

sulfur cinquefoil

Potentilla recta L.

Synonyms: *Potentilla recta* var. *obscura* (Nestler) W.D.J. Koch, *P. recta* var. *pilosa* (Willd.) Ledeb., *P. recta* var. *sulphurea* (Lam. & DC.) Peyr.

Other common names: erect cinquefoil, roughfruit cinquefoil, sulphur cinquefoil

Family: Rosaceae

Invasiveness Rank: 57 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

Sulfur cinquefoil is a perennial herb that grows from 30 ½ to 46 cm tall. One or a few stems grow from a well developed root-stock. Stems are tufted, erect, simple or branched, and very leafy with both coarse and fine hairs. Basal leaves are greenish, coarse-hairy on both sides, few, long-stalked, and palmately compound with 5 or 7 toothed leaflets. Stem leaves are similar to basal leaves but are shorter-stalked, several, and obviously alternate. Flowers are arranged in open, terminal clusters. They each have 5 light yellow petals. Seeds are numerous, clustered, about 1 mm long, brownish, and strongly net-veined (Pojar 1999, Whitson et al. 2000).



Potentilla recta L. Photo by D. Horn.

Similar species: Sulfur cinquefoil can be distinguished from native cinquefoils by the presence of long hairs that are oriented perpendicular to the stem or leaf stalk, many more stem leaves than basal leaves, and net-like patterns on the seed coats.

Ecological Impact

Impact on community composition, structure, and interactions: Sulfur cinquefoil displaces native vegetation in grasslands and open forest communities (Endress and Parks 2004, Kadrmaz and Johnson 2004). It may reduce the reproductive success and abundance of coexisting native cinquefoils. Although elk and deer have been observed grazing on sulfur cinquefoil, high tannin levels make this species unpalatable to most wildlife (Werner and Soule 1976, Endress and Parks 2004, Kadrmaz and Johnson 2004). A large number of phytophagous and pollinating insect species are associated with sulfur cinquefoil (Powell 1996). *Potentilla* species do not readily hybridize (Acharya Goswami and Matfield 1975).

Impact on ecosystem processes: As a pioneer species, sulfur cinquefoil may bind disturbed soil and prevent erosion (Werner and Soule 1976). Alteration of additional ecosystem functions by sulfur cinquefoil is probable but has not been documented (Powell 1996).

Biology and Invasive Potential

Reproductive potential: Sulfur cinquefoil reproduces by seeds. Large parent plants can propagate vegetatively when their central roots die, causing them to fragment. Individual plants produce 1,650 seeds per season on average (Endress and Parks 2004, Werner and Soule 2004).

Role of disturbance in establishment: Sulfur cinquefoil colonizes disturbed areas such as abandoned agricultural fields and clearcuts (Endress and Parks 2004, Kadrmaz and Johnson 2004). It can also invade undisturbed, natural grasslands, shrublands, and open-canopy forests (Zouhar 2003).

Potential for long-distance dispersal: Most seeds fall to the ground passively. Long-distance dispersal can occur when seeds attach to or are consumed by birds, small

mammals, and grazing animals. Seeds can be transported long distances by wind, melting snow, and moving water (Werner and Soule 1976, Powell 1996, Endress and Parks 2004).

Potential to be spread by human activity: Seeds can be transported on clothes, boots, vehicles, and earth-moving equipment (Endress and Parks 2004). They can also be transported in soil, hay, animal bedding, and floral arrangements (Powell 1996).

Germination requirements: The dormancy of mature seeds is broken by a combination of soil moisture, exposure to light, and fluctuating diurnal temperatures. Germination can occur during any month of the growing season but is inhibited by darkness (Baskin and Baskin 1990).

Growth requirements: Sulfur cinquefoil grows best in dry to moderately moist, coarse-textured soils; dense populations have also been found growing in clay (Werner and Soule 1976). In the Pacific Northwest, sulfur cinquefoil grows in areas that receive 33 to 127 cm of precipitation annually. This species appears to be intolerant of complete shade (Zouhar 2003, Endress and Parks 2004).

Congeneric weeds: There are a number of introduced *Potentilla* species in North America, but none are listed as weeds (USDA 2002).

Legal Listings

- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states (CO, MT, NV, OR, WA)
- Federal noxious weed
- Listed noxious in Canada or other countries (BC)

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Distribution and abundance

Sulfur cinquefoil grows in disturbed areas, waste places, roadsides, pastures, and overgrazed grasslands (Powell 1996, Pojar 1999, Endress and Parks 2004). It often colonizes undisturbed forest, shrub, and grassland communities (Whitson et al. 2000, Endress and Parks 2004).

Native and current distribution: Sulfur cinquefoil is native to the eastern Mediterranean region of Eurasia. It also grows in central and southern Europe and the mountains of North Africa and Asia. This species has spread throughout North America. It has been reported in the ten southernmost Canadian provinces and all states of the continental United States except for Arizona, Utah, and New Mexico (Werner and Soule 1976, USDA 2002). It has not been documented in Alaska.

Management

Sulfur cinquefoil does not threaten native vegetation until it completely dominates an area. A combination of mechanical, chemical, and biological control methods may be necessary to eradicate or successfully contain large infestations. Chemical methods can effectively control infestations of sulfur cinquefoil; however, this species is resistant to some herbicides (Powell 1996, Endress and Parks 2004, Kadrmaz and Johnson 2004). Digging and tilling can effectively control small infestations. Mowed or grazed plants can still flower and produce seeds.

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