

yellow toadflax

Linaria vulgaris P. Miller

Synonyms: *Linaria linaria* (L.) Karst.

Other common name: butter and eggs, flaxweed, ramsted, wild snapdragon

Family: Plantaginaceae

Invasiveness Rank: **69** 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

Yellow toadflax is a perennial plant that can reach a height of 61 cm. It is rarely branched. Leaves are alternate, pale green, narrow, and 64 mm long. Flowers are borne in dense, terminal clusters and resemble the flowers of snapdragons. They are yellow with orange throats and 2 ½ to 5 cm long. Capsules are ovate to egg-shaped and 9 ½ to 13 mm long. Seeds are flattened, ovate, and winged (Royer and Dickinson 1999).



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Similar species: There are no other species with yellow, spurred flowers in Alaska that might be confused with yellow toadflax.

Ecological Impact

Impact on community composition, structure, and interactions: Yellow toadflax is a persistent, aggressive invader that is capable of forming dense colonies. It suppresses native grasses and other perennials by competing intensely for limited soil moisture. Yellow toadflax contains a glucoside that is reported to be unpalatable and moderately poisonous to livestock. The plant is an alternate host for tobacco mosaic virus.

Impact on ecosystem processes: The impacts of yellow toadflax on ecosystem processes are unknown.

Biology and Invasive Potential

Reproductive potential: Yellow toadflax is a perennial plant that reproduces sexually by seeds and vegetatively by creeping rhizomes. Plants are self-incompatible and insect pollinated. Seed production ranges from 1,500 to 30,000 seeds per plant. Seed viability is generally low. Seeds can remain dormant for periods of to 8 to 10 years. Vegetative reproduction can begin as soon as 2 to 3 weeks after germination. New plants can establish from root fragments as short as 13 mm.

Role of disturbance in establishment: Disturbances promote invasion and are necessary for yellow toadflax to establish. Once established, yellow toadflax readily spreads into adjacent undisturbed areas.

Potential for long-distance dispersal: Seeds are winged and can be transported by wind. They can also be dispersed by water and ants.

Potential to be spread by human activity: Yellow toadflax can spread along highways. The seeds have been found as contaminants in commercial seed. The plant is sold by some nurseries.

Germination requirements: Yellow toadflax requires open soil for germination (Densmore et al. 2001). Seeds usually germinate in the top 2 cm of soil (Royer and Dickinson 1999). They require a two to eight week period of chilling to germinate successfully (J. Gibson unpubl. data). The success rate of germination is

generally low (Rutledge and McLendon 1996, Zouhar 2003).

Growth requirements: Yellow toadflax grows on sandy and gravelly soils in roadsides, pastures, cultivated fields, meadows, and gardens. It does well in wet or dark areas on fertile soil.

Congeneric weeds: Dalmatian toadflax (*Linaria dalmatica*) and broomleaf toadflax (*L. genistifolia*) are both known to occur as non-native weeds in North America (USDA 2010). Dalmatian toadflax is considered a noxious weed in Alberta, British Columbia, and Manitoba in Canada and Colorado, Montana, Nevada, North Dakota, Oregon, Washington, and Wyoming in the U.S. Broomleaf toadflax is considered a noxious weed in California, Colorado, Idaho, and New Mexico (Invaders 2010, USDA 2010).

Legal Listings

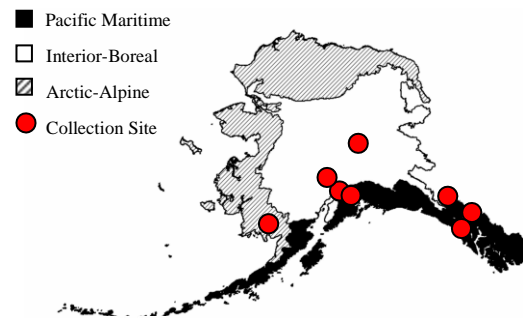
- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states (ID, MT, NM, NV, OR, SD, WA, WY)
- Federal noxious weed
- Listed noxious in Canada or other countries (AB, BC, MB, SK)

Distribution and Abundance

Yellow toadflax was introduced to North America in the late 17th century as an ornamental and medicinal herb.

Native and current distribution: Yellow toadflax is native to south-central Eurasia. Its present world distribution includes most of Europe, Asia, Australia, New Zealand, South Africa, Jamaica, Chile, North America, and South America (Hultén. 1968). It grows throughout the U.S. and Canada (USDA 2010). Yellow

toadflax has been documented from all three ecogeographic regions of Alaska (Hultén 1968, AKEPIC 2010, UAM 2010).



Distribution of yellow toadflax in Alaska

Management

Cutting, mowing, and tilling are effective ways to eliminate reproduction from seeds. Herbicide treatments can significantly reduce plant infestations. Control methods must be repeated annually for up to ten years to completely remove stands. Vigorous, well-adapted grasses can be planted to compete with yellow toadflax. Several insect species have been approved by the USDA as biological control agents. The weevil, *Gymnetron antirrhini*, is the most important agent for biological control in British Columbia and the northwestern U.S. Other species are the shoot and flower-feeding beetle, *Brachyterolus pulicarius*, and the root-boring moths, *Eteobalea serratella* and *E. intermediella* (Carpenter and Murray 1998). Fruits and seeds collected in Anchorage had roughly 20% infestation by an unknown weevil (M. Carlson - pers. obs.).

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