

Yellow Toadflax

Linaria vulgaris



FAMILY	Plantaginaceae- plantains	ORIGIN	Mediterranean
LIFE CYCLE	Short-lived perennial	OTHER NAMES	Butter and eggs, Ranstead weed, Common toadflax, Jacob's ladder, Wild snapdragon

QUICK FACTS

- Yellow toadflax is an invasive perennial that aggressively spreads through its extensive creeping root system, often leading to significant ecological and agricultural impacts. It outcompetes desirable plants by sequestering water.
- It was introduced to North America in the 1600s as a decorative garden plant. Today, it is naturalized in almost every U.S. state and Canadian province, where it is considered a noxious weed in many regions.
- The plant significantly increases erosion risk, harms the agricultural economy, and displaces native plants and wildlife.

Whimsically nicknamed “butter-and-eggs,” yellow toadflax is a short-lived perennial plant known for its bright yellow and orange flowers resembling a sunny-side-up egg. Native to Eurasia and introduced to North America, it has become widespread along roadsides, fields, and disturbed areas. While its vivid appearance may add a cheerful aesthetic to flower gardens, yellow toadflax is a highly invasive species in many regions of the world.

What does it look like?

Toadflaxes are perennial, creeping, woody plants with very similar attributes. In the United States, three toadflax species are listed as noxious: Dalmatian toadflax is divided into broadleaf (*L. dalmatica*) and narrowleaf (*L. genistifolia*) varieties. There is also yellow toadflax (*Linaria vulgaris*), which is similar to the Dalmatian toadflaxes but can be distinguished by smaller, whiter flowers and globe-shaped fruit. Yellow toadflax is also a bit shorter (1.5-3 feet), while Dalmatian toadflax is usually taller (3+ feet). Dalmatian toadflax tends to have thick, heart-shaped, waxy leaves, while yellow toadflax leaves are linear and soft. It is possible for Dalmatian toadflax to hybridize with yellow toadflax. Dalmatian toadflax mainly propagates via seed germination with success rates of about 75%, while yellow toadflax spreads by creeping roots, with only a 10% germination rate.



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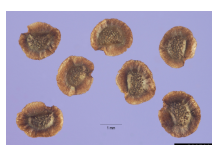
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Steve Hurst, USDA NRCS PLANTS Database, Bugwood.org

Plant: Grass-green, branching stems growing 1-3 feet tall are woody at the base, soften closer to the top, and are often hairy. The above-ground portion of the plant mostly dies back in winter (with the exception of prostrate stems) while the roots remain alive underground.

Roots: Yellow toadflax produces particularly hardy, extensive creeping roots that allow for primary reproduction through rhizomes. The vertical roots penetrate the soil about 3 feet. The lateral roots branch off from the vertical roots and can extend in a 10-foot or more radius, remaining close to the soil surface. Buds that develop on the lateral roots quickly produce new shoots. Roots may form mutualistic relationships with vesicular-arbuscular mycorrhizae.

Leaves: Narrow linear 3/4-4 inch leaves are like-colored to the stem and are usually alternate but may appear whirled or opposite on the stem. Leaves are symmetrical, blade-like, and smooth-edged, pointed at both the apex and base. They have smooth margins and begin to droop about halfway down the length.

Flowers: Flowers appear May-September and are snapdragon-like, with buttery white conjoined petals and a yellow-orange (egg) in the center. A long spur protrudes from the bottom of the flower, and stamens are in pairs of two (four stamens per flower). The tubular flowers crowd the top of the stem in branch clusters (racemes).

Seeds: Fruit pods contain light, papery seeds that allow for slight wind dispersal. Blackish seeds are flat, with a papery wing encircling them. Mature plants can produce up to 1,500-3,000 seeds, which remain viable in the soil for up to 10 years. Pods are 2-chambered, each containing 10-40 seeds.

Impact and Management

Economic

This weed will become a monoculture through aggressive seed production and vegetative growth. Aside from big game, it can reduce available forage for domestic livestock and, in rare cases, cause harm to cattle. Yellow toadflax primarily affects rangelands and agricultural lands, while Dalmatian toadflax tends to be a more significant threat to wild habitats. In Alberta, Canada, a 1987 study of 69,188 infested acres resulted in an estimated loss of \$360,000 per year due to the plant's presence. In addition to its other agricultural risks, the plant can carry and spread pathogens such as cucumber mosaic and broad bean wilt viruses.

Ecosystem Health

Once established, yellow toadflax displaces native plants, resulting in a notable loss of floral and faunal biodiversity. This can significantly reduce forage availability for game, particularly during the winter months, and may even alter migratory patterns. While deer, sheep, certain birds, and rodents occasionally consume yellow toadflax, it is generally not considered a reliable forage source, as most animals tend to avoid it. Some wildlife may use the plant for shelter, but this typically occurs in areas where the toadflax itself has already replaced preferable shelter.

Erosion

Yellow toadflax significantly increases the risk of soil erosion by outcompeting and displacing native bunchgrasses and ground cover. These native plants play a crucial role in stabilizing soil with their extensive root systems, which help bind the soil and reduce runoff. When yellow toadflax takes over, it replaces these stabilizing plants with its shallow, less effective root structure, leaving the soil more vulnerable to wind and water erosion. In areas where there is already little to no vegetation, or in areas of primary succession such as mines, it is possible that toadflax species may help stabilize the soil until more favorable plant communities take over.

Yellow toadflax struggles to establish itself in areas with strong, well-established grass and forb communities. Encouraging the growth of native plants and maintaining healthy cover crops is the most effective first step in preventing the weed from taking root.

An effective management strategy involves the successful re-vegetation of desirable plants, which can out-compete and crowd out potential invasions. Although grazing often increases the risk of infestation, targeted grazing by sheep and goats can be helpful in controlling small patches or areas that are difficult to access. However, mowing, grazing, and burning methods are generally ineffective, as they fail to address the weed's extensive and resilient root system. Manual removal by tilling can be successful in small areas if repeated for 7-10 days during the growing season.

DO's

- Identify the plant when young; young shoots are weak and die quickly without ideal conditions.
- Encourage healthy cover crops and vegetation to promote native plant growth. These can outcompete yellow toadflax and help prevent it.
- Consider manual removal by tilling in small areas, repeating the process regularly throughout the growing season to reduce the plant's spread.

DON'Ts

- Overgraze or frequently till fields and pastures, as this can allow the weed to gain a foothold.
- Mow, burn, or graze as these methods leave behind root fragments, further spreading the infestation.
- Ignore early infestations—taking action in the first few weeks of yellow toadflax's life is crucial for successful early eradication.



For more information on managing yellow toadflax, please visit www.nmweeds.org

