

Polygonum arenastrum Bor. (Polygonaceae)
Dooryard Knotweed

Description. Annuals; stems prostrate, mat-like, 10-100 cm long, striate to angled, Leaves alternate, 5-20 mm long, 2-10 mm wide, generally all the same size, often deciduous on older stems, sessile to short-petiolate, stipulate, the stipules 3-6 mm long, at first bifid, often shredded at maturity, the blades oblong to elliptic, sometimes oblanceolate, the bases obtuse, the apices acute to obtuse, margins entire. Flowers 1-5, axillary; perianth 2-3 mm long, united to about the middle, the 5 segments greenish with white to pinkish margins; stamens usually 8; ovary superior, with 3 style branches; fruit a 3-angled achene, 1.5-2.5 mm long, dark brown to olive green. In California, flowering from May to October. (Clapham et al. 1962, Gleason and Cronquist 1991, Hickman 1993, Kaul 1986, Munz 1959, Webb and Chater 1964, Welsh 1984).

Note: The name *Polygonum aviculare* L. was incorrectly applied to this taxon as represented in California and as circumscribed by earlier American taxonomists (Mertens and Raven 1965). *Polygonum aviculare* is characterized by being heterophyllous (early leaves 25-60 mm long, 4-15 mm wide, later leaves about 1/3 the size) and with perianth segments fused only at the base (Mertens and Raven 1965, Webb and Chater 1964). It has not been reported from the Channel Islands. In addition, *P. argyrocoleon* (Persian knotweed), another widespread prostrate knotweed, is similar to *P. arenastrum*, but differs by having the perianth constricted above the tip of the achene, with the outer 3 tepals much narrower than the inner two (Gleason and Cronquist 1991, Hickman 1993, Kaul 1986, Webb and Chater 1964).

Geographic distribution. *Polygonum arenastrum*, a native of southern Europe, has become widely naturalized in North America, Australia, and New Zealand (Chapman 1991, Gleason and Cronquist 1991, Kaul 1986, , Webb and Chater 1964, Webb et al. 1988). In addition to these areas, *Polygonum aviculare*, also a native of Europe, has been reported from Australia, South America, Japan, southern Africa, and Hawaii (Ohwi 1965, Arnold and de Wet 1993, Kruk and Benech-Arnold 1998, Lemerle et al. 1996, Requesens et al. 1997, Wagner et al. 1990). It is possible that some of the latter reports may also be attributable to or include *P. arenastrum*. *Polygonum argyrocoleon* has been reported elsewhere only from Hawaii (Wagner et al. 1990).

Polygonum argyrocoleon appeared first in Imperial County in 1921 and was spread throughout California as a contaminant of alfalfa seed crops (Robbins 1940). *Polygonum aviculare* (probably also including *P. arenastrum*) was first introduced in the late 18th century, because it had become widespread by the mid 19th century (Hendry and Bellue 1925, Robbins 1940, Watson 1880).

Polygonum arenastrum has been reported from Anacapa, Santa Cruz, and Santa Rosa islands and *P. argyrocoleon* has been reported from Santa Cruz Island (Junak et al. 1997). Apparently, *Polygonum aviculare* is unknown from any of the Channel islands. All three species are widespread in California, especially west of the Sierra Nevada (Hickman 1993, Martens and Raven 1965).

Reproductive and vegetative biology. The three species are probably self-compatible and largely self-pollinated, although nectar production probably attracts some level of insect visitation (Proctor et al. 1996). Seeds of *P. aviculare* may remain dormant for over

8 years (Conn and Deck 1995). Seed germination is relatively tolerant of saline conditions, but plant productivity, especially under competitive conditions, remains relatively low (Foderaro and Ungar 1997, Khan and Ungar 1998). Seed germination in cultivated wheat fields is enhanced by warm, moist conditions (Kruk and Benech-Arnold 1998). However, seed banks of *P. aviculare* are apparently depleted by cultivation relative to other invasive weeds (Brenchley and Warington 1945, Forcella et al. 1997, Requesens et al. 1997).

Meerts and Garnier (1996) provided evidence for ecotypic variation (including differential germination and growth responses), based on comparisons of pastures, fallow fields, and undisturbed areas. Local adaptation in *Polygonum aviculare* is also enhanced by relatively high levels of phenotypic plasticity (Meerts 1995).

No literature was found pertinent to the biology of *P. arenastrum* or *P. argyrocoleon*.

Ecological distribution. All three species are reported from roadsides, fields, waste places, and disturbed sites (Gleason and Cronquist 1991, Hickman 1993, Kaul 1986, Munz 1959, Webb and Chater 1964, Webb et al. 1988). *Polygonum aviculare* survives in pastures experiencing intense trampling (Thomas 1960).

Weed status. Neither *Polygonum arenastrum* nor *P. aviculare* are considered noxious weeds in agricultural or horticultural practice, at least at a global level (not listed by Holm et al. 1977), nor is it considered a noxious weed by the State Dept. of Food and Agriculture (Anonymous 1996). Only *P. aviculare* is listed for the United States in Lorenzi and Jeffery (1987).

Microbial pathogens. *Polygonum aviculare* is a host of several pathogenic fungi, including *Uromyces* (Stojanovic et al. 1995) and *Phomopsis* (Shivas et al. 1994).

Insect pathogens. *Polygonum aviculare* is reported to be a host of the wheat bug in New Zealand (Farrell and Stufkens 1993).

Herbicide control. Several herbicides have been used to control *Polygonum aviculare*, including mixtures of flupoxam and prometryn (Bedmar 1995), metosulam and atrazine (Daniau et al. 1996). However, Callens et al. (1996) reported poor control using sulcotrione. Lorenzi and Jeffery (1987) recommended mixtures of 2,4-D and dicamba.

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