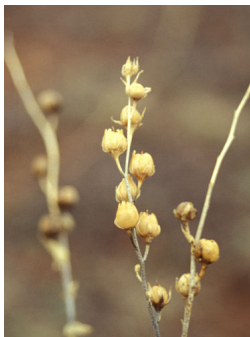


Dalmatian toadflax

Colorado Department of
Agriculture

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Key ID Points

1. Showy yellow snapdragon-like flowers with an orange throat on elongated racemes.
2. Thick, waxy, bluish heart-shaped leaves that wrap the stem.

Dalmatian toadflax Identification and Management



Identification and Impacts

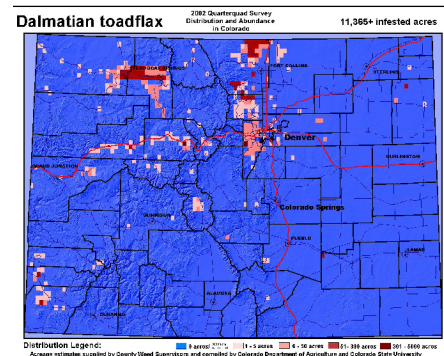
Dalmatian toadflax (*Linaria dalmatica*) is a non-native, perennial forb introduced from the Mediterranean region as a folk remedy, fabric dye and ornamental. It reproduces both by seed and by extensive, creeping rhizomes. A single plant produces 500,000 seeds, most of which fall within 18 inches of the parent plant. Seeds can remain viable for at least 10 years. Dalmatian toadflax grows to 3 feet, and has bright yellow snapdragon-like flowers with an orange throat on elongated racemes. The alternate leaves are broad, with a thick, waxy cuticle and a bluish cast. Each leaf is heart-shaped and wraps the stem.

Habitats for Dalmatian toadflax include disturbed open sites, fields, pastures, rangeland, roadsides, cropland and forest clearings. Infestations can begin in small disturbed sites, then spread even to rangeland and wildlife habitats in excellent condition. Dalmatian toadflax is a highly aggressive plant that can genetically adapt to varied environmental conditions and herbicide controls. Its extreme competitiveness is due to early spring regeneration from vegetative buds on roots that are not dependent on soil moisture or native plant competition. Once established, toadflax quickly overruns native plants and becomes

a monoculture that severely reduces forage, productivity, biodiversity and wildlife habitat.

The key to effective control of Dalmatian toadflax is prevention and integrating as many management strategies as possible. Prevention is always desirable when dealing with Dalmatian toadflax. Early detection and eradication can keep populations from exploding, making more management options available. With the plants varying genetically using many different approaches is important such as; chemical, mechanical, cultural and biological methods. Details on the back of this sheet can help to create a management plan compatible with your site ecology.

Dalmatian toadflax is designated as a "List B" species in the Colorado Noxious Weed Act. It is required to be either eradicated, contained, or suppressed depending on the local infestations. For more information visit www.colorado.gov/ag/csd and click on the Noxious Weed Management Program. Or call the State Weed Coordinator at the Colorado Department of Agriculture, Conservation Services Division, 303-239-4100.



Clockwise, from lower left, photos © John M. Randall of The Nature Conservancy; and Linda Wilson and Susan Turner of Invasive.org. Infestation map by Crystal Andrews, Colorado Department of Agriculture.

Linaria dalmatica

**CULTURAL**

It is imperative to seed managed areas with competitive grasses such as thickspike wheatgrass and streambank wheatgrass. The combination of herbicide spraying and seeding competitive grasses controls Dalmatian toadflax better than spraying alone. (K.G. Beck, CSU)

**BIOLOGICAL**

Calophasia lunula, a predatory noctuid moth, feeds on leaves and flowers of Dalmatian toadflax. *Eteobalea intermediella*, a root boring moth, and *Mecinus janthinus*, a stem boring weevil, are also available. For more information, contact the Palisade Insectary of the Colorado Department of Agriculture at 970-464-7916.

**MECHANICAL**

For small infestations, pulling toadflax by hand can be effective. Pull every year for 5 to 6 years to deplete the reserves of the root system. Monitor the site for 10 - 15 years to remove seedlings produced from dormant seeds.

Integrated Weed Management:

Because of the high genetic variability of the toadflax species, it is critical to integrate as many management strategies as possible into the control program. Two local populations may respond differently to the same herbicides.

Keys to management are to prevent seed formation and vegetative spread by roots.

Controlling toadflaxes is expensive and difficult, prevention is the best option.

HERBICIDES

NOTE: The following are recommendations for herbicides that can be applied to range and pasturelands. Rates are approximate and based on equipment with an output of 30 gal/acre. Please read label for exact rates. **Always read, understand, and follow the label directions. The herbicide label is the LAW!**

Herbicide	Rate	Application Timing
Aminocyclopyrachlor + chlorsulfuron (Perspective)*	4 oz. product/acre + 1% v/v methylated seed oil	Apply <u>when flowering</u> in spring and/or in the fall regrowth. IMPORTANT: Applications greater than 5.5 oz. product/acre exceeds the threshold for selectivity. DO NOT treat in the root zone of desirable trees and shrubs. Not for use on grazed or feed forage.
Picloram* (Tordon/Picloram 22K - Restricted use pesticide)	1-2 qts./acre + 1% v/v methylated seed oil	Apply <u>when flowering</u> in spring and/or in the fall regrowth. DO NOT use near trees, desirable shrubs, water, or high water table.
Chlorsulfuron** (Telar)	1.5-2 oz./acre + 1% v/v methylated seed oil	Apply <u>when flowering</u> in spring and/or in the fall regrowth.

Note: *Not permitted for use in the San Luis Valley. **This herbicide has residual soil activity that will affect all broadleaf seedlings germinating after application has occurred.

Additional herbicide recommendations for this and other species can be found at:
www.colorado.gov/agconservation/CSUHerbicideRecommendations.pdf

Dalmatian toadflax

