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ADDITIONS TO 'THE SPECIES OF *CRASSULA* L. IN AUSTRALIA'.

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Abstract

Crassula sieberiana subsp. *rubinea* Toelken is described from New South Wales. The combination *C. colorata* var. *acuminata* (Reader) Toelken is published and *C. ciliata* L. is recorded as naturalised in South Australia. Notes and additions to the previously published key (Toelken, 1981) are included.

Since the recently published revision of the genus *Crassula* in Australia (Toelken, 1981) important additional information has come to hand. The format employed here and retention of the species numbering enables the additions to be collated in the previous work.

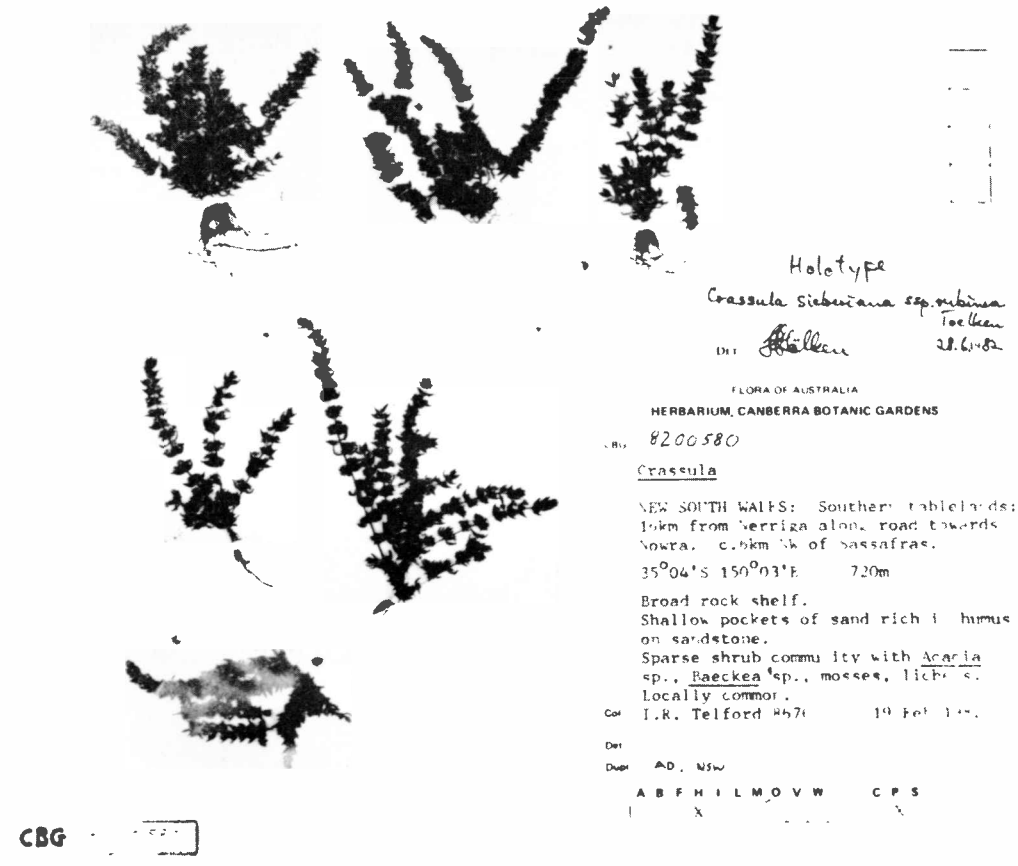

Fig. 1. *Crassula sieberiana* subsp. *rubinea*: holotype *Telford 8676* (CBG).

I. In the paper attention is drawn to particularly robust plants of *C. sieberiana* subsp. *sieberiana* from near Nerriga. As a result of an investigation of this complex in the field, these are now regarded as forming separate subspecies.

9c. **C. sieberiana** subsp. **rubinea** Toelken, subsp. nov.

Ab subsp. *sieberiana* foliis rubineascentibus, vaginis foliorum latioribus (0.5-0.7 mm), petalis sepalis aequantibus fructu; ab subsp. *tetramera* habitatu perenni, ramificanti a base, petalis sepalis aequantibus fructu differt.

Herba perennis, rare annua, ramis erectis sed interdum radicibus adventiis a nodis infernis. *Rames* praecipue a base, carnosi, nodis aliquantum tumidis, foliis veteribus rare deciduis et internodiis basalibus rare longioribus foliis subtentis. *Folia* rubineascentia; vaginae 0.5-0.7 mm latae. *Petala* sepala circiter aequantia fructu. *Folliculi* secus suturas totas findentes et late effusi.

Type: New South Wales, 16 km from Nerriga on road to Nowra, *Telford 8676* (CBG, holo.; AD, CHR, K, L, MO, NSW, iso.).

Perennials, rarely annuals, with erect branches but sometimes with adventitious roots from the lower nodes. *Branches* mainly from the base, carnose, with somewhat swollen nodes, old leaves rarely deciduous and basal internodes rarely longer than the subtending leaves. *Leaves* becoming deep ruby-red; sheath 0.5-0.7 mm broad. *Petals* about as long as sepals when fruiting. *Follicles* spitting along whole suture and opening widely. Fig. 1.

Growing on shallow soil on top of sandstone shelves; recorded only from the vicinity of Nerriga.

In accordance with the change of the International Code as adopted at the International Botanical Congress in 1981 the specific epithet should be spelled 'sieberiana' and not 'sieberana' (article 73).

Table 1. Distinguishing characters of the subspecies of *Crassula sieberiana*.

	subsp. rubinea	subsp. sieberiana	subsp. tetramera
habit	perennial tufts	decumbent or prostrate perennials	annual tufts, rarely decumbent
branches	mainly basal with swollen nodes	irregularly branched with swollen nodes	few, irregular without swollen nodes
adventitious roots	rarely at basal nodes	often along branches	absent
basal internodes	2-4 (-5) mm	(1-) 3-5 (-8) mm	(4-) 8-12 (-20) mm
leaf colour change	ruby-red	brownish-red	pinkish to brownish-red
leaf sheath	(0.4) 0.5-0.7 mm	0.2-0.3 (-0.4) mm	0.2-0.6 (-0.8) mm
petal length	c. as long as sepals	c. $^2/_3$ of sepals	usually less than $^1/_2$ of sepals
habitat	shallow soil on rocks, well exposed position	shallow soil on rocks sheltered by rocks or vegetation	shallow or deep sandy soil, more or less sheltered

Subsp. *rubinea* is very similar to and could easily be interpreted as a robust form of subsp. *sieberiana* (cf. Toelken, 1981) unless one had the opportunity, as was subsequently provided at the type locality of subsp. *rubinea*, to investigate specimens of all three subspecies growing close to one another. The characteristics of all three subspecies are summarized in Table 1.

No difficulty was experienced in recognising the three taxa in the field by the tabulated characters but in cultivation the difference seem to be obscured as all plants have soft branches which are decumbent to prostrate and relatively shorter leaves in

comparison with the internodes which they subtend. Subsp. *tetramera* can, however, be distinguished by its very long basal internodes, which are up to eight times longer than the subtending leaves while they are rarely more than twice as long in the other two subspecies. Of the latter subsp. *rubinea* is distinguished from the subsp. *sieberiana* by its broader leaf sheath (see Table 1). In dried specimens of cultivated material, as well as those from the field, the nodal tissues did not collapse as much as those of the internodes so that a distortion of the membranous sheath can often be observed. In that case some identifications can be made by means of the length of the sepals relative to the petals (see Table 1). It was noticed that this ratio did not usually change as much from the flowering to fruiting stage in cultivated plants as it did in plants from the natural habitat. However, in cultivated plants some specimens were observed with an intermediate range of perianth size between subspecies.

Selection of specimens examined

NEW SOUTH WALES: *Adams 1470*, 4 miles E Nerriga (CANB); *Pickard 3319*, 1 km S Round Hill (NSW); *Toelken 7053*, 16 km from Nerriga on road to Nowra (AD).

Mr T.D. Stanley, Queensland Herbarium correctly pointed out in a personal communication that flowers of *C. sieberiana* subsp. *sieberiana* are predominantly 5-merous in Queensland. Couplets 11 and 12 of the key (Toelken, 1981; p. 65) need to be replaced and 11a, 11b and 12a added. This allows also for an extra lead to *C. decumbens* var. *decumbens* which has some plants with 4-merous flowers:-

11. Lateral part-inflorescences stalked. ..... 7. *C. decumbens* var. *decumbens*

11. Lateral part-inflorescences sessile in axile of leaves. 11a

11a. Annuals with few branches from erect main axis; at least some lower internodes more than 3 times longer than the subtending leaves. ..... 9b. *C. sieberiana* subsp. *tetramera*

11a. Perennials, rarely annuals, with branches mainly from the base; internodes rarely exceeding twice the length of the subtending leaves. 11b

11b. Leaf sheath 0.2-0.3 (-0.4) mm long; leaves turning brown, rarely brownish-red; in sheltered and usually shaded crevices. ..... 9a. *C. sieberiana* subsp. *sieberiana*

11b. Leaf sheath (0.4-) 0.5 (-0.7) mm long; leaves turning deep ruby-red; in exposed positions on top of rock shelves. ..... 9c. *C. sieberiana* subsp. *rubinea*

12. Perennials with thickened basal stems and often swollen nodes; Queensland. ..... 9a. *C. sieberiana* subsp. *sieberiana*

12. Annuals with thin wiry stems without thickened nodes; Australia south of Queensland 12a

12a. Flowers sessile or almost so 13

12a. Flowers with pedicels at least 1.5 mm long 16

II. In a re-evaluation of the type specimen of *Tillaea acuminata* the existing combination *C. colorata* var. *acuminata* should have been adopted in preference to *C. colorata* var. *tuberculata* (cf. Toelken, 1981):

11c. **C. colorata** (Nees) Ostenf. var. **acuminata** (Reader) Toelken, comb. nov.

Type: Victoria, Dimboola shire, Lowan, *Reader in MEL 89418a* (MEL, holo.!).

Tillaea acuminata Reader, Vict. Nat. 15: 96 (1898).

T. sieberiana J.A. & J.H. Schultes var. *acuminata* (Reader) Ewart et al., J. Proc. R. Soc. N.S.W. 43: 196 (1908).

Crassula sieberiana (J.A. & J.H. Schultes) Druce var. *acuminata* (Reader) Domin, Bibl. Bot. 89: 704 (1925).

Crassula colorata (Nees) Ostenf. var. *tuberculata* Toelken, J. Adelaide Bot. Gard. 3: 81 (1981), nom. illeg.

Type: Western Australia, 65 km NNW Leonora, *Toelken 6079* (AD, holo.!).

III. Since the publication of a revision of the genus *Crassula* in Australia (Toelken, 1981) a population of several plants of *Crassula ciliata* from near Yankalilla (South Australia) has been found and the species must be interpreted as naturalised there. Insert additional couplet between couplets 1 and 2 of the key (Toelken, 1981, p 64):-

1a. Leaves with dense row of spreading marginal cilia . . . (sect. *Subulares*) ..... 15. *C. ciliata*

1a. Leaves glabrous.....2

E. sect. **Subulares** Haw. ex DC., Mem. Coll. 2. Crassulacees 17 (1828), partly; Toelken, Contr. Bolus Herb. 8: 286 (1977).

Type Species: *C. ramosa* Thunb.

Perennial shrublets with base somewhat woody. *Leaves* dorsiventrally compressed, glabrous except for marginal cilia. *Inflorescence* a terminal thyrsoid, with more or less distinct peduncle as leaves are gradually shortened upwards; flowers tubular. *Calyx* shorter than corolla. *Carpels* with elongate ovaries more or less abruptly tapering into styles.

Species occur naturally in the winter rainfall region of the south-western to south-eastern Cape Province, South Africa.

15. **C. ciliata** L., Sp. Pl. ed. 1: 283 (1753); DC., Hist. Pl. Succ. t. 7 (1799); Toelken, Contr. Bolus Herb. 8: 293 (1977).

Type: Dillenius, Hort. Eltham., 116, t. 98, fig. 116.

Perennial shrublets to 40 cm high when flowering, moderately branched from the base. *Leaves* oblong-elliptic 1.5-3 x 0.5-0.8 (-1.2) cm, obtuse or rounded, slightly constricted towards the base, dorsiventrally flattened, erect, with a dense row of spreading marginal cilia, green to yellowish-green. *Inflorescence* a rounded or flat-topped thyrsoid borne above the leaves; flowers 5-merous. *Calyx*: lobes triangular 2-3 mm long, acute to obtuse, slightly fleshy, green to yellow. *Corolla* urceolate later campanulate, white to cream; lobes ovate-rostrate, c. 3 mm long, drawn into a blunt point, without dorsal appendage, first erect later recurved. *Squamae* oblong 0.9-1.2 x c. 0.3 mm, truncate to slightly emarginate, scarcely constricted downwards, fleshy, pale yellow. *Ovaries* oblong-reniform, more or less abruptly constricted into slender styles, with 8-12 ovules. *Follicles* erect, smooth, dehiscing by apical pore.

Native along the southern Cape coast, South Africa; now found naturalised near Yankalilla cemetery (Southern Lofty region of South Australia) where it is growing on dry flats.

Specimen examined

SOUTH AUSTRALIA: *Symon 12963*, near Yankalilla cemetery (AD, ADW).

Acknowledgements

The author is indebted to Mr D.E. Symon for drawing his attention to a population of *C. ciliata* near Yankalilla. Mr T.D. Stanley pointed out that *C. sieberiana* subsp. *sieberiana* has mainly 5-merous flowers in its few occurrences in southern Queensland. Mr I. Telford kindly collected sufficient material for an adequate type specimen of *C. sieberiana* subsp. *rubinea*.

Reference

Toelken, H.R. (1981). The species of *Crassula* L. in Australia. *J. Adelaide Bot. Gard.* 3: 57-90.