Montana Weed Prevention Areas: Partnerships for rangeland protection from invasive weed spread

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Justification

Invasive weeds irreversibly damage biological communities and ecosystems (Cronk and Fuller 1995)

Invasive weeds are a biological disaster (USDA 1998)

Weeds continue to rapidly spread (Buhler 2002), up to 14 percent per year (FICMNEW 1998), in spite of management efforts (USDI 1996)

Justification (cont.)

Rapid and chronic spread results from:

- Spatially distributed foci (Simberloff 2003)
- With high spread rates (Moody and Mack 1988)
- Often go undetected (Asher and Spurrier 1998)

Healthy, non-infested ecosystems must be immediately protected from weed spread (NISC 2001, USDI 1996)

Justification (cont.)

Purpose

To protect healthy rangelands and critical zones from rapid and chronic weed spread through proactive and unified weed management

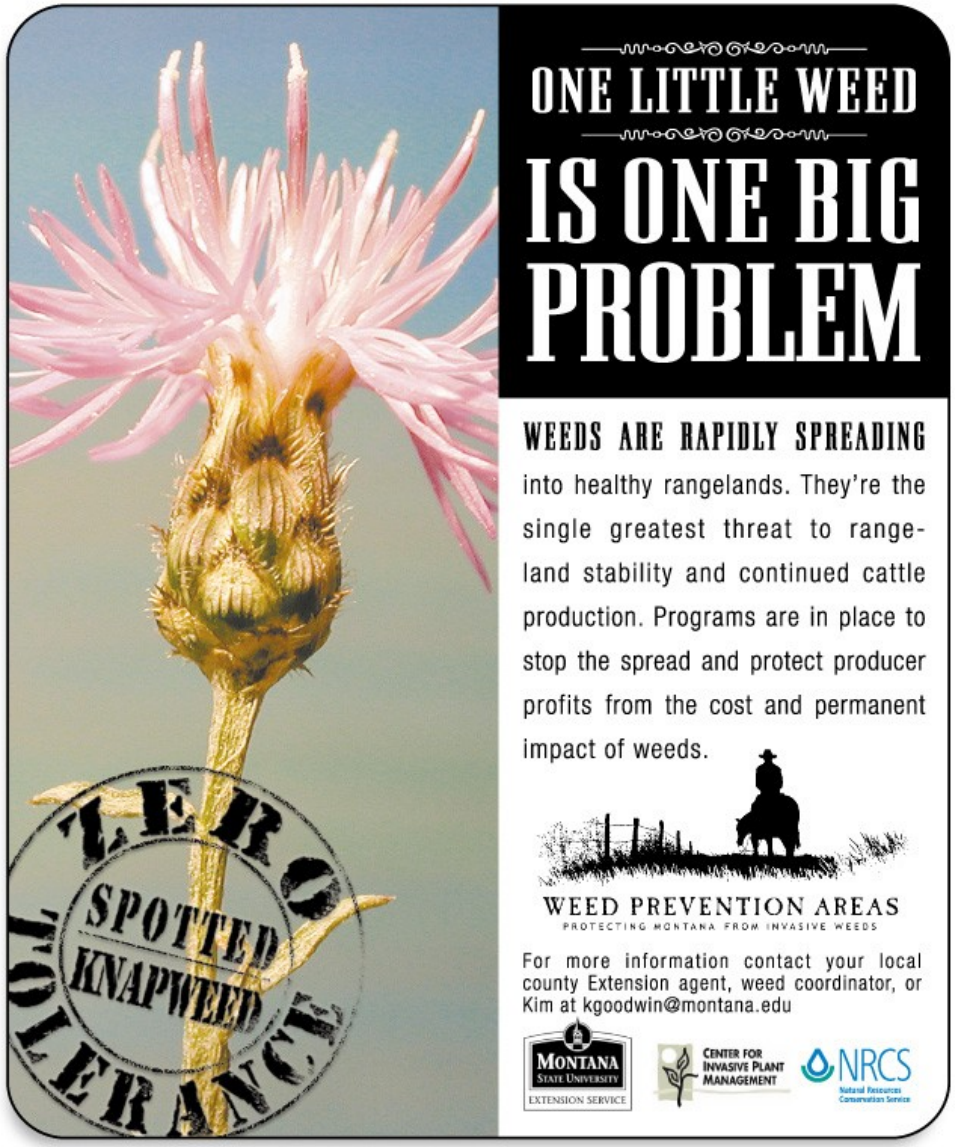
Objectives

1) Implement regional and local-level awareness campaigns and programs

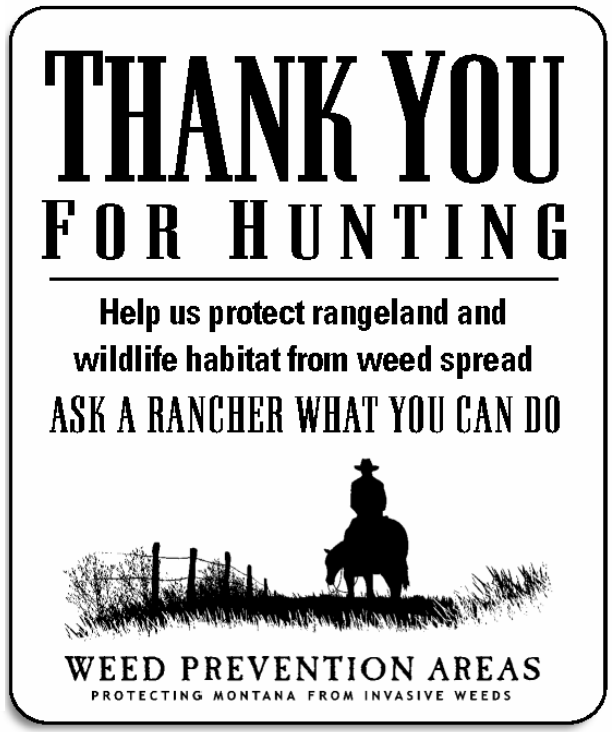
2) Identify and delineate prioritized areas for prevention and facilitate WPA development

3) Maintain WPAs via rancher-designed, integrated plans

Objective 1 – Increase awareness

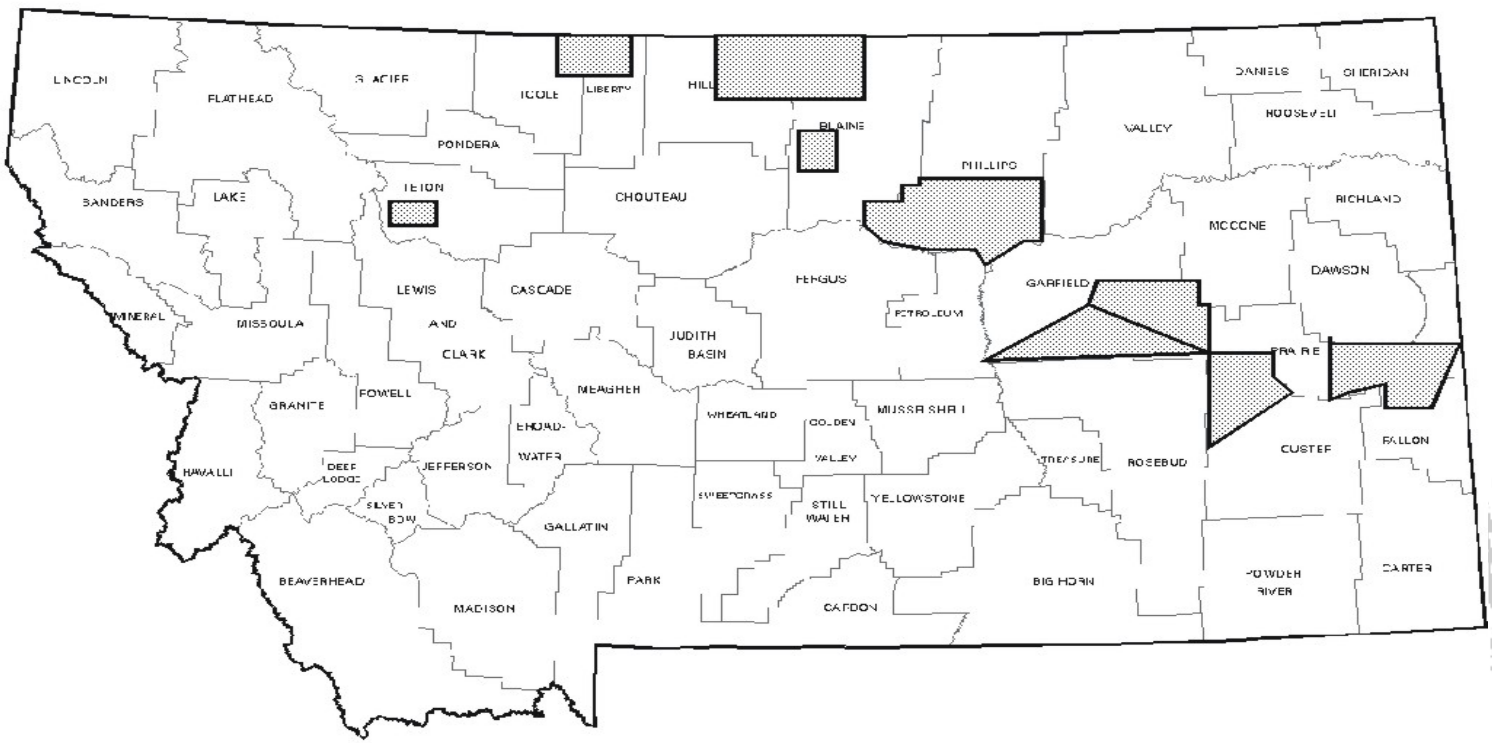


Spotted knapweed (*Centaurea biebersteinii* DC.)



Objective 2 – Identify and delineate prioritized areas and facilitate WPA development

2003 – 2005: 4.4 million rangeland acres protected from invasive weed spread



Objective 3 – Maintain WPAs through rancher-designed plans

WPA-specific, integrated plans

1) Ecosystem management
2) Prevention strategies
3) Early detection / rapid response
    a) GPS mapping strategies
    b) Range Riders / Weed Scouts
    c) Invasive weed detector dogs

Objective 3 – Maintain WPAs through rancher-designed plans

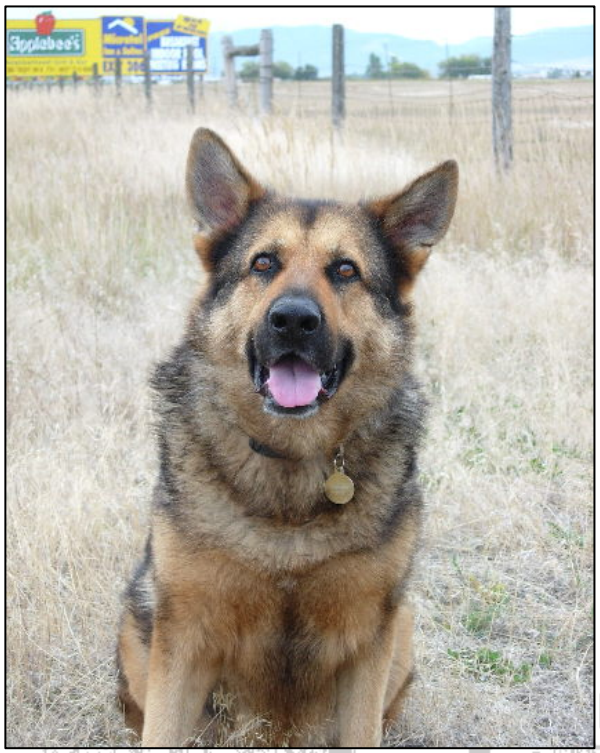
Early detection/rapid response – GPS mapping strategies

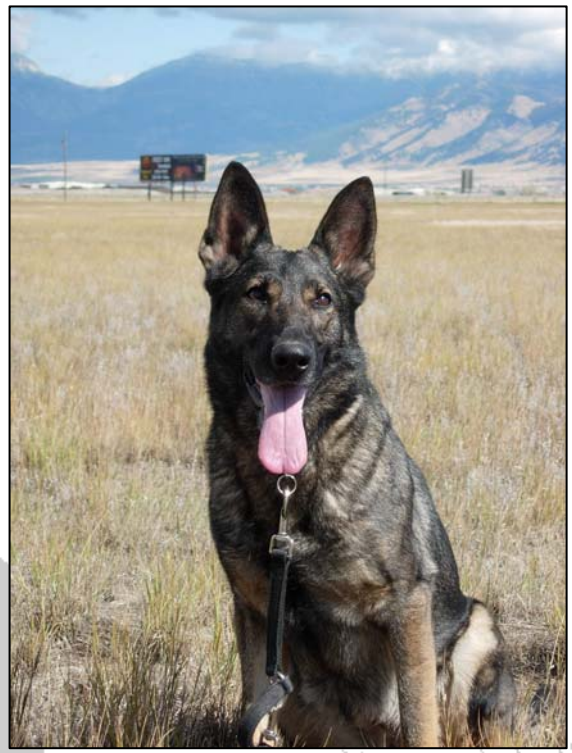
Objective 3 – Maintain WPAs through rancher-designed plans

Early detection / rapid response – Range Riders and Montana Conservation Corps Crews

Objective 3 – Maintain WPAs through rancher-designed plans

More early detection systems needed (GAO 2001)





Strong sensitivity to a target (Waggoner et al. 1998) and can cover large areas (Lorenzo et al. 2003)

Early detection / rapid response – Detector dogs

Early detection / rapid response – Detector dogs

Purpose: **To quantify and compare the accuracies, search durations, and detection distances of canines and human surveyors in locating new invasions of spotted knapweed through a series of field trials.**

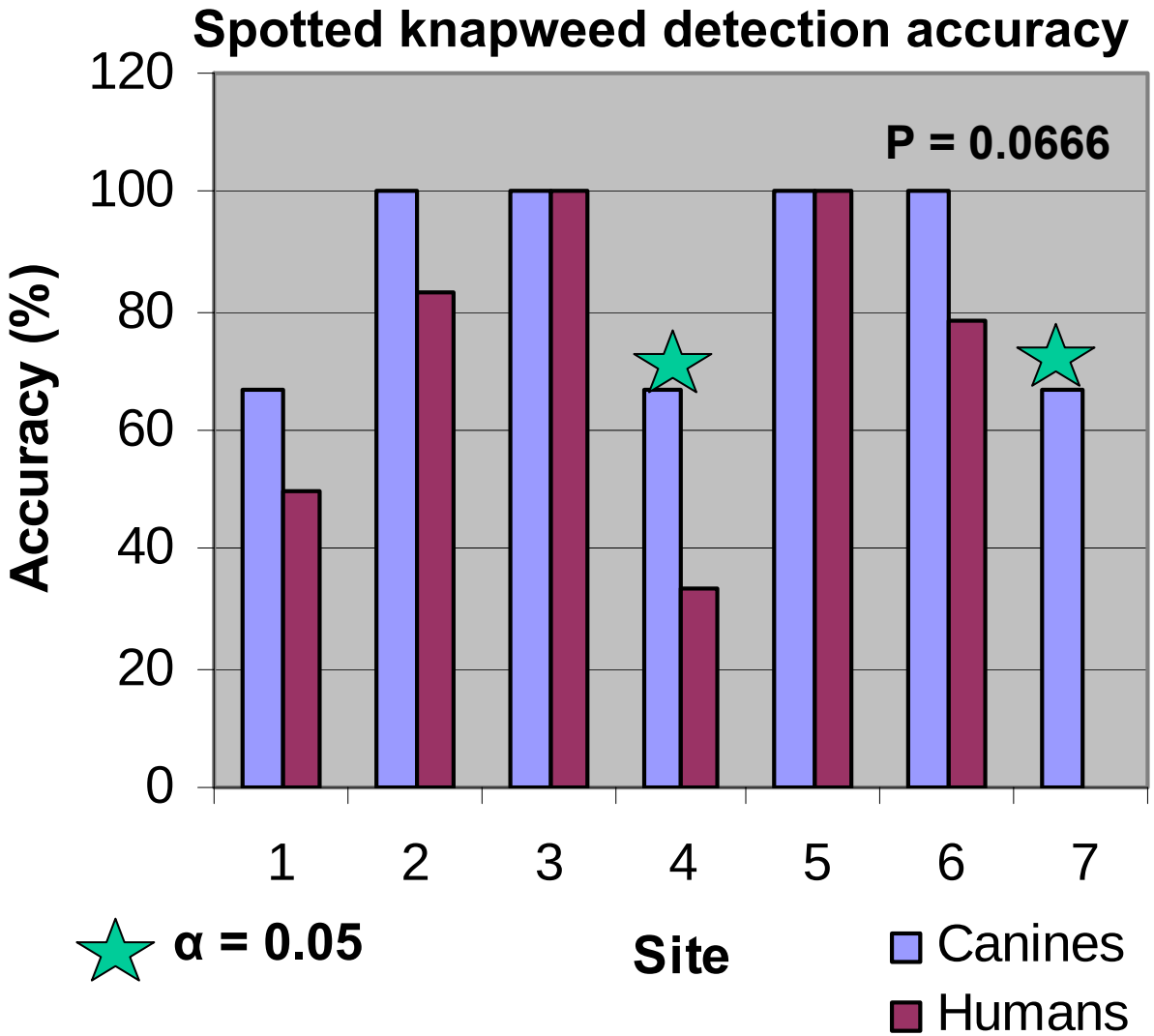
Methods: **3 canines and 3 human surveyors**
Standard narcotics detection protocol (Robicheaux 1996)
September 2005:
Seven, 0.5 ha field trial sites in SW Montana
Total search area = 3.5 ha
Total number of targets = 13
Targets isolated plants or small patches
Mean density = 1.9 targets/site (SD 0.69)
Open grid search (Rebmann et al. 2000)
6m transect width

Preliminary results:

Mean canine accuracy: 85.7% (SD 23.1)

Mean human accuracy: 63.5% (SD 38.2)

P = 0.0007



Preliminary results:

	Canines		Humans	
Mean	**Percent**	**SD**	**Percent**	**SD**
Accuracy	85.7	23.1	63.5	38.2
Search duration	**Minutes**	**SD**	**Minutes**	**SD**
	30.2	8.81	38.1	11.1
Detection distance	**Meters**	**SD**	**Meters**	**SD**
	8.14	13.2	4.06	6.58

Detector dog teams: expand eradication efforts and improve ground inventories

Cover large areas, increase sampling accuracy and thoroughness, decrease search time, and locate early age class and early season targets

Expected Contribution

Native ecosystems and rural economies are protected

Conserve limited weed management funds

Weed spread greatly reduced, diminishing regional weed threats

NRCS Natural Resources Conservation Service

CENTER FOR INVASIVE PLANT MANAGEMENT