Bothalia 24,1: 31–35 (1994)

Notes on African plants

VARIOUS AUTHORS

ROSACEAE

CLIFFORTIA LONGIFOLIA, A 'GOOD' SPECIES OR SHOULD IT BE A VARIETY UNDER *C. STROBILIFERA*?

Ecklon & Zeyher (1836) described a variety of *Cliffortia strobilifera* L. and named it var. *longifolia*, but pointed out that it might be a separate species. Their type, *Ecklon & Zeyher 1753B*, was observed by the authors as 'wanting flowers' whereas Weimarck (1933) noted that it had 'an abundance of male flowers'.

As the female flowers were not seen by Weimarck (1933), his decision to raise the taxon to specific level was based on the differences in the male bracteoles and the brachyblasts. Observed inconsistencies in Weimarck's (1933, 1934) descriptions and figures depicting the respective sizes of the leaf stipules and male bracteoles in *C. longifolia* and the indumentum of the male bracteoles in *C. strobilifera*, added to the doubt concerning the validity of such a decision. In fact, the investigation of the male bracteoles and pedicels in *C. strobilifera*, revealed a very similar structure to those in *C. longifolia* but on a somewhat smaller scale. (Figure 1M & N compared to 1A & B).

Further confusion was caused by the observed variation in leaf size and sheath length in *C. strobilifera*, the larger forms being difficult to distinguish from *C. longifolia* on vegetative characters only.

The investigation of female flowers seemed to be the only way to settle this question. If the female flowers should show the same degree of similarity as the male flowers, differing in size only, the case for raising the status of the taxon would be very flimsy. If however, the female flower and fruit should be markedly different, there could no longer be room for doubt.

In the search for female flowers, short shoots with obvious male flowers but apparently totally lacking in female flowers, were removed from herbarium specimens and softened by boiling and soaking. Successive leaf sheaths were removed from each short shoot and the axils examined for flowers.

Each axil contained a single flower and even though the intact short shoots showed no evidence of the presence of female flowers, these were in fact found. A single female flower occurred in the axil of the leaf halfway up the short shoot, preceded by 3(4) old male flower remains (pedicels and bracteoles) and followed by a similar group of young male flowers (buds). Fully matured fruits were also totally obscured by the leaf sheaths.

With the discovery of the female flowers and fruits of *C. longifolia*, the necessity for amendments to the descriptions of both taxa, became obvious.

The specimens of *C. strobilifera* selected for examination included the extremes from the small-leafed form normally regarded as the typical *C. strobilifera*, to the large-leafed form that is almost indistinguishable from *C. longifolia* on the vegetative characters only.

Cliffortia longifolia (*Eckl. & Zeyh.*) *Weim.*, Monograph of the genus *Cliffortia* : 144 (1934).

C. strobilifera L. var. *longifolia* Eckl. & Zeyh. : 271 (1836). Type: Swellendam: ad flumen Breederivier, *Mund s.n. sub Ecklon s.n.* (B†, S!, lectotype here designated).

Weimark (1934) quoted a Mund collection under *Ecklon & Zeyher 1753B* as the type in B and S. The Berlin specimen was destroyed in the Second World War and the Stockholm specimen bears no collector's number. A handwritten label (not in Weimarck's handwriting) bearing the name '*Cliffort strobilifera* B longifol' and a reprint of Ecklon & Zeyher's description of the variety giving the locality as the Breede River and the collector as Mund, are attached to the Stockholm specimen. Weimarck seems to have found these two labels sufficient evidence that the Stockholm specimen is a duplicate of the Berlin one in spite of the absence from the Stockholm specimen of the Ecklon & Zeyher collector's number.

Leaves: stipules up to 20 mm long, densely shortly hairy; leaflets 15.0–65.0 × 2.0–6.0 mm. *Male flowers*: pedicel 6.75 mm long with 2.4 mm above upper bracteole and 2.9 mm below lower bracteole, densely hairy; upper bracteole 6.3–6.5 mm long, lower bracteole 9.25–9.50 mm long, situated 1.45 mm apart on pedicel; receptacle 1.0–1.25 × 0.65 mm, glabrous; sepals 3, 10.0 × 2.0 mm, (Figure 1A & B). *Female flowers*: pedicel 1.6 mm long with half of its length above upper bracteole, densely hairy except for glabrous apical cone (Figure 1F & K); bracteoles 7.0–8.4 mm long, originating one above the other on pedicel, basally ovate abruptly narrowing to linear, keel of basal ovate part and entire linear portion densely hairy, margin of basal ovate portion glabrous but for a sparsely ciliate edge (Figure 1D & F); sepals 3, 5.0–6. 0 × 1.0–1.2 mm, linear-lanceolate, glabrous (Figure 1C); ovary 2.6 × 1.5 mm, ovate, truncate at both ends, glabrous, irregularly longitudinally ribbed with 19 (20) low ridges apically joined to form roughly flattened top bearing staminodes, ridges basally lost in a somewhat swollen and hollow part that fits over cone of pedicel, adaxially irregularly grooved

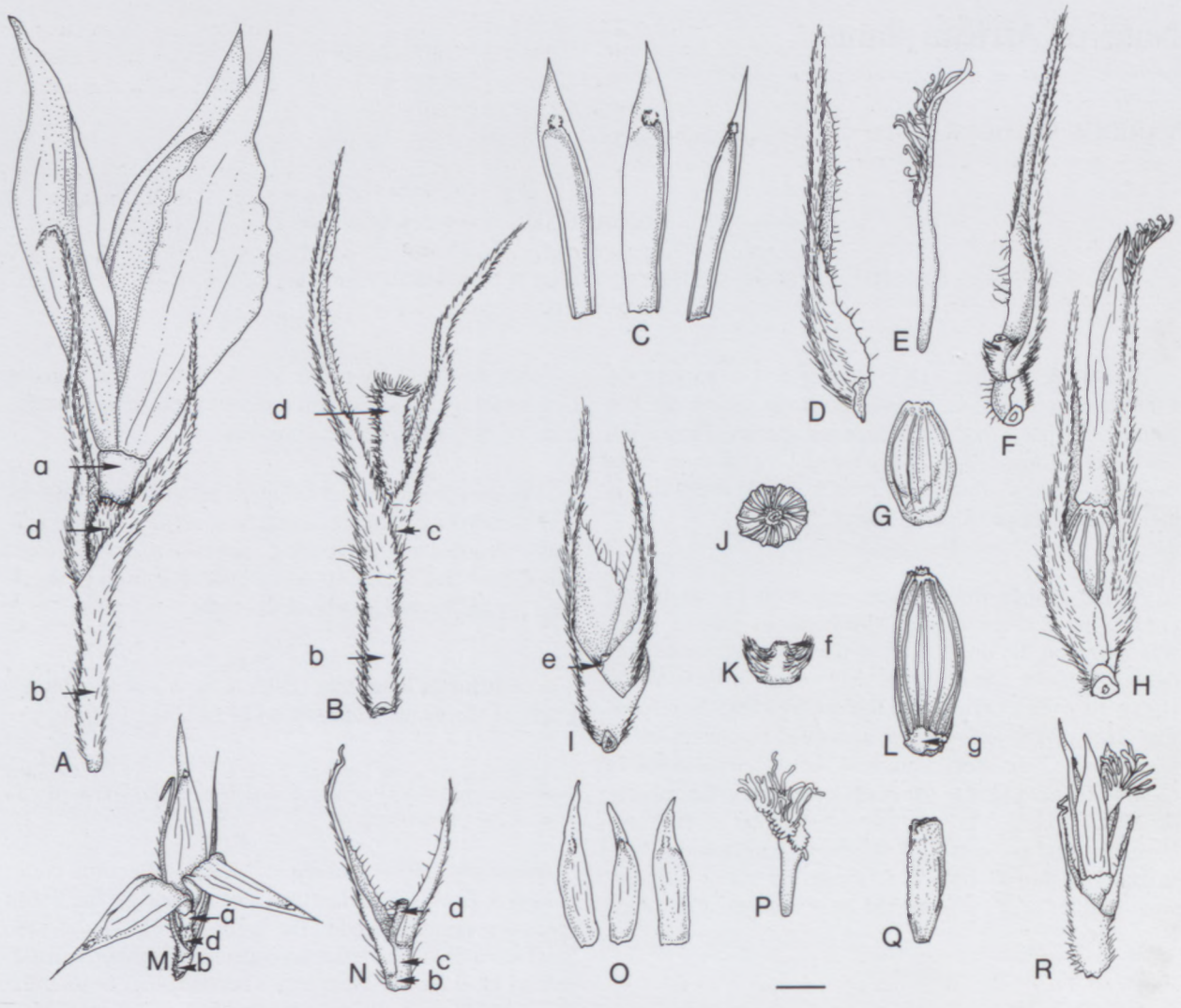

FIGURE 1.—*Cliffortia longifolia*. A, abaxial view of male flower (stamens removed): Aa, receptacle; Ab & Ad, densely hairy pedicel. B, adaxial view of male flower, receptacle and calyx removed: Bb, Bc, Bd, parts of pedicel. C, female calyx lobes; D, lower female bracteole; E, style and stigma; F, upper female bracteole attached to pedicel; G, ovary; H, female flower, (D–G in situ). I, female bracteoles, fruit removed: Ie, part of pedicel. J, fruit viewed from top. K, top half of densely hairy pedicel: Kf, conical apex. L, fruit: Lg, swollen part, with basal hollow that fits over cone on pedicel. *Cliffortia strobilifera*. M, adaxial view of male flower (stamens removed): Ma, glabrous receptacle; Mb, Md, hairy pedicel. N, abaxial view of male flower, receptacle and calyx removed: Nb, Nc & Nd, parts of pedicel. O, female calyx lobes; P, style and stigma; Q, fruit, irregularly rugose, top truncate; R, intact female flower and bracteoles. A, B, *Burgers 1668* (STE); C–H, *Hugo 1800* (STE); I–L, *Oliver 8494* (STE); M, *Rudatis 999* (STE); N, *Thompson 3691* (STE); O–R, *Oliver 10053* (STE). Scale bar: 1 mm.

by edges of the bracteoles (Figure 1G); style solitary, 3.1 mm long, stigma 3.3 mm long sparsely fimbriate on one side only (Figure 1E). *Fruit*: 4.0 × 1.5 mm, elliptic, truncate at both ends, longitudinally ridged, without irregular adaxial groove as seen on ovary, the fruit having developed beyond bracteoles (Figure 1H, J & L).

Cliffortia strobilifera *L.*, Systema vegetabilium edn 13 : 749 (1774). Weim. : 140 (1934); auct. mult. Type: Pluk.: t. 275, fig. 2 (1694).

Although a Plukenet specimen associated with the cited figure exists under Herb. Sloane 99: 179, upper right (BM-SL), this specimen cannot be designated lectotype as it was never seen by Linnaeus, according to Dr F.R. Barrie of the Linnaean Plant Name Typification Project (pers. comm.). The only possible type referred to by Linnaeus (1774) in his description of the species, is the Plukenet figure.

Change of author citation

The author of *C. strobilifera* has always been cited as J. A. Murray in *Systema vegetabilium* edn 13: 749 (1774). Stafleu & Cowan (1981) however, in referring to this document, added the following: 'N.B. The new taxa in this work must be attributed to Linnaeus; Murray was simply editor.'

Leaves: vagina 3–9 mm long; stipules 2–4 mm long, ciliate; leaflets glabrous to hairy all over or on veins only, 10–70 × 1.5–8 mm, linear-lanceolate, base somewhat narrowed to channelled and petiolate, apex acute to tridentate or with main vein bisecting lamina obliquely. *Male flowers*: pedicel 1.0–1.3 mm long, hairy; bracteoles 4.0–4.75 mm long, linear subulate, the lower implanted 0.4 mm below the upper, keel ciliate; sepals ± 4.0 × 1.0 mm, linear-lanceolate apiculate, glabrous (Figure 1M & N). *Female flowers*: sessile; bracteoles 2.5–3.5 mm long, lanceolate-linear acuminate, apex sometimes spirally twisted; sepals 3, 3.0–3.3 × 0.6–0.8 mm, linear lanceolate, glabrous

(Figure 1O); ovary linear, apex truncate, base cuneate, glabrous, irregularly rugose; style solitary, 1.5 mm long, stigma 1.5 mm long, fimbriate mainly on one side (Figure 1P). *Fruit*: 2.3–2.4 mm × 0.75–1.0 mm, cuneate linear truncate, rugose to very obscurely longitudinally ridged, apex concave giving the appearance of an opening (Figure 1Q).

Distribution and habitat: *C. longifolia* occurs in wetlands, half-wetlands, swamps, vleis and on streamsides near the coast, at low altitudes, from Langebaan Lagoon in the west to the Cape Peninsula, then along the southern coast to Ystervarkpunt (Gouriqua) near Albertinia (Figure 2).

C. strobilifera shares the habitat with *C. longifolia*, but has a much wider distribution and altitudinal range; the localities near the Cape southwestern coast are at lower altitudes than those inland and northerly, which occur as high as 1 600 m.

DISCUSSION

Some herbarium specimens of *C. strobilifera* have both small and large leaves. These are often borne on separate branches, or the large ones are on long shoots, the small ones on short shoots, apparently indicating different growth phases. Field observations confirmed this: the new season's growth is represented by a much more robust and larger long shoot with a thicker stem and larger leaves than the existing stems and leaves. These leaves also have the typically soft texture and hairiness of new growth. Where the larger leaves occur on herbarium specimens of *C. strobilifera*, these are always together with smaller ones, either on the same branch and then with the large leaves on the long shoot sheathing the short shoots, or on different branches where the robust branch represents the new growth referred to above. In contrast, the leaves of *C. longifolia* appear homogeneous or at least far less variable in size. The leaves are also of a more robust texture and the margins thicker.

Whereas most other differences between *C. longifolia* and *C. strobilifera* could very well be dismissed as merely of degree, the differences in fruit morphology establish *C. longifolia* as a separate entity beyond all doubt. *C. longifolia* has the clearly marked ribs typical of section *Costatae*, whereas *C. strobilifera* not only has the smoother fruit less often encountered in this section, but the shape of the fruit is also unusual and the concave apex even more so.

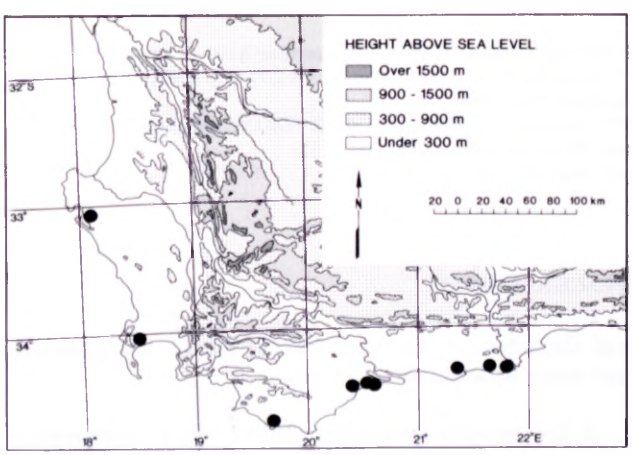

FIGURE 2.—Known distribution of *Cliffortia longifolia*.

Weimarck (1934) gave the distribution of *C. longifolia* as the type locality only. Six years later, Weimarck (1940) quoted one other collection and extended the range to include the Cape Peninsula. Later collections filled in the gap between these two localities and extended the distribution to the west coast.

SPECIMENS EXAMINED

C. longifolia

CAPE.—**3318** (Cape Town): Farm Geelbek, eastern shores, Langebaan Lagoon, marsh occasionally saline, ± 5 m, 14-08-1975, (–AA), *Boucher 2813* (STE). **3318/3418** (Cape Town/Simonstown): Cape Peninsula without precise locality, banks of streams, ± 160–320 m, 1887, *Thode 9183* (STE). **3419** (Caledon): Ratel River Mouth, 50 m, 07-06-1984, (–DC), *O'Callaghan et al. 483* (PRE, STE). **3420** (Bredasdorp): De Hoop-Potberg Nature Reserve, Windhoek, Rietkloof, damp soil along stream, 10 m, 16-01-1979, (–AD), *Burgers 1668* (PRE); between Noetzie and Elandspad, streamside vegetation, 60 m, 11-04-1979, (–BC), *Hugo 1800* (STE); Potberg area, Hamerkop Resort, streamside in kloof, 60 m, 19-06-1984, (–BC), *Oliver 8494* (PRE, STE). **3421** (Riversdale): Kransfontein Farm, Still Bay, river bank, 30 m, 07-10-1980, (–AD), *Bohnen 7730* (PRE, STE); Albertinia, near Ystervarkpunt, on Gouriqua land, in a marsh, on gentle south-facing slope, in coastal fynbos, 10 m, 18-02-1989, (–BC), *Vlok 2098* (PRE); Albertinia, Ystervarkpunt (Gouriqua), along stream, 25 m, 18-03-1987, (–BD), *Willemse 150* (PRE, STE).

C. strobilifera

Robust form

NATAL.—**2930** (Pietermaritzburg): Inanda, 06-1880, (–DB), *Wood 795* (STE). **2931** (Stanger): Chakaskraal, by streams, 100 m, 02-1916, (–AC), *Thode 4407* (STE). **3030** (Port Shepstone): Fairfield, Dumisa, 750 m, 14-01-1911, (–AD), *Rudatis 1303* (STE); Oribi side river, in riverbed between boulders, 23-01-1973, (–CB), *Strey 11061* (PRE); Izotsha, riverbank, mud, 16-11-1969, (–CD), *Strey 9283* (PRE).

CAPE.—**3227** (Stutterheim): Komgha River, 330 m, 11-1892, (–DB), *Flanagan 1452* (STE). **3318** (Cape Town): Cape Peninsula, Table Mountain, Orange Kloof, 08-1903, (–CD), *Marloth 3431* (STE); Jonkershoek, Bosboukloof, 320 m, 05-1967, (–DD), *Kerfoot 5805* (STE). **3319** (Worcester): near Karoo Botanic Garden, beside dam, 330 m, 11-10-1969, (–CB), *Rycroft 3055* (NBG, STE). **3323** (Willowmore): Avontuur Poort, 4 miles from Uniondale, 810 m, 12-1930, (–CA), *Fourcade 4520* (STE). **3526** (Grahamstown): Grahamstown, 01-04-1922, (–BC), *Wilson SA142* (STE). **3418** (Simonstown): lower Eerste River below Krammat near mouth on Zandvliet allotment, riverbank, 7 m, 06-01-1978, (–BB), *Boucher 3475* (STE); Sir Lowry's Pass, Steenbras side, 04-1948, (–BB), *Stokoe SAM 61497* (PRE, SAM); Palmiet River Mouth near Kleinmond, 5 m, 17-03-1983, (–BD), *Van Wyk 1183* (STE). **3419** (Caledon): Palmiet River, 25-04-1948, (–AA), *De Vos 895* (STE). **3423** (Knysna): Concordia, along streams and on moist ground, 230 m, 03-1921, (–AA), *Keet 705* (STE); Keurbooms River, 160 m, 1969, (–AB), *Heinecken K58* (STE). **3424** (Humansdorp): Kromme River at Assegai Bosch, 223 m, 03-1931, (–BA), *Fourcade 4565* (STE).

Smaller form

CAPE.—**3318** (Cape Town): Blaauwklip Stellenbosch, 01-1926, (–DD), *Gillett s.n.* (STE). **3319** (Worcester): Wemmershoek, Protea State Forest Reserve, ENE of Wemmershoek Station, 800 m, 29-02-1992, (–CC), *Oliver 10053* (STE). **3320** (Montagu): Langeberg East, Lemoenshoek, 550 m, 25-02-1988, (–DD), *Van der Merwe 226* (STE). **3321** (Ladismith): Elandskloof between Vleiland and Seweweekspoort, 1 300 m, 20-02-1986, (–AD), *Moffett & Steensma 3824* (STE); Garcia's Pass near Tollhouse, 19-04-1983, (–CC), *Fellingham 445* (STE). **3322** (Oudtshoorn): Boomplaas, Cango Valley on banks of Grobbelaars River, 24-06-1974, (–AC), *Moffett 62* (STE). **3418** (Simonstown): Cape of Good Hope Nature Reserve, 330 m, 09-03-1973, (–AB), *Taylor 8352*

(STE); Gordon's Bay, March, (–BB), *Duthie 762* (STE); Rooiels, River Mouth, near Hangklip Floodplain, 11-03-1981, (–BD), *Parsons 59* (STE). **3419** (Caledon): Oudebos, Riviersonderend, 04-1930, (–AB), *Stokoe s.n.* (STE); between Avoka and Goedvertrou, 83 m, 22-05-1971, (–DA), *Thompson 1207* (STE). **3420** (Bredasdorp): Breede River at Malgas, 16 m, 07-03-1971, (–BC), *Heard 3* (STE). **3421** (Riversdale): Korente River Dam, 200 m, 26-09-1979, (–AA), *Bohnen 6621* (STE).

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MS. received: 1993-04-01.