

3. *Crassula saginoides* (Maxim.) Bywater & Wickens comb. nov.

Tillaea simplex Phil. in Anal. Univ. Chil.: 719 (1872) non Nutt. (1817). Type: Chile, Catapilco, *Philippi* s.n. (holotype SGO!).

T. angustifolia Nuttall var. *bolanderi* S. Watson in Watson, Gray & Brewer, Fl. Calif. 1: 209 (1876), Type: California, San Francisco, *Bolander* s.n. (holotype GH, n.v.).

T. saginoides Maxim. in Bull. Acad. Petersb. 26: 473 (1880). Type: Mongolia, Irtysh, *Potinin* s.n. (holotype LE; isotype K!).

T. bolanderi (S. Watson) Greene, Fl. Francisco: 183 (1891).

T. drummondii Torr. & Gray var. *bolanderi* (S. Watson) Jepson, Fl. W. Mid. Calif.: 265 (1901).

Tillaeastrum pringlei Rose in Bull. N.Y. Bot. Gard. 3: 2 (1903). Type: Mexico, Serrania de Ajusco, *Pringle* 6517 (holotype US; isotype BM! K! UC!).

[*Tillaea vaillantii* sensu Gray, New Man. Bot. ed. 7: 442 (1908), non Willd.]

[*Hydrophila vaillantii* sensu House in Amer. Mid. Nat. 6: 203 (1920), non (Willd.) Roth.]

Erect to decumbent herb. Stems up to 135 mm long. Leaves elliptic-oblong, 2–5 mm long, acute. Pedicels extending in fruit, (0.5–)2–19 mm long. Flowers 1 per node, 4-merous, 2–2.1 × 1.5–2 mm. Sepals triangular to obtuse, 0.9–1.3 × 0.4–0.9 mm wide with occasional black gland dots. Petals oblong to ovate 1.3–1.9 × 0.5–0.7 mm, exceeding sepals. Scales filamentous, spatulate 0.9 mm long. Carpels (6–)8–10(–17)-seeded. (Fig. 2 A–E).

SEED. [LM]: oblong-ellipsoid, (0.34–)0.39–0.42(–0.57) × 0.14–0.2 (–0.22) mm, reddish brown, longitudinally striate, minutely rugulose. [SEM]: cells oblong, longitudinally striate, joined by rounded, interlinking lobes. Wax debris may be present. (Plate 29 E–F). Of the 72 specimens examined, seeds were studied from 38 and were all of similar form to those of *C. aquatica*.

NEW WORLD CRASSULA

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FIG. 2. A–E *C. saginoides*: A habit × 8; B ½ flower × 16; C sepal × 20; D petal × 20; E scale × 26, from Hoover 2016. F–K *C. venezuelensis*: F habit × 8; G ½ flower × 16; H sepal × 20; J petal × 20; K scale × 26, from Beck 1865. Drawn by author (M.B.).

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HABITAT. Terrestrial to subaquatic; inland, wet and muddy places; ditch banks, seasonal pools, lake and river shores, fresh-water marshes. Reaching high altitudes < 3000 m.

DISTRIBUTION. Alaska, Nova Scotia, Massachusetts, Wyoming, Nevada, Arizona, Washington, Oregon, California, Hispaniola, Mexico (Map 1); also Mongolia, central Asia; naturalised in Portugal (*C. bonariensis* sensu Webb in Fl. Europ. 1: 351 (1964) non (DC.) Camb. (1829)).

C. saginoides can easily be confused with *C. aquatica* or *C. solierii* in North America. In *C. saginoides*, however, the pedicels tend to elongate in fruit, while those of *C. aquatica* are sessile. When dealing with immature or depauperate specimens this distinction may not always be apparent. From *C. solierii*, *C. saginoides* differs in its rugulose seed and long pedicels. *C. solierii* has smooth, shiny seed and shorter pedicels.

This species has been referred to *C. vaillantii* (Willd.) Roth which has pedicels of c. 4 mm compared with those of *C. saginoides* which may reach 19 mm at maturity. It is possible that the two species merge in central Asia and extensive field studies would be needed to show the true range of these taxa.