A Synopsis of *Korthalsella* (Viscaceae)

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ABSTRACT. In preparation for forthcoming publications on allozymes and the ITS region of nuclear DNA of *Korthalsella*, a synopsis of the genus is presented. Only names in current use are listed; a complete taxonomic revision will be published separately. Molecular evidence, as well as morphometric evaluation of branch shape characters and anatomical results have shown that a realignment of *Korthalsella* sections and species is needed. The changes involve new delimitations and combinations. A key to the eight species of *Korthalsella* is presented. The following species are recognized: *Korthalsella geminata* (Korthals) Engler, *K. papuana* Danser, *K. taenioides* (Commerson ex DC.) Engler, including six forms, *K. cylindrica* (Tieghem) Engler, *K. japonica* (Thunberg) Engler, including three forms, *K. salicornioides* (A. Cunningham) Tieghem, *K. lindsayi* (Oliver ex Hooker f.) Engler, *K. lindsayi* var. *clavata* (Kirk) Danser, and *K. dacrydii* (Ridley) Danser.

The taxonomy of *Korthalsella*, a genus of mistletoes with highly reduced leaves and flowers, has been problematic from the outset. Van Tieghem (1896) first monographed the taxon as a tribe with three genera. He described over 60 species largely on the basis of minute variations in shape and size of the segments composing the articulated branches. Engler (1897) reduced the genera to sections of *Korthalsella* and made some new combinations. Danser (1937, 1940) completed the most recent monograph, in which he maintained Engler's 3 sections, and reduced Van Tieghem's numerous species and those added by later workers (e.g., Lecomte, 1916) to 22 species and 10 varieties, including 3 new species he described.

Danser delimited sections by the presence or absence of specialized inflorescence branches and distichous or decussate cladotaxy. Studies of living plants showed that cladotaxy is an unreliable character at any level, since members of one population sometimes exhibit the full range of character states. Sections in the present work are delimited as follows: vegetative branches flattened and inflorescence branches terete, vascular bundles eight or more, section *Heterixia*; vegetative and flowering branches similar in appearance, vascular bundles eight or more, section *Korthalsella*; and vascular bundles four or fewer, section *Bifaria*. These sectional delimitations, however, are still under study and may prove to need revision.

Three of Danser's species were recognized on the basis of inflorescence characters; the other nineteen, and all ten varieties, were delimited on the basis of segment shape or plant size. Some, though not all, of his taxa were difficult to identify from descriptions alone, so botanists tended to use a "biogeographic" species concept in practice, identifying specimens based on locality rather than congruence with the protologue. Studies briefly enumerated below indicated that shape and size characters were indeed unreliable in many cases, and that eight species can be recognized on the basis of flower number per inflorescence, strictly defined size and shape characters, and host plants.

Shape and size are quantitative characters that can be evaluated using morphometric techniques. Statistical analysis of measurement data showed that a large complex of species within the section *Bifaria* were not distinguishable using shape or size. These taxa are currently placed in *Korthalsella taenioides* and *K. japonica*.

Anatomical work revealed that the number of major vascular bundles varied discretely between eight or more (seven or six in a few specimens) and four or fewer. *Korthalsella opuntia* sensu Danser (1937), correctly called *K. japonica* (Thunberg) Engler (Merrill, 1916), was found to have elements with both vascular bundle numbers. The type specimen of *K. japonica* has four vascular bundles; the earliest valid name for the eight-bundle elements is *K. taenioides* (Commerson ex DC.) Engler.

Molecular work has confirmed both the morphometric and anatomical species delimitations. Allozymes have been studied in 28 populations of five of the seven species using 25 loci in 11 enzyme systems. This study included all the problem taxa in the genus except *K. dacrydii*, a rare species known only from a few Malayan and Javan collections. Sequences of the ITS region are confirming the allozyme data. Both molecular approaches sup-

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port a monophyletic sibling species found only on *Metrosideros*, *K. cylindrica*, which sometimes has very strict distichous or decussate cladotaxy, but is not otherwise obviously distinct from *K. taenioides* forma *remyana*.

Taxonomy

Korthalsella Tieghem, Bull. Soc. Bot. France 43: 83. 1896. TYPE: *Korthalsella remyana* Tieghem.

Monoecious, perennial, hemiparasitic herbs, the host usually dicotyledonous trees, 2–60 cm long from base to apex, articulated at the nodes, the segments terete to strongly complanate, forming cladodes, inflorescences axillary at each node, opposite, the whole mass of flowers forming a cushion-like structure, the flowers surrounded by unicellular or multicellular trichomes; staminate and pistillate flowers sessile, 0.4–0.8 mm diam. at broadest point, with 3 persistent tepals; anthers 3, 2-locular, connate into a synandrium, the pollen dehiscing into a central chamber and exuded through the apical pore of the synandrium; fruit globose to ellipsoid, less than 3 mm long, dehiscence weakly explosive; chromosome number: $n = 14$.

Distribution. Madagascar, Mascarene Islands, isolated collections in Africa (Kenya, Ethiopia, Socotra), Himalaya, southern China, Ryukyu and Bonin Islands, southern Japan, Indomalaysia, Papuasia, Australia (Western Australia, Northern Territory, South Australia, Queensland, New South Wales, Victoria), New Zealand, volcanic islands of the Pacific, extending to the Hawaiian Islands.

Key to the Species of *Korthalsella*

1a. Branch vascular bundles 8 or more (rarely 7 or 6).
  2a. Flowering branches terete and vegetative branches flattened (section *Heterixia*).
    3a. Inflorescence composed of triads of flowers . . . . . 1. *K. geminata*
    3b. Inflorescences composed of many flowers . . . . . 2. *K. papuana*
  2b. Flowering and vegetative branches similar in shape (section *Korthalsella*).
    4a. Plants growing on *Metrosideros*. . . . . 4. *K. cylindrica*
    4b. Plants growing on other hosts . . . . . 3. *K. taenioides*
1b. Branch vascular bundles 4 or fewer (section *Bifaria*).
  5a. Flowering branches terete and vegetative branches flattened . . . . . 6. *K. lindsayi*
  5b. Flowering and vegetative branches similar in shape.
    6a. Mature plants more than 8 cm long, branch segments usually obovate and flattened . . . . 5. *K. japonica*
    6b. Mature plants less than 8 cm long, branch segments small and cylindrical or subcylindrical.
      7a. Plants growing on angiosperms . . . . . 7. *K. salicornioides*
      7b. Plants growing on gymnosperms (*Dacrydium*) . . . . . 8. *K. dacrydii*

1. Korthalsella geminata (Korthals) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. *Viscum geminatum* Korthals, Verh. Batav. Genootsch. Kunsten 17: 259. 1839. TYPE: Southeast Borneo. Summit of Mt. Sakoembang, 930 m, *Korthals s.n.* (holotype, L (sheet no. 6415 #12 & #13); isotype, U).

Distribution. Borneo, Sumatra.

2. Korthalsella papuana Danser, Blumea 3: 53. 1938. TYPE: Papua New Guinea. Crest of the main ridge NW of The Gap, *Carr 15120* (holotype, L; isotypes, A, LAE).

Distribution. Northern Queensland, tropical rainforest canopy; Sumatra; New Guinea.

3. Korthalsella taenioides (Commerson ex DC.) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. *Viscum taenioides* Commerson ex DC., Prodr. 4: 283. (Sept.) 1830. TYPE: Mascarene Islands. Réunion, 1771, *Commerson s.n.* (lectotype, designated here, G).

Distribution. The most widely distributed species in the genus, found on the volcanic islands of the Pacific, Lord Howe and Norfolk Islands, Australia (Queensland, New South Wales, Victoria), New Hebrides, Loyalties, Solomons, New Caledonia, Rossel Island near New Guinea, Malaysia, Mascarenes Islands, perhaps Madagascar (no recent collections), and east Africa.

Key to the Forms of *Korthalsella taenioides*

1a. Branches complanate.
  2a. Individual segments broader than long or nearly square, the ratio of length to width 1.1 or less . . . . . 3d. f. *pendula*
  2b. Individual segments longer than broad, the ratio of length to width greater than 1.1.

3a. Segments broadly elliptical, sometimes approaching suborbicular . . . . . 3f. f. *emersa*
3b. Segments oblong or rectangular.
4a. Nodes strongly constricted; segments very large, basal segments commonly longer than 40 mm, medium-sized segments commonly longer than 25 mm . . . . . 3e. f. *disticha*
4b. Nodes weakly to not constricted; segments smaller than above . . . . . 3a. f. *taenioides*
1b. Branches cylindrical, sometimes approaching elliptical in cross section in specimens with long segments.
5a. Segments cylindrical and short, usually less than 15 mm . . . . . 3b. f. *remyana*
5b. Segments elliptical in cross section and elongate, the medium-sized segments commonly more than 15 mm long, the large segments commonly more than 20 mm long . . . . . 3c. f. *horneana*

Notes on delimitation of the forms. Korthalsella taenioides is a highly polymorphic species with recognizable extreme forms that represent outliers along a continuum of shape and size variation. Owing to the continuous nature of the variation the lowest taxonomic rank has been used, and arithmetic definition of the forms facilitates reproducible identification of specimens. This approach seems preferable to recognizing a single polymorphic taxon without providing a means to identify extreme forms when necessary.

3a. **Korthalsella taenioides** (Commerson ex DC.) Engler f. **taenioides**

Bifaria commersoni Tieghem, Bull. Soc. Bot. France 43: 176. 1896. *Korthalsella commersoni* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 14: 154. 1937. TYPE: Madagascar. 1770 or 1771, *Commerson s.n.* (holotype, P; isotype, G).

Bifaria complanata Tieghem, Bull. Soc. Bot. France 43: 167. 1896. *Korthalsella complanata* (Tieghem) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. TYPE: Hawaiian Islands. Maui, on *Osmanthus*, 1851–1855, *Rémy 504-Maui* (holotype, P; isotypes, A, BISH).

Bifaria dichotoma Tieghem, Bull. Soc. Bot. France 43: 171. 1896. *Korthalsella dichotoma* (Tieghem) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. SYNTYPES: New Caledonia. Island Art, *Montrousier 200* (G); 1871, *Balansa 3169a* (P).

Bifaria balansae Tieghem, Bull. Soc. Bot. France 43: 172. 1896. *Korthalsella dichotoma* (Tieghem) Engler var. *balansae* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 14: 142. 1937. TYPE: New Caledonia. Hills above Conception, 1869, *Balansa 1320* (holotype, P; isotype, US).

Bifaria platycaula Tieghem, Bull. Soc. Bot. France 43: 170. 1896. *Korthalsella platycaula* (Tieghem) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. TYPE: Society Islands. Tahiti, illegible locality that may read "Vulz. Pinpapa," 1834, *Moerenhout s.n.* (holotype, P; isotype, G).

Bifaria vitiensis Tieghem, Bull. Soc. Bot. France 43: 170. 1896. *Korthalsella platycaula* (Tieghem) Engler var. *vitiensis* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 16: 337. 1940. TYPE: Fijian Islands. 1840. Without specific locality, but the collection must have come from either Vanua Levu or Ovalau (vide Smith, 1985). On *Inocarpus*. U.S. Expl. Exped. (holotype, P; isotype, US 78373).

Korthalsella rapensis F. Brown, Bernice P. Bishop Mus. Bull. 130: 57. 1935. *Korthalsella platycaula* (Tieghem) Engler var. *rapensis* (F. Brown) Danser, Bull. Jard. Bot. Buitenzorg 16: 337. 1940. TYPE: Tubuai Islands. Rapa, Pake Bay, Tauloko, near shore, on *Celtis paniculata*, 1920s, *Stokes 465* (holotype, BISH).

Bifaria bojeri Tieghem, Bull. Soc. Bot. France 43: 176. 1896. *Korthalsella opuntia* var. *bojeri* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 14: 138. 1937. SYNTYPES: Mascarene Islands. Mauritius, on *Antidesma madagascariense*, 1833, *Bojer s.n.* (G, P).

Bifaria gaudichaudii Tieghem, Bull. Soc. Bot. France 43: 176. 1896. *Korthalsella opuntia* var. *gaudichaudii* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 14: 138. 1937. TYPE: Mascarene Islands. Réunion, Voy. Bonité, 1837, *Gaudichaud s.n.* (P).

Bifaria richardii Tieghem, Bull. Soc. Bot. France 43: 176. 1896. *Korthalsella opuntia* var. *richardii* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 14: 141. 1937. SYNTYPES: Mascarene Islands. Réunion, forests at Salazie, *Richard 218* and *219* (P).

Korthalsella degeneri Danser, in Degener, Fl. Hawaii. Fam. 105, p.p. 1938. TYPE: Hawaiian Islands. Oahu, Makua Valley, base of Piko trail, 1000 ft., on *Sapindus oahuensis*, *Degener 11870* p.p. (A, G, K, L p.p., MO, NSW). (L p. alt. *K. taenioides* f. *horneana.*)

Korthalsella binii Pichi-Sermolli, Missione Stazione Lago Tana 7: 31. 1951. TYPE: Africa. Ethiopia, on the shores of Lake Tana, *Pichi-Sermolli 2487* (holotype, FI "Herb. Colon. Florent.").

Korthalsella cylindrica (Tieghem) Engler var. *planiuscula* Danser, Bull. Jard. Bot. Buitenzorg 14: 132. 1937. TYPE: Hawaiian Islands. Oahu, Waiolani, no date, *Wawra 1971* (holotype, W apparently lost).

Bifaria crassa Tieghem, Bull. Soc. Bot. France 43: 167. 1896. *Korthalsella latissima* (Tieghem) Danser var. *crassa* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 14: 153. 1937. TYPE: Hawaiian Islands. *Rémy 504-Hawaii* (holotype, P; isotype, A).

Korthalsella wawrae Tieghem, Bull. Soc. Bot. France 43: 164. 1896. *Korthalsella remyana* Tieghem var. *wawrae* Danser, Bull. Jard. Bot. Buitenzorg 14: 127. 1937. TYPE: Hawaiian Islands. Kauai, Pohakupili, *Wawra 2054* (holotype, W apparently lost).

Korthalsella rubra (Tieghem) Engler subsp. *geijericola* Barlow, Brunonia 6: 54. 1983. TYPE: Australia. New South Wales, Wee Waa, 21 Oct. 1920, *Withers s.n.* (holotype, NSW).

Distribution. Mascarene Islands, isolated collections in Kenya, Ethiopia and Socotra, Malay peninsula, Papuasia, Australia (Queensland, New South Wales, Victoria), volcanic islands of the Pacific, extending to the Hawaiian Islands.

Korthalsella opuntia, the most widely used name in the genus, was misapplied and requires some

explanation. Thunberg (1784) cited a valid Linnaean species, *Viscum opuntioides*, in synonymy when he published *Viscum opuntia*, rendering his name nomenclaturally superfluous. Thunberg later realized his taxon was distinct from *V. opuntioides* L. and redescribed it as *V. japonicum* Thunberg (1794), the earliest valid epithet in what was to become *Korthalsella*. Engler (1897) published a new combination in *Korthalsella* based on Thunberg's later epithet (*V. japonicum*). Merrill (1916) incorrectly used the earlier epithet, *opuntia*, ignoring Engler's valid and effective combination *K. japonica* (Thunberg) Engler. Thus, *K. opuntia* (Thunberg) Merrill was nomenclaturally superfluous. This difficulty with *K. opuntia* was first noted by Eichler (1965) and corrected by Barlow (1983).

3b. Korthalsella taenioides (Commerson ex DC.) Engler f. **remyana** (Tieghem) Molvray, comb. et stat. nov. Basionym: *Korthalsella remyana* Tieghem, Bull. Soc. Bot. France 43: 86. 1896. TYPE: Hawaiiian Islands. Oahu, on *Diospyros*, *Rémy 502-Oahu* (holotype, P; isotype, L).

Distribution. Reported from the Hawaiian Islands and Tahiti.

3c. Korthalsella taenioides (Commerson ex DC.) Engler f. **horneana** (Tieghem) Molvray, comb. et stat. nov. Basionym: *Korthalsella horneana* Tieghem, Bull. Soc. Bot. France 43: 164. 1896. TYPE: Fijian Islands. Viti Levu, Mt Koromba, viii/187, *Horne 894* (holotype, P; isotypes, BO, GH, K).

Korthalsella degeneri Danser, in Degener, Fl. Hawaii. Fam. 105, p. p. 1938. TYPE: Hawaiian Islands. Oahu, Makua Valley, base of Piko Trail, 1000 ft., on *Sapindus oahuensis*, *Degener 11870*. p. p. (L 6415). (p. alt. *K. taenioides* f. *taenioides*.)

Distribution. Reported from the Hawaiian Islands, Marquesas, Tahiti, Samoa, Fiji, and Norfolk Island.

3d. Korthalsella taenioides (Commerson ex DC.) Engler f. **pendula** (Wawra) Molvray, comb. nov. Basionym: *Viscum moniliforme* Blume [var. *planum* Wawra] forma *pendula* Wawra, Beiträge Fl. Haw. Inseln, Fortsetzung 56: 139. 1873. *Bifaria latissima* Tieghem, Bull. Soc. Bot. France 43: 168. 1896. *Korthalsella latissima* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 14: 150. 1937. TYPE: Hawaiian Islands. Kauai, Halemanu, *Wawra 2139* (P).

Bifaria breviarticulata Tieghem, Bull. Soc. Bot. France 43: 173. 1896. *Korthalsella breviarticulata* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 16: 339. 1940. TYPE: Australia. Queensland, close to Brisbane, Gowrie Mtn., on *Croton insulare*, no date, *Bailey 1065* (holotype, B lost; lectotype, designated here, BRI; isolectotypes, K, NSW).

Distribution. Reported from the Hawaiian Islands, southern Queensland, and one collection from Dungog, New South Wales.

3e. Korthalsella taenioides (Commerson ex DC.) Engler f. **disticha** (Endlicher) Molvray, comb. et stat. nov. Basionym: *Viscum distichum* Endlicher, Prodr. Fl. Norfolk. 61. 1833. *Korthalsella disticha* (Endlicher) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. TYPE: Norfolk Island, 1804–1805, *Bauer s.n.* (holotype, W apparently lost; isotype, P).

Distribution. Reported from Norfolk Island, isolated collections from Fiji, and the Austral islands.

3f. Korthalsella taenioides (Commerson ex DC.) Engler f. **emersa** (Barlow) Molvray, comb. et stat. nov. Basionym: *Korthalsella emersa* Barlow, Brunonia 6: 44. 1983. TYPE: Australia. Lord Howe Island, Mt. Eliza, ca. 100 m, on *Elaeodendron*, *Balgooy 1037* (holotype, CANB).

Distribution. Reported from Lord Howe Island, New Caledonia, and isolated collections from Norfolk Island.

4. Korthalsella cylindrica (Tieghem) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. Basionym: *Bifaria cylindrica* Tieghem, Bull. Soc. Bot. France 43: 166. 1896. TYPE: Hawaiian Islands. Lanai, on *Metrosideros*, *Rémy 502-Lanai* (P).

Distribution. Hawaiian Islands, Tahiti.

5. Korthalsella japonica (Thunberg) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. *Viscum japonicum* Thunberg, Trans. Linn. Soc. London 2: 329. 1794. TYPE: Thunberg Herbarium specimen labeled *Viscum japonicum* (holotype, UPS).

Distribution. New Caledonia, Australia (Queensland, New South Wales, South Australia, Western Australia), Philippines, Japan, China, India, Himalaya, Ceylon, Afghanistan, and the Mascarene Islands.

KEY TO THE FORMS OF *KORTHALSELLA JAPONICA*

1a. Plants large, commonly 15 cm or longer; mature segments usually greater than 10 mm long, basal segments often greater than 17 mm long . . . . . 5b. f. *rubra*

1b. Plants usually 8–15 cm long; mature segments usually smaller than 10 mm long, basal segments usually less than 15 mm long.

2a. Segments short, slender, and terete or nearly so . . . . . 5c. f. *grayi*

2b. Segments relatively flat . . . . . 5a. f. *japonica*

5a. Korthalsella japonica (Thunberg) Engler f. **japonica**

Bifaria fasciculata Tieghem, Bull. Soc. Bot. France 43: 173. 1896. *Korthalsella opuntia* Danser var. *fasciculata* (Tieghem) Danser, Bull. Jard. Bot. Buitenzorg 14: 138. 1937. TYPE: China. Eastern Su-tchuen, (Dist. Tchen-keou-tin), *Farges s.n.* (P).

Korthalsella brassiana Blakely, Proc. Roy. Soc. Queensland 47: 79. 1936. *Korthalsella japonica* (Thunberg) Engler subsp. *brassiana* (Blakely) Barlow, Brunonia 6: 47. 1983. TYPE: Australia. North Queensland, Thornton's Peak 4000–4500 ft., *Brass 2298* (holotype, NSW; isotypes, A, BRI).

Korthalsella leucothrix Barlow, Brunonia 6: 48. 1983. TYPE: Western Australia, Wanarra Rock, on *Acacia acuminata, Gardner 12540* (holotype, PERTH).

Distribution. Reported throughout the range of the species.

Merrill (1916) used Thunberg's 1784 epithet "opuntia" for this taxon. Nomenclaturally, the combination *Korthalsella opuntia* (Thunberg) Merrill applies to *Viscum opuntioides* L. See discussion of *K. taenioides* f. *taenioides*, above.

5b. Korthalsella japonica (Thunberg) Engler f. **rubra** (Tieghem) Molvray, comb. et stat. nov. Basionym: *Bifaria rubra* Tieghem, Bull. Soc. Bot. France 43: 173. 1896. *Korthalsella rubra* (Tieghem) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. TYPE: Australia. New South Wales, Richmond and Clarence Rivers, *Beckler s.n.* (holotype, P; isotype, MEL).

Distribution. Reported from northern Queensland, New South Wales, Himalaya, and Japan.

5c. Korthalsella japonica (Thunberg) Engler f. **grayi** (Barlow) Molvray, comb. et stat. nov. Basionym: *Korthalsella grayi* Barlow, Brunonia 6: 46. 1983. TYPE: Australia. North Queensland State Forest Reserve 607, Emerald Logging Area, 1100 m, on *Elaeocarpus ferrugineus, Gray 1724* (holotype, QRS).

Distribution. Reported from north Queensland, Australia.

6. Korthalsella lindsayi (Oliver ex J. D. Hooker) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. *Viscum lindsayi* Oliver ex J. D. Hooker, Handb. N. Zeal. Fl. 108. 1867. TYPE: New Zealand. Middle Island [= South Island], Otago, *Lindsay s.n.* (AK, K).

Distribution. North and South Islands of New Zealand, and possibly Island Art, New Caledonia.

KEY TO THE VARIETIES OF *KORTHALSELLA LINDSAYI*

1a. Vegetative segments suborbicular, two or less times longer than broad . . . . . 6a. var. *lindsayi*

1b. Vegetative segments narrowly obovate, more than two times longer than broad . . . . . 6b. var. *clavata*

6a. Korthalsella lindsayi (Oliver ex J. D. Hooker) Engler var. **lindsayi**

Heterixia amentacea Tieghem, Bull. Soc. Bot. France 43: 178. 1896. *Korthalsella amentacea* (Tieghem) Engler, Nat. Pflanzenfam. Nachtr. 3. 138. 1897. TYPE: New Caledonia. Island Art, on *Baeckea virgata, Montrousier 201* (LY?).

Distribution. North and South Islands of New Zealand, and possibly Island Art, New Caledonia.

6b. Korthalsella lindsayi (Oliver ex J. D. Hooker) Engler var. **clavata** (T. Kirk) Danser, Bull. Jard. Bot. Buitenzorg 14: 130. 1937. *Viscum clavatum* T. Kirk, Trans. & Proc. New Zealand Inst. 24: 429. 1892. TYPE: New Zealand. South Island, Canterbury, Castle Hill Basin, 600–900 m, 1876, *Kirk & Enys s.n.* (AK).

Distribution. North and South Islands of New Zealand.

7. Korthalsella salicornioides (A. Cunningham) Tieghem, Bull. Soc. Bot. France 43: 164. 1896. *Viscum salicornioides* A. Cunningham, Ann. Nat. Hist. 2: 208. 1839. TYPE: New Zealand. North Island, Keri Keri River, on *Leptospermum scoparium*, 1833, *A. Cunningham s.n.* (G, P).

Korthalsella madagascarica Danser, Bull. Jard. Bot. Buitenzorg 14: 126. 1937. TYPE: Madagascar. W of Ambositra, on the right bank of the Ivato River, on *Diospyros, Perrier de la Bâthie 12363* (P).

Korthalsella striata Danser, Bull. Jard. Bot. Buitenzorg 14: 124. 1937. TYPE: New Caledonia. Isle of Pines on the central plateau, on *Baeckea, Pancher V.638* (P).

Distribution. North and South Islands of New Zealand, Isle of Pines south of New Caledonia, and Madagascar.

8. Korthalsella dacrydii (Ridley) Danser, Recueil Trav. Bot. Néerl. 31: 759. 1934. *Arceuthobium dacrydii* Ridley, J. Fed. Malay. States Mus. 6: 170. 1915. TYPE: Malay peninsula. Pahang, Gunong Tahan, 900–1500 m, on *Dacrydium, Ridley 16094* (holotype, K; isotypes, BM, SING).

Distribution. Malay peninsula and Java.

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