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Lycium strandveldense (Solanaceae), a new species from the western coast of South Africa

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A new species, *L. strandveldense*, from the western coastal region of the Western and Northern Cape Provinces, is described and figured. *L. strandveldense,* which is functionally dioecious, resembles the bisexual *L. afrum* L., a species also found along the western coast. Because of the near similarity in leaf and floral characteristics, specimens of *L. strandveldense* have in the past been regarded as atypical forms of *L. afrum*. This new species is distinguished by its functionally dioecious habit, relatively short, narrowly oblong, bright green leaves instead of the long, linear, glaucous leaves of *L. afrum*, corolla dark purple instead of claret coloured, corolla tube shorter than in *L. afrum*, stamens of the male flowers slightly exserted from corolla mouth in contrast to the included stamens of *L. afrum,* and finally a smaller ellipsoid red berry instead of the large spherical black berry of *L. afrum*.

Introduction

Lycium is one of the larger genera of the Solanaceae and comprises about 75 species globally (D'Arcy 1991), one of only two Solanaceous genera to occur naturally on all the continents except Antarctica, the other being *Solanum* (Symon 1991). The African Lyciums proved to be a taxonomic nightmare. A total of 101 species and 25 varieties were described for Africa. At present only 25 species are acknowledged for this continent (Venter 2000) of which 23 occur in southern Africa, and are concentrated in the arid regions in particular. It was only after a unique type of sexuality was discovered in the African *Lycium* species by the present authors that satisfactory circumscriptions of the different species could be made.

Defining *L. afrum* proved unsatisfactory, as atypical forms kept turning up. Once it was discovered that one of these atypical forms was actually functionally dioecious, in contrast to the bisexual condition found in *L. afrum*, the problem was solved. *L. strandveldense* was identified as a new species, well established along the coast of the Western and Northern Cape Provinces.

The epithet is derived from the Afrikaans name 'Strandveld' (translated as beach field) under which the region, inhabited by this species, is known by the local people.

Material and Methods

Herbarium specimens, now housed in the Geo Potts Herbarium (BLFU) of the University of the Free State, and material for chromosome analysis were collected in the field. The chromosome material was prepared according to Carnoy (1886), Bowen (1956) and Darlington and LaCour (1976). From these preparations the chromosome number of *L. strandveldense* was determined. Herbarium specimens from the Bolus Herbarium (BOL), Compton Herbarium (NBG) and National Herbarium Pretoria (PRE) were examined for collections of *L. strandveldense*.

Results

Taxonomy

***Lycium strandveldense* A.M.Venter, sp. nov.**

Lycium strandveldense distinguitur habitu utiliter dioecio, foliis prasinis, corolla atropurpurea, staminibus exigue exsertis, baccis ellipsoideis rubris. Simile est *L. afrum* incrementi forma et relative magnis floribus fuscis. *L. afrum* autem dissimile est *L. strandveldense* habitu bisexuali, colore foliorum glaucos, corolla vinosa, baccis magnis atris sphaericis.

TYPE: — South Africa, Western Cape Province, Lamberts Bay, Municipal Caravan Park, at gate to beach (–AB), 7 Dec. 1994, *AM Venter 477* (BLFU, holotype; NBG, K, PRE, isotype).

A functionally dioecious, erect, rigid, thorny *shrub* of 1–1.5m high. *Stems* stout, erect, young stems pale grey to pale brownish-grey, sometimes striated, older stems grey to brownish-grey, glabrous; thorns 10–60mm long, of mixed length on younger and older stems. *Leaves* densely fascicled on conspicuous brachyblasts of stems and thorns, fas-

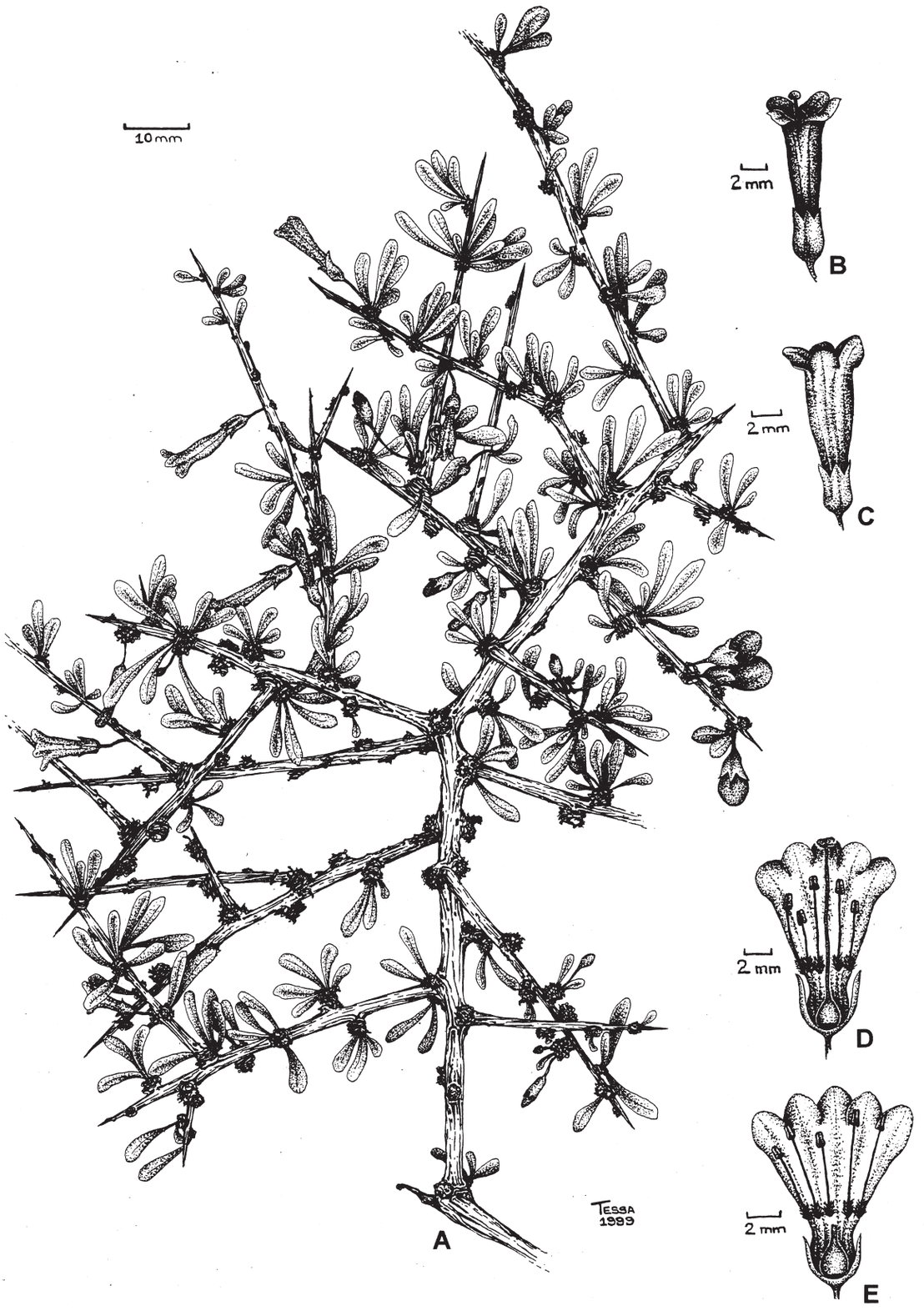

Figure 1: *Lycium strandveldense.* A. Stem with thorns, leaves and flowers. B. External view of female flower. C. External view of male flower. D. Female flower internally showing complete pistil and infertile stamens. E. Male flower internally showing ovary with stunted style and fertile stamens. [A, B and D: *AM Venter 477* (BLFU); C and E: *AM Venter 479* (BLFU)]

cicles 3–7 leaved; *petiole* 0–1mm long; *lamina* narrowly obovate to ovate, 9–13mm x 2–3mm, succulent, bright green, glabrous, apices obtuse to rarely acute. *Flowers* solitary from centre of leaf clusters, pedicellate with pedicel (3–)4–5(–7)mm long, functionally unisexual, actinomorphic, pentamerous, hypogynous. ***Male flowers*****:** *Calyx* tubular, 4mm x 2–2.5mm; *lobes* triangular, 1mm long, about equal in size, apices acute. *Corolla* deep purple with tube sometimes greenish cream externally; *tube* tubular, 11–13mm x 3mm, glabrous outside and inside; *lobes* semi-orbicular, 2.5mm x 2mm, spreading. *Stamens* epipetalous, inserted 4–4.5mm above corolla base just below middle of tube, about equal in length, slightly exserted from corolla mouth; *anthers* fertile; *filaments* 7–9mm long, with base pilose. *Ovary* broadly ovoid, 1.5–2mm x 1.5–2mm; *style* up to 1mm long or absent; *stigma* absent; *nectary* golden brown, annular around base of ovary, inconspicuous; no fruit develops. ***Female flowers*** as in male flowers, except: *corolla* tube 10–11mm x 2–2.5mm; *stamens* reach corolla throat, not exserted; *anthers* infertile with no pollen; *style* 10–12mm long, reaches corolla throat; *stigma* present, obtuse and bilobed, pale green. *Fruit* an ellipsoid berry, 4–5mm x 7–8mm, red. *Seeds* numerous, subdiscoid to ovate, 1.5–2mm long; testa leathery; embryo curved, of uniform diameter, with radicle terete, cotyledons semi-terete, usually abundant endosperm. (Figure 1). *Chromosome number:* 2n = 4x = 48.

Diagnostic characteristics

Lycium strandveldense is distinguished by its functionally dioecious habit, bright green leaves, dark purple tubular corolla, slightly exserted stamens and ellipsoid red berries. It resembles *L. afrum* in growth form and the relatively large dark coloured tubular flowers. However, *L. afrum* differs from *L. strandveldense* in its bisexual habit, glaucous leaf colour, claret coloured corolla and its large spherical black berries.

Distribution and habitat

L. strandveldense occurs along the western coast of the Western and Northern Cape Provinces. It is found north of Port Nolloth, at Lamberts Bay and southwards to Dwarskersbos near Velddrif (Figure 2). *L. strandveldense* is common on the sandy flats and dunes of low-lying areas near and at the coast. Flowering specimens have been collected during September to December.

Discussion

L. strandveldense is one of six *Lycium* species on the African continent that exhibit 'functional or cryptic dioecy' (Venter 2000). All six species are polyploids, with *L. strandveldense* a tetraploid. Evidence from cytological studies indicates that this species is probably of hybrid origin (Venter 2000). The closely similar, bisexual, diploid *L. afrum* of the west coast flats is most probably one of the parent species. *L. afrum* was observed in the field to hybridise readily with neighbouring plants from other species, such as *L. ferocissimum* Miers, resulting in a continuum of intermediate forms between the two parent plants. The other parent should then

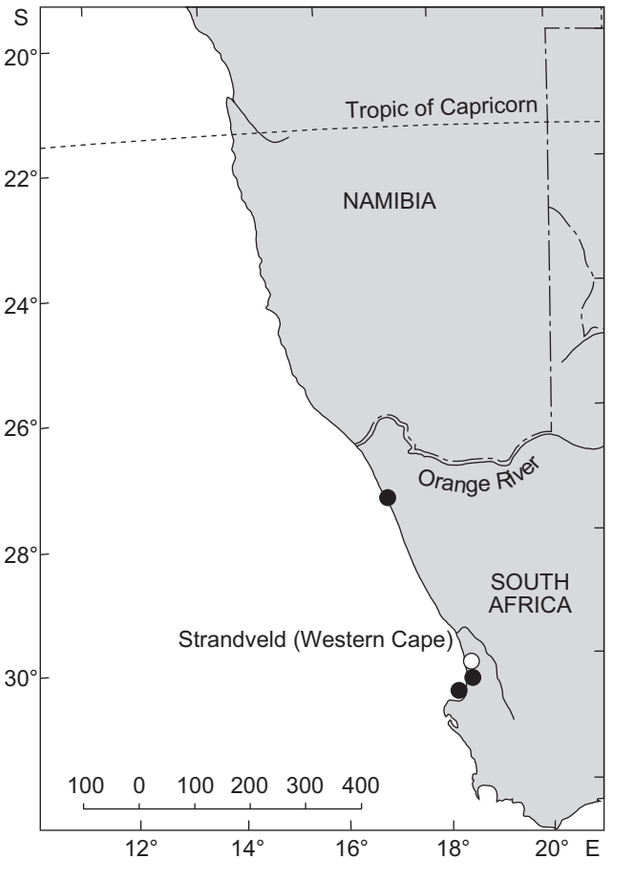

Figure 2: Presently known distribution of *Lycium strandveldense*. [open circle = type locality]

be a polypoid, functionally dioecious species and the only such species occurring very commonly along the west coast is *L. tetrandrum*.

Paratype material

Northern Cape, South Africa: — **2916** (Port Nolloth): 5km north of Port Nolloth along road to Alexander Bay (–BD), *Venter 8229*, (BLFU); *Venter 8230*, (BLFU).

— **3218** (Clanwilliam): Lamberts Bay, 5km east on road to Clanwilliam (–AB), *AM Venter 478 & 479*,(BLFU), *AM Venter 504* & *506*, *AM Venter 505 & 507*, (BLFU); Elands Bay, 0.5km west of the river crossing (–AD), *AM Venter 510* (BLFU); Dwarskersbos, 10km on road to Velddrif (–CA), *AM Venter 513* (BLFU).

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