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A NEW SPECIES OF EUONYMUS (CELASTRACEAE) FROM AUSTRALIA

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SUMMARY

Euonymus globularis, a new species from Queensland, is here described. It is the second species of *Euonymus* for Australia. It shows reticulate affinities with species belonging to different sections or series of this genus as well as with species of *Brassiantha* and *Hedraianthera* in the same family.

In the latest synopsis of *Euonymus*, 176 species have been enumerated by Blakelock (Kew Bull. 1951, 210—290, fig. 1—5). Most of them occur in tropical and subtropical Asia, especially in the region of the Himalayas, China, and Japan; besides, there are 12 species in Malesia, 9 species in North and Central America, 4 species in Europe, 2 species in Madagascar, and 1 species each in Africa (Zaïre and Gabon) and Australia.

Far from the centre of speciation and at the generic boundary of *Euonymus*, up to now, there is only one species recorded from Australia, *E. australianus* F. v. M. (Fragm. 4, 1864, 118; type: Rockingham's Bay, *Dallachy s.n.*, K), known only from north eastern Queensland. Among the duplicates recently received by the Rijksherbarium, Leiden, there are two specimens collected by L. J. Brass in 1948 in Queensland, and distributed by the Arnold Arboretum, U.S.A., under the name of *Euonymus*; both are bearing flowers and fruits. On my visit to the Kew Herbarium in 1973, I checked the type of *E. australianus* and other Australian collections of *Euonymus* and received these specimens on loan. After having studied the material, it was found that the two collections of Brass represent an interesting new species of *Euonymus*, a second species of this genus for the flora of Australia.

I am grateful to the Directors and Curators of the Arnold Arboretum, U.S.A., and the Royal Botanic Gardens, Kew, for making the material available for this study.

Euonymus globularis Ding Hou, *spec. nov.* — **Fig. 1.**

Frutex vel arboscula 2—5 m alta, ramulis glabris. Stipulae triangulares, ca. 0.5 mm longae. Folia opposita, subsessilia, chartacea, glabra, ovato-elliptica vel elliptica, 5—9.5 cm longa, 2—4 cm lata, leviter crenulata, basi obtusa, apice acuta vel acuminata, raro obtusa, nervis 4—7-paribus, venis subtiliter reticulatis. *Inflorescentiae* axillares vel caulinis, solitariae, breves, ad 10 mm longae, pauciflorae, bracteis decussatis, condensatis, persistentibus; pedunculus ad 5 mm longus; pedicelli 3—8 mm longi. *Flores* virides. Calyx 5-fidus, lobis triangularibus, ca. 1.25 mm longis. Petala 5, imbricata, patentia, persistentia, integra, suborbicularia, 3 mm longa, 3—3.25 mm lata. Discus carnosus, discoideus, 1.25—1.5 mm diam., incisuris 5. Stamina 5, incisuris disci affixa, ca. 1 mm longa, filamentis brevibus, antheris late ellipsoideis, introrsis, longistrorsum dehiscentibus. Ovarium disco immersum, 5-loculare, ovulis in quoque loculo 8, biseriatis; stylus brevis; stigmata obscuri. *Capsula* globularis, ca. 1.5 cm diam., 5-locularis, 5-valvata. Semina ellipsoidea, ca. 7 mm longa; arillus carnosus, angustus, ca. 4.5 mm longus, leviter puberulus, basi et latui seminis affixus.

Shrub or small tree, 2—5 m tall. Branches glabrous. Stipules triangular, *c.* 0.5 mm long. Leaves opposite, subsessile, chartaceous, glabrous, ovate-elliptic, or elliptic, 5—9.5 × 2—4 cm; margin slightly crenulate; base obtuse; apex acute or acuminate, rarely obtuse;

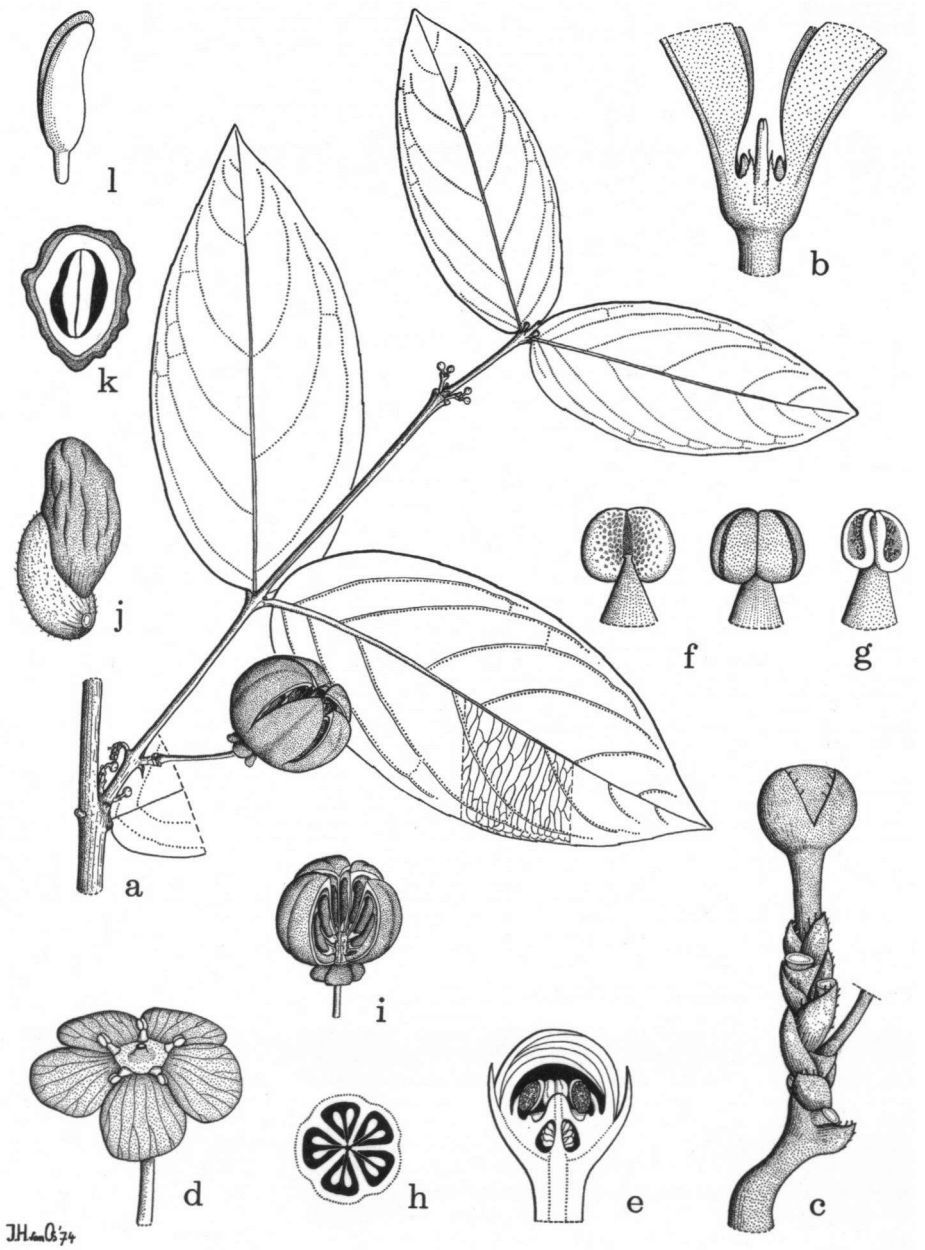

Fig. 1. *Euonymus globularis.* — a. Habit, X 1; b. apical node of a very young shoot showing stipules, X 3.5; c. inflorescence, X 7; d. flower, X 3.5; e. longitudinal section of flower, X 7; f & g. young and old stamens, X 14; h. diagramatic cross-section of ovary; i. fruit with one valve removed, X 1; j. seed with puberulous aril, X 3.5; k. cross section of seed, X 7; l. cotyledons, X 3.5 (all from *L. J. Brass 20224*, holotype).

nerves 4—7, slender, slightly elevated on both surfaces, arcuate and ascending; veins finely reticulate, visible on both surfaces. *Inflorescences* axillary to leaves or bracts, solitary, short, up to 10 mm long, rarely branched, few-flowered; peduncle up to 5 mm; bracts decussate, condensed, persistent, ovate, elliptic, or lanceolate, 0.5—1.25 mm long, slightly fimbriate on the margin; pedicels 3—8 mm. *Flowers* green. Calyx 5-lobed, lobes imbricate, triangular, *c.* 1.25 mm long, margin slightly ciliate. Petals 5, imbricate, patent, persistent, entire, suborbiculate, 3 × 3—3.25 mm, with 5 or 6 longitudinal veins, each usually once branched. Disk fleshy, discoid, 1.25—1.5 mm ∅, 5-notched. Stamens 5, inserted in the notches of the disk, *c.* 1 mm long; filament fleshy, short; anthers broad-ellipsoid (subglobose when young), introrse, dehiscing longitudinally. Ovary immersed in the disk, 5-loculed; ovules 8, in two rows in each locule, axile, erect, superposed; style short, *c.* 0.3 mm; stigmas obscure. *Capsule* small globose, *c.* 1.5 cm ∅, leaving a short columella after dehiscing, with persistent and reflexed petals, 5-loculed, each locule 6—8-seeded, 5-valved, valves coriaceous. Seed ellipsoid, dark brown, *c.* 7 mm long, with a fleshy, narrow, slightly puberulous aril attached to its base and side up to about half of its length, *c.* 4.5 mm long; cotyledons foliaceous, *c.* 6 mm long.

QUEENSLAND. Cape York Peninsula: Shipton's Flat, *L. J. Brass 20224* (L, type; K), flower and fruit green, 14—9—1948; *L. J. Brass 20019* (K, L), with green flowers and unripe fruit, in 1948.

Ecology: Abundant in dense undergrowth of rain forest; alt. 275 m.

Euonymus globularis is characterized by the opposite, subsessile leaves with finely reticulate veins, short inflorescences with decussate, condensed and persistent bracts, 5-loculed ovary and each locule with 8 ovules in two rows, entire and persistent petals, globose fruit leaving a short columella after dehiscing, and seed with a fleshy, narrow and slightly puberulous aril attached to its base and side up to about half of its length. The specific epithet alludes to the small globose fruit. It can be easily distinguished from the other Australian species, *E. australianus* F.v.M., which has petioled leaves with obsolete veins, long pedunculate and loosely branched cymes, obovoid, lobed, 5-loculed fruit, each locule with only two seeds, and seed enveloped by the aril.

In *Euonymus*, the rather high number of ovules in each locule of the ovary (usually 2 in most of the species) occurs only in a few species found in India and China, e.g. *E. grandiflorus* Wall. and *E. linearifolius* Franch. The columella left in a fruit after dehiscence has been only known for the European species, *E. latifolia* (L.) Miller (cf. Loesener, in E. & P., Nat. Pfl. Fam. ed. 2, 20b, 1942, 101, fig. 31C). As for the fleshy, narrow and slightly puberulous aril, which is basally and laterally attached to the seed, this has so far not been recorded for any species of this genus.

Following the 'Key to Subgenera, Sections and Series' of *Euonymus*, prepared by Blakelock (l.c.), *E. globularis* belongs to the subgen. *Euonymus*, sect. *Ilicifolia* Nakai (type: *E. japonicus* Thunb.). According to Blakelock (l.c.), this section is characterized by 'capsule not or slightly lobed (lobes rotund), globose or oblate-globose, apex rotund, sometimes slightly retuse, smooth or slightly rugose or squamate, 4-merous (3—5-merous in *E. chloranthoides*'. With the exception of the fruit shape, some characters of the present species, e.g. the rather high number of ovules, the columella of the fruit, and seed with a narrow and slightly puberulous aril, are different from those of the species in this section. It appears to be ill-fitted here.

It may be interesting to mention here that the fruit of *E. globularis* is rather similar to those of two monotypic genera in the same family, i.e. *Brassiantha* A. C. Smith (J. Arn. Arb. 22, 1941, 389, pl. 1) from New Guinea and *Hedraianthera* F.v.M. (Fragm. 5, 1865, 58) from Queensland, by the globose shape, a short columella left after dehiscence, 5 locules,

and each locule with several seeds (cf. Fl. Mal. I, 6, 1964, 392—394, fig. 23 f—h). However, the aril of the seed of the present species as described above differs from the sac-like one of *Brassiantha* and caterpillar-like one of *Hedraianthera*.

The pollen grains of the present species are similar to those of *Hedraianthera porphyropetalum* F.v.M., especially the irregularly rugulate-reticulate sexine (cf. Blumea 17, 1969, 104, pl. 1, L—N). Unfortunately, data on the pollen of the genus *Euonymus* as a whole are not yet been available for comparison.

The appropriate position of the present species in the rather heterogenous genus *Euonymus* can hardly be ascertained until a comprehensive revision of it is available. It may be possible that it should be placed in a group of its own. It shows reticulate affinities with species belonging to different sections or series of *Euonymus* as delimited by Blakelock (l.c.) and also with species of *Brassiantha* and *Hedraianthera*.