

# Dalmatian Toadflax

*Linaria dalmatica*  
Snapdragon Family

## Class B Noxious Weed: Control Required

### Identification Tips

- It has erect stems up to 3 feet tall with increased branching near the top of the plant.
- The light-green leaves are egg-shaped, waxy and pointed, and clasp the stem.
- The flowers are two-lipped and bright yellow, sometimes with orange centers, resembling snapdragon flowers.

### Biology

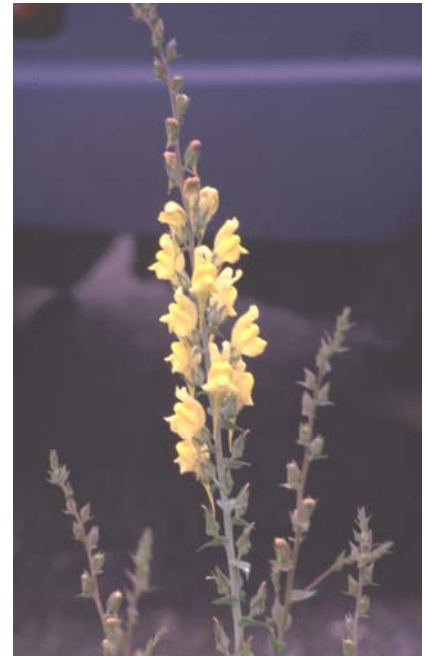
- Non-native, short-lived perennial
- Well adapted to arid sites and can spread rapidly once established
- Deep, extensive, creeping root system and heavy seed production
- Plant spreads through vegetative propagation, and the seeds can remain dormant for up to ten years

### Impacts

- Dalmatian toadflax contains a glucoside, a quinoline alkaloid, and peganine which make it toxic to livestock. However, it is generally considered unpalatable, and reports of livestock poisonings are rare.
- Toadflax can significantly reduce crop yields and stress native communities.
- Established toadflax suppress other vegetation mainly by intense competition for limited soil water. Mature plants are particularly competitive with winter annuals and shallow-rooted perennials

### Distribution

- It is most commonly found along roadsides, fences, rangelands, croplands, clear cuts, and pastures. Disturbed or cultivated ground is a prime candidate for colonization.



### Questions?

Kitsap County Noxious Weed Control  
Program Line: **360-307-4242**  
[http://kitsap.wsu.edu/noxious\\_weed](http://kitsap.wsu.edu/noxious_weed)

## Control Methods

**Mechanical:** Grubbing or hand pulling may be effective for controlling small infestations, but must be repeated several times a year for many years. Dalmatian toadflax has an extensive underground network of lateral roots with numerous dormant root buds. Complete removal of the root system is generally infeasible.

Mowing generally provides very limited control of Dalmatian toadflax. Mowing may prevent seed production, but does not appear to significantly deplete root carbohydrate reserves. Mowing also reduces the competitive effects of surrounding vegetation. Mowing should not be used if plants have set seed, as this will facilitate seed dispersal.

Intensive cultivation may be utilized on arable land where Dalmatian toadflax is a problem. Eradication has been accomplished by cultivating every 7-10 days during the growing season for two years. However, this strategy is generally economically and environmentally unacceptable. Cultivation may also bury seed, which may be viable in the soil for over ten years. Tillage equipment should also be thoroughly cleaned after being used in infested areas, as seeds and root segments may be carried to new areas.

**Biological:** Two insects active on Dalmatian and yellow toadflax were accidentally introduced into the United States in the early 1900's. The toadflax flower feeding beetle (*Brachypterolus pulicarius*) and the toadflax capsule weevil (*Gymnetron antirrhini*) are well established the Northwest. Both significantly reduce yellow toadflax seed production, but their effect on Dalmatian toadflax is unclear. Although several other insects are currently being tested, the only registered biocontrol agent for Dalmatian toadflax is the toadflax moth, *Calophasia lunula*. This moth is highly active in the larval stage and will dramatically defoliate plants, reducing seed production and root carbohydrate levels. The moth is established in Idaho, Montana, and Washington, but is only readily available for redistribution in Washington. Larvae may be collected from plants, stored in cool cardboard containers with ample plants for food, and transferred to new locations for release. Larval feeding activity is in May and June. These moths may not establish in heavily shaded areas or in areas with heavy rainfall.

**Chemical:** Chemical control of dalmation toadflax has been highly variable. Picloram has been the most effective herbicide for toadflax control. Picloram will injure or kill most other dicots and some monocot seedlings. Fall applications have been more effective in Colorado and Montana. Optimal timing in California's Mediterranean type climate is uncertain. Dicamba may be effective at very high rates (4 lb ae/ A) and 2,4-D alone is generally ineffective. Glyphosate may be applied as a spot treatment to plants in early bloom, but will also kill other vegetation it contacts.

**Grazing and Burning:** Although deer may occasionally browse Dalmatian toadflax, livestock will avoid it. It is known to be toxic to livestock, but reported cases are few, due to its unpalatable nature. Cattle numbers should be reduced on range infested areas to prevent overgrazing of the desirable vegetation. Cattle should also be removed from infested areas before seed production. Cattle may also facilitate dispersal as the tiny seeds easily catch in hair or fur, or pass through the digestive system. Good grazing practices combined with weed monitoring on rangeland may be the best preventative measure for invaders such as Dalmatian toadflax.

There is little available information regarding toadflax control with fire. Fire may control seedlings and established plant topgrowth, but new shoots will rapidly emerge from lateral root buds if there is available soil moisture. These new shoots may proliferate in the burned nutrient rich environment, especially in the absence of competition. Additional research is needed in this area.

**Information Program Line: 360-307-4242**  
**Website: [http://kitsap.wsu.edu/noxious\\_weed](http://kitsap.wsu.edu/noxious_weed)**

