

THE LOGANIACEAE OF AFRICA ¹⁾

VI. RETZIA

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HISTORY OF THE GENUS

Retzia was placed by THUNBERG (1794) near *Datura* and by LINNAEUS f. (1781) near *Convolvulus* in the *Pentandria Monogynia*. The latter was followed by several authors, a.o. SCHREBER (1789), WILLDENOW (1797), PERSOON (1805), ROEMER & SCHULTES (1819), and SPRENGEL (1825). JUSSIEU (1789) placed it in the *Convolvulaceae* (as *Convolvuli*) and was again followed by various authors. GISEKE (1792) placed it in the *Campanulaceae* (as *Campanaceae*) together with *Convolvulus* and *Campanula*.

BARTLING (1830) founded the *Retziaceae* which he composed of *Retzia* and *Lonchostoma*; the latter genus was moved to the *Bruniaceae* by BENTHAM & HOOKER (1876). BARTLING placed the *Retziaceae* near the *Convolvulaceae*, a view shared by G. DON (1838). ENDLICHER (1839, 1841) maintained the *Retziaceae* and placed it in the order of the *Tubiflorae* near the *Solanaceae*. SPACH (1840) placed *Retzia* with doubt in the *Solanaceae*. LINDLEY (1846) gave it a more certain place in this family after *Sessea*. DUNAL (1852) who studied the subject more thoroughly reduced BARTLING's *Retziaceae* in rank and made it a subtribe (as *Retzieae*) of the tribe *Solaneae* in the *Solanaceae*, while excluding two species added by SPRENGEL (1825) which are at present placed in *Prismatocarpus* (*Campan.*). BENTHAM & HOOKER (1876) followed DUNAL in placing *Retzia* in the *Solanaceae*, but they separated it from *Lonchostoma* (see above). In the *Genera Platarum* it appears between *Metternichia* and *Fabiana* in the *Cestreae* (as *Cestrineae*).

BAILLON (1888) included the *Loganiaceae* in the *Solanaceae* and therefore did not consider this problem. He placed it there near *Sessea* in the *Nicotianeae*. VON WETTSTEIN (1891) the only one who gives a survey of the *Solanaceae* with a key to the genera indicated (l.c. p.32) that *Retzia* occupied an isolated place, but nevertheless he followed BENTHAM & HOOKER more or less by placing it near *Metternichia* and *Sessea* in subtribe *Nicotianeae* of the tribe *Cestreae*. FEDDE (1896) who studied the anatomy of the *Solanaceae* found a striking resemblance in the anatomy of *Retzia* and *Nuxia* which is entirely different from that of the *Solanaceae* studied by him. Therefore he supposes, that it could better be placed in the *Loganiaceae* near *Nuxia* and *Buddleja*.

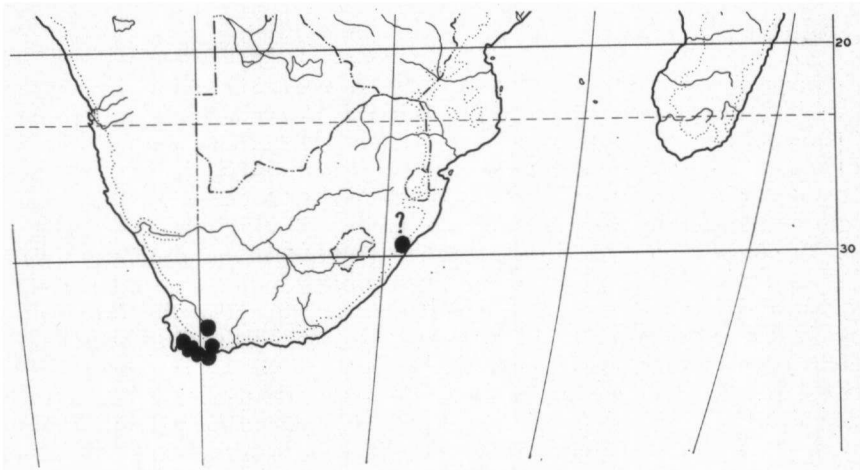
THONNER (1908) placed it, finally, in the *Loganiaceae* where it got

¹⁾ Continued from Act. Bot. Néerl. 10: 1-53, 460-465, 1961; 11: 47-50, 1962; 12: 112-118, 1963 and Meded. Landbouwhogeschool Wageningen 61 (4): 1-31, 1961.

its place in the subfamily of the *Loganioideae*, but did not explain his reasons.

GEOGRAPHICAL DISTRIBUTION

Retzia is endemic in the Cape of Good Hope. One collection is known from Natal, but this old specimen is insufficient evidence that the species actually occurs there.



Map. 1. *Retzia capensis*.

RELATIONSHIP WITH OTHER GENERA

As is stated in the first paper on the African *Loganiaceae* the present author is convinced that *Retzia* belongs to the *Loganiaceae*. FEDDE's conclusion is fully supported.

Retzia resembles *Metternichia* and *Sessea* in the following characters: woody plant; tubular calyx; induplicate-valvate aestivation of the corolla; 2-valved oblong few-seeded capsule with apically torn valves. In all these characters, excepting the aestivation, it also resembles *Nuxia*. But by its aestivation *Retzia* resembles *Usteria*. The seeds of *Metternichia* and *Sessea* are obscurely winged; those of *Retzia* and *Nuxia* unwinged, but in other *Loganiaceae*, e.g. *Gelsemium* and *Usteria* they are distinctly winged.

In both the *Loganiaceae* and *Solanaceae* *Retzia* may be placed on account of its flower-, fruit-, and seed-characters. The only characteristics in favour of the *Loganiaceae* are its decussate leaves and its *Nuxia*-like anatomy (FEDDE, 1896). This moved the present author to refer *Retzia* to the *Loganiaceae*. It represents a separate tribe near the tribes *Antonieae*, which contains *Usteria*, and *Buddlejeae* which contains *Nuxia*.

Antonieae

Leaves orbicular to oblong or nearly so, opposite or decussate. Plants without glandular hairs. Sepals free or connate, inside glabrous or with colleters at the base. Corolla lobes 5 or 4, valvate. Anther cells parallel, discrete. Ovary completely 2-celled, with many ovules in each cell. Fruit an oblong bivalved capsule with often apically torn valves. Seeds mostly winged.

Buddlejeae

Leaves ovate to narrowly elliptic, opposite, subopposite, ternate, or occasionally alternate. Plants mostly with glandular hairs. Calyx inside hairy with ordinary hairs or glabrous (at least in *Nuxia*), without colleters. Corolla lobes 4 or 5, imbricate (*Androya*, *Buddleja*, *Gomphostigma*, *Nuxia*, *Sanango*) or sometimes valvate (*Peltanthera*). Anther cells confluent (*Androya*, *Nuxia*, *Peltanthera*) or discrete (*Buddleja* (at least some species), *Gomphostigma*). Ovary completely 2-celled, with many ovules in each cell. Fruit an oblong bivalved capsule with often apically torn valves. Seeds smooth and reticulate (at least in *Nuxia* and *Sanango*) or with a honey-comb of wings (*Peltanthera*).

Tribus Retzieae (Bartling) Leeuwenberg, stat. nov. Type genus: *Retzia* Thunb.

Homotypic synonyms: *Retziaceae* Bartling, Ord. 192. 1830 (p.p. quoad *Retzia*); G. Don, Gen. Syst. 4:306. 1838 (p.p. quoad *Retzia spicata*); Endlicher, Gen. Pl. 669. 1839 (p.p. quoad *Retzia*); Ench. 336. 1841 (p.p. quoad *Retzia*); Meisner, Gen. Pl. 1:273. 1840; 2:179. 1840 (p.p. quoad *Retzia*); Walpers, Repert. 3:125. 1845 (p.p. quoad *Retzia spicata*).

Subtribus *Retzieae* (Bartling) Dunal in De Candolle, Prod. 13 (1): 580. 1852.

Leaves linear, in two decussate pairs close to each other, with glandular hairs. Calyx tubular, inside with glandular hairs, without colleters. Corolla lobes 5, induplicate-valvate (FEDDE erroneously: contorted). Anther cells divergent at the base, discrete (FEDDE erroneously: confluent). Ovary partially 2-celled, with 2–3 ovules in each cell. Fruit an oblong bivalved capsule with apically torn valves. Seeds with narrow crests.

Retzia Thunb., Phys. Sällsk. Handl. Stockholm (= Act. Soc. Lund.) 1:55, t. 1. f. 2. 1776; Nov. Gen. 1:4. 1781; Linnaeus f., Suppl. 18, 138. 1781; Murray, Syst. 196. 1784; Jussieu, Gen. Pl. 133. 1789; Schreber, Gen. Pl. 1:115. 1789; J. F. Gmelin, Syst. 333. 1791; Lamarck, Ill. 1:366. 1792(?), t. 103. 1792(?); Giseke, Prael. 393, 396. 1792; Thunberg, Prod. Pl. Cap. 1: 34. 1794; Persoon, Syst. 203. 1797; Willdenow, Sp. Pl. 1:843. 1797; Poiret in Lamarck, Enc. 6:185. 1804; Persoon, Syn. 1:176. 1805; Roemer & Schultes, Syst. 4:XXI, 205. 1819; Steudel, Nom. 684. 1821; 2nd ed. 2:443. 1841; Schultes (Thunberg), Fl. Cap. 167. 1823; Sprengel, Syst. 1:589.

1825, p.p. quoad speciem typicam; Reichenbach, Consp. 119. 1828; Bartling, Ord. 192. 1830; G. Don, Gen. Syst. 4: 306. 1838, p.p. quoad *R. spicata*; Harvey, Gen. S. Afr. Pl. 1st ed. 238. 1838; 2nd ed. 259. 1868; Endlicher, Gen. Pl. 669. 1839; Spach, Vég. Phan. 9: 58. 1840; Meisner, Gen. Pl. 1: 273. 1840; 2: 179. 1840; Endlicher, Ench. 337. 1841; Lindley, Veg. Kingdom 621. 1846; Schnizlein, Iconogr. 2: t. 148. 1843–1870; Dunal in De Candolle, Prod. 13(1): 581. 1852; Bentham et J. D. Hooker, Gen. Pl. 2: 905. 1876; v. Wettstein in Engl. Prantl, Nat. Pflanzenf. 4(3b): 32. 1891; op. cit. Nachtr. 1: 293. 1897; Fedde, Beitr. Anat. Solanac. (Thesis). 41–48. 1896; Solereder, Syst. Anat. Dicotyl. 657. 1899; Wright in Fl. Cap. 4(2): 120. 1904; Thonner, Blütenpfl. Afr. 456. 1908; Phillips, Gen. S. Afr. Flow. Pl. 1st ed. 538. 1926; 2nd ed. 657. 1951.

Shrub, about 0.60–1.50 m high. Branchlets densely covered with linear leaves. Stipules none. Flowers axillary, solitary, on very short branches, sessile, subtended by some leafy and some sepal-like often keeled bracteoles. Calyx tubular, tube cylindric; lobes 5, about as long as the tube, unequal. Corolla red, limb yellow or less often white or grey, cylindric, about $2.5\times$ as long as the calyx, outside densely pilose above, glabrous beneath; lobes small, equal, triangular-ovate, induplicate-valvate, entire, outside sericeous with appressed hairs, especially at the apex. Stamens 5, equal, exserted; filaments free from each other, inserted near the apex of the corolla tube; anthers introrse, oblong or narrowly triangular; cells 2, discrete, divergent at the base, dehiscent throughout by a longitudinal split. Ovary superior, ovoid-conical, 2-celled, with 2 impressed lines along the line of dehiscence; style filiform, exserted; stigma small, bilobed, above pubescent with glandular hairs. Disk none. Ovules ovoid, 2–3 in each cell, attached on rather long funiculi in the middle of the septum. Capsule oblong, slightly longer than the calyx tube, seemingly 4-valved, septicidal and both valves torn for about two-thirds of their length. Seeds in each cell 2–3, ellipsoid 6×3 mm; testa pale brown, reticulate, covered with longitudinal septate crests. Embryo surrounded by mealy endosperm, cylindric, large.

Distribution: A single species in the Cape of Good Hope and perhaps also in Natal (see remark on geographical distribution).

Retzia capensis Thunb., Phys. Sällsk. Handl. Stockholm (= Act. Soc. Lund.) 1: 55, t. 1. f. 2. 1776; Nov. Gen. 1: 5. 1781; Poirlet in Lamarck, Enc. 6: 185. 1804; Roemer & Schultes, Syst. 4: 205. 1819; Steudel, Nom. 684. 1821; Schultes (Thunberg), Fl. Cap. 167. 1823; Dunal in De Candolle, Prod. 13(1): 582. 1852; Rice & Compton, Wild Flow. Cape Good Hope pl. 113. 1951.

Type: Cape of Good Hope: between Hottentots Hollands Kloof and Houthoek, on the top of the mountains, Thunberg anno 1773 (S, holotype; isotypes: S, WAG).

Fig. 1; map 1

Homotypic synonym: *R. spicata* Thunb. ex. L. f., Suppl. 138. 1781; Murray, Syst. 196. 1784; Gmelin, Syst. 333. 1791; Willdenow, Sp.

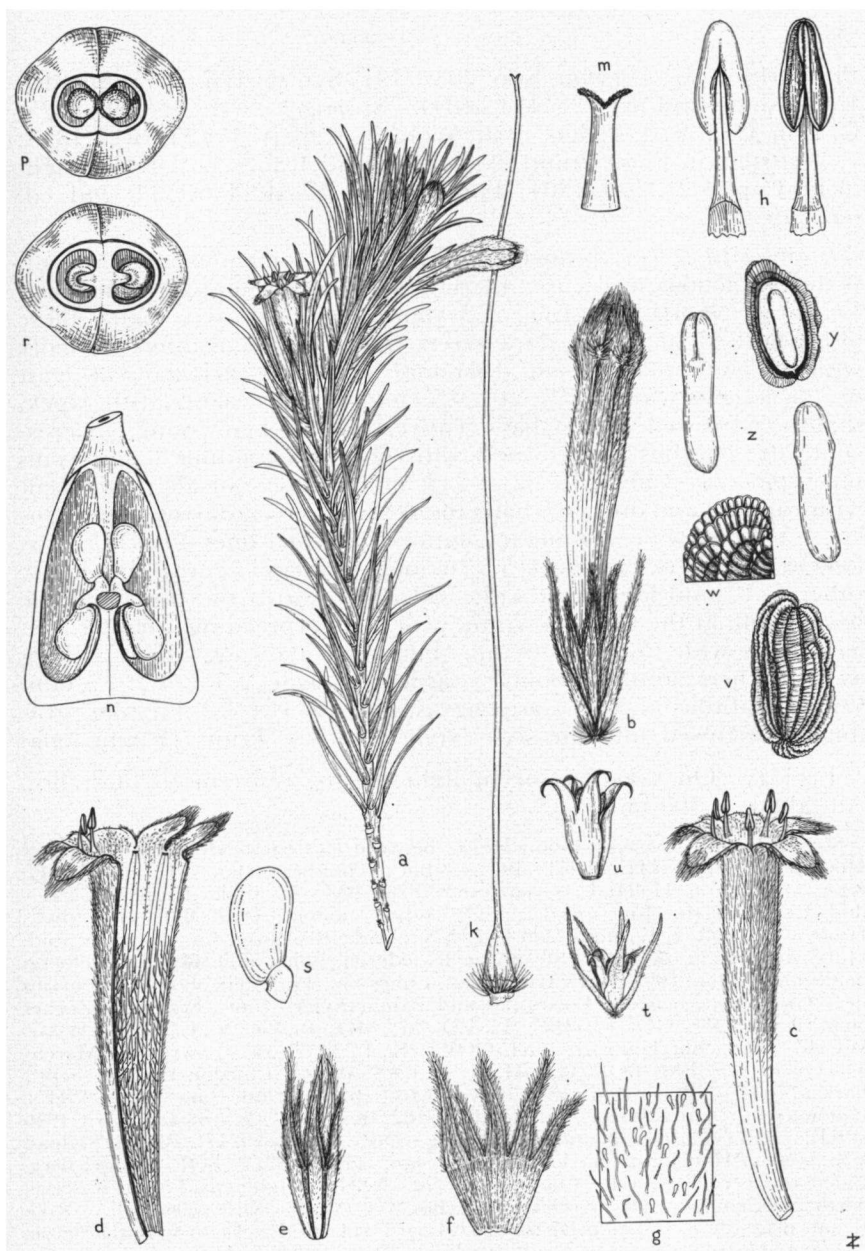


Fig. 1. *Retzia capensis*: a. branch, $\frac{1}{2} \times$; b. flower bud, $1 \times$; c. corolla, $1 \times$; d. opened corolla, $1 \times$; e. calyx, $1 \times$; f. opened calyx inside, $1 \times$; g. portion of calyx inside, with glandular hairs, $20 \times$; h. stamens, $5 \times$; k. pistil, $2 \times$; m. stigma, $10 \times$; n. longitudinal section of ovary, $10 \times$; p. transverse section of apex of ovary, $10 \times$; r. transverse section of the middle of the ovary; s. ovule, $20 \times$; t. fruit with calyx, $\frac{1}{2} \times$; u. fruit, $1 \times$; v. seed, $4 \times$; w. portion of testa, $10 \times$; y. longitudinal section of seed, $4 \times$; z. embryo, $8 \times$. (a-s. Rehm 1 Feb. 1947; t-z. Phillips 70).

Pl. 1: 843. 1797; Persoon, Syst. 203. 1797; Syn. 1: 176. 1805; Steudel, l.c.; Nom. 2nd ed. 2: 443. 1841; Sprengel, Syst. 1: 589. 1825; G. Don, Gen. Syst. 4: 306. 1838; Walpers, Repert. 3: 125. 1844–1845; v. Wettstein in Engl. Prantl, Nat. Pflanzenf. 4(3b): 32. 1891; Wright in Fl. Cap. 4(2): 120. 1904; Phillips, Gen. S. Afr. Flow. Pl. 2nd ed. 657. 1951.

Stems stiff, erect; branchlets thick, white-tomentose, glabrescent, with conspicuous leaf-scars; internodes very short, up to 10 mm long. Leaves in whorls consisting of 2 approximate decussate pairs, those of a whorl equal, sessile, dark green, thick-coriaceous, linear, usually with revolute margin and therefore seemingly acicular, at least $8 \times$ as long as wide, $3-7 \times 0.3-0.5$ cm or smaller, acute at the apex, slightly narrowed at the base, entire, pilose when young, macroscopically glabrous but covered with minute glandular hairs; veins inconspicuous. Calyx $18-22 \times 2-3$ mm, pilose outside, pubescent with capitate and ordinary hairs inside; lobes erect, narrowly triangular, $1.5-2$ mm wide, acuminate, entire, the longer ones up to $1.5 \times$ as long as the others. Corolla $4-5.5$ cm long, inside pilose with thin hairs; tube $35-48$ mm long, gradually widened towards the throat, at the base 2 mm, at the throat $6-7$ mm wide; lobes spreading, about $1.5 \times$ as long as wide, $5-7 \times 3-4$ mm. Filaments glabrous, about as long as the anthers; anthers about $2 \times$ as long as wide, $2.5 \times 1.2-1.5$ mm. Ovary glabrous, $1.5-2 \times$ as long as wide, $2-3 \times 1.2-1.5$ mm, gradually narrowed into the style; style glabrous. Fruits 16 mm long.

Ecology: On savannas or in light forests, resistant to bush fire. Alt. about 0–300 m.

SOUTH AFRICA: CAPE OF GOOD HOPE: between Hottentots Hollands Kloof and Houthoek, Mund B.H. 26984 (BOL); *ibid.*, Thunberg anno 1773 (S, WAG, type); Hottentots Holland, Niven anno 1826 (BM, S); *ibid.*, Pappe s.n. (K); *ibid.* (fl.) Anonym. June (BOL); *ibid.* (July) Anonym. 3476 (BOL, W); *ibid.*, Hibbew (?), coll. J. E. Smith 286.1 (LINN); *ibid.*, Roxburgh s.n. (BM, G); *ibid.* (July) Zeyher s.n. (K); *ibid.*, Steenbruss R. (March) Bolus 5339 (BOL); Tafelberg, Schlechter 27 Jan. 1897 (GH); Grietjesgat, Lüher s.n. (W); Stellenbosch, mountains near Grietjesgat, between Lowryspas and Palmietrivier (June) Ecklon & Zeyher 56.6 (E, G, GH, GOET, HBG, L, LD, M, MO, P, PR, S, UPS, W, WAG, WU, Z); *ibid.*, Burchell 8187 (GH, GOET, K, L, M, P, W); Lowryspas (March) MacOwan 245 (BM, BOL, G, GH, K, P, UPS, W, Z); Caledon District (Sept.) Barker 1634 (NBG); *ibid.*, Bot. River Mts. (fl.) Marloth Jan. 1929 (PRE); Palmietrivier (Jan.) Stokoe Nat. Herb. 27182 (K); *ibid.* (fr.) Stokoe April 1946 (PRE); *ibid.*, Platteberg and Paardeberg (Dec.) Stokoe 9212 (PRE); Skilpad Vlei, west of Hangklip, Caledon Division (Jan.) Pillans 8217 (BOL); Kogel Berg, Caledon District (March) Compton 19390 (NBG); Highlands Forest Reserve, north of Kleinmond (fl. fr. Oct.) J. J. Bos 674 (WAG, with spirit coll.); Roos Kraal, near Elgin, Caledon Division, Hubbard 414 (BOL); Elgin Forest Reserve, Caledon District (fl.) Hubbard 10 Dec. 1940 (NBG); Hermanus Summit, Maanskijnskop in Waterfall Kloof (April) Galpin 12838 (K); Hermanus, Caledon Division (Dec.) Gilmore 2502 (G); *ibid.* (fl.) Guthrie Jan. 1920 (Z); *ibid.* (Oct.) Paterson 10 (BOL); *ibid.*, I.B.P.E. 463 (K); Houwhoek (fl. fr. Oct.) Phillips 70 (G); *ibid.* (Oct., Feb.) Schlechter 5481 (Z), 7434 (BM, COI, E, G, HBG, K, L, MO, P, PR, S, W, Z); between Elim and Caledon (Dec.) Bolus B.H. 26982 (BOL); Bredasdorp (Jan.) Galpin 11241 (K), B.H. 26983 (BOL); near Elim, Swellendam (fl.) Ecklon Dec. 1838 (M, W, Z); Beddiesbaai (fl.) Rehm 1 Feb. 1947 (M); Ofbert (?) (fl.) 11 July 1779 (?) (W, herb. 290905); Robertson (?),

Mapon s.n. (BM); Kleinriviersberge III, Anonym. Nov. (S); sin. loc.: Bladh, Linnean herb. 209.1 (LINN); herb. Burmann s.n. (G); Commerson s.n. (G); herb. Deserès, herb. Jussieu s.n. (P); Forster s.n. (K); herb. Forsyth s.n. (K); herb. Gasström s.n. (S); Linnean herb. 209.2 (LINN); herb. Retzius 440 (?) (LD); Scholl 1108, herb. Jacquin fil. (W); herb. Schreber, herb. 1686 (M).

NATAL: Durban, comm. Poeppig s.n. (W).

EXCLUDED SPECIES

R. campanuloides (L.f.) Spreng., Syst. Veg. 1: 589. 1825 = *Prismatocarpus campanuloides* (L.f.) Sonder in Fl. Cap. 3: 589. 1865; R. S. Adamson, Rev. of *Prismatocarpus* and *Roellia*, Journ. S. Afr. Bot. 17: 109. 1952.

R. roëllioides (L.f.) Spreng., 1.c. = *Prismatocarpus roëllioides* (L.f.) Sonder, 1.c. p. 586 = *P. pedunculatus* (Berg.) A. DC. in De Candolle, Prod. 7: 443. 1839; R. S. Adamson, 1.c. p. 97.