

Category A—High

Dalmatian toadflax (*Linaria dalmatica*)



Photo credit: M. Licher



Photo credit: S. Dewey, USU



Photo Credit: Bureau of Land Management.

Origin

Native to Europe and the Mediterranean.

Description

Dalmatian toadflax is a perennial forb with several branching stems. Stems are rough and woody at the base and become smooth and waxy toward the top. Leaves are waxy and heart-shaped and appear bluish-green with smooth margins. Leaves are alternate and clasp the stem. They have deep taproots with adventitious buds that can form new plants. Flowers resemble snapdragons, with two lips, that can be yellow to orange with a bearded throat and a long spur. Fruits appear as small capsules that hold several small seeds. Individual plants can produce as many as 500,000 seeds a year (DiTomaso et al. 2013).



Photo credit: Bureau of Indian Affairs

Biology

Dalmatian toadflax grows in open fields, riparian areas, rangeland, and disturbed sites. It is adapted to a wide range of environments and soils, and often grows in disturbed sites. Toadflax germinates in the spring and fall. It can spread vegetatively or through seed germination. Because of its ability to produce hundreds of thousands of seeds, it increases its chances of germinating and occupying sites. However, because seeds are small, they likely do not survive for more than a few years.

Locations

A few small populations have been documented near roadsides in Western and Fort Defiance Agencies.

Ecological Threat and Management Concerns

Dalmatian toadflax can form dense colonies through its creeping root system and prolific seeding ability, which can outcompete with native grasses and forbs. This can reduce forage and productivity of rangelands and agricultural fields. It also contains quinazoline alkaloids, which can affect livestock if ingested.

Key ID Tips

- Forms small, low-growing clumps
- Grows in thick clumps with several stems
- Small, fine hairs prominent at the ligule.
- Small, dense spikelets with 3—8 florets.

Management Recommendations

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Additional safety measures and limitations may apply to each method. Refer to the [Navajo Nation Integrated Weed Management Plan](#) for more information.

Mechanical/Manual Removal

Hand removal can be effective for seedlings before plants are established. Mowing can prevent plants from going to seed, but can also stimulate root growth. Tilling can be effective but must be done weekly during the growing season and repeated over several years to reduce resprouting root fragments.

Biological

Seven different biological control agents have been approved for use on the Navajo Nation. Seed and flower feeding insects can reduce seed set. The stem mining weevil is also effective at damaging foliage and flower production.

Cultural Control

Grazing is not an effective control method as it can create disturbance that encourages plant growth and its alkaloids are considered moderately toxic for livestock. Fire is also not effective since it does not damage the underground roots.

Maintaining healthy plant cover is good at preventing establishment and reseeding with native grasses is effective at preventing spread and reducing survival.

Chemical

Use of herbicides can be effective. Refer to the product labels for application rates, timing, and approved application methods.

Recommended herbicides include:

- Chlorsulfuron methyl
- Fluazifop-P-butyl
- Imazapic
- Indaziflam
- Picloram*

*Restricted Use by U.S. EPA

References

DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center. University of California. 544 pp.

USDA, NRCS. 2023. PLANTS Database. Available at <https://plants.sc.egov.usda.gov/>. National Plant Data Team, Greensboro, NC 27401-4901 USA



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