

Project Manages Invasive Vegetation in Deepest Canyon in U.S.

Twelve-year Cooperative Effort Pays Dividends

By Charles Henry
TechLine Editor

The Tri-State Weed Management Area (WMA) comprising 250,000 acres in Idaho, Oregon, and Washington on both sides of the lower Snake River was one of the original federal Demonstration Weed Management Areas created in 1995. Lynn Danly, natural resource specialist for the Bureau of Land Management (BLM) headquartered at the Cottonwood Field Office in Idaho was the WMA's first chairperson and remains in that role (*see "Tri-State WMA Cooperators" on page 4*).

"One measure of our success is that we were originally funded for four years and we have demonstrated enough progress to maintain our funding for 12 years," Danly says with a small laugh. "Actually, the real measure of our progress, we are not calling it 'success' yet, is that we have developed several management practices that are working very well and are being copied by other WMAs now."

The WMA covers the lower portion of Hells Canyon, North America's deepest river gorge (*see chart below for comparisons*). It encompasses a vast and remote region with dramatic changes in elevation, terrain, climate and vegetation. Carved by the great Snake River, Hells Canyon plunges more than a mile below Oregon's west rim, and 8,000 feet below snowcapped



Lynn Danly, natural resource specialist for the Bureau of Land Management (BLM), Cottonwood, ID.

He Devil Peak of Idaho's Seven Devils Mountains. By comparison, the Grand Canyon rises 6,100 feet above the Colorado River at its deepest point. There are no roads across Hells Canyon's 10-mile wide expanse, and only three roads that lead to the Snake River between Hells Canyon Dam and the Oregon-Washington boundary.

Danly says cooperators knew that the steep terrain and very remote nature of the WMA was going to be difficult. "It is nearly impossible to reach some areas, let alone implement weed management on those areas," she says. "We have had our share of setbacks, but we have also answered some of the challenges."

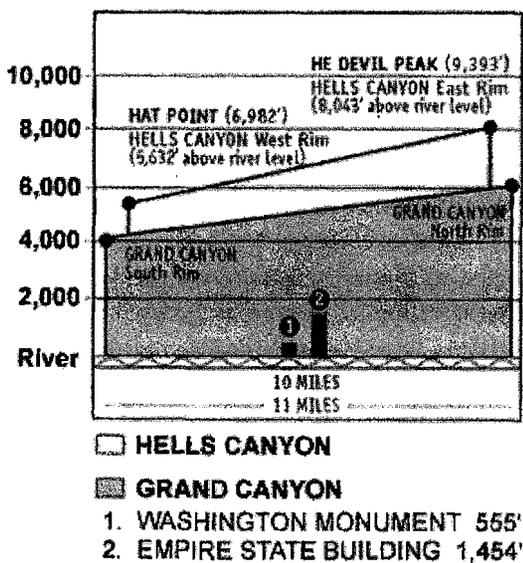
Prioritization

Prioritization was the group's first task. Yellow starthistle (*Centaurea solstitialis*) was well established in the northern end of the canyon and their first priority was to keep it out of the southern end. Next they wanted to keep leafy spurge (*Euphorbia esula* L.) and spotted knapweed (*Centaurea stoebe*) from coming down the Salmon River into the Snake River canyon. And they were determined to prevent, as much as possible, rush skeletonweed (*Chondrilla juncea*) moving in from surrounding states.

Mapping and Inventory

Danly explains that their next task was to inventory their weed problem so they could measure their progress. "This was slow and difficult at first, again due to

See "Tri-State WMA" on page 4



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the nature of the terrain. We explored using satellite imagery, but this was expensive and due to the elevation changes you can't obtain a one-time image focusing on blooming yellow starthistle and find it all. Plus we discovered the light signature reflected from yellow starthistle mimicked bunchgrass during certain times of the year.”

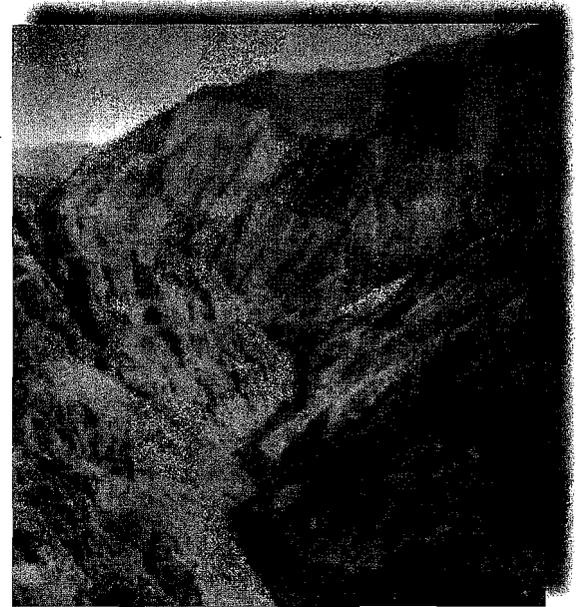
Danly says they turned to a partnership with The Nature Conservancy's Hells Canyon Initiative for inventory help. The TNC was having good success with aerial sketch mapping from helicopters. An observer knowledgeable in plant identification flies with an ArcPad™ tablet on his or her knee and sketches infestations. The ArcPad is tied into the helicopter's GPS system to provide real time locations of the weeds the observer is drawing into the software via the tablet.

“Accuracy is nearly 85% and the cost is approximately \$.25/acre. Timing is critical, however, with some species such as Dalmatian toadflax (*Linaria dalmatica*). You can see it easily one week, but just a few days later the moth mullein blooms and it becomes very difficult to tell them apart.”

The cooperators have now completed inventorying

Tri-State WMA Cooperators

Asotin County, WA Weed Control
Baker Bureau of Land Management
Bureau of Land Management – inclusive
Cottonwood Bureau of Land Management
Chief Joseph Wildlife Management Area
U.S. Forest Service – Hells Canyon National Recreation Area, Wallowa-Whitman National Forest
Idaho Department of Fish and Game
Idaho Department of Lands
The Nature Conservancy of Idaho
Lewis County, ID Weed Control
Nez Perce Biocontrol Center
Nez Perce County, ID Weed Control
Nez Perce Tribe
The Nature Conservancy of Oregon
The Nature Conservancy of Idaho
Private Landowners
Student Conservation Association
Tri-County Weed Management Area (Oregon)
The Nature Conservancy - inclusive
University of Idaho
Wallowa County, OR Weed Control
WR Wallowa Resources



the entire canyon and they are confident they know where new infestations of whitetop or hoary cress (*Cardaria draba L.*), Dalmatian toadflax, and yellow starthistle are located in the canyon.

Prevention, Education and Awareness

Their next step was to implement prevention, and education and awareness programs to minimize current infestations' spread and stop new infestations as much as possible. They developed an awareness program with jet boat and rafting outfitters as well as hunting outfitters who are permitted in the WMA. They also implemented a weed free forage program. And they have a weed washing program at fire camps to prevent fire crews from bringing weeds in or taking them out on equipment.

They also realized their herbicide applicator crews needed very intensive training. It is simply too expensive to take a crew and equipment into the rugged terrain and not have them do a proper application job as well as operate safely. Human safety is a priority as crews work a great distances from medical assistance and in very difficult geographic and climatic conditions (the country is steep and temperatures are high during the application season.)

Management Techniques

Danly says they use herbicides, biological insect releases, hand pulling and a rapidly growing revegetation program as their primary weed control tools. They have instituted an extensive biological insect control program, distributing insects by hand and from the air in the more remote areas.

Numerous herbicide tools are utilized including Transline® herbicide and Tordon® 22K herbicide. Most applications are along travel corridors and in other areas they can access with their ATV, truck-mounted,

Researcher Sees Possibilities in New Tools and Techniques

By Charles Henry
TechLine Editor

Knotweeds are spreading into more areas in the Western U.S. as researchers scramble to find control solutions for this escaped ornamental. Knotweed species are out-competing existing vegetation and ruining habitats as they clog streambanks and dominate stream channels in more areas (see "Knotweeds" on page 7).

"I am somewhat humbled by this invasive plant species. Each time we seem to have a method of control, it may work at one growth stage, but not another or on one species of knotweed and not so well on one or more of the others. Often, as a researcher, I can obtain control, but when our research methods are transferred to large-scale application in the field, the results are not as good as in our test plots," say Kim Patten. Patten is a Washington State University extension professor in Long Beach, WA.

See "Knotweeds" on page 6



Kim Patten, Washington State University, Long Beach, WA, holds a knotweed plant that illustrates how large this species can grow.

or backpack sprayers. One of the partners in the WMA, the Idaho Fish & Game Department, has begun using Milestone® herbicide for yellow starthistle control on their lands in the WMA and they are happy with the control being obtained, according to Danly.

Danly says their revegetation program may be one thing that is unique about their management efforts. "Just treating yellow starthistle with a herbicide is often not enough in this ecosystem. Downy brome or cheatgrass (*Bromus tectorum* L.) is so prevalent that it will immediately occupy areas where you remove the starthistle. Our program's goal is to reduce invasive annual plants, but also keep them out so we can deplete the weeds' seed bank."

"We do this by first reseeding with perennial introduced species such as intermediate wheatgrass and pubescent wheatgrass or hard and sheep fescues. We plan to follow-up by inter-seeding native grasses and forbs once the sites are converted from an annual ecosystem to a perennial ecosystem more reminiscent of the native one that existed originally. We have not been able to successfully establish native grass species directly into these intensely competitive sites. So with this two-step approach we have reestablished a stable

perennial plant community that keeps the weeds out with only occasional spot spraying, we have a forage resource for wildlife habitat, and we have time to inter-seed with natives when they have a much better chance of survival."

Generate Data to Measure Success

Danly says she was frustrated at first in finding data that would tell them when they had reached a plant density after weed management that would maintain a stable eco-system. Fire rehab work had generated similar data, but their goals were different than those of the WMA.

"We began doing our own monitoring to generate this data. We established 50-ft. belt transects where we had removed the weeds and reseeded. We counted every desirable plant in these transects a year after seeding," she concludes. "In the Tri-State WMA we found that when we had 0.82 plants per square foot of any desirable species, then we were successful and the eco-system would remain stable and keep weeds out. Five years after we began controlling the weeds, reseeding and keeping the weeds down with periodic spot treatments, they are holding." 