

creeping buttercup *Ranunculus repens* L.

Synonyms: *Ranunculus repens* var. *degeneratus* Schur, *R. repens* var. *erectus* DC., *R. repens* var. *glabratus* DC., *R. repens* var. *linearilobus* DC., *R. repens* var. *pleniflorus* Fern., *R. repens* var. *repens* L., *R. repens* var. *typicus* Beck, *R. repens* var. *villosus* Lamotte.

Other Common name: none

Family: Ranunculaceae

Invasiveness Rank: 72 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

Creeping buttercup is a decumbent, perennial herb that grows up to 91 cm long with slender, fibrous roots. Stems root freely at the nodes and are often slightly hollow with long, spreading hairs. Basal leaves are 1.25 to 9 cm long, up to 10 cm wide, egg-shaped to triangular, toothed, and trifoliate. They often have light-colored spots. Stem leaves are alternate, smaller and have short stalks. Upper stem leaves are simple to five-parted bracts. Flower stalks are long and erect. Flowers are few, large (10-35 mm wide), and yellow. They normally have five petals each but can have between six and nine. Petals are 6 to 10 mm long. Spherical seed heads usually contain 12 flattened, rounded seeds with short, backward-turned beaks (Welsh 1974, Douglas and Meidinger 1999, Whitson et al. 2000). Plants overwinter as rosettes with small, green leaves (Harper 1957).

Creeping buttercup is a facultative wetland plant (FAC) which means it is known to grow in both wetland and non-wetland conditions in Alaska (Lichvar et al. 2014). Widely distributed in the northern areas of Pakistan, creeping buttercup is used for a variety of medicinal purposes the roots are known to contain compounds with antibacterial activity (Noor et al. 2006).

Similar species: Creeping buttercup can be distinguished from other buttercup species by its horizontal growth habit, creeping stems that root at the nodes, spherical seed heads, and long petiolule (stalk) from the central leaf lobe (Hultén 1968, Lovett-Doust et al. 1990, Douglas and Meidinger 1999).

Distribution and Abundance

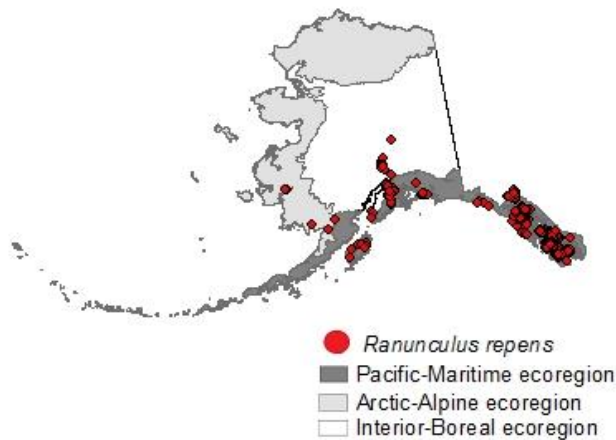
General information about distribution/range: Creeping buttercup grows in disturbed areas, gardens, croplands, grasslands, woodlands, and semi-aquatic communities, such as swamps, pond margins, rivers, and ditches (Harper 1957, Lovett-Doust et al. 1990, Hilty 2017).



Creeping buttercup (*Ranunculus repens* L.)

Native and current distribution: Creeping buttercup is native to Europe, where its range extends northward to 72° N in Norway (GBIF 2018). It has naturalized in many temperate regions around the world, including North America, South America, Asia, Africa, Australia, and New Zealand (Hultén 1968, GBIF 2018). In Alaska, this species has been documented from all three ecogeographic regions (Hultén 1968, AKEPIC 2018) including areas within Denali National Park, Glacier Bay National Park, Klondike Gold Rush National Historical Monument and Sitka National Historical Park (NPS 2009).

AKEPIC database link and information regarding non-native plant species list is available online: <http://accs.uaa.alaska.edu/invasive-species/non-native-plants>



Distribution of creeping buttercup (*Ranunculus repens* L.) in Alaska.

Legal Listings

- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states (prohibited in Massachusetts)
- Federal noxious weed
- Listed noxious in Canada or other countries

Ecological Impact

Impact on community composition, structure, and interactions: Creeping buttercup is usually found in early successional communities including disturbed soils, grassland communities, aquatic and semi-aquatic communities and woodlands, restricted to clearings, forest margins and along paths where light conditions are adequate (Lovett-Doust 1990). *Ranunculus repens* is capable of withstanding competition from tall-growing grasses (Harper 1957).

The poisonous compound protoanemonin is released in the sap of creeping buttercup. Protoanemonin can kill grazing animals if ingested. Geese and other birds readily eat the leaves and seeds of buttercup (Lovett-Doust et al. 1990). The flowers are visited by honey bees, butterflies, moths, and beetles for pollen or nectar. Creeping buttercup is a known host for many microorganisms, viruses, insects, and nematodes (Lovett-Doust et al. 1990, Royer and Dickinson 1999).

Impact on ecosystem processes: Creeping buttercup readily occupies moist disturbed open areas and may hinder colonization by native species (Lovett-Doust 1990), forming dense patches with large numbers of creeping stolons. Some studies have found evidence of *Ranunculus repens* sequestering nutrients and minerals in the soil, causing dieback, as well as potassium and other nutrient deficiencies of neighboring vegetation (Schipstra 1957, Hatfield 1970).

Biology and Invasive Potential

Reproductive potential: Creeping buttercup can reproduce sexually by seeds and vegetatively from stolons and rhizomes (EOL 2016). Seed bank studies show wide variation depending on land use and habitat type, ranging from 32 to 11,400 seeds per square meter (Chippendale & Milton 1934, Sarukhan 1974, Lovett-Doust et al. 1990). Production of stolons and ramets is the major mechanism of population increase for creeping buttercup. Stolon internodes breakdown after ramets form independent leaves and root systems, leaving the daughter plants independent from the parent plant (Lovett- Doust et al. 1990).

Role of disturbance in establishment: Seedlings establish readily on open ground and colonize bare areas in the year following germination (Harper 1957). Disturbance provides a vector for invasion of creeping buttercup; buttercup plants can colonize moist disturbed areas from creeping stolons and from rooting vegetative pieces.

Potential for long-distance dispersal: Although most seeds drop near the parent plant, some seeds are transported farther away when blown by wind or dispersed in the dung of birds, farm animals, or small rodents (Lovett-Doust et al. 1990). Use of this plant as an ornamental planting and presence in hay could further spread the range of creeping buttercup.

Potential to be spread by human activity: Seeds can attach to clothing and tires. Creeping buttercup may have been introduced into North America as an ornamental plant (Lovett-Doust et al. 1990). At Sitka National Historic Monument, creeping buttercup is prevalent in areas disturbed by human activity (Densmore et al. 2001).

Germination requirements: Seeds usually germinate in late spring. Successful germination and early establishment appear to require open soil.

Growth requirements: Buttercups are adapted to a wide range of soil types. Because they can withstand waterlogged soils, buttercups grow mainly in heavy, wet clay, but they can also thrive in sand or gravel if adequate moisture is present. Creeping buttercup is able to tolerate some salinity and can be found on beaches and in salt marshes. They can tolerate frost, but not prolonged dry periods (Lovett-Doust et al. 1990).

Congeneric weeds: Littleleaf buttercup (*Ranunculus abortivus*), tall buttercup (*Ranunculus acris*), corn buttercup (*R. arvensis*), St. Anthony's turnip (*R. bulbosus*), and hairy buttercup (*R. sardous*) are invasive

in some parts of the United States (USDA, NRCS 2018).

Management

Herbicides are generally recommended for the control of buttercups. Plants can be weakened by cultivation, but they may regenerate from parts of the caudex (rootstock) and stolon, causing increases in the

population. Plowing provides ideal conditions for the germination of seeds and is therefore not recommended as an eradication technique (Lovett-Doust et al. 1990). New infestations can be prevented by seeding disturbed areas and managing grazing animals to maintain native perennial plant communities including seeding those areas disturbed by animals.

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