

**Strategy For Integrated Weed Management
For the
Henry's Fork Cooperative Weed Management Area
(Revised December 2009)**

I. INTRODUCTION.

A common operating approach to the management of noxious weeds and other invasive plants is to focus strictly on specific sites. Weeds are treated, but the relationship of the treatment to the entire weed problem in an area is not addressed. In addition, individual landowners and managers in a given area attempt to manage weeds based on narrowly defined objectives, independent of each other.

Treatment of specific weeds and sites remain a critical component of an effective strategy. However, long-term solutions to the problem of noxious weed and other invasive plants must include a broad-scale approach to weed management. A weed management area is a broad-scale approach to managing invasive exotic plants. The landscape view places specific weeds and treatment sites in context with geographic distribution of invasive plants, susceptible habitats, and management feasibility. The weed management area focus is finding solutions to invasive weeds across a landscape rather than strictly focusing on treatments on specific land ownership's. The following plan outlines a landscape approach to the weed problem in the Henry's Fork Cooperative Weed Management Area (HFCWMA).

II. PURPOSE.

The HFCWMA is intended to bring together those responsible for weed management within the area, to develop common management objectives, set realistic management priorities, facilitate effective treatment, and coordinate efforts along logical geographic boundaries with similar land types, use patterns and problem species.

III. CWMA BOUNDARIES

The boundaries of the CWMA changed in 2010 with the addition of Teton and Madison Counties to the HFCWMA. The new boundary includes all of Fremont County, Idaho, Teton County, Idaho, and Madison County, Idaho and that portion of Wyoming, including Yellowstone and Grand Teton National Parks that drain into Fremont County. A map of the HFCWMA is included in Appendix C.

IV. COOPERATIVE WEED MANAGEMENT AREA GOALS.

1. Prevent the introduction, reproduction and spread of designated noxious weeds and invasive exotic plants into and within the HFCWMA.
2. Reduce the extent and density of established noxious weeds to a point that natural resource damage is within an acceptable limit.
3. Implement the most economical and effective control methods for the target weeds.
4. Implement an integrated management system using all appropriate available methods or a combination of methods.
5. Elevate the concern and understanding among private land owners, public land managers, public officials and the general public regarding noxious weeds.
6. Coordinate the inventory, mapping, and monitoring of noxious weed infestations and treatments within the area.
7. Seek adequate funding from internal and external sources to implement annual work plans, special projects, long term strategies and plans.
8. Create new pro-active weed fighting partnerships and initiatives and provide a communication forum to keep all parties informed and engaged.

V. STEERING COMMITTEE.

Cooperators of the weed management area include private landowners, county government, state and federal land management agencies, and interested organizations and individuals. A steering committee has been organized from interested cooperators to jointly:

- Develop and maintain an integrated inventory.
- Establish Control Priorities.
- Develop specific Weed Management Objectives.
- Formulate Weed Management Zones based on geographic areas.
- Develop area wide informational, educational and public awareness material.
- Coordinate the use of resources and manpower to treat designated weed infestations.
- Manage designated weeds in an integrated approach.

The HFCWMA steering committee will meet regularly to develop the Annual Operating Plan, monitor accomplishments, maintain the basin wide inventory, assess effectiveness of control strategies and tactics, and make necessary adjustments.

VI. INTEGRATED MANAGEMENT

Integrated weed management “is a system for the planning and implementation of selected methods of management for preventing, containing or controlling undesirable plant species or group of species using all available strategies and techniques”¹. Together these strategies and techniques are economically and environmentally more effective than any single option. All control methods are available and are prescribed on species/infestation specific basis. Elements of Integrated Management included in this plan are: Education/Awareness, Prevention/Early Detection, Inventory, Treatment (including physical, biological, cultural and chemical methods), and Monitoring.

A. Education/Awareness.

Education and awareness programs foster public understanding of the threat invasive exotic plants pose to the natural resources of the HFCWMA, the techniques used to manage the weeds and the role humans play in the dispersal and establishment of invasive weeds. Awareness also provides an important first step in the detection of new invaders. Education includes the training of weed district and agency personnel, private landowners and general public in weed identification, new management techniques, monitoring protocols and other skills needed for the management of noxious and other invasive weeds.

B. Prevention/Early Detection.

Prevention measures are management practices that reduce the potential for the introduction, establishment or spread of weeds. Prevention is a high priority in the management of noxious weeds. In the long term, it is more cost effective to prevent weeds from establishing than to initiate treatment after establishment. The following land management activities require consideration and evaluation of prevention measures:

- Timber management
- Road construction, reconstruction and maintenance.
- Construction and use of rock pits.
- Range management activities.
- Recreational activities (including construction and maintenance of rec. sites, and areas of concentrated use such as camp sites, trailheads and trails, off road vehicle use and livestock in the back country .
- Gravel mining activities.
- Wildlife enhancement projects, and management.
- Fire suppression and rehabilitation.
- Farm management including irrigation canals and ditches
- Home sites and subdivisions
- Right –A- Ways for road, railroads, and utilities.

C. Inventory.

An inventory is the collection, documentation and storage of information on the extent and location of invasive weeds within the HFCWMA. A critical part of integrated management is a current and maintained inventory of infestations occurring within the management area. Inventory provides necessary information for establishing site-specific priorities, management objectives and for prescribing treatment methods. It highlights the need for preventive measures and is the baseline for effective monitoring.

D. Treatment Methods.

Under the integrated approach all control methods are available. It is the use of all available options in combination that results in the most successful program. Specific treatment is determined by plant species, site characteristics, and management objectives. The following management techniques of noxious weed control will be considered on a site specific and plant species basis.

Physical/Mechanical: The use of physical or mechanical methods to weed control can be effective on small infestations of annual or biannual species. Hand grubbing, mowing, tilling and burning are commonly used to physically destroy weeds or interfere with their reproduction. To be effective, treatment must take place before seed production. Plants that have flowered must be removed from the site and destroyed. Repeated mowing or tilling during the growing season is required with most weed species.

Biological: Biological weed control involves the deliberate introduction and establishment of natural enemies to reduce the target plant's competitive or reproductive capacities. Insects are the most common agent released against noxious weeds. Plant pathogens, such as fungi, are increasing in use. Sheep and goats have been effective in reducing

densities and limiting spread of specific weed species. Biological control can be a slow process, often requiring 10 to 20 years to be effective. Its purpose is not eradication but a reduction in densities and rate of weed spread to an acceptable level. It is most effective on dense weed infestations over large areas.

Chemical: Herbicides are an effective and efficient tool for the control of noxious weeds. Herbicide application and rates are dependent on specific site characteristics, target plant, location, non-target vegetation and land-use. Herbicides are an important method of treatment when control or eradication is the management objective. Environmental concerns make it critical to follow all label instructions, site directions and safety precautions when using any herbicide.

Cultural/Land Use: Cultural practices are activities that purposefully enhance and maintain the growth of desired vegetation. Practices that maintain or introduce desirable plant species that out-compete or dominate exotic plant species can serve as prevention, control and/or follow-up. Examples that are applicable to the management area are seeding, planting, fertilizing, and retaining brush and tree canopy cover. Grazing prescriptions that are designed to maintain or enhance perennial vegetation in a healthy state or maintain soil cover is an important practice in slowing the spread of invasive plants. Minimizing the extent and duration of exposed soil during management actions can also reduce the risk of weed establishment.

E. Monitoring.

Monitoring is the collection of information to determine the effectiveness of management actions in meeting the prescribed objectives. Noxious weed management focuses upon density and rate of spread of invasive exotic plant species, and the effect these aggressive plants have on the natural resources of the Henry's Fork Basin. The cooperators are also interested in the effectiveness of prescribed actions on the target plant and the response of desirable vegetation. Monitoring will help determine if our prescriptions and activities are accomplishing the goals and objectives established by HFCWMA partners.

VII. MANAGEMENT OBJECTIVES AND PRIORITIES

Noxious weeds are treated as invaders in the HFCWMA. Invaders are defined as:

Potential Invaders: Exotic plant species not known to be located within the HFCWMA but occurs adjacent to the area with the imminent potential for introduction and poses a future threat to the resources.

New Invaders: Exotic plant species recently found to occur in the HFCWMA with limited distribution and density to make eradication feasible.

Established Invaders: Exotic plant species firmly established and wide spread throughout the weed management area.

The following management objectives and treatment priorities are assigned to specific species and/or infestations to provide direction to control actions, and to coordinate management efforts of the HFCWMA cooperators. The level of treatment will meet or exceed the level of treatment described in the Idaho Noxious Weed Law. Management will be site specific and result in the eradication, control, or containment of species.

Management Definitions:

Eradicate - The noxious weed species is eliminated from the HFCWMA, including all viable seeds and vegetative mater that can reproduce.

Control - Seed production is prevented throughout the target patch and the area coverage of the weed is decreased over time. Prevent the weed species from dominating the vegetation of the area but accept low levels of the weed.

Contain - Weeds are geographically contained and are not increasing beyond the perimeter of the infestation. Treatment within established infestations may be limited, but control or eradicate outside those areas.

NOXIOUS WEED MANAGEMENT OBJECTIVES AND PRIORITIES

Table1 (see Page 7), lists the noxious weeds known to inhabit the HFCWMA. Each species are designated by its status as an invader in the HFWMA, the level of treatment required in the Idaho Noxious Weed Law, and the planned level of treatment in the HFCWMA by Zone.

General Management Priorities for the Henry's Fork Cooperative Weed Management Area:

1. Prevent the establishment of Potential Invaders through early detection and rapid response (EDRR).
2. Eradicate New Invaders (EDRR).
3. Treat transportation corridors and areas of concentrated activities, such as roads, trails, campgrounds, trailheads parking lots and gravel pits. Control satellite infestations of Established Invaders.
4. Contain and slow the spread of widespread established invaders.

VIII. SPECIFIC MANAGEMENT RECOMMENDATIONS

A. Education/Awareness

Education and Awareness is a critical element in the long-term management of noxious weeds in the HFCWMA. As such the HFCWMA will develop and implement a targeted information and education campaign during 2008 – 2011. The objective is to create awareness of the threat to the HFCWMA's natural resources and economy. Education will provide the foundation for active treatment projects, early alert programs and prevention practices. Continued education of practitioners may ensure that effective strategies and new technologies will be incorporated into management actions. The following Education/Awareness focus will be incorporated into the HFCWMA strategy for managing noxious weeds:

1. Conduct annual Weed Fairs/seminars and tours.
2. Develop and maintain a weed management display for public gatherings such as fairs, expos, conventions and shows. Current focus includes county fairs, and home and garden shows.
3. Develop Interpretive Signs to alert the general public of the threat of weeds and the efforts in the HFCWMA.
4. Post weed identification signs at specific trailheads, road turnouts and other public places.
5. Develop an Adopt-A-Weed program at specific beaches, campgrounds, and trailheads. Possible groups include garden clubs, boy scouts, and recreation clubs.
6. Provide presentations to classrooms, and special interest groups such as horse council, Off Highway Vehicles (OHV) groups, Powerboat/rafting groups etc.
7. Develop and implement training programs to familiarize agency personnel with noxious weeds.
8. Develop brochures and pamphlets specific to the CWMA. Examples include weed free feeds, early alert posters, and local overview of existing weeds.
9. Facilitate communication and coordination of cooperators and partners in the HFCWMA.

B. Recommended Prevention Strategies

Prevention means to reduce conditions that favor the presence of noxious weeds through management of habitat disturbance and weed dispersal, and the improvement of vegetation condition. The HFCWMA will strive to integrate appropriate prevention measures into management activities, and promote the use of practices that reduce rates of weed spread throughout the Henry's Fork Basin. The HFCWMA will work with agencies, organizations and individuals in the development and implementation of prevention practice that could be effective in reducing dispersal and establishment. The HFCWMA will:

1. Promote and support the use of certified weed free seed, and/or weed free feeds.
2. Inventory and treat gravel and rock pits.
3. Maintain existing weed free areas.
4. Provide noxious weed identification training and discuss the connection between weed spread and human activities.
5. Develop and implement an **EARLY DETECTION/ RAPID RESPONSE** program where citizens communicate the location of new weeds or new locations of existing weed infestations.

C. Inventory

A comprehensive inventory of noxious weeds provides the bases for understanding the situation, recognizing trends and threats, developing strategies, planning projects, and determining successes and failures. A coordinated weed inventory will be maintained for the entire management area using GPS and GIS technology. Data will be collected using the protocol developed by the Idaho Department of Agriculture as a minimum standard. All inventory data will be collected using GPS unit when available. As funding and information becomes available a consistent database will be established for each zone. The database will store the distribution of weed species across all land ownership's.

D. Species Management Objectives.

It is assumed that the elements of education, prevention, early detection, and inventory will be integrated concurrently with specific control actions. Management objectives by species are listed for each Management Zone in Table 1. The objectives are developed in context with the geographic distribution, habitat relationships and invasiveness, relative abundance, and treatment feasibility of specific weeds. Locations with low population levels of the target plant would be managed for eradication, and specific sites maintained as weed free

E. Annual Operating Plan

Each year an Annual Operating Plan (AOP) will be developed for the HFCWMA. The Annual Operating Plan outlines the management actions and activities that the cooperators agree to accomplish for the current year. The AOP guides implementation of the Strategic Plan and is designed to establish the yearly actions that contribute to weed management objectives and priorities of the basin.

The annual plan will identify the treatment priorities, treatment tools, prevention measures, locations of priority infestations, specific responsibilities, and other management activities that the sub-basin cooperators agree to accomplish for that current year. Individual cooperators and partners may not accomplish each action item outlined in the AOP, but the combined actions of the cooperators will result in the accomplishment of high priority practices across individual sub-basins.

Common practices that will be implemented such as educational programs, prevention measures, and inventory work will be coordinated with the HFCWMA Steering Committee.

G. Monitoring/Evaluation

Monitoring and Evaluation will focus on four general questions:

- Is the plan being implemented?
- Are the objectives and priorities realistic and achievable?
- Are the treatments effective in meeting the planned objectives?
- Are the weeds continuing to spread beyond our control actions?

Information as result of specific monitoring of herbicide treatments, bio-control agents, and general weed spread, will be evaluated to answer the three resource questions stated above.

1. Long Term Spread of Weeds:

Monitoring the spread and /or suppression of noxious weeds will be accomplished through existing databases and GIS layer. An inventory to re-map infestations will be completed in five years to compare with 1997 inventory. Annual inventories will also be used to assess weed spread.

2. Herbicide Treatment:

Herbicide treatments will be monitored following two general intensity levels.

- a. Visual Assessments: Personnel will conduct visual reconnaissance of the treated area after chemical application to determine the presence or absence of target plants, and/or desirable vegetation.
- b. Systematic sample: Within selected infestations sample plots will be established to document changes in target plant densities, and species composition and cover of desirable vegetation.

3. Bio-control Agents:

The CWMA will implement an aggressive biological control strategy that uses insects and grazing to contain and control noxious weeds. The CWMA will work with qualified professionals to develop monitoring techniques that can be effectively applied across the release zones. Monitoring will determine insect establishment success, insect

population trends, insect impact on target plants, and the effect of insect populations on weed population density and spread. General visual reconnaissance will periodically be completed for target organisms that have been targeted towards specific weeds.

Table 1 – HFCWMA Noxious Weed Treatment

Weed Species	HFCWMA Invader Status	State required level of treatment	West Zone	East Zone	North Zone
Japanese Knotweed	New	Control	EDRR	EDRR	EDRR
Scotch Broom	Potential	Control	EDRR	EDRR	EDRR
Dyer's Woad	New	Control	EDRR	EDRR	EDRR
Mediterranean sage	Potential	Control	EDRR	EDRR	EDRR
Toothed spurge	Potential	Control	EDRR	EDRR	EDRR
Johnsongrass	Potential	Control	EDRR	EDRR	EDRR
Buffalobur	Potential	Control	EDRR	EDRR	EDRR
Skeletonweed bursage	Potential	Control	EDRR	EDRR	EDRR
Black Henbane	Established	Control	Control	Control	Control
Russian Knapweed	New	Control	Control	Control	Control
Perennial Sowthistle	Established	Control	Control	Control	Control
Musk Thistle	Established	Control	Control	Control	Control
Purple Loosestrife	New	Containment	EDRR	EDRR	EDRR
Rush Skeletonweed	New	Containment	EDRR	EDRR	EDRR
Field Bindweed	Established	Containment	EDRR	EDRR	EDRR
Tansy Ragwort	Potential	Containment	EDRR	EDRR	EDRR
Jointed Goatgrass	Potential	Containment	EDRR	EDRR	EDRR
Hoary Cress	New	Containment	Control	Control	Control
Oxeye Daisy	Established	Containment	Control	Control	Control
Poison Hemlock	Established	Containment	Control	Control	Control
Scotch Thistle	Established	Containment	Control	Control	Control
Dalmatian Toadflax	New	Containment	Control	Control	Control
White Bryony	Established	Containment	Control	Control	Control
Diffuse Knapweed	Established	Containment	Containment	Containment	Containment
Spotted Knapweed	Established	Containment	Containment	Containment	Containment
Puncturevine	Established	Containment	Containment	Containment	Containment
Leafy Spurge	Established	Containment	Containment	Containment	Containment
Canada Thistle	Established	Containment	Containment	Containment	Containment
Plumless Thistle	Established	Containment	Containment	Containment	Containment
Yellow Toadflax	Established	Containment	Containment	Containment	Containment
Saltcedar	New	Containment	EDRR	EDRR	

Statewide EDRR Noxious Weed List

If any of the listed plants are found to occur in Idaho, they shall be reported to the Department within ten (10) days following positive identification by the University of Idaho or other qualified authority as approved by the Director. These weeds shall be eradicated during the same growing season as identified.

Common Name	Scientific Name
1. Brazilian Elodea	1. <i>Egeria densa</i> P.
2. Giant Hogweed	2. <i>Heracleum mantegazzianum</i>
3. Hydrilla	3. <i>Hydrilla verticillata</i>
4. Policeman's Helmet	4. <i>Impatiens glandulifera</i>
5. Squarrose Knapweed	5. <i>Centaurea squarrosa</i>
6. Syrian Beancaper	6. <i>Zygophyllum fabago</i>
7. Tall Hawkweed	7. <i>Hieracium piloselloides</i>
8. Water Hyacinth	8. <i>Eichhornia crassipes</i> M.
9. Yellow Devil Hawkweed	9. <i>Hieracium glomeratum</i>

Statewide Control Noxious Weed List

Weeds listed in the control list are known to exist in varying populations throughout the state. The concentration of these weeds is at a level where control and/or eradication may be possible. A written plan for weeds on the Statewide Control Noxious Weed List shall be developed by the control authority that specifies active control methods to reduce known populations in not more than five (5) years. The plan shall be available to the Department upon request.

Common Name	Scientific Name	Common Name	Scientific Name
1. Black Henbane	1. <i>Hyoscyamus niger</i>	2. Bohemian Knotweed	2. <i>Polygonum bohemicum</i>
3. Bufflobur	3. <i>Solanum rostratum</i>	4. Common Crupina	4. <i>Crupina vulgaris</i>
5. Dyer's Woad	5. <i>Isatis tinctoria</i>	6. Eurasian Watermilfoil	6. <i>Myriophyllum spicatum</i>
7. Giant Knotweed	7. <i>Polygonum sachalinesnse</i>	8. Japanese Knotweed	8. <i>Polygonum cuspidatum</i>
9. Johnsongrass	9. <i>Sorghum halpense</i>	10. Matgrass	10. <i>Nardus stricta</i>
11. Meadow Knapweed	11. <i>Centaurea pratensis</i>	12. Mediterranean Sage	12. <i>Salvia aethiops</i>
13. Musk Thistle	13. <i>Carduus nutans</i>	14. Orange Hawkweed	14. <i>Hieracium aurantiacum</i>
15. Parrotfeather Milfoil	15. <i>Myriophyllum aquaticum</i>	16. Perennial Sowthistle	16. <i>Sonchus arvensis</i>
17. Russian Knapweed	17. <i>Acroptilon repens</i>	18. Scotch Broom	18. <i>Sytisus scoparius</i>
19. Silverleaf Nightshade	19. <i>Solanum elaeagnifolium</i>	20. Skeletonleaf Bursage	20. <i>Ambrosia tomentosa</i>
21. Small Bugloss	21. <i>Anchusa arvensis</i>	22. Toothed Spurge	22. <i>Euphorbia dentata</i>
23. Vipers Bugloss	23. <i>Echium vulgare</i>	24. Yellow Hawkweed	24. <i>Hieracium caespitosum</i>

Statewide Containment Noxious Weed List

Weeds listed in the containment noxious weeds list are known to exist in various populations throughout the state. Weed control efforts may be directed at reducing or eliminating new or expanding weed populations while known and established weed populations, as determined by the weed control authority, may be managed by any approved weed control methodology, as determined by the weed control authority.

Common Name	Scientific Name	Common Name	Scientific Name
1. Canada Thistle	1. <i>Cirsium arvense</i>	2. Dalmation Toadflax	2. <i>Linaria genistifolia</i> ssp. <i>dalmatica</i>
3. Diffuse Knapweed	3. <i>Centaurea diffusa</i>	4. Field Bindweed	4. <i>Convolvulus arvensis</i>
5. Hoary Alyssum	5. <i>Berteroa incana</i>	6. Houndstongue	6. <i>Cynoglossum officinale</i>
7. Jointed Goatgrass	7. <i>Aegilops cylindrical</i>	8. Leafy Spurge	8. <i>Euphorbia esula</i>
9. Milium	9. <i>Milium vernale</i>	10. Oxeye Daisy	10. <i>Chrysanthemum leucanthemum</i>
11. Perennial Pepperweed	11. <i>Lepidium latifolium</i>	12. Plumeless Thistle	12. <i>Carduus acanthoides</i>
13. Poison Hemlock	13. <i>Conium maculatum</i>	14. Puncturevine	14. <i>Tribulus terrestris</i>
15. Purple Loosestrife	15. <i>Lythrum salicaria</i>	16. Rush Skeletonweed	16. <i>Chondrilla juncea</i>
17. Saltcedar	17. <i>Tamarix</i>	18. Scotch Thistle	18. <i>Onopordum acanthium</i>
19. Spotted Knapweed	19. <i>Centaurea maculosa</i>	20. Tansy Ragwort	20. <i>Senecio jacobaea</i>
21. White Bryony	21. <i>Bryonia alba</i>	22. Whitetop	22. <i>Cardaria draba</i>
23. Yellow Starthistle	23. <i>Centaurea solstitialis</i>	24. Yellow Toadflax	24. <i>Linaria vulgaris</i>