

# **Spotted Knapweed Management in the Cleveland Fire Rehabilitation Area**

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## **Project Background**

Spotted knapweed has been introduced to the Sierra Nevada Mountains east of Sacramento, California, in an area known as the Cleveland Fire Area. The Cleveland Fire burned 22,485 acres in 1992 after a small 5-foot fire exploded in a matter of hours. One-half of the burned area is public land within the Eldorado National Forest. The remainder is privately owned property, the majority owned and managed by Sierra Pacific Industries (SPI) as commercial timberland. The fire adversely affected many important resources including the watershed stability, wildlife habitat, fisheries, water quality and timber. Over 70 miles of streams and fisheries habitat have been impacted by the damage caused by the fire. This area remains highly susceptible to noxious weed spread and the resultant degradation to the South Fork of Silver Creek and Twenty-five Mile Canyon watersheds.

Spotted knapweed, a highly invasive California Department of Food and Agriculture A-rated noxious weed, was most likely brought in on equipment used during fire suppression, erosion control and timber salvage efforts. The weed was detected on Sierra Pacific Industries commercial timberlands near Peavine Ridge in 1999. Beginning in 1999, hand-pulling and herbicide treatments reduced the size of the infestation at the initial site. Three factors delayed additional survey and eradication efforts: 1) dense fire and slash debris hid many of the plants from view, 2) very steep canyon terrain made detection difficult and labor intensive, 3) funding for the eradication efforts was limited and insufficient.

During fall 2001, the project was raised to emergency status by the El Dorado County Noxious Weed Management Area (WMA). A project partnership and WMA committee were formed which included the Eldorado National Forest, Sierra Pacific Industries, El Dorado County Department of Agriculture, California Department of Food and Agriculture and volunteers from the El Dorado Chapter of the California Native Plant Society. Funding for additional eradication efforts was secured from California Department of Food and Agriculture via an USFS/State and Private Forestry grant, the WMA Senate Bill 1740 grant plus in-kind equipment, materials and labor commitments from the project partners.

During spring 2002, the WMA project committee outlined four objectives to eradicate spotted knapweed on the 20-acre project site:

- Remove debris and lower tree limbs to improve weed detection and treatment effectiveness

- Establish treatment zones within the project area that would provide flexibility in the use of integrated pest management techniques including mechanical and herbicide treatments
- Delimitation and mapping beyond the current 20-acre infestation site, including along the South Fork of Silver Creek, on both private and public (national forest) lands
- Outreach and educational efforts to alert the public to the importance of stopping the spread of invasive weeds. In addition, evidence of unauthorized All Terrain Vehicles (ATV) entering SPI lands prompted the plan to install informational signage and additional fencing at key sites on the property.

### **Survey and Eradication Activities - 2002**

As planned, the fire debris on the steep slopes was hand cleared and piled by California Department of Forestry - Growlersburg Crew and a private contractor during early summer 2002. Plantation trees were also limbed up (to three whorls) and branches piled and burned. The clearing phase was completed in July 2002.

Transline® herbicide was applied utilizing a contracted crew with backpack sprayers at the maximum application rate. The area was resurveyed in August and seven (7) infestations were detected, mapped and mechanically removed in the main project area. A major infestation was also found on the South Fork of Silver Creek. This infestation was mechanically treated by clipping seed heads and hand pulling immature plants. The increased accessibility after the completion of the clearing phase of the project led to the detection of these weed populations.

Delimitation surveys began August 1, 2002 and were initially designed to survey a radius of 1 mile beyond the project area. Teams of 4 to 6 volunteers worked at 20-foot intervals traversing blocks of the steep terrain outlined on topographical maps. The initial delimitation survey included both sides of the South Fork of Silver Creek just below the boundary of the project area. Six infestations were found along the creek ranging from 1 to over 500 plants each. Four other infestations (all <10 plants) were also found on the hillsides. The infestations were mapped utilizing Global Positioning Satellite (GPS) technology and the plants were pulled and/or seed heads clipped and bagged.

The second and third survey days were re-focused to monitor all of the South Fork of Silver Creek to Junction Reservoir, particularly since the creek appeared to be a major corridor for seed movement. In all, forty-six (46) sites were mapped along the creek to the reservoir, a distance of approximately 5 miles. This creek segment runs through both Eldorado National Forest and Sierra Pacific Industries lands. It should be noted that no spotted knapweed was found for approximately ½ mile up the creek from the reservoir where the terrain was not damaged in the Cleveland Fire. This area had good shade and vegetative competition that inhibited the establishment of spotted knapweed.

The delimitation surveys continued through September 2002 with a total of 141 sites mapped and either mechanically or chemically treated. Crews treated infestations utilizing a variety of methods including: 1) Transline® herbicide was utilized on private lands, when deemed appropriate in regards to proximity to the creek, plant maturity 2) by hand pulling plants that had not yet developed seeds and 3) if mature plants were found, seed heads were clipped and bagged to stop the dispersal of seeds that might be associated with hand-pulling the mature plant. The bags of plant and seeds were sealed and transported to the CDFA Pest Exclusion Inspection Station at Truckee for incineration. In-kind contributions of volunteers and staff were provided by U.S. Forest Service, El Dorado County Resource Conservation District, Sierra Pacific Industries, El Dorado County Department of Agriculture and California Department of Food and Agriculture.

In October 2002, the project area was expanded by the WMA committee to include a total of 50 acres of SPI timberlands plus the South Fork of Silver Creek to Junction Reservoir. Subsequently, the additional 30 acres of SPI property was cleared of debris, trees limbed and treated with herbicide. Fencing was installed along Peavine Ridge to discourage All Terrain Vehicles (ATV) from going around the SPI gates into the project area, contributing to the spread of spotted knapweed seed. The Eldorado National Forest began the Environmental Assessment process to treat the infestations found on public lands during the 2002 delimitation survey.

### **Survey and Eradication Activities - 2003**

The detection and eradication efforts continued during 2003, including extensive work by all project partners:

- The Eldorado National Forest completed an Environmental Assessment, which allowed treatment of twelve (12) spotted knapweed infestations detected during the 2002 delimitation survey. Eradication treatments included spot applications of glyphosate, mechanical removal of plants and/or clipping and bagging viable seed. Forest service staff also completed a survey of the surrounding area (approximately 50 acres) insure that all infestations had been documented and treated.
- Sierra Pacific Industries completed the limbing and clearing of the plantation within and bordering the project area and treated the area with herbicide.
- The El Dorado County Weed Management Area received continued funding from the CDFA grant during 2003, which allowed for the hiring of seasonal personnel by the El Dorado County Department of Agriculture to continue the eradication efforts. The crew concentrated efforts in three phases between July and November including, 1) survey and eradication of spotted knapweed along the creek (three times over the season), utilizing herbicide and mechanical methods, as appropriate 2) resurveying and eradicating (as needed) within the project area on SPI property, 3) surveying and eradicating within 100 yards of the canyon on both sides of the creek.

- Volunteers and staff from the El Dorado Chapter of the California Native Plant Society, USFS, SPI and El Dorado County Department of Agriculture completed two delimitation surveys.

A total of 92 infestations were mapped and treated in 2003 within the project area plus 12 sites on USFS property. All sites will be re-evaluated in 2004 by the project partners.

### **Education and Outreach Components**

As with any pest eradication plan in a public area, an effective education and outreach component is vital to the success of the project. The education and outreach activities utilized for the Cleveland Fire Area Spotted Knapweed Eradication Project included:

- Media outreach to publicize the threat posed by the spread of spotted knapweed in El Dorado County and the Sierra Nevada Mountains;
  - ✓ Articles were generated in two newspapers
  - ✓ A television news segment was produced by Sacramento Channel 3, which was broadcast throughout the region
- Worked to educate the public regarding the importance of preventing the spread of this invasive weed, especially by ATVs entering around SPI gates;
  - ✓ A sign was posted at the gate to discourage entrance into the area
- Produced a handout/flier for distribution to the general public with information about spotted knapweed and the threats (water quality degradation, loss of wildlife habitat, etc.) posed by the spread
- Posted informational posters at campgrounds and public areas in the Crystal Basin area describing how to identify spotted knapweed and whom to contact if the plant was found

### **Results**

Adequate funding and planning for survey and eradication work has been instrumental toward meeting the goal of eradication of spotted knapweed in the Silver Creek Watershed. The clearing and delimitation surveys over the past two seasons have defined the extent of the problem. Continued funding and support will be needed to meet the eradication goal by 2010.

This project has also highlighted the importance of collaborative efforts in invasive weed eradication work that has been supported by the California Weed Management Area infrastructure. Without all parties cooperating and communicating, logistic, environmental and regulatory challenges could not have been dealt with in a timely manner. This is a classic illustration that planning and funding are imperative--- *invasive weeds won't wait!*