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“WOAD WARRIORS” – COMMUNITY WEED AWARENESS

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INTRODUCTION

This fact sheet is one in a series about community partnerships formed to address natural resource issues in Elko County. Beginning in 1998, community members from all walks of life began to cooperatively review, evaluate, and tackle several natural resource issues with the potential to affect the quality of life in Elko County. For several years prior to these efforts, the University of Nevada Cooperative Extension, Nevada Department of Agriculture, and others had been conducting workshops and distributing educational material about noxious weeds, an enemy to all who work and play on Nevada's rangelands. The noxious weed challenge still remains near the top of conservation issues that affect Elko County citizens (McAdoo 2001).

The discovery of a localized population of Dyer's woad (*Isatis tinctoria*) in the community of Spring Creek catalyzed specific efforts to control this weed and expand educational efforts area wide about the significant problems caused by noxious weeds in northeast Nevada. A group of agency specialists and concerned citizen's first educated themselves about the biology

and management of this species. They then took appropriate actions to reduce the impacts of dyer's woad.

ORIGIN, DISTRIBUTION, AND BIOLOGY OF DYER'S WOAD

The concerned group of citizen's learned that dyer's woad is an invasive exotic species. Furthermore, it is classified as a noxious weed in Nevada and other states in the Intermountain West. This species is native to southeastern Russia and is currently established on six continents. In the early 1900s, dyer's woad was introduced accidentally into the American West as a contaminant in alfalfa seed from Europe. A deceptively attractive plant, dyer's woad may grow up to four feet tall and has yellow flowers that bloom in May and June.

The Nevada population of this weed is currently limited to Elko County, with the primary infestation located in Spring Creek, approximately 15 miles southwest of the city of Elko. Dyer's woad was first observed near the Spring Creek Marina, and has since spread along roadsides, into residential lawns, and into adjacent meadows and sagebrush habitat.

Like many other competitive alien species, dyer's woad tends to form dense monocultures (single species stands), degrading the integrity and diversity of native plant ecosystems. It therefore reduces the production of livestock forage and eliminates wildlife habitat in rangelands. Livestock and most wildlife species do not readily eat this plant. As a dominant stand, dyer's woad also increases the potential for soil erosion in the areas it invades.

Dyer's woad is a member of the mustard family, and can be a winter annual, a biennial, or a short-lived perennial. The small, bright yellow flowers of dyer's woad have four petals, four sepals (bract-like segments of the outer whorl of flower parts), and grow in clusters at the tops of the stems. The plant has a taproot that grows to five feet deep, with small lateral roots present in the top twelve inches of soil. The fruit produced by dyer's woad is teardrop-shaped pods that turn brown to purplish-brown as they mature in mid-to late summer. Dyer's woad spreads only by seed production, but each plant produces up to 500 seeds. Consequently, it spreads aggressively across the landscape. The seeds are dispersed by wind, water, livestock, and humans (through contaminated topsoil, hay, seed, and machinery/vehicles).

The plant grows early in the spring, making it very competitive with desirable vegetation for soil moisture and nutrients. Because of its deep taproot, dyer's woad has the competitive edge even in relatively dry areas with poor and rocky soils. During the spring and summer, it uses soil moisture that is unavailable to shallow-rooted species (Kadrmass and Johnson 2002).

MANAGEMENT AND CONTROL OF DYER'S WOAD

The "Woad Warriors," as this group of concerned weed control activists eventually called themselves, are dedicated to eliminating dyer's woad from the Spring Creek area. They have learned and demonstrated how to successfully combat this weed, especially when infestations are localized. They found that prevention is the first and best step in managing dyer's woad. This prevention strategy

requires educating property owners and other citizens to recognize dyer's woad. It also requires continued diligence and responsibility on the part of property owners and land managers. Annual surveillance or monitoring of the area should be initiated to identify individual plants before they go to seed. When found, they should be removed. Seed and plants with seed should not be allowed to enter uninfested lands. By all means, before leaving an infested area, seeds of this species should be removed from clothing, shoes, pets, camping gear, and vehicles. Maintaining vigorous native plant communities and planting desirable species in weakened or disturbed sites to compete with dyer's woad are also paramount.

Where dyer's woad is already established, multiple tools can and should be used in the control of this species. Methods of controlling dyer's woad include mechanical, biological (e.g., livestock, insects, and/or pathogens), and chemical (see Kadrmass and Johnson 2002 for a complete discussion of control alternatives). However, the best way to control this noxious weed, as with most others, is to eliminate small infestations before they become large ones.

The group learned that hand grubbing and cutting are the simplest and most economical methods for controlling small infestations of dyer's woad. To be most effective, hand pulling or grubbing must be repeated two to three times a year. They found that, for best results, the plants should be pulled either during the first year's rosette stage (dense cluster of leaves in a circle at ground level) or during the time of flowering when the yellow flowers are conspicuous. Very early flowering (before seeds are set) is the best time. This prevents seed production. Once seeds are set, they mature rapidly, usually within four to six weeks after the first flowers appear. Pulled plants can be left on site only if they are removed up to and including the time that yellow flowers with green seed pods are still visible. If flowers are no longer present, the seeds can germinate, and any plants pulled at this stage should be hauled to the dump in closed bags or other containers. If they are not buried immediately, they should be burned to kill the seed.

The Woad Warriors also learned that, when cutting dyer's woad with a shovel, the cut must be made below the plant's crown, approximately two inches below the soil surface for both rosettes and larger plants. Unless the soil is extremely hard, this can be done with a hand shovel. Mowing is not a recommended control measure due to the plant's ability to resprout from the crown.

WOAD WARRIORS IN ACTION!

Beginning in 1998, concern about the presence of this noxious weed spurred several Elko County residents into action. Armed with knowledge about the biology and management of dyer's woad, the Woad Warriors began developing a plan of attack. With guidance and encouragement from the Nevada Department of Agriculture, several cooperators came together to plan and implement a cooperative control effort. Involved in this initial effort were representatives of the Nevada Division of Forestry, Bureau of Land Management, and U.S. Forest Service, as well as several Spring Creek community residents. A Cooperative Extension representative joined the planning team in 1999. Because infestations of dyer's woad were relatively small and localized, the group decided to pull the weeds instead of using chemicals. This would allow citizens to work together side by side with little training, at low cost, and with simple tools (shovels). Instruction about safety, weed identification, and pulling/digging techniques were the only requirements to arm the citizen warriors.

Several planning sessions followed to work out the logistical details. Volunteer organizations were contacted to help assist with the event, which was well advertised in both the local newspaper and on local radio. The first "Woad Pull" was considered an overwhelming success, with approximately 100 participants, including 70 K-12 youth.

BECOMING SUCCESSFUL REQUIRES WORK!

The "Woad Pull" has become an annual event. Making these events successful requires considerable work. However, the preparation tasks are divided equitably among the 15 members of the planning team, and the event runs smoother each year. Operating without a Memorandum of

Understanding (MOU), representatives of the various agencies involved provide in-kind services such as meeting facilitation and accommodations, letter writing, printing and copying of brochures and fliers, etc. The 4-hour event is conducted on a Saturday morning in mid-May, concluding with a free hot dog and hamburger feed. Participants are also given "Woad Warrior" T-shirts in gratitude for their participation.

The list of items and details necessary to produce these successful events is long and includes the following:

- organizing adult supervision;
- preparing classroom presentations;
- reserving picnic area; buying food, water, and drinks;
- facilitating the barbecue;
- designing and purchasing T-shirts;
- coordinating special groups (Boy and Girl Scouts, 4-H, FFA, conservation and stewardship organizations, Master Gardeners);
- mapping weed infestations;
- obtaining and manning 4-wheelers to distribute drinks;
- contacting area residents;
- preparing media releases;
- tracking costs;
- preparing weed exhibits and other educational materials;
- contacting exhibitors;
- providing 2-way radios for communication;
- obtaining shovels;
- placing traffic caution signs;
- preparing rules and safety presentations;
- providing first aid (EMT's);
- coordinating with schools for extra credit for student participation.

Education is a critical component of this event. The planning team prepares announcements, fliers, radio spots, newspaper articles, dyer's woad "wanted posters," and even letters to Spring Creek landowners. Information on the identification of dyer's woad, the problems it causes, and control methods are widely distributed each year. The day of the "pull," participants are instructed how to successfully dig or pull dyer's woad. Also included in the instruction are several poster displays about all the noxious weed species that threaten Elko County. One year an educational demonstration was presented by a local FFA student who used domestic goats for weed management. During the

last two years, slide presentations on weed control have been made to more than 600 junior high students, in preparation for the Woad Pull.

Based on the Woad Warriors' experience, the following steps are recommended for other communities that wish to tackle weed problems cooperatively and pro-actively:

- form a group of weed professionals to initiate the process and provide guidance
- recruit concerned community volunteers and property owners/managers
- learn about the biology of the specific noxious weed(s) to be targeted
- learn how to best manage the targeted weed(s)
- educate landowners and managers to identify weeds and assume weed control responsibility
- involve and educate local youth organizations and schools
- identify and secure sponsors for funding needs
- facilitate meetings to plan a methodical "hands-on" weed management approach
- develop an annual weed management event and secure appropriate media coverage

RESULTS

The number of Woad Warriors has grown annually, to more than 230 participants in 2002. The following results show the initial impacts of this program:

- increased annual participation
- increased public awareness of noxious weeds
- increased distribution of printed educational material
- more inquiries about weeds
- more weed infestation reporting
- increased media coverage
- reduction of dyer's woad along roadsides and in lawns where pulling occurs regularly
- inspiration for establishment of the Spring Creek Weed Action Team (SWAT)
- line item for weed control in Spring Creek Association's budget (\$15,000 first year)

The Woad Warriors have shown that communities that "pull together" can address the noxious weed challenge effectively and have a great time doing it!

REFERENCES

- Kadrmaz, T., and W.S. Johnson. 2002. Managing Dyer's Woad. Univ. of Nevada Cooperative Extension Fact Sheet (In Press).
- McAdoo, J.K. 2001. Northeast Nevada Natural Resources Opinion Survey. Univ. of Nevada Cooperative Extension Fact Sheet. FS-01-38.
- Wilson, R.E., W.S. Johnson, S. Swanson, and S. Donaldson. 1999. Nevada's War on Weeds – Steps to Success – Making your Program Work! Univ. of Nevada Cooperative Extension Fact Sheet. FS-99-74.