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83. AIZOACEAE

Description of the family and key to genera by S. Knapp.

Annual or perennial herbs or subshrubs, usually very succulent. Leaves alternate or opposite, usually simple and entire, rarely dentate or pinnatifid, occasionally reduced to scales, fleshy and succulent, glabrous or pubescent, the epidermis with specialized water-storing idioblasts and appearing papillate; stipules absent or rarely present and interpetiolar. Inflorescences axillary or terminal, cymose or the flowers solitary.

Flowers bisexual or unisexual and the plants monoecious or dioecious, fleshy, usually brightly coloured; tepals 3-8, fleshy, connate at the base to form a floral cup; staminodes numerous, petaloid, thin and strap-like or absent (Mesoamerica); stamens 3-many, perigynous or epigynous, the filaments free or connate basally in fascicles, the anthers 2-thecate with longitudinal dehiscence; ovary superior to inferior, 1-5(-20)-locular, the placentation generally axile, occasionally parietal or central; styles and stigmas equal in number to the locules. Fruit a loculicidal or circumscissile capsule, an indehiscent nut or nutlet, or berry-like; seeds often arillate, the embryo large. Aprox. 120 gen., 2000-2500 spp. Tropical and temperate zones of the southern hemisphere, most diverse in South Africa and Australia.

The number of genera in the Aizoaceae varies from about 12 to 127 depending upon how *Mesembryanthemum* L. and its segregates are treated; recent treatments of the family recognise 127 genera of which 115 are derived from *Mesembryanthemum* (Hartmann, 1993). Member of the subfamilies *Mesembryanthemoideae* and *Ruschioideae* (sensu Hartmann, 1993) have been reported as being in cultivation as garden plants in Mesoamerica (Standley & Steyermark, 1946; Molina, 1975; Breedlove, 1986) and in Mexico (Rico-Gray, 1979). *Mesembryanthemum blandum* Haw. has been reported from Honduras (Molina, 1975) and from Guatemala (Standley & Steyermark, 1946), where it known by the common name of 'uña de gato'. The *Mesembryanthemum* segregates *Delosperma brunthaleri* (A. Berger) Schwantes ex H. Jacobsen (*Montalvo 6362*, MO) and *Aptenia cordifolia* (L.f.) Schwantes have both been recorded as being cultivated in El Salvador, the latter, called 'siempreviva', is also cultivated as a pot plant is cultivated as a pot plant in

Guatemala (Standley & Steyermark, 1946). *Lampranthus multiradiatus* (Jacq.) N.E. Br. has been reported as being in cultivation in Chiapas (Breedlove, 1986). Species of these two subfamilies differ from the native or adventive species of Aizoaceae in Mesoamerica in having distinct linear, strap-shaped petals (actually staminodes) that are often bright magenta or pink.

1. Leaves alternate or the lowest sometimes opposite; ovary semi-inferior; fruit indehiscent. **2. Tetragonia**

1. Leaves strictly opposite or subopposite; ovary superior; fruit circumscissile.

2. Stipules absent; leaves at each node the same size; styles 3-4. **1. Sesuvium**

2. Stipules present; leaves at each node markedly unequal; style 1. **3. Trianthema**

1. Sesuvium L.

Halimus Kuntze

By S. Knapp.

Herbs or subshrubs, prostrate or suberect, often rooting at the nodes. Stems succulent, glabrous. Leaves opposite, succulent, linear, glabrous; bases united across the node to form a clasping or sheathing base; margins entire; stipules absent. Inflorescences of solitary axillary flowers, bracteolate, the bracts 2; pedicels absent or present. Flowers bisexual, the perianth of a single whorl; tepals 5-parted, triangular, with an appendage abaxially; stamens 5-15(-many), the filaments free or united, borne on the floral cup; ovary superior (Mesoamerica) or occasionally semi-inferior, 2-5-locular; styles 2-5; stigmas longitudinal, papillose. Fruit a circumscissile capsule; seeds several to many, black, cochleate, annular or reniform, smooth. Aprox. 6 spp. Pantropical on all continents.

1. Flowers sessile; stamens 5; capsules ovoid. **1. S. maritimum**

1. Flowers pedicellate; stamens numerous; capsules conical. **2. S. portulacastrum**

1. Sesuvium maritimum (Walter) Britton, Sterns & Poggenb., *Prelim. Cat.* 20 (1888). *Pharnaceum maritimum* Walter, *Fl. Carol.* 117 (1788). Neotipo

(designado por Ward, 2008): Estados Unidos, *Nelson 5850* (USCH). Ilustr.: Rico-Gray, *Fl. Veracruz* 9: 5, t. 1 (1979).

Halimus maritima (Walter) Kuntze, *Sesuvium pentandrum* Elliott.

Annual herbs, prostrate and forming dense carpets to 2 m in diameter. Leaves to 2.5 × 1 cm, spatulate to oblong-lanceolate or obovate; venation visible, but only the midvein obvious; base sheathing; margins entire; apex acute to obtuse. Flowers sessile; tepals 2-3 mm, ovate to oblong-ovate, pale pink adaxially, persistent; stamens 5; ovary 2-locular, the styles 2. Capsules c. 4 mm, ovoid, green or brown; seeds 5-60, dark brown, annular. *Beaches, mangroves*. B (*Vincent et al. 5950*, MO). 0 m. (Estados Unidos, Mexico, Mesoamerica, Antillas.)

2. *Sesuvium portulacastrum* (L.) L., *Syst. Nat.* ed. 10, 1058 (1759).

Portulaca portulacastrum L., *Sp. Pl.* 446 (1753). Lectotipo (designado por Wijnands, 1983): Hermann, *Parad. Bat.* 212, t. (1698) (BM). Ilustr.: Rico-Gray, *Fl. Veracruz* 9: 9, t. 2 (1979). N.v.: Verdolaga de playa, tsaycan, Y; denkum biski (Kuna), P.

Halimus portulacastrum (L.) Kuntze, *Sesuvium ortegae* Spreng., *S. pedunculatum* Pers., *S. revolutifolium* Ortega, *S. sessile* Pers., *S. sessilifolium* Domb. ex Rohrb.

Perennial herbs, trailing or erect, to 2 m in diameter. Leaves 2-6 × 0.3-1.5 cm, oblong to oblong-lanceolate; venation not apparent; base sheathing; margins entire; apex obtuse or rounded. Flowers pedicellate, the pedicel 2-11 mm; tepals c. 10 × 6 mm, ovate-lanceolate to lanceolate, persistent, reddish purple adaxially; stamens numerous; ovary 3-4-locular, the styles 3-4. Capsules 9-11 mm, conical, green or brownish; seeds 8-30, black, lenticular-reniform. *Beaches, mangroves, coastal dunes*. T (*Magaña y Cowan 2128*, MEXU); Ch (*Breedlove 25557*, MEXU); Y (*Miranda 8325*, MEXU); C (*Herrera 151*, MEXU); QR (*Rico-Gray 134*, MEXU); B (*Whitefoord 3341*, BM); G (*Anon. 141*, MEXU); H (*Nelson et al. 9756*, MO); ES (*Sidwell et al. 664*, BM); N (*Stevens 23051*, MO); CR (*Grayum et al. 5130*, BM); P (*Herrera y Mojica 570*, MO). 0-50 m. (Estados Unidos, Mexico, Mesoamerica, Colombia, Venezuela, Guyana, Ecuador, Galápagos, Peru, Bolivia, Brasil, Paraguay, Chile, Argentina, Antillas; Asia, Africa, Australia.)

2. *Tetragonia* L.

By S. Knapp.

Herbs or subshrubs, usually erect. Stems fleshy or succulent, glabrous or pubescent. Leaves alternate or sometimes the basal ones opposite, fleshy but not rounded and succulent; base variously attenuate; margins entire; stipules absent. Inflorescences axillary, fasciculate or of solitary flowers, or cymose, sessile or pedunculate, sometimes bracteolate; pedicels absent or present. Flowers bisexual or unisexual, the perianth of a single whorl; tepals 3-5, triangular or deltate; stamens (1-)4-20, the filaments free or united at the base, borne on the floral cup; ovary semi-inferior or inferior, (1-)3-9-locular; styles equal to the number of carpels; stigmas linear, papillose. Fruit an indehiscent nut, hard, 3-5-angled; seeds several to many, black or brown, pyriform to reniform, smooth. Aprox. 50-60 spp., South America (11 spp.), Africa, Australia, New Zealand, 1 sp. (*T. tetragonoides*) widely naturalized in temperate and subtropical regions.

Bibliografía: Taylor, C.M., *Syst. Bot* 19: 575-589 (1994).

1. *Tetragonia tetragonoides* (Pall.) Kuntze, *Revis. Gen. Pl.* 1: 264 (1891).

Demidovia tetragonoides Pall., *Enum. Hort. Demidof.* 150 (1781). Tipo: Cult. in Russia (not found). Ilustr.: Castroviejo, *Fl. Iberica* 2: 79, t. 20 (1990). N.v.: Espinaca, N; New Zealand spinach.

Tetragonia expansa Murray.

Annual herbs to 0.5 m, erect. Leaves 3.5-11 × 2.5-8 cm, ovate to lanceolate, glabrous or minutely strigillose; venation triplinerved to pinnate, visible; base acute to cuneate, becoming long attenuate; margins entire; apex acute; petioles 0-6 mm. Inflorescences of 1-3 axillary flowers, the peduncle 1-4 mm. Flowers bisexual; tepals 4, 1.5-2 × 1-1.5 mm, ovate to broadly triangular, green; stamens c. 10, the filaments 1-1.5 mm; ovary 5-angled, inferior; styles 5, 1.5-2 mm. Nuts 7-10 × 6-12 mm, turbinate, subsessile, strongly 5-angled, the ridges terminating in curved horns 1-3 mm. *Cultivated and occasionally escaped.* H (Molina, 1975: 45); N (*Stevens 23515*, MO). 0-100 m. (Estados Unidos, Mexico, Mesoamerica, Venezuela, Ecuador, Peru, Bolivia, Chile, Argentina, Japan, New Zealand, New Caledonia; native to cool seacoasts in New Zealand, Japan, Argentina and Chile.)

3. *Trianthema* L.

By S. Knapp.

Herbs or subshrubs, annual or very short-lived, prostrate or erect. Stems succulent, glabrous or puberulent. Leaves opposite or subopposite, the opposing leaves at a node markedly unequal, linear to orbicular, succulent or semi-succulent; base clasping or sheathing; margins entire; stipules present. Inflorescences axillary, the flowers solitary or in fascicles, occasionally united with the leaf base and hidden; pedicels absent or present. Flowers bisexual, the perianth of a single whorl; tepals 5, triangular, sometimes with a distal appendage; stamens 5, 10 or many, on the edge of the floral cup, alternate with the tepals when equal in number to them; ovary superior, 1-locular; style 1, linear. Fruit a circumscissile capsule; seeds cochleate or reniform, rough. Aprox. 9 spp., 1 sp. Pantropical, 1 sp. Argentina, and the rest in Africa, Asia and Australia.

1. *Trianthema portulacastrum* L., *Sp. Pl.* 223 (1753). Lectotipo (designado por Jeffrey, 1960): Hermann, *Parad. Bat.* 213, t. 1698 (BM). Ilustr.: Rico-Gray, *Fl. Veracruz* 9: 11, t. 3 (1979). N.v.: Verdolaga, Y.

Portulacastrum monogynum (L.) Medik., *Trianthema flexuosa* Schum. et Thonn., *Trianthema monogyna* L., *T. procumbens* Mill.

Annual herbs, erect or more commonly spreading, forming carpets to 1 m diameter; young stems pubescent. Leaves 1-7 × 0.5-6 cm, obovate to suborbicular, succulent, of unequal sizes with the smaller half the size of the larger; venation not apparent, except for the midvein; base sheathing, with an interpetiolar stipulate appendage to c. 3 mm; margins entire; apex abruptly rounded, sometimes apiculate; petioles 2-30 mm, sheathing. Inflorescences axillary, of solitary flowers; pedicels absent, the flowers sessile. Tepals c. 1.5 × 1 mm, green; stamens 10, borne on the edge of the floral cup; ovary lobed at the apex. Capsules c. 5 × 4 mm, usually hidden within the sheathing leaf bases, crested at the apex; seeds 2-12, c. 1.5 mm, reniform, reddish black. *Dunes, mangroves, in dry or salty soils in open areas.* Ch (Ventura y López 1890, MO); Y (Rico-Gray y Espejel 350, MO); B (Standley y Steyermark, 1946: 207); G (Steyermark 31789, MO); H (Molina, 1975: 45); ES (González y Villacorta 53, MO); N (Guzmán 2239, UNA); CR (Grayum y Kress 8563, MO); P (D'Arcy 16249, MO). 0-2300 m. (Estados Unidos, Mexico, Mesoamerica, Colombia,

Venezuela, Ecuador, Galápagos, Peru, Bolivia, Paraguay, Argentina, Antillas; Asia, Africa, Australia.)

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