

Bothalia 37,1: 9–22 (2007)

New species and notes on the genus *Cliffortia* (Rosaceae)

C.M. WHITEHOUSE* and A.C. FELLINGHAM**

Keywords: Cape Floristic Region, *Cliffortia* L., endemic, new combinations, new species, Rosaceae

ABSTRACT

Seven new species of *Cliffortia* L. endemic to the Cape Floristic Region (CFR) are described, *C. anthospermoides*, *C. cruciata*, *C. ferricola*, *C. gracillima*, *C. perpendicularis*, *C. sparsa* and *C. weimarckii*. A further species from the Graaff-Reinet area, described by Weimarck but not formally named, is here given the name *C. bolusii*. New varieties *C. cuneata* var. *cylindrica* and *C. filifolia* var. *arenaria* are also described, and *C. gracilis* Harv. is recombined as *C. dentata* var. *gracilis*. *Cliffortia discolor* Weim. and *C. hermaphroditica* Weim. are reduced to synonyms of *C. odorata* L.f. and *C. juniperina* L.f. respectively. There are now 132 species recognized in *Cliffortia*, 124 of which are found in the CFR and 109 endemic to the region.

INTRODUCTION

Cliffortia L. is one of the ten largest genera in the Cape Floristic Region (CFR) (Goldblatt & Manning 2000). In Fellingham's (2000) enumeration of the species in the CFR, 111 described species were recognized. Five other species had been described that occurred exclusively outside the CFR (Oliver & Fellingham 1994; Whitehouse 2004a), including one, *C. nitidula* (Engl.) R.E.Fr. & T.C.E.Fr. (incorporating *C. aequatorialis* R.E.Fr. & T.C.E.Fr.), found as far as Kenya (Graham 1960). Since then, eleven more species have been described (Fellingham 2003; Whitehouse 2004a, b).

In this paper, eight more species are described, as well as new varieties of *Cliffortia cuneata* Dryand. and *C. filifolia* L.f. One species, *C. gracilis* Harv., is considered to be a variety of *C. dentata* Willd., while a further two species, *C. discolor* Weim. and *C. hermaphroditica* Weim., are reduced to synonymy of more widespread species. Seven of the new species are endemic to the CFR, but the eighth species is only known from the Nardouwsberg on the Great Escarpment east of Graaff-Reinet. This brings the total number of species in the genus *Cliffortia* to 132.

The following species were listed as endemic to the CFR by Fellingham (2000), but have collections from outside the region: *Cliffortia amplexistipula* Schltr. (Namaqualand, Fellingham 1993), *C. erectisepala* Weim. (Grahamstown, Whitehouse 2004a), *C. eriocephalina* Cham. (Graaff-Reinet, see *C. bolusii* Diels ex C. Whitehouse below, and Amatole Mtns, Phillipson 1987), *C. graminea* L.f. (Grahamstown, Weimarck 1934), *C. ilicifolia* L. (Grahamstown, Weimarck 1934), *C. montana* Weim. (see *C. bolusii* below and Graaff-Reinet, Weimarck 1934) and *C. ruscifolia* L. (Namaqualand, Weimarck 1934). The presence of *C. juniperina* L.f. north of Nieuwoudtville is doubtful, whereas *C. repens* Schltr. is regarded now as being found only outside the CFR (Whitehouse 2004a). Therefore, the total number

of species found within the CFR is 124, of which 109 are endemic to the area.

1. *Cliffortia anthospermoides* Fellingham, sp. nov., *C. ramosissimae* Schltr. affinis, sed internodiis brevibus, brachyblastis imbricatis, staminibus 9–12 notabilis.

TYPE.—Western Cape, 3419 (Caledon): Caledon District, Walker Bay area, Grootbos Private Nature Reserve, slight northern slope, 150 m, (–CB), 31 Aug. 1996, *Fellingham 1691* (BOL, holo.!, K!, NBG!, PRE!).

C. sp. 2 sensu Fellingham: 614 (2000).

Medium, erect shrub, up to 1 m high, monoecious but with alternating male and female phases; young branches reddish with indumentum of long white hair, turning greyish brown, becoming glabrous, hair bases remaining as pustules, bark splitting and peeling, ageing to a smooth glabrous reddish brown surface with persistent patent, woody sheaths of fallen leaves with central nerves prominent, giving appearance of thorny petioles; internodes \pm 10 mm long, shorter than leaves, giving plant a leafy appearance. *Leaves* trifoliate; leaflets 5.5–7.0 \times 0.9–1.0 mm, straight to falcate to twisted giving an untidy appearance; margins scabrid to minutely denticulate; lamina bright green, glabrous adaxially, with occasional long hairs on margin and abaxially; sheath 1–2 mm long below central leaflet, diminishing distally, glabrous except for a few long cilia on margins, 3-nerved, medially herbaceous, laterally pinky white membranous; stipules represented by the membranous edges of sheaths forming rectangular 'wings'. *Flowers* solitary, ebracteate, in axils of vegetative leaves separated by long internodes. *Male flowers*: bracteoles ovate-lanceolate, 2.2 \times 1.5 mm, glabrous, scarious, whitish; pedicel and receptacle 1 mm long, glabrous; sepals 3 (or 4), linear-lanceolate, 3.7–4.3 \times 2.6–3.0 mm, green with occasional maroon longitudinal lines, prominently mucronate even in bud, adaxially with obvious locking mechanism consisting of subapical tuft of crisped papillae; stamens (9)10–12; filaments 5 mm long, maroon, glabrous; anthers 0.7–0.8 mm long, maroon-red with white connective. *Female flowers*: bracteoles ovate-lanceolate, 3.4–3.6 \times 2.0–2.3 mm, membranous, translucent, sheathing fruit, inner bracteole with apical one fifth part reflexed, outer with a tuft of retrorse hair at base; pedicel absent up to 0.6 mm long in fruit, glabrous; sepals 3, broadly elliptic, 1.9–2.0

* Bolus Herbarium, University of Cape Town, 7700 Rondebosch. Present address: The Royal Horticultural Society Garden, Wisley, Woking, Surrey GU23 6QB, England, UK.

** Bolus Herbarium, University of Cape Town, 7700 Rondebosch. Present address: 25 Bon Esperance, La Vie est Belle, 7550 Sonstraal Heights, South Africa.

MS. received: 2006-01-18.

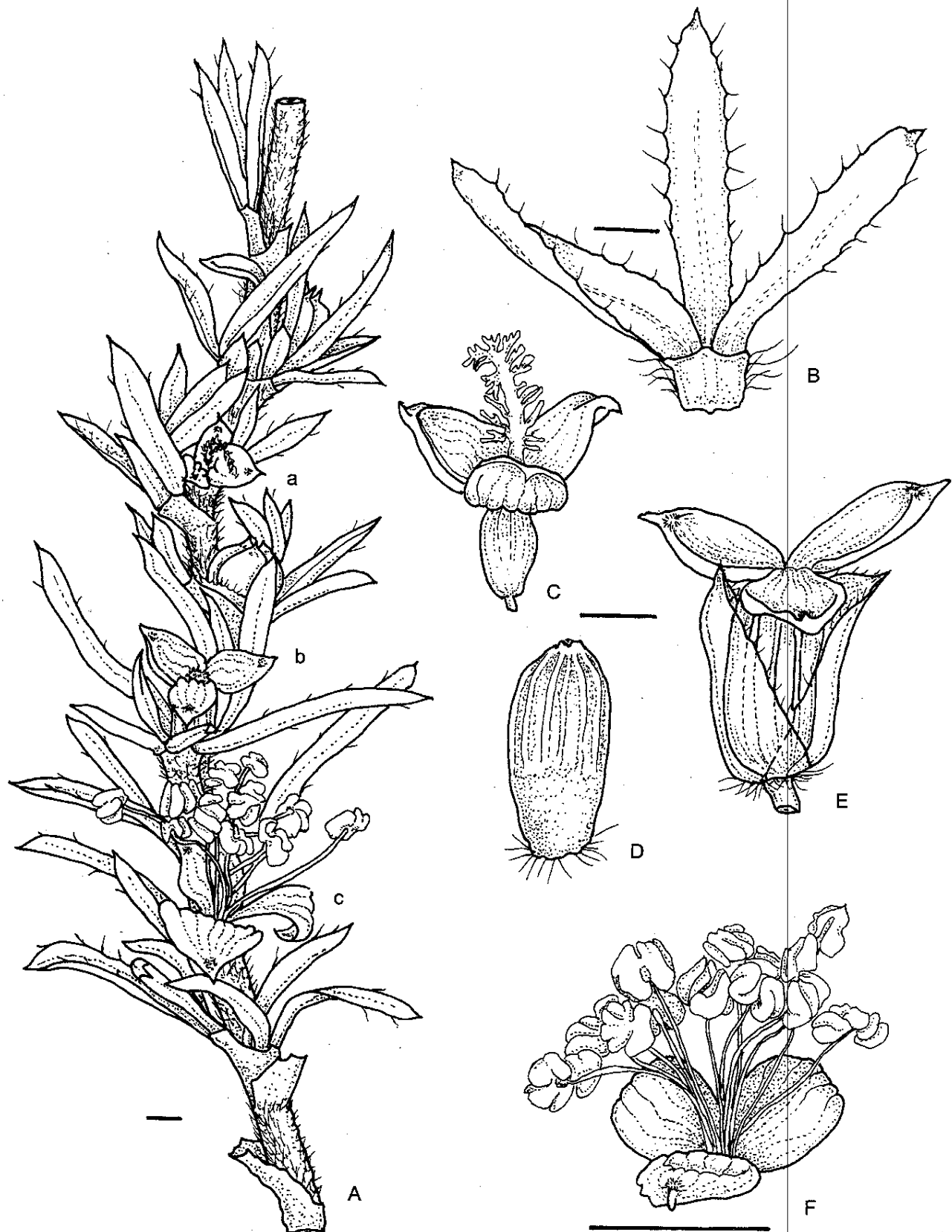


FIGURE 1.—*Cliffortia anthospermoides*. A, branch: Aa, female flower in situ; Ab, fruit in situ; Ac, male flower in situ. B, leaf; C, female flower; D, fruit; E, fruit with sepals and bracts in situ; F, male flower; A, D, E, Fellingham 1545; B, C, Fellingham 1529; F, Fellingham 1634. Scale bars: A–E, 1 mm; F, 3 mm. Artist: A.C. Fellingham.

× 1.5–1.6 mm, spreading, mucronate, glabrous but for papillate locking mechanism ventrally near apex, fugacious; immature receptacle ellipsoid, 1.5 mm × 0.8 mm, pale green with occasional longitudinal reddish lines; style solitary, 0.2–0.3 mm, pale green, glabrous; stigma 1.8–2.2 mm long, deep maroon-red, fimbriate. *Achene* ellipsoid, 1.9–2.1 × 1.5–1.6 mm, apex with small indentation containing staminodes and ridged by remains of fallen sepals, apical two thirds with ± 12 low longitudinal ridges, green, tinged with maroon where exposed to sun, lower third smooth, base concave with central pedicel scar surrounded by a ring of stiff hairs. Figure 1.

Diagnostic characters and affinities: at first sight, this species can be mistaken for a member of the genus *Anthospermum* (Rubiaceae). However, on closer examination the alternate arrangement of shoots becomes evident. Morphologically it appears closest to *Cliffortia ramosissima* Schltr. but the habit of that species is lower and spreading, not upright as in *C. anthospermoides*. Furthermore, the leaves of *C. anthospermoides* are larger and more tightly packed on the stems and the species generally has more stamens in the male flowers: 9–12, as opposed to *C. ramosissima*, which has fewer than nine. The distributions of the two species do not overlap.

Superficially the flowers appear to be borne singly in the axils of normal vegetative leaves, particularly those at the top of shoots. On closer inspection of the implantation sites of these flowers, however, the presence of a growth point next to each flower has been noted. Furthermore, the axils of leaves lower down on the vegetative shoots contained well-developed short shoots, bearing the bracts of a lower (fallen) flower as well as a second developing flower above them. From the size of the empty bracts it can be deduced that these subtended a female flower, whereas the second flower was male. Axils in the intermediate zone contained fruits in the lower bracts with very young male flowers above, whereas the axils in the tops of the shoots contained young male flowers. From the emerging pattern of male and female flower sites, it can be deduced that the first flowers of the season to appear on any particular plant, would be female. As a result of their diminutive size and obscure arrangement, these would go unnoticed except for the showy red styles. The shedding of the styles completely obscures the female phase, whereas the male phase which follows is patently obvious by its showy stamens, thus leading a casual observer to the erroneous conclusion that the plant is a male specimen of a dioecious species.

Habitat: fynbos on brown, sandy soil on slight slopes; altitude 50–250 m.

Distribution: only known from the Gansbaai area, Caledon District (Figure 2).

Conservation status: four populations are known. The population at Woest Arabie has been ± destroyed by road widening, the one at Danger Point is under threat of development and the one at Wortelgat has been severely invaded by *Acacia cyclops*; only the population in the Grootbos Nature Reserve is protected.

Etymology: an early Elsie Esterhuysen collection was annotated by her as having ‘the aspect of *Anthospermum*

aethiopicum’; an apt description as the tightly packed leaves obscure the alternate arrangement of the leaves which would distinguish it from an *Anthospermum*.

2. *Cliffortia cruciata* C.Whitehouse, sp. nov., *C. ramosissima* Schltr. primo aspectu similis, sed nullis petiolis, sepalis quatuor, costis acheniorum manifeste quatuor differt.

TYPE.—Western Cape, 3319 (Worcester): Worcester District, Jonaskop, Wildepaardeberg, just below sandy plateau, 900 m, (–DC), 15 Sept. 2000, *Whitehouse 137* (BOL, holo.!; K!, MO!, NBG!, Z!).

Low, erect shrub, up to 0.3 m high, killed by fire; densely divaricately branched, forming brachyblasts; young stems 0.6–0.9 mm wide, tinged reddish, hairy; stem hairs adpressed upwards, 0.2–0.4 mm long. *Leaves* trifoliate; leaflets linear, 2.7–3.7 × 0.4–0.6 mm, base noticeably swollen and bulbous, apex 0.1–0.2 mm long, margins rounded but slightly grooved, entire and smooth; lamina chartaceous, 0.3–0.5 mm thick, slightly curved upwards and towards stem, green with two paler stripes on each side, glabrous; sheath 0.7–1.0 mm long, abaxially glabrous, adaxially hairy; stipules 0.3–0.8 mm long, free, margins smooth; petiole absent. *Flowers* solitary at base of undifferentiated leaves; bracteoles hairy on keel, margins ciliate; sepals 4, glabrous. *Male flowers:* bracteoles 1.2–1.5 mm long; pedicel and receptacle 0.5–0.8 mm long; sepals broadly ovate, 3.4–4.4 × 1.3–2.2 mm, acute to acuminate at apex, tips not completely separating at anthesis; stamens 6 or 7; filaments 1.2–2.0 mm long, red; anthers brownish red. *Female flowers:* bracteoles 1.3–1.7 mm long, shorter than immature receptacle; sepals 0.8–1.2 × 0.2–0.4 mm, erect; carpel 1; stigma 1.4–2.6 mm long, red to pinkish, feathery, hidden within leaves; immature receptacle 1.3–2.7 × 0.6–1.1 mm, glabrous, clearly ribbed. *Achene* broadly ellipsoid, 3.8–4.7 × 1.7–2.0 mm, medium brown, glabrous; ribs 4, rounded, ± 0.6 mm wide, slightly tuberculate. *Flowering time:* around September. Figure 3.

Diagnostic characters and affinities: closely allied to *Cliffortia subsetacea* (Eckl. & Zeyh.) Diels ex Bolus & Wolley Dod, but this is only clearly discernible by examination of the achenes, which are very similar except that the ribs on *C. cruciata* are not curved. In general appearance the species looks more similar to *C. ramosissima* with its short, but comparatively broad and flat, very slightly curved leaves. Apart from the achene, the two species can be easily separated because *C. cruciata* lacks any evidence of a petiole and the flowers have four sepals and four prominently ribbed achenes.

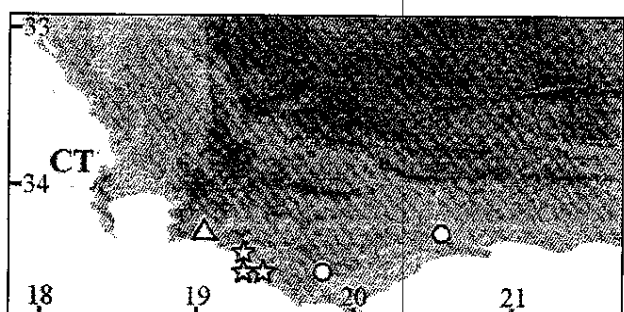


FIGURE 2.—Known distribution of *Cliffortia anthospermoides*, ☆; *C. ferricola*, △; and *C. perpendicularis*, ○, in South Africa.