on Shaw's Pass, (-AD), Stirton 11103 (STE); Klein

River Mountain, (-AD), Stokoe 68737 (BOL, PRE); Genadendal, near mission station, (-BA), Levyns 4847 (PRE); Genadendal Mountains, (-BA), Schlechter 9801 (BOL, GRA, PRE); Zondagskloof, (-BC), Compton 10228 (NBG); Hartebees River, (-BC), Elbrecht 22151 (PRE); Bredasdorp, (-BD), Barker 7259 (GRA, NBG); Paardenberg, (-BD), Jordaan c18458 (STE); The Kelders, (-CB), Van der Merwe 2033 (STE); Danger Point, (-CB), Leighton 1560 (PRE); Danger Point, (-CB), Compton 10262 (NBG); Baardscheerdersbosch, (-DA), Compton 20454 (NBG); Elim, (-DA), Drake 9643; Schlechter 3515, 9643 (PRE); Blaaskloof, Keeromsberg, (-DA), Esterhuysen 27583 (PRE); 1 km from Viljoenshof between Elim and Die Dam, (-DA), Koekemoer 349 (PRE); Ratel River, (-DA), Lewis 5250 (NBG); Hagel Kraal, (-DA), Lewis 63088 (BOL); between Pearly Beach and Viljoenshof, (-DA), Simpson 213 (STE); Uintjeskuil, (-DB), Van Breda & Admiraal 2353 (PRE); 3 km from Die Dam to Elim, (-DC), Koekemoer 344 (PRE). **3420** (Riversdale): Bontebok National Park, (-AB), Grobler 592 (PRE, STE); Koekemoer 308, 339 (PRE); Liebenberg 7970 (PRE); De Hoop, (-AD), Van der Merwe 1362 (PRE, STE); Potberg, above Diepkloof, (-BC), Burgers 1640b (STE); Potberg, (-BC), Taylor 4337 (PRE); Bredasdorp, (-CA), Hafström & Acocks 2250 (PRE). **3421** (Riversdale): Still Bay, (-AD), Muir 439 (PRE); Ystervarkpunt, Kampong entrance, N block, (-BC), Willems 109 (STE).

**8. *Disparago kraussii* Sch. Bip. in Flora 2: 693 (1844); Harv.: 278 (1894); Levyns: 100 (1936a). Type: Cape Province, near Tsitsikama, *Krauss* s.n. (P-CO, specimen on the far left, lecto.!, here designated).**

The type, *Krauss* s.n., is mounted with two other specimens on the same sheet in the Cosson Herbarium. The specimen of Drège in the centre is *D. laxifolia*, whereas the two others are of *D. kraussii*. The specimen on the left is chosen as lectotype because the original label of Krauss is mounted with it. All three specimens are provided with notes in Schultz Bipontinus's handwriting.

Small shrublets, often profusely branched and dwarfed, 150–500(–800) mm tall. Leaves linear, 4–8 × 0.3–0.5 mm, spirally twisted, appressed or slightly spreading, margins involute and almost touching, mucronate at apex. Synflorescence globular or ovate aggregation of heads. Heads with 1 ray and 1 tubular flower. Involucre of about 6 bracts in 1 or 2 series; narrowly cymbiform, smooth, yellowish. Ray flowers sterile, ray 1.8–2.2 × 0.7–1.5 mm, usually white or sometimes pink; cypelas reduced. Tubular flowers hermaphrodite; cypelas puberulous, hairs falcate, more prominent on ribs, apical annulus well developed. Pappus present in tubular flowers, of (3–)5(–8) plumose hairs, not coalescent; occasionally poorly devel-

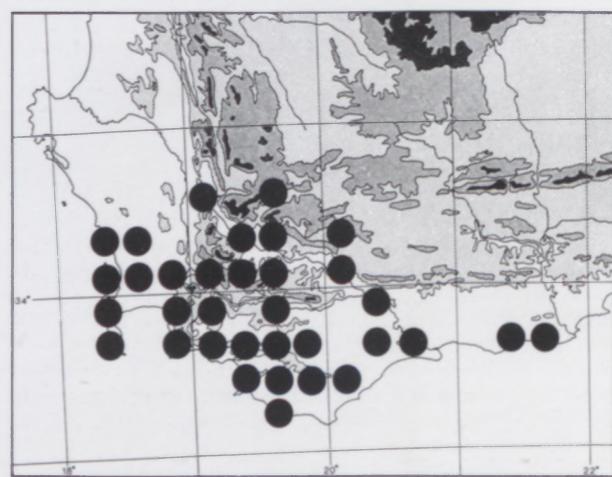


FIGURE 5.—Geographical distribution of *D. ericoides*.

oped and then only 1 or 2 hairs per flower and lacking in some heads.

In *Taylor* 7720 a pappus, identical to that in the tubular flowers, was present in the sterile ray flowers, whereas in *Compton* 23519, reduced stamens were present in the sterile ray flowers.

**Distribution:** *D. kraussii* can be found along the southern coast of the Cape from De Hoop Nature Reserve to Still Bay (Figure 2).

#### Specimens examined

CAPE.—**3420** (Riversdale): De Hoop, (—AD), *Barker* 8743 (NBG); *Burgers* 162 (PRE, STE); *Van der Merwe* 1181 (PRE); Die Poort, Bredasdorp, (—AD), *Compton* 22609 (STE); De Hoop game camp, (—AD), *Van der Merwe* 1112 (PRE); De Hoop, calcareous ridges, (—AD), *Barker* 8693 (NBG); Heidelberg, Witsand, (—BB), *Levyns* 10729 (BOL); De Hoop, Farm Hamerkop, (—BC), *Van Wyk* 1605, 2311, 2315 (PRE); Whitesands, (—BD), *Esterhuysen* 16963 (BOL); De Hoop, Witwater, (—BD), *Van Wyk* 2293 (PRE); Farm Meulvlei, (—CA), *Bösenberg & Rutherford* 272 (STE); Albertinia, (—CA), *Compton* 23519 (NBG); Uyshoek, 7 km N of Arniston, (—CA), *Hugo* 843 (PRE, STE); Bredasdorp, (—CA), *Dix* 41927 (SAM); Bredasdorp, Skipskop, (—CB), *Acocks* 22258 (PRE); Moerasfontein, between Bredasdorp and Skipskop, (—CB), *Hugo* 848 (PRE, STE); De Hoop, between Buffelsfontein and Ryspunt, (—CB), *Van Wyk* 2217 (PRE); flats between Bredasdorp and Struis Bay, (—CC), *Levyns* 3534 (BOL). **3421** (Riversdale): Plattebosch, (—AA), *Muir* 438(5217) (PRE); between Riversdale and Albertinia, (—AB), *Compton* 23327 (NBG); Puntjie along Riversdale coast, (—AB), *Esterhuysen* 16976 (BOL); Still Bay, Panorama circle, (—AD), *Bohnen* 3823 (STE), 5122 (PRE, STE); Still Bay Reserve, (—AD), *Fellingham* 464 (PRE, STE); above bridge at Still Bay strand, (—AD), *Nordenstam* 402 (S); Schoemanshoek between Albertinia and The Fisheries, (—BA), *Boucher* 3717 (PRE, STE); Albertinia Downs, (—BA), *Muir* 1975 (PRE); near Albertinia, (—BA), *Muir* 1978 (PRE); Cloetes Pass, Herbertsdale, (—BB), *Zinn* 54598 (PRE); 'Canca se leegte', S of Albertinia, (—BC), *Oliver* 5722 (STE); Gouriqua, Ystervarkpunt, (—BC), *Willemse* 110 (STE); Ystervarkpunt, Aulax Hill, (—BD), *Willemse* 162 (STE). **3422** (Mossel Bay): Cloete's Pass, (—AA), *Lewis* 5406 (NBG); hill 2.5 km W of Mossel Bay near reservoir, (—AA), *Vlok* 1423 (STE); George, Gwaing River, (—AB), *O'Callagan, Fellingham & Van Wyk* 226 (STE); George, Christina Bay, (—BA), *Schlechter* 2449 (BOL, G, K, PRE, S, STE); Knysna, Buffels Bay, (—BB), *Keet* 960 (PRE); Sedgefield, (—BB), *O'Callagan* 576 (STE). **3423** (Knysna): Lake Pleasant Hotel, (—AA), *Acocks* 21221 (PRE); Groenvlei, (—AA), *Levyns* 10310 (BOL); Robberg Nature Reserve, highest point, (—AB), *Taylor* 7720 (STE); Robberg Nature Reserve, top of central dune, (—AB), *Taylor* 7720a (STE); Plettenberg Bay, Robberg, (—AB), *Viljoen* 62 (PRE).

**9. Disparago laxifolia DC.**, *Prodromus systematis naturalis regni vegetabilis* 6: 257 (1837); Harv.: 278 (1894); *Levyns*: 101 (1936a). Type: 'ad Cap. Bonae-Spei in distr. Caledon ad Zwartberg et Kleinrivier's-berge', *Ecklon* s.n. (G-DC in herb. Dunant, holotype; photo and microfiche in PRE!).

Small trailing shrublets, 100–300 mm tall, branches usually lax and far apart. Leaves linear, 3–8(–10) × 0.6–2.5 mm, widely spaced, spirally twisted, usually with ½–1 twist, spreading, older leaves reflexed; margins slightly involute, apices blunt. Synflorescence globular aggregation of heads. Heads with 1 ray and 1 tubular flower (a single case with 2 ray flowers was observed). Involucle of about 6 bracts in 2 series, inner series chaffy, narrowly cymbiform, outer series foliaceous, spatulate. Ray flowers sterile, ray 1.5–2.0 × 1.0–1.5 mm, white; cypselas reduced. Tubular flowers hermaphrodite; cypselae surface puberulous, apical annulus a well-developed fringe of

hairs. Pappus present in tubular flowers, of 5 plumose hairs, not connate.

**Distribution:** *D. laxifolia* has a very local and scattered distribution that stretches from Simonstown to the Houwhoek Mountains, Grabouw, Caledon and Hermanus. It is very common in the Fernkloof Nature Reserve, near Hermanus (Figure 2).

#### Specimens examined

CAPE.—**3418** (Simonstown): Redhill, (—AB), *Levyns* 5903 (BOL); *Salter* 5703 (BOL, K); Peninsula, Sirkelsvlei, (—AD), *Esterhuysen* 7793 (BOL); Sir Lowry's Pass (—BB), *Drège* s.n. (P); *Schlechter* 595 (PRE), 7223 (BOL, GRA, S); Steenbras area, (—BB), *Levyns* 8753 (BOL); Sir Lowry's Pass, Palmiet River, (—BB), *Penther* 1415 (S); Cape Point Gap, Klawer Valley, (—BB), *Salter* 6426 (BOL, K); near Somersfontein, (—BD), *Boucher* 720 (PRE, STE); Betty's Bay, (—BD), *Esterhuysen* 34768 (BOL). **3419** (Caledon): Grabouw, Palmiet River, (—AA), *Bolus* 5077 (BOL); *Bond* 1531 (NBG); *Esterhuysen* 35273 (BOL); *Levyns* 5358, 7778 (BOL); *Stokoe* 63084 (SAM); Palmiet River Valley, Platteberg, (—AA), *Stokoe* 65911 (SAM); Houwhoek, (—AA), *Esterhuysen* 33688 (BOL); *Galpin* 4152 (GRA, PRE); *Levyns* 11404 (BOL); *Schlechter* 5447 (BOL, G, GRA, K, PRE, S), 5506 (GRA, PRE); Good Hope Reserve, (—AB), *Wright* s.n. (K); Palmietberg, E of bridge, (—AC), *De Vos* 1431 (PRE, STE); Hermanus, Vogelgat Reserve, (—AC), *Esterhuysen* 35540 (BOL); Hermanus, Fernkloof Nature Reserve, (—AC), *Koekemoer* 192 (PRE); Palmiet River mouth, (—AC), *Koekemoer* 439 (PRE); Fernkloof Nature Reserve, (—AD), *Orchard* 321 (STE); Vogelgat, Sea Saddle, (—AD), *Williams* 2909 (NBG); Caledon, Highlands, (—DB), *Compton* 12259 (NBG); Highlands Estate, Elgin, (—DB), *Lewis* 63083 (SAM).

#### Excluded species

*Disparago gomphrenoides* Sch. Bip.: 180 (1861). Type: C.B.S., *Zeyher* 46 (P!) = *Stoebe* sp.

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