

Protecting Relatively Uninfested Lands: Reducing Weed Spread Following Fire

Jerry Asher, Bureau of Land Management, Portland, OR; Steve Dewey, Utah State University, Logan, UT; Curt Johnson, USDA Forest Service, Ogden, UT; Jim Olivarez, USDA Forest Service, Missoula, MT

This Resource Note is adapted from the December 2000 issue of TechLine, (published by Ag West Communications.) summarizing several studies and successful post-fire management programs.

Used with permission of the 1999 California Exotic Pest Plant Council Proceedings.

Wildland fire is a natural process that often helps to maintain or improve the health and productivity of native plant communities. However, when invasive exotic plants are involved, fires burn in an unnatural situation. There are two purposes to this presentation. The first is to show how weeds often proliferate following wildland fire. The second is to discuss how reducing post-fire weed spread is one of the best ways to keep relatively uninfested land from becoming seriously infested. It is common knowledge that various plants respond differently to fire. However, all too often weeds rapidly infest burned areas frequently causing vast and permanent damage. Therefore the intent of this presentation is to increase the awareness about this problem along with providing some

recommendations—with every intention to support appropriate prescribed fire efforts.

How vulnerable are typical wildland sites following fire?

Factors like an ideal seed bed, reduced competition from native plants and increased nutrients released by the fire all combine to make conditions ideal for weed seed to germinate and flourish following fire. With conditions ideal, how much weed seed is likely to be available on any burned site?

There are about 70 million acres of noxious weeds, primarily on wildlands, in the 11 western states (outside of Alaska). Consequently there are roughly 70 million acres of weed seed produced every year! Much of that seed is making its way to relatively uninfested land by wind, water, wildlife, livestock, people and equipment. Therefore, after wildland fire in a previously uninfested area, there is a high likelihood for both ideal conditions for weed establishment, and the presence of weed seed. Furthermore, biennial and perennial weeds, already present in the fire area, commonly sprout from buds or crowns. Squarrose knapweed, diffuse knapweed and rush skeleton-weed for example often re-sprout, flower and set seed within six weeks of a fire—while most other vegetation is dormant waiting another season to produce seed. This almost immediate seed production following fire gives the weeds yet another advantage.

Examples of weed spread following fire

Every year we learn more about the challenge of reducing the spread of invasive wildland weeds. A multitude of post-fire photographs in many western states make it clear that weeds frequently invade and dominate plant

communities following fire, sometimes on a large scale. For example, in the Bureau of Land Management Sand Butte and adjoining Wilderness Study Areas in Idaho, considerable weed surveillance and successful control of leafy spurge had been underway for many years. A 200,000-acre wildfire burned over the area in 1992. Rush skeletonweed was not known to exist there until 1995, when a few rush skeletonweed plants were found and controlled. In 1996 another wildfire, also about 200,000 acres, burned the entire area again. A preliminary detection survey in 1997 found serious rush skeletonweed infestations widely scattered within a 60,000 acre area of the burn.

In a research example from northern Utah, wildfire increased squarrose knapweed abundance by 50% to 120% within just two years. Control of squarrose knapweed from herbicide applied in the first fall after a summer burn was 98% to 100% effective, while the same herbicide treatment achieved only 20% control or less in adjacent non-burned areas. Not only did this study show that invasive weeds can increase dramatically after a fire, but it also shows that post-fire herbicide application is a unique window of opportunity for effective control.

Recommendations

With weeds spreading at about 4,600 acres per day on western federal lands alone (outside of Alaska), the overarching goal becomes keeping relatively uninfested land from becoming seriously infested. Capitalizing on the opportunity to prevent weed spread after fires is cost effective and efficient.

Readiness and Post-fire Vigilance:

1. At the earliest possible time, hopefully before the fire season, ensure that the NEPA process is adequate to cover timely application of herbicides—if needed anywhere on the landscape. The proper process needs to be in place so an environmental analysis update or amendment or whatever documentation is needed does not unduly delay the application of herbicides in order to avoid weed seed set after a fire.
2. Establish procedures that minimize the transport of weeds into or within a proposed fire or burned area.
3. Include existing, or consider involving new cooperators. Weed management efforts have a higher probability of success when adjacent landowners, public land users, agencies, universities, or other interested people are participating.
4. After fires, when weeds begin to “show life” either starting from seed or sprouting from crowns or roots of existing plants, there frequently are outstanding opportunities to control the weeds. Weeds are usually easier to find for hand control or other mechanical techniques, and herbicide application is more effective because weeds are no longer protected by non-target vegetation or debris. Capitalize on this rare opportunity before the weeds have a chance to produce seed.
5. Build the cost of weed management caused or encouraged by the disturbance of the fire into fire rehabilitation plans. In 1998 the Bureau of Land Management, Forest Service, Fish and Wildlife Service and the Park Service were given new authority to use fire rehabilitation funds to control weeds following wildfire, including weed detection and control in subsequent years. Where rehabilitation plans are not intended, use creativity and perseverance to ensure

that invasive weeds get the priority they deserve.

6. Approximately one month after any fire, survey the entire fire area for signs of new or sprouting weeds. Repeated surveys will be needed, with the frequency and intensity guided by local conditions.

7. Develop and implement a strategy to control the weeds including follow-up detection and treatments for a few years until the populations are completely controlled or eradicated.

Prescribed fire planning:

Before burning evaluate the potential for increased weed populations and consider the following:

1. Check existing weed maps and visit with local weed experts. Then survey the entire proposed burn area for weeds. If a few weeds have been on the site for a year or more it is likely that thousands of unseen seeds are in the ground ready to germinate.

2. Check adjacent land for weeds that may become a seed source following the burn. These areas may provide weed seed to the burn area via transport by people, livestock, wildlife, wind, water, vehicles or other equipment.

3. Enlist the advice of agency weed coordinators, extension agents, Department of Agriculture or county weed supervisors regarding plans to minimize the increase in weeds. Where possible, time the burn to reduce seed production of existing weeds. Make sure that equipment, vehicles and personnel do not bring weed seed in with them from other areas.

4. Ensure that the appropriate NEPA process/requirements for weed control are addressed before the fire to avoid any delays in timely application of herbicides in the event they are needed.

5. Keep a log of weed management activities so you can share your experiences with others.

Level of Urgency:

Nature often helps put out fires; nature does not help “put out” weeds. Fires are often very beneficial, but weeds are not beneficial. If and when there are negative impacts from fire, they are usually short-term, whereas impacts from weeds are long term and often permanent.

Therefore, new infestations or small burned infestations poised to proliferate out-of-control, truly constitute a state of biological emergency! When preparing NEPA documents, keep that concept in mind regarding the emergency nature of controlling weeds following fire before they have a chance to set seed.

In conclusion, we must keep relatively uninfested land from becoming seriously infested. Future generations deserve to inherit healthy, productive wildlands, not vast landscapes infested with noxious weeds that are unfit for people or wildlife.

RESOURCE NOTES are intended to be early announcements of technical and informational topics for Bureau of Land Management personnel and some of their customers. Information in this RESOURCE NOTE is based on the opinion and experience of the author and has not been peer-reviewed. Conclusions and opinions expressed herein do not necessarily represent those of BLM. Use of trade names does not imply U.S. Government endorsement of commercial products.

If you have received a copy of or found out about RESOURCE NOTES in an indirect way and would like to be included in future mailings, please send the following:

NAME, TITLE, MAILING ADDRESS and a list of the two or three subject areas that you are most interested in or that most directly relate to your job. Send this information to Phil Dittbener, BLM, RS-140, P.O. Box 25047, Denver, CO. 80225-0047 or phil_dittbener@blm.gov or FAX 303-236-3508.

If you would like to prepare a RESOURCE NOTE for distribution, or you have an idea and author in mind for a good RESOURCE NOTE, please contact Phil Dittbener at 303-236-1833, FAX 303-236-3508 or phil_dittbener@blm.gov with the topic and the name of writer, including an address, phone number, and e-mail address.

Thank you for your interest in RESOURCE NOTES.



National Science & Technology Center



Bureau of Land Management