

Serruria Salisb. consisting of some 54 species, is the largest genus of the Proteaceae endemic to Western Cape. Dr Tony Rebelo, initiator of the Protea Atlas Project discovered this extraordinary species in July 1998. No earlier collections are known, which is scarcely surprising considering its cryptic growth habit and very localised distribution. When not flowering, mature plants are exceptionally difficult to detect in the field, even at known sites.

***Serruria rebeloi* Rourke**, sp. nov. Fruticulus prostratus, ramis glabris gracilibus; foliis secundis praecipue acicularibus (aliquando 2-, 3-, vel 4-furcatis), racemis minimis sessilibus terminalibus, 4–9 floribus, perianthiis brevissimis, 7–8 mm longis, et ovariis stylopodio, distinguitur.

Fruticulus diffusus, prostratus ad 200 mm altus, 1 m in diametro. *Rami* graciles in filiformes, implexi, 1.5 mm in diametro, glabri aut pilis paucis dispersis. *Folia* secunda, 30–50 mm longa, bipinnata, 2-, 3-, vel 4-furcata sed aciforma apicem versus; primum sparse puberula, demum glabra. *Inflorescentia* racemosa parvula, 10–12 mm in diametro; obovoidea, sessilis, solitaria et terminalis, (4)5–7(–9) floribus. *Bractee* 6–8, peranguste lanceolato-acuminatae, 8–10 × 0.5–1.0 mm, glabrae sed ciliis marginalibus. *Perianthium* 7–9 mm longum, rectum ante anthesin, dense villosum. *Stylus* rectus, glaber, 7–8 mm longus. *Ovarium* sphaericum, 2 mm longum, dense villosum, stylopodio cylindrico carmineo superpositum. *Squamae hypogynae* absentes (Figura 11).

TYPE.—Western Cape, 3419 (Caledon): Boskloof, south of Akkedisberg, on watershed of Kars and Uilkraal

Rivers, (–BC), 1-10-1998, *J.P. Rourke 2151* (NBG holo.; BOL, E, K, MO, NSW, PRE, S, W).



FIGURE 11.—*Serruria rebeloi*, open inflorescences, ± life size.



FIGURE 12.—*Serruria rebeloi*. A, flowering shoot; B, detached inflorescence; C, floral bract; D, unopened flower bud; E, single flower at anthesis; F, ovary, style and pollen presenter; G, ovary with gynophore and style attached; H, mature fruit. Scale bars: 1 mm. Drawn from J.P. Rourke 2151. Artist: Claire Linder Smith.

Low, prostrate, diffuse shrublet up to 200 mm high and 1 m diam. with horizontally trailing branches; forming a loose tangled mat from a single main stem up to 50 mm tall, 15 mm diam. *Branches* very slender to almost filiform, 1.5 mm diam., reddish, glabrous or nearly glabrous with a few scattered hairs; branches very rarely divided. *Leaves* secund, 30–50 mm long, very sparsely puberulous when young but soon glabrous, bipinnate becoming 2-, 3-, or 4-furcate, but frequently simple and acicular towards shoot apex; filiform, terete, upper surface canaliculate, apices reddish, mucronate. *Inflorescence* an obovoid, sessile, usually solitary, much reduced terminal raceme, 10–12 mm diam., (4)5–7(–9)-flowered; very rarely with up to 4 axillary inflorescences below terminal raceme. *Involucral bracts* 6–8, loosely arranged, very narrowly lanceolate-acuminate, 8–10 × 0.5–1.0 mm, deep carmine, glabrous but with a few scattered marginal cilia. *Floral bracts* narrowly ovate-acuminate, 8–10 × 3 mm, apices patent, bases clasping, minutely pubescent, margins ciliate. *Perianth* 7–9 mm long, straight in bud; limbs and claws uniform-

ly thickly villous; limbs ovate-acute, 1 mm long; tube region glabrous; perianth segments opening equally at right angles. *Anthers* sessile. *Style* straight, glabrous, 7–8 mm long; pollen presenter clavate, 1 mm long, stigmatic groove terminal; style base connected to ovary by a cylindrical, fleshy, carmine stylopodium, 1.5 mm long, slightly broader than style, stylopodium and style separated by a distinct abscission layer. *Ovary* spherical to ovoid, 2 mm long, densely villous. *Hypogynous scales* absent. *Fruit* a cylindric, villous achene, 6–7 × 2–5 mm, with a glabrous, black, conical beak terminally; truncate and pedicellate basally with a basal fringe of trichomes (Figure 12).

Diagnostic characters

Serruria rebeloi is easily distinguished by its low, diffuse, sprawling growth habit, secondly arranged, mainly acicular (occasionally 2-, 3-, or 4-furcate) leaves, very small (4–9-flowered) sessile terminal racemes, 10–12 mm

diam., unusually short perianths, 7–8 mm long, straight in bud, and by the absence of hypogynous scales. Moreover, the ovary is surmounted by a cylindric, glabrous, carmine stylopodium, 1.5 mm long from which the style arises, a character that is not known in any other *Serruria*.

Distribution and habitat

This species is confined to the Perdeberg Mountains \pm 12 km northwest of Napier in the southern Cape, where it occurs at elevations between 480 m and 600 m, mainly on the Farm Boskloof with additional populations on the adjacent Farms, Fairfield and Perdeberg. On Boskloof there are several populations southwest of Akkedisberg on the watershed of the Uilkraal and Kars Rivers. These populations each consist of several hundred individuals. *Serruria rebeloi* is very localised and is presently not known beyond these sites. It favours gently sloping seasonally moist habitats on Table Mountain Sandstone in Mesic Mountain Fynbos (Figure 13).

Serruria rebeloi is a seed regenerator that passes through several distinct developmental stages before the adult growth form is attained. In the first three or four years after germinating the seedlings form a compact semi-upright shrublet 150–180 mm tall with densely arranged divided leaves. By the fifth or sixth year, long,

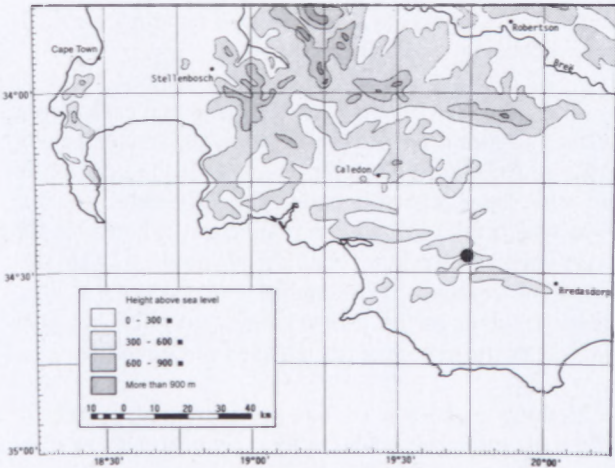


FIGURE 13.—Distribution of *Serruria rebeloi*.

lax, trailing stems with secundly arranged leaves begin to develop towards the perimeter of the shrublet (Figure 14). The leaves on these very slender horizontally spreading branches are widely spaced usually with only two or three bifurcations and tend to become simple and undivided towards the growing point. These slender, almost filiform branches continue to develop and spread into the surrounding low fynbos vegetation until the lax, diffuse adult shrublet is about a meter in diameter. Most mature

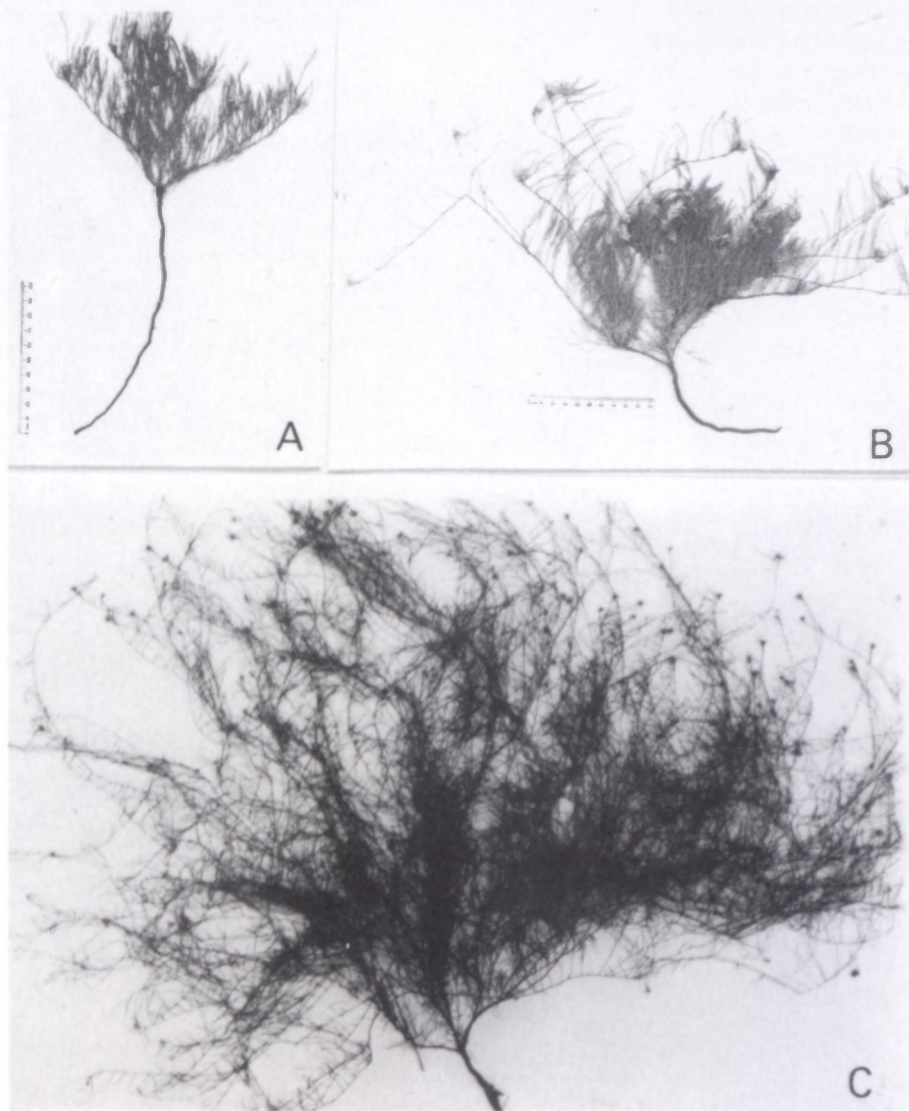


FIGURE 14.—*Serruria rebeloi*, developmental stages from seedling to adult. A, young 2–3-year-old seedling of compact growth; B, \pm 5-year-old seedling initiating trailing adult stems with mainly simple undivided leaves; C, fully developed adult shrublet. Part of the type collection, J.P. Rourke 2151. Scale bars: 100 mm.

shrublets are so cryptically concealed that they are difficult to observe, even when flowering.

This species is unique in the genus in that each flower sheds its entire style and pollen presenter soon after pollination. An abscission layer develops at the junction of the style base and stylopodium, neatly detaching the style which falls away after pollination, whereafter the ovary and stylopodium continue to develop. The stylopodium enlarges considerably and assumes a deep carmine colour as the fruit continues to swell but later shrivels as the mature fruits are shed in December.

Nothing is known of the pollinators of *S. rebeloi* which are probably small Diptera, Hymenoptera or even ants as the tiny, 4–9-flowered inflorescences are produced almost at ground level. However, the post pollination style-shedding described above, appears to be a pollinator cue to ensure maximum pollinator visitation to unfertilised flowers. An examination of some 50 infructescences revealed an average of one mature fruit per infructescence, indicating a fair degree of pollinator success.

Affinities

Serruria rebeloi appears to be most closely related to *S. deluvialis* Rourke, principally on account of its sessile, very small, few-flowered racemose inflorescences and very short, straight perianths. Like *S. deluvialis* (a widely geographically separated Palmiet River Valley endemic), *S. rebeloi* has a strong tendency to reduce the number of leaf divisions, ultimately producing undivided acicular leaves on the adult shoots. Significantly, in

the juvenile stages of the plant's development, the leaves are bipinnate and highly divided but after several years of growth the adult branches produce mainly entire acicular leaves. This tendency to reduce bipinnately divided leaves to entire acicular leaves occurs in other species of *Serruria*, notably *S. simplicifolia* Salisb. ex Knight and appears to be a strongly apomorphic character.

The highly reduced floral characters, reduced leaves and specialised growth habit suggests that *S. rebeloi* is a fairly recently evolved species.

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