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ELATINACEAE

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ELATINACEAE

D.E. Albrecht, P.S. Short & G.J. Leach

Herbs or small shrubs of wet places, glabrous or with uniseriate or multiseriate hairs, often creeping and rooting at nodes. *Leaves* opposite or whorled, simple, entire or toothed; stipules present, scarious. *Flowers* bisexual, actinomorphic, solitary in axils or in small axillary clusters, cleistogamous in some species. *Calyx* of 2–5 sepals, distinct or connate to about half their length. *Petals* as many as sepals, free, imbricate. *Stamens* 3–10, usually as many or twice as many as the petals, arranged in 1 or 2 whorls; filaments free; anthers 2-celled, dorsifixed and opening by longitudinal slits. *Gynoeceium* of 2–5 carpels united to form a superior compound ovary, locules as many as carpels but partitions not always complete; ovules numerous, axile or basal; styles 2–5, being equal to the number of carpels, free, stigmas capitate. *Fruit* a capsule dehiscing septicidally, rarely indehiscent. *Seeds* numerous, minute, embryo straight or curved, endosperm lacking.

The Elatinaceae comprise two genera, *Elatine* and *Bergia*, and *c.* 55 species. Widespread in tropical and temperate regions.

Taxonomic references: Cronquist (1981); Tucker (2004).

- | | | |
|----|--|----------------|
| 1 | Leaf margins usually serrate, rarely entire; sepals 3–5, herbaceous; capsule walls subcrustaceous to crustaceous | Bergia |
| 1: | Leaf margins entire; sepals 3, membranous to herbaceous; capsule walls somewhat membranous to subcrustaceous | Elatine |

BERGIA L.

Annual or perennial *herbs*, prostrate to erect, usually in seasonally wet areas, glabrous or with an indumentum of uniseriate eglandular hairs or multiseriate glandular hairs. *Leaves* opposite, usually serrulate, base attenuated into a short petiole or subsessile; stipules herbaceous or variably scarious and with lacinate margins, basally often connate and/or adnate to petioles, persistent. *Flowers* solitary, paired or in dense fascicles, bracteoles usually present, often inconspicuous. *Sepals* 3–5, herbaceous, margins scarious, fimbriate or not, persistent. *Petals* as many as sepals, white or pink, persistent. *Stamens* 3–10. *Ovary* 3–5-locular. *Styles* as many as locules, long and with a terminal capitate stigma or the stigmas more or less sessile. *Capsule* with subcrustaceous walls. *Seeds* shortly cylindrical, ellipsoid or ovoid, straight or curved, surface smooth, alveolate or striate.

Genus of *c.* 24 species in the drier parts of tropical and warm-temperate regions. Ten species in Australia, including nine in the N.T., but only two in the D.R.

Taxonomic reference: Leach (1989).

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|----|---|------------------------|
| 1 | Leaves more than 10 mm long; pedicels 8–40 mm long in fruit; calyx and corolla 5-merous; stamens 10 | B. pedicellaris |
| 1: | Leaves less than 10 mm long; pedicels 1–2.5 mm long in fruit; calyx and corolla 4-merous; stamens 4 | B. pusilla |

B. pedicellaris (F. Muell.) F. Muell. ex Benth.

Annual *herb*, spreading to erect and to 35 cm high, glabrous or with glandular hairs. *Leaves* elliptic to narrowly elliptic, rarely ovate or obovate, 10–35 mm long, 3–11 mm wide, glandular hairs usually present at base, or on margins or midvein, rarely absent, midvein prominent, margins serrulate, serrate or fimbriate, acute. *Stipules* 2.5–3 mm long. *Flowers* solitary or paired, on slender

pedicels 0.8–4 cm long in fruit. *Sepals* 5, ovate, 2–3.5 mm long, 1–1.5 mm wide, glandular-pubescent, rarely glabrous, margins entire to fimbriate, keel absent or rarely slightly developed, acuminate. *Petals* 5, elliptic, shorter than or the length of the sepals. *Stamens* 10, of about equal length. *Stigmas* sessile or almost so. *Capsule* globular, 2.5–3.5 mm diam., 5-locular. *Seeds* ellipsoid or slightly curved, 0.25–0.3 mm long,

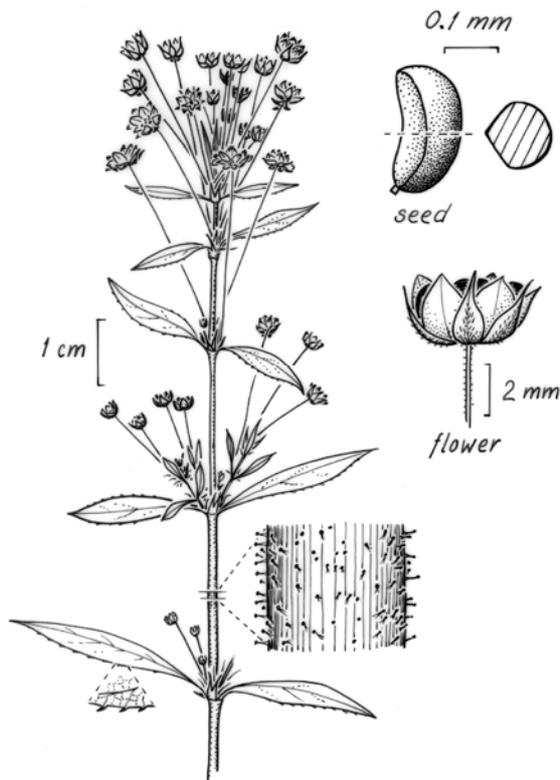
Bergia pedicellaris

Fig. 1

0.1–0.15 mm wide, smooth, shiny, brown. *Flowering & fruiting*: throughout the year.

Fig. 1 (Egan 5005); Pl. 1 (unvouchered).

Australia (W.A., N.T., Qld), being found throughout much of the N.T. Most commonly on cracking clay soils. Localities include Erlpunda Waterhole (Eastern Davenport Range), Edmirringee Rockhole (Kurundi Station), seasonal swamps at Wycliffe Well, Tortilla Flats, and floodplains of the Adelaide and East Alligator rivers.

***B. pusilla* Benth.**

Annual *herb*, erect to 6 cm high, glabrous. *Leaves* narrow-elliptic to elliptic, 3–9 mm long, 1.5–2.5 mm wide, veins obscure, margin entire, apically with a brown gland. *Stipules* 1.25–2.5 mm long. *Flowers* solitary but clustered terminally;

Bergia pusilla

Fig. 2

pedicel 1–2.5 mm long in fruit. *Sepals* 4, narrowly elliptic, 2.5–5 mm long, 0.5–1 mm wide, glabrous, margin narrow, entire, keel mostly prominent, sinuate, acuminate, often with mucro to 0.4 mm long. *Petals* 4, narrow-ovate, 1.5–2.5 long, 0.5–1 mm wide, *c.* ½ to subequal with sepals, erect at anthesis, acute, mucronate. *Stamens* 4, 1–1.5 mm long; filaments flattened, scarcely dilated at base. *Stigmas* clavate, sessile or on style to 0.25 mm long. *Capsule* pyriform, 1.75–2.5 mm long, 1–1.5 mm diam., 4-locular. *Seeds* ellipsoid, *c.* 0.3 mm long, 0.1 mm wide, smooth to faintly alveolate, shiny, pale yellow-brown. *Flowering*: Apr.–June. *Fruiting*: *c.* July.

Fig. 2 (Short 5023).

Northern Australian (W.A., N.T.) species typically found on sandy soils associated with watercourses. Widespread in the Top End but in the D.R. only gathered from Woolaning and Girraween; at the latter location plants were growing in a damp depression caused by sandmining.

ELATINE L.

Annual *herbs*, prostrate to erect, often aquatic. *Leaves* opposite or whorled, entire; stipules persistent or not. *Flowers* solitary in the axil of only one leaf in any pair, minute, 3-merous. *Sepals* membranous. *Petals* as many as sepals, falling. *Stamens* as many as or twice the number of petals, shorter to longer than the sepals. *Styles* 3, short, capitate. *Ovary* 3-locular. *Capsule* with membranous or thickish walls, with a terminal depression. *Seeds* straight or curved, surface reticulated.

About 30 species worldwide, with two recorded for Australia. Both species occur in the N.T. and are described here but only *E. gratiolooides* is recorded for the D.R.

Taxonomic reference: Albrecht (2002).

- | | | |
|----|--|--------------------------------|
| 1 | Sepals less than 1.5 mm long, shorter than the petals and often <i>c.</i> ½ their length; fruit dehiscent with thin-textured walls; longitudinal rows on seed coat each with <i>c.</i> 12 or more alveolae | <i>E. gratiolooides</i> |
| 1: | Sepals 2–3 mm long, equal to or longer than the petals; fruit indehiscent with firm-textured walls; longitudinal rows on seed coat each with 7–10 alveolae | <i>E. macrocalyx</i> |

E. gratiolooides A. Cunn. *s. lat.*

Weak glabrous annual *herbs* prostrate to decumbent and mat-forming when growing in wet mud or stems ascending to *c.* 40 cm high when growing as an aquatic; stems rooting at least at lower nodes. *Leaves* opposite, with short or indistinct petioles, lamina ovate, lanceolate or elliptic, rarely oblong, 2–20 mm long, 0.8–5 mm wide, apex obtuse to acute, with 1 apical and 1–several marginal hydathodes, venation often evident in fresh material; stipules membranous to somewhat herbaceous, *c.* ovate, less than 1 mm long, apex not attenuate, somewhat toothed. *Flowers* sessile or shortly pedicellate. *Sepals* 3, pink, pinkish-white or greenish tinged, oblong-ovate, 0.5–1.3 mm long, apex obtuse, irregular marginal teeth sometimes present. *Petals* 3, membranous, pink, pinkish-white or greenish tinged, strongly concave, widely elliptic-ovate to orbicular, 0.8–2 mm long, longer than the sepals and often *c.* twice their length. *Stamens* 3. *Carpels* 3; styles 3, *c.* 0.1 mm long. *Fruit* depressed-globose, walls membranous, 0.5–1.3 mm long, 1–2.5 mm diam., dehiscent. *Seeds* pale often yellowish-brown, sub-cylindrical, straight to slightly curved, 0.4–0.6 mm long, *c.* 0.2 mm thick, ends obtuse except for a tiny apiculum at one end; surface reticulated, each longitudinal row with *c.* 12 or more somewhat hexagonal alveolae. *Flowering & fruiting:* in the D.R. only recorded *c.* Apr.

Fig. 3 (Cowie 7514); Pl. 2 (unvouchered).

Australia (all States), New Zealand. Relatively widely distributed in southern N.T. but rarely collected in the Top End where it is known from Magela and Scott creeks, near Jarong Springs and Judbarra (Gregory) N.P. Occurs predominantly in or beside permanent or semi-permanent rock holes. This description is based on specimens collected throughout the N.T.

Australian specimens are referred to here as *E. gratiolooides s. lat.* as they apparently differ some-

Elatine gratiolooides

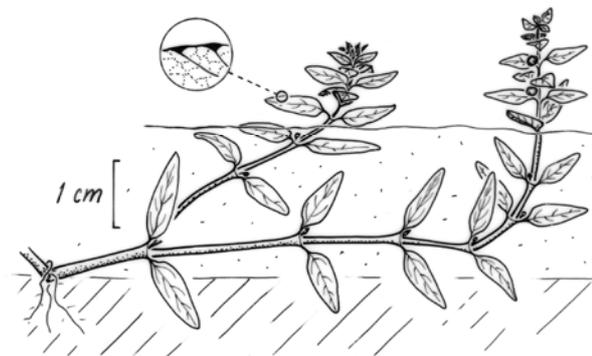


Fig. 3

what from the type specimen of *E. gratiolooides* which was collected in New Zealand.

E. macrocalyx Albr.

Prostrate glabrous annual *herbs* forming dense mats; stems rooting at nodes. *Leaves* opposite, with indistinct petioles, lamina obovate or spatulate, 3–7 mm long, 1–3 mm wide, apex obtuse, with 1 apical and 1–3 marginal hydathodes, venation not evident in fresh material; stipules membranous, narrowly triangular-subulate, 1.4–2.4 mm long, apex attenuate, somewhat toothed. *Flowers* sessile. *Sepals* 3, green, oblong-elliptic to oblong-ovate or oblong-obovate, 2–3 mm long, apex obtuse, irregular marginal teeth sometimes present. *Petals* 3, white or sometimes tinged green, strongly concave, mostly oblong-elliptic but sometimes oblong ovate or oblong-obovate, 1.5–2.5 mm long, equal to or shorter than the sepals. *Stamens* 3. *Carpels* 3; styles 3, *c.* 0.1 mm long. *Fruit* depressed-globose, wall firm-textured, 1–2 mm long, 2–4 mm diam., green or pink tinged but drying brown, apparently indehiscent. *Seeds* brown, subcylindrical, straight to slightly curved, 0.4–0.5 mm long, *c.* 0.2 mm thick, ends obtuse except for a tiny apiculum at one end; surface reticulated, each longitudinal row with 7–10

somewhat hexagonal alveolae. *Flowering & fruiting:* Australia (W.A., N.T.). In the N.T. restricted to arid regions where it occurs in herbfields on the temporarily moist margins of playa lakes and clay pans.

Pl. 3 (unvouchered).

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Pl. 1 *Bergia pedicellaris* (Photo: D.E. Albrecht)



Pl. 3 *Elatine macrocalyx* (Photos: D.E. Albrecht)



Pl. 2 *Elatine gratiolooides* (Photo: D.E. Albrecht)