

Fire Effects on Noxious Weeds

By Robin Innes, Ecologist Writer for the Fire Effects Information System

The Fire Effects Information System (FEIS, www.fs.fed.us/database/feis/) has been providing reviews of scientific knowledge about fire effects since 1986. FEIS is an online collection of literature reviews on more than 1,100 species and their relationships with fire. Reviews cover plants and animals throughout the United States, providing a wealth of information for landowners and resource managers.

The Fire Effects Information System recently completed a multi-year project to increase the information available in FEIS on nonnative invasives in the United States. There are more than 100 reviews available on nonnative invasive plants in Montana, including 25 species on the Montana Noxious Weed List.



Literature reviews and syntheses are important sources of information for land managers who need detailed information about invasive species and their relationships to fire. This is particularly relevant during a year, such as this one, of extensive wildfires in Montana and throughout the West.

Reviews published in FEIS synthesize information on the biology and ecology of individual plant species, especially regarding:

- How invasive plant species may respond to fire and thus influence native plant communities
- How fire, fire suppression activities, and fire exclusion may influence plant invasions and site invasibility
- How invasive plants may alter fuels and fire regime characteristics
- Knowledge gaps and limitations of existing knowledge on these topics

Leafy spurge, common tansy, and yellow and Dalmatian toadflaxes are examples of Montana invasives reviewed in FEIS. The following excerpts are from these FEIS reviews:

Leafy spurge: Leafy spurge has a large, deep, and highly regenerative root system, which makes sprouting of established plants after fire nearly certain. Because very deep leafy spurge roots are capable of sprouting, even severe fires are not likely to kill mature plants. Leafy spurge seeds can be killed by fire, but depending upon fire timing, fire severity, and depth of seed burial, many may survive. The high oil content of leafy spurge foliage may allow for good fire spread. Although prescribed fire alone is not used to control leafy spurge, fire in conjunction with herbicides has provided some control, and fire may improve the effectiveness of flea beetle biocontrols.

Common tansy: Common tansy is likely only top-killed by fire. On sites with established common tansy plants, postfire sprouting from rhizomes is likely the predominant regeneration method. Because common tansy seeds can be dispersed long distances and seedlings establish best on sites with bare ground, little established vegetation, and high light levels, burned areas could provide suitable establishment sites. Although no studies (as of 2009) directly reported

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Fire and weeds....

on common tansy's response to fire, some sources suggest that fire may result in increased abundance or facilitate spread of common tansy. If common tansy plants are burned at the flowering stage, surviving seeds may produce mutated seedlings. Dense patches of dried common tansy stems may burn intensely. Altered fire regimes in common tansy habitats were not reported, but fuels in dense patches of the previous year's stems may change fire behavior or increase fire severity in areas with an abundance of common tansy. Prescribed fire in the spring may reduce future fire potential in common tansy stands. Prescribed fire alone is not likely to control common tansy. However, fire may be useful in removing dead stems and litter and increasing common tansy's exposure to herbicide treatments or grazing. Fire may also be used to dispose of stems with flowers or seeds on mowed or cut sites, because on-site destruction of reproductive stems should decrease the potential for dispersal and spread.

Yellow and Dalmatian Toadflax: Yellow and Dalmatian toadflaxes are likely to be top killed by fire, however their deep, extensive root systems are likely to survive even severe fire and allow reestablishment of populations from vegetative buds on roots. Scorching of floral stalks by fire may prevent seed production during the first postfire year. Toadflaxes are able to quickly recover after fire and may even be promoted by fire, especially if other species are reduced. The postfire environment is well suited to toadflax establishment by seed. Most literature suggest that toadflaxes are likely to increase or to be unaffected by fire. Burning is not usually a recommended or effective control method for toadflaxes because root buds and buried seeds are unaffected by fire and burning may increase competitiveness of toadflax by removing desirable plants. Removal of toadflax top-growth may even stimulate production of vegetative shoots. Because of their propensity to establish in dry, open areas with little plant competition, toadflaxes have high potential for establishing after fire (when competition from other vegetation is removed or reduced) either by seed imported to the site or by soil-stored seed.

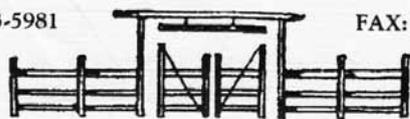
A snake dance?

DEQ Employee Pat Plantenberg observed a "snake dance" while spraying for noxious weeds. Plantenberg was at the reclaimed Spokane Minerals limestone quarry on McMasters' Ranch when he came upon the two male rattlers engaged in the dance. No, not the tango or the waltz, this dance is to determine which rattler is dominant! When two males encounter one another during mating season they raise up their bodies and "dance" until one is able to force the other to the ground. The winner of this combat gets breeding rights. Plantenberg was able to observe and take pictures of the snakes for over 10 minutes from 10 to 15 feet away. They weren't paying him any attention and were still in combat when he left to continue his weed spraying!



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