

Yellow Toadflax



Linaria vulgaris P. Mill.

Alternate Names

Common toadflax, toadflax, butter and eggs, wild snapdragon

Synonyms

Linaria linaria (L.) Karst.

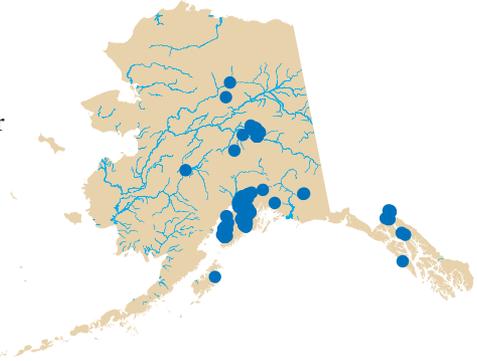
Related Species

Dalmatian toadflax
Linaria dalmatica (L.) Mill.

Description

Yellow toadflax is a perennial plant, rarely branched, that often grows in clumps up to 2½ feet high. Leaves are numerous, alternate, pale green, narrow, up to 2½ inches long, and pointed at both ends. Flowers are yellow with an orange throat and 1–2 inches long, appearing in dense terminal clusters and resembling snapdragons, with a tube-like structure extending below the lower lip of the corolla. The fruit is an ovate to egg-shaped capsule that is ¼–½ of an inch long. Seeds are flattened, ovate, and winged.

Dalmatian toadflax (*L. dalmatica* (L.) Mill.) is another exotic species to look out for that is common in the western United States. This perennial plant is larger than yellow toadflax, growing to 5 feet rather than 2½ feet high, and its leaves are broad and ovate to ovate-lanceolate rather than linear to linear-lanceolate. Dalmatian toadflax



USDA Forest Service photo by Michael Shephard

Yellow toadflax.

Family: Scrophulariaceae

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has alternate leaves that are 1–2 inches long. Stem leaves are stalkless and clasp the stem. All leaves are bluish-green and hairless. Flowers are large, yellow, and borne in long terminal clusters. A prominent spur, $\frac{1}{2}$ – $\frac{3}{4}$ of an inch long, is projected from the back of the petals. Dalmatian toadflax is similar in biology and management to yellow toadflax, and so the information below will generally apply to both species.



USDA Forest Service photo
by Michael Shephard

An infestation of yellow toadflax.

Similar Species

There are no other yellow, spurred species in Alaska that might be easily confused with the toadflaxes.

Ecological Impact

Yellow toadflax is a persistent and aggressive invader that is capable of forming dense colonies. It can suppress native grasses and other perennials, primarily through intense competition for limited soil and water. This species contains a poisonous glucoside that is reported to be unpalatable and moderately poisonous to livestock. Yellow toadflax is an alternate host for tobacco mosaic virus. It reduces soil moisture and nutrient availability, changes soil texture and composition, and alters local pollination ecology (M. Carlson, pers. comm. 2004).

Biology and Invasive Potential

Yellow toadflax reproduces by seeds and creeping rhizomes. Plants cannot self-fertilize and are pollinated by insects. Seed production ranges from



National Park Service photo by Penny Bauder

Yellow toadflax.

1,500 to 30,000 seeds per individual, but seed viability is generally low. Seeds are winged and can be carried by the wind, and they may remain dormant for a period of up to 10 years. Taproots may penetrate the soil to 3 feet deep and extend 10 feet away from the parent plant. Disturbance promotes invasion and is necessary for establishment to occur. Once established, yellow toadflax readily spreads into adjacent undisturbed areas. It may be dispersed by water and ants and is often found as a contaminant in commercial seed or sold by nurseries. Germination is minimal without a 2 to 8 week period of chilling (J. Gibson, unpubl. data). Vegetative reproduction may begin as soon as 2 to 3 weeks after germination, and this species can establish from root fragments as short as ½ of an inch. Yellow toadflax is listed as noxious in Colorado, Idaho, Nevada, New Mexico, Montana, Oregon, South Dakota, and Washington and a restricted noxious weed in Alaska (Alaska Administrative Code 1987).

Distribution and Abundance

Yellow toadflax was imported into North America in the late 1600s as an ornamental and for folk remedies. It occurs on sandy and gravelly soil on roadsides, pastures, lake and beach shores, cultivated fields, meadows, and gardens. It is found throughout the United States and in every Canadian province and territory. It is commonly found throughout southcentral and interior Alaska, particularly near settlements or anthropogenic disturbance. Native to southcentral Eurasia, the present world distribution of yellow toadflax includes most of Europe and Asia, Australia, New Zealand, South Africa, Jamaica, and North and South America.

Management

Cutting, mowing, and tilling are effective ways to eliminate plant reproduction by seed, and hand-pulling can control small infestations if monitored and retreated over many years. Control is most effective in early summer, after flower bud formation but before flowering. Herbicide treatment can significantly reduce plant infestations, espe-

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cially when used as a follow-up to other methods. Vigorous grasses can be used to compete with toadflax. Several biological agents effective against yellow toadflax have been approved by the USDA. A weevil, *Gymnetron antirrhini*, is the most important agent for biological control in British Columbia and the northwestern United States. Other agents include shoot- and flower-feeding beetles (*Brachypterolus pulicarius*) and root-boring moths (*Eteobalea serratella* and *E. intermediella*) (Carpenter and Murray 1998). Fruits and seeds recently collected in Anchorage had about 20% infestation by an unknown weevil (M. Carlson, pers. comm. 2004).



USDA-Aphis-PPQ photo by R. Hansen

Dalmatian toadflax.

Notes

Toadflaxes were brought to North America as ornamentals because they are easy to grow and very hardy. Yellow toadflax was often one of the first flowers planted at mining settlements, and it often still remains in these abandoned townsites and spreads into surrounding wild areas. A mature dalmatian toadflax plant can produce 500,000 seeds in a year.



XID Services photo by Richard Old

An infestation of dalmatian toadflax.