

OPEN SPACE INVADERS

Noxious weeds crowd out native plants, ruin rangeland, and cost farmers and ranchers millions.

How Montana is fighting back. **BY DAVID STALLING**

If the commonly used term “war on weeds” seems overly dramatic, consider this: Noxious weeds today infest more than 130 million acres of the United States.

Each year they overrun an additional 1.7 million acres, invading an estimated 6 square miles of Bureau of Land Management (BLM) and U.S. Forest Service (USFS) lands every day. Weeds have infested more than 7 million acres in national parks, including Glacier and Yellowstone. Harmful invasive plants are a major scourge of agriculture, which declared the “war.” Each year noxious weeds cost Montana producers \$100 million in control expenses and crop production losses, according to the Montana State University (MSU) Extension Service.

Invasives also devastate native vegetation, in some cases reducing entire biologically diverse plant communities to large tracts of just one or two dominant species. And by crowding out indigenous grasses and forbs that wildlife eat, noxious weeds reduce the amount of forage available for deer, elk, and pronghorn.

“Noxious weeds” is a legal term state and federal agencies use to denote exotic plants posing serious threats to agriculture, wild-

life, and native plant communities. Many weeds reach this continent as seeds inadvertently carried in grain shipments. Others are brought by well-meaning folks to grace gardens or help control erosion. Once here, plants and their

seeds hitch rides aboard birds, big game animals, wool pants, horses, trains, and the tires of trucks and all-terrain vehicles. Some simply ride with the wind or float along rivers.

One of the most invasive exotic plants is spotted knapweed, which arrived in North America from central Europe in 1883, mixed in with shipments of alfalfa or soil used as ship ballast. Knapweed has since crowded out native plants on 2.8 million acres in Montana, thriving on soil disturbed by logging, grazing, flooding, or fire. By sending down stout taproots, knapweed gets the jump on other plants with its early spring growth and snatches up space, sun, water, and nutrients. Each plant produces more than 1,000 seeds annually, creating knapweed stands of up to two million plants per acre. According to the Forest Service, such densities can reduce the total amount of native grasses and forbs by as much as 90 percent.

Making matters worse, native plants have a tough time growing back even after



LUDO VIZIUTIS/LATHROP BEACON

BOTANICAL BARBARIAN A spotted knapweed plant appears to be scouting a route across a highway near Kalispell. Since the early 1900s, the invasive plant has spread to every county in Montana, today covering 2.8 million acres.

knapweed has been eliminated. Documenting the first scientific evidence of a plant using an offensive chemical weapon, researchers at the University of Montana and Colorado State University recently verified that knapweed releases a substance called “catechin” that destroys roots of surrounding vegetation.

The U. S. government recognizes roughly 4,000 exotic plants as “pests.” Of those, 90 are federal noxious weeds, and dozens more are listed as noxious by various states. The BLM refers to exotic weeds as “A Growing Pain,” the U.S. Department of Agriculture calls them “Silent Invaders,” and The Nature Conservancy created “The Dirty Dozen” list of “America’s Most Wanted: A Rogue’s Gallery of Invasive Plants and Animals.” In an article for *Sierra* magazine, writer Robert Devine coined the term “botanical barbarians.”

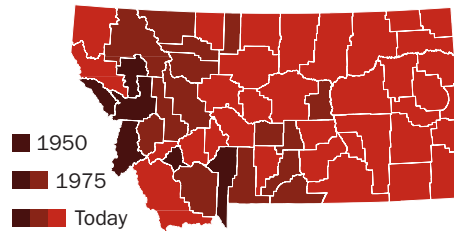
AT THE GATE

Barbarians, indeed. Noxious weeds have a competitive edge over native plants because their natural predators—mammals, birds, insects, and fungi—don’t live here. Just as deer and elk proliferate in the absence of predation—human or otherwise—noxious weeds multiply on lands where few natural enemies exist. In Montana, aggressive species such as

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Spotted knapweed’s rapid spread

Montana counties reporting infestations of spotted knapweed over the past 60 years.



leafy spurge, spotted knapweed, and Dalmatian toadflax take over prairies, wetlands, sagebrush steppes, mountain parklands, and riverbanks. Though research on the ecological effects is spotty, scientists know that invasive plants greatly reduce biological diversity in native plant communities. And because the roots of weeds hold less soil than native vegetation roots, erosion increases dramatically where invasives such as knapweed dominate. Topsoil sloughs into streams and fouls spawning and rearing habitat critical to trout and other fish. An MSU study published in 1989 found that surface runoff and sediment loss were nearly three times higher on sites dominated by spotted knapweed than on those where native bunchgrass predominated. In a Wyoming study, sites dominated by native prairie bunchgrass lost only 12.5 pounds of soil per acre in a simulated thunderstorm, while sites overrun by spotted knapweed

lost more than 125 pounds per acre.

Noxious weeds also threaten native plant communities in national parks. During one three-year period in Glacier, spotted knapweed nearly eliminated seven rare or uncommon native species. Yellowstone reports widespread infestations of Dalmatian toadflax and Canada thistle.

The few studies on how noxious weeds affect wildlife raise concerns among conservation agencies and organizations. Researchers at the University of South Dakota found that deer and bison used areas dominated by leafy spurge far less than similar uninfested sites. A study in the early 1990s by Mike Thompson, now FWP regional wildlife manager in Missoula, found that dense stands of spotted knapweed in native bunchgrass sites reduced available winter forage for elk. “We can’t go so far as to conclude that noxious weeds reduce elk numbers in Montana,” Thompson says. “That’s because in much of the state we’re already managing populations below the land’s biological carrying capacity, in order to reduce wildlife depredation problems on private land. But weed infestations definitely make a difference in elk distribution. If you have more weeds on public lands, elk could move to other property where there are fewer weeds.”

Nonprofit conservation groups are concerned, too. The Nature Conservancy and the Rocky Mountain Elk Foundation have warned of the threat noxious weeds pose to wildlife and native plant communities.

Then there’s aesthetics. Though noxious



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weeds sprout colorful flowers, people who value native plant communities wince at the sight of knapweed overtaking shortgrass prairie or leafy spurge spilling over riverbanks. And few sights are more discouraging to dog owners than their Brittany, springer spaniel, or golden retriever covered in houndstongue or burdock seed.

“It’s easy to get depressed about noxious weeds,” says Jim Olivarez, a retired weed program manager for the USFS Northern Region. “But I try to look at it this way: About 95 percent of our public land is not affected by weeds, and we can keep it that way. I refuse to let these plants dominate the landscape. These lands are national treasures, and we need to protect them.”

MAKING HEADWAY

Montana has been fighting noxious plants for more than a century. The state legislature passed its first laws to control weeds as early as 1895. Yet by the late 1920s, invasive exotic vegetation had spread to every county in the state. Today, 32 species infest 7.6 million acres of Montana.

In 2000 Montana developed a comprehensive, statewide noxious weed management plan. Its goal is to boost existing weed management and promote new, ecological ways of controlling weeds. The plan notes that noxious weeds are controlled by identifying ways the plants are spread, educating land-

owners and others on how to limit spread and prevent introductions, and conducting plant inventories and research. Weeds are killed using herbicides, fire, hand pulling, and insect predators (known as biocontrols.)

Dave Burch, state weed coordinator with the Montana Department of Agriculture, says this “integrated” approach is making inroads into existing infestations. Spotted knapweed has taken the biggest hit, declining from 4.5 million infested acres in 1985 to about 2.8 million acres today. Though that reduction has been partly offset by new infestations of other species, over the past decade Montana has reduced the amount of land with noxious weeds by 500,000 acres.

According to the 2008 Montana Noxious Weed Summit Advisory Council, private land managers, county weed districts, and federal and state agencies now spend a total of \$21 million each year in Montana on noxious weed control. (The council calls for spending nearly three times that amount to slow the spread and reduce existing infestations by 5 percent each year.)

In addition to containing and eradicating weed infestations, a major goal of the weed war is to prevent new noxious plants from taking hold. Public education is critical. Burch says the more people who know about noxious weeds, the more likely early infestations can be detected and then treated before the plants take over. He tells



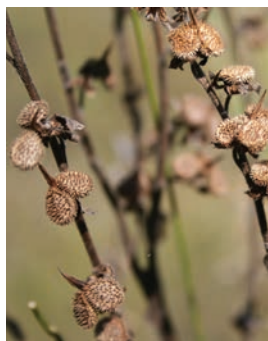
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COLORFUL CREEPS Nicknamed “leafy scourge” by some land managers, leafy spurge is shown at top covering Missoula’s Mount Sentinel. On nearby Mount Jumbo (above), purple spotted knapweed has driven out native vegetation, turning a biologically diverse plant community into a monoculture that wildlife rarely eat. With limited success, the city and the University of Montana have used herbicides, goats, and weed-eating insects to contain these and other noxious weed infestations.

Know thine enemies

Shown here: Montana’s five worst noxious weeds. State officials warn the public not to walk or drive through established infestations of these and other invasive vegetation.

Houndstongue



JOSEPH M. DITOMASO, UNIVERSITY OF CALIFORNIA

Dalmatian toadflax



STEVEN YANRE

Spotted knapweed



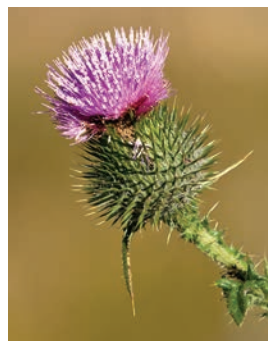
STEVEN YANRE

Leafy spurge



CHRIS EVANS/BUGWOOD.ORG

Canada thistle



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FWP's battlefront on FWP lands

At the new Marias Wildlife Management Area and State Park near Shelby, FWP has released root-boring weevils at 20 different sites to control noxious weeds. The department also spot-sprayed herbicides on roads, trails, and river corridors, and aerially sprayed 300 acres. "Keep in mind that the previous owner had done no weed control at all for the previous 50 years, so it will take us some time to get a handle on the weeds there," says Graham Taylor, FWP regional wildlife manager in Great Falls.

The activities at Marias are just a snapshot of the noxious weed control FWP does at state parks, wildlife management areas (WMAs), and fishing access sites. In 2010, the department:

- conducted weed management on 8,430 acres;
- spent \$642,000 for on-the-ground weed control, weed education and outreach, and other weed management work;
- provided \$143,000 to Block Management Program landowners for weed management (in addition to \$4 million in Block Management payments for activities such as weed management that help offset the effects of allowing public hunting access);
- provided \$1.2 million in federal grants to private organizations and public municipalities and agencies for hiking, cross-country skiing, snowmobiling, and other recreational trail projects, all requiring weed management plans and frequently including weed-control actions;
- worked with ranchers to conduct rest-rotation cattle grazing on some WMAs to maintain rangeland health, in part so native plant communities can resist weed invasions;
- collected and released 11 million biological control insects on infested sites for long-term control, benefiting the FWP lands and those owned by adjacent landowners;
- contracted with county weed districts and private contractors to spray weeds;
- conducted an aggressive media campaign warning hunters and other recreationists to be aware of weeds and avoid spreading seeds or plants; and
- regularly convened its Noxious Weed Management Advisory Committee to discuss and act on weed issues.

"I'm encouraged to see how our experienced managers pass their experience and knowledge about noxious weeds to the new managers," says Joe Weigand, FWP noxious weed coordinator. "They're committed to not lose any ground they've gained over the years." ■



GIVING WEEDS THE BLUES A contract worker sprays weeds at a fishing access site on the Missouri River. Last year FWP managed noxious plants—including the release of 1.1 million weed-eating insects—on more than 8,000 acres of its properties.



2006: Before



2008: After

HEALTHY HILLSIDE Before and after shots show how FWP controlled a leafy spurge infestation on Garrity Mountain Wildlife Management Area near Anaconda. Though the department employs biocontrols and hand pulling as part of its integrated approach to managing noxious weeds, sometimes broad herbicide applications are the best long-term way to save native plant communities and wildlife forage production.

of a retired Forest Service employee who reported a stand of yellowstar thistle discovered while hiking near Dillon. The county weed district quickly treated the site. "That shows how important it is for people to be able to identify weeds and report them to us," Burch says. "Yellowstar thistle is not prevalent in the state, and we want to keep it that way."

GOOD NEIGHBOR

FWP is a key player in the state's noxious weed management plan. Joe Weigand, the department's statewide weed coordinator, says FWP is responsible for managing noxious weeds on 610 sites across the state comprising 410,000 acres. Working with state, federal, and county programs, the department spends roughly \$650,000 each year for on-the-ground weed control and other management, in addition to several million dollars in grants and other payments that landowners and others may use to manage weeds (see sidebar at left). Along with educating the public and applying herbicides, FWP's integrated management approach includes pulling weeds by hand, using cattle grazing to help native range resist weed invasions, and releasing beetles and other natural insect predators to attack the weeds. "We use every tool available," says Weigand.

Thompson says being a good neighbor is a top priority for the department. "Wildlife management areas are part of a community, so we put a lot of emphasis on controlling weeds along the borders with our neighbors," he says. "We understand that a landowner on one side of the fence can spend a ton of money on weed control and then see those efforts wasted if the neighbors aren't doing their part too." Weigand adds that FWP is required to control weeds on its lands, and that a law passed by the 2009 legislature mandates the department to develop a noxious weed management plan for any land it proposes to buy.

While nearby landowners support FWP weed control, other Montanans criticize the department for using herbicides. The chemicals can kill native wildlife forage and, when used at fishing access sites, contaminate streams and lakes. Weigand says the department is using more biocontrols to reduce the need for chemical applications. "We're very

Join the fight

The best way to fight noxious weeds is to prevent new infestations and stop the spread of existing ones.

Here's how:

- Learn to identify plants common to your locale and favorite recreation spots so you can recognize potential invaders and report them to public agencies.
- If you travel with pack animals, carry only certified weed-seed-free forage (pellets, hay, and alfalfa) into the backcountry.
- Thoroughly clean vehicles and livestock before entering the backcountry to ensure they are not carrying weed seeds.
- Avoid traveling through weed-infested areas, where seeds can hitchhike on tires and clothing and be inadvertently spread to other parts of Montana.



GETTING AN EARFUL Upland hunters and other dog owners should clean houndstongue and other nasty weed seeds off their pets and clothing at home and not in their vehicles or in the field.

For more information:

FWP Noxious Weed Management Program

fwp.mt.gov/habitat/noxiousWeeds or e-mail: joweigand@mt.gov

Montana's Statewide Noxious Weed Awareness and Education Program:
weedawareness.org

Montana Department of Agriculture Noxious Weed Program:
agr.mt.gov/weedpest/noxiousweeds.asp or e-mail: dburch@mt.gov

The threat of aquatic invasive species, including plants:
fwp.mt.gov/mtoutdoors/HTML/articles/2010/AIS.htm

cautious about how, when, and where we apply herbicides," he says. "But broad herbicide applications are necessary where we have massive weed infestations, especially to save wildlife forage production. In the long run, we believe eradicating noxious weeds is best for the land and for wildlife, and using herbicides is usually the lesser of two potential evils."

One thing's for certain: Noxious weeds aren't going away by themselves, whether on FWP lands or any others. The looming threats to agriculture and natural ecosystems mean that Montana can't stand by and do nothing. To keep existing infestations from spreading and prevent new species from taking root, the state may have to be as pugnacious and persistent as the weeds themselves. 🐾

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