

Convolvulus arvensis

FIELD BINDWEED

ENGLISH NAMES	Field bindweed, common bindweed, small bindweed, European bindweed, field morning-glory, orchard morning-glory, creeping jenny, bellbind, sheep-bind, corn-bind
SCIENTIFIC NAME	<i>Convolvulus arvensis</i> L.
FAMILY	Convolvulaceae (Morning-glory)



Photo Credit: © L. KERSHAW

Field bindweed is a white-flowered perennial herb with long, trailing, somewhat twining stems.

RANGE/KNOWN DISTRIBUTION

Field bindweed originated in the Mediterranean region of Europe and was introduced to North America in the early 1700s. It is now found in temperate regions worldwide, and is most abundant in disturbed areas. It is currently infrequent in Garry oak meadows in southwestern British Columbia.

IMPACTS ON GARRY OAK AND ASSOCIATED ECOSYSTEMS

Field bindweed is an aggressive competitor, robbing nutrients, moisture and light from other plants. Although not yet considered a problem in Garry oak and associated ecosystems, field bindweed can be present on fringes that abut disturbed areas or that receive yard waste from residential areas. If the soil in a Garry oak ecosystem becomes highly disturbed, field bindweed may establish and spread, competing with native species.

FIELD DESCRIPTION

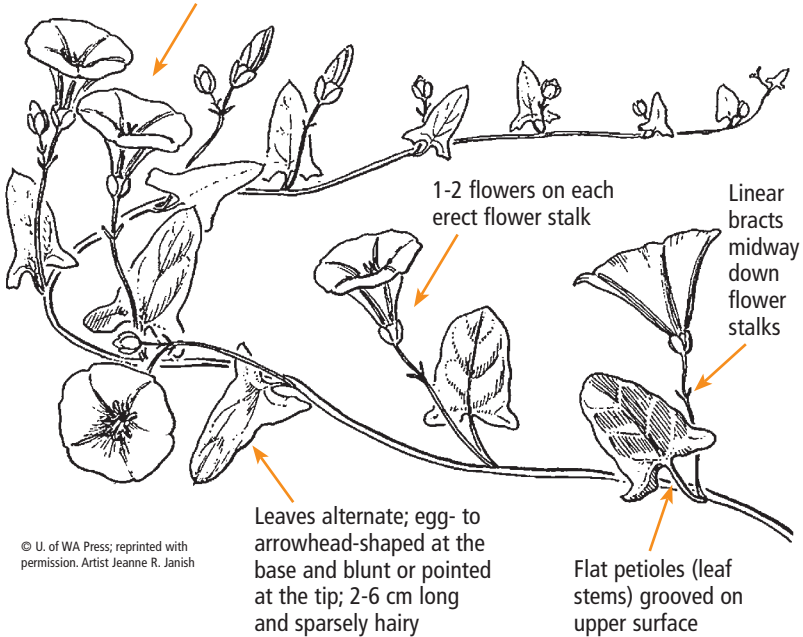
This persistent perennial vine forms dense, tangled mats on the ground or climbs up shrubs and trees. Stems can grow 1.5 m long or longer, and underground rhizomes range from 5 cm to 2.6 m long. Roots can be over 6 m long and penetrate deep into the soil. Seed leaves (cotyledons) are nearly square with a shallow notch at the tip, while mature leaves are arrowhead-shaped and 2-6 cm long. Trumpet-shaped, white to pinkish-purple flowers bloom in summer, closing each afternoon and reopening the following day. Cone-shaped capsules 5-7 mm long split lengthwise to release 1-4 smooth, dark, 4 mm seeds.

LIFE HISTORY

Field bindweed reproduces from both seeds and rhizomes. An average plant produces several hundred seeds per year, and the seeds can remain

CONVOLVULUS ARVENSIS

Trumpet-shaped, 2-4 cm wide flowers with wide mouths; petals fused, white to pinkish-purple



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viable in the soil for 20 years or more. Young plants generally begin producing seed in their second growing season. Seeds germinate throughout the growing season, but peak germination usually occurs mid-spring through early summer. Fragments of vertical roots and rhizomes can also form new plants. Shoots form from lateral roots, enabling a plant to spread more than 3 m in a growing season.

HABITAT

Field bindweed is found in a range of soil conditions, from relatively moist (mesic) to dry. In southern British Columbia, it is generally found in disturbed areas and waste places.

MANAGEMENT

Develop a long-term, realistic program for invasive species removal before undertaking any work. Before taking action, obtain expert advice. Please refer to the introductory section of this manual.

Control of field bindweed in an area cannot be accomplished with a single treatment or in a single season. This plant is very drought tolerant and once established is nearly impossible to eradicate. It is important to address new infestations when they are small, because spot control is the most effective and least expensive control technique.

PHYSICAL CONTROL: Hand-weeding is only temporarily effective and is not recommended because field bindweed sprouts from root fragments left behind. Deep plowing to turn the soil and expose the plant's roots to the sun may be effective. Ensure that other exotics do not invade the turned soil during the treatment period.

If plants have been cut back to near the ground, painting the cut ends with glyphosate may prevent re-sprouting. The best time for this treatment is midsummer, before the bindweed flowers.

BIOLOGICAL CONTROL: Biological control of field bindweed is still in the experimental stage. *Tyta luctuosa*, a defoliating moth, has undergone preliminary releases for biocontrol in North America, but has not yet been reported as reliably established. *Aceria malherbae*, a gall mite native to the Mediterranean, has been released at a few locations in British Columbia. The mite attacks the leaves of field bindweed and causes galls and other distorted growth. Previous releases in the province have not survived. It is possible, however, that the mite could survive and be effective in Garry oak ecosystems, which occur in a Mediterranean-like climate.

CHEMICAL CONTROL: If herbicides are used to control field bindweed, repeated applications are required because of the plant's persistent seed bank. Herbicides such as dicamba, glyphosate, dicamba 2,4-D mixtures and spot-sprayed 2,4-D have been somewhat effective for suppression, but may not be effective for eradication. Ensure herbicides are spot-sprayed only on the field bindweed, and not on other plants nearby. Supplement herbicides with appropriate preventive and cultural controls.

Herbicides should be used in sensitive Garry oak ecosystems only with extreme caution and expert advice.

OTHER TECHNIQUES: Various natural herbicides containing fungi (mycoherbicides) are being researched for control of field bindweed in Canada and other parts of the world. None of these mycoherbicides are currently registered for use on field bindweed in British Columbia.

Using a combination of the mite *A. malherbae* and sublethal doses of herbicides such as 2,4-D or glyphosate may suppress the field

bindweed, while minimizing herbicide injury to *A. malherbae* populations and nearby native plants.

PREVENTIVE MEASURES: The best way to minimize the establishment and spread of field bindweed is to maintain the natural cover of vegetation and prevent soil disturbance and compaction. When field bindweed first appears, remove its seeds and seedlings frequently.

PERSISTENCE: Field bindweed seed banks can persist for decades, and rhizomes for several years. Use the Decision Support Tool that is discussed at the beginning of this manual to conduct intense management of this species in areas adjacent to rare plant habitat.

GENERAL COMMENTS

Field bindweed is a prohibited noxious weed under the Canada Seeds Act and under the provincial Weed Control Acts of Alberta, Saskatchewan, Manitoba, Ontario, Quebec and Nova Scotia.

SELECT REFERENCES

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Lyons, K. E. 1998. *Element Stewardship Abstract for Convolvulus arvensis L. Field Bindweed*. The Nature Conservancy, Arlington, VA. <http://tncweeds.ucdavis.edu/esadocs/documnts/convarv.pdf> (accessed 19 May 2005).

Murray, C., and R. K. Jones. 2002. *Decision Support Tool for Invasive Species in Garry Oak Ecosystems*. Prepared by ESSA Technologies Ltd. for the Garry Oak Ecosystems Recovery Team. Victoria, BC.

A comprehensive annotated bibliography of literature specific to field bindweed is available at <http://www.goert.ca/resources/biblio.htm>.

For more information contact the Garry Oak Ecosystems Recovery Team, or see the website at www.goert.ca