



Noxious Weeds...

A Biological Wildfire

Applying Fundamentals of Wildfire Management to Improve Noxious Weed Control

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BIOLOGICAL WILDFIRE:

Invasive noxious weeds have been described as a raging biological wildfire—out of control, and spreading rapidly. The devastation from these alien plants includes enormous economic losses to agriculture and irreparable ecological damage to wildlands. Millions of acres have been invaded or are at risk including rangelands, forests, wilderness areas, national parks, recreation sites, and wildlife management areas.



Wildlife habitat, wilderness, and recreation areas invaded by yellow starthistle.



Picnic areas and campgrounds overrun by St. Johnswort.

Wildfires and weeds share much in common, including impacts, spread, and management.

IMPACT:

Like an unwanted wildfire, noxious weeds can drastically affect wildland plant and animal communities, damage watersheds, increase soil erosion, and adversely impact recreation. However, unlike the temporary negative impacts of wildfire, ecological damage from extensive noxious weed infestations is often permanent. Lands affected by wildfire are self-healing, whereas lands invaded by noxious weeds don't return naturally to their pre-invasion condition. Weeds continue to spread and the damage worsens.



Temporary impact of wildfire on plants and animals.



Permanent change in wildland plant and animal community caused by noxious weeds.

When considering long-term ecological effects on the land, invasion by aggressive non-indigenous noxious weeds is far more damaging than any wildfire.

SPREAD:

Weed infestations enlarge and spread much like wildfires, beginning small, then expanding to cover huge areas if not controlled quickly. Weed seeds, like embers, can be carried long distances by wind or other means. Resulting new “spot” infestations grow and merge, much like spot fires ahead of an advancing fire front.



Single leafy spurge plant—the beginning of a new noxious weed infestation.



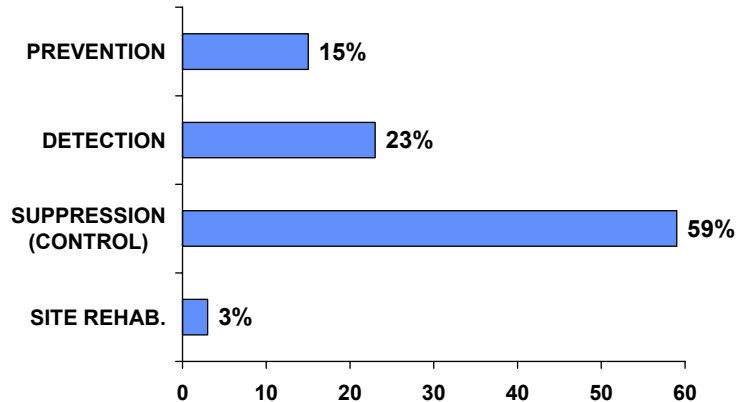
Leafy spurge infestation “out of control” and expanding.

MANAGEMENT:

Modern wildfire management is based on elements of **Prevention, Detection, Suppression (Control), and Revegetation**; the same fundamentals of effective weed management. A balance of all four elements is essential for effective management of wildfires or weeds.

Resource/budget allocation within effective fire management programs.

A similar balance should exist in weed management programs, with significant efforts in prevention, detection, and revegetation.



PREVENTION:

Prevention is the first line of defense against wildfires, and the same should be true for noxious weeds. The old adage “an ounce of prevention is worth a pound of cure” applies perfectly to both. Weed prevention means placing a priority on preserving and protecting lands not presently infested.

Wildfire prevention depends on widespread public awareness and concern achieved through a balance of education and regulation. Fire prevention messages appear in a variety of forms and places to remind people of the critical role everyone plays in this effort. Regulations such as campfire restrictions contribute significantly to wildfire prevention.

Education and regulation are the key ingredients needed to raise public awareness and gain greater support for weed prevention. More land managers and users need to recognize the adverse effects of noxious weeds and become involved in efforts to reduce spread. Informed hikers, campers, hunters, bikers, 4-wheelers, and other recreationists also could do much to prevent the spread of weeds. A significant portion of every weed management budget should be devoted to awareness education and to other forms of prevention.

DETECTION:

Early detection of wildfires makes rapid and complete control much more likely. The same is true for weeds. Wildfire detection is the primary duty of assigned individuals, but all field personnel within land management agencies are expected to watch for and report wildfires. Weed detection requires field surveys and accurate mapping by designated weed management personnel. As with fire detection, other field personnel could be trained to recognize and report targeted noxious weeds. The public also plays a significant role in fire detection and reporting. Ways should be explored to involve volunteer groups, recreationists, and other interested public land users in noxious weed detection and reporting.

SUPPRESSION (CONTROL):

The third element of weed and wildfire management is actual control. Wildfire control activities are called suppression. Fire fighters follow a proven step-wise process of (1) rapid response, (2) size-up, (3) containment, and (4) mop-up. Suppression efforts may fail if all four steps are not completed in proper sequence.

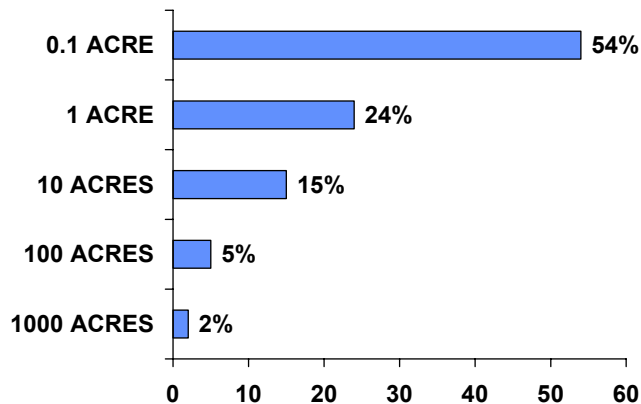
Adoption of a similar four-step approach to noxious weed control could increase the effectiveness and efficiency of almost any weed program.

Rapid Response

Controlling wildfires when small reduces costs and minimizes resource losses. An initial attack fire crew usually is dispatched within minutes of a report, and control begins before most wildfires exceed 0.1 acre in size. In contrast, control of noxious weeds is often postponed until infestations have covered hundreds or thousands of acres and are beyond hope of eradication. Adopting a “rapid response” attitude about new noxious weed infestations is vital to success.

Size of wildfires when initial attack (active control) begins.

A similar response pattern should exist for control of new weed infestations, beginning before most exceed 0.1 acre.



Size-up

Developing the best plan of attack against each new wildfire requires information on incident size, direction and rate of spread, location and value of threatened resources, and control constraints (terrain, accessibility, safety, method restrictions, budget, etc.). Gathering and incorporating this information into a plan is called size-up, and must take place before control actions begin. Similar factors must be addressed when developing a weed control plan. Bypassing the “size-up” step in weed management is an invitation to inefficiency and possible failure.

Contain / Confine

The first objective in wildfire suppression is always containment—protecting nonburned areas by stopping further spread. Efforts are focused on the fire’s advancing perimeter, not on the core. If full containment is not practical, the goal is to stop spread on one or two sides to save the most valuable resources. Spot fires outside of a containment zone always receive highest control priority.

The same strategy should be applied to weed management—stop the advancing perimeter before controlling the interior of an extensive infestation. Sometimes weed managers may be tempted to direct most or all control efforts at the core of large weed problems, ignoring the need for perimeter containment and control of isolated spots. This approach is like dropping fire fighters into the center of a huge wildfire and ignoring the expanding fire front. Spread continues, as if nothing had been done.

Mop-up

The final step in fire suppression is called “mop-up.” It involves hours of tedious labor to find and extinguish every live ember inside a containment area. Until mop-up is completed, a fire is not considered controlled, and may flare up and escape.

In weed control terms, mop-up means total eradication. It involves killing every weed and exhausting the soil of all seeds. Years of dedication and persistence are required. The effort needed for eradication may be justified only on relatively small patches, or along containment edges of larger infestations. However, failure to fully “mop up” any weed infestation essentially guarantees its eventual re-establishment and spread.

REVEGETATION (Site Restoration):

The fourth fundamental of wildfire management is revegetation. Often it occurs naturally, but other times it must be assisted. Weed managers also should place emphasis on revegetation following control, realizing the value of healthy desirable plants in protecting sites from re-invasion by noxious weeds.

A MODEL:

Essentially every aspect of wildfire management has close weed management parallels, making it an excellent example or pattern from which to develop more effective weed control strategies and programs. Thinking of weeds as a slow-moving fire can provide a valuable perspective when developing and implementing weed management plans.

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