Revised May 2008

the Montana Weed Management Plan

Montana Noxious Weed Summit Advisory Council

Weed Management Task Force

In Cooperation With

Montana Weed Control Association
Federal and State Agencies
Montana University System
County Weed Districts
Private Land Managers

OFFICE OF THE GOVERNOR
STATE OF MONTANA

BRIAN SCHWEITZER
GOVERNOR

JOHN BOHLINGER
LT. GOVERNOR

May 16, 2008

The Montana Weed Management Plan is one of the most comprehensive and well-defined state plans in the nation. This 2008 Plan update outlines current weed programs and weed management budgets for all responsible parties across Montana, highlights strengths of current programs, and identifies ongoing needs for those programs.

Non-native species are altering ecosystems, reducing cropland and rangeland productivity, impacting wildlife habitat and threatening the survival of native species. The purpose of the Montana Weed Management Plan is to strengthen, support and coordinate private, county, state, and federal weed management efforts in the state, and promote implementation of ecologically based integrated weed management programs.

Please join me in supporting efforts to reduce noxious weed populations and their spread in Montana. Management of noxious weeds is everyone's responsibility. Working together, we can put and to this serious threat to our native landscapes and ecosystems.

Thank you for your support of the Montana Weed Management Plan.

Sincerely,

BRIAN SCHWEITZER
Governor

STATE CAPITOL • P.O. BOX 200801 • HELENA, MONTANA 59620-0801
TELEPHONE: 406-444-3111 • FAX: 406-444-5529 • WEBSITE: WWW.MT.GOV

Montana passed its first legislative measure to control undesirable weed species in 1895. Since the 1920's, noxious weeds have moved across the state and today infest every county. The state of Montana adopted its statewide noxious weed management plan in 2000. Since that time, documented acres of noxious weeds have actually decreased from over 8 million acres, to 7.6 million in 2008. It is still estimated, however, that the amount of revenue needed to stop the spread and reduce noxious weed infestations by 5% per year in Montana is about $54.8 million annually, or 2.5 times the present budget.

The Montana Noxious Weed Plan is a dynamic document that enables all the people of Montana to work together to resolve the noxious weed problem. The comprehensive plan includes five key components for managing weeds:

1. Risk Analysis & Prevention
2. Management
3. Inventory & Monitoring
4. Awareness & Education
5. Research

The plan offers an opportunity for anyone interested or concerned about noxious weeds to make a contribution. Over the past 30 years, agricultural, natural resource, urban interests, and private and public landowners have found ways to work together on noxious weed programs. This is the main reason Montana is leading the nation in addressing noxious weed issues.

The Montana Noxious Weed Management Plan provides a coordinated strategy for us to continue to be effective in managing noxious weeds. It is up to us to implement this plan to ensure that our state is protected from the environmental and economic impacts of noxious weeds for generations to come.

Jim Ghekiere, President
Montana Weed Control Association

MONTANA WEED MANAGEMENT PLAN

MONTANA NOXIOUS WEED SUMMIT ADVISORY COUNCIL

WEED MANAGEMENT TASK FORCE

Cover drawing by Jennifer Cramer

In cooperation with:

MONTANA WEED CONTROL ASSOCIATION

FEDERAL AND STATE AGENCIES

MONTANA UNIVERSITY SYSTEM

COUNTY WEED DISTRICTS

PRIVATE LAND MANAGERS

COMPILED BY:

Celestine A. Duncan[1]

DESIGN BY:

Melissa L. Brown

PRINTED BY:

Montana Department of Transportation

Helena, MT.

REVISED MAY, 2008

[1] Weed Management Services, PO Box 1385, Helena, MT 59624

OVERSIGHT: MONTANA NOXIOUS WEED SUMMIT ADVISORY COUNCIL

Governor's Office
Ron deYong, Director
Montana Department of Agriculture
Helena, MT 59620-0201

MWCA Representative
Scott Bockness
Yellowstone County Weed District
Billings, MT 59101

Irrigation District
Darrel Briese
Havre, MT 59501

Weed District Representative
Jim Ghekiere
Liberty County Weed District
Chester, MT 59522

MDA Representative
Dave Burch
Montana Department of Agriculture
Helena, MT 59620-0201

Federal Agency Representative
Jim Olivarez
U.S. Forest Service
Missoula, MT 59807

State Agency Representative
Kevin Chappell
Department of Natural Resources and Conservation
Helena, MT 59620-1001

MACO Representative
Dave Schulz
Madison County Commissioner
Virginia City, MT 59755

Extension Representative
Jerry Marks
Missoula County Extension Agent
Missoula, MT 59801

MSU Experiment Station Representative
Jon Wraith
Bozeman, MT 59717

Tribal Representative
Doug Dupuis
Confederated Salish Kootenai Tribe
Pablo, MT 59855

Crop Protection Industry Representative
Celestine Duncan
Weed Management Consultant
Helena, MT 59601

INFORMATION PROVIDED BY:

Montana Weed Control Association
Weed Management Committee
Weed Research Committee
Weed Prevention Committee
Statewide Noxious Weed Awareness and Education Campaign Task Force
Montana Weed Coordinator Support Committee
Montana State University
University of Montana
State Land Management Agencies
Federal Land Management Agencies
Tribal Natural Resources
Bureau of Indian Affairs Natural Resources

PHOTOGRAPHS COURTESY OF[1]:

Center for Invasive Plant Management
Custer County Cooperative Extension Service
Garrett C. Munson
Jeff Schuller Design & Graphics
Melissa L. Brown
Montana Department of Agriculture
Montana Department of Transportation, Dan Williams
Montana Sheep Institute
Montana State University Extension Service
Montana Stockgrower's Association
Phillips County Cooperative Extension Service
Prickly Pear Land Trust, Andy Baur
Statewide Noxious Weed Awareness & Education Campaign
Treasure County Weed District, Jennifer Cramer
Weed Management Services, Celestine Duncan

[1] Yellowflag iris photo by Robert H. Mohlenbrock @ USDA-NRCS PLANTS Database / USDA NRCS. 1995. *Northeast wetland flora: Field office guide to plant species*. Northeast National Technical Center, Chester, PA.

EXECUTIVE SUMMARY

Rangeland, pastureland, cropland, forests, and wildlands comprise 92 million acres, or 98% of the total land area in Montana. These lands are vital for agricultural production and protecting the integrity of ecological systems. Currently 32 noxious weeds infest about 7.6 million acres in Montana. These non-native species are affecting the economic stability of the state and impacting the ecological integrity of Montana's lands and waters.

The purpose of the Montana Weed Management Plan is to strengthen, support, and coordinate private, county, state, and federal weed management efforts in the state, and promote implementation of ecologically-based integrated weed management programs. There are 10 objectives identified within the plan. These objectives will: 1) provide guidelines for private, county, state, and federal land managers to develop goals and plans consistent with state and national strategies; 2) provide a method of prioritizing management strategies and allocating limited resources; and 3) prioritize Noxious Weed Trust Fund grants based on compatibility and compliance with the state plan.

Financial resources are currently inadequate to effectively manage noxious weeds in Montana. Increased funding to private land managers, county weed districts, federal, and state agencies, and improved efficiency and organization of grassroots efforts are critical to implementing viable weed management programs in the state. It is calculated that approximately $55.8 million (about 2.6 times the current budget of $21.2) is needed to implement a balanced weed management program that slows weed spread and reduces current infestations by 5% per year.

LEADERSHIP

This plan is designed and supported by weed managers in Montana including state, federal, county, and private stakeholders. It is a dynamic document that requires involvement of Montana citizens, and local, regional and national stakeholders to meet objectives and implement the plan. The Weed Summit Steering Committee has responsibility for identifying and supporting leaders for action items identified within this plan. These leaders will provide local and statewide direction and organization to promote and support weed management programs in Montana.

PLAN OF ACTION

The magnitude and complexity of the noxious weed problem in Montana requires a comprehensive plan of action with five major components. These components are: 1) risk analysis and prevention; 2) management; 3) inventory, monitoring, and evaluation; 4) public awareness, education and outreach; and 5) research.

RISK ANALYSIS AND PREVENTION: *Action: The Plan proposes to enhance prevention programs in the state by improving prediction models and identifying pathways for weed invasion; engaging and educating landowners to protect areas from introduction and spread of weeds; promoting ecosystem management concepts; regulating introduction and movement of weeds in Montana, and refining early detection/rapid response efforts on new invaders.*

MANAGEMENT: Management of noxious weeds in Montana is divided into four priorities based on a unique species classification system. These include a watch list (Category 4), non-established new invaders (Category 3), established new invaders (Category 2), and those species that are widespread in the state (Category 1).

Watch List. Category 4 weeds are prohibited from sale within or into Montana. Research and monitoring for Category 4 plant species may result in listing as a Category 1, 2, or 3 noxious weed in Montana. *Action: Montana Department of Agriculture will add Category 4 weeds to species currently quarantined for sale through the Quarantine-Nursery Program. No additional costs are estimated as of this writing.*

New Invaders. Category 2 and 3 weeds are the highest priority species for management in Montana. The goal is preventing invasion, eradicating small infestations, or long-term, high-intensity containment of larger infestations to prevent movement to non-infested sites. *Action: A $7.7- million annual budget is proposed for risk analysis, prevention, early detection and rapid response, and task force operations.*

Widespread Weed Infestations (Category 1). Reducing established noxious weed infestations and containing their spread by expanding Cooperative Weed Management Areas (CWMAs) would minimize economic and environmental impacts of weeds in Montana. *Action: The Plan proposes to support increased funding for weed management within county, state, and federal entities; facilitate partnerships between agencies and private land managers through CWMAs; and secure cost-share programs to assist private land managers. About $29 million is needed annually to adequately address management of established noxious weeds in the state.*

INVENTORY, MONITORING, AND EVALUATION: This information is critical for identifying non-infested lands, detecting newly invading weeds, identifying boundaries of established weed infestations, developing management plans, and evaluating weed management efforts in the state. *Action: An estimated $5.5 million annually is needed to complete plant and section-based inventories, increase private and agency participation in statewide inventory efforts, and facilitate web-based data entry and retrieval.*

PUBLIC AWARENESS, EDUCATION, AND OUTREACH: The purpose of the public awareness, education, and outreach component of this plan is to ensure that everyone in Montana is aware of the serious impacts of noxious weeds on natural resources, and that land managers implement systems-based integrated weed management (IWM) methods. *Action: An estimated $3.8 million annually is needed to meet public awareness, education, and outreach components of the Montana Weed Plan.*

RESEARCH: Research provides a scientific foundation for sustainable, ecologically-based weed management. Six research areas are identified: Impacts, Prevention, Weed Biology and Plant Dynamics, Integrated Weed Management, Land Reclamation, and Effects of Natural Disturbance (fire, flood, drought, etc.). *Action: An estimated $5.4 million is needed annually to conduct research required to fill information gaps and to transfer new technologies to Montana land managers.*

INDEX TO ABBREVIATIONS AND ACRONYMS

AA, Assistance Agreements
ANS, Aquatic Nuisance Species
APHIS, Animal and Plant Health Inspection Service
ARS, USDA Agricultural Research Service
BIA, USDI Bureau of Indian Affairs
BLM, USDI Bureau of Land Management
BN, Burlington Northern Railroad
BOR, USDI Bureau of Reclamation
CABI, Commonwealth Agricultural Bureau International
CES, Cooperative Extension Service
CIPM, Center for Invasive Plant Management
CWMA, Cooperative Weed Management Area
DNRC, Department of Natural Resources and Conservation
DPHHS, Department of Public Health and Human Services
EIS, Environmental Impact Statement
EPMT, Exotic Plant Management Team
EQIP, Environmental Quality Incentive Program
FS, USDA Forest Service
FSA, USDA Farm Service Agency
FWP, Department of Fish, Wildlife, and Parks
FWS, USDI Fish and Wildlife Service
GIS, Geographic Information System
GYA, Greater Yellowstone Area
IWM, Integrated Weed Management
MACO, Montana Association of Counties
MAES, Montana Agricultural Experiment Station
MDA, Montana Department of Agriculture
MDC, Department of Corrections
MDT, Department of Transportation
MOU, Memorandum of Understanding
MRL, Montana Rail Link
MSU, Montana State University
MWCA, Montana Weed Control Association
NAWMA, North American Weed Management Association
NEPA, National Environmental Policy Act
NFWF, National Fish and Wildlife Foundation
NHP, Natural Heritage Program
NPS, USDI National Park Service
NRCS, USDA Natural Resource Conservation Service
NRIS, Natural Resources Information Service
NWTF, Noxious Weed Trust Fund
PI, Private Industry
RMEF, Rocky Mountain Elk Foundation
SNWAEC, Statewide Noxious Weed Awareness and Education Campaign
SWCD, Soil and Water Conservation District
TNC, The Nature Conservancy
UM, University of Montana
UP, Union Pacific Railroad
USDA, United States Department of Agriculture
USDI, United States Department of Interior
WMA, Weed Management Area
YNP, Yellowstone National Park

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

FORWARD

Noxious weeds pose a major threat to Montana's economy and environment. During the past century, weeds have infested over 7.6 million acres, or about 8% of the state, degrading the productivity and biological diversity of ecosystems. An action plan involving private, county, state, and federal entities is critical to stop introduction of new weed species and reduce the spread of established infestations.

Montana's Weed Management Plan is the result of goals and issues outlined in 1995 by the Vision 2020 working group, and further refined at the Governor's Montana Weed Summit held in October 1998. The mission of Vision 2020 was *to encourage all Montana citizens and land managers to support and implement long-term resource management plans and integrated noxious weed management strategies*. Critical issues and goals for four major areas of weed management were identified in Vision 2020 and the Governor's Summit. These management components comprise the action plan for the state: 1) Public Education and Awareness; 2) Research and Information Sharing; 3) Prevention; and 4) Weed Management.

In 2007, the Montana Noxious Weed Summit Advisory Council and the Montana Weed Control Association recognized the need to revise and update the plan to increase effectiveness of the statewide weed management effort and determine revenue projections. This revision reflects progress made in the plan during the past four years and strengthens existing goals and objectives. The Montana Weed Management Plan continues to provide the conceptual framework and recommendations for actions to prevent introduction and manage the spread of noxious weeds in Montana. The plan provides guidance and direction on a statewide level while maintaining flexibility for local priorities and actions. It is designed to complement regional, national, and international strategies in the National Invasive Species Management Plan.

The Montana Weed Management Plan identifies current and future challenges posed by noxious weeds and describes how county, state, and federal programs and legislation can be improved to help solve the problem. This action plan is designed and supported by weed managers in Montana including state, federal, county, and private stakeholders. It is a dynamic document that requires the support and involvement of Montana citizens to meet objectives and implement and improve the plan over the long-term.

ORGANIZATION OF THE PLAN

This is not a detailed plan that describes management criteria for individual weed species. Rather it provides an outline of current programs and requirements to more effectively meet short- and long-term management objectives. The plan is divided into five major chapters with supporting material in Appendices.

Chapter 1 describes objectives of the management plan and briefly discusses problems and impacts associated with noxious weeds in Montana. This chapter also provides an overview of noxious weed species and categories, and summarizes current legislation that affects weed introduction, spread, and management activities in the state. A more in-depth discussion of legislation is in Appendix D.

Chapter 2 describes existing programs and capabilities of private, county, state, and federal land managers and agencies. Budget and program needs are discussed for each entity.

Chapter 3 is the Plan of Action section regarding statewide strategies to reduce risk of weed introductions, management of new and existing infestations, inventory and monitoring, public awareness

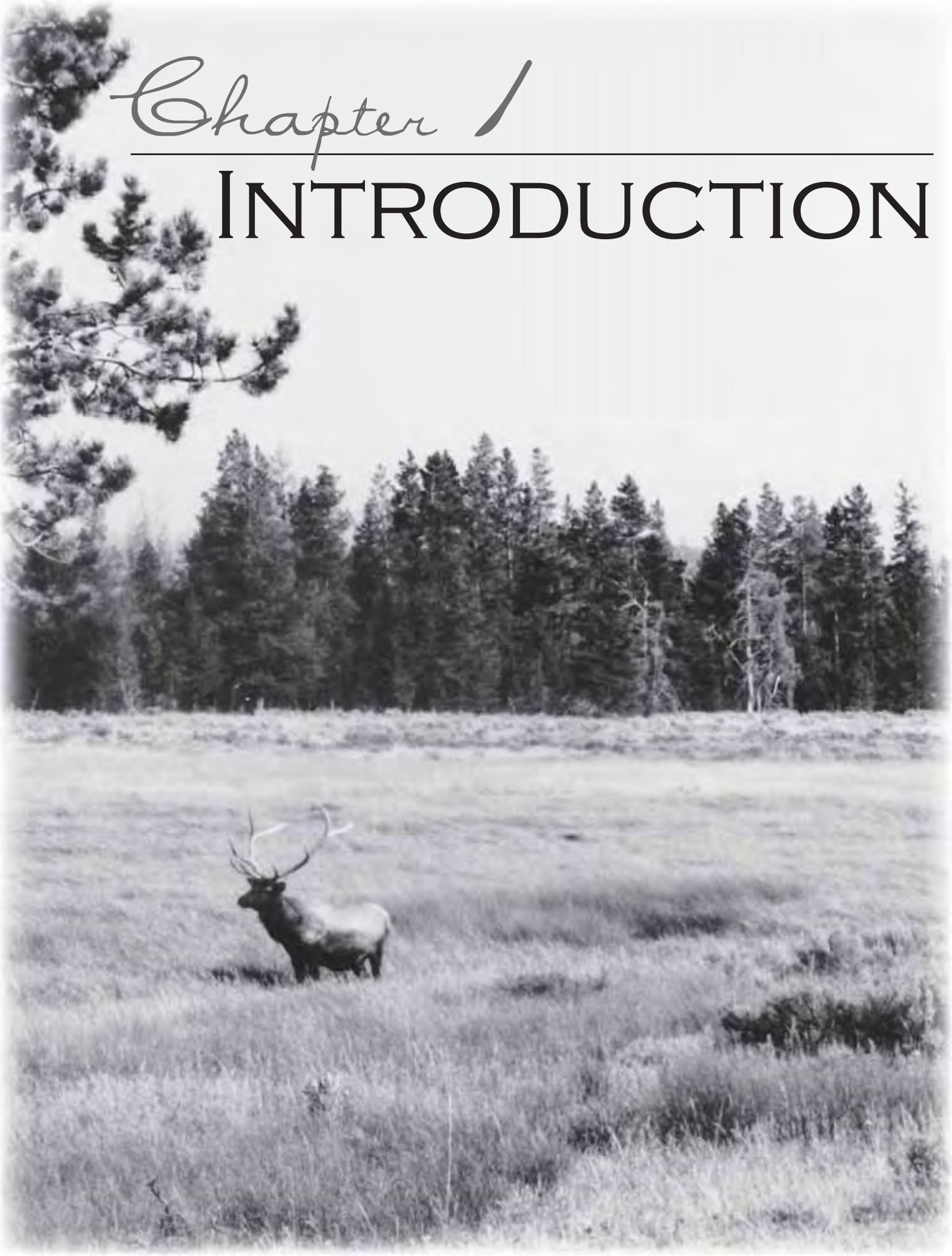
and education, and research priorities. Existing and proposed programs are described and budget needs addressed for each action item.

Chapter 4 is the budget outlining current funding and program requirements to stop spread and reduce infestation levels by 5% per year.

Chapter 5 describes duties, responsibilities, and dates for implementing action items identified within the Plan.

Chapter 1

Introduction



CHAPTER 1 - INTRODUCTION

The purpose of the Montana Weed Management Plan is ***to strengthen, support, and coordinate private, county, state, and federal weed management efforts in Montana, and promote implementation of ecologically-based noxious weed management programs***. The magnitude and complexity of noxious weeds in Montana requires a comprehensive and thoughtful management plan that can achieve reasonable objectives. These objectives will: 1) provide guidelines for private, county, state, and federal land managers to develop goals and plans consistent with state and national strategies; 2) provide a method of prioritizing management strategies and allocating limited resources based upon prioritized objectives; and 3) prioritize Noxious Weed Trust Fund grants based on compatibility and compliance with the plan. This plan is a dynamic document that will be evaluated and action items revised every two years. Specific objectives, issues, and programs are discussed to increase awareness and foster coordinated, cooperative weed management efforts statewide.

OBJECTIVES

1) Develop stable long-term funding sources for private, county, state, and federal land managers to implement a comprehensive weed management program that includes all aspects of integrated weed management.

2) Strengthen and expand Cooperative Weed Management Areas that include private, municipal, university, county, state, tribal, and federal land interests.

3) Establish strategies for managing weeds on a priority basis, including the development of memorandums of understanding (MOUs).

4) Strengthen compliance with the Montana County Weed Control Act and the Montana Weed Control Act.

5) Promote the development and maintenance of noxious weed inventories on all lands in Montana for inclusion in the statewide database system.

6) Prevent introduction and establishment of noxious weeds and aquatic nuisance plant species to non-infested land and water in Montana.

7) Raise awareness and understanding of effects and affects of noxious weeds on Montana's natural resources and citizens, educate local communities and individuals on integrated weed management methods, and prepare educators to empower local communities to implement these methods.

8) Promote and support noxious weed research based on needs determined by public and private land managers.

9) Implement ecologically-based, integrated weed management programs.

Noxious weeds such as oxeye daisy (above) impact Montana's economy and environment.

10) Prepare for weed-related emergencies that occur from fires, drought, flood, or other major natural or human-caused disturbances.

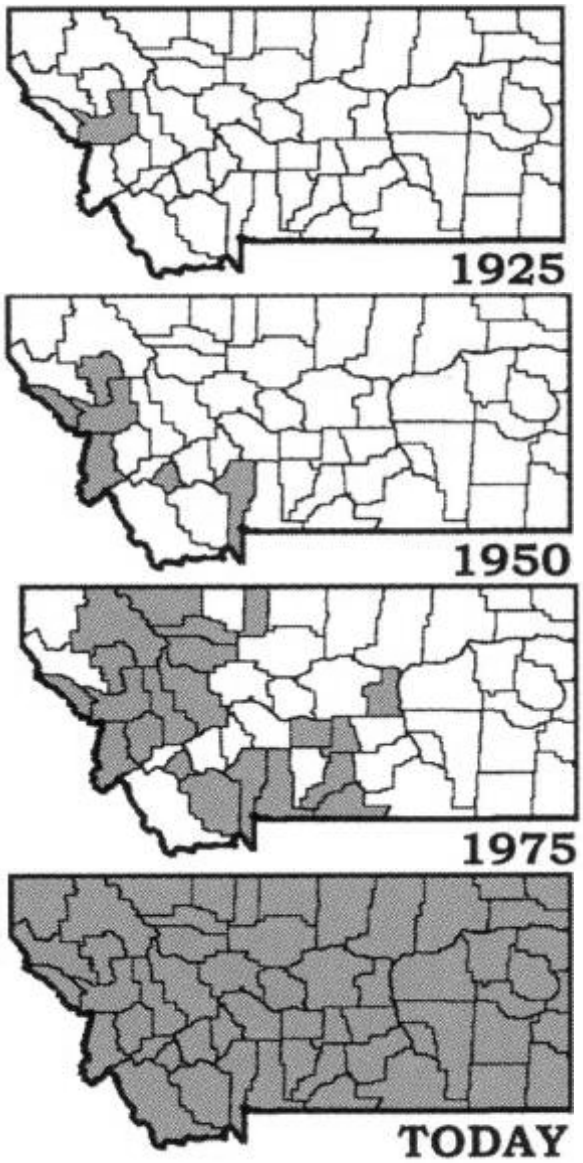
NOXIOUS WEED IMPACTS

A weed is defined as any plant that interferes with management objectives for a given area of land (or body of water) at a given point in time. Once a plant has been classified as a weed, it attains a "noxious" status by Rule as described in the Montana County Weed Control Act. Noxious weeds are defined as "plants of foreign origin that can directly or indirectly injure agriculture, navigation, fish or wildlife, or public health." Currently there are 32 weeds on the statewide noxious weed list that infest about 7.6 million acres in Montana. See Appendix D for a list of species names. Although there are native and intentionally introduced non-native plants that have invasive characteristics, this plan will focus on state-listed noxious weeds.

Noxious weeds are reducing economic productivity and ecological integrity of Montana's lands and waters. The rate of introduction and spread of noxious weeds has increased dramatically over the past 150 years with increases in human activities, trade, and commerce. For example, spotted knapweed was first recorded in the state in the early 1920's. Since that time it has spread to infest about 2.7 million acres in the state. The introduction and spread of spotted knapweed is characteristic of several noxious weeds in Montana (Figure 1.1).

The ecological and economic impacts caused by noxious weeds in Montana are numerous; the following information describes some of these effects. Water quality and long-term production potential of land can be reduced when tap-rooted species such as spotted and diffuse knapweed invade grasslands. In western Montana, surface runoff was 56% higher and sediment yield was 192% higher on spotted knapweed infested sites compared to those dominated by native bunchgrass (Lacey et al 1989).

Figure 1.1: Montana counties reporting infestations of spotted knapweed from 1920 to present (Invaders Database).



Exotic species can also alter hydrologic cycles, sediment deposition, erosion, and other ecosystem processes causing serious ecological damage. Saltcedar, a relatively new invader in Montana, impacts wetland and riparian areas by lowering water tables and changing soil

properties. This reduces or eliminates surface water habitats required by native plants and animals. Saltcedar infestations also trap more sediment than stands of native vegetation, thus altering the shape, carrying capacity, and flooding cycle of water courses (McDaniel et al. 2005).

The Montana Natural Heritage Program lists Sapphire rockcress (*Arabis fecunda)* as a "Plant Species of Concern" (April 2003) due to very limited and potentially declining populations. Survival of the plant is at risk in part because of encroachment by spotted knapweed, which reduces seedling establishment (Lesica 1991).

Noxious weeds are recognized as serious problems on lands managed for wilderness or wildland values by federal, state, and private entities in Montana. When weeds invade and expand into a wilderness environment, the "naturalness" of the area is degraded and scientific values of once biologically diverse landscapes are impaired. Examples include leafy spurge infestations at Pine Butte Swamp Preserve and the remote Danaher Creek area of the Bob Marshall Wilderness, and spotted knapweed invasions in most wilderness areas and National Parks in Montana.

The introduction of exotic plants influences wildlife by displacing forage species, modifying habitat structure—such as changing grassland to a forb-dominated community—or changing species interactions within the ecosystem. Leafy spurge reduced habitat utilization by bison (*Bos bison*), deer (*Odocoileus* spp.), and elk (*Cervus elaphus*) (Trammell and Butler 1995). Spotted knapweed was shown to influence elk and deer foraging behavior and population distribution in western Montana. Elk use increased an average of 266% after knapweed was removed from a winter range site (Thompson 1996). Although knapweed is common on most winter ranges in western Montana, studies indicate that the plant is not a major component of mule deer diet.

Noxious weeds also impact small birds and mammals. Grasshopper sparrow (*Ammodramus savanarum*) and savannah sparrow (*Passerculus sandwichensis*) densities were lower on high (>60%) leafy spurge cover than on medium (20 to 60%) or low (0 to 20%) cover (Scheiman et al. 2003). Purple loosestrife, a weed that infests wetlands, was first reported in Montana in 1980 and by 2004 infested 10 counties in the state. The weed forms dense infestations that reduce desirable plants, such as cattails, that are preferred habitats for muskrats and long-billed marsh wrens. Waterfowl broods are also more susceptible to predation because dense stands of purple loosestrife reduce access from water to nesting sites (Brown 2005). Changes in bird species have been reported on sites dominated by non-native weed species such as leafy spurge. Russian knapweed has been shown to reduce small mammal populations (mice) by altering species diversity (Kurz 1995).

Economic losses caused by leafy spurge and spotted knapweed have been calculated for Montana. Bioeconomic models were used to evaluate annual economic impact of knapweed and leafy spurge on grazing land and wildland values in Montana. Annual direct impacts of knapweed to grazing land value in Montana were $11 million, including lower personal income and lost cash outlays from reduced livestock production. Annual direct impacts to wildland values were $3.1 million, including $1.2 million for reduced wildlife associated recreation and $1.9 million for reduced soil and water conservation (Hirsch and Leitch 1996). Projections of total direct and secondary annual economic impacts exceeded $42 million in Montana, which could support 518 jobs in the state's economy. If spotted knapweed invaded 34 million vulnerable acres in Montana, loss to the livestock industry alone is estimated at $155 million. The economic impact of leafy spurge on Montana's economy was estimated at $18.6 million per year (Leitch et al. 1994). These losses included reduced income from lower grazing capacity, lost livestock sales, and reduced grazing land and wildland values due to leafy spurge infestations.

Although significant progress was made in weed management since 2000 (D. Burch personal communication), inadequate financial and

manpower resources are available to effectively manage noxious weeds in Montana. Increased funding to private land managers, county weed districts, federal, and state agencies, and improving efficiency and organization of grassroots efforts are needed to move Montana forward in effective weed management.

WEED LISTS AND CATEGORIES

As of March, 2008, there are 32 noxious weeds in Montana divided into four categories based on number of acres infested in the state and management criteria. This unique classification system is modified and updated as needed by the Statewide Noxious Weed List Advisory Committee, and determined by Rule of the Montana Department of Agriculture (MDA) under the provisions of the Montana County Weed Control Act. The Committee uses established criteria (Appendix A) to review requests for additions to the list. Recommendations from the Committee are made to the Director of the MDA. Weeds on federal and regional weed lists are reviewed for inclusion on the Montana state list based on their potential to invade and spread within the state. The 32 weeds on the statewide noxious weed list and the federal noxious weed list are found in Appendix B.

CATEGORY 1: WIDESPREAD NOXIOUS WEEDS

This category includes 15 generally widespread noxious weeds infesting about 7.1 million acres in the state (Appendix B and C). These weeds, such as spotted knapweed and leafy spurge, are capable of rapid spread and limit desirable land uses. Management criteria include public awareness and education, containment, and suppression of existing infestations and prevention of new infestations.

CATEGORY 2 ESTABLISHED NEW INVADERS

This category includes 10 noxious weed species infesting about 513,000 acres in the state (Appendix B and C). These weeds have recently been introduced into Montana and/or are rapidly spreading from current infestations. Management criteria include awareness and education, prevention of movement into non-infested areas, monitoring and containment of known infestations, and eradication where possible

CATEGORY 3 NON-ESTABLISHED NEW INVADERS

There are six noxious weeds within this category including yellow starthistle, common crupina, Eurasian watermilfoil, dyer's woad, knotweed complex, and flowering rush. These weeds have either not been detected in the state or may be found in small, scattered, and/or localized infestations. As of 2007, there 154 acres of dyer's woad, 201 acres of knotweed, and 801 acres of flowering rush reported in Montana. Eurasian watermilfoil was first reported in Montana in 2007 and infests more than 200 acres. Management criteria include public awareness and education, prevention of introduction and movement into non-infested areas, early detection, and immediate action to eradicate infestations.

CATEGORY 4 WATCH LIST

Scotch broom is the only Category 4 noxious weed in Montana as of this publication date. Weeds within this category include plants that are invasive and may cause significant economic or environmental impacts if allowed to become established in Montana. Research and monitoring

for Category 4 plant species may result in listing as a Category 1, 2, or 3 noxious weed in Montana. Plant species designated as a Category 4 plant are prohibited from sale within or into Montana.

MONTANA WEED LAWS AND REGULATIONS

The first weed legislation in Montana was passed in 1895, and a noxious weed program was established in 1921. Since that time additional laws and rules have been enacted to strengthen weed management efforts. The eight laws currently affecting weed management in Montana are summarized below and described in detail in Appendix D.

The statewide noxious weed list is updated as needed and is determined by Rule of the Montana Department of Agriculture (MDA) under the provisions of the Montana County Weed Control Act. Changes or additions are based on advice and recommendations from the Statewide Noxious Weed List Advisory Committee. The Committee reviews requests for additions to the list received by the MDA, using established criteria, and makes recommendations to the Director of the MDA.

1) Montana County Weed Control Act (Title 7, Chapter 22 Part 21) provides for weed management activities at the county level. Local county government has the responsibility for the implementation and enforcement of weed management in Montana. County funding is limited to two mills with a yearly local levy allowing counties to fund above the two-mill cap. Weed district revenue in FY2008 from county tax revenue was $4 million. Annual budgets range from $21,000 to about $600,000 among counties, including county tax revenue, grants, and contracts (private, state, and federal contracts).

2) Montana Weed Control Act (Title 80, Chapter 7 Part 7) provides for technical assistance, embargoes, and rearing and distribution of biological weed control agents (80-7-720 MCA). Pursuant to 80-7-712 MCA, MDA can obtain federal funds and disburse these funds to local governments authorized to conduct noxious plant management programs.

3) Montana Noxious Weed Trust Fund Act is a grant-funding program designed to encourage and support local cooperative weed management programs, weed research, and public education, awareness, and outreach programs. Revenue for the current grants program comes from interest from a permanent Trust, vehicle weed fee, and state and federal funding. Amount of grant revenue awarded in FY 2008 was $2,487,452 including $384,400 county and reservation grants. Details regarding these funds are described in Appendix D.

4) Montana Noxious Weed Seed Free Forage Act establishes a certification program that provides for production of weed-seed-free forage and mulch used by individuals, agencies, and private corporations on public and private lands. The Montana program supports and complements the regional North American Weed Management Association (NAWMA) weed free forage certification program.

5) Montana Agricultural Seed Act lists prohibited and restricted weed seed levels that must be maintained in state certified seed.

6) Montana Commercial Feed Act prohibits noxious weeds in commercial feed.

7) Montana Environmental Policy Act must be addressed by state actions that have potential environmental or socioeconomic impacts.

8) Montana Nursery Law allows for inspection, certification, and embargo of all nursery stock for listed pests, including weeds.

Chapter 2

Existing Situation, Current Program, and Program Needs

CHAPTER 2 - EXISTING SITUATION, CURRENT PROGRAM, AND PROGRAM NEEDS

Montana encompasses about 94 million acres consisting of about 28% federal, 6% state, 3% tribal, and 63% private land ownership. Rangeland, pastureland, cropland, forests, national parks, and nature preserves and other wildlands comprise about 92 million acres or 98% of the total land area of the state[1]. These lands are vital for agricultural production and protecting the integrity of ecological systems. Montana's weed program is divided into five cooperative working groups: 1) county weed districts implement and enforce the Montana County Weed Control Act and coordinate weed management activities within the county; 2) private land managers work cooperatively with county weed districts and other agencies to manage weeds on private lands; 3) state land management agencies develop long-term management plans and allocate funding within each county where they manage lands; 4) federal land managers work cooperatively with weed districts and adjoining landowners directly through management efforts and providing weed research and demonstration areas as an important part of the state program; 5) universities provide research, teaching, demonstration, outreach, and public education programs on invasive plants. In addition to the five cooperative groups, special task forces have been developed on several new weed invaders; biological weed control; statewide education, awareness, and outreach; and the Montana weed mapping project. Considerable progress has been made toward implementing the Montana Weed Management Plan since 2000. Although some of the progress is described in this chapter, more detailed information is on file with Montana Department of Agriculture and described in the Montana Weed Control Association Annual Conference Proceedings (2003).

Agencies, county weed districts, and private land managers and corporations provided information included in this section. However, some agencies did not report infested acreage or calculate budget requirements necessary to manage infestations. Estimated budget needs for agencies that did not submit information were based on weed acres as a percent of total infested lands in the state. For example, if an agency managed 1 million acres, then it was assumed that 8% or 80,000 acres were infested. These estimates were also used to calculate infested acres on privately owned lands. Cost of weed management was based on $38.00[3] per acre for on-ground control, which represents an average cost for weed management on rangeland and wildland sites in Montana. The Plan recognizes that treatment costs vary depending on treatment method, weed treated, and location of infestations. Cost of remote backcountry infestations can exceed $400.00 per acre for labor and materials (McClure, personal communication).

COOPERATIVE WEED MANAGEMENT AREAS

Cooperative Weed Management Areas (CWMAs) are the foundation for effective weed management involving private and public lands in Montana. Since 1985, cost-share programs have provided incentive for development and implementation of CWMAs in Montana. Various grant funding mechanisms to support CWMAs are described below.

[1] [USDA NRCS] USDA Natural Resource Conservation Service. 1997. National Res. Inventory Summary Report 1997 (Updated 2000). [Online] http://www.nrcs.usda.gov/technical/NRI/1997/summary_report/table1.html. Accessed: April 2004.

[3] Based on grant records of ten Noxious Weed Trust Fund projects for herbicide application (aerial/ground combined).

Cooperative Weed Management Areas (CWMAs) are the foundation for effective weed management involving private and public lands in Montana. *Sula Peak Ranch - Sula, MT.*

NOXIOUS WEED TRUST FUND

The Noxious Weed Trust Fund (NWTF) program was established in 1985 and is administered through the Montana Department of Agriculture. The grant program is designed to assist citizens, counties, local communities, researchers, and educators in their efforts to solve a variety of weed problems in Montana. Cost share funding is provided for local CWMAs, education and research projects, including non-chemical research and demonstration programs. Approximately 160 NWTF grants are awarded each year by the Noxious Weed Trust Fund for an annual total of approximately $2.5 million. Weed management programs funded must focus on state-listed noxious weeds and lands within projects must be part of an active CWMA. Weed control costs average about $38.00 per acre depending on the weed treated and application method. The NWTF expenditures to support CWMAs averaged $800,000 annually from 1985 through 2000, and about $1.9 million annually from 2001 through 2007. Landowners within CWMAs provide a minimum of 50% matching funds. Funding sources for the Noxious Weed Trust Fund and other projects funded are described under the section on Montana Weed Laws and Regulations.

ROCKY MOUNTAIN ELK FOUNDATION

The mission of the Rocky Mountain Elk Foundation (RMEF) is to ensure the future of elk, other wildlife and their habitat. In support of this mission, the RMEF is committed to managing noxious weeds to conserve, restore, and enhance natural habitats. The RMEF provides funding toward cooperative vegetation management projects involving public and/or private lands. These projects utilize integrated weed management including burning, reseeding, fencing, livestock manipulation, release of biological agents, and use of herbicides.

NATIONAL FISH AND WILDLIFE FOUNDATION

The National Fish and Wildlife Foundation (NFWF) was established by Congress in 1984, and is a private, non-profit, organization dedicated to the conservation of fish, wildlife, plants, and the habitat on which they depend. The NFWF in partnership with other federal agencies provides funding to non-profit organizations and government agencies interested in managing invasive and noxious plant species. Since 1997, the program has provided about $872,260 in grants to 24 CWMAs and other weed management projects in the state. From 2000 through 2007, total grants received in Montana from the NFWF for CWMAs and other weed management project were $687,000 with $1,205,074 in matching funds.

CENTER FOR INVASIVE PLANT MANAGEMENT

The Center for Invasive Plant Management (CIPM) based at Montana State University promotes ecologically sound management of invasive plants by facilitating collaboration and partnerships among scientists, educators, and land managers. From 2000 to 2004, CIPM provided $260,000 in grant funds to weed

management and prevention programs in Montana, in addition to funding weed research and public education programs in the state. As of calendar year 2007, funding was no longer available for grants.

Program Needs

1) Identify and develop addition sources of funds to promote development and implementation of CWMAs in Montana.

COUNTY WEED DISTRICT PROGRAMS

The 56 county weed districts (CWDs) in Montana are the cornerstone of Montana's weed program. Weed districts establish management criteria for noxious weeds on all lands within the district (MCA 7-22-2109) and implement and enforce the Montana County Weed Control Act. In addition, CWDs conduct weed education and awareness programs, develop cooperative agreements and CWMAs, manage noxious weeds on county-owned/controlled lands and rights-of-way, coordinate weed management activities within and among counties, and monitor weed infestations on private and public lands.

The county weed control district is responsible for developing a district-wide noxious weed management plan to assist county residents in complying with the Montana County Weed Control Act. The plan establishes management criteria for noxious weeds and describes weed district responsibility for management of noxious weeds on all land and rights-of-way owned or controlled by the county or municipalities within the district. Management criteria will include integration of cultural, chemical, and biological methods for controlling noxious weeds.

Budget information from county weed districts in Montana indicate about $4 million are generated annually from mill levies, general fund, or other county-tax revenue. This revenue is inadequate to support a minimum part-time position in 57% of counties. There were 13 counties capable of supporting a full-time position based on county-tax revenue alone. In an effort to support part- or full-time weed management positions, counties rely on revenue generated from contract weed control work. Contract revenue provides an additional $3.9 million per year, primarily from Montana Department of Transportation Maintenance Division and federal agencies, with limited income from private and state sources. About 84% of counties reported an increase in funding since 2000. Funding levels in most counties were inadequate to meet current needs.

Program Needs

1) Develop long-term, stable, adequate funding for county weed districts.

2) Support employment of full-time, professional, qualified individuals to serve as county weed district coordinators. If necessary, consider consolidating multiple counties to ensure a full-time position.

3) Update and expand county weed management plans biannually to complement Montana's State Weed Management Plan.

4) Coordinate weed inventories with the statewide program and integrate inventory and monitoring efforts into annual operations.

5) Build and/or expand partnerships with federal, state, city, tribal, and private entities.

6) Pursue federal, state, and other granting opportunities.

7) Develop cost–share incentives and promote integrated weed management projects on private lands.

8) Implement a public education program at the county level that empowers individuals to implement integrated weed management strategies.

9) Include weed coordinator or weed board members on the subdivision committee of the County Planning Board.

PRIVATE LAND OWNERS

Private lands encompass approximately about 18.3 million acres of cropland, 1.7 million acres grazeable woodland, 38.2 million acres of pasture and rangeland, and about 0.8 million acres of building lots, roads, and wasteland[1]. Weed inventory information is not available for most private lands in Montana. Based on about 6% of cropland and 8% of range, pasture, grazeable woodland and "other lands" infested with noxious weeds, about 4.3 million acres of privately owned lands are infested in the state. This figure is equivalent to 57% of total weed acres reported in Montana. The Montana County Weed Control Act states that private land managers must develop and follow a weed management plan on their land. However, the magnitude of the weed problem, jurisdictional conflicts, cost of weed management, relatively low net return per acre of range and pastureland, and lack of cost-share funds has made it difficult for private landowners to effectively manage weeds. Although several counties offer cost-share programs for specific weed species, there are inadequate financial resources to assist private landowners with weed management. The NWTF and other grant programs through federal agencies, private foundations, and sportsman organizations provide limited funding for weed control on private lands. Cooperative Extension Service and county weed districts coordinate local public education programs and provide technical assistance and training to private land managers on noxious weed management issues. The Natural Resource Conservation Service (NRCS), Farm Service Agency (FSA), and Soil and Water Conservation Districts (SWCD) provide technical and some internal program-based financial assistance to landowners.

Private lands encompass approximately 59 million acres in Montana. These lands are the cornerstone of Montana's economy and critical for resource conservation.

Montana Fish, Wildlife and Parks' Block Management Program provides annual incentive payments to private landowners specifically for weed management. In 2007, 1,256 private landowners received $184,613 in weed payments through the Block Management Program. Funds are intended to offset potential weed spread by allowing public hunting access on private property.

Weed management costs incurred by private land managers are difficult to assess. Based on estimates of herbicide sales and grants to CWMAs, about 200,000 acres of privately owned range, pasture, and grazable woodland are treated annually for noxious weeds at a cost of about $5.8 million (includes state, federal, and private grants and private dollars). In addition, biological control agents are released on leafy spurge and knapweed infestations, and targeted grazing with livestock is used as a weed management tool, thus total acres managed are greater than 200,000.

The current level of management is not adequate to contain and manage noxious weed infestations in the state. At a spread rate of 10%

[1] Source: 2002 Census of Agriculture – Montana data.

per year, about 420,000 acres of private land (327,000 acres of range, pasture, and woodland) should be managed annually for noxious weeds to remain at current levels of infestation. This would require a budget about twice the present level of funding for on-ground noxious weed management on private range and pasturelands alone.

Program Needs

1) Identify and secure funding sources to support cost-share programs on private lands.

2) Work with Congress and land management agencies at state and national levels to increase federal cost-share for noxious weed management.

3) Increase county weed budgets and dedicate a portion of those funds toward cost-share programs.

4) Increase funding to the NWTF to allow for additional grants to private lands.

5) Provide a leadership role for introducing weed education and prevention to community groups.

PRIVATE CONSERVATION ORGANIZATIONS

The Nature Conservancy (TNC) is one of the largest conservation organizations in Montana. In addition to protecting lands through conservation easements (about 250,000 acres), TNC owns and manages 92,000 acres, about half of it in preserves. Their largest holding is the Matador Ranch in southern Phillips County.

Management of invasive non-native plants is a priority on TNC lands and includes partnerships with other private, state, and federal landholders within seven community-based programs. TNC is an integral part of several large cooperative weed management efforts including the Weed Prevention Area surrounding the Matador Ranch, the Blackfoot Challenge CWMA in the Blackfoot Valley, the Red Rock and Big Hole Watershed CWMA in southwestern Montana, and the Weed Roundtable on the Rocky Mountain Front. TNC provides labor, materials, and funding to implement integrated management of noxious weeds on their lands and on adjoining CWMAs.

The Montana Association of Land Trusts reported that private landowners, public agencies and land trusts have conserved about 1.5 million acres of land, 4,400 miles of streams and rivers, and 120 square miles of lakes and wetlands in Montana (Marx 2007). Although the 11 land trusts operating in Montana have adopted Land Trust Alliance Standards and Practices, there are no formal guidelines for weed management on conservation easement lands.

Program Needs

1) Promote, develop, and facilitate CWMAs on lands covered by conservation easements with other private landholders, and county, state, and federal agencies.

2) Encourage Montana Land Trust organizations to adopt policies that promote early detection and management of noxious weeds on lands encompassed by conservation easements.

PRIVATE INDUSTRY

Private industry includes local vendors for herbicides, biological management agents (livestock, insects, and pathogens), seed suppliers, plant nurseries, herbicide applicators, inventory and monitoring specialists, and natural resource consultants. Private industry serves as an important link between local individuals and agencies for providing technical assistance, developing and coordinating cooperative weed

management projects, and other expertise that supports and promotes weed management in Montana.

Program Needs

1) Improve coordination and communication between private industry and local, state, and federal entities on weed management issues; and facilitate technology transfer, public education, and development of CWMAs.

LOCAL GOVERNMENT AGENCIES

A number of local government agencies manage lands in Montana. They include: county road department, city street departments, airports, city and county parks, cemeteries, sewer and water districts, fairgrounds, historical museums, irrigation districts, and schools. In addition, several of Montana's larger cities have programs to help purchase land for the purpose of preserving open space lands. Lands that are managed by local government agencies are often a vector for introduction and spread of noxious weeds. These agencies generally do not have an integrated weed management (IWM) plan, and lack the expertise and resources to carry out an effective vegetation management program. As a result, noxious weeds continue to spread and threaten other non-infested lands.

There is a critical need for local government agencies to have an effective vegetation management program that includes a component on management of noxious weeds. Taxpayers are often critical of government agencies for the lack of weed management, and they expect local governments to set an example and provide leadership in controlling weeds.

Program Needs

1) County weed districts will assist local government agencies in developing IWM programs.

2) Local government agencies will work with county weed districts to develop and implement an IWM plan with line-item budgets for weed control.

3) Increase weed awareness and support for all aspects of weed management within local governments.

SOIL AND WATER CONSERVATION DISTRICTS

Soil and Water Conservation Districts (SWCDs) are local governments established under state law to manage natural resources within their boundaries. Conservation districts cover the entire state of Montana including most cities and towns. Each district has five locally elected supervisors along with two supervisors appointed by incorporated communities within the district boundary that oversee district activities.

Conservation districts work with local individuals, state, federal and local government agencies to help citizens conserve soil, water, and other renewable natural resources. Districts are active with weed management on a local, state, and interstate basis. Conservation districts provide information on proper land management and weed control through printed educational materials, and farm and ranch tours. Along with educational efforts, conservation districts sponsor grants that have provided funding for equipment, biological control agents, and herbicides for weed management.

Program Needs

1) Improve coordination between SWCDs, Montana Department of Agriculture, and weed districts to facilitate funding weed management projects at the local level.

PROGRAMS AND LANDS ADMINISTERED BY STATE AGENCIES

Lands administered by state agencies encompass about 5.8 million acres, with Montana Trust Land Management Division of the Department of Natural Resources and Conservation the primary landholder. House Bill 395, passed in 1995, requires state agencies in Montana to develop a management plan to address noxious weed issues on state managed land. Although plans are completed, not all lands have budgets dedicated to management of weeds.

DEPARTMENT OF AGRICULTURE NOXIOUS WEED PROGRAM

Montana Department of Agriculture (MDA) devotes five FTE (full time employees) to the state weed program, with an operational budget of approximately $450,000 as of 2008. The program includes oversight of the Noxious Weed Trust Fund Program, the Noxious Weed Seed Free Forage Program, biological control of weeds effort, Aquatic Vegetation Management Program, technical expertise in all aspects of weed management, support of statewide and regional weed efforts, and coordination of efforts between state, federal, county, and private land managers.

In addition to staff within the Noxious Weed Program, other Agricultural Sciences Division employees lend expertise and assistance to the weed management effort in Montana. These specialist positions include the following services: mapping and geographic information system (GIS); worker protection and certification; soils and ground water; quarantine and nursery; feed; seed; and regional pesticide training.

Program Needs

1) Increase funding within the NWTF to allow for additional weed management grants on private lands.

2) Enhance weed inventory and data input though improved GIS capabilities or remote sensing.

DEPARTMENT OF CORRECTIONS

Montana Department of Corrections manages a 37,720-acre ranch in Montana. Noxious weeds (predominantly spotted knapweed and leafy spurge) infest about 3,000 acres with approximately 50% of the area inventoried. Revenue expended in 2004 for noxious weed control was $22,545 and was static through 2007. The ranch manager estimated about $25,000 annually was needed to reduce weed spread and treat approximately one-third of infestations per year. An integrated program including prevention, release of biological control agents, livestock management, and aerial and ground herbicide applications are used to manage noxious weeds on the ranch. A management plan was completed in 2000.

MONTANA FISH, WILDLIFE, AND PARKS

Montana Fish, Wildlife and Parks (FWP) manages more than 610 sites across the state and is responsible for weed management on approximately 364,626 acres. Managed sites include administrative offices, state parks, hatcheries, wildlife management areas, and fishing access sites. A state weed coordinator assists managers with organization and implementation of weed management activities.

The number of weed-infested acres on FWP owned and/or managed land was estimated at 32,650 acres based on 2007 reports. Detailed information on infested sites is on file with MDA and FWP. Annual integrated weed

Dense infestations of noxious weeds have major impacts on wetland wildlife habitat.

management activities occur on about 7,000 to 9,000 acres annually (exclusive of biological control). A total of $627,300 was expended in fiscal year 2007 on weed management, education and outreach, grants, and other vegetation management activities. Integrated weed management expenditures in 2007 included $354,937 (on-ground weed management); $23,450 (weed control on trails); $184,613 (private landowners enrolled in Block Management Program); $10,000 Sikes Act (public land projects), and $6,350 to support outreach and education. The proposed on-ground noxious weed management biennial budget for FY 2008 through 2009 is $469,994. Weed control activities are funded through multiple operations budgets of the Fisheries, Wildlife, Field Services, and Parks Divisions. Future regional budgets would be similar to previous year expenditures.

An agency Statewide Integrated Noxious Weed Management Plan has been drafted and is expected to be finalized in 2008. For the majority of sites, weed control is accomplished via contract with county weed districts or private contractors. Weed Management Agreements are reviewed annually with each county to determine priorities and funding and to plan work schedules.

Program Needs

1) Continue MDA and FWP cooperative inventory, mapping, and monitoring of weed infestations and weed management activities on fishing access sites and state parks, and expand to include wildlife management areas.

2) Continue to evaluate and prioritize current FWP noxious weed management practices and focus future efforts on high priority sites.

3) Seek alternative sources of funding for weed related impacts from non-sportsman outdoor recreationists that have not traditionally been targeted through educational efforts.

4) Continue wise-use of integrated noxious weed management methods to protect and enhance wildlife and other natural resources.

5) Establish a minimum half-time noxious weed coordinator position and encourage establishment of a full-time invasive species coordinator position.

6) Continue to promote healthy rangeland and riparian management to reduce susceptibility of lands to weed establishment and spread.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION TRUST LAND DIVISION (STATE LANDS)

Department of Natural Resources and Conservation (DNRC) Trust Land Division manages 5.1 million surface and 6.2 million subsurface acres through six area offices and 12 unit offices. Currently, the Trust Land Division has a weed management budget of approximately $80,000 for projects on state lands. This does not include staff time and

expenses for annual biological control efforts. Total acres infested by noxious weeds are unknown and statewide inventories have not been conducted on state lands. Based on 8% of lands infested in Montana, a total of 408,000 acres are infested on state trust lands. Weed specialists have estimated that a minimum annual budget of $300,000 annually is necessary to assess the current status of noxious weeds on state owned lands and develop management strategies. In addition, cost to state-land lessees to stop spread and reduce existing infestations by 5% would be $2.3 million annually (on-ground management costs only). Therefore, total predicted costs for weed management on state trust lands would be about $2.6 million.

As lands are inspected in association with leases or other projects (such as timber sales), weed infestations are noted. For leased lands, follow-up contact is made with the lessee and weed management plans or control is required. For other projects, site-specific plans are developed to address weed control during and after those activities.

The Trust Land Division has established six Land Office Noxious Weed Management Plans across the state. The goal of these plans are to: 1) identify significant noxious weed infestations on state land; 2) monitor priority noxious weed infestations and weed management compliance; 3) identify land/unit office weed management projects warranting involvement by DNRC; and 4) consolidate DNRC weed management projects and develop budget proposals for executive and legislative considerations.

Individual county weed management plans have also been developed for all counties within an area/unit office that specifically identify actions to be taken by DNRC and define project responsibility between DNRC, the lessee/licensee, and the county. These plans serve to coordinate efforts between the county and DNRC in the effort to control/eradicate noxious weed infestations on State School Trust Lands within the boundary of the county. These plans will serve both DNRC's and the county's best interest by working closely together to exchange information, combine efforts and resources, and to work uniformly with together with all the landowners in a given county.

In 2003, a legislative performance audit reviewed weed management activities on state land. Based on recommendations from that audit, the Trust Land Division developed weed management plans for each of its area offices. The plans, along with the County Cooperative Weed Agreements required by §7-22-2151 MCA, are intended to meet program needs 2 through 4 described below.

In 2007, the Legislature passed House Bill 37. This bill provides a notification process for noncompliant weed control on state lands and allows DNRC to control weeds on state land and bill lessees for costs incurred.

Program Needs

1) Identify and record noxious weed infestations on state land for inclusion in the statewide inventory system.

2) Establish and implement a process for monitoring weed management efforts for weed infestations.

3) Establish priorities for funding weed management projects.

4) Verify weed management compliance on leased parcels.

5) Request additional funding to be used for inventory and control projects on vacant tracts.

6) Develop and implement a statewide integrated weed management plan.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION—STATE WATER PROJECTS

The DNRC state water project lands include 19,000 acres in the state encompassing 25 water storage projects including canals associated with dams and reservoirs. A weed management plan was completed in 1997 and indicated approximately 2,000 acres were infested with noxious weeds at 23 of the 25 sites. The estimated total weed management cost for the period from 1997 through 2003 was $41,000. As of this writing, current status of noxious weed infestations, progress of weed management efforts, and estimates for weed control are unknown.

The full-time Land Management/Weed Control Coordinator position for the DNRC State Water Projects Bureau was eliminated by the legislature 2003. The Environmental Science Specialist assumed weed management responsibilities. Approximately 5% of the Environmental Science Specialist's time is spent on weed management related activities. Responsibility of weed control on these lands is the sole responsibility of the Water User Association. Section 2 of the Water Purchase Contract, which stipulates conditions by which water is sold by the state to the associations, states that water users will be responsible for "all costs of the maintenance, repair, operation, and necessary alteration of the project." Each association is required to sign the contract to secure water from these reservoirs.

The Bureau updated weed management plans for each water user association in 2005. Weed management plans were mailed to water users along with letters reminding the association of their weed control responsibilities. As part of the Bureau's weed control oversight, selected water projects are visited annually for on-site inspections. Respective water users are contracted if the inspection determines that additional weed control actions are needed.

Nine project site visits were completed in 2007. Letters were mailed in August 2007 to emphasize the need for continued weed control and to inform water users of problem areas and the need to implement additional control measures. Additional site visits are planned on an annual basis.

Program Needs

1) Support Montana's Aquatic Nuisance Species (ANS) Management Plan/Program and assist with inventory/surveying and monitoring water bodies for aquatic plant species such as Eurasian watermilfoil and flowering rush.

DEPARTMENT OF PUBLIC HEALTH AND HUMAN SERVICES (DPHHS)

Montana Department of Public Health and Human Services (DPHHS) manages 1,728 acres, with 975 acres leased to FWP and 160 acres leased to a private individual for ranching. The FY 2004 weed budget for vegetation management (including noxious weed control) on DPHHS lands was $7,400. The lessee is responsible for compliance with weed management on leased lands. There is no information regarding noxious weed infestations on these DPHHS lands; however, management is either contracted to county weed districts or performed as part of maintenance activities.

DEPARTMENT OF TRANSPORTATION (MDT)

Montana Department of Transportation (MDT) manages about 12,500 centerline miles of road through five districts accountable for 10 maintenance area offices. Weed management plans are reviewed annually with each county to

determine priorities, funding, and plan work schedules. The FY 2006-2007 budget is $1.2 million of state funds in addition to approximately $300,000 of federal highway funds. Both state and federal funds are allocated annually. There is a formal inventory/mapping program coordinated through MDT for state-owned rights-of-way. This program has been completed in 55 counties. An estimated $1.4 million in state funds is needed to improve program performance with annual increases to adjust for increases in rights-of-way and inflation. If these funds are appropriated, the $1.7 million available annually from both state maintenance budget and federal post-construction funds should prove adequate to manage MDT's rights-of-way. A more detailed description of MDT's weed program is described under transportation corridors in Chapter 3.

STATE UNIVERSITIES

University of Montana (UM) manages 129 and 483 acres at Fort Missoula and Mount Sentinel respectively, all of which are infested with noxious weeds. In addition to these lands UM also has 28,000 acres at Lubrecht Experiment Station, and 3,400 acres at Bandy Ranch. Weed management budgets for these lands are $1,500 and $3,000 respectively. Current weed management budgets for Fort Missoula and Mount Sentinel are $30,000 for a part-time coordinator, supplies, and travel, with additional grants for weed research.

Montana State University (MSU) has seven Montana Agricultural Experiment Station (MAES) Research Centers (Sidney, Huntley, Moccasin, Havre, Creston, Corvallis, and Conrad) encompassing 7,085 acres. These stations are utilized for noxious weed research and also manage invasive weeds as part of maintenance/operating budgets. In addition to Research Centers, the MSU College of Agriculture (COA) manages the MAES Bozeman Area Research and Teaching Farm (600 acres), Post Research Farm (250 acres), Fort Ellis Research Farm (700 acres), and Red Bluff Research Ranch (12,662 acres plus 635 acres of state and federal leases) as teaching and research facilities. Weed research and management is funded and accomplished by MAES and COA employees. Annual weed management budgets are increasingly tight due to reduced spending power (i.e., flat or decreasing budgets).

There is no weed management plan for Red Bluff Ranch; however, about 350 acres are infested with leafy spurge and spotted knapweed. A budget of $2,000 is allocated annually for herbicide management of weeds on ranch property. Red Bluff would like to expand weed management efforts and implement an integrated weed management program, utilizing sheep grazing, herbicides, and release of biological control agents. An estimated $52,500 is needed to implement an integrated weed management program at Red Bluff, with about $9,000 per year to sustain the program.

Program Needs

1) Identify and secure funding sources to support IWM projects on university- and Agricultural Experiment Station-owned lands.

2) Implement IWM programs on university owned lands.

LANDS ADMINISTERED BY FEDERAL AGENCIES

Cooperation of federal land managers is an integral component of the Montana Weed Plan. Lands administered by federal agencies comprise 27 million acres or about 28% of the total land area in Montana. United States Department of Agriculture (USDA) Forest Service and United States Department of Interior (USDI) Bureau of Land Management manage the majority of these acres. Current status of lands administered by federal agencies is described below.

USDA AGRICULTURAL RESEARCH SERVICE

The Fort Keogh Livestock and Range Research Laboratory encompass about 55,000 acres near Miles City, MT. The USDA Agricultural Research Service (ARS) recognized the importance of noxious weeds in Montana and has added three researchers (two in 2003 and one in 2007) whose research focuses on the study of invasive plants. The Ecologist positions are currently focused on assessing plant community response to weed management practices (i.e. burning, grazing, and herbicide), estimating weed impacts, predicting weed invasion potential, and mechanistically understanding invader abundance and distribution. The Ruminant Nutritionist position is investigating varied success that different animal systems have in controlling noxious weeds and utilizing them as forage. This research will provide valuable information to producers to aid in preventing further infestations of noxious weeds on rangeland and enhancing capabilities of livestock as a management tool to control noxious weeds in invaded areas. Operating budgets dedicated toward invasive plants include about $180,000 for salaries and $60,000 for research in FY 2008, with research budgets declining to $40,000 and projected to be flat in the future. Additional funding for weed research will be required to maintain adequate levels of funding. Fort Keogh maintains an aggressive noxious weed management program to minimize introduction and establishment of noxious weeds on their lands.

Program Needs

1) Increased financial support to facilitate and expand noxious weed research at Fort Keogh Livestock and Range Laboratory.

The USDA ARS also encompasses the Northern Plains Agricultural Research Laboratory (NPARL) in Sidney, MT. The lab has four full-time scientist positions dedicated to studying biological control of invasive plants of the Northern Great Plains, including an entomologist, a plant pathologist, a botanist, and an ecologist/plant physiologist. Research objectives include evaluation of new and effective biological control agents (both insects and plant pathogens), improved understanding of distribution of various genotypes of both target weeds and biological control agents, improved plant community restoration during and after biological control efforts, and knowledge of factors limiting biological control success. Current research targets include saltcedar, leafy spurge, knapweeds, hawkweeds, rush skeletonweed and whitetop; all of which are Montana state-listed noxious weeds. Annual appropriated funding for the biological control of weeds unit is $1,266,000, with current discretionary funding of over $100,000. A biocontainment quarantine facility is currently under construction in Sidney, and starting in 2008 NPARL scientists will be able to do tests of biological control agent host-specificity on-site.

Program Needs

1) Financial support to facilitate and expand noxious weed research in Sidney, MT including scientist and technician positions to work on additional target weeds, and to manage the new biocontainment facility.

USDA FOREST SERVICE (FS)

The Forest Service (FS) manages about 16.9 million acres in Montana, comprised of nine National Forests and 40 Ranger Districts. An estimated 5% of the land area or 900,000 acres are infested by noxious weeds as of this writing.

The FS annually treats about 1.1% of noxious weed infestations on National Forest lands. In recent years, FS weed program priority has been elevated on the Beaverhead-Deerlodge, Bitterroot, Flathead, Helena, and Gallatin National Forest. This higher program priority

status is tied directly to Forests dedicating more of their limited funding resources to the invasive plant program. Some Forests have been able to augment invasive plant programs with funding from other resource areas.

Early detection and rapid response is a top priority, with rush skeletonweed and tansy ragwort infestations targeted on the Flathead and Kootenai National Forests.

Unit costs per acre are rising in order to accommodate other invasive plant program components, such as prevention, education, and awareness, and restoration efforts. Activation of corporate databases for inventory and treatment are also adding to increased costs.

The USDA Forest Service has two other agency arms supporting the invasive plan program:

1) State and Private Forestry provides technical support associated with pesticide training, aerial applications and liaison with state pesticide regulatory entities. State and Private Forestry supports the Montana Weed Management Plan by providing annual grants to Montana Department of Agriculture. Since 2001, the cumulative grant total is $7 million.

2) Rocky Mountain Research Station continues dedicated research in biological control, restoration ecology, and invasive plant effects on wildlife populations. Forest Service research also provides funding to the Joe Skeen Institute/MSU for research associated with sheep and goat grazing as a treatment for invasive plants

Program Needs

Current program capabilities far exceed available resources. Most on-ground management personnel working at the Forest and Ranger District level in the invasive plant program have colateral duties with other programs such as timber, GIS, range, and botany. Additional resources could accommodate an increase in practitioners' time dedicated to application of innovative strategic and tactical aspects of the invasive plant program.

Base program budgets have been static for more than five years at $2.5 million for the Region. The regional program needs at least $6 million per year to increase resources available for invasive plant management and strengthen integration with native species restoration.

USDI BUREAU OF LAND MANAGEMENT

The USDI Bureau of Land Management (BLM) manages about eight million surface acres in Montana, comprised of seven Field Offices, two Field Stations, and two National Monuments. Approximately 15% or 1,218,300 acres are infested with invasive plants. The BLM has been implementing the national integrated weed management plan, Partners Against Weeds (PAW) since 1996. This management plan has action goals of: Prevention and Detection; Education and Awareness; Inventory; Planning; Integrated Weed Management; Coordination; and Monitoring, Evaluation, Research and Technology Transfer. Through the implementation of the PAW plan, all resource management programs participate in integrated weed management. In September 2007, the BLM completed a new programmatic Environmental Impact Statement (EIS) for Vegetation Treatments Using Herbicides. The Record of Decision has authorized use of 18 different herbicides for control and management of invasive plants on BLM administered lands. The BLM has established Assistance Agreements with 44 counties in Montana for cooperative management of invasive plants on public lands. The BLM continues to support

biological control research with ARS, USDA Animal and Plant Health Inspection Service (APHIS), University of Idaho, and Montana State University. The current annual budget for weed management in Montana is approximately $1.6 million. Because of generally scattered land pattern of BLM administered lands, cooperative efforts with other entities are a vital part of the BLM's integrated weed management program

Program Needs

1) Continue to develop county partnerships.

2) Increase budgets to $6 million through appropriation increases and leveraging cost-share funding to adequately contain and suppress current levels of infestations, conduct public education and awareness campaigns, contribute to research, and conduct rehabilitation projects.

USDI FISH AND WILDLIFE SERVICE

As the federal agency with primary responsibility for conservation of fish, wildlife, and their habitats, the USDI Fish and Wildlife Service (FWS) has a critical leadership role in the invasive species crisis. Confronting invasive species presents a major challenge in the management of the National Wildlife Refuge System (NWRS). In Montana, the FWS manages over 1.3 million acres: 23 National Wildlife Refuges (NWR); five Wetland Management Districts (WMD) that include Waterfowl Production Areas and conservation easements; and over 64 thousand acres designated as wilderness. National Wildlife Refuges across the state range in size from Lee Metcalf NWR at 2,792 acres to over 1 million acres at the Charles M. Russell NWR.

The FWS estimates approximately 37,000 acres of NWRS lands in Montana are infested with invasive plant species (2007 Refuge Annual Performance Plan). However, much of the NWRS does not have resources to conduct invasive plant inventories so acreage estimates could be conservative. Currently, NWR and WMD are struggling to treat perimeters of infestations and travel corridors for containment, which leaves few resources to conduct inventories.

The Montana Invasive Species Strike Team (Strike Team) has completed its fourth year assisting NWR and WMD staff in managing invasive species on NWRS land, at $450,000 annually. The focus is on invasive plant control, but an important role in prevention, inventory, monitoring, restoration, and community partnerships is also achieved.

The control of invasive plants is a priority for the NWRS and they have leveraged limited funds into larger projects. Partnerships with the U.S. Army Corp of Engineers on Ft. Peck Reservoir and Charles M. Russell NWR for tamarisk control are examples.

Along with management efforts on federal lands, the FWS Partners for Fish and Wildlife program assists private landowners in enhancing habitat and developing invasive plant management plans.

Another component of the FWS program is volunteers providing assistance for invasive plant management on NWRS lands. Examples of projects in Montana for 2007 include: South Phillips County Ranchers Stewardship Alliance Weed Committee for the Weed Seed Prevention Project on Charles M. Russell NWR; and Lee Metcalf volunteers for the Fourth Annual Weed Roundup.

Invasive plant education and outreach are highlighted through the FWS participation in the Montana Statewide Noxious Weed Awareness and Education Campaign. A portion of Montana Strike Team, Realty Program, and Partners Program funding are combined to support the development of education tools and media

outreach projects that help fight noxious weed invasions. The Strike Team also assisted with several community outreach events.

Current funding within the FWS for invasive species inventory and treatment limits the amount of work that can be accomplished on NWRS lands in Montana. About 7% of infested acres are treated annually with current resources. Considering infestations generally have to be treated and monitored for three to 12 years, the idea of "control" is not feasible with current resources.

Program Needs

1) Increase budgets for Montana NWRs and WMDs by $1.7 to $2.4 million (treat 25-35% of infested acres).

2) Maintain Strike Team program for EDRR and partnerships.

3) Enhance funding for granting opportunities for cooperative invasive plant projects on NWRs lands and adjoining lands.

USDI NATIONAL PARK SERVICE

The USDI National Park Service (NPS) manages 1,124,543 acres in Montana within eight units. Glacier National Park, Yellowstone National Park, and Bighorn Canyon National Recreation Area (draft) have weed management plans; however, all units have annual weed management programs. The eight units estimate having 3,509 acres of noxious weeds. As of this writing, units spend about $285,440 annually on education, prevention, inventory and mapping, control, and monitoring; which includes approximately $100,000 contributed by the NPS Northern Rocky Mountain Exotic Plant Management Team (EPMT). New exotic plant invaders are a top priority for treatment in Parks, regardless of their legal status. Glacier and Yellowstone National Parks are formal participants in weed management areas, although all park units are actively cooperating with area weed program managers. The combined estimated annual weed program budget needs for the eight parks for weed management in Montana is about $530,000. Monitoring, research, and management of weeds on NPS lands are limited due to budget restraints. A brief description of National Parks follows.

- ***Nez Perce National Historic Park—Big Hole National Battlefield*** encompasses 656 acres in Montana. About 50 acres are infested by noxious weeds mostly along trail and road corridors. Estimated program budget needs are $12,000. The FY 2005 budget was $8,700 with $3,000 from EPMT.

- ***Nez Perce National Historic Park—Bearpaw Battlefield*** encompasses 190 acres in Montana with an estimated 10 acres infested with noxious weeds mainly along trails and road corridors. The current budget for noxious weeds is $500 from EPMT that is contracted to counties. This funding is adequate for current infestations.

- ***Bighorn Canyon National Recreation Area*** encompasses 68,491 acres with 41,095 acres in Montana. About 200 acres are infested with noxious weeds in Montana with an annual weed budget of $6,500 (Montana only). Estimated budget needs are $57,000 (Montana portion).

- ***Glacier National Park*** encompasses 1,013,572 acres in the Hudson Bay and West Lake districts. An estimated 4,283 gross acres are infested with state-listed noxious weeds. The Exotic Vegetation Management Plan (1993) is currently being updated with action plans written and revised annually. The weed program had a FY 2007 base budget of $116,700. Soft money funding for weed monitoring and control (including Burned Area Emergency Rehabilitation funds) amounted to an additional $170,267. Annually, 150 acres are

treated manually and/or chemically and approximately 3,000 gross acres are surveyed. It is estimated that a total annual weed management budget of $320,000 is needed to adequately address the weed problem.

- ***Grant-Kohrs Ranch National Historic Site*** encompasses a 1,600 acre cultural landscape with 195 acres infested with noxious weeds. The weed management budget was $6,000 in FY 2007 with $35,000 needed to adequately manage current infestations.

- ***Little Bighorn Battlefield National Monument*** encompasses 765 acres with 100 acres infested with noxious weeds. In 2004, the weed management budget was $3,000 with $10,000 needed.

- ***Fort Union Trading Post National Historic Site*** encompasses 460 total acres with 112 acres in Montana. Noxious weeds infest about 40 acres in the Montana portion of the park. The Northern Great Plains Exotic Plant Management Plan and Environmental Assessment was completed in September of 2005 which included Fort Union Trading Post National Historic Site. In FY 2005 the weed management budget was $5,000 park-wide. About $1,200 of the budget was utilized in Montana in addition to the $1,200 contributed by the Northern Great Plains EPMT. Estimated weed program budget needs are $18,000 park-wide with $4,320 needed for Montana, plus continued support from the Northern Great Plains EPMT of $1,200.

- ***Yellowstone National Park*** (YNP) Yellowstone National Park encompasses 2.2 million acres, including 66,653 acres (3% of the park) in Montana. The park continues to operate on a Draft Exotic Vegetation Management Plan, which was updated in 2006. In 2007, the park program focused on education, prevention, participation in six cooperative weed management area partnerships, treatment of 12 new invaders, and containment of 16 established species. Parkwide, staff annually survey 3,000 acres of high probability areas including roads and developed areas. In addition, in 2007 a parkwide backcountry survey was conducted of approximately 600 miles of trails and 282 campsites (94%). Only five "priority 2" species were documented at 21 sites, with no new invaders found. Most high priority species have been contained to the roadsides and developed areas; however, there are widespread infestations of Dalmatian toadflax and Canada thistle with an estimated 1,000 acres occurring in the Montana portion of the park. In 2007, about $250,000 was committed to weed management, including $35,000 contributed by the Northern Rocky Mountain EPMT. Montana's portion of the weed management budget equaled about $20,000 with 156 acres treated. Projected park-wide estimates to contain and manage existing infestations, prevent new invasions, increase public awareness, and stop newly invading species is $400,000 with an additional one-time funding of $500,000 for infrastructure, research, and equipment. The Montana portion of program needs is $40,000 for operations, plus $50,000 for infra-structure.

Glacier National Park.
The National Park Service manages 1,124,543 acres in Montana. New exotic plant invaders are a top priority for treatment in Parks, regardless of their legal status.

Program Needs

1) Increase the budget to $530,000 for NPS lands in Montana for monitoring, research, and management of noxious weeds on NPS lands.

BUREAU OF RECLAMATION

The USDI Bureau of Reclamation (BOR) manages approximately 200,000 acres of land in Montana, whereas reservoirs comprise another 110,000 water surface acres. These areas are managed through two regional offices, two area offices, and five field offices. BOR has 13 reservoir project areas east of the continental divide and Hungry Horse Reservoir west of the divide. BOR directly manages lands surrounding four reservoirs. Other BOR lands are administered by other agencies, including the FS, NPS, FWP, and by irrigation districts. As of this writing, funding for BOR/ County cooperative agreements totals $67,000. Weed control coordination efforts are not funded separately from other land management activities. It is estimated that an annual budget of $250,000 would be needed to support a full-time coordinator, continue control agreements, update and conduct inventories, and reduce current weed infestations by 5%.

Program Needs

1) Support a full-time weed coordinator position.

2) Develop and implement a statewide weed management plan for BOR lands.

3) Increase the annual budget to $250,000 to support a full-time coordinator, continue weed management agreements, and reduce weed infestations by 5%.

OTHER NOXIOUS WEED PROGRAMS BY FEDERAL AGENCIES

USDA ANIMAL AND PLANT HEALTH INSPECTION SERVICE, PLANT PROTECTION AND QUARANTINE

The USDA Animal and Plant Health Inspection Service, Plant Protection Quarantine (APHIS, PPQ) has two primary weed-related program areas: Federal noxious weed and biological control[1]. PPQ is both a regulatory and service-focused agency. The PPQ State Plant Health Director's office is in Helena, MT, with a field office in Billings. These programs are coordinated with APHIS regional office and methods lab in Ft. Collins, CO and the national office in Riverdale, MD. In addition to permanent staff, PPQ hires seasonal employees to conduct summer field work statewide.

APHIS weed program mission statement mandates that APHIS will use modern technologies to prevent introduction of parasitic plant pests and noxious weeds (federally listed or candidates) into the United States. APHIS will exclude, detect, and eradicate newly introduced weeds that pose the highest risk to United States agriculture or the environment. APHIS may cooperate with other agencies to achieve environmentally sound and desirable forms of integrated management against introduced invasive plants.

In addition, APHIS noxious weed activities include issuing weed and biological control permits, including evaluation of proposed biological control agents. APHIS early detection

[1] Web sites for noxious weeds and biocontrol:
http://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/index.shtml
http://www.aphis.usda.gov/plant_health/plant_pest_info/biocontrol/index.shtml

and rapid response (EDRR) efforts focus on such activities as: evaluation for possible regulation of newly found incipient infestations, or of plants not yet known to occur in the U.S; design and fund survey or control activities, including data design and management; and public education. These efforts (including biological control) are usually focused through design and implementation of integrated management programs in cooperation with other federal and state agencies.

PPQ works closely with Department of Homeland Security, Custom and Border Protection to enforce authorities covered by the Plant Protection Act of 2000 in an effort to prevent introduction of invasive plants. Invasive species inadvertently passing the first line of defense at ports are handled by PPQ and cooperators through an Early Detection and Rapid Response Program.

In Montana, PPQ plays an active role in initiating, coordinating, and facilitating the distribution of weed biological control agents through the Montana Biological Control Working Group. Funding has occasionally been available through cooperative agreements relating to: weed inventories, monitoring for biocontrol agent establishment, and outreach. These agreements are managed through the Montana Department of Agriculture.

USDA NATURAL RESOURCE CONSERVATION SERVICE

The USDA Natural Resource Conservation Service (NRCS) is dedicated to increasing its involvement in noxious weed prevention, public education and awareness, and management programs in Montana. NRCS supports expanding partnerships to double the number of private landowners and/or respective acres involved in implementing the Montana Weed Management Plan.

The NRCS has been an active partner in Zero Spread, a major media and educational campaign to promote prevention and management of invasive weeds in Montana. The NRCS provided $100,000 to the campaign. In addition, NRCS provided $100,000, which was matched by a Noxious Weed Trust Fund Grant to fund six on-ground management programs in Montana. In 2007, NRCS developed and published 10,000 copies each of 10 invasive species brochures on noxious weeds. Brochures included biology, identification, and management of species that pose the greatest concern in Montana.

In 2006, Montana NRCS received four grants totaling $395,255 through the Grazing Land Conservation Initiative, a nationwide competitive grant process. Funds were used to support watershed-based cooperative weed management programs in four areas.

In 2005 and 2006, NRCS obligated more than $3.1 million through the Environmental Quality Incentive Program (EQIP) to private land in Beaverhead, Broadwater, Lewis and Clark, and Sweet Grass Counties. These funds are utilized for noxious weed management projects over a six to nine year period. NRCS expanded this special initiative to other areas in southwestern and southcentral Montana. In addition, NRCS obligated EQIP funds to address natural resource concerns, including fencing, deferred grazing, seeding, and noxious weeds ($395,000), on areas damaged by the Derby Wildfire in Stillwater and Sweet Grass Counties. NRCS approved conservation practices include Practice Code 595-Pest Management. Through this practice, NRCS pays a portion of the agricultural producer’s total cost for controlling pests, including noxious weeds, on private, non-cropped acres.

The Conservation Innovation Grant (CIG) Program has provided about $65,000 annually since 2006 for weed-related projects in Montana. This program helped fund the Range Rider Program for improving early detection and control of weeds in eastern Montana. In 2007, NRCS co-funded a CIG project in Madison

County designed to evaluate livestock as a weed management tool.

The NRCS continues to provide technical assistance for invasive species management on private lands and occasionally may collaborate on public lands. The annual value dollar of the technical assistance is unknown, but the results are a substantial contribution to the weed management effort in Montana.

Program Needs

1) Increase involvement of NRCS employees in development and facilitation of CWMAs.

2) Enhance training opportunities for NRCS employees on implementing IWM programs on non-crop sites.

LARGE CORPORATE LAND OWNERS

Large corporate landowners are an important component of the Montana Weed Management Plan. Plum Creek Timber Company manages 1.3 million acres in the state in four management units including Missoula, Seeley Lake, Kalispell, and Libby. The number of acres infested by noxious weeds is unknown at this time. Each office has a broad-based weed management plan. Budgets for noxious weed management are part of other program costs and are allocated and spent on a case-by-case basis. The analysis for financial resources necessary to adequately address weed issues has not been completed. Costs for these acres were included in figures for private land managers.

Plans and programs for utility companies and railroads are listed under “Special Management Zones” in Section IV-Plan of Action.

INDIAN TRUST LANDS

The USDI Bureau of Indian Affairs (BIA) is divided into twelve regions nationally covering about 54 million acres. The Rocky Mountain Region includes Indian trust lands (both tribal and individually owned) in Montana and Wyoming. In Montana, seven reservations comprise approximately 5.3 million acres of Indian trust lands, with an estimated 722,456 acres or 13% of trust land infested by noxious weeds. The national noxious weed budget has currently declined from $2 million to $1 million. Funding for weed management projects through BIA is dedicated only to Indian trust lands. Noxious weed management activities or efforts completed by BIA are conducted as additional duties within other disciplines. However, the Rocky Mountain Regional Office of BIA continues to compete nationally for funding of local noxious weed management projects.

Noxious weed management at various reservations varies greatly depending on interest, commitment, and local priorities. Many reservation weed management projects are conducted in conjunction with adjoining counties.

Total BIA funding allocated to weed management in FY 2007 was $209,000 down from $403,865 in FY 2004. About $945,000 annually is needed to adequately address weed management issues on Indian trust lands in Montana. Acres of Indian trust land shown below do not include fee (deeded) lands within the boundaries of the reservations.

- ***Blackfeet Reservation*** includes 962,000 acres of Indian trust land. Approximately 80,000 acres are infested with noxious weeds. The FY 2007 weed management project budget through BIA was $55,500 with an annual budget need of $200,000 to adequately address noxious weeds.

- ***Crow Reservation*** includes 1.5 million acres of Indian trust lands. Approximately 126,500 acres are infested with noxious weeds. The FY 2007 weed management project budget through BIA was $47,600

with annual budget needs of $250,000 to adequately address noxious weeds.

- ***Flathead Reservation*** includes more than 700,000 acres of Indian trust lands of which about 200,000 acres are infested with noxious weeds. The FY 2007 weed management project budget through BIA was $40,000 in addition to tribal funds, with an annual budget need of $270,000 to adequately address noxious weeds.

- ***Fort Belknap Reservation*** includes 617,000 acres of Indian trust land. Noxious weeds infest about 6,700 acres. The FY 2007 weed management project budget through BIA was $7,500 with an annual budget need of $60,000 to adequately address noxious weeds.

- ***Fort Peck Reservation*** includes 913,000 acres of Indian trust land with approximately 3,280 acres infested with noxious weeds. The FY 2007 weed management project budget was $9,600 in addition to tribal funds, with an annual budget need of $50,000 to adequately address noxious weeds.

- ***Northern Cheyenne Reservation*** includes 442,000 acres of Indian trust land with about 9,200 acres infested with noxious weeds. The FY 2007 weed management project budget through BIA was $20,300, with an annual budget need of $75,000 to adequately address noxious weeds.

- ***Rocky Boy's Reservation*** includes 111,000 acres of Indian trust lands with about 1,800 acres infested with noxious weeds. The FY 2007 weed management project budget was $28,500 in addition to tribal funds, with an annual budget need of $40,000 to adequately address noxious weeds.

Program Needs

1) Establish a Noxious Weed Coordinator position within BIA.

2) Develop Weed Management Plans in conjunction with Tribes for each Indian reservation in Montana.

3) Increase the annual budget for noxious weed control on Indian reservations in Montana to $945,000 to adequately address weed management issues on Indian trust lands.

4) Increase use of Integrated Pest Management by implementing improved pasture management, increasing use of biological control, and promoting/implementing the use of sheep and goats as a weed management tool.

Chapter 3

Plan of Action

CHAPTER 3 - PLAN OF ACTION

Effective management of noxious weeds depends upon several underlying capabilities: 1) strong local, state, and federal leadership; 2) establishment of priorities based upon a science-based assessment of risks; 3) ready access to current scientific and management information; 4) strengthening of laws and regulations; 5) coordination and cooperation between agencies, between different levels of government, and between the public and private sectors; 6) development of stable funding to sustain current programs and initiate new projects; and 7) elevated public awareness, empowerment to implement integrated weed management strategies, and support of weed management efforts.

In summary, management of noxious weeds, and protection and restoration of habitats are critical issues. The lack of a comprehensive weed management program will lead to continued habitat degradation and displacement of native biodiversity. Management actions must be based upon principles and practices consistent with current science, and use prevention, detection and rapid response, control, grazing, and restoration to meet management objectives.

LEADERSHIP AND ORGANIZATION

Leadership and organization at the county, state, and federal level are critical for directing noxious weed programs, implementing state weed laws and directives, and allocating limited resources. Providing consistent local and statewide leadership and organization is important to the success of this plan. Current programs for the following entities are described in detail in Chapter 2. This section identifies leadership needs to strengthen Montana's weed management efforts and facilitate implementation of this plan.

MONTANA WEED CONTROL ASSOCIATION (MWCA). The MWCA is a state organization committed to management of noxious weeds in Montana. The MWCA will support and facilitate adoption of this plan by developing and strengthening task forces for each of the five major components described above. The Steering Committee, as part of the MWCA, will coordinate the five task force groups, consolidate information regarding plan implementation, monitor progress of plan components, and provide direction for adoption of this Plan.

COUNTY WEED DISTRICTS. The 56 County Weed Districts in Montana provide an important role in organization, implementation, and oversight of local weed management programs. County weed coordinators are a primary contact for private land managers who own 63% of land in the state. Counties are also responsible for implementing the state weed law.

STATE AND FEDERAL NATURAL RESOURCE AND LAND MANAGEMENT AGENCIES. State and federal land management agencies control 35% of land in Montana. Their leadership, support, and cooperation on weed management efforts are critical to the success of weed management efforts in Montana.

MONTANA DEPARTMENT OF AGRICULTURE. The Montana Department of Agriculture (MDA) is the primary state agency providing leadership for noxious weed management. The number and diversity of national, regional, and state noxious weed issues necessitates the need for leadership and organization at the state level. The MDA will continue to work with the Montana Weed Control Association, and federal, state, county, and private entities to ensure coordination and oversight of weed management programs at the state and national level.

Need for Action

Critical needs for meeting Plan objectives include: 1) strengthening community-based stakeholder support for the Montana Weed Management Plan and local weed management projects; 2) increasing funding for county weed district programs; 3) and strengthening weed management plans. Specific action items to meet statewide objectives for leadership and organization are described in Chapter 5.

RISK ANALYSIS AND PREVENTION

The majority of weed management programs in Montana focus on land that is dominated by noxious weeds. An equal if not greater effort should be made to prevent their spread into lands that remain non-infested. Preventing weed invasion is the most ecologically sound and economical land management strategy. This includes the ability to predict which noxious weed species are likely to enter the state and implement education, regulation, inspection, and/or quarantine programs to prevent entry of those species.

A comprehensive, systematic approach for preventing introduction and spread of noxious weeds into healthy ecosystems in Montana is critical to the success of this plan. The protection of healthy ecosystems from weed introduction and spread should be made on a site-specific basis to maximize efforts and resources. A successful prevention program includes the ability to: 1) prioritize healthy ecosystems in Montana and predict which noxious weeds will invade these areas; 2) engage and educate landowners to manage and protect weed-free areas from invasion; 3) collect and record information on pathways and spread vectors; 4) implement sampling frequency based on invasion probability to improve rapid response; 5) promote and implement proper ecosystem management to encourage desirable plant communities and minimize weed invasion; 6) refine management strategies to meet the specific needs of landowners.

Prevention guidelines for counties and land management agencies have been published by the Center for Invasive Plant Management (CIPM). The guidelines summarize information provided by the Prevention Task Force, and federal agencies. Information included in the guidelines and a source for the publication is summarized in Appendix E.

Montana's certified weed seed free forage program plays a critical role in preventing introduction of noxious weeds into pristine areas. Certified weed seed free forage is required on Montana's federal land.

Current Program

1) Prevention Task Force, CIPM, and agencies developed weed prevention guidelines land managers (Appendix E).

2) The Invaders Database at University of Montana is used to track weed introduction and spread in the Northwest.

3) County weed districts, Extension offices, NRCS, Montana State University and other partners are prioritizing and protecting healthy rangelands from weed spread. Weed Prevention Areas (WPA) are being developed and implemented to unify landowner groups to work collectively in preventing invasion of non-infested lands.

4) Continental Divide Barrier Zone Project is developing a coordinated network along the Montana/Idaho and Montana/Wyoming borders. The goal of the project is to facilitate establishment of a barrier zone for noxious weeds along southwest Montana and northeast Idaho borders comprising 13 million acres. The project will coordinate EDRR actions and stakeholder partnership

to improve rapid response capacity and reduce new invader weed spread.

5) Certified weed seed free forage is required on Montana's federal land. Additionally, state agencies and public utilities are required to use certified mulch in construction and reclamation projects.

6) The Noxious Weed Seed Free Forage Act and Rules and the North American Weed Management Association minimum regional standards have been in effect since 1995. Both programs are reviewed and updated annually.

7) A communication network regarding new and potential invaders exists with surrounding states and within Montana between Department of Agriculture, Universities, federal and state agencies, and counties.

8) The MDA Nursery Program communicates with the Montana Nursery and Landscape Association on invasive, and state-listed noxious weeds. Through routine nursery inspections, meetings and trade shows, and newsletters, MDA provides educational outreach to this industry regarding weeds sold for ornamental purposes.

9) Public education program on newly invading weed species.

10) Noxious Weed Trust Fund has allocated $5 million since 1985 in addition to $6.8 million from federal, other state, and private funding for control or eradication programs for newly introduced species into Montana. The NWTF also allows for emergency funding, approved by the Governor, for noxious weed emergencies including new invaders (utilizes principal from the permanent weed trust).

Need for Action

Prevent the introduction and establishment of weeds in Montana through a cooperative effort between the research community, agencies, and on-ground land managers to effectively implement early detection, quarantine, and control strategies. Specific action items to meet statewide objectives for risk analysis and prevention are described in Chapter 5.

MANAGEMENT

Management of noxious weeds in Montana is divided into three priorities based on the status of the weed in the state. These include weeds on the watch list, non-established new invaders, established new invaders, and those that are widespread in portions of the state. As of this writing, specific action plans outlining goals, objectives, and management criteria are completed for rush skeletonweed, purple loosestrife, tansy ragwort, saltcedar, yellow starthistle, and dyers woad. As of this writing, plans are being written for Eurasian watermilfoil and hawkweeds; and development of management guidelines proposed for Russian olive. Management of widespread weed species is based on county priority and acres of the weed in the county. An integrated weed management approach will be implemented in all weed management programs.

In addition to prioritizing weeds, special management zones are identified, which include transportation and utility rights-of-way, and waterways. Action plans and needs have been identified for these management zones.

WATCH LIST

Scotch broom, a Category 4 new invader is established in Sanders County, Montana and is the only Category 4 weed as of this writing. Management goals for scotch broom include surveying existing infestations, quantifying invasive characteristics of the plant, increasing public awareness, and working with the nursery industry to prohibit sale into and within Montana.

Current Program

1) Montana Department of Agriculture added scotch broom to species currently quarantined for sale through the Quarantine Nursery Program.

NON-ESTABLISHED NEW INVADERS

Non-established new invaders are the highest priority in Montana. Category 3 state-listed noxious weeds that are considered non-established new invaders as of March 2008, include yellow starthistle, common crupina, Eurasian watermilfoil, dyers woad, the knotweed complex, and flowering rush. These weeds occupy about 1,356 total acres in the state.

Current Program

1) Monitoring high risk sites for invasion as part of early detection rapid response efforts.

2) Complete control of existing infestations with of the objective of eradication.

3) Monitoring of existing sites of introduction and complete control of new plants.

4) Targeted educational efforts, including state- and county-wide weed bounty programs.

5) Specific management plans written for dyers woad and yellow starthistle; development of a task force and management plan for Eurasian watermilfoil is on-going as of this writing.

Need for Action

Increased funding for early detection and rapid response efforts for Category 3 and 4 is a high priority in Montana. Specific action items for non-established new invaders are described in Chapter 5.

ESTABLISHED NEW INVADERS

Newly invading species that are established are the second management priority in Montana. These species include ten Category 2 weeds: orange and meadow hawkweed, perennial pepperweed, purple loosestrife, rush skeletonweed, saltcedar (tamarisk), tall buttercup, tansy ragwort, blueweed, yellow flag iris. The goal for these species is long-term, high-intensity containment and control of current infestations and prevention of movement to non-infested sites.

Current Program

Since 1985, the Noxious Weed Trust Fund, in addition to private, county, regional and federal partners, has provided $11.8 million in revenue and other resources for management of established new invaders (Table 3.1). The increase in the number of new species, and locations and acres infested by these weeds has greatly expanded the amount of funding required for management. An average of about $1.2 million annually was allocated toward management of established new invaders in Montana from 2000 through 2008. These funds are inadequate to contain and control current levels of infestations.

In addition to financial support of management efforts, the following activities are on-going for established new invaders:

1) Inventory/survey of existing infestations as funding and resources allow.

2) Targeted educational efforts, including state- and county-wide weed bounty programs are conducted through various county, private, state, and federal organizations and agencies.

Yellow flag iris is an established new invader in Montana.

3) Regional or statewide task forces have been formed and management plans written or are being developed for purple loosestrife, tansy ragwort, saltcedar, hawkweeds, and rush skeletonweed.

4) The Missouri River Watershed Coalition involving federal, state, county, and private partners was formed to develop a saltcedar management plan for the Missouri River watershed. Purpose of the Plan is to manage saltcedar and restore riparian corridors of the Missouri River Watershed.

Need for Action

Increased funding for early detection, rapid control, and containment of established new invaders is a high priority in Montana. Specific action items for established new invaders are described in Chapter 5.

WIDESPREAD WEED INFESTATIONS

The third management priority includes species that are widespread in Montana (Category 1 weeds). Priorities for management of Category 1 weeds may differ at the local or county level based on abundance of a weed within a specific area, or land management goals and objectives. For example, a containment strategy may be the best management objective for spotted knapweed in western Montana, but in eastern Montana, eradication or high-intensity management may be the goal.

The statewide management goal for spotted and diffuse knapweed is containment and implementation of IWM methods within Cooperative Weed Management Areas (CWMAs) in the western half of the state, and high-intensity management in the eastern half of Montana. Management of other species within the Category 1 designation include containment and implementation of IWM methods within CWMAs (Appendix F).

Current Program

1) Management of existing infestations as funding and resources allow, mostly within CWMAs.

2) Support of CWMAs by the Noxious Weed Trust Fund and other granting institutions and agencies.

3) Inventory of existing infestations as funding and resources allow.

Table 3.1: Amount of NWTF revenue and matching funds allocated toward management of established new invaders from 1985 through 2008.

Weed Species (year project initiated)	NWTF (1985-1999)	Cooperators (1985-1999)	NWTF (2000-2008)	Cooperators (2000-2008)	Total Cost
Dyers woad (1985)	$ 118,658	$ 65,219	$ 199,054	$ 93,320	$ 476,251
Eurasian watermilfoil (2008)	0	0	59,300	28,000	87,300
Hawkweeds	0	0	545,125	1,056,132	1,601,257
Perennial pepperweed	0	0	27,758	37,563	65,321
Purple loosestrife (1989)	173,825	214,453	230,926	367,380	986,584
Rush skeletonweed (1994)	193,524	196,278	536,629	633,159	1,559,590
Saltcedar (2000)	33,200	56,810	609,456	799,330	1,498,796
Tall buttercup	0	0	175,842	181,866	357,708
Tansy ragwort (1994)	429,715	686,641	1,383,352	1,956,611	4,456,319
Yellow flag iris	0	0	237,117	298,424	535,541
Yellow starthistle	0	0	60,591	151,020	211,611
Total	$ 948,922	$ 1,219,401	$ 4,065,150	$ 5,602,805	$ 11,836,278

4) Public awareness and education on impacts caused by Category 1 weeds and quick reference guides to IWM methods.

Need for Action

There is a critical need to expand CWMAs through increased funding opportunities and partnerships between private, county, state, and federal entities. Specific action items for widespread noxious weeds are described in Chapter 5.

SPECIAL MANAGEMENT ZONES

HIGHWAYS/ROADWAY

Highway/roadway rights-of-way are a high-risk area for introduction of new weeds to the state and can serve as a major site of spread of established noxious weeds in Montana. These corridors also serve as a key avenue for movement of weeds into non-infested sites. The Montana Department of Transportation (MDT) manages Interstate, National and Primary Highways, and Secondary Highways. Acreage encompassed by rights-of-way is estimated at 156,000 acres. Road construction activities such as widening and straightening existing highways, as well as assuming the responsibility for maintenance of paved secondary roads, add about 800 to 1,000 acres of new right-of-way per year. Future queries of MDT's roadside weed inventory will provide a more accurate record on weed infestations along most MDT rights-of-way.

Current Program

MDT has five district offices accountable for 10 maintenance areas, with one central contact for weed control program oversight. Each of the 10 area maintenance chiefs meets annually with county weed district supervisors within their jurisdiction to discuss budget and control priorities. Monies are allocated primarily upon previous year's use and paid by reimbursements through invoices submitted by the counties. Total MDT annual revenue available statewide for integrated vegetation management is approximately $1.5 million as of July 1, 2007.

Highway/roadway rights-of-way are a high risk area for introduction of new weeds to the state.

County weed boards establish weed management priorities within their jurisdiction. The current system allows local landowners greater influence over what type of weed control is conducted along roadways adjacent to their properties. MDT has written and adopted cooperative plans for weed management on rights-of-way. MDT is actively pursuing letting of contracts for noxious weed control for their rights-of-ways. An integrated weed management plan has been completed as part of a statewide vegetation management plan.

Construction Sites and Reclamation of Disturbed Rights-of-way

- MDT must allow county weed boards to review and comment on the reclamation specifications for all road construction projects that disturb ground off of the driving surface.
- Some counties now require approval of borrow sources prior to any material placement within rights-of-way, as well as power-washing of all equipment brought into construction project areas.
- The Standard Specifications for Road and Bridge Construction-1995 Edition provided strong direction to construction contractors to abide by the County Weed Management Act. Standard Specification 107.11.5-Noxious Weed

> Management instructs all bidders to "Determine the specific noxious weed control requirements not specified in the [Construction] Contract of each county where the project is located before submitting a bid."

Need for Action

Monitoring and program review to improve efficiency and control are important program needs. Specific action items for highways and roadsides are described under “Special Management Zones” in Chapter 5.

RAILROADS

The introduction and establishment of noxious weeds and their subsequent spread from railroad lands to adjoining private, state, and federal lands is documented in Montana. Controlling establishment and spread of weeds on these rights-of-way is critical for managing weed populations in Montana and protecting non-infested sites. Burlington Northern (BN) Montana Rail Link (MRL), and Union Pacific (UP) are the principle railroads in the state. Union Pacific contracted about $14,500 annually (2004) to Beaverhead and Butte/Silver Bow Counties combined for management of noxious weeds on 113 miles of track. Funding is inadequate to control weeds on Union Pacific right-of-way in these counties. Private contractors are utilized for noxious weed control on MRL and BN rights-of-way. Montana Rail Link did not report current acres of noxious weeds treated in 2004; however, previous records indicate between 3,400 to 4,000 infested acres of right-of-way annually. In 2004, the Western Area Weed Council and MRL initiated development of an integrated vegetation management plan for MRL railroad rights-of-way. Funding of $48,200 in 2004 allocated to MRL rights-of-way in six western Montana counties is inadequate to meet current weed management objectives. Burlington Northern has 2,168 miles of track in Montana. Based on a right-of-way width of 200 feet, total acres encompassed by BN right-of-way is 52,466 acres. In 2004, BN contracted treatment of 8,679 acres of noxious weeds or about 16% of right-of-way acreage. Budgets for weed management activities on these rights-of-way are not published.

Need for Action

Specific action items for railroads are described under “Special Management Zones” in Chapter 5. Weed inventory, monitoring, and management plans remain a critical need for railroads in Montana.

UTILITY RIGHTS-OF WAY

Utility rights-of-way for power, communications, and other public services serve as a major avenue for weed introduction and spread. Most easements are on private land and weed control responsibility must be negotiated between the utility company and private landowner. Utility companies are required by law (7-22-2152 MCA) to send a copy of the reclamation and weed management plan to the county weed district for any new construction or reconstruction of existing services with major land disturbance. Once projects are completed, responsibility of weed management reverts to landowner and contract agreement with utility company.

OPEN PIT MINING (GRAVEL PITS)

The Montana County Weed Control Act (7-22-2152 MCA) currently states that any state agency or local government unit approving a mine or other major disturbance shall notify the weed board and submit a written plan specifying revegetation at least 15 days prior to the activity. Several counties, such as Park County, have written policies regarding removal and purchase of gravel, topsoil, rock, sand, and other materials. The County Weed Control Board is responsible for inspection and approval under county policy. In general, once projects are completed, responsibility of weed management reverts to the landowner or contract obligation between the landowner and excavating company.

The Greater Yellowstone Area (GYA) Coordinating Committee, in cooperation with county weed districts, inspects gravel/sand pits and issues certification for weed-free pits within the GYA. Pits must be certified prior movement of materials into Yellowstone National Park.

Need for Action

County Weed Districts need to expand coordination with state and federal agencies, and work with local pit operators in securing sources of noxious weed free gravel and materials.

WATERWAYS

Montana is dissected with numerous ephemeral and perennial streams and rivers. Major river systems include the Yellowstone, Madison, Missouri, Clarks Fork, Flathead, Bitterroot, Beaverhead, Blackfoot, Ruby, and Big Hole Rivers. Although many of the major streams and rivers originate in Montana, exceptions include the Yellowstone, Tongue, Powder, Little Powder, and Little Missouri Rivers that originate in Wyoming. The Milk River in northern Montana originates in the state but flows through Alberta, Canada before re-entering Montana in Hill County. Montana also contains more than 1,000 lakes and reservoirs.

The extremely diverse and abundant waterways of Montana provide equally abundant and diverse habitats for noxious weeds. Noxious weeds associated with waterways can be submerged or emerged and all waterways are at risk of establishment. Land managers should expect invasion and take proactive steps to identify and protect non-infested rivers, streams, and water bodies. Once weeds are established, management is difficult due to movement of plant parts in water, limited accessibility, and limited management options.

Rivers, streams, and lakes serve as important transportation corridors for weeds between states and provinces, and within Montana. Infested rivers and streams are a source for invasion of upland sites when conditions are favorable.

Waterways are highly susceptible to invasion as a result of water transport of weed seeds, repeated disturbance associated with flooding, and frequent human activity. Pathways for introduction of aquatic noxious weeds include boats, trailers and other recreational equipment, the aquarium trade, and the ornamental pond industry including nursery and garden centers. Aquatic weeds impact water quality, recreational use of waterways, fisheries, and irrigation and drainage ditches. These weeds compete with native species and form dense canopies that displace native vegetation, waterfowl, fish, and other wildlife.

Montana waterways contain sensitive ecosystems that provide important environmental and economic benefits. Healthy waterway ecosystems perform key functions that maintain water quality and quantity and provide diverse habitat for wildlife and high quality forage for livestock. Recreational use by anglers and bird watchers provides financial support to rural economies. Because people are drawn to these popular sites, the sites are vulnerable to severe

Streams and rivers are a valuable resource in Montana.

alteration, resulting in erosion and weed invasion. Protection of healthy waterway ecosystems is a high priority in Montana.

Current Program

1) Montana adopted the Montana Aquatic Nuisance Species (ANS) Management Plan (October 2002). The plan outlines management for all aquatic nuisance species in Montana including aquatic noxious weeds and is administered by Montana Fish, Wildlife and Parks.

2) Formation of multi-state Continental Divide Barrier Zone Project and Missouri River Watershed Coalition for early detection and control of newly invading weeds.

3) Weed management plans are completed and management efforts implemented for portions of the Yellowstone, Smith, Beaverhead, Red Rock, Big Hole, Stillwater, Marias, Milk, Missouri, Musselshell, and Blackfoot Rivers and several other smaller streams and rivers in the state.

4) Early detection and management of invading species, such as purple loosestrife along the Missouri River and saltcedar in eastern Montana.

5) Monitoring water bodies for aquatic plant species such as Eurasian watermilfoil and flowering rush.

6) Public outreach campaigns to increase awareness of invasive plant movement in and along waterways.

Need for Action

Additional revenue for early detection, control, and monitoring of noxious weeds in and along waterways are needed in Montana. Specific action items for waterways are described under “Special Management Zones” in Chapter 5.

Trails built for public use are susceptible to invasion by noxious weeds and can serve as corridors for movement of weeds into non-infested sites.

TRAILS

Trails built for motorized and non-motorized public use are susceptible to invasion by noxious weeds. These trails serve as corridors for movement of weeds into non-infested sites. Weed control along trails should be a priority within city, state, and federal agencies with jurisdictional authority for trail construction and maintenance. Montana Department of Fish, Wildlife and Parks (FWP) allocates limited funding to management of weeds on trails. There is federal funding available through FWP for creation, completion, maintenance and/or renovation of recreational trails in Montana, which includes a component on weed control. Educational programs on noxious weeds should continue to focus on recreational users of trails and two-track roads.

AIRPORTS

Airports serve as a source of introduction of newly invading weeds and aid dispersal of weed seed. Most airports in the state are under city/county ownership with weed management responsibility of the county weed district. Montana Department of Aeronautics maintains 15 state-owned airstrips. Weed management on state-owned strips is conducted within existing maintenance budgets, often as a contract with county weed districts.

RESTORATION AND RECLAMATION

The terms restoration, reclamation, and revegetation are often confused, and for the purpose of this document are defined as follows: *Restoration* is a return of something to an original or unimpaired condition. *Reclamation* is reclaiming degraded lands to productive or desired use. Reclamation attempts to restore *some* elements of structure and function in an ecosystem. It is considered less ambitious but sometimes more feasible than restoration. *Revegetation* is to cause vegetation to grow again.

Soil or ecological site-adapted desired plants should be restored onto a site where invader species are to be eradicated. Restoration planning to reoccupy the site with desired vegetation should be an integral component of a weed management program when loss or displacement of desirable species has occurred. Without restoration of desired plants, the area is likely to become re-infested with either the same or a new weed species. Disturbed areas, where protection and restoration projects may protect critical habitat or important natural features, should have the highest priority. Areas where restoration has a good chance of success should also be a high priority.

In some cases, revegetation may not be necessary to restore a desired plant community. For example, if a moderately healthy component of the desired vegetation remains on the site, restoration may be achieved through other weed management techniques such as multi-species grazing, herbicide applications, and/or the integration of techniques applied in a manner that addresses how plant communities change naturally. Before revegetation occurs, sites should be evaluated for the presence and composition of desired species to determine if revegetation is necessary. The need for revegetation should be determined before weed treatments occur so that seeding can be done soon after the weeds have been removed and before the treated species or other weed species recolonize the site. Monitoring is required to determine which native species established well and whether a second seeding is desirable.

Although efforts to restore appropriate desired vegetation are being exerted on disturbed sites, such as rights-of-way, mining areas, and power and transmission lines, there is limited work of this kind being done on degraded range, pasture and woodland sites. The state of Montana should support and implement the following restoration activities during the next five years.

Need for Action

Public education, additional research, and assistance to public and private land managers on restoration and reclamation are needed in Montana. Specific action items for restoration and reclamation are described in Chapter 5.

INVENTORY, MONITORING, AND EVALUATION

INVENTORY

Inventory/survey standards provided in the Montana Noxious Weed Survey and Mapping System and International Mapping Standards are followed for mapping noxious weeds on some lands in the state. Montana participates in a national committee to maintain mapping standards.

The program is limited by lack of funds and resources to collect, store, process, and retrieve data. It is estimated that less than 5% of total weed management expenditures in the state are dedicated toward weed inventories and processing data.

There are two levels of inventory/survey adopted in Montana:

Plant-based Inventory/Survey

The objective of plant-based weed inventory/surveying and mapping is to: 1) determine and record locations of noxious weeds in Montana; 2) accurately calculate total number of acres infested for each weed on the statewide noxious weed list; 3) prioritize protection of

non-infested areas; and 4) determine how fast noxious weeds are spreading by comparing weed inventories/surveys over time. Surveys also provide information on weed biology and ecology, help predict high-risk sites for weed invasion, and raise public awareness. This information is critical for identifying boundaries of newly invading species, developing long-term weed management goals and objectives, implementing action plans, evaluating the status of weed management efforts across the state, and establishing early detection/rapid response strategies.

Section-based Inventory/Survey

The objective of section-based weed inventory/survey and mapping is to: 1) establish an overview of annual change of weed infestations statewide; 2) provide an internet-based reporting system where new information can be added by county weed coordinators and designated land managers: and 3) facilitate a rapid data and information retrieval system. This type of mapping allows for identification of weed movement trends and weed-watch advisories statewide on an annual basis.

Need for Action

Increased allocation of revenue toward field inventory, and developing/funding a suitable statewide data storage and retrieval system for noxious weeds is needed in Montana. Specific action items for inventory are described under "Inventory, Monitoring, and Evaluation" in Chapter 5.

MONITORING

Monitoring and evaluation are necessary to establish baseline data on site condition and record changes in vegetation trends before and after implementing weed management practices. The purpose of a monitoring system is to: 1) collect baseline field data on existing weed infestations and management practices; 2) compile data to develop effective management decisions; 3) evaluate effectiveness of education, training, and management programs; 4) guide maintenance of weed-free areas and measure effectiveness of prevention strategies over time; and 5) prevent reinvasion of weeds into a treated area.

Monitoring and evaluation are necessary to establish baseline data on site condition and record changes in vegetation trends before and after implementing weed management practices.

The level of monitoring will vary based on resources and manpower available. The following components are considered a baseline for monitoring the status of weed management programs.

- Survey size and density of weed infestations and vegetation trends in CWMAs.
- Assess public opinion towards weeds and weed management practices.
- Assemble data on past and current weed management activities within weed management areas.
- Update weed distribution and density maps as an on-going part of a weed management program.
- Characterize sites for ecological and habitat classification.
- Establish both short-and long-term monitoring depending on project objectives.

EVALUATION

Evaluation is relating information obtained from monitoring to objectives of the annual plan

of operation. Evaluations will help determine if the weed management program accomplishes the objectives of the plan. Evaluation should answer the following questions:

- Was the weed population adequately suppressed?
- Was the planned procedure used, if not how and why did it vary from the original plan?
- Were weed management costs equal to, greater than, or less than projected costs?
- What was the affect on the target weed?
- Were there any side-effects to non-target organisms from the treatment?
- Should the treatment be repeated or modified?
- Were funding and manpower available at the appropriate time and were they adequate?
- Was personnel training adequate?
- Make necessary changes to annual plan of operation based on the evaluation.

Need for Action

Evaluate and monitor noxious weed management programs in Montana.

PUBLIC OUTREACH, AWARENESS, AND EDUCATION

The primary purpose of the public outreach, awareness and education component to the Montana Weed Management Plan is to ensure that every Montana resident, landowner, and visitor is aware of the serious impacts of noxious weeds on natural resources and citizens and understands where and how to connect with available resources. The secondary purpose is to provide every land manager with information about current systems-based integrated weed management methods. Strategies used to meet these objectives are based on continuing research and understanding of the dynamic needs, apprehensions and behaviors of Montana residents, visitors, and people who own and manage property in Montana.

Organizations and agencies across Montana have engaged in noxious weed awareness and educational programs for more than 60 years with formation of conservation districts and weed districts and organizations of the Montana Weed Control Association (MWCA). Research technology transfer available to land managers was enhanced when the MWCA opened its membership to agencies and stakeholders in 1983. Weed fairs were organized statewide to increase public awareness. An independent public awareness survey conducted in 1994 identified a need for public support of weed efforts. In 1998, the Statewide Noxious Weed Awareness and Education Campaign (SNWAEC) Task Force united efforts of stakeholders and began implementing a strategic mass-media awareness campaign for the general public mirroring the national strategy "Pulling Together Against Noxious Weeds." The SNWAEC task force involves more than 300 individuals comprised mainly of volunteers, and coordinates statewide weed education activities to reduce duplication of effort and expand effectiveness of shared resources.

Raising awareness of the impacts of noxious weeds and educating the public about prevention and management is a critical component of Montana's weed management program.

Groups and individuals comprising the SNWAEC task force members are dedicated to implementing three major components in the public outreach, awareness, and education strategy: 1) public awareness and opportunities to take action; 2) building coalitions and partnerships; and 3) developing training opportunities and support systems for land management professionals. Particular emphasis is placed on building partnerships that improve capacity of grassroots educational programs to meet area- and entity-specific for example: Rocky Mountain Front Weed Round Table, Blackfoot Challenge, Beartooth Cooperative Weed Management Areas, and the Big Hole River Watershed Group. Grassroot initiated programs that focus on shared resources and decision-making improves local capacity to implement community-based integrated weed management programs.

The Campaign's activities generate new partnerships and shared resources that support partnering stakeholder and agency noxious weed education goals throughout the State. Beginning with the 2000 inception of the Montana Weed Management Plan, existing and newly initiating cooperative weed management areas, watershed groups, and citizen action groups subsequently increased numbers and diversity of stakeholders and participants involved in implementing the plan. Models for community-based fund-raising such as the Blackfoot Challenge and Madison Valley Ranchlands, provide alternatives to traditional and often inconsistent government support. Sustainable grassroots organizations—and there are many in Montana—encourage and support other local initiatives. Stakeholders and agencies together developed educational guidelines and training programs for targeted audiences such as small-acreage landowner action groups, real estate professionals and developers, utilities and transportation, recreationists, sportsmen, tourists, conservation groups, residents on reservations, government employees, youth and youth educators.

Recognition that noxious weed education is important has grown and is evidenced in participation by non-traditional public audiences engaging in prevention, eradication, and control efforts. Increased public support resulted in the addition of noxious weed education specialist positions to six county weed management districts. Noxious weed and invasive species specialist positions were created in state and federal agencies, increasing in number after the 2005 update to the Montana Weed Management Plan. The Aquatic Nuisance Species Management Plan was drafted and a full-time coordinator was funded. The public outreach plan for aquatic nuisance species was drafted in 2007 and aquatic nuisance plants, animals, and pathogens were added to existing Statewide Campaign information materials. The MWCA reorganized in 2007 to strengthen, support, and coordinate weed management efforts. The MWCA Zero Spread and TIPS for fighting weeds on small-acreage information materials are designed for mass media, signage, and local adaptation.

Education on various weed management methods is currently conducted by Montana State University Cooperative Extension Service, conservation districts, county weed districts, federal agencies, Montana Department of Agriculture, private contractors, and industry. Training programs are targeted toward weed district employees, agricultural producers, herbicide applicators, private landowners, and county, state, and federal land managers. Information included in education efforts includes: mapping and monitoring, inventory, early detection and rapid response, weed identification, integrated weed management methods, herbicide mode of action and fate in the environment, and current research regarding weed management techniques.

Despite increasing capacity to implement education programs, new invading weed species and increased cost to manage additional infestations poses great challenges. Like many western states, Montana's landowner population is rapidly transitioning resulting in a loss of traditional farming and ranching and an increase in retirement and small-acreage landownership. Influx of residents and visitors bring new ideas of land use and ways of receiving information.

Not only is Montana faced with reaching these varied populations with innovative technologies, we are challenged to continuously cycle existing education programs through traditional media. The need to communicate with varied audiences is joined by challenges to secure funding to create information materials for newly invading and establishing plant species. Five new weed species were listed as noxious in Montana during 2008. Inconsistent program funding for maintaining existing programs sets the stage for inadequate resources to generate materials about risks, impacts, and management of these species.

Need for Action

Stabilize funding for the Statewide Noxious Weed Awareness and Education Campaign to allow for improved program operation, partnerships, and information dissemination. Specific action items for public outreach, awareness, and education are described in Chapter 5.

RESEARCH

Research provides a scientific foundation for effective, sustainable, ecologically-based weed management. More effective management strategies must be developed to protect Montana's natural resources from invasive weeds. The Weed Research Task Force formed in 1999 identified six general research areas critical for invasive weed management in Montana. Research priorities, objectives, and funding were reviewed and revised in 2004 by a coalition of individuals representing the Center for Invasive Plant Management, Montana State University, University of Montana, Montana Weed Control Association Research Needs Committee, federal agencies, and private industry. These were again reviewed and updated in 2007.

Six research areas are identified: Impacts, Prevention, Weed Biology, Plant Population and Community Dynamics (including modeling), Integrated Weed Management, Land Reclamation, and Effects of Natural Disturbance. Working together and with

Research provides a scientific foundation for sustainable, ecologically-based weed management. *Knapweed insectary at Whitehall School.*

provision of adequate funding, Montana's scientific community will make significant advances in knowledge about invasive plant species leading to opportunities for improved management. Technology transfer—the two-way transfer of knowledge between researchers and land managers—is critical for incorporating new scientific knowledge into management strategies. The amount of revenue needed to support personnel and programs in designing and conducting research, testing hypotheses, compiling results, and transferring the information and technology to broader audiences is estimated at $5.4 million annually.

As noted below, these six research areas support the *Risk Analysis and Prevention* and *Management* sections of the Montana Weed Management Plan.

IMPACTS (RISK ANALYSIS AND PREVENTION)

- Quantify the effects of weeds on Montana's economy (considering crops, livestock, wildlife, tourism, and recreational revenues). Develop effective means to assess and quantify weed impacts. Develop cost:benefit analysis tools for weed management strategies.

- Develop new methods and test current methods to screen the invasion potential of new plant species introduced as crops or ornamentals, and species established in adjacent states but not yet detected in Montana.

- Quantify current and potential pathways of invasion through inventory, survey and monitoring of current established and potential invasive species.

- Determine the relationship between environment and variability in species invasion potential to prioritize environments for early detection and rapid response.

- Quantify current and potential effects of weeds on Montana's ecosystems, including biodiversity change, nutrient cycling, hydrologic cycling, and energy flow. Develop models to estimate ecosystem change in response to weed invasion.

- Quantify the effects of weed management strategies on ecosystems. Develop effective monitoring approaches that may be transferred to land managers and landowners.

PREVENTION (RISK ANALYSIS AND PREVENTION)

- Identify invasion routes and mechanisms, favorable habitats, environmental and plant traits correlated with invasiveness of weed species. Develop models predicting invasion.

- Develop and implement site-specific "best management practices" to prevent invasion through identified routes.

- Develop and demonstrate economical and effective mapping and monitoring systems to assess the status and trends of invasive plants, and that are appropriate for specific land management objectives.

- Develop the scientific basis for management techniques to prevent weed invasion or re-invasion. Evaluate interactions between environmental conditions, plant community diversity, invasive species population dynamics, weed seed dispersal, disturbances, grazing management, and other known or potential drivers.

WEED BIOLOGY AND PLANT DYNAMICS (MANAGEMENT)

- Identify factors controlling plant community dynamics. Collect plant community information to identify key processes in the life cycle of invasive species. Identify important environmental relationships that may favor or discourage invasion and provide opportunities for effective management. *Absence data can be as important as presence data.*

- Document weed population response to crop rotations, minimum or no-till, and irrigated agriculture, and climate change. Develop decision-support systems to forecast population dynamics and crop impact to identify economic thresholds and increase weed management efficiency.

- Investigate the genotypic variability and phenotypic plasticity of weeds for the purposes of understanding species population variation. Consider the compatibility of weeds with potential biocontrol agents, the potential for herbicide resistance, and differences in the ecology and spread of weed populations.

INTEGRATED WEED MANAGEMENT (MANAGEMENT)

- Develop and demonstrate sustainable, integrated weed management strategies that set plant communities on a

trajectory toward a desired state. Investigate interactions and synergism among management strategies. Conduct workshops on incorporating experimentation into management according to the adaptive management paradigm.

- Enhance and support consortia involved in biological control as they identify new target weeds and associated natural enemies. Improve agent screening / risk analysis prior to release. Improve propagation, distribution, collection, and monitoring of agents. Evaluate critical interactions among control mechanisms and environmental conditions that may affect efficacy, and evaluate long-term effects on ecosystems. Enhance integration of biological control techniques into existing weed management strategies.

- Improve the effectiveness and use of herbicides by investigating response and persistence of desirable vegetation as well as the target weed(s). Analyze efficiency of spot treatments versus broadcast treatments in differing situations. Develop decision-support tools and demonstration sites for effective herbicide use.

- Enhance the use of sustainable grazing for weed management. Develop multi-species grazing systems that decrease weeds, and increase diversity and abundance of desired plant species.

- Develop and improve strategies for agricultural weed management, including crop rotations, prevention of herbicide resistance, and application of site-specific weed management technology. Improve herbicide efficacy by understanding weed biology and response to stresses.

LAND RECLAMATION (MANAGEMENT)

- Develop and demonstrate methods for revegetating and reclaiming disturbed land.

- Develop improved understanding about the interactions between soils, plants (invasive, desired), and other key site properties that govern the potential methods and outcomes of restoration efforts.

EFFECTS OF NATURAL DISTURBANCE (MANAGEMENT)

- Determine effects of natural disturbance (fire, flood, drought, landslides, etc.) on weed biology, ecology, and spread.

- Determine optimal post-disturbance management for weed-infested areas. Develop management guidelines to minimize weed spread.

Need for Action

Identify and pursue funding sources and support for Montana University system to conduct basic and applied research defined in the Montana Weed Management Plan.

Major natural events such as fire, flood, drought, and landslides can increase a site's susceptibility to weed invasion.

Chapter 4

Budgets for a Comprehensive Weed Management Program

CHAPTER 4 - BUDGETS FOR A COMPREHENSIVE WEED MANAGEMENT PROGRAM

Increased funding is critical to address the current level of weed infestations in the state. Revenue generated for weed management in Montana increased about $7 million from 2000 to 2008. However, the present budget remains inadequate to stop introduction of new species and slow spread of existing weed infestations. A balanced comprehensive weed management program that segments funding toward public education and awareness, prevention, early detection, management, and rehabilitation is vital to successfully manage large-scale weed infestations. In addition, a coordinated research effort is necessary to develop more sustainable, cost-effective weed management techniques.

The percent of total budgets allocated to each critical component of a weed management program were based on cornerstones of weed management (Dewey, 1995) and expanded to fit needs in Montana. Based on weed acreage figures and current weed management budgets, implementing a balanced weed management program that stops spread and reduces current weed infestations by 5% per year will require about *$55.8 million dollars annually*.

The following budget estimates are based on information provided by county, state, and federal entities, estimates from herbicide sales, and the following assumptions and calculations.

Weed Infestation Status

- A total of 7.6 million acres infested with noxious weeds (estimated 1 million acres in cropland and 6.6 million on range, pasture, or wildland).
- Infested acres by land ownership (estimates): 4,300,000 on private land; 430,000 on state land (includes MDT); 2,200,000 federal lands; and 700,000 tribal land.

Management Assumptions

- Average noxious weed spread rate per year = 10%
- Minimum management cost per acre = $38/acre
- Consider 5% of Russian knapweed, leafy spurge, and whitetop, 30% of Canada thistle, and 70% of field bindweed is in crop and treated as part of a cropping system. Total area infested on range, pasture, wildlands and non-crop sites is about 6.6 million acres.

Current Program

The current budget for weed management activities is about $21.2 million dollars annually. Based on 6.6 million acres of range and wildland infested, ***the deficit is $ 9.5 million for on-ground management and treatment of established new invaders, to maintain current weed populations (stop spread)***[1] assuming all other costs remain fixed. Allocation of dollars into various weed management activities is shown in Table 4.1, and a more detailed description by agency is shown in Appendix G. There are several entities responsible for each management activity. For example, Public Education and Awareness includes portions of budgets from county weed districts, state and federal agencies, the State Weed Education Program, and MSU Cooperative Extension Service. On-ground management includes county weed districts, federal and state agencies, and private land managers.

[1] Deficit is based on treatment of 660,000 acres (10% of 6.6 million acres) at $38/acre for a total of $25 million. Deduct current management, rapid response and administration budget of $15.5 million, and deficit is $9.5 million to maintain current levels of weed infestations.

Need for Action

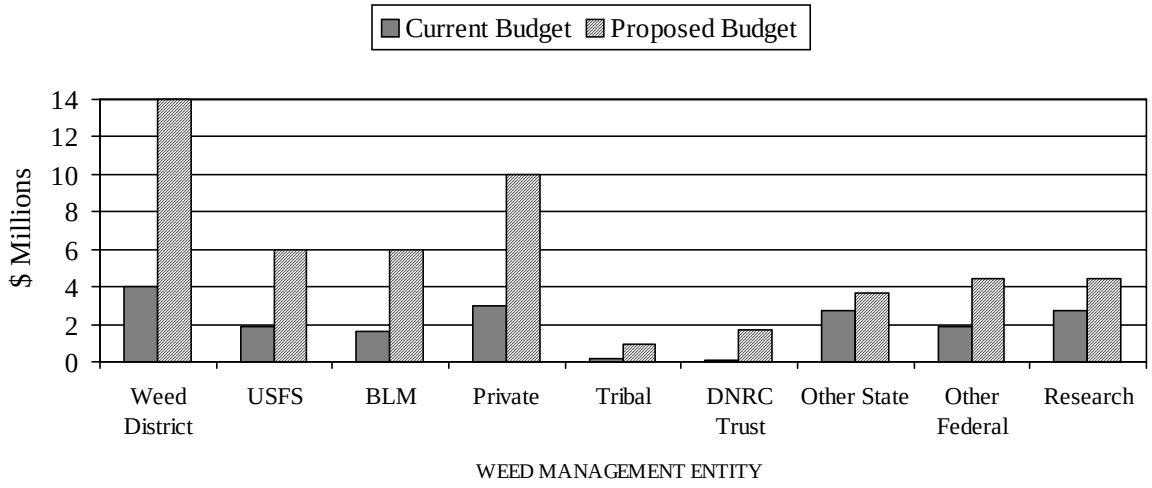
Additional revenue of about $34.6 million is needed to support weed management efforts of various entities in Montana. Based on current infestation levels, the annual budget necessary to stop weed spread and reduce current infestation levels by 5% per year through a balanced weed management program is about $55.8 million dollars (Table 4.1). This estimate was based on 6.6 million acres infested, a MINIMUM management cost of $38 per acre, and projected needs identified by agencies. Costs represent a balanced statewide program that allocates funding to various weed management activities. Figure 4.1 indicates current weed management budgets and budget requirements for various weed management entities in Montana.

Table 4.1: Current and Required Annual Budgets for Weed Management Activities in Montana.

Management Activity	Current Budget	% of Budget	Required Budget	% of Budget
Public education and awareness	$ 1,500,000	7	$ 3,800,000	7
Weed Inventory	636,000	3	5,480,000	10
Prevention/ Early Detection/Rapid Response	2,100,000	10	7,672,000	13
Management (on-ground)*	12,000,000	57	29,044,000	51
Rehabilitation	636,000	3	1,600,000	3
Administration (county, state, fed)	1,500,000	7	3,836,000	6
Research (ARS, APHIS, MSU, UM)	2,850,000	13	5,400,000	10
Total	**$ 21.2 million**		**$55.8 million**	

*Adjusted slightly for state and federal agency costs.

Figure 4.1: Current and proposed weed management budgets for various management entities in Montana [2]



[2] County Weed District based on mill levy only. Totals do not include Noxious Weed Trust Fund or other grants.

Chapter 5

Plan Implementation and Evaluation

CHAPTER 5 - PLAN IMPLEMENTATION AND EVALUATION

The key to success of Montana's Weed Management Plan is dependent on the ability of stakeholders to implement action items identified in the plan. Table 5.1 identifies key action items within the plan, responsible entity for implementing the proposed action, estimated date for completion, and cost/resource requirements.

Evaluation of progress on action items is critical to determine whether modifications or additions to the plan are necessary to improve facilitation and implementation. Montana's Weed Management Plan will be reviewed biennially by stakeholders, possibly in conjunction with the Montana Weed Control Association annual meeting. Status of action items will be reviewed, updated as needed, and suggestions identified for facilitation of the plan. The Montana Noxious Weed Summit Advisory Council (MNWSAC) and Montana Weed Control Association will be responsible for scheduling the review process and implementing revisions in the plan. A formal review of the plan was conducted in 2004 and again in 2007. Reports of accomplishments are on file with Montana Department of Agriculture. The following action items represent revisions and updates based on accomplishments since 2004.

Table 5.1: Action Items to Implement for the Montana Weed Plan.

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
LEADERSHIP AND ORGANIZATION					
1) MNWSAC, MWCA, Task Force Committees will direct and facilitate implementation of plan components.	MNWSAC, MWCA, weed task force committees	on-going	min cost	Develop or strengthen task forces that represent five components of the plan. MNWSAC would provide guidance and direction for task force groups.	3-1
2) Secure long-term, stable, adequate funding to support county weed coordinators and reservations.	MWCA, MACO, weed districts, reservations	2011	$1 million	Identify and secure funds to add $15,000 in each county and reservation to enhance noxious weed management programs.	2-3 3-1 3-2
3) Establish full-time weed coordinator positions in each county or multi-county area in Montana.	MACO, MWCA, MNWSAC	on-going	see above	MWCA and MNWSAC will work with MACO to increase support for weed coordinator positions.	2-3 3-1
4) Facilitate endorsement of the Montana Weed Management Plan by local governments, Tribal, county, state and federal agencies, and public.	MWCA, weed district, agencies, Tribes, PI	on-going	min cost	Agencies and county and city governments adopt action items identified in this plan.	2-3, 2-5 2-6, 3-1 3-2

[1] Page numbers reflect location of program needs and action items identified in the plan.

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
5) Review county, state, and federal weed management plans and update as needed to complement and support the Montana Weed Management Plan.	county, state, federal, and municipal gov't	biennial	min cost	Update agency/county weed management plans to complement state plan.	2-3 3-1 3-2
6) Encourage reservations to develop a weed management plan that complements the Montana Weed Management Plan.	Tribes, BIA, MDA, weed districts	on-going	add cost	Facilitate/encourage plan development.	2-3 2-19 2-20 3-1
7) Establish weed coordinator positions in state and federal agencies to meet program needs.	MNWSAC, MWCA, agencies	on-going	add cost	Work with state and federal agencies to encourage establishment of weed coordinator positions.	2-8 2-10 2-20 3-1
8) Facilitate development and implementation of IWM plans for local government and agencies that complement the Montana Weed Management Plan.	MACO, weed district, agencies, commissioners	2010	Additional cost to gov't	County weed districts work with local government agencies to facilitate development and adoption of vegetation management plans.	2-3,2-6 2-8,2-9 3-1
9) Strengthen community-based stakeholder support of weed management projects at county level	Weed districts, CES, agencies	on-going	min cost	County weed districts and CES will take lead to build consensus in community-based weed projects.	2-3 3-1
RISK ANALYSIS AND PREVENTION					
1) Ensure Montana's efforts complement APHIS programs regarding introduction of exotic species quarantine and control, including national and regional early detection/ rapid response system.	APHIS, MWCA Prevention Task Force, MDA	on-going	min cost	Meet with APHIS to review prevention programs in Montana	2-17 3-2
2) Early detection/rapid response (covered under management)					
3) Work with federal funding agencies to ensure compliance with Executive Order 13112[1].	weed districts, MDT	on-going	min cost		3-2 3-3

[1] Presidential Executive Order 13112 to prevent introduction of invasive species and provide for their control and minimize economic, ecologic, and human health impacts caused by invasive species.

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
4) Include monitoring and regulatory protocols in the proposed MDA Nursery Program Procedures Manual.	MDA, weed Prevention Task Force	on-going	min cost	Write protocols regarding nurseries and other mail-order outlets that distribute plants into and within Montana.	3-2 3-3
5) Identify and delineate non-infested ecosystems within the state as part of current inventory and mapping system.	Private, weed districts, agencies, SWCD	on-going	part of inventory $'s	Identify non-infested sites as part of weed inventory program.	3-2 3-3
6) Develop site-specific prevention strategies that include identifying pathways for weed invasion.	Weed districts, agencies, regional weed-free barrier projects, universities, MAES	on-going	add cost	Weed districts and agencies will include prevention strategies in management plans that include identification and mitigation of invasion pathways.	3-2 3-15
7) Enhance communication and education of invasive species professionals to facilitate early detection and eradication / control of newly invading species.	CES, SNWAEC, universities, MAES	on-going	min cost	Continue training of CES, weed districts, agencies, and other weed management professionals	3-3 3-13
8) Improve distribution of state authorized weed alerts with photographs and biological information.	MDA	on-going	min cost	Formalize program and develop distribution procedure.	3-2 3-3
9) Establish incentives to encourage noxious weed seed free forage production to enhance existing laws.	MDA	on-going	$100,000	Establish funding for the program	3-2 3-3
10) Encourage implementation of weed prevention strategies as outlined in CIPM Prevention Guidelines (Appendix E).	Agencies and municipal gov't, SWCD, weed districts	on-going	min cost	Encourage implementation of CIPM prevention standards statewide.	3-2 3-3

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
MANAGEMENT - *NEW INVADERS AND ESTABLISHED NEW INVADERS*					
1) Early Detection/ Rapid Response: designate/develop a fund for $7.7 million for prevention, management of new invaders, task force operations, and support of SWAT team.	MDA, MWCA	on-going	$7.7 million annually	MDA work with MWCA Prevention and Management Task Forces to designate funds for task force operations and early detection/rapid response programs.	3-3 3-4 3-5
2) Identification of high-risk areas for invasion.	Invaders Database, weed districts, agencies, universities, MAES	on-going	add cost	Identify high risk sites for invasion for noxious weeds.	3-4 3-15
3) Organize a task force and develop a written management plan for newly invading species that are not covered under existing task force operations.	MWCA, MDA, MNWSAC	on-going	Part of $7.7 million in #1	Organize task forces and write management plans as needed.	3-4
4) Revise existing management plans to include management budgets.	Weed districts, agencies, MDA, steering committee	on-going	min cost	Provide format for management plans.	3-4
5) Coordinate programs on Category 2 and 3 weeds at a multi-state level.	Task Force	on-going	min cost	Montana Hawkweed Task Force will coordinate and participate in regional hawkweed efforts.	3-4
6) Evaluate and monitor existing weed management efforts.	MDA, agencies, Tribes, weed districts	on-going	min cost	Monitor existing weed management efforts.	3-4 3-12
7) Annual updates and refinement of weed inventories.	Agencies	on-going	min cost	Update and refine inventories.	3-4
8) Develop management guidelines for Russian olive in Montana.	MNWSAC	2009	min cost	Develop guidelines.	3-3

[1] Page numbers reflect location of program needs and action items identified in the plan.

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
MANAGEMENT - *WIDESPREAD WEED INFESTATIONS*					
1) Increase funding for county, state, and federal entities to provide long-term, consistent revenue for weed programs.	MWCA, MACO, agencies, Tribes	on-going	$37 million annually	Identify and secure funding sources for county, state, and federal weed management programs.	2-3,2-5 2-8 2-12 to 2-20 3-5
2) Expand CWMA concept to optimize weed management efforts and partnerships.	Weed district, MWCA, agencies, CIPM, Tribes, PI, private	on-going	min cost	Identify and secure regional, federal, state, and private grant revenue to expand CWMA.	2-1,2-3 2-5 /20 3-5,3-6
3) Promote and assist with implementation of integrated weed management systems.	Weed district, agencies, CES, PI, private	on-going	min cost	Promote integrated weed management.	2-20 3-5 3-6
4) Develop cost-share programs for weed management on private lands.	MWCA, NRCS, NWTF (MDA), SWCD, private	on-going	add cost	Identify and secure grant funds for private lands.	2-4,2-6 2-18 3-5
MANAGEMENT - *SPECIAL MANAGEMENT ZONES*					
1) Develop and implement FWP and DNRC statewide integrated weed management plans.	FWP, DNRC	2009	$50,000	Finalize plans.	2-8 2-9 3-6
2) Continue to improve monitoring and evaluation of vegetation management efforts on right-of-way.	MDT, weed districts	on-going	add cost	Monitor management efforts.	3-6
3) Periodically review reimbursement programs to county weed districts to increase efficiency and improve administration.	MDT, weed districts, Tribes	on-going	min cost	Review reimbursement program as part of operations.	3-6

[1] Page numbers reflect location of program needs and action items identified in the plan.

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
4) MDT contracts will mandate contractors contact county weed districts for reclamation requirements on roadside projects and monitor reclamation projects on a regular basis.	MDT	on-going	min cost	Amend current contracts and enforce monitoring on reclamation projects.	3-6
5) Evaluate budgets for weed control on right-of-way and increase as needed to meet right-of-way expansion	MDT	annually	add cost	Increase budgets as needed for right-of-way expansion.	3-6
6) Identify scope of weed infestations and management issues on railroad rights-of-way.	Railroads, weed districts	on-going	add cost	Inventory weed infestations on right-of-way and identify management issues.	3-7
7) Develop strategies to address weed management issues on railroad rights-of-way.	Railroads, weed districts	on-going	add cost	Develop strategies to address weed management issues on right-of-way.	3-7
8) Develop statewide management plan for Eurasian watermilfoil and flowering rush.	ANS program coordinator, Milfoil Task Force, weed districts, CES, private	2009	$20,000	Develop plan.	3-4 3-8 3-9
9) Review ANS plan to monitor status of program.	FWP, MDA	biennially	min cost	Review ANS plan.	3-8 3-9
10) Support ANS Program to address prevention of weed introduction and management along streams and rivers.	MWCA, MACD, agencies	on-going	add cost	Support ANS program coordinator by attending programs and facilitating projects.	3-8 3-9
11) Identify weed species that are most adapted to movement along waterways.	ANS program coordinator	on-going	min cost	Identify weed species.	3-8 3-9

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
12) Identify weed-free waterways and water bodies and prioritize protection of these areas.	ANS program coordinator	2009	add cost	Identify weed-free waterways.	3-8 3-9
13) Develop partnerships with adjoining states and provinces to determine potential new invaders that could be introduced along waterways.	ANS program coordinator	2009	min cost	Determine location of non-native invasive aquatic plants in states adjoining Montana.	3-8 3-9
14) Encourage education of waterway users and develop advocacy groups.	ANS program coordinator, SNWAEC, weed districts, MWCA, CES	on-going	min cost	Work with CES, Education Task Force, MWCA to promote education and awareness.	3-8 3-9
15) Improve communication with irrigation districts regarding noxious weed management	Weed districts, MNWSAC	on-going	min cost	Improve communication with irrigation districts.	2-6 3-9
16) County weed districts coordinate with state and federal agencies and local pit operators in securing sources of noxious weed free gravel and materials.	Weed districts, agencies, Tribes	on-going	min cost	Identify and secure sites for gravel and other borrow materials that are weed free.	3-7 3-8
17) Develop standardized requirements for gravel and other source material.	Weed districts, agencies, Tribes	2010	min cost	Develop standardized requirements.	3-7 3-8
RESTORATION AND RECLAMATION					
1) Encourage land managers to evaluate and monitor sites treated for noxious weeds to determine whether restoration, reclamation, and/or revegetation activities are required.	Weed district, agencies, Tribes, SWCD, PI, universities, MAES	on-going	min cost	Incorporate restoration concepts in land manager training.	2-3 3-10 3-16

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
2) Work closely with federal agencies and govt' restoration program on burn rehabilitation plans to incorporate revegetation where noxious weeds are present.	MWCA, agencies, Tribes	on-going	min cost	Maintain good communication among agencies.	3-10 3-16
3) Assist land managers in developing integrated weed management techniques that are based on natural plant community change through succession.	Weed district, agencies, SWCD, PI, universities, MAES, CES	on-going	min cost	Incorporate ecological systems theory into land manager training.	2-3 3-10 3-16
4) Evaluate current restoration research, and increase efforts and funding for research related to enhancement or development of new restoration, revegetation, and reclamation techniques.	Universities, NRCS PMS, weed districts, agencies, MAES	on-going	add cost	Pursue grants and partnerships; maintain communication among researchers.	3-10 3-16
5) Develop and field test seed mixtures for revegetation that may be more resistant to weed invasion.	NRCS PMC, Tribes, universities, agencies, MAES	on-going	add cost	Coordinate research and development.	3-10
6) Educate the public on the importance of revegetating disturbed and weed-infested sites with appropriate site-adapted desirable species.	CES, Educ. Task Force, Tribes, NRCS, SNWAEC, universities, MAES	on-going	add cost	Focus outreach efforts on revegetation and ecological principles.	3-10 3-12
7) Develop targeted livestock grazing strategies for restoration and long-term maintenance of weed-infested sites.	Universities, Montana Sheep Institute, MAES	on-going	add cost	Consult experts, develop and promote strategies.	3-10 3-15 3-16

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
INVENTORY, MONITORING, AND EVALUATION					
1) Increase funding for weed detection and survey, data storage and retrieval.	Weed district, agencies, NRIS	2010	$5.4 million annually	Amount of funding needed to adequately support weed survey and data storage/retrieval.	3-10 3-11
2) Re-design and implement a weed survey data entry, storage, and retrieval system for Montana	NRIS, NHP, MDA, other state and federal agencies, weed districts	2009	add cost	Develop and implement data storage and retrieval system.	2-7 3-10 3-11
3) Update and improve section-based inventories on Category 1 weeds.	Weed districts, NRIS	on-going	add cost	Improve when new data entry, storage and retrieval system is operational.	2-3 3-10 3-11
4) Encourage yearly completion of internet-based data collection.	Weed district, agencies; MDA	on-going	min cost	Train weed district coordinators and other agencies on MRIS program.	2-3,2-7 3-10 3-11
5) Encourage participation in the state survey system.	Weed district, agencies, CWMA	on-going	add cost		2-3 2-7 to 2-9 3-10
6) Provide regional and national leadership for weed survey processes.	MDA, MWCA, NRIS, mapping work group	on-going	min cost		2-7 3-10
7) Annually monitor/survey known high-risk sites to prevent weed establishment.	weed district, agencies, CWMA	on-going	add cost	Identify high-risk areas and monitor/ survey for weeds	2-3 3-10
8) Continue annual training in use of the survey/mapping system.	MDA, NRIS, universities, MAES	on-going	add cost	Provide annual training	2-7 3-10
9) Improve/expand internet reporting system for detailed plant-based data collection.	MDA, NRIS, Invaders Database	2009	add cost	Expand system.	2-7 3-11
10) Create a data distribution site for plant-based data.	Invaders Database, MDA	on-going	add cost		2-7 3-10 3-11

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
11) Evaluate and monitor noxious weed management programs in Montana.	MDA, agencies, weed districts	on-going	add cost	Continue to evaluate and monitor programs and prioritize areas for management.	2-7,2-8 3-11 3-12
12) Encourage implementation of monitoring and evaluation efforts following "Guidelines for Coordinated Management of Noxious Weeds[1]" to measure status of projects.	MDA, agencies, weed districts, universities, MAES	on-going	add cost		2-7 3-11
PUBLIC OUTREACH, AWARENESS, AND EDUCATION					
1) Work with Montana Office of Public Instruction to include noxious weed units in state standards.	SNWAEC, MWCA	on-going	add cost	2009: Add weed units to math and science.	3-12 to 3-14
2) Continue to implement the public outreach, awareness, and education campaign.	SNWAEC, CES, SWCD	on-going	$2.6 million	Continue program.	3-12 to 3-14
3) Increase professional training opportunities for noxious weed educators.	SNWAEC, CES, MWCA Educ. Comm., MAES, CIPM, universities	annually	add cost	Implement at MWCA annual conference and other meetings.	3-12 to 3-14
4) Collect and distribute information about successful programs to targeted audiences through new and existing communications channels.	SNWAEC, CES, agencies, MWCA	on-going	add cost	Collect and transfer information on programs to target audience.	3-12 to 3-14
5) Facilitate technology transfer between researchers and land managers.	CIPM, CES, SNWAEC, SWCD; PI; NRCS, MAES, universities	on-going	$100,000	Bring together researchers and land managers at workshops, training sessions, conferences.	2-6 3-12 to 3-14

[1] Available [Online] http://www.weedcenter.org/management/guidelines/tableofcontents.html

Action Item	Responsibility*	Action Date	Cost and/or Resources	Action Required	Page[1]
6) Develop, through communications, collaboration opportunities for grassroots integrated weed management.	SNWAEC; CES; weed districts; SWCD, private, local govt.	on-going	min cost		2-3,2-5 3-6 3-12 to 3-14
7) Secure funding for collaborative noxious weed educational efforts.	SNWAEC, MWCA, CIPM	on-going	add cost		3-12 to 3-14
8) Enhance working relationships and maintain/update website links.	SNWAEC, MWCA, CIPM	on-going	add cost		3-12 to 3-14
9) Develop priority projects identified by partnerships.	SNWAEC, MWCA	on-going	min cost		3-12 to 3-14
10) Provide formal course work in weed biology, ecology, and management.	Universities	on-going	min cost		3-12 to 3-14
RESEARCH					
1) Identify and pursue funding sources for basic and applied research defined in the Montana Weed Management Plan.	Universities, MAES, ARS	on-going	$5.4 million	Pursue grants and partnerships.	3-14
2) Support Montana University System and other research institutions to pursue research identified in the Montana Weed Management Plan.	MNWSAC, MWCA, CIPM, MAES	on-going	min cost	Maintain communication with scientists at Montana University System and other research institutions.	3-14

***Key to Acronyms:**
Agencies - Refers to all state and federal agencies with land management responsibility.
ANS – Aquatic Nuisance Species Program
APHIS – Animal and Plant health Inspection Service
ARS – Agricultural Research Service
CES – Cooperative Extension Service
CIPM – Center for invasive Plant Management
DEQ – Department of Environmental Quality
DNRC – Dept of Natural Res. and Conservation
FSA – Farm Service Agency

MACO – Montana Association of Counties
MAES – Montana Agricultural Experiment Station
MDA – Montana Department of Agriculture
MDT – Montana Department of Transportation
MNWSAC – Montana Noxious Weed Summit Advisory Council
MWCA – Montana Weed Control Association
NHP – Natural Heritage Program
NRCS – Natural Resource Conservation Service
NRIS – Natural Resource Information Service
PI – Private Industry
PMS –Plant Materials Center (NRCS)
Private – Private landowners
SNWAEC – Statewide Noxious Weed, Awareness, and Education Campaign Task Force
SWCD – Soil and Water Conservation District
Weed Districts – County weed districts

CHAPTER 6 - LITERATURE CITED

Brown, M.L. 2005. Loosestrife Family: Lythraceae. Purple Loosestrife, *Lythrum salicaria* (L.) P. Mill. *In* Duncan, C.A. and J.K. Clark, eds. Invasive Plants of Range and Wildlands and their Environmental, Economic, and Societal Impacts. Lawrence, KS: Weed Science Society of America.

Dewey, S.A. 1995. A biological wildfire: Applying fundamentals of wildfire management to improve noxious weed control. Utah State Univ., Logan UT. AG500.

Hirsch, S.A. and J.A. Leitch. 1996. The impact of knapweed on Montana's economy. Fargo, ND: North Dakota State University Ag. Econ. Rep. No. 355. 41p.

Kurz, G.L. 1995. Ecological implications of Russian knapweed (*Centaurea repens* L.) infestation: Small mammal and habitat associations. M.S. thesis. University of Wyoming, Laramie, WY. 59 p.

Lacey, J.R., C.B. Marlow, and J.R. Lane. 1989. Influence of spotted knapweed (*Centaurea maculosa*) on surface runoff and sediment yield. Weed Technol. 3(4):627-631.

Leitch, J.A., F.L. Leistritz, and D.A. Bangsund. 1994. Economic effect of leafy spurge in the upper Great Plains: methods, models, and results. Fargo, ND: North Dakota State University Agric. Econ. Rep. No. 316. 8 p.

Lesica, P. 1991. The effect of the introduced weed *Centaurea maculosa* on *Arabis fecunda*, a threatened Montana endemic. Helena, MT: Montana Natural Heritage Prog., State Library. 19 p.

Marx, G. 2007. Montana Association of Land Trust Newsletter. January. 2 p.

McClure, C. Personal Communication, Yellowstone National Park, Invasive Plant Coordinator.

McDaniel K.C., J.M. DiTomaso, and C.A. Duncan. 2005. Tamarisk Family: Tamaricaeae. Tamarisk or Saltcedar, *Tamarix* spp. *In* Duncan, C.A. and J.K. Clark, eds. Invasive Plants of Range and Wildlands and their Environmental, Economic, and Societal Impacts. Lawrence, KS: Weed Science Society of America.

Scheiman, D.M., E.K. Bollinger, and D.H. Johnson. 2003. Effects of leafy spurge infestation on grassland birds. J. Wildlife Manage. 67:115-121.

Thompson, M.J. 1996. Winter foraging response of elk to spotted knapweed removal. Northwest Sci. 70(1):10-19.

Trammell, M.A. and J.L. Butler. 1995. Effects of exotic plants on native ungulate use of habitat. J. Wildlife Manage. 59:808-816.

CHAPTER 7 - APPENDICES

APPENDIX A: CRITERIA FOR LISTING/DELISTING A NON-NATIVE PLANT

This is an indicator list- not a ranking list.

_____
Name of plant

_____
Date

1. Is the plant pre-adapted to Montana's climate?
   _____Yes (80 points)
   _____Probably yes (40 points)
   _____Probably no (-40 points)
   _____No (-80 points)

2. Based on MAPS, what is the percentage of Montana's area that is expected to have suitable climate for this weed (1 point for each percentage).
   _____points

3. How many neighboring States/Provinces list the weed as noxious?
   _____Oregon (6)
   _____Washington (8)
   _____Idaho (10)
   _____Wyoming (10)
   _____South Dakota (10)
   _____North Dakota (10)
   _____Southern Alberta (10)
   _____Southern Saskatchewan (10)
   _____British Columbia (10)
   _____None
   _____**TOTAL**
   List Other US/Canadian:

4. How many acres does the weed infest in each State/Province?

_____Oregon	Acres	Points
_____Washington	0-100	1
_____Idaho	100-1,000	2
_____Wyoming	1,000-5,000	4
_____South Dakota	5,000-10,000	6
_____North Dakota	10,000-50,000	8
_____Southern Alberta	50,000-over	10
_____Southern Saskatchewan		
_____British Columbia	_____0 **TOTAL**	

5. How many acres does the weed infest in counties/portion of provinces immediately adjacent to Montana?

_____acres

Acres	Points	
0-100	5	
100-1,000	10	
1,000-5,000	20	
5,000-10,000	40	
10,000-50,000	60	
50,000-over	80	_____

6. How many counties in Montana have listed the weed as noxious? (2 pts. for each)

_____# of counties _____points

7. How many total acres does the weed infest in Montana?

_____acres

Acres	Points	
0-100	5	
100-1,000	10	
1,000-5,000	20	
5,000-10,000	40	
10,000-50,000	60	
50,000-over	80	_____points

8. Which environmental types has the weed invaded? (10 pts. for each type)

_____forest/grassland (>20" ppt)
_____forest/grassland (<20" ppt)
_____sagebrush/grassland (western Montana)
_____sagebrush/grassland (eastern Montana)
_____grassland (west)
_____grassland (east)
_____riparian/wetland
_____improved pasture
_____cropland
_____roadsides/right-of-ways
_____aquatic
_____0**TOTAL**

9. Which of the potential negative impacts are associated with this weed?

_____loss of forage production (10)
_____loss of native plants (10)
_____loss of biodiversity (10)
_____loss of wildlife habitat (10)
_____increase soil erosion (10)
_____reduce recreational value (10)
_____poisonous to any animal (10)

_____ causes human health concern (10)
_____ loss of cropland (10)
_____ none (0)
_____ 0 **TOTAL**

10. Which of the potential positive impacts are associated with this weed?
_____ pollen for honey bees (-5)
_____ potential food item source (-10)
_____ potential medical uses (-10)
_____ grazing value (-10)
_____ other (-10)
_____ 0 **TOTAL**

11. How often has the weed been included in a national or international weed list?
(5 points for each designated listing)
_____ # of listings _____ points

12. What is the current rate of expansion of the weed?
_____ decline (-5)
_____ stable (10)
_____ slow/moderate (20)
_____ fast (40)
_____ exponential (60)

13. Which of the following characterizes the plant?
_____ very high seed production (10)
_____ longlived seedbank (over three years) (10)
_____ simultaneous asexual and sexual reproduction (10)
_____ adapted to disturbance (10)
_____ rapid growth rate (10)
_____ early and continuous growth throughout the season (10)
_____ 0 **TOTAL**

TOTAL # OF POINTS FOR THIS SPECIES _____

Please attach biological information on this plant.

APPENDIX B: THE STATEWIDE NOXIOUS WEED LIST AND ACRES INFESTED

Noxious weed acres are based on estimates and inventory data by county weed districts with input from Tribes, and public/private land managers. Acreage estimates for Canada thistle and field bindweed were difficult to obtain because of presence in cropland. Acreage infested for Category 2 and 3 weeds are based to a greater extent on field inventories, accounting for greater accuracy than for Category 1 weeds.

Category 1.	**Acres Infested**
Canada thistle (*Cirsium arvense*)	1,400,000
Field bindweed (*Convolvulus arvensis*)	764,000
Whitetop or hoary cress (*Cardaria draba*)	127,000
Leafy spurge (Euphorbia esula)	797,000
Russian Knapweed (*Centaurea repens*)	66,500
Spotted knapweed (*Centaurea maculosa*)	2,700,000
Diffuse knapweed (*Centaurea diffusa*)	8,500
Dalmatian toadflax (*Linaria dalmatica*)	174,000
St. Johnswort (*Hypericum perforatum*)	98,000
Sulfur (Erect) cinquefoil (*Potentilla recta*)	328,000
Common tansy (*Tanacetum vulgare*)	52,500
Ox-eye daisy (*Chrysanthemum leucanthemum* L.)	105,000
Houndstongue (*Cynoglossum officinale* L.)	381,500
Yellow toadflax (*Linaria vulgaris*)	29,500
Hoary alyssum (*Berteroa incana*)	54,500
Total acres	**7,086,000**

Category 2.	
Rush skeletonweed (*Chondrilla juncea*)	703
Purple loosestrife or Lythrum (*Lythrum salicaria*, L. *virgatum*, and any hybrid crosses thereof)	400
Tansy ragwort (*Senecio jacobea* L.)	201,228
Meadow Hawkweed Complex (*Hieracium pratense, H. floribundum, H. piloselloides*)	15,525
Orange hawkweed (*Hieracium aurantiacum* L.)	56,124
Tall buttercup (*Ranunculus acris* L.)	20,551
Tamarisk [Saltcedar] (*Tamarix* spp.)	160,907
Perennial pepperweed (*Lepidium latifolium*)	4,863
Blueweed (*Echium vulgare*)	35,466
Yellow flag iris (*Iris pseudacoru*)	17,303
Total acres	**513,070**

Category 3.	
Yellow starthistle (*Centaurea solstitialis*)	0
Common crupina (*Crupina vulgaris*)	0
Eurasian watermilfoil (*Myriophyllum spicatum*)	>200
Dyers woad (*Isatis tinctoria*)	154
Knotweed complex (includes Japanese knotweed, *Polygonum cuspidatum*; giant knotweed *P. sachaliness*; and Bohemian knotweed, *P. bohemica*)	201
Flowering rush (*Butomus umbellatus*)	801
Total acres	**1,356**

Category 4.	
Scotch broom (*Cytisus scoparius*)	25

APPENDIX B (CONTINUED): FEDERAL NOXIOUS WEED LIST

Date of List (06/2006)

The Federal Noxious Weed list is determined by rule of the U.S. Department of Agriculture under the definitions and provisions of the Federal Noxious Weed Act of 1974, Title 7, Chapter 61. A federal noxious weed is of foreign origin and is new to or not widely prevalent within the United States. Federal noxious weeds are specified as aquatic weeds, parasitic weeds, or terrestrial weeds. For the purpose of weed management on federal lands (Section 2814), a federal agency shall adopt any list classified as noxious by federal or state law.

Aquatic/Wetland

Azolla pinnata (Azollaceae) (mosquito fern, water velvet)
Caulerpa taxifolia (Caulerpaceae)(Mediterranean clone of caulerpa)
Eichhornia azurea (Ponterderiaceae) (anchored waterhyacinth)
Hydrilla verticillata (Hydrocharitaceae) (hydrilla)
Hygrophila polysperma (Acanthaceae) (Miramar weed)
Ipomoea aquatica (Convolvulaceae) (Chinese waterspinach)
Lagarosiphon major (Hydrocharitaceae) (Oxygen weed)
Limnophila sessiliflora (Scrophulariaceae) (ambulia)
Melaleuca quinquenervia (Myrtaceae) (melaleuca)
Monochoria hastata (Pontederiaceae) (monochoria)
Monochoria vaginalis (Pontederiaceae) (pickerel weed)
Ottelia alismoides (Hydrocharitaceae) (duck-lettuce)
Sagittaria sagittifolia (Alismataceae) (arrowhead)
Salvinia auriculata (Salviniaceae) (giant salvinia)
Salvinia biloba (Salviniaceae) (giant salvinia)
Salvinia herzogii (Salviniaceae) (giant salvinia)
Salvinia molesta (Salviniaceae) (giant salvinia)
Solanum tampicense (Solanaceae)(wetland nightshade)
Sparganium erectum (Sparganiaceae) (exotic bur-reed)

Parasitic

Aeginetia spp. (Orobanchaceae)
Alectra spp. (Scrophulariaceae)
Cuscuta spp. other than native or widely distributed species (Cuscutaceae)(dodders)
Orobanche spp. other than native or widely distributed species (Orobanchaceae) (broomrapes)
Striga spp. (Scrophulariaceae) (witchweeds)

Terrestrial

Ageratina adenophora (Asteraceae) (crofton weed)
Alternanthera sessilis (Amaranthaceae) (sessile joyweed)
Asphodelus fistulosus (Liliaceae) (onionweed)
Avena sterilis L. (Poaceae) (animated or wild oat)
Spermacoce alata (Rubiaceae) (borreria)
Carthamus oxyacanthus (Asteraceae) (wild safflower)
Chrysopogon aciculatus (Poaceae) (pilipiliula)
Commelina benghalensis (Commelinaceae) (Benghal dayflower)
Crupina vulgaris (Asteraceae) (common crupina)
Digitaria abyssinica (=D. scalarum) (Poaceae) (African couch grass)
Digitaria velutina (Poaceae) (velvet fingergrass)
Drymaria arenarioides (Caryophyllaceae) (lightening weed, alfombrilla)
Emex australis (Polygonaceae) (three-cornered jack)
Emex spinosa (Polygonaceae) (devil's thorn)
Galega officinalis (Fabaceae) (goatsrue)
Heracleum mantegazzianum (Apiaceae) (giant hogweed)
Homeria spp. (Iridaceae) (Cape tulip)
Imperata brasiliensis (Poaceae) (Brazilian satintail)
Imperata cylindrica (Poaceae) (cogongrass)
Ischaemum rugosum (Poaceae) (murain-grass)
Leptochloa chinensis (Poaceae) (Asian sprangletop)
Lycium ferocissimum (Solanaceae) (African boxthorn)
Melastoma malabathricum (Melastomataceae) (no common name)
Mikania cordata (Asteraceae) (mile-a-minute)
Mikania micrantha (Asteraceae) (mile-a-minute)
Mimosa invisa (Fabaceae) (giant sensitive plant)
Mimosa pigra (Fabaceae) (catclaw mimosa)
Nassella trichotoma (Poaceae) (serrated tussock)
Opuntia aurantiaca (Cactaceae) (jointed prickly pear)
Oryza longistaminata (Poaceae) (red rice)
Oryza punctata (Poaceae) (red rice)
Oryza rufipogon (Poaceae) (red rice)
Paspalum scrobiculatum (Poaceae) (Kodo-millet)
Pennisetum clandestinum (Poaceae) (kikuyugrass)
Pennisetum macrourum (Poaceae) (African feathergrass)
Pennisetum pedicellatum (Poaceae) (kyasuma-grass)
Pennisetum polystachion (Poaceae) (missiongrass)
Prosopis alapataco (Fabaceae) (*Prosopis* spp. are mesquites)
Prosopis argentina
Prosopis articulata
Prosopis burkartii
Prosopis caldenia
Prosopis calingastana
Prosopis campestris
Prosopis castellanosii
Prosopis denudans
Prosopis elata
Prosopis farcta
Prosopis ferox
Prosopis fiebrigii
Prosopis hassleri
Prosopis humilis

Prosopis kuntzei
Prosopis pallida
Prosopis palmeri
Prosopis reptans
Prosopis rojasiana
Prosopis ruizlealii
Prosopis ruscifolia
Prosopis sericantha
Prosopis strombulifera
Prosopis torquata
Rottboellia cochinchinensis (Poaceae) (itchgrass)
Rubus fruticosus (Rosaceae) (wild blackberry complex)
Rubus moluccanus (Rosaceae) (wild blackberry)
Saccharum spontaneum (Poaceae) (wild sugarcane)
Salsola vermiculata (Chenopodiaceae) (wormleaf salsola)
Senecio inadquidens DC (South African ragwort)
Senecio madagascariensis Poir (Madagascar ragwort)
Setaria pallide-fusca (Poaceae) (cattail grass)
Solanum torvum (Solanaceae) (turkeyberry)
Solanum viarum (Solanaceae) (tropical soda apple)
Tridax procumbens (Asteraceae) (coat buttons)
Urochloa panicoides (Poaceae) (liverseed grass)

APPENDIX C: NOXIOUS WEED DISTRIBUTION MAPS (CATEGORY 1, 2, AND 3)

The Montana Department of Agriculture conducted a survey of Montana County Weed Districts and/or County Extension Agents in January 2005. The purpose of the survey was to record presence or absence of noxious weeds listed on the Statewide Noxious Weed List within each county. Results of the survey were compared to the University of Montana Invaders Database. **The following maps indicate presence or absence of noxious weeds in counties in Montana as of 2005, and does not account for Category 4 weeds or changes in noxious weed status since 2005. The map legend is defined as follows:**

Currently reported: refers to counties where the weed is reported as present.

Historically present, not currently reported: indicates a historical record of the weed in the county (based on Invaders Database); however, the weed does not currently occur in the county based on survey results.

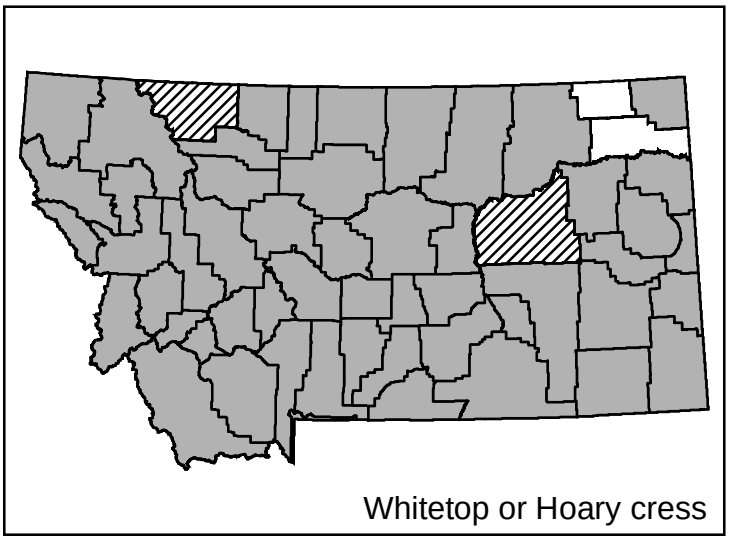
Not reported: indicates that the weed has never been reported to occur within that county.

NOTE: Section based maps of five Category 1 weeds can be accessed through the MSU web site (http://www.montana.edu/places/mtweeds/) or viewed as part of the Montana Natural Resource Information System (NRIS) Thematic Mapper located at http://nris.state.mt.us/mapper/.

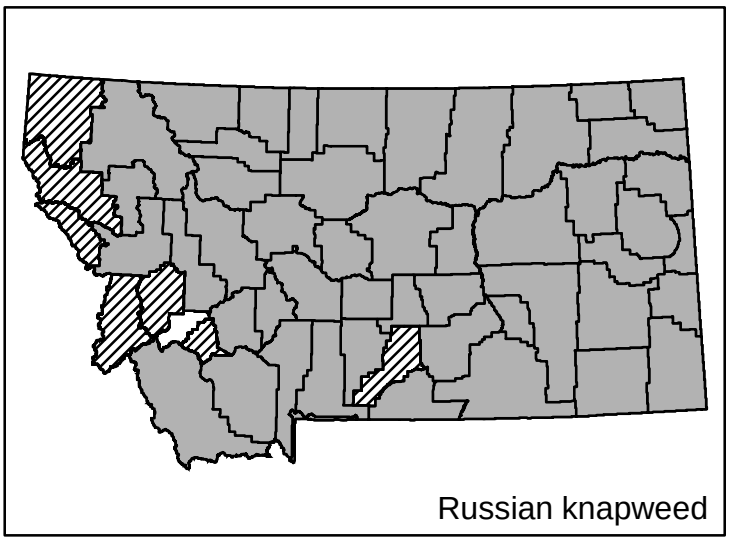
Montana Statewide Noxious Weed Distribution 2005

Category 1

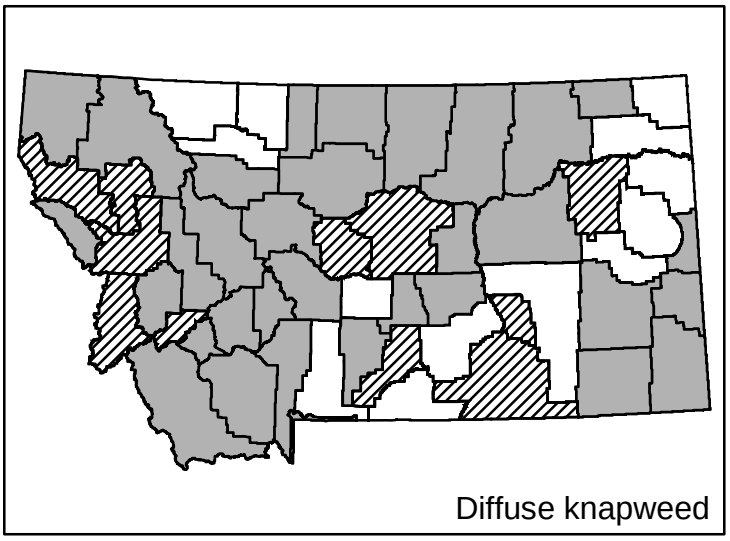
Currently Reported Historically Present, Not Currently Reported Not Reported



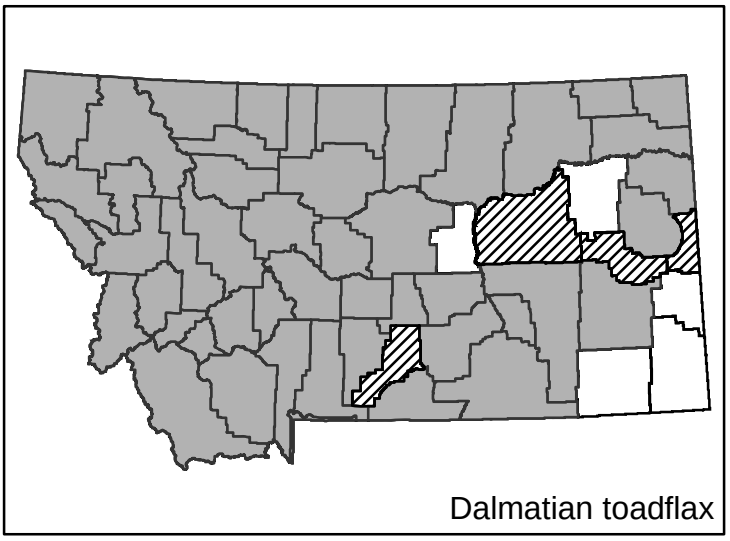
Whitetop or Hoary cress



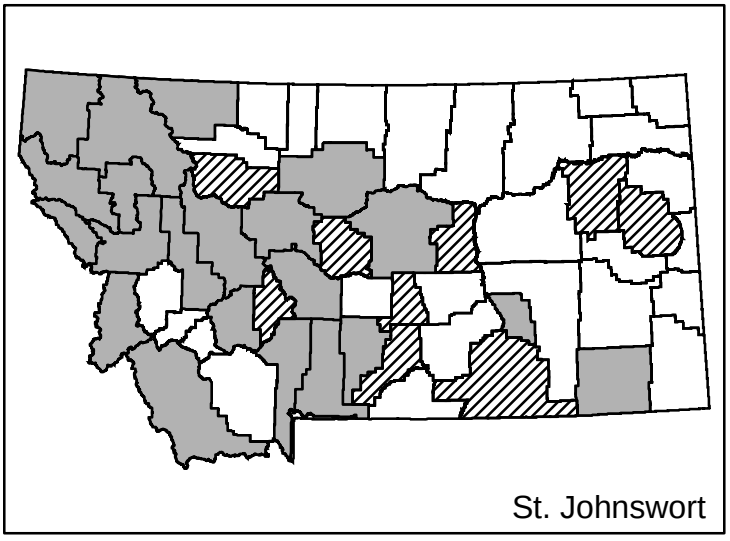
Russian knapweed



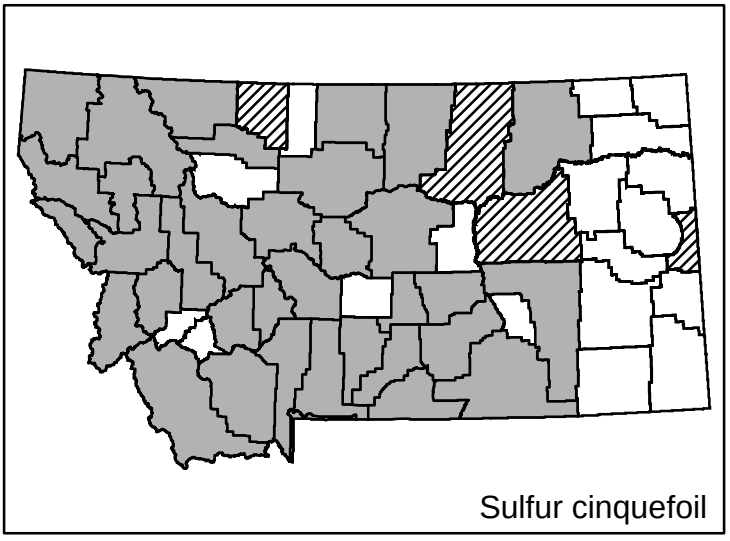
Diffuse knapweed



Dalmatian toadflax



St. Johnswort

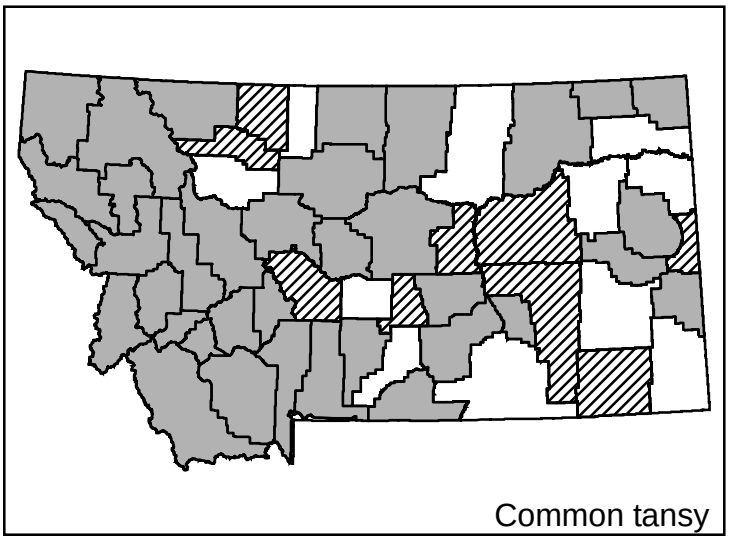


Sulfur cinquefoil

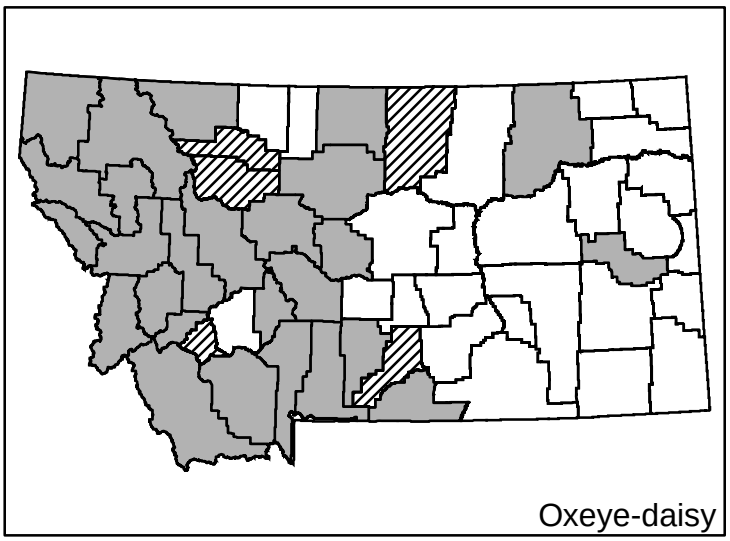
Montana Statewide Noxious Weed Distribution 2005

Category 1 (con't)

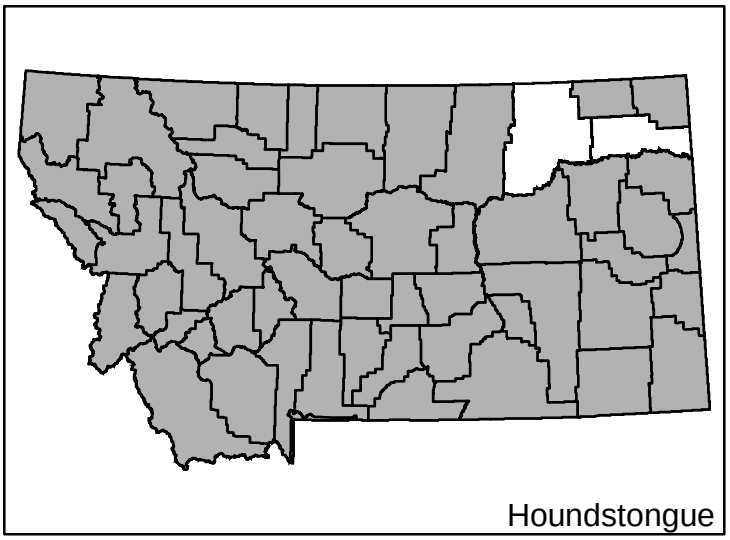
Currently Reported Historically Present, Not Currently Reported Not Reported



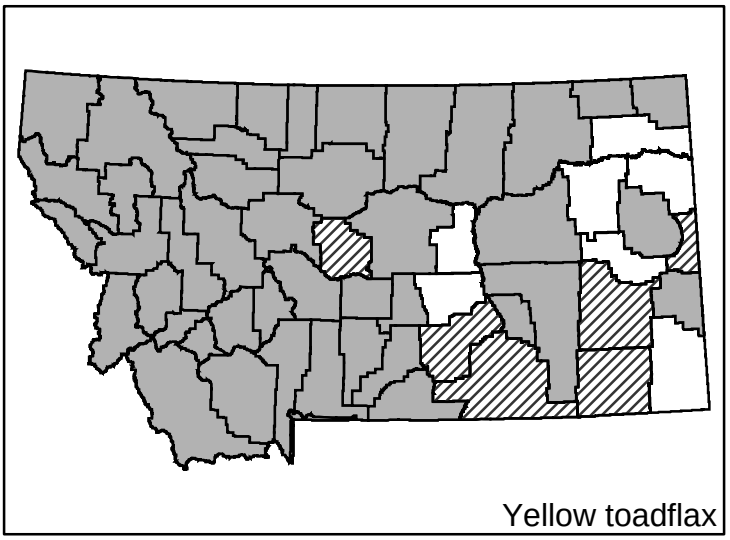
Common tansy



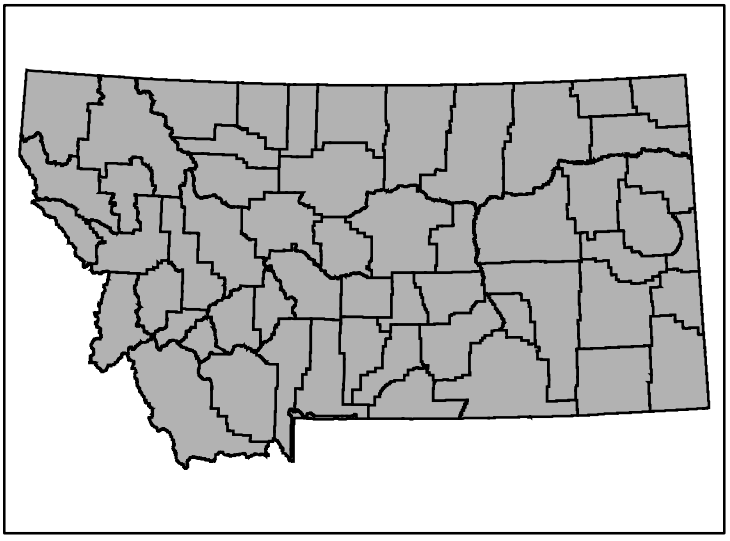
Oxeye-daisy



Houndstongue



Yellow toadflax

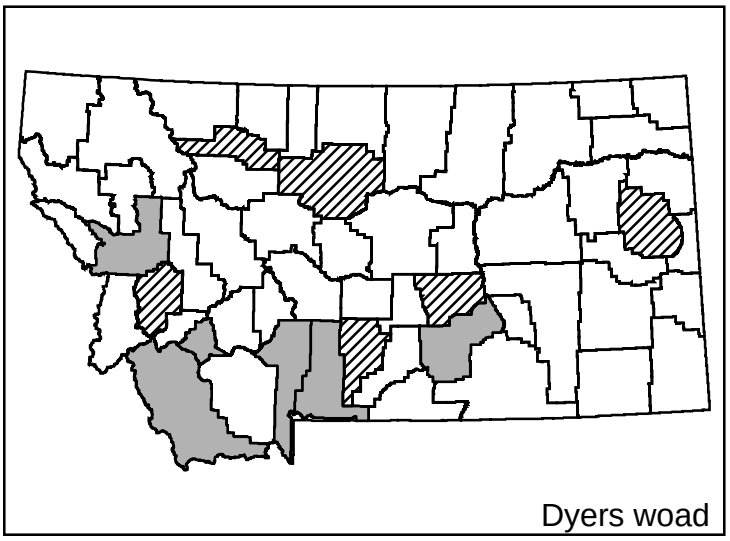


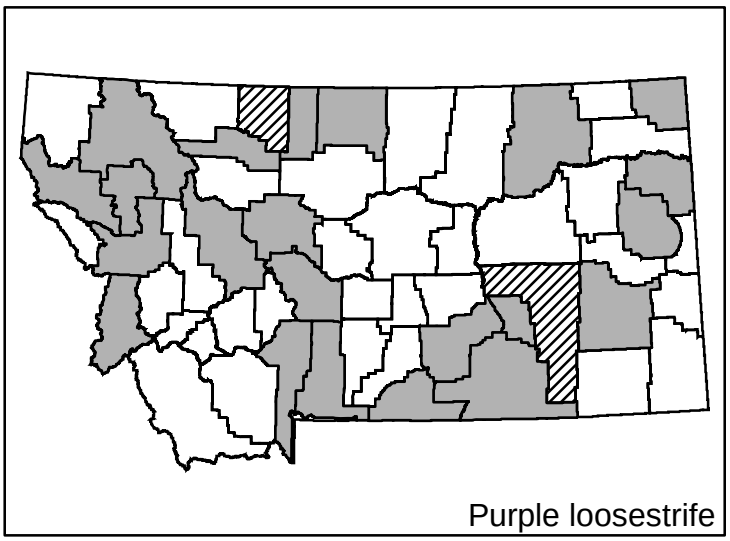
Species Reported In All Counties:
Canada thistle
Field bindweed
Leafy spurge
Spotted knapweed

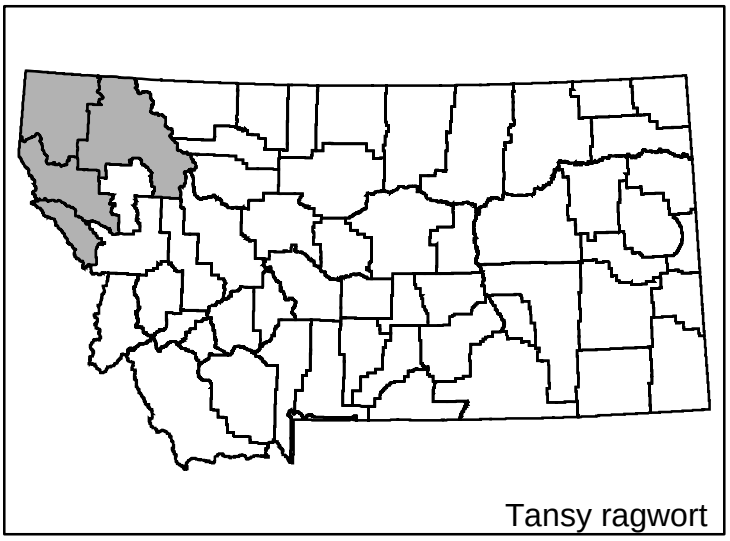
Montana Statewide Noxious Weed Distribution 2005

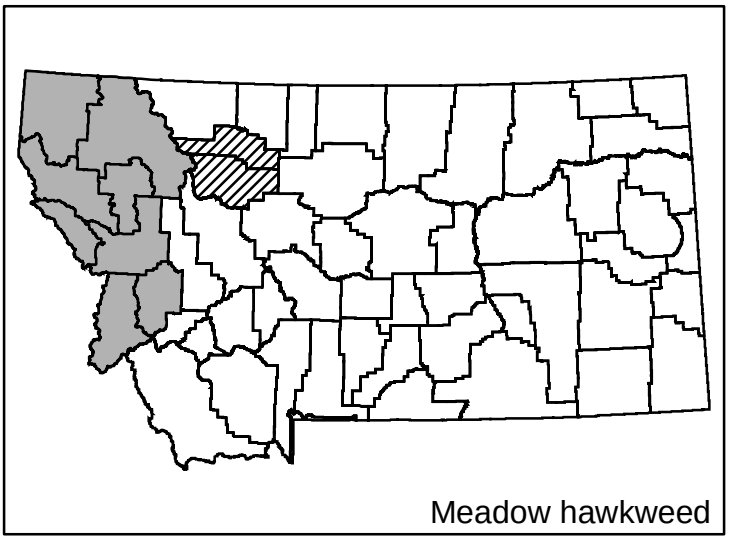
Category 2

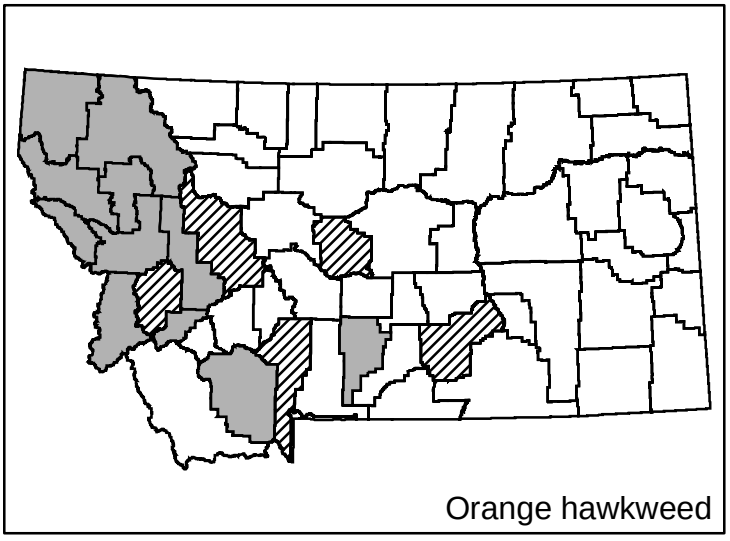
Currently Reported | Historically Present, Not Currently Reported | Not Reported

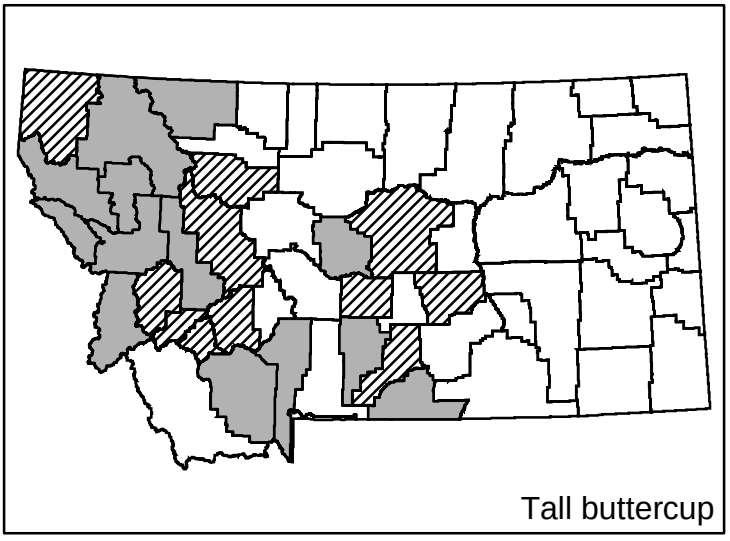

Dyers woad


Purple loosestrife


Tansy ragwort


Meadow hawkweed

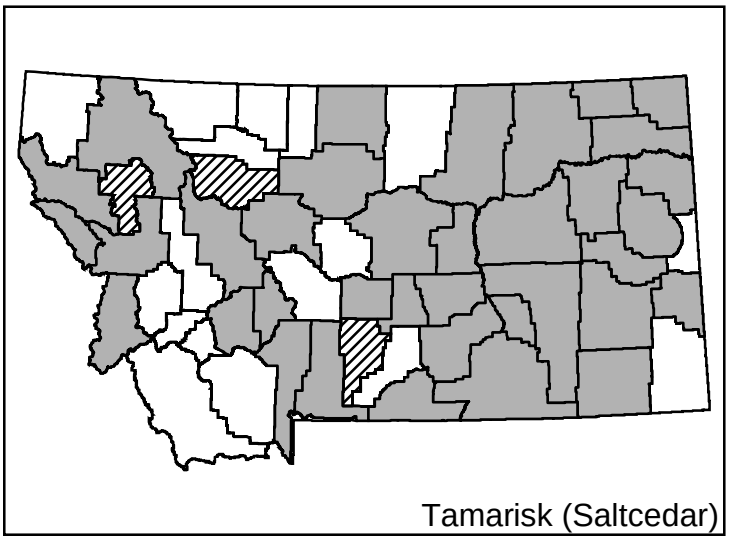

Orange hawkweed


Tall buttercup

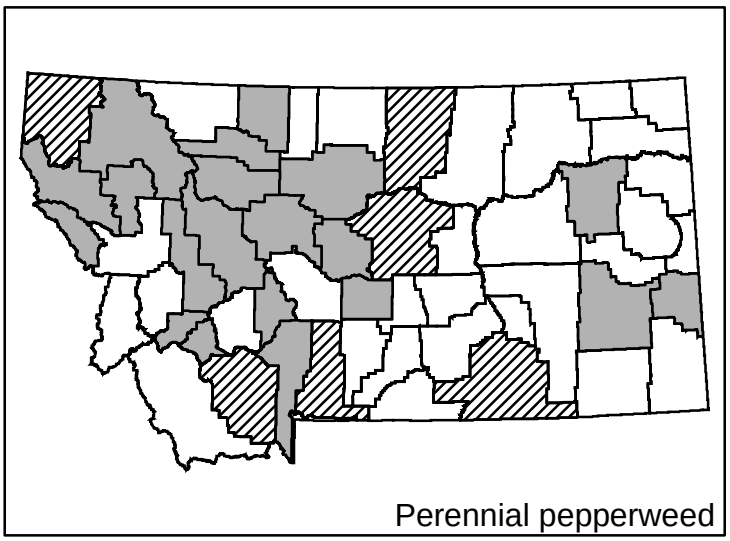
Montana Statewide Noxious Weed Distribution 2005

Category 2 (con't)

Currently Reported Historically Present, Not Currently Reported Not Reported



Tamarisk (Saltcedar)

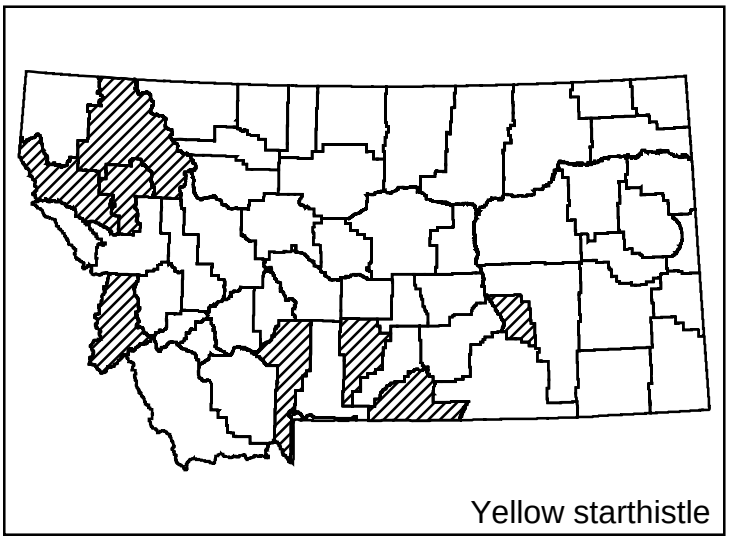


Perennial pepperweed

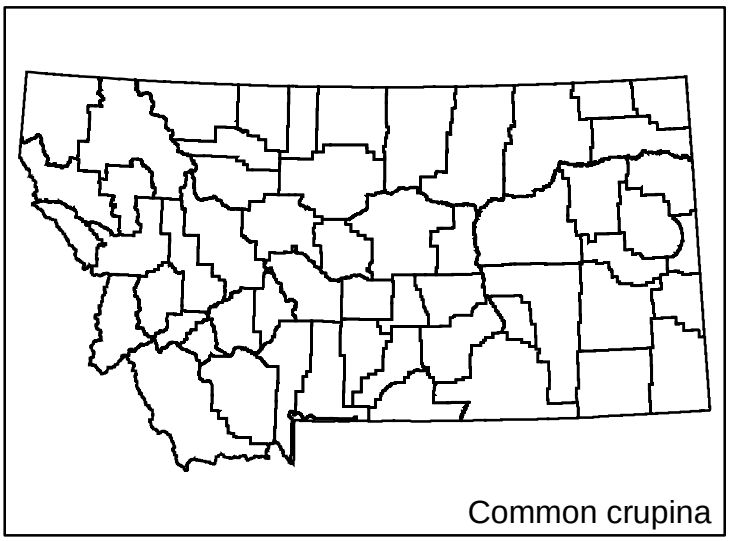
Montana Statewide Noxious Weed Distribution 2005

Category 3

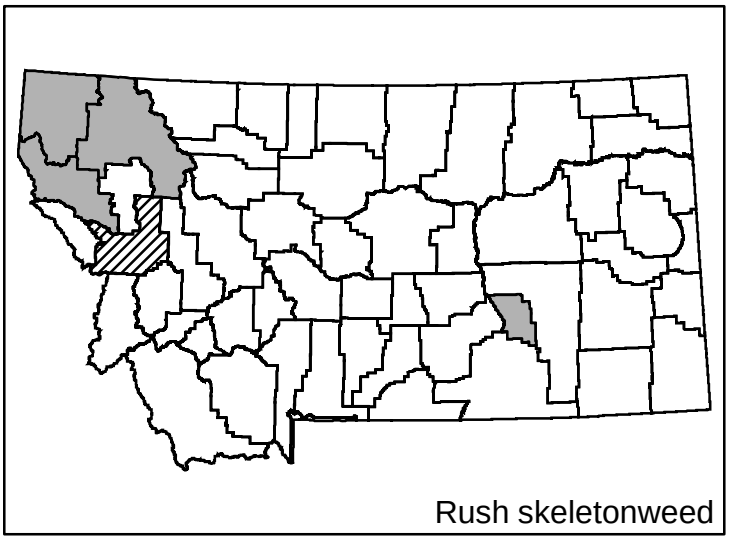
Currently Reported Historically Present, Not Currently Reported Not Reported



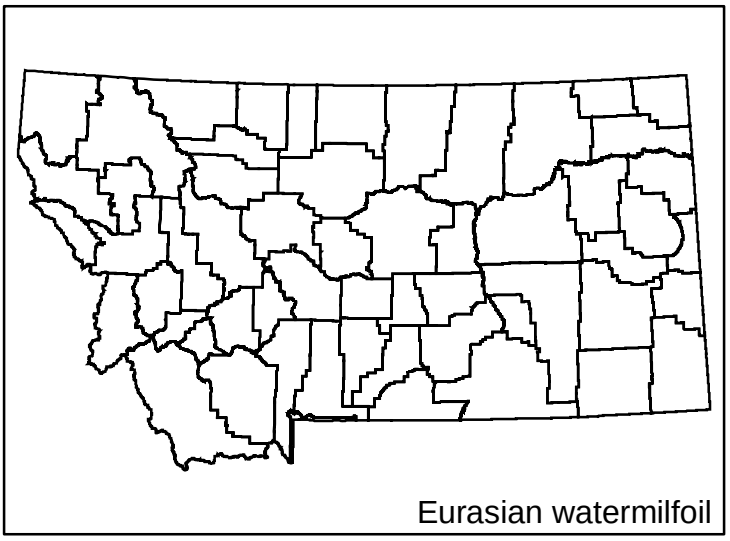
Yellow starthistle



Common crupina

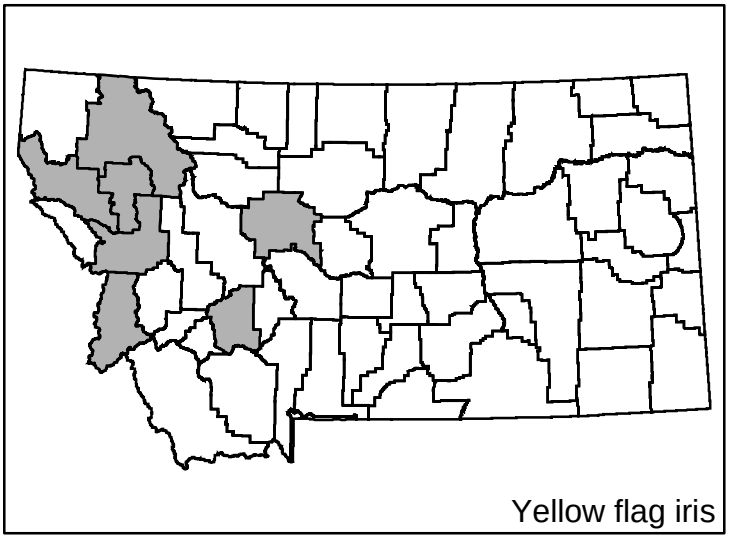


Rush skeletonweed



Eurasian watermilfoil

(Eurasian watermilfoil was found in Sanders County, MT in 2007)



Yellow flag iris

APPENDIX D: LEGISLATION ASSOCIATED WITH NOXIOUS WEED PROGRAMS IN MONTANA.

COUNTY WEED CONTROL PROGRAMS AND LEGISLATION

Local county government has the responsibility for implementation and enforcement of weed management in Montana.

Montana County Weed Control Act (Title 7, Chapter 22 Part 21) is implemented and enforced at the local county level. Each county government is required to appoint a county weed control board but funding is permissive. Most of the fifty-six counties in Montana have some level of local weed management program. The law requires counties to develop a long-term management plan for the control of noxious weeds in their county.

While county law mandates minimum requirements, each county weed program is unique due to the disparity of financial and personnel resources, and levels of weed infestations at the county level. County funding is limited to 2 mills, with a yearly local levy allowing counties to fund above the two-mill cap. Some counties have resources to maintain a minimum program, while others develop more aggressive programs that include preventive and educational elements. Total yearly operating budgets for Montana weed districts range from $13,000 to $500,000 including grants and contracts. County weed boards in the 56 counties have developed long-term integrated weed management plans.

STATE WEED PROGRAMS AND LEGISLATION

Montana Department of Agriculture (MDA) administers a number of laws relating to weed management in the state.

Section 7-22-2151 of the Montana County Weed Control Act authorizes that any state agency controlling land within a district enter into a written agreement with the board. The agreement must specify mutual responsibilities for integrated noxious weed management on state-owned or state-controlled. The plan must include: a 6-year integrated weed management plan, to be updated biennially; a noxious weeds goals statement; and a specific plan of operations for each biennium, including a budget. Each agency is required to submit a biennial performance report to the Montana Department of Agriculture. These provisions were enacted by the 1995 Montana Legislature and MDA is currently working with agencies and counties to facilitate implementation. State agencies with weed management responsibilities are: Department of Fish, Wildlife and Parks; Department of Natural Resources and Conservation; Department of Transportation; Department of Corrections; Department of Public Health & Human Services; and the University System.

The Montana Weed Control Act (Title 80, Chapter 7 Part 7) provides for technical assistance, funding of noxious plant management programs, and embargoes. Section 80-7-712 MCA allows the Montana Department of Agriculture to obtain federal funds and disburse funds to local governments authorized to conduct noxious plant management programs. In addition, Section 80-7-720 MCA provides for the following regarding biological agents for weed control: (1) the department of agriculture is authorized to expend funds for the collection and distribution of biological agents to control leafy spurge and spotted knapweed. The project will reduce energy consumption by reducing the need for repeated chemical application. (2) The department of natural resources and conservation is authorized to administratively transfer funds to the department of agriculture for the project described in subsection (1).

The Montana Noxious Weed Seed Free Forage Act establishes a state noxious weed seed free forage and mulch certification program used by individuals, agencies, and private corporations on public and private lands. The Montana program supports and complements the regional North American Weed Management Association (NAWMA) Noxious Weed Free Forage Certification Program. This program provides forage products that are free of regionally designated noxious weeds seeds or any injurious portions of plants and any propagating parts of plants

that are capable of producing new plants.

The Montana Agricultural Seed Act lists prohibited and restricted seed levels that must be maintained in state certified seed. All state noxious weeds are included in this list.

The Montana Commercial Feed Act prohibits noxious weeds in commercial feed.

The Montana Nursery Law allows for inspection, certification, and embargo of all nursery stock for listed pests, including weeds.

The Montana Environmental Policy Act must be addressed by all MDA actions that have potential environmental or socioeconomic impacts.

The Montana Noxious Weed Trust Fund Act is a grant-funding program designed to encourage local cooperative weed management programs, creative research in weed control, including the development of biological control methods, and educational programs. The MDA is responsible for weed supervisor training standards and listing of statewide noxious weeds by rule under the Montana County Weed Control Act.

The Montana Trust Fund Grants Program started in 1985 with a $1,000,000 grant from the Montana Resource Indemnity Trust Fund to provide for the development of local cooperative weed control programs and creative weed management research. Half of the original grant established a permanent Trust Fund and half funded cost-share weed control to local landowners. Additional funding for the program was through a 1% herbicide surcharge on the retail value of all herbicide sold in Montana. Half of this revenue funded grants and half was deposited in the Trust Fund account.

In 1987 additional revenue supplemented the grants program with a $.50 fee on the registration of all vehicles in the state. The weed vehicle fee was increased to $1.50 in 1989. When the permanent Trust Fund reached the target goal of $2.5 million in 1992, the herbicide surcharge was repealed. Senate Bill 164 provided two lump sum payments of $1,125,000 from Montana Department of Transportation non-restricted highway funds to the NWTF that increased the permanent Trust Fund. The 2005 Legislature amended 15-1-122 Fund Transfers. This changed the fee structure from a $1.50 per vehicle to a percentage of the total motor vehicle revenue for all vehicles registered. The percent was calculated at 1.53% for FY06 and 1.50% for succeeding fiscal years. The 2007 Legislature approved a one-time only general fund transfer of $5 million to the permanent Noxious Weed Trust Fund to help cap the fund at $10 million. Additional interest generated from the $5 million will be used to help fund local cooperative, education, and research projects.

The noxious weed grants program is competitive and applications are submitted to the Department of Agriculture once per year (generally December). Grant requests for funding are about double the amount available through the NWTF program. There is an 11 member Noxious Weed Management Advisory Council chaired by the Director of the Montana Department of Agriculture that reviews all grant applications and provides funding recommendations to the Director. All applicants present their grant requests at a hearing of the Council. The MDA director appoints the advisory council, which includes members representing the following interests: 1) livestock production; 2) agriculture crop production; 3) recreationist/wildlife group; 4) herbicide dealer or applicator; 5) consumer group; 6) biological research and control interests; 7) the Montana weed control association; 8) counties, one each from the western and eastern parts of the state, which may include a county commissioner, district weed board member, or weed district supervisor; and 9) an at-large member from the agricultural community.

Cooperative Weed Management Grants encourage county weed districts, local landowners, local federal and state land managers to develop long-term management programs within a defined project area. Matching funds are required for the IWM projects. Grant applicants must submit an environmental assessment regarding attributes of the project.

Research Projects are also funded through this program. Much of this funding supports the development of biological control agents for Montana noxious weeds. Other weed research includes revegetation projects, herbicide-resistant weed research, and grazing projects.

Educational Programs target education of land managers on proper weed management techniques and education of the general public to encourage their support of weed control in Montana. Examples of funded projects include the development of the Montana weed calendar, public service announcements, weed identification brochures, weed surveys and mapping, high school greenhouses and integrated control projects, weed supervisor and weed board member training, sportsman training, and realtor training.

Special County and Reservation Grants were instituted in 1994 from funds in the grants program. Each of the 56 Montana county weed districts and seven Montana reservations may apply for $7,500 each year to fund any part of their program that will help maintain an effective weed program.

APPENDIX E: INVASIVE PLANT PREVENTION GUIDELINES

The Invasive Plant Prevention Guidelines published by the Center for Invasive Plant Management (CIPM) is a comprehensive, concise guide that provides practical techniques to prevent the invasion and permanent establishment of invasive plants on roadsides and in natural areas. The guide is based on the USDA Forest Service "Guide to Noxious Weed Prevention Practices", with input from Montana State University, Utah State University, Oregon State University, and USDA Agricultural Research Service. The guide includes information developed by the Montana Prevention Task Force. Material in the guide is divided into four sections:

Invasive Plant Prevention: Lands addresses prevention strategies for site-disturbing projects such as road-building and timber harvesting, considerations for land-use planning, and movement of people and equipment within natural areas.

Invasion Plant Prevention: Water addresses prevention strategies in riparian areas and watersheds, as well as providing tips for aquatic recreation.

Invasive Plant Prevention: Animals addresses prevention strategies specific to grazing management, wildlife, and movement of horses and pack animals into the backcountry.

Invasive Plant Prevention: Fire addresses prevention strategies for prescribed burns as well as firefighting and post-fire land rehabilitation.

This guide was developed with the firm conviction that healthy, non-infested ecosystems can be protected from the introduction and establishment of invasive plants by following practical, proactive, weed prevention guidelines. Elements of the prevention document include:

- Limiting the introduction of weed seeds into an area;
- early detection and eradication of small patches of weeds;
- minimizing disturbance of desirable vegetation along roadsides, trails, and waterways;
- managing land to build and maintain healthy communities of native and desirable plants to compete with weeds;
- careful monitoring of high-risk areas such as human and animal transportation corridors and disturbed or bare ground;
- revegetating disturbed sites with desirable plants; and
- evaluating annually the effectiveness of the prevention plan so appropriate adaptations can be implemented the following year.

As of this writing, the Prevention Guide is available for $1.75 or to download free go to the CIPM website www.weedcenter.org, at Montana State University – Bozeman.

APPENDIX F: COOPERATIVE WEED MANAGEMENT AREAS

A Cooperative Weed Management Area (CWMA) is an excellent tool for coordinating action and sharing expertise and resources to combat common weed species in a defined geographical area. These local organizations bring together landowners and land managers (private, city, county, state, and federal) to effectively manage weeds as a unified group. Locally-driven CWMAs are especially effective at generating public interest in weed management and organizing community groups to support on-the-ground programs.

DEVELOPING CWMAS IN MONTANA

In Montana, every county is a weed district with a county weed management plan. In cooperation with the county weed coordinator, CWMAs may be established by landowners or land managers to encompass part of a county, or a natural land area (such as a watershed) that includes adjoining parts of several counties. CWMAs do not supplant county weed districts; rather, CWMA steering committees that include county weed personnel facilitate cooperation across private, county, state, and federal boundaries.

CWMAs often function under the authority of a mutually developed Memorandum of Understanding or Cooperative Agreement and are governed by a steering committee. In designating a CWMA, the first steps are:

- **Invite all landowners/managers:** Call an organizational meeting to bring together all the potential partners, listen to each other's ideas and concerns about a CWMA, and begin to develop a group vision and plan.

- **Develop boundaries**: Establish clearly-defined boundaries, generally coordinated with counties and possibly adjoining CWMAs. Boundaries of a CWMA may be created according to watersheds, topography, weed species, land usage, and/or rights-of-way.

- **Identify special management zones** within the CWMA such as: aquatic areas, habitats of threatened and endangered species or species of special concern, recreational/special use areas, transportation corridors, and relatively weed-free areas. For instance, weed-free areas should be identified, prioritized for prevention, and given special designation and protection.

CREATING A CWMA MANAGEMENT PLAN

Together, CWMA partners develop a comprehensive weed management plan for their area. (Detailed information regarding development of Weed Management Areas is described in "Guidelines for Coordinated Management of Noxious Weeds: Development of Weed Management Areas"[1].) At the least, CWMA plans include weed surveying and mapping components as well as strategies for integrated weed management and prevention. More comprehensive plans may include public education and training, early detection of new invaders, monitoring, and annual evaluation and adaptation of the weed management plan. An initial assessment of the situation (landowner involvement, weed abundance and distribution, impacts of weeds, current management, level of community support, etc.) will determine the weed management objectives. For example, rather than treat weeds immediately, it may be most effective to establish awareness and prevention programs first.

Elements of a typical weed management plan include:

- A complete description of the proposed area, including natural features, soil types, transportation corridors, population centers, maps, and descriptions of weed infestations.

- Goals and objectives, including long-term priorities and planning (five to 10 years), which may address prevention strategies; weed reduction, containment, or eradication; and educational programs.

[1] Available [Online] http://www.weedcenter.org/management/guidelines/tableofcontents.html

- Budgets, including funding sources (federal, state county, local landowner, grants) and shared equipment, supplies, and staffing. Determine short- and long-range needs: equipment purchases, herbicides, rearing cages for biocontrol agents, public outreach materials, etc. Develop a yearly procurement plan to include personnel, operations, equipment, and supplies.

- Cooperators' roles and responsibilities, including a list of agencies and jurisdictions involved, and a timeline.

- A list of target weeds and potential control methods with pros and cons of each. Note recommended control for a specific area, the timing of control, and recommended rates.

- Special management zones, including areas with stringent management criteria, relatively weed-free areas that would benefit from site-specific prevention strategies, and disturbed areas (for example, burned or flooded sites) that may require immediate attention.

- Strategies for gathering public comment on the management plan. This can help increase public awareness and build public support.

- Evaluations, which should be conducted annually and should include a weed inventory to determine whether the long-term goals of reducing weed populations or preventing infestations are being met. Management plans will change over time to insure their effectiveness as new situations arise.

ADVANTAGES OF A CWMA

CWMAs encourage long-term planning to a successful resolution. Planning establishes priorities – cooperators can emphasize a particular species or area. CWMAs focus attention and provide a united front to state and federal legislators, as well as communicate to the general public the seriousness of good land management and the value of healthy ecosystems. CWMAs pool talents and resources; address the problem of weeds spreading from neighboring land before the damage occurs; provide channels for communication between cooperators; and adequately assess the risk of damage to water, crops, threatened and endangered species, etc. CWMAs base control efforts on biological and geographical factors rather than legal divisions, thus increasing the effectiveness of weed management. And finally, CWMAs may help secure more stable funding for long-term management and prevention efforts.

APPENDIX G: BUDGET FIGURES

Annual budget represents estimated and known expenditures for weed management activities in Montana in 2007 unless otherwise noted. Required budget represents funding necessary for specific entities to conduct comprehensive program based either on estimates by respective agencies, or weed infested acres. The budget does not include increases in grant revenue required by the Noxious Weed Trust Fund to meet needs of private and public landholders in the state.

Entity	Annual Budget	Required budget
County Weed District (mills/general fund)[1]	$ 4,021,000	$ 14,000,000
Bureau of Land Mgt	$ 1,600,000	$ 6,000,000
US Forest Service	$ 1,900,000	$ 6,000,000
Natl. Park Service	$ 329,867	$ 500,000
Fish and Wildlife Service	$ 450,000	$ 2,500,000
Bureau of Reclamation	$ 67,000	$ 250,000
Tribal (Trust Lands)	$ 209,000	$ 945,000
Natural Resource Conservation Ser.[2]	$ 1,200,000	$ 1,200,000
MT Dept. of Agriculture	$ 458,744	$ 458,744
DNRC Trust Lands	$ 80,000	$ 2,600,000
DNRC Water Bureau[3]	$ 2,500	$ 30,000
MT Dept Transportation	$ 1,500,000	$ 1,700,000
MT Fish, Wildlife, & Parks	$ 355,000	$ 600,000
Dept. of Corrections	$ 22,545	$ 25,000
Dept. of Health and Human Ser.[3]	$ 7,400	$ 7,500
Private landowners[4]	$ 3,000,000	$ 10,000,000
University and MAES Land (UM, MSU)	$ 70,000	$ 120,000
University Extension[5]	$ 345,000	$ 800,000
University Research MAES[3]	$ 1,541,000	$ 3,810,000
USDA Ag. Research Ser.	$ 1,266,000	$ 1,600,000
USDA APHIS	$ 43,750	$ 43,750
Education Task Force[6]	$ 112,000	($ 2,600,000)
Noxious Weed Trust Fund[7]	$ 2,450,252	$ 2,450,252
Other granting sources	$ 150,000	$ 150,000
	$ 21,181,058	**$ 55,790,246**

[1] Includes county-tax generated revenue not contract labor or grants.

[2] Annual figure is based on average of EQIP contracts (regular and special) GLCI, and CIG from 2005-2008.

[3] Annual budget figures are from 2004.

[4] Calculated for range, pasture, and wildland only based on herbicide sales and NWTF grants (total does not include grant dollars)

[5] Based on University Extension time + 46 county cooperative extension agents @ $50,000/yr and 15% of time spent on weed management activities.

[6] Required budget revenue would be generated from private, state, and federal revenue sources (already included in "required budgets" for various entities). Figures represent FY 2004.

[7] Does not include $10 million permanent trust.

The State of Montana attempts to provide accommodations for any known disability that may interfere with a person participating in any service, program or activity of the Departments. Alternative accessible formats of this information will be provided upon request. For further information call (406) 444-2511 or TTY (406) 444-1421, or by calling Montana Relay at 711.

1,500 copies of this public document were published with funding
from the Montana Noxious Weed Trust Fund
at an estimated cost of $0.56 per copy for a total of $847.00.

"Problems cannot be solved at the same level of awareness that created them"

-Albert Einstein

Partners