



TechLine

Information About Invasive/Exotic Plant Management

Spring 2007

Innovative Program Managers Find Answers

Booming Resort Communities Pose Weed Management Challenge

Many small mountain ski towns are now booming with retired and/or second homeowners throughout the West. As these resorts absorb more population, they spread onto what were once ranches or open spaces and bump up against public lands as never before. This not only creates conflicts over land use, but also opens the door to soil disturbances and increased recreational traffic (motorized and human-powered). Invasive plant species quickly follow this exploding development.

“We don’t have large infestations of any one invasive plant species in this area, but with all of the human visitation and the fact that we are the headwaters of the Snake River that drains through three other states, the potential for spread is immense if we don’t stop these species here,” says Erika Edmiston. Edmiston is Teton County Weed & Pest supervisor based in Jackson, WY. She is assisted by Aaron Foster, assistant supervisor, and Travis Ziehl, IPM coordinator for the county. Edmiston says their program is geared to early detection and rapid control of new invaders or containment of existing infestations (*see “Quick Response to Leafy Spurge” on page 3*).

There are 2.7 million acres in Teton County and 97% of it is federal land including Grand Teton National Park, Bridger-Teton National Forest, a portion of Yellowstone National Park, Bureau of Land Management land, and the National Elk Refuge. Nearly six million people visit the Jackson Hole region annually. The remaining 3% is private property that is equally

See “Jackson Hole” on page 2



(L. to R.) Amy Lerch, Travis Ziehl, Aaron Foster, Erika Edmiston, Teton County Weed & Pest, Jackson, WY.

“In short, a land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for fellow-members, and also respect for the community as such.”

...Aldo Leopold

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divided between landowners that own 40 acres or more and those who own a tenth of an acre or less. Many are absentee landowners, so the county works with caretakers as the primary contact.

Edmiston says they formed the Jackson Hole Weed Management Association in 1998 so that a coordinated, planned approach could be implemented. The Federal agencies as well as state and many non-governmental organizations (NGO) quickly came on board and are doing a terrific job of managing invasive plant species. The greatest challenge has been the private sector as former ranch lands are converted to private developments.

“Our greatest new invaders are leafy spurge (*Euphorbia esula*), purple loosestrife (*Lythrum salicaria*), rush skeletonweed (*Chondrilla juncea*), yellow starthistle

(*Centaurea solstitialis*), dyers woad (*Isatis tinctoria*) and field scabious (*Knautia arvensis*).

“They have almost all been first found on private property,” Edmiston says. “When we began many of these landowners were completely in the dark about the negative impacts of noxious weeds on the very mountain environment that drew them here in the first place. Plus, there was a negative stigma attached to herbicide use. We don’t even treat around delineator poles on rights-of-way. To protect the native roadside vegetation we only spot spray and are more hands-on in all that we do.”

Innovation #1: National Elk Refuge

The National Elk Refuge is managed by the National Fish & Wildlife Service, but they have integrated their program directly into Teton County’s and this has paid tremendous dividends in successful weed management (**see article on National Elk Refuge on page 8**). The county hires, trains and pays the elk refuge weed crews.

Innovation #2: Snake River Corridor

The Snake River bisects the Jackson Hole Weed Management Area and is intensively used by individual and outfitter-guided fishermen, float boats, and rafters. Salt cedar (*Tamarix spp.*), perennial pepperweed (*Lepidium latifolium*), and other noxious plant species infest the river corridor, so Edmiston’s team manages this portion of the WMA almost as a separate area. They are convinced that many invasive species are coming in on fishing boats and trailers from other states.

“Grand Teton National Park and Bridger-Teton Forest have jurisdiction over recreational use of the Snake River and they cooperate closely with us on weed management. But we found that we have to get on the river ourselves to really be effective,” Edmiston explains. “We float the river at least twice each summer. We hand pull the salt cedar that we find and treat the pepperweed with glyphosate.”

Edmiston’s team created water-proof and tear-proof signs for each boat launch site and posting at the rafting outfitter’s sites that show the targeted invasive species and ask folks to report any infestations they might spot while they recreate on the river. Before the summer season begins, they meet with each fishing guide and rafting company to educate their staffs on noxious weeds.

The river’s banks and levee system are infested with Canada thistle and spotted knapweed which prove particularly challenging because they had limited

Jackson Hole WMA

The diversity of participants in the Jackson Hole Weed Management Association illustrates the complex mix of interests and points-of-view that must be considered to successfully manage invasive vegetation in the area. By bringing all these groups to the table, a unified management plan was drafted to protect the natural resource of the area. Partners include:

Bridger-Teton National Forest
Bureau of Land Management
Bureau of Reclamation
Caribou Targhee National Forest
Grand Teton National Park
Jackson Hole Conservation Alliance
Jackson Hole Land Trust
Jackson Hole Wildlife Foundation
National Elk Refuge
NRCS
Pinto Ranch
Snake River Ranch
Snake River Sporting Club
State of Wyoming Office of State Lands
Teton Conservation District
Teton County Weed & Pest District
Teton County Parks & Recreation Department
Teton Science School
Wyoming Department of Transportation
Wyoming Game & Fish Department
Wyoming Native Plant Society, Teton Chapter
Yellowstone National Park

Quick Response to Leafy Spurge

A 15-acre infestation of leafy spurge infestation was found by a hiker in the Bridger-Teton National Forest near Jackson in 2003. Containing this infestation is a good example of the Jackson Hole Weed Management Association and Teton County Weed & Pest's early detection and rapid response philosophy. The spurge was found in an area that is remote and not heavily used. But thanks to their education and awareness program, the hiker knew what the plant was and where to report it.

This discovery jumped-started a cooperative effort that involved county crews, forest service crews, and other volunteers in a joint spray day where they all worked together. The Wilson Fire Department donated the use of a water truck and crews from each agency used backpack sprayers to treat the infestation with Tordon® 22K herbicide applied at the labeled rate of 2.0 qt./acre tank-mixed with 2,4-D herbicide at the labeled rate of 1.0 qt./acre.

This control option was selected because the spurge was growing in a very remote location and containing the infestation was the highest priority.

"Our control was excellent and we have monitored this site every year since it was originally found. In the summer of 2006 the infestation was virtually eliminated," says Erika Edmiston, supervisor of the Teton County Weed & Pest District in Jackson. "We spot treated this infestation each year after the initial treatment, and just need to monitor it now. Early detection by knowledgeable citizens really works."



(Top right) Munger Mountain meadow infested with leafy spurge before treatment. (Middle and bottom right) Meadows and hillsides after leafy spurge was controlled.

herbicide options that close to water. This past summer this problem was solved as they began using Milestone™ herbicide for these areas. "There is less leaching potential and we can treat right to the water's edge with this herbicide and at lower per acre rates than herbicides we used previously. In this type of environment, Milestone is a perfect fit," Edmiston explains.

Innovation #3: Education and Awareness Program

Amy Lerch is the full-time education coordinator for the Teton program. She conducts classes with realtors

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and also visits school classrooms to educate these groups on the impacts of invasive plant species. She has developed a native plant plug program that asks landowners to exchange invasive ornamentals and plant the native plant instead. They also began collecting their own native species seeds locally to help landowners with their replacement plant choices. They go door-to-door to visit with new house owners and have created television spots for the local cable-access station as well as radio spots and newspaper articles that feature a "weed of the week."

Lerch also involved the renowned Teton Science School in treating its own weeds and adding an invasive plant species course to its curriculum.

The county now requires a noxious weed plan from

See "Jackson Hole" on page 5

Editor's Note:

The new invasive plant herbicide aminopyralid (trade name Milestone™ herbicide) has been evaluated extensively in university research trials and demonstration plots across the United States in the past seven years.

The results of these trials on a species by species basis will be presented in this and coming issues of TechLine.

Previous species covered and the TechLine issues in which they appeared include:

- Spotted knapweed, Russian knapweed, and orange hawkweed –Winter 2005-2006
- Canada thistle – Spring 2006
- Yellow starthistle – Late Summer 2006
- Absinth Wormwood – Early Winter 2006

Performance of Herbicides Applied in the Spring for Scotch Thistle

By Charles Henry
TechLine Editor



Dr. Robert Wilson
University of Nebraska, Scottsbluff

A field study was initiated near Melbeta, Nebraska to compare the effectiveness of various herbicides applied postemergence in the spring for scotch thistle control. The experimental design was a randomized complete block with three replications. Plots were 7 feet wide by 25 feet long and were located on a sandy loam soil with a pH of 8.0 and 1.5% organic matter. The plot area was located in a pasture heavily infested with scotch thistle. On May 5, scotch thistle plants were in the rosette growth stage and actively growing. Herbicides were applied with a backpack sprayer calibrated to deliver 20 gallons of water per acre at 36-psi pressure with Spraying Systems 11002 VS nozzles. Environmental conditions at the


time of herbicide application are given in Table 1. Visual evaluations of Scotch thistle control were taken on May 30, July 1, and August 25, 2005 (Table 2). In late May and early July Scotch thistle control with all the herbicide treatments was excellent. By late August Scotch thistle seedlings were emerging in some of the plot areas. Scotch thistle control averaged over the five Milestone™ rates was 90% while control averaged over the two ForeFront™ rates was 85%. Transline®, Tordon® 22K plus 2,4-D, and Clarity plus 2,4-D were providing 94, 84, and 66% Scotch thistle control, respectively. 

Table 1: Environmental Conditions at the time of herbicide application.

Date	Air Temperature	Humidity	Wind Speed & Direction	Time of Day	Scotch Thistle
5/5/05	62 (F)	41%	0 mph	9 am	Rosette growth Stage, actively growing

Rainfall before and after herbicide application:

Date	Amount
April	2.21 inch
May 8	0.10 inch
May 11	0.20 inch

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Table 2: Scotch Thistle Control with Milestone at Melbeta, NE during the 2005 Growing Season.

Treatment ¹	Scotch Thistle Control		
	Rate Per acre	5/30	7/1 % 8/25
Non treated		0	0
Milestone + Activator 90	3 fl oz	96	97
Milestone + Activator 90	4 fl oz	97	98
Milestone + Activator 90	5 fl oz	96	98
Milestone + Activator 90	6 fl oz	97	96
Milestone + Activator 90	7 fl oz	97	99
ForeFront + Activator 90	24 fl oz	93	99
ForeFront + Activator 90	32 fl oz	98	99
Transline + Activator 90	0.5 pt	96	97
Tordon 22K + 2, 4-D + Activator 90	1.0 pt + 1.0 pt	97	99
Clarity + 2, 4-D + Activator 90	1.0 pt + 1.0 pt	94	89
LSD at 5%		3	9

¹The spray additive Activator 90 was combined with herbicide treatments at the rate of 0.25% per volume of carrier.

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“Jackson Hole” Continued from page 3


each new development. “If we can get just one person involved in each subdivision – it really builds from there,” Edmiston says.

Another awareness program that is slowly gaining traction involves local landscaping companies. Edmiston says they discovered more than 60 locations where leafy spurge had come in on tree and shrub root balls. They formed a landscaping committee to address this and similar issues and to involve the landscapers in a positive way.

Innovation #4: Staff Housing and Weed Finder Reward Program

Weed programs struggle finding capable staff and paying wages that are competitive with the building trade or the oil and gas industry that are booming in the West. Housing is particularly hard to find for workers when real estate values drive up housing costs for local residents. Teton County is again finding an innovative solution to this challenge – they provide housing as part of their wage and benefit package.

“We purchased a house in Jackson that is divided into apartments and we also have a small apartment near the shop,” Edmiston explains. “We are building a new weed shop and offices and are including a dormitory at the new complex that will replace our existing housing and be more cost efficient. Before we had our own housing, we had a difficult time finding seasonal employees. Now we find high quality seasonals usually from the University of Wyoming and Brigham Young University/Rexburg that we start at \$9.50 and bump to \$10 per hour when they obtain their applicator’s license – plus housing. Since we’ve made housing available we have a much easier time filling 12-15 positions each summer.”

Another innovation involving summer staff is a weed-spotting reward program and allowing almost unlimited overtime. Teton County crews never work Sundays, but if they are still operating safely, they can work all the overtime they want. “They have to ID and GPS a new infestation and bring in a plant sample for verification. Crew members spend their off days floating the river or hiking to find weeds. Many have been known to double their last paycheck with what they earn from the reward program,” Edmiston concludes. 

Re-vegetation and Riparian Area Weed Control Help Restore Rangelands

One of the most valuable natural resources in eastern Oregon is grass.

Forages on private and public lands form the foundation for the entire region.

Baker County is comprised of commercial timber lands, national forest, open sagebrush ranges, farms and ranches.

“Our area depends on a viable, weed-free forage resource. Invasive weed species can replace these grasses, degrading our wildlife ranges, forests, and livestock ranches,” says Arnie Grammon in Baker City, OR. Grammon is the Baker County weed supervisor. Baker County along with Union and Wallowa Counties form the Tri-County Weed Management Area in eastern Oregon.

“Spotted knapweed, Canada and Scotch thistle (*Onopordum acanthium*), and whitetop (*Cardaria draba*) infest the most acreages in Baker County, but rush skeletonweed (*Chondrilla juncea*) is the species that worries us the most (see **“Rush Skeletonweed” on next page**). Unlike the other species, skeletonweed invades farm ground and can survive wildfires since it has such a small leaf area. We conducted a survey after the Foster Gulch Fire last year and found rush skeletonweed infestations scattered throughout the burn area,” Grammon says.

Grammon says they immediately jump on rush skeletonweed as soon as a new infestation is found. They have used Tordon® 22K herbicide applied at the labeled rate of 1 qt/acre with a MSO surfactant applied in the fall. Last fall they applied Milestone™ herbicide for the first time applied at the labeled rate of 7 fl. oz/acre. Again they added MSO and marker dye to all treatments.

“Both these herbicides work extremely well for us on rush skeletonweed. They each have a fit based on where we are spraying,” Grammon says. “Some people will argue that fall spraying allows for another season

of seed production, but when we have tried other products in the spring or summer, we have not achieved sufficient control like we do with Tordon or Milestone. Sacrificing a season of seed production for this level of control seems to be a positive tradeoff in our opinion.”

Grammon says they have effective herbicides for controlling their priority species, but they were not labeled for use next to streams where some infestations are the worst. Weed seeds spread the most right next to streams since the water serves as a conduit. They also wanted to find a combination of weed control and grass re-vegetation that left ranges less susceptible to reinvasion.

Stream Banks and Gravel Bars

“The first problem was solved with the introduction of Milestone herbicide this past season,” Grammon says. “We have battled spotted knapweed infestations along the Powder River for six years. It infests the banks and gravel bars where the river flows through the valley floor. All we could do was use aquatic glyphosate and spot spray, but the knapweed was getting ahead of us.”

In 2006 one of the valley’s ranchers, Don Foster, received funding from the Oregon Department of Fish & Wildlife’s Access and Habitat program to tackle the spotted knapweed problem. This program uses a portion of the state license fee to help landowners fund habitat improvements. The Foster Ranch contains key elk summer and winter range as well as winter feeding stations. These feeding stations are set up permanently, are administered by the Oregon Department of Fish And Wildlife, and are intended to take pressure off haystacks and winter cattle pastures.

Knapweed also infested upland rangelands where Grammon says it was out-competing grass and lowering



Arnie Grammon, Baker County weed supervisor, Baker City, OR.


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the carrying capacity of the range. “We achieved excellent spotted knapweed control with Milestone that was applied at the labeled rate of 5.0 fl oz/acre with ATV sprayers on the open rangeland and backpacks along the river. We add MSO and marker dye to every spray tank as well. We have made excellent progress because we can treat right up to the water’s edge with this herbicide. And we are cleaning up the gravel bars and islands in the river as well.”

Grass Seed Study

Grammon says they began a grass seed study five years ago to find the best species for re-vegetating ranges. They particularly wanted to address ranges with poorer, drier soil sites where the pH was in the 7.5-8.0 range. Grass was not reestablishing in these areas even if the weeds were controlled. They seeded several native and improved grasses into weedy rangeland in November at 12 lb/acre with a Capps Bros. Rangeland Drill. Two years of drought slowed emergence, but after three years, they had stands established. He cautions that grass seedlings should not be evaluated for two to three years because emergence can be slow even when conditions are better than they experienced.

“The most competitive species is proving to be Vavilov Siberian Wheatgrass,” Grammon concludes.

“To control the Scotch thistle and whitetop in the seedings we applied Milestone herbicide at the labeled rate of 5.0 fl oz/acre tank mixed with Telar herbicide at the labeled rate of 0.5 oz/acre for the whitetop. We achieved 95% control with this tank mix and grass response has been excellent. The beauty of Milestone is that we achieve such good control of the Scotch thistle that there are no rosettes and we don’t have to go back to re-treat. There is enough residual to give us two years of control. This should allow time for further establishment, enhancing the ability of these grasses to favorably compete against aggressive weeds.” 

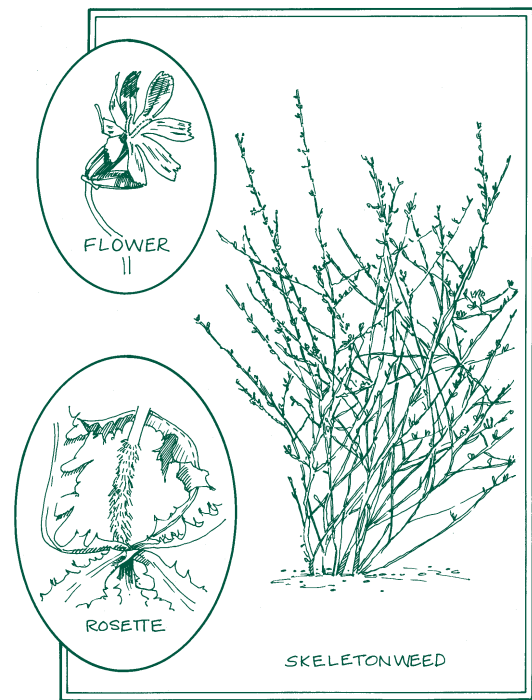


Rush Skeletonweed

Rush skeletonweed (*Chondrilla juncea*) is a perennial that blooms from July to September. Plants grow one to four feet tall. Skeletonweed flowers are yellow and 3/4 inch in diameter with seven to 15 petals. Coarse downbent hairs are found on the lower four to six inches of stem and there are almost no leaves. This plant spreads primarily by seed, but roots scattered by cultivation can aid in spread.

Impacts

Rush skeletonweed is an aggressive plant in both rangeland and cropland, particularly in light textured soil and has been the target of large control projects for decades. Cereal grain and potato production areas are at risk from skeletonweed invasion. Impacts include reduced yield due to competition and harvest difficulties with combine harvesters from latex sap that is exuded from the plant. Extensive efforts have been made to eradicate or contain outbreaks, but new sites are being found each year in the eastern part of Oregon.





Integrated Program Successfully Preserves Habitat

Invasive Plant Species Threaten Elk Refuge

The National Elk Refuge on the edge of Jackson, Wyoming is one of the most visible wildlife refuges in the United States. Visitors can observe the refuge's 7,500 wintering elk from their cars or along walking paths just outside the refuge. One of the most popular methods of elk viewing is from horse-drawn sleighs that take visitors close to the herd as long as snow cover allows.

This easy visibility makes the Jackson Hole elk herd one of the most popular attractions in the area. "People become very emotional about wildlife when they can see it so easily and in such vast numbers in one spot," says Erika Edmiston. Edmiston is the Teton County Weed & Pest District's supervisor. She helps manage invasive plant species on the refuge in a unique partnership with the U.S. Fish and Wildlife Service which manages the refuge.



"When spotted knapweed (*Centaurea maculosa*), Russian knapweed (*Acroptilon repens*), and Canada thistle (*Cirsium arvense*) threaten the forage capacity of the refuge, people want something done. Thus, the refuge is a good tool for raising awareness about the impacts of invasive species, and at the same time showcasing that we can protect wildlife habitat," says Steve Brock. Brock recently retired as the deputy manager for the National Elk Refuge.

"The Gros Ventre River corridor forms the northern boundary of the refuge and Grand Teton National Park and the Bridger-Teton National Forest. The river – especially the islands in the river – are heavily infested with knapweed and Canada thistle," says Brock. "If not controlled, these infestations would quickly invade the refuge and compromise the forage potential of the elk habitat. Our goal is to prevent that from happening."

Brock says they have formed a unique partnership that works very well. Local Boy Scout troops collect elk antlers from the refuge each year for sale at an annual auction held in May. This antler sale generates from \$70,000 to \$80,000 that the Scouts donate back to the refuge for weed management. The U.S. Fish & Wildlife Service then contracts with Teton County to hire, train, and pay summer employees to manage the weeds on the refuge. The refuge provides housing and equipment and buys the herbicides. This arrangement frees refuge employees to concentrate on other aspects of wildlife management and insures that the invasive species receive constant attention," Brock says.

An extensive biological control agent program is in place on the refuge (although with limited success) and student volunteers are also used to flag and GPS

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infestations. These crews also chop the few musk thistle patches in the refuge. “The volunteers do a good job and make a difference,” Brock says.

Herbicide applications are made with backpacks and ATV sprayers, with most of the work being done with backpacks. Herbicide choices have been limited in previous years because of the weeds’ proximity to the river and the extensive wetlands that comprise the western edge of the refuge. In 2006, crews used Milestone™ herbicide on the Canada thistle and knapweed infestations. This herbicide was applied at the labeled rate of 6.0 fl. oz/acre. Milestone’s label allows use up to water’s edge, which enabled crews to treat areas that they had been unable to reach in the past.


“We are accomplishing our goals. The city of Jackson



large portion of elk winter range. Establishment of farms and ranches further forced elk from their traditional wintering areas. Livestock competed for winter food, and hungry elk raided haystacks. These severe conflicts between humans and elk diminished the Jackson elk population.

Today the refuge continues to preserve much of the remaining elk winter range in the valley, approximately one-quarter of the original Jackson Hole winter range. Elk stay

on the refuge for approximately six months each winter. An 8-foot high fence along the main highway and the northern border of town prevents elk from moving through Jackson and onto private lands.

Today the refuge consists of nearly 24,000 acres devoted to elk winter range. This represents the last remaining elk winter range in Jackson Hole. Refuge grasslands are managed to produce as much natural forage for elk as possible through extensive irrigation, seeding, prescribed burning, and other practices. These management practices enhance elk winter habitat and reduce the need for supplemental feeding. 

“The Gros Ventre River spotted knapweed has been worked on hard for a number of years and I think I can say we have for the most part kept it under control. It has not spread widely throughout the refuge - yet. I do believe the new herbicide we are using, Milestone, will allow us to do a much better job of controlling it in the coming years. I am optimistic we can have good control of spotted knapweed right to the water’s edge and on the islands of the river.”

came back into our program this year and asked us to treat the refuge areas that border the town. We are containing these infestations with the help of this new herbicide in conjunction with our other control techniques. We are protecting the elk refuge,” Edmiston and Brock agree.

The National Elk Refuge works to provide, preserve, restore, and manage winter habitat for the nationally significant Jackson elk herd and habitat for endangered species, birds, fish, and other big game animals, and provide compatible human uses associated with the wildlife and wildlands.

- The Jackson elk herd was used as a nucleus herd to replenish other elk herds and elk re-introductions across the country.
- The migration of the Jackson Hole elk is the longest herd migration of elk in the lower U.S.
- It is winter range for the largest bison herd (more than 1,200) in the National Wildlife Refuge System.
- It is the world’s largest wintering concentration of elk with national and international significance.

When settlers arrived in Jackson Hole in the late 1800s, there may have been as many as 25,000 elk in the entire valley. The town of Jackson was built in a

Organization, Prioritization, and Motivation Create Success

It is challenging to manage invasive weed species that are scattered over hundreds of thousands of acres. It is more challenging when traditional land use undergo relatively rapid change. In the upper Snake River area of eastern Idaho, some farms and ranches are being converted into housing subdivisions and ranchettes. Recreation has become a greater part of the local economy and tax base and wildlife habitat is being fragmented due to the land use changes. Demands on the water and forest resources change as more people move into western states.

“All of these new activities and changes have accelerated the spread of invasive plant species such as leafy spurge, spotted knapweed, Canada thistle, musk thistle (*Carduus nutans*), houndstongue (*Cynoglossum officinale*), black henbane (*Hyoscyamus niger*), and salt cedar,” says Jeffrey Pettingill, Bonneville County weed superintendent based in Idaho Falls, ID. Along with Greg Hanson, USFS Palisade RD rangeland management specialist, and Eric Anderson with the Idaho Fish & Game, he is one of many land managers tasked with stopping the spread of noxious weeds in eastern Idaho.

Organization

“When we formed this CWMA in 2000 our main goal was to ‘break down the fences’ between all the agencies and landowners and work as one unit. The organization portion of our program is complete and now we are implementing the prioritization and motivation parts of our plan.”

Prioritization

“Our highest priorities include transportation corridors, the Snake River and its tributaries, and areas of highest wildlife value,” say Eric Anderson. “These are the areas that either have the greatest potential for spreading weeds to other areas or are the most threatened by the damaging impact of invasive plants. Our elk winter grounds are critical in this area. We also



(Left to right) Greg Hanson, USFS Palisade Ranger District, Jeffrey Pettingill, Bonneville County, and Eric Anderson, Idaho Fish & Game.

manage habitat that includes the bald eagles, grizzly bears, and one T&E species – Ute-ladies’-tresses orchid (*Spiranthes diluvialis*). Our fly fishing and rafting economies generate more than 2,000 jobs and more than \$57 million annually, so protecting the upper Snake River eco-system is important in so many ways.” **(For a complete copy of the study, *The Economic Value of Recreational Fishing & Boating to Visitors & Communities along the Upper Snake River* contact TechLine at the information listed on page 12.)**

The Bureau of Land Management manages lands on the southern side of the river, the Forest Service on the northern side and the counties work with the farmers and ranchers that own land interspersed among the federal land. Riparian areas are their primary focus, but they also work with private landowners to revegetate old farms which are a mono-culture of smooth bromes by introducing forbs and bitter brush. These old dryland farms provide prime winter range for big game, according to Anderson. “A lot of our areas are weed-free, so it is our goal to keep them clean,” Anderson says.

Pettingill says they have a huge biological control agent program along the Snake and its tributaries. They have their own insectary in the weed management area and have made biological agent releases on leafy spurge, purple loosestrife, and Canada and musk thistles. In the Cartier Slough near Rexburg, ID they employ a combination of goat grazing and biological control agents because the water table is so high. This

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combination of methods has proven very successful. And on CRP ground and Idaho Fish & Game Wildlife Areas, they mow and spray to control Canada thistle.

“Our trail system is a high priority as new invaders are our highest priority,” Greg Hanson says. “We have two weed crews and one backcountry horseback crew working Forest lands in the Upper Snake River CWMA. The weed management area takes in two districts, the Palisades and Teton Basin Districts. We have hundreds of miles of horse trails and usage increases each year.”

Motivation

According to Pettingill the motivation portion of the equation varies for each agency, but usually is some form of cost share for landowners. They cost share 50-50 on biological control agent releases with landowners and 100% with governmental agencies. In Madison and Jefferson counties, the county pays for the herbicide. In Bonneville County, the landowner buys

the herbicide, but the county applies it using one of the four crews they employ.

“We are a bit different from some other areas of the country in that sending out an enforcement letter first works best for us. This speeds up the process, especially with absentee landowners. However, we quickly follow with a ‘we will help you’ letter. We want to be in the field controlling weeds before they bloom and set seed and our system enables us to accomplish this,” he says.

Special Projects and Equipment

What has worked best for the Upper Snake River CWMA is the creation of sub-projects within the area that targets certain areas. Short-line rail lines in the area are one example. The Weed Management Area pays for the herbicide and the rail lines furnish a spray unit to ride the rails. A county trained applicator

See “Upper Snake River” on page 12

Split Tank ATV Setup

Jeffrey Pettingill in Bonneville County, Idaho has designed a specific ATV sprayer setup that works well in their diverse area. The county builds the units in their shop. Each 500cc ATV carries one 12-gallon fresh water tank on the front rack. This tank is plumbed to supply water to the rear tanks if needed, but its primary purpose is as a front weight and for emergency wash water.

The rear racks carry two 12-gallon tanks that are plumbed with separate valves and gauges. One tank carries Tordon®22K herbicide or Milestone™ herbicide and the other tank carries Transline® herbicide. When out in the open, the operator sprays with Tordon or Milestone herbicide. When the unit moves near trees, the operator simply switches to the tank containing Transline herbicide and continues spraying without interruption.


“The only disadvantage to our tank set-up is that they must be mounted four inches higher on the ATV to accommodate the bottom drain and hoses,” Pettingill says. “We calibrate to apply 12 gallons per acre, so each tank can cover one acre which makes record-keeping easier. Each unit has a Boom Buster 125 nozzle that sprays 15-ft. on one side only. Operators spray one swath and then turn and drive back in the same wheel row which cuts down on skips.”

Each unit carries a Calc-An-Acre control monitor to track speed and spray applied per acre. The pump switch is wired into the controller so when the operator turns the monitor on or off, the pump is turned on or



(Top) Each 500cc ATV carries one 12-gallon fresh water tank on the front rack to supply water to the rear tanks if needed, but its primary use is as a front weight and for emergency wash water. The rear racks carry two 12-gallon tanks that are plumbed with separate valves and gauges.

(Bottom) Pettingill shows the backpack sprayer racks built on the rear of each ATV trailer.


off at the same time. These units use a sensor off the drive line that Pettingill feels is more accurate than spraying with the ATV’s speedometer. 

“Upper Snake River”

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accompanies the sprayer to man another handgun and then hands this job off to the next county when they cross county lines. Six years ago it took them one and half weeks to cover the rail lines. Now it only takes two days because they have reduced the weed infestations so well.

The Highway 33 corridor is another such project. Once a year crews from all the agencies join forces and travel the highway from Jackson, WY to Mud Lake, ID. Twenty-eight people and 25 pieces of equipment join forces to spray spotted knapweed and leafy spurge on the right-of-way. When they find these invasive species, they ask each landowner if they can come onto their property and treat. This method has enabled them to expand further out from the highway each year which is the key to stopping the weeds' spread along the corridor.

On one project, the Forest Service had re-routed an ATV trail away from a riparian zone, according to Hanson. “The relocated trail area is one of the cleanest areas in the project. We had a weed problem in the area for a long time and were treating it without it getting larger or smaller. Then we noticed musk thistle was increasing and leafy spurge, that had been decreasing, was increasing. We also found St. Johnswort there, a weed that we previously did not have elsewhere on the ranger district. Since our crew time is limited we decided to call in our partners in the Upper Snake River CWMA to help us. We wanted a rapid response to the new invader and to get our leafy spurge, Canada and musk thistle controlled to a point where our crews could maintain control of the infestations on their own. Eighteen ATV sprayers converged on one day to treat the area. This sort of coordination is invaluable in containing infestations,” Hanson concludes. 

Need More Information?

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