

## Yellow toadflax

### *Linaria vulgaris* P.Miller.

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

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

Family: Scrophulariaceae

#### Description

The plant can reach a height of 2 feet and are rarely branched. Leaves are alternate, pale green, narrow, 2 ½ inches long. Flowers, resembling snapdragons, appear in dense terminal clusters. They are yellow with an orange throat and 1 to 2 inches long. The fruit is an ovate to egg-shaped capsule, 8 to 12 mm (ca. 3/8 – 1/2 inch) long. Seeds are flattened, ovate, winged (Royer and Dickinson 1999).

There are no other yellow, spurred species 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, capable of forming dense colonies; it can suppress native grasses and other perennials, mainly by intense competition for limited

soil water. This species contains a poisonous glucoside that is reported to be unpalatable and moderately poisonous to livestock. Toadflax is an alternate host for tobacco mosaic virus.

*Impact on ecosystem process:* Unknown.

#### Biology and Invasive Potential

*Reproductive potential:* Yellow toadflax is a perennial that reproduces by seeds and creeping rhizomes. Plants are self-incompatible and insect pollinated. Seed production ranges from 1,500 to 30,000 seeds/individual, but seed viability is generally low. Seeds may remain dormant for periods up to 8-10 years. Vegetative reproduction may begin as soon as 2-3 weeks after germination, and it can establish from root fragments as short as ½ inch.

*Role of disturbance in establishment:* Disturbance promotes invasion and is necessary for establishment to occur. Once established, toadflax readily spreads into adjacent non-disturbed areas.

*Potential for long-distance dispersal:* Seeds are winged and can be carried by the wind. This species may also be dispersed by water and ants.

*Potential to be spread by human activity:* Toadflax can spread along highways. It has been found as a contaminant in commercial seed and is still sold by some nurseries.

*Germination requirements:* Yellow toadflax requires open soil for germination (Densmore et al. 2001). Germination usually occurs in the top 2 cm of soil (Royer and Dickinson 1999). Germination success is generally low (Rutledge and McLendon 1996, Zouhar 2003).

*Growth requirements:* Seeds require a two to eight week period of chilling for successful germination (J. Gibson unpubl. data). It occurs on sandy and gravelly soil on roadsides, pastures, cultivated fields, meadows, and gardens. Generally it does well in wet or dark areas with high fertility.

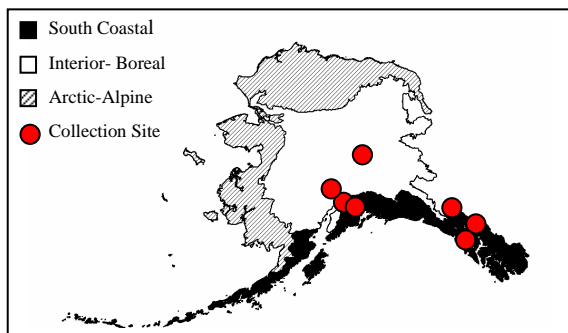
*Congeneric weeds:* *Linaria dalmatica* L., *L. genistifolia* (L.) P. Mill. (USDA 2002).

*Listing:* *Linaria vulgaris* is noxious in Colorado, Idaho, Nevada, New Mexico, Montana (Cat. 1), Oregon (B List), South Dakota, Washington (C List)

(Pokorny and Sheley 2003, USDA 2003). This species is a restricted noxious weed in Alaska (Alaska Administrative Code).

### Distribution and Abundance

It was imported into North America in the late 1600s as an ornamental and for folk remedies. Yellow toadflax is found throughout the continental United States and in every Canadian province and territory.



Distribution of yellow toadflax in Alaska

*Native and current distribution:* Native to south-central Eurasia, the present world distribution includes most of Europe and Asia, Australia, New Zealand, South Africa, Jamaica, Chile, and North and South America (Hultén. 1968).

### Management

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

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