field bindweed
Convolvulus arvensis L.

Synonyms: *Convolvulus ambiqens* House, *C. incanus* auct.non Vahl, *Strophocaulos arvensis* (L.) Small
Other common names: creeping jenny, European bindweed, morningglory, perennial morningglory, smallflowered morning glory
Family: Convolvulaceae

Invasiveness Rank: **56** 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
Field bindweed is a perennial plant with extensive rhizomes that can penetrate soil to a depth of 6 meters (Whitson et al. 2000). Stems are trailing to somewhat twining and glabrous to densely pubescent. They can be more than 7 meters long. Leaves are long-stalked, 19 to 64 mm long, and about 2½ cm wide with rounded tips and smooth margins. The leaf shape is extremely variable. Most leaves are arrowhead-shaped to triangular; some leaves, however, are round, ovate, oblong, or linear. Flowers are funnel-shaped, 19 to 25½ mm in diameter, and white or pink-purple. They are arranged by themselves or in groups of 2 to 3 in the axils of leaves. Flowers bloom for a single day only. Fruits are egg-shaped capsules that house grayish-brown, three-sided seeds (Hitchcock et al. 1959, Royer and Dickinson 1999). Seedlings are erect and ascending. Seedling leaves are nearly as broad as they are long, somewhat round, and notched at the tip (Lyons 1998).


Flowers of *Convolvulus arvensis* L. Photo by B. Wofford.

Similar species: Field bindweed can be confused with black bindweed (*Fallopia convolvulus* / *Polygonum convolvulus*). Unlike field bindweed, black bindweed has clusters of inconspicuous, greenish-white flowers, leaves with pointed tips, and membranous or papery sheaths at the leaf nodes (Weaver and Riley 1982, Royer and Dickinson 1999).


Convolvulus arvensis L. Photo by T. Heutte.

Ecological Impact
Impact on community composition, structure, and interactions: Field bindweed can twine and form dense, tangled mats, which dominate local plant communities. The extensive root systems reduce the availability of soil moisture and nutrients and help field bindweed outcompete native forbs and grasses. Field bindweed attracts various pollinators, including bees, honeybees, butterflies, and moths (Zouhar 2004). It may be mildly toxic to some grazing animals (Todd et al. 1995, Lyons 1998). Field bindweed hosts several viruses (Weaver and Riley 1982).
Impact on ecosystem processes: Field bindweed tends to occupy bare ground under open conditions. It is unclear how long this species may persist in native plant communities, but it can affect successional processes (Rutledge and McLendon 1996).

Biology and Invasive Potential
Reproductive potential: Field bindweed reproduces sexually by seeds and vegetatively from rhizomes. A

single plant can produce between 12 and 500 seeds per year (Weaver and Riley 1982, Royer and Dickinson 1999). Seed banks are extremely persistent. Seeds can lie dormant in the soil for more than 50 years (Timmons 1949, Lyons 1998, Whitson et al. 2000).

Role of disturbance in establishment: Field bindweed is an early successional species that establishes easily on bare ground or in disturbed natural communities. Seeds germinate better on bare ground than on sites with litter or vegetation (Zouhar 2004).

Potential for long-distance dispersal: Seeds land near the parent plant but can be dispersed farther by water, birds, or animals (Harmon and Keim 1934, Proctor 1968, Weaver and Riley 1982, Zouhar 2004).

Potential to be spread by human activity: Seeds can be dispersed by vehicles and machinery or in contaminated farm and garden seed. Field bindweed is planted as an ornamental ground cover and in hanging baskets (Zouhar 2004).

Germination requirements: Peak germination occurs in late spring or early summer. Under laboratory conditions, the optimal temperatures for germination of field bindweed ranged from 20°C to 35°C. Seed coats can become permeable to water by exposure to moist air or fluctuating soil temperatures, by mechanical abrasion (especially during cultivation), or by passage through the digestive tract of mammals and birds (Weaver and Riley 1982).

Growth requirements: The optimal growth conditions for field bindweed are strong sunlight and moderate to low moisture. This plant grows best on rich, fertile soils but may persist on nutrient-poor gravel (Rutledge and McLendon 1996). Field bindweed is cold tolerant. Freezing temperatures kill shoots, but roots and rhizomes can withstand temperatures as low as -6°C (Dexter 1937).

Congeneric weeds: Hollyhock bindweed (*Convolvulus althaeoides*) is known to occur as a non-native weed in North America (DiTomaso and Healy 2007, ITIS 2010).

Legal Listings

☐ Has not been declared noxious

☒ Listed noxious in Alaska

☒ Listed noxious by other states (AR, AZ, CA, CO, HI, IA, ID, KS, MI, MN, MO, MT, ND, NM, OR, SD, TX, UT, WA, WI, WY)

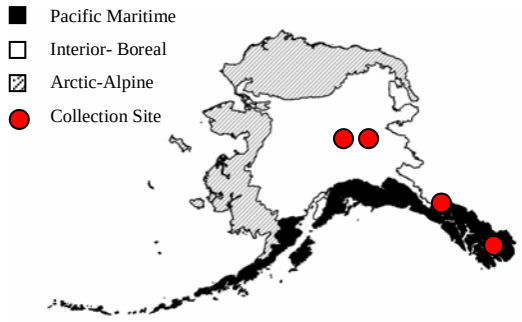
☐ Federal noxious weed

☒ Listed noxious in Canada or other countries (AB, MB, NS, QC, SK)

Distribution and abundance

Field bindweed grows in temperate, tropical, and Mediterranean climates (Lyons 1998, Gubanov et al. 2004). It is especially common in cereal crops, orchards, and vineyards. In many areas, field bindweed is considered to be one of the most detrimental agricultural weeds (Hitchcock et al. 1959). Field bindweed can also be found in roadsides, ditches, stream banks, and lakeshores (Lyons 1998).

Native and current distribution: Field bindweed is native to Europe and Asia but currently has a cosmopolitan distribution between the 60°N and 45°S latitudes. It is common in the United States and Canada, except in the extreme Southeast, New Mexico, Arizona, Newfoundland, and Prince Edward Island. Field bindweed has been documented from the Pacific Maritime and Interior-Boreal ecogeographic regions of Alaska (AKEPIC 2010).



Distribution of field bindweed in Alaska

Management

Field bindweed is difficult to control due to its extensive root systems and long-lived seed banks. Mechanical control is not effective because plants can regenerate from the rhizomes. Herbicides are generally the most effective control method. No biological control agents are currently available (Rutledge and McLendon 1996, Elmore and Cudney 2003).

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