birdseye pearlwort
Sagina procumbens L.

Synonym: *Sagina procumbens* var. *compacta* Lange
Other common names: arctic pearlwort, birdeye pearlwort, procumbent pearlwort
Family: Caryophyllaceae

Invasiveness Rank: **39** The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Description

Birdseye pearlwort is a mat-forming perennial plant that grows from a taproot and rooting stems. Stems are glabrous, ascending or trailing, branched, slender, and 2 to 20 cm long. Basal leaves are arranged in dense, persistent rosettes and are 8 to 25 mm long. Stem leaves are often arranged in dense clusters and are opposite, linear, slightly fleshy, 2.5 to 15 mm long, and 0.4 to 2 mm wide with narrowly pointed tips. Stipules are absent. Flowers are axillary or terminal and consist of 4 or 5 sepals. Sepals are circular to elliptic and 1.5 to 2.5 mm long. They are appressed while the capsules are developing and spreading once the capsules have opened. Sepal margins are white. Petals are absent or are shorter than or equaling sepals. Capsules are ovoid, 2 to 5 mm long, and four- or five-valved. Seeds are brown, triangular, grooved, and 0.3 to 0.4 mm long (Crow 2005, eFloras 2008, Klinkenberg 2010, NatureGate 2011, Western Australian Herbarium 2011).

Sagina procumbens L. Photo by R. Old.

Small mat of *Sagina procumbens* L. Photo by J. Opioła.

Similar species: Birdseye pearlwort can be confused with several *Sagina* species that are native to Alaska: alpine pearlwort (*Sagina saginoides*), snow pearlwort (*S. nivalis*), stickystem pearlwort (*S. maxima* ssp. *crassicaulis*), and western pearlwort (*S. decumbens* ssp. *occidentalis*). These species can be distinguished from birdseye pearlwort based on the following traits. Alpine pearlwort has leaves that are not fleshy, five sepals and petals per flower, shorter petals that are 1.5 to 2 mm long, and sepals that are appressed once the capsules have opened. Stickystem pearlwort has five sepals and petals per flower and longer sepals that are 2.5 to 3 mm long. Snow pearlwort has purple sepal margins and shorter petals that are 1.5 to 2 mm long. Western pearlwort has an annual growth habit, leaves that are not fleshy, and purple sepal margins or apexes, and it lacks basal rosettes. All native *Sagina* species lack densely clustered stem leaves (Hultén 1968, Crow 2005).

Ecological Impact

Impact on community composition, structure, and interactions: Birdseye pearlwort colonizes disturbed soil (Pakeman and Small 2005, DiTomaso and Healy 2007) and forms extensive mats (Klinkenberg 2010, NatureGate 2011), likely increasing the density of vegetation and possibly reducing native plant populations in disturbed areas. Approximately 10% of infestations in Alaska occur at or above 20% ground cover (AKEPIC 2011). However, this species is displaced as the vegetative cover in disturbed areas increases (Pakeman and Small 2005). Birdseye pearlwort is consumed by mammals and birds (Welch 1985).

Impact on ecosystem processes: Birdseye pearlwort may reduce the availability of soil moisture and nutrients in disturbed areas. However, its potential impacts are likely minor because it is easily outcompeted by taller vegetation (Western Australian Herbarium 2011).

Biology and Invasive Potential

Reproductive potential: Birdseye pearlwort reproduces sexually by seeds and vegetatively by stems that root at the nodes (Crow 2005). Plants produce large numbers of seeds (Western Australian Herbarium 2011), which remain viable in the soil for more than 5 years (Rosef 2008).

Role of disturbance in establishment: Birdseye pearlwort occupies coastal cliffs, shores, roadsides, bare areas, open ground, and disturbed sites (DiTomaso and Healy 2007, Klinkenberg 2010, NatureGate 2011, Western Australian Herbarium 2011). It exploits gaps in vegetation created by disturbances but is often excluded as the cover of other species increases. Seedlings are not likely to persist in closed vegetation (Pakeman and Small 2005). The majority of infestations in Alaska are associated with anthropogenically disturbed areas (AKEPIC 2011, UAM 2011); however, birdseye pearlwort can also establish in areas disturbed by natural fluvial or coastal processes (UAM 2011).

Potential for long-distance dispersal: Seeds are likely dispersed by moving water. They have been found in sediment samples from Lake Mills on the Olympic Peninsula in Washington (Brown and Chenoweth 2008). Seeds can be spread in the excrement of some animals (Welch 1985).

Potential to be spread by human activity: Birdseye pearlwort has been identified as a weed contaminant in soil from container-grown ornamental plants available from vendors in Alaska (Conn et al. 2008). Seeds have also been found in cattle dung (Welch 1985, Matějková et al. 2003).

Germination requirements: Seeds germinate best in the presence of light. Seedlings require several months to reach maturity (Western Australian Herbarium 2011).

Growth requirements: Birdseye pearlwort grows best in wet or damp, gravelly or sandy soils (Crow 2005).

Congeneric weeds: Annual pearlwort (*Sagina apetala*) and Japanese pearlwort (*S. japonica*) are known to occur as non-native weeds in North America (Crow 2005, DiTomaso and Healy 2007).

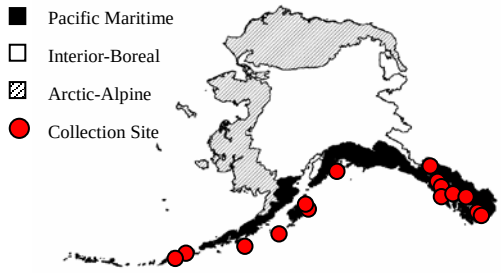
Legal Listings

- ☒ Has not been declared noxious
- ☐ Listed noxious in Alaska
- ☐ Listed noxious by other states
- ☐ Federal noxious weed
- ☐ Listed noxious in Canada or other countries

Distribution and Abundance

Birdseye pearlwort is an occasional weed in lawns (Klinkenberg 2010) and container-grown ornamental plants (Conn et al. 2008). It can grow in wetland communities and pond and lake margins (Crow 2005, Brown and Chenoweth 2008). This species dominates and modifies the vegetative composition of some habitats that have been associated with past disturbances on the subantarctic Marion Island (Frenot et al. 2001).

Native and current distribution: Birdseye pearlwort is native to Europe (Crow 2005). It has been introduced to North America, South America, Asia, Australia, New Zealand, and several subantarctic islands (Frenot et al. 2001, Crow 2005, Landcare Research 2011, Western Australian Herbarium 2011). This species grows in 33 states of the U.S. and much of Canada (USDA 2011). It is known to grow as far north as 70.9°N in Norway (Vascular Plant Herbarium Trondheim 2011). Birdseye pearlwort has been documented from the Pacific Maritime ecogeographic region of Alaska (AKEPIC 2011, UAM 2011).



Distribution of birdseye pearlwort in Alaska

Management

Small infestations can be removed by digging. Glyphosate may effectively control larger infestations (Western Australian Herbarium 2011). Plants can be controlled with two or three applications of 2, 4-D with mecoprop, 2, 4-D with dichlorprop-P, or 2, 4-D with Dicamba (Royal Horticultural Society 2011).

References:

AKEPIC database. Alaska Exotic Plant Information Clearinghouse Database. 2011. Available: http://akweeds.uaa.alaska.edu/

Brown, R., and J. Chenoweth. 2008. The Effect of Glines Canyon Dam on Hydrochorous Seed Dispersal in the Elwha River. Northwest Science. 82(1). 197-209 p.

Conn, J., C. Stockdale, and J. Morgan. 2008. Characterizing Pathways of Invasive Plant Spread to Alaska: I. Propagules from Container-Grown Ornamentals. Invasive Plant Science and Management. 1(4). 331-336 p.

Crow, G. 2005. *Sagina procumbens* Linnaeus. In: Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 12+ vols. New York and Oxford. Vol. 5, p. 143.

DiTomaso, J., and E. Healy. 2007. Weeds of California and Other Western States. Vol. 1. University of California Agriculture and Natural Resources Communication Services, Oakland, CA. 834 p.

eFloras. 2008. Published on the Internet http://www.efloras.org [accessed 9 March 2011]. Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA.

Frenot, Y., J. Gloaguen, L. Massé, and M. Lebouvier. 2001. Human activities, ecosystem disturbance, and plant invasions in subantarctic Crozet, Kerguelen, and Amsterdam Islands. Biological Conservation. 101(1). 33-50 p.

Hultén, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA. 1008 pp.

Klinkenberg, B. (Editor) 2010. *Sagina procumbens* L. In: E-Flora BC: Electronic Atlas of the Plants of British Columbia**.** Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia. Vancouver, BC. [8 March 2011] Available: http://www.geog.ubc.ca/biodiversity/eflora/index.shtml

Landcare Research. 2011. *Sagina procumbens* L. New Zealand Plants. Landcare Research. Lincoln, New Zealand. [8 March 2011] http://nzflora.landcareresearch.co.nz/

Matějková, I., R. van Diggelen, and K. Prach. 2003. An attempt to restore a central European species-rich mountain grassland through grazing. Applied Vegetation Science. 6(2). 161-168 p.

NatureGate. 2011. Finland Nature and Species. Helsinki, Finland. [8 March 2011] Available: http://www.luontoportti.com/suomi/en/

Pakeman, R., and J. Small. 2005. The role of the seed bank, seed rain, and the timing of disturbance in gap regeneration. Journal of Vegetation Science. 16(1). 121-130 p.

Rosef, L. 2008. Germinable soil seed banks in abandoned grasslands in central and western Norway and their significance for restoration. Applied Vegetation Science. 11(2). 223-280 p.

Royal Horticultural Society. 2011. Lawn weeds: selecting weedkillers. Royal Horticultural Society. London, UK. [8 March 2011] http://www.rhs.org.uk/

UAM. 2011. University of Alaska Museum, University of Alaska Fairbanks. Available: http://arctos.database.museum/home.cfm

USDA. 2011. The PLANTS Database. National Plant Data Center, Natural Resources Conservation Service, United States Department of Agriculture. Baton Rouge, LA. http://plants.usda.gov

Vascular Plant Herbarium, Trondheim. 2011. Accessed through GBIF (Global Biodiversity Information Facility) data portal (http://data.gbif.org/datasets/resource/7978, 2011-03-08). Natural History Museum, University of Oslo. Trondheim, Norway.

Welch, D. 1985. Studies in the grazing of heather moorland in north-east Scotland. Journal of Applied Ecology. 22(2). 461-472 p.

Western Australian Herbarium. 2011. FloraBase — The Western Australian Flora. Department of Environment and Conservation. http://florabase.dec.wa.gov.au/