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A TAXONOMIC REVISION OF THE GENUS *HEMIPHORA* (CHLOANTHACEAE)

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Abstract

A taxonomic revision of the monotypic genus *Hemiphora* is provided. The affinities and distribution are considered and a detailed revised description is provided for the genus and the species. A habit sketch of a flowering branch and analytical drawings of the flowers are also included.

The genus *Hemiphora* was proposed by F. Mueller (1882), with one species, *H. elderi*, the type of which was collected by J. Young in Western Australia. Previously, however, the type specimen had been described by F. Mueller (1876) as a species of *Chloanthes* R.Br., *C. elderi*, with the remark: "In genera propter antherarum duas cassas sectionem seorsam *Hemiphora dicendam sistit*".

It was referred by F. Mueller (1876) to the Verbenaceae where it has been retained by the majority of botanists. Subsequently, however, Durand (1888) placed the genus in Bentham & Hooker's (1876) tribe Chloantheae in the Verbenaceae. The same tribe was upgraded by Briquet (1895) to a subfamily Chloanthoideae, by Hutchinson (1959) to a family Chloanthaceae and by Airy Shaw (1965) to a new family Dicrasyliaceae. Moldenke (1959) referred the tribe to the family Stilbaceae. In the present revision, however, *Hemiphora* is referred to the tribe Chloantheae in the Chloanthaceae. For details of the taxonomic history of the tribe Chloantheae, see the taxonomic revisions of the related genera *Spartothamnella*, *Chloanthes* and *Cyanostegia* published by the present author (Munir, 1976, 1977, 1978).

HEMIPHORA F. Muell.

(Greek, *hemi*, half; *phorus*, bearing; alluding to its stamens of which half are fertile).

Hemiphora F. Muell., Syst. Cens. Aust. Pl. 1(1882)103 (the type species was initially described as a species of *Chloanthes* by F. Muell., Fragm. Phyt. 10(1876)13); F. Muell., J. Roy. Soc. N.S.W. 15(1882)41; Durand, Gen. Phan. (1888)319; F. Muell., Sec. Syst. Cens. Aust. Pl. (1889)173; Briq. in Engl. & Prantl, Pflanzenfam. 4, 3a(1895)162; Dalla Torre & Harms, Gen. Siphon. (1904)431, no. 7169; Diels & Pritzel, Bot. Jahrb. Syst. 35(1904)496, 524; Post & Kuntze, Lexic. Gen. Phan. (1904)273, 688; Maid., Aust. Veg. (1914)190 in obs.; Gard., Enum. Pl. Aust. Occ. 3(1931)112; Junell, Symb. Bot. Upsal. 4(1934)73; Lemée, Dict. Descrip. Syn. Gen. Pl. Phan. 8b(1943)654; Willis, Dict. Fl. Pl. & Ferns 6 ed. (1957)321; Gard., Wild Fl. W. Aust. (1959)127 in obs.; Mold., Résumé Verben. etc. (1959)404; Burb., Dict. Aust. Pl. Gen. (1963)148; Beard (Ed.), W. Aust. Pl. (1965)92; Blackall & Grieve, W. Aust. Wildfls 3(1965)560; Beard (Ed.), W. Aust. Pl. 2 ed. (1970)113; Morcombe, Aust. Wildfls (1970)94 in obs.; Mold., Fifth Summary Verben. etc. 2(1971)751; Airy Shaw, Willis's Dict. Fl. Pl. & Ferns 8 ed. (1973)546; Erickson et al. (Ed.), Fl. Pl. W. Aust. (1973)138.

Type species: H. elderi (F. Muell.) F. Muell., Sec. Syst. Cens. Aust. Pl. 1(1882)103.

Chloanthes F. Muell., Fragm. Phyt. 10(1876)13 p.p. quoad. sp. *C. elderi*.

Description

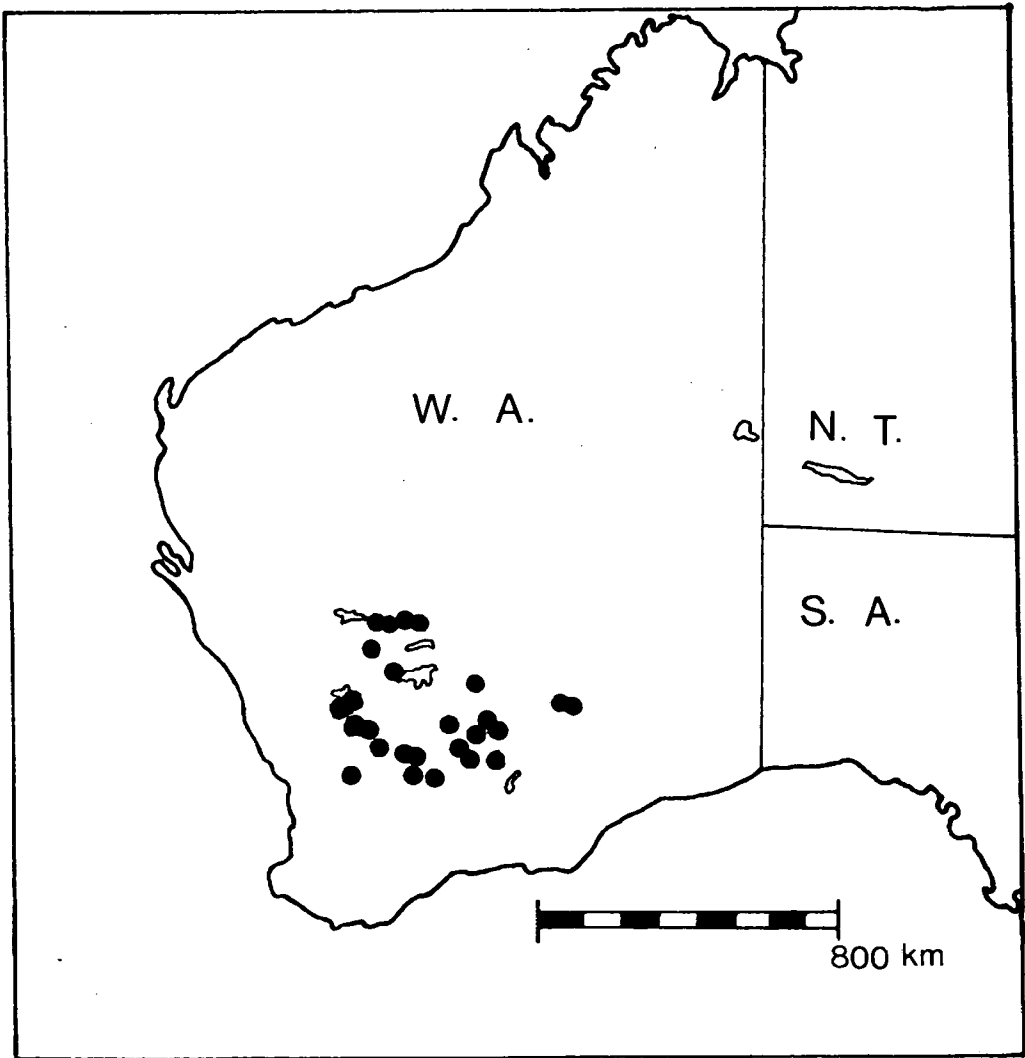
Perennial shrubs, densely clothed with branched woolly tomentum. *Stem* erect, branched, cylindrical, solid and woody. *Leaves* cauline and ramal, exstipulate, simple, sessile, reticulate unicostate, decussate or in whorls of 3, bullate-rugose, non-decurrent. *Flowers* axillary, solitary, bracteate, with two lateral bracteoles, complete, zygomorphic, bisexual, hypogynous. *Calyx* of 5 fused sepals, persistent, deeply 5-lobed, tubular below. *Corolla* of 5 fused petals, caducous, 2-lipped, tubular below, the upper-lip 2-lobed, the lower

lip 3-lobed; lobes almost identical; tube elongated, curved and dilated upwards. *Stamens* 4, only the 2 upper fertile, epipetalous, inserted below the middle of the corolla-tube; filaments filiform, glabrous; anthers dorsifixed, 2-lobed; lobes free in the lower halves, without any appendages at the lower end, longitudinally dehiscent. *Ovary* bicarpellary, syncarpous, 4-locular with one axile ovule in each cell; style filiform, glabrous, 2-lobed at the summit. *Fruit* non-dehiscent, dry. *Seeds* albuminous.

Number of Species: 1.

Distribution (Map 1)

The genus *Hemiphora* is endemic in Western Australia.



Map 1. Distribution of *Hemiphora elderi* (F. Muell.) F. Muell.

Affinities

Hemiphora is closely related to *Chloanthes* R.Br. in having branched tomentum all over the plant, rugose-bullate leaves with recurved margins, axillary solitary flowers towards the end of branches, non-acrescent fruiting calyx, 2-lipped corolla and no appendages to the anther-lobes. Nevertheless, *Chloanthes* can be distinguished easily by having decurrent leaves and 4 fertile stamens.

Hemiphora is also close to *Pityrodia* R.Br. in having non-decurrent leaves, 2-lipped corolla, and stamens inserted in the lower half of the corolla-tube. However, *Pityrodia* R.Br. may be identified readily by having 4 fertile stamens and appendaged anther-lobes.

Hemiphora elderi (F. Muell.) F. Muell., Syst. Cens. Aust. Pl. 1(1882)103; F. Muell., Sec. Syst. Cens. Aust. Pl. 1(1889)173; Briq. in Engl. & Prantl, Pflanzenfam. 4, 3a(1895)162 in obs.; F. Muell. & Tate, Trans. Roy. Soc. S. Aust. 16(1896)376; Diels & Pritzel, Bot. Jahrb. Syst. 35(1904)524; Ewart & Davies, Fl. N. Terr. (1917)239 in obs.; Gard., Enum. Pl. Aust. Occ. 3(1931)112; Junell, Symb. Bot. Upsal. 4(1934)73, fig. 123; Gard., Wildfls W. Aust. (1959)132; Mold., Résumé Verben. etc. (1959)209,251; Beard (Ed.), W. Aust. Pl. 1 ed. (1965)92; Blackall & Grieve, W. Aust. Wildfls 3(1965)573, t. 29 p.p.; Beard (Ed.), W. Aust. Pl. 2 ed. (1970)113; Mold., Fifth Summary Verben. etc. 1(1971)346, 425; Erickson et al., Fl. Pl. W. Aust. (1973)138, 196 and t. 431.

Type: *J. Young s.n.*, near Victoria Springs, Western Australia, 7-9 Oct., 1875(MEL 73286 lectotype; MEL 73287 syntype).

Chloanthes elderi F. Muell., Fragm. Phyt. Aust. 10(1876)13 — **Basionym**.

Typification

H. elderi was based on two specimens collected by J. Young in Western Australia. One of these with yellow floral-tomentum was gathered from near Ularung and the other with red floral-tomentum came from near the Victoria Springs. Both the syntypes are preserved in Herb. MEL and are labelled erroneously as "Isotypes". Of these, the one with red floral-tomentum collected from near the Victoria Springs and now preserved under the number MEL 73286, is particularly complete and well preserved and is therefore selected here as the lectotype for this species.

Description (Fig. 1)

A shrub 30-45 cm high. *Stem* often with several branches arising from a common stock. *Leaves* pale green, linear, linear-lanceolate or almost terete owing to the revolute margins, densely white woolly all over, (7-)10-15(-20) mm long, (2-)3-4(-5) mm broad at the base, rugose-bullate above, the woolly under surface often concealed by the revolute margins; bullae tuberculate or muricate. *Flowers* collected into short leafy spike-like clusters near the summit of the branches, shortly pedicellate; pedicel 1-2 mm long, densely hairy; bracts leafy, sessile, linear, linear-lanceolate or narrowly elliptic-oblong, with revolute margins, (5-)7-9(-10) mm long, 2-4(-5) mm broad, rugose along the margins, woolly-tomentose underneath and on the rugose margins, glabrous above; bracteoles sessile, oblong or more or less linear, 3-4 mm long, 1-1.5 mm broad, woolly-tomentose underneath, glabrous above. *Calyx* deeply 5-lobed, with a very short tube, (6-)8-10 mm long, densely clothed outside with branched woolly tomentum of reddish-purple or claret colour, glabrous inside excepting the few sparse hairs on the upper inner half of the lobes; lobes almost free to the base, linear or oblong-linear, (6-)7-9 mm long, 0.5-1 mm broad; tube 0.5-1 mm long. *Corolla* reddish-purple, claret-coloured or occasionally yellow, (14-)15-22(-25) mm long, pubescent outside, glabrous inside excepting the dense hairy ring above the ovary, and with a few hairs extending to the anterior (i.e. lower) lip; the upper-lip longer than the lower one, 5-7 mm long, 6-8 mm broad; lobes oblong-ovate or more or less deltoid, (3-)4-5 mm long, 3-4(-5) mm broad at the base; tube almost cylindrical towards the base, dilated immediately above the calyx, (8-)10-15 mm long, (6-)7-9 mm in diameter in the upper half. *Stamens* 4; the

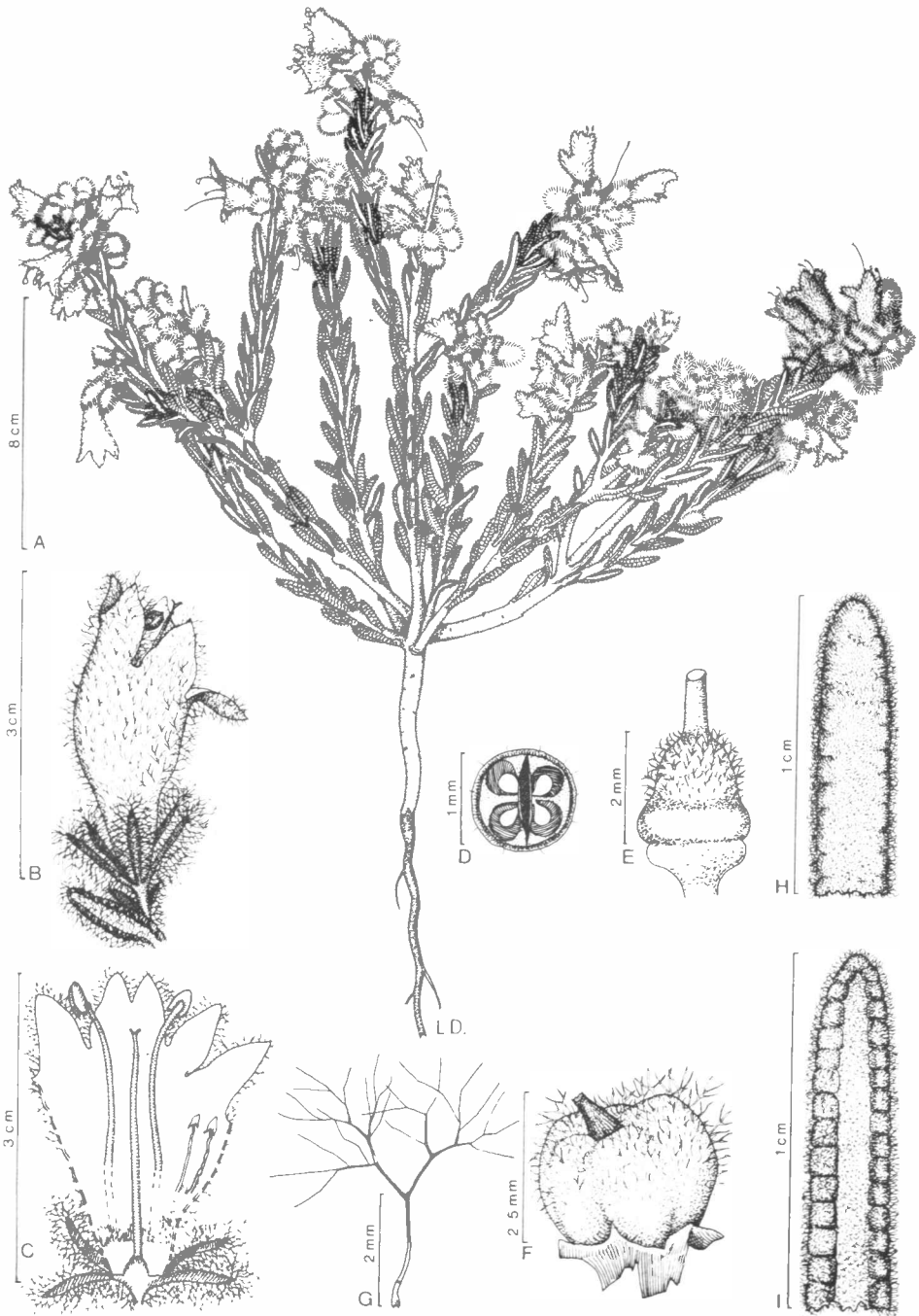


Fig. 1. *Hemiphora elderi* (F. Muell.) F. Muell. (*R. Helms s.n.*, AD97113280: AD). A, habit drawing; B, flower with bract and bracteoles; C, flower with calyx and corolla vertically cut open to show androecium and gynoecium; D, transverse section of ovary; E, ovary; F, fruit; G, calyx-tomentum; H&I, adaxial and abaxial views of an enlarged leaf portion.

2 upper stamens fertile, exserted, filaments (10-)12-15 mm long, anthers ca. 2 mm long, ca. 1 mm broad, lobes free in the lower halves, not divergent; the 2 lower stamens sterile, included, filaments 6-8 mm long, anthers shrivelled, ca. 1 mm long, ca. 0.5 mm broad, lobes free and divergent in the lower halves. *Ovary* more or less globose, 1-2 mm in diameter, glabrous in the lower half, pubescent above; style scarcely exserted or almost included, filiform, glabrous, 17-20(-22) mm long, minutely 2-lobed at the summit. *Fruit* more or less globose, 2.5-3 mm in diameter, pubescent.

Specimens examined

WESTERN AUSTRALIA: *Ashby 3607*, north of Beacon, 17.IX.1970 (AD, PERTH). *Barrett 15*, Ghooli, no. 6 Pumping Stn, 3.X.1952 (PERTH). *Beard 4724*, 8 miles N. of Wialki, 16.VII.1967 (PERTH). *Blackall 478*, between Sandstone and Anketell, 16.VIII.1931 (PERTH). *Blackall 3343*, near Mt. Churchman, Sept. 1937 (PERTH). *Blackall s.n.*, 25 miles N. of Beacon, Oct. 1937 (PERTH). *Broadbent 1723*, 12 miles west of Sandstone, 12.X.1953 (BM). *Campbell s.n.*, Boulder, near Kalgoorlie, 1899 (BM, C, PERTH). *Cleland s.n.*, Kurrawang, Sept. 1915 (AD). *Cook s.n.*, between Bonnie Rock and Wialki, Nov. 1932 (PERTH). *Cronin s.n.*, Coolgardie, near Lake Lefroy, 1893 (MEL 73291). *Cronin s.n.*, (between upper Blackwood River and Lake Lefroy, 1893 (MEL 73292). *Davies for A.M. Ashby no. 2058*, north of Menzies, Sept. 1966 (AD). *Demarz 5114*, 16 miles west of Sandstone, 21.VIII.1974 (King's Park Perth). *Erickson s.n.*, western fringes of Southern Cross, July 1952 (MEL 73295). *Fairall 2400*, 28 miles west of Coolgardie, 13.X.1967 (PERTH). *Fairall 8802*, 38 miles east of Sandstone on road to Leonora, 13.IX.1966 (MEL). *George 8009*, 18 miles E. of Sandstone, 13.IX.1966 (PERTH). *George 8043*, S. W. of Queen Victoria Rocks, 16.IX.1966 (B. MO, PERTH). *Gardner 541*, Kalgoorlie, Sept. 1922 (PERTH). *Gardner 966a*, N. of Southern Cross, Oct. 1922 (PERTH). *?Gardner 1215*, Comet Vale, Sept. 1959 (PERTH). *Gardner & Kretchmar 12704*, Beacon, 4.IX.1960 (PERTH). *Gardner 2509*, 18 miles W. of Sandstone, 18.VIII.1931 (PERTH). *Gardner 7958*, Comet Vale, 19.X.1945 (PERTH). *Gardner 14377*, near Youanmi, 26.VIII.1963 (PERTH). *Gardner 19026*, N. of Lake Barlee, 19.X.1966 (PERTH). *Gardner s.n.*, N. of Southern Cross, Nov. 1923 (PERTH). *Gardner s.n.*, near Ghooli, Oct. 1953 (PERTH). *Gardner s.n.*, near Menzies, November — ((PERTH). *Gardner s.n.*, Sandstone, undated (PERTH). *Hann s.n.*, 80 miles N.E. from Southern Cross, Oct. 1901 (K, PERTH). *Helms s.n.*, Victoria Desert, Eld. Expl. Exped. Camp 58, C. 195 km east of Kalgoorlie, 21.IX.1891 (AD96215330, AD 97113280, AD 97113290-1, AD 97709161, K, MEL 73288-9, NSW 129474-7, WU). *Hill 1446*, west of Kalgoorlie, 9.X.1964 (AD). *Hunter 5047*, between Warralakin and Bullfinch, Aug. 1967 (King's Park Perth). *Merrall s.n.*, Parker's Range, 1892 (MEL 73290). *Main s.n.*, Bonnie Rock — Wialki, 11.IX.1957 (PERTH). *F. Mueller s.n.*, Victoria Springs, undated (W 736-7, WU). *Newman s.n.*, Bullfinch, 10.XI.1922 (PERTH). *Richardson s.n.*, Mukinbudin, Nov. 1929 (PERTH). *Richmond R 48*, loc. incert., Oct. 1972 (PERTH). *Royce 10443*, N. of Sandstone, between Wiluna and Meekathara, 16.X.1972 (PERTH). *Thiselton-Dyer 116*, along railway between Conderdin and Wedari (or ?Dedari), Oct. 1903 (K). *Stacey 237*, 12.6 miles E. of Mukinbudin, 16.XI.1972 (PERTH). *Webster 18*, Coolgardie, 1898 (G, MEL). *Wilcox S.164*, F. Ayres' property, Cleary Siding, Bonnie Rock, 25.XI.1966 (King's Park Perth, PERTH). *Young s.n.*, "Ad scaturigines Victoria Springs", between Victoria Springs and Ularing, 7-9 Oct. 1875 (MEL 73286 lectotype). *Young s.n.*, "Prope Ularing", between Victoria Springs and Ularing, 7-9 Oct. 1875 (MEL 73287 syntype).

Distribution (Map 1)

H. elderi is endemic in the south-west of Western Australia. The main areas of its occurrence are in the Austin and Coolgardie districts (as defined by Gardner & Bennetts, 1956) of the Eremean Province where it seems to be restricted between latitude 27° and 32° S, and between longitude 117° and 124° E. In the north it is known from around Sandstone and Menzies, extending southwards to the Parker Range and the upper sources of the Blackwood River. Elsewhere, the distribution extends from south-west of Lake Moore and the township of Cunderdin in the west up to the Victoria Springs in the east.

Comments

Neither of the two specimens in the type folder at Herb. K is the type. One of these was collected by G. H. Thiselton-Dyer (Coll. no. 116) in 1903, and the other by R. Helms (s.n.) in 1891, during the Elder Exploring Expedition. Both the specimens were gathered many years after the publication of this species.

According to Ewart & Davies (1917), *Hemiphora elderi* was recorded from Northern Australia in the "Nation Herbarium Census". During the present investigations, however, *Hemiphora* has been found to be restricted to the south-west of Western Australia.

The fruit is small and concealed within the long dense woolly tomentum of the persistent calyx. This may have been the reason why botanists, including the original author (F. Mueller), failed to describe it.

Due to the usually brilliant-red colour of the woolly inflorescence, Erickson et al. (1973) have called this species "red velvet".

Two specimens collected by C. L. Webster are recorded here. One of them in Herb. G is without collector's number and the other in Herb. MEL is with collector's field note and no. "18". Since both the specimens come from the same locality and bear the same collecting date (only year is given) they are treated here as belonging to the same collection.

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