



PITKIN COUNTY NOXIOUS WEED MANAGEMENT PLAN

Last Revised: March 2010

Acknowledgements

Pitkin County would like to acknowledge the Pitkin County Weed Advisory Board (WAB) who invested many hours of their time in preparing and implementing the Pitkin County Noxious Weed Management Plan and its revisions. These past and present WAB members include: Chonnie Bliss, Tish Bartlett, Steve Child, Ann Larson, Jim Lewis, Connie Knuth, and Amber McKeague.

Grateful acknowledgement goes to the Pitkin County Attorney's Office for their extensive knowledge and legal expertise.

Thank you to Lisa Tasker (E.M. Ecological, LLC), Janis Huggins (Colorado Native Heritage Program and author of *Wild at Heart*), and Ann Larson for photos used in this plan. Photos were also acquired from the Colorado Department of Agriculture website and fact-sheets, from ForestryImages.com and from the Wikimedia Commons website.

Thanks to each of the following agencies for reviewing the Plan and providing feedback to help create a comprehensive Plan: City of Aspen; Town of Snowmass Village; Town of Basalt; Pitkin County Open Space and Trails; Eagle, Garfield, and Gunnison Counties; Colorado Division of Wildlife; Colorado Department of Transportation; Colorado Department of Agriculture; Bureau of Land Management; United States Forest Service.

Thanks are also extended to the Pitkin County Board of County Commissioners for their support and adoption of this updated version of the Pitkin County Noxious Weed Management Plan.

Pitkin County Weed Management Plan

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6.32.010. Introduction

A. The Weed Problem

The health of our environment is clearly a high priority for residents of Pitkin County and the Roaring Fork Valley. Yet the health and productivity of our natural plant communities are being threatened by the introduction of numerous invasive noxious weeds. These plants displace native vegetation and important wildlife forage, disrupt native hydrology, alter soil chemistry, and disturb the overall ecological balance of native habitats. They are also an agricultural pest, crowding out desirable crops and requiring immense investments in time, money, and materials to control. Thousands of acres of land in Pitkin County are already infested with noxious weed species. Roadsides, ranchland, open space, housing developments, industrial sites, private property, and Municipal, County, State, and Federal lands are all affected.

In December 2001, the Colorado Department of Agriculture published *Colorado's Strategic Plan to Stop the Spread of Noxious Weeds*. At that time, 1.5 to 2 million acres in Colorado were infested with noxious/invasive weeds. In 2009, that number is probably even higher. Such an increase in weed populations is a serious threat to the recreational, agricultural, economic, and environmental value of land in Pitkin County and the region at large. For this reason, the noxious weed problem is of concern not only to the rural and agricultural community, but also to urban communities, small landowners, recreational land users, and public land managers.

Noxious weeds have displaced at least 10% of Colorado's native plant species and have severely degraded important native plant communities that provide essential habitat to more than 85% of Colorado's wildlife species. This phenomenon is especially disturbing when it comes to Colorado's delicate Riparian areas. While they compose less than 3% of the Colorado landscape, these wetland areas along rivers and streams contain about 75% of Colorado's plant and animal diversity, and play an important role in decreasing stream sediment loads and controlling flooding¹. Without a major integrated weed management program, aggressive invasive plants will continue to infest and degrade the lands that we value so highly.

B. Enactment Authority

In an effort to address the statewide threat of noxious weeds, the Colorado State Legislature passed the *Colorado Noxious Weed Act* (C.R.S. 35-5.5-101 et seq.) ("*The Act*") and the *Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act* (8 CCR 1206-2) ("*The Rules*").

The Act directs the Board of County Commissioners (BOCC) of each county in the Colorado to adopt and administer a Noxious Weed Management Plan for all unincorporated land within the county. It also directs the Board of County Commissioners to appoint a local Weed Advisory Board (WAB), whose power and duties include:

- Development of a list of noxious weeds to be declared subject to integrated management.
- Development of a recommended Weed Management Plan and management criteria for noxious weeds within BOCC jurisdiction. This plan is to be reviewed and amended at least once every three years.
- Recommendation to the BOCC that identified landowners be required to submit and follow an integrated weed management plan for managing designated noxious weeds.

The BOCC has sole and final authority to approve, modify, or reject the management plan, management criteria, management practice, and any other decision or recommendation of the WAB.

C. Plan Purpose and Objectives

The Purpose of the Pitkin County Noxious Weed Management Plan (WMP) is to provide guidelines for effectively managing Designated Noxious Weeds in Pitkin County.

The Objectives of this WMP are to:

- Comply with and execute the requirements of *the Act* and *the Rules* in Pitkin County.
- Institute regulations, guidelines, and policies within Pitkin County government that:

¹ Environmental Protection Agency. "Wetlands in Region 8." *EPA Home*. 9 July 2009. WCMS. 6 November 2009. <http://www.epa.gov/region8/water/wetlands/wetr8.html>.

- emphasize and support prevention of noxious weed infestation,
 - improve communication on noxious weed issues, and
 - allow for swift and effective enforcement of the WMP, *the Act*, and *the Rules* in Pitkin County.
- Institute County-wide programs that address the following fundamentals:
 - Awareness, Education, and Training
 - Prevention; Early Detection and Rapid Response
 - Inventory, Survey, and Mapping
 - Integrated Management (Biological, Chemical, Cultural, and Mechanical)
 - Monitoring and Evaluation
 - Reporting
 - Foster a spirit of cooperation among landowners (be they Federal, State, County, Municipal, or private) to carry out regional Integrated Management Plans.
 - Serve as an educational tool for the public: as a guide to the weeds in Pitkin County and as a manual for landowners working to control weeds on their own property.

D. How to use this Plan

The Pitkin County Noxious Weed Management Plan (WMP) is an official legal document, adopted as an Ordinance by the Board of County Commissioners. As such, this WMP is the primary policy guiding the weed management operations and enforcement activities of the Pitkin County Land Management program.

However, this WMP is also intended for use by the public as an educational tool and weed control manual. Chapters 2-5 provide a wealth of information to the public on how to identify and control noxious weeds in Pitkin County. In addition, Chapter 6 provides information on who to contact when reporting a new or suspicious weed infestation.

Use the following table to guide you the right section of the WMP to answer your questions:

If you want to know...	see...
...what weeds are designated “Noxious” in Colorado... ...what the A, B, and C Listings mean...	...Section 2: <i>Colorado Noxious Weed List</i>
...which Noxious Weeds are found in Pitkin County...	...Section 3: <i>Pitkin County Noxious Weed List</i>
...the name of a weed you have... ...how to identify a specific weed... ...common look-alikes of a specific weed... ...how to control a specific weed... ...common locations of a weed in Pitkin County...	...Section 4: <i>Descriptions of Noxious Weeds in Pitkin County</i>
	...Section 5: <i>Pitkin County</i>

<p>...what weeds may soon be coming to Pitkin County...</p> <p>...which weeds are the most important to report...</p>	<p><i>Weed Watch List</i> and Section 2: <i>Colorado Noxious Weed List</i> (any List A weed)</p>
<p>...what to do if you find a new weed...</p> <p>...who to contact about a weed problem...</p> <p>...the jurisdiction of agencies in Pitkin County...</p>	<p>...Section 6: <i>Early Detection,</i> <i>Rapid Response</i> and Appendix D: <i>Resource Directory</i></p>
<p>...how Pitkin County enforces <i>the Act</i> and <i>the Rules</i>...</p>	<p>...Section 7: <i>Enforcement</i></p>
<p>...why Noxious Weeds are such a big deal...</p> <p>...why you should know how to identify noxious weeds...</p> <p>...why you should landscape with native plants...</p>	<p>...Appendix A: <i>The Threat of Escaped</i> <i>Ornamentals</i></p>
<p>...about Native Thistles in Colorado...</p> <p>...how to distinguish Native and Noxious Thistles...</p>	<p>Appendix B: <i>Native Thistles in Pitkin County</i></p>
<p>...the meaning of a word or term used in this WMP...</p>	<p>...Appendix E: <i>Definitions</i></p>
<p>...how to calibrate your spray equipment...</p> <p>...how to determine how much herbicide to use...</p> <p>...how to read an herbicide label...</p>	<p>Pitkin County Land Manager 970-920-5214 www.aspenpitkin.com/weeds</p>

6.32.02 Definitions

<i>The Act</i>	<i>Colorado Noxious Weed Act, C.R.S. 35-5.5-101 et seq.</i>
<i>Adjacent</i>	Having a common boundary that meets or touches at some point.
<i>Aggressive</i>	Fast growing, tending to propagate and spread quickly.
<i>Agriculture keeping of</i>	Uses involving the cultivation of land, production of crops, and/or the livestock and the preparation of these products for man's use and disposal.
<i>Alien Plant</i>	A plant species that is not indigenous to the state of Colorado
<i>Annual</i>	A plant which, having germinated, completes its life cycle in one year
<i>Best Management Practices</i>	The most efficient (least amount of effort) and effective (best results) way of accomplishing a task, based on repeatable procedures that have proven themselves over time for large numbers of people.
<i>Biennial</i>	A plant which, having germinated, takes two years to complete its life cycle. The first year it typically lives only in a vegetative form, such as a rosette of leaves. The second year the plant grows a flowering shoot, sets seed, and dies.
<i>Biological Management</i>	The use of organisms to disrupt the growth of noxious weeds
<i>Bolt</i>	To develop a flowering stem from a rosette.
<i>BOCC</i>	Board of County Commissioners
<i>Bract</i>	A reduced or modified leaf often surrounding the base of a flower
<i>Browse</i>	Tender shoots, twigs, and leaves of trees and shrubs fit for food for wildlife
<i>CDA</i>	Colorado Department of Agriculture
<i>Chemical Management</i>	The use of herbicides or plant growth regulators to disrupt the growth of noxious weeds.
<i>The</i>	

<i>Commissioner</i>	The Commissioner of the Department of Agriculture or his or her designee.
<i>Containment</i>	Maintaining an intensively managed buffer zone that separates infested regions, where suppression activities prevail, from largely un-infested regions, where eradication activities prevail.
<i>Cooperative Weed Mgmt. Area</i>	A partnership of Federal, State, and Local government agencies, tribes, individuals, and various interested groups that manage noxious weeds or invasive plants in a defined area.
<i>County</i>	The unincorporated areas of Pitkin County
<i>Cultural Management</i>	Methodologies or management practices that favor the growth of desirable plants over noxious weeds, including maintaining an optimum fertility and plant moisture status in an area, planting at optimum density and spatial arrangement in an area, and planting species most suited to an area.
<i>Designated Noxious Weed</i>	A non-native, invasive plant or plant parts identified as a threat to native plant communities and included on the Colorado or Pitkin County Noxious Weed lists.
<i>Desirable Plants</i>	Plants considered to be advantageous and beneficial to environmental viability.
<i>Eradication</i>	Reducing the reproductive success of a noxious weed species or specified noxious weed population in largely un-infested regions to zero and permanently eliminating the species or population with a specified period of time. Once all specified weed populations are eliminated or prevented from reproducing, intensive efforts continue until the existing seed bank is exhausted.
<i>Escaped Ornamental</i>	A plant originally intended for horticultural or landscape situations that has escaped its intended boundaries.
<i>Exotic Plant</i>	A plant that is not a native member of the native or natural community in which it is found.
<i>Forage</i>	Plant material (mainly plant leaves and stems) eaten by animals.

<i>Glyphosate</i>	Non-selective active ingredient of herbicides such as Round-Up.
<i>Herbaceous</i>	A non-woody plant that dies to the ground each year.
<i>Infestation</i>	The presence of a large number of pest organisms in an area.
<i>Integrated Management</i>	The planning and implementation of a coordinated program utilizing a variety of methods for managing noxious weeds, the purpose of which is to achieve specified management objectives and promote desirable plant communities. Such methods may include, but are not limited to: education, preventative measures, good stewardship, and Biological, Chemical, Cultural, and Mechanical Management.
	Integrated Pest Management has been further defined as: <i>a decision support system for the selection and use of pest control tactics, singly or harmoniously coordinated into a management strategy, based on cost/benefit analysis that takes into account the interests of and impacts on producers, society, and the environment.</i> (Marcos Kogan. 1998. Integrated Pest Management: Historical Perspectives and Contemporary Developments. Annual Review of Entomology. 43:243-270.)
<i>Invasive</i>	Capable of entering a native plant community to the detriment of native species.
<i>Invasive Ornamental</i>	A plant originally intended for horticultural or landscape situations that has escaped its intended boundaries and is capable of invading a plant community and creating a monoculture.
<i>Involucre</i>	A cluster of bracts surrounding the base of an inflorescence
<i>Landowner</i>	Any owner of record of federal, tribal, state, county, municipal, or private land.
<i>Lobe</i>	A part into which a leaf is divided.
<i>Local Governing Body</i>	The Board of County Commissioners of a county, the City Council of a city and county or statutory or home rule city, the Board of Trustees of a statutory town or home rule town, or the Board of Selectmen or City Council of a territorial charter municipality, as the context so requires.
<i>Local</i>	

<i>Noxious Weed</i>	Any plant of local importance that has been declared a noxious weed by the local governing body.
<i>Management</i>	Any activity that prevents a plant from establishing, reproducing, or dispersing itself.
<i>Management Objective</i>	Means the specific, desired result of integrated management efforts and includes Eradication, Containment, Suppression, and Restoration.
<i>Management Plan</i>	The noxious weed management plan developed by any person or the local advisory board using integrated management.
<i>Mechanical Management</i>	Using methodologies or management practices that physically disrupt plant growth, including tilling, mowing, burning, flooding, mulching, hand-pulling, hoeing, and grazing.
<i>Monocarpic Perennial</i>	A perennial plant which flowers and bears fruit only once.
<i>Monoculture</i>	A single homogeneous stand of plants without diversity or dissension.
<i>Native Plant</i>	A plant species that is indigenous to the state of Colorado.
<i>Neighboring</i>	Any property located within a half-mile radius of the boundary of a subject property
<i>Noxious Weed</i>	An alien plant or parts of an alien plant that has been designated by rule as being noxious or has been declared a noxious weed by a local advisory board, and meets one or more of the following criteria: <ol style="list-style-type: none"> 1. Aggressively invades or is detrimental to economic crops or native plant communities; 2. Is poisonous to livestock; 3. Is a carrier of detrimental insects, diseases, or parasites; 4. The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural ecosystems.
<i>Noxious Weed Management</i>	The planning and implementation of an integrated program to manage noxious weed species

<i>Ornamental</i>	A decorative, non-native plant often sold through nurseries or spread through seed collection. Many ornamental plants can become a threat to native plant species, growing aggressively and without natural predators, and thus out-competing the plants of the natural ecosystem.
<i>Perennial</i>	A plant that grows for three years or more. Usually flowering and producing fruit each year. The above ground part of the plant may die, but new growth comes from the roots or the crown each spring.
<i>Petiole</i>	A small stalk attaching the leaf blade to the stem.
<i>Pinnate</i>	In the form of a feather
<i>Plant Growth Regulator</i>	A substance used for controlling or modifying plant growth processes without appreciable phytotoxic effect at the dosage applied.
<i>Restoration</i>	Removal of noxious weed species and reestablishment of desirable plant communities on lands of significant environmental or agricultural value in order to help restore said value.
<i>Rhizome</i>	An elongated subterranean plant stem that produces shoots above and roots below, and is distinguished from a true root in possessing buds, nodes, and scale-like leaves.
<i>Rosette</i>	A cluster of leaves growing in crowded circles from a common center or crown, usually at or close to the ground.
<i>The Rules</i>	<i>Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act (8 CCR 1206-2)</i>
<i>Sessile</i>	Without a petiole, pedicel, or stalk, (i.e. directly attached)
<i>Silique</i>	Narrow, elongated seed pod characteristic of the Mustard family.
<i>State Noxious Weed</i>	Any noxious weed identified by the commissioner by rule after notifying and consulting with the State Noxious Weed Advisory Committee created by C.R.S. 35-5.5-108.7
<i>State Weed Coordinator</i>	The State Weed Coordinator under contract with or appointed by the Commissioner pursuant to C.R.S. 35-5.5-117.

<i>Suppression</i>	Reducing the vigor of noxious weed populations within an infested region, decreasing the propensity of noxious weed species to spread to surrounding lands, and mitigating the negative effects of noxious weed populations on infested lands. Suppression efforts may employ a wide variety of integrated management techniques.
<i>Surfactant</i>	A compound that improves the emulsifying, dispersing, spreading, wetting, or other surface modifying properties of liquids. Used with an herbicide, a surfactant aids in adhesion of the herbicide to foliage and its absorption by the plant.
<i>Umbel</i>	An umbrella-shaped flower-head in which the individual flowers are borne on short stems arising from the top of a main stem. This is the inflorescence typical of the parsley family (e.g. plants like carrot, dill, and fennel).
<i>WAB</i>	The Pitkin County Weed Advisory Board, created and appointed pursuant to C.R.S. 35-5.5-107. This group of individuals is appointed by the Board of County Commissioners to advise on matters of noxious weed management.
<i>Weed</i>	Any undesirable plant.
<i>Wildflower</i>	The flower of a wild or uncultivated plant.

6.32.020. Colorado Noxious Weed List

A. A, B, and C Listings

The State of Colorado has designated 73 plants as Noxious Weeds, and has categorized them into three lists based on priority for management in Colorado. These lists have been named Lists A, B, and C. Most simply put:

- **List A** plants are newly arrived and/or less common in Colorado and must be eradicated from all lands in the State.
- **List B** includes plants whose continued spread in Colorado should be halted.
- **List C** plants are those for which local governments have authority to decide the management strategy.

The purpose of such categorization is to guide the State and local governments in developing Management Strategies for each weed. The Management Strategy of a particular weed in an area may be one of the following (see Appendix E for more complete definitions):

- **Eradication** (complete elimination of all populations of a weed)
- **Containment** (confinement of populations of a weed to a defined area)
- **Suppression** (attempt to limit the vigor and spread of populations within a region)

All List A species have been designated by the Colorado Commissioner of Agriculture (“the Commissioner”) for eradication. This means that it is a violation to allow any List A species to produce seed or develop other reproductive means such as roots, shoots and runners. Many List A weeds are not yet present in Colorado, but have become a problem in neighboring states. Others are present in small isolated populations. It is the intent of the Commission to eliminate these species before they become widespread. *The Rules* allow the local governing authority to file for a compliance waiver if it is determined that eradication is not a practical management objective for specific populations.

List B weed species may be designated for eradication, suppression, or containment, depending on the extent of their presence in a particular county. The local Management Strategy for each List B species in each county is determined by the Commissioner (in consultation with the State Noxious Weed Advisory Committee, local governments, and other interested parties). From these local Management Strategies, the Commissioner develops a State-wide noxious weed management plan for each List B species. This Plan is designed to stop the continued spread of List B species, making it a violation to allow any List B species to spread into any un-infested area.

Local governments are left to decide whether to require management of List C weed species, and, if so, whether the Management Strategy will be Eradication, Containment, or Suppression. State Management Plans for List C weed species developed by the Commissioner are designed to support the weed management efforts of local governing bodies. The goal of such plans is not to stop the continued spread of these species. Rather, they are meant to provide additional education, research, and biological control resources to jurisdictions that choose to require management of List C species.

B. Colorado List A Noxious Weeds

African rue (*Peganum harmala*)
Camelthorn (*Alhagi pseudalhagi*)
Common crupina (*Crupina vulgaris*)
Cypress spurge (*Euphorbia cyparissias*)
Dyer's woad (*Isatis tinctoria*)
Giant salvinia (*Salvinia molesta*)
Hydrilla (*Hydrilla verticillata*)
Meadow knapweed (*Centaurea pratensis*)
Mediterranean sage (*Salvia aethiopsis*)

C. Colorado List B Noxious Weeds

Absinth wormwood (*Artemisia absinthium*)
Black henbane (*Hyoscyamus niger*)
Bouncingbet (*Saponaria officinalis*)
Bull thistle (*Cirsium vulgare*)
Canada thistle (*Cirsium arvense*)
Chinese clematis (*Clematis orientalis*)
Common Buckthorn (*Rhamnus cathartica*)
Common Tansy (*Tanacetum vulgare*)
Common Teasel (*Dipsacus fullonum*)
Corn Chamomile (*Anthemis arvensis*)
Cutleaf teasel (*Dipsacus laciniatus*)
Dalmatian toadflax (*Linaria dalmatica*)
Dalmatian toadflax (*Linaria genistifolia*)
Dame's rocket (*Hesperis matronalis*)
Diffuse knapweed (*Centaurea diffusa*)
Eurasian watermilfoil (*Myriophyllum spicatum*)
Glossy Buckthorn (*Rhamnus frangula*)
Hoary cress (*Cardaria draba*)
Houndstongue (*Cynoglossum officinale*)
Leafy spurge (*Euphorbia esula*)
Mayweed chamomile (*Anthemis cotula*)

D. Colorado List C Noxious Weeds

Chicory (*Cichorium intybus*)
Common burdock (*Arctium minus*)
Common mullein (*Verbascum thapsus*)
Downy brome (*Bromus tectorum*)
Field bindweed (*Convolvulus arvensis*)
Halogeton (*Halogeton glomeratus*)
Johnsongrass (*Sorghum halepense*)

Medusahead (*Taeniatherum caput-medusae*)
Myrtle spurge (*Euphorbia myrsinites*)
Orange Hawkweed (*Hieracium aurantiacum*)
Purple loosestrife (*Lythrum salicaria*)
Rush skeltonweed (*Chondrilla juncea*)
Sericea lespedeza (*Lespedeza cuneata*)
Squarrose knapweed (*Centaurea virgata*)
Tansy ragwort (*Senecio jacobaea*)
Yellow starthistle (*Centaurea solstitialis*)

Moth mullein (*Verbascum blattaria*)
Musk thistle (*Carduus nutans*)
Oxeye daisy (*Chrysanthemum leucanthemum*)
Perennial pepperweed (*Lepidium latifolium*)
Plumeless thistle (*Carduus acanthoides*)
Quackgrass (*Elytrigia repens*)
Redstem filaree (*Erodium cicutarium*)
Russian knapweed (*Acroptilon repens*)
Russian olive (*Elaeagnus angustifolia*)
Salt cedar (*Tamarix ramosissima*)
Scentless chamomile (*Matricaria perforata*)
Scotch thistle (*Onopordum acanthium*)
Scotch thistle (*Onopordum tauricum*)
Spotted knapweed (*Centaurea maculosa*)
Spurred anoda (*Anoda cristata*)
Sulfur cinquefoil (*Potentilla recta*)
Tatarian Honeysuckle (*Lonicera Tatarica*)
Venice mallow (*Hibiscus trionum*)
Wild caraway (*Carum carvi*)
Yellow nutsedge (*Cyperus esculentus*)
Yellow toadflax (*Linaria vulgaris*)

Jointed goatgrass (*Aegilops cylindrica*)
Perennial sowthistle (*Sonchus arvensis*)
Poison hemlock (*Conium maculatum*)
Puncture Vine (*Tribulus terrestris*)
Velvetleaf (*Abutilon theophrasti*)
Wild proso millet (*Panicum miliaceum*)

6.32.040. Pitkin County Noxious Weed List

A. List A Noxious Weeds in Pitkin County

The following List A Noxious Weeds are designated for **Eradication** from Pitkin County:

- Cypress Spurge (*Euphorbia cyparissias*)
- Meadow Knapweed (*Centaurea pratensis*)
- Myrtle Spurge (*Euphorbia myrsinites*)

B. List B Noxious Weeds in Pitkin County

The Pitkin County WAB shall establish management recommendations for List B weed species in Pitkin County for which the Commissioner has not developed and implemented management plans. These recommendations shall be submitted to the BOCC for adoption. Once adopted, management objectives for List B noxious weed species will be communicated to the Commissioner.

The following List B Noxious Weeds are designated for **Eradication** from Pitkin County:

- Absinth wormwood (*Artemisia absinthium*)
- Black henbane (*Hyoscyamus niger*)
- Bull thistle (*Cirsium vulgare*)
- Chinese clematis (*Clematis orientalis*)
- Dalmatian toadflax (*Linaria dalmatica*)
- Dame's rocket (*Hesperis matronalis*)
- Diffuse knapweed (*Centaurea diffusa*)
- Plumeless thistle (*Carduus acanthoides*)
- Russian knapweed (*Centaurea repens*)
- Salt cedar (*Tamarix chinensis*)
- Salt cedar (*Tamarix ramosissima*)
- Spotted knapweed (*Centaurea maculosa*)

The following List B Noxious Weeds are designated for **Containment** in Pitkin County:

- Oxeye daisy (*Chrysanthemum leucanthemum*)
- Russian olive (*Elaeagnus angustifolia*)
- Scotch thistle (*Onopordum acanthium*)
- Sulfur Cinquefoil (*Potentilla recta*)

The following List B Noxious Weeds are designated for **Suppression** in Pitkin County:

- Canada thistle (*Cirsium arvense*)
- Common tansy (*Tanacetum vulgare*)
- Hoary cress (*Cardaria draba*)
- Houndstongue (*Cynoglossum officinale*)
- Leafy spurge (*Euphorbia esula*)
- Musk thistle (*Carduus nutans*)
- Perennial pepperweed (*Lepidium latifolium*)
- Scentless chamomile (*Matricaria perforata*)
- Wild caraway (*Carum carvi*)
- Yellow toadflax (*Linaria vulgaris*)

C. List C Noxious Weeds in Pitkin County

The Pitkin County WAB shall establish management recommendations for List C weed species in Pitkin County. These recommendations shall be submitted to the BOCC for adoption. Once adopted, management objectives for List C noxious weed species will be communicated to the Commissioner.

The following List C Noxious Weeds are designated for **Eradication** from Pitkin County:

- Chicory (*Cichorium intybus*)

The following List C Noxious Weeds are designated for **Suppression** in Pitkin County:

- Common burdock (*Articum minus*)
- Common mullein (*Verbascum thapsus l.*)
- Downy brome (*Bromus tectorum*)
- Field bindweed (*Convolvulus arvensis*)
- Poison hemlock (*Conium maculatum*)

D. Declaration of Additional Noxious Weeds

The BOCC may declare additional noxious weeds within its jurisdictional boundaries after a public hearing with thirty days prior notice to the public. Any declaration of additional noxious weeds shall include management objectives, per *The Act* § 35-5.5-108. The integrated management of any additionally declared noxious weed species shall be the responsibility of the landowner, as required by *The Act* and *The Rules*.

6.32.050 Descriptions of Noxious Weeds in Pitkin County

A. Section Overview

The purpose of this section is to provide the public with a practical guide to the identification and management of Designated Noxious Weed Species in Pitkin County. Photographs and the following information are provided for each plant on the Pitkin County Noxious Weed List:

- **Key Characteristics**, including plant family, area of origin, identifying characteristics, mode(s) of reproduction, and (where applicable) toxicity.
- **Locations** of both major and new infestations in Pitkin County
- **Best Management Practices** based on the Colorado Commissioner of Agriculture's prescribed management plans. These practices include Biological, Cultural, Mechanical, and Chemical Control methods. Because there are many factors involved in choosing and executing an appropriate chemical treatment method, no specific herbicide and application rate information is included here. Contact the Land Management department directly to learn more about chemical treatment options appropriate for the site and weeds in question.
- **Look-Alikes** Some of our noxious weeds are commonly confused with native or common non-native (but non-noxious) weeds. Where applicable, common look-alikes are pictured and distinguished from the noxious weed.

This section is intended to be a first-reference, not an exhaustive outline. **Appendix D: Resource Directory** lists a variety of websites that provide more information about Noxious Weeds. The Pitkin County Land Management department is also available to answer any further questions.

B. Absinth Wormwood (*Artemisia absinthium*)

Key Characteristics:

Absinth wormwood is a member of the Sunflower family. Absinth Wormwood is a long-lived perennial with a strong aromatic odor, bitter taste, and a shrub-like appearance. Often misidentified as native *Artemisia* species, Absinth Wormwood is often overlooked, making good identification skills key to effective prevention and control.



Plants are multiple-stemmed, grow 16 to 48 inches tall, and die back every winter to crowns at soil-level. (In comparison, our native Big Sagebrush (*A. tridentata*) has one main stem that branches, and it retains its leaves all year.)

Leaves consist of rounded lobes, 3-10 cm wide by nearly as long, that are divided many times. Leaves are alternate, with lower leaves on long petioles and upper leaves on short petioles and less lobed. This contrasts to native Fringed Sage (*A. frigi da*) whose leaves are smaller, much more thinly divided, and almost lace-like throughout. In addition, Absinth Wormwood leaves are a bluer, olive gray-green color than native *Artemisia* species.



Locations:

Known infestations in Pitkin County exist in the AABC and North Forty neighborhoods, on Red Mountain, in Snowmass Village and Old Town Basalt, along Maroon Creek, Brush Creek, Capitol Creek, and Thompson Creek Roads, and along Hwy 133 near the Garfield-Pitkin County Line and near Marble.

Biological control:

No known biological controls at this time.

Cultural control:

Good perennial grass growth resists infestation. Be aware that varieties of Absinth Wormwood may be sold as ornamentals at garden shops and may be a contaminant in native sage seed mixes. Purchase only certified-weed free seed.

Mechanical control:

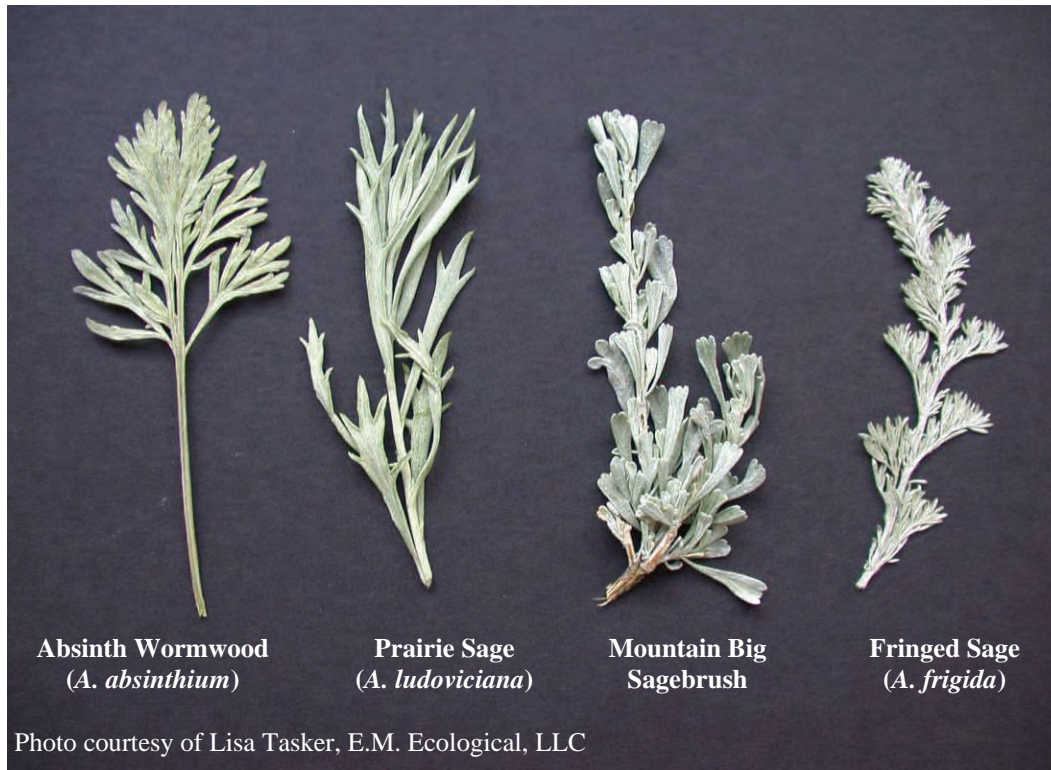
Summer fallow and fall tillage prevent establishment on cultivated land, but spring tillage is less effective. Cutting or mowing reduces seed production, but will not kill root system.

Chemical control:

There are effective herbicide options for Absinth Wormwood control. Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.

B. Absinth Wormwood (*Artemisia absinthium*) (continued)

Native Look-Alikes: Absinth Wormwood is closely related to several of our native sage species. These plants are shown side-by-side below for comparison.



Prairie Sage
(A. ludoviciana)



Big Mountain Sagebrush
(A. tridentata)



Fringed Sage
(A. frigida)

C. Field Bindweed

(*Convolvulus arvensis*)

Key Characteristics:

Field bindweed is a member of the Morning-glory family, introduced from Europe. It is a creeping perennial that reproduces by both seed and rhizomes.

Stems lie close to the ground, are smooth, slender, slightly angled, 1 to 4 feet long, and spread thickly over the ground or wind around erect plants or other objects.

Leaves are alternate, 1 to 2 inches long with great variation in shape. They are somewhat arrow shaped with spreading, pointed, or blunt lobes at the base. The flowers are white or pink bell shaped about $\frac{3}{4}$ to 1 inch broad.



Field bindweed is one of the most competitive perennial weeds in Colorado, and is very common throughout Pitkin County. A two or three year food supply is stored in the root system, making this plant very difficult to kill. It is best to eliminate young bindweed plants before they have a chance to develop their extensive root system. Seeds can stay viable in the soil for up to 40 years. This plant is also **poisonous** to horses.

Biological control:

The Field Bindweed Gall Mite, *Aceria malherbae*, is now available for Bindweed Control. It is available for a small fee from the Colorado Department of Agriculture Insectary until 2012, when distribution will be turned over to counties to manage.

Cultural control:

Good vegetative cover helps but does not prevent Field Bindweed invasion and spread.

Mechanical control:

Do not Cultivate! Cultivation will chop up the root system and spread it more rapidly. Smothering or clipping (without disturbing roots) can be effective on small infestations if done thoroughly.

Chemical control:

There are effective herbicide options for Field Bindweed control. Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.

D. Black Henbane (*Hyoscyamus niger*)

Key Characteristics:

Black henbane, a member of the nightshade family, was introduced from Europe as an ornamental and medicinal herb. Blooming June through September this weed may be an annual or biennial and grows from 1 to 3 feet tall.

Leaves are shallowly-lobed to coarsely-toothed and have sticky hairs. **Flowers** are brownish-yellow with a purple center and purple veins and have a foul odor. **Fruits** are about 1 inch long with 5 lobes. Black Henbane is **poisonous** to both livestock and humans.

Locations:

This plant is relatively rare in Pitkin County, with most outbreaks happening in areas where heavy earth-moving has occurred. Black henbane plants have been identified on Brush Creek Road, near the Aspen Recreation Center, along Hwy 82 near the Maroon Creek Bridge, and at the Pitkin County Airport.

Biological control:

No known biological controls at this time.

Cultural control:

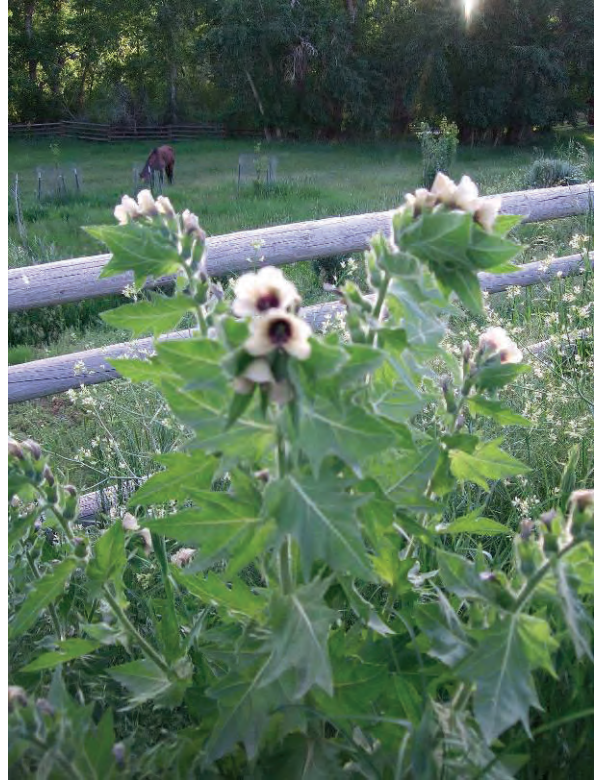
Good vegetative cover substantially reduces chance of infestation. Beware of potentially contaminated fill, dirt, or hay. Avoid overgrazing, as this weed is a common invader of overused pasture.

Mechanical control:

Hand pull or dig from moist soil, to remove the entire taproot system. Be sure to bag plants that have been removed during or after flowering to prevent potential seed spread.

Chemical control:

There are effective herbicide options for Black Henbane control. Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.



E. Downy Brome (“Cheatgrass”) (*Bromus tectorum*)

Key Characteristics:

Downy Brome or “cheatgrass” is a grass introduced from Eurasia. **Reproduction** is by seed. **Plants** are 4-30 inches tall and **blades** densely covered with soft hairs, giving them a downy feel. **Flowers** in mid-spring are followed by **seedheads** 2-6 inches long and usually purplish at maturity. Cheatgrass competes with more desirable perennial grasses for moisture because of its early spring emergence. Once mature, the dry plant is a nuisance and fire hazard.

Downy Brome seeds can germinate in the fall, winter, and spring. Most seeds germinate within one year of maturation. Frequent late summer or late fall rains will cause rapid germination and abundant fall growth. However, if adequate fall moisture is not available, Downy Brome can act like a spring annual.

Locations:

This plant is located throughout Pitkin County, especially along roadsides and in areas where heavy disturbance has occurred.

Biological control:

Scientists are working on specific bacteria for biological control but still in testing stage.

Cultural control:

Seeding with aggressive, native, perennial grasses can help compete against Downy Brome. Maintain range and pasture in good condition. Promote healthy grass growth through proper irrigation and fertilization. Do not overgraze.

Mechanical control:

Early spring tillage of fallow ground, tillage prior to planting spring-season crops, and tillage operations that bury downy brome seeds (mold-board plowing) are effective mechanical methods. Neither mowing nor burning are effective controls to prevent seed spread.

Chemical control:

There are effective herbicide options for Cheatgrass control. Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.



F. Common Burdock (*Arctium minus*)

Key Characteristics:

Common burdock is a member of the Sunflower family. It is an introduced biennial which reproduces by seed in its second year. In the first year of growth the plant forms a rosette; the second year the plant bolts and flowers. Burdock can grow up to 6 feet tall, has enormous leaves and prickly burs. The flowers are purple and white on numerous heads. Burdock grows along roadsides, ditch banks, and in neglected areas.

Locations:

This plant is a very serious threat to sheep as the burs can significantly damage the quality of their wool. Common burdock is found throughout Pitkin County.

Biological control:

None known at this time.

Cultural control:

Prevent the establishment of new infestations by minimizing disturbances and seed dispersal, eliminating seed production and maintaining healthy native plant communities.

Mechanical control:

Burdock will not stand repeated cultivation, cutting, digging or pulling. Mechanical control is laborious but effective; properly bag and dispose of mature burs.

Chemical control:

There are effective herbicide options for Common Burdock control. Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.



G. Wild Caraway (*Carum carvi*)

Key Characteristics:

Wild caraway is a member of the Parsley family. It is a biennial plant, producing a low-growing rosette of leaves in its first year of growth, and then a flowering stalk (bolt) in the second year. The plant is supported by a **narrow taproot** and grows in a wide range of soil types. Bolting plants can tolerate some spring flooding and seedlings can survive light frost. **Stems** are erect, smooth, branched, usually hollow, and grow 1- 3 feet tall. There can be several stems per plant. **Leaves** are alternate and very finely divided (parsley-like). The leaves of the first-year rosettes can look very similar to yarrow, a native plant. The **flowers** of Wild Caraway are usually white, but occasionally pinkish, and occur in loose umbels. **Fruit** has a distinct caraway odor.



Locations:

Wild caraway is grown in Canada as a spice crop; however it has escaped cultivation and has been invading pastures, rangeland and natural areas for several years now. This plant is prolific in Pitkin County. Small infestations have been noticed in Maroon Bells Park.

Biological control:

None known at this time.

Cultural control:

Healthy, competitive vegetation helps protect areas from invasion.

Mechanical control:

Hand-pulling of bolting stalks is effective at preventing seed production, but at maturity the seed heads are extremely fragile and shatter easily.

At this stage a plastic bag can be carefully placed over the mature plant, and closed tightly around the stem while hand-pulling. Carefully done, this method can remove seed without accidentally spreading it. Collected seed should be disposed of in landfill-bound garbage or thoroughly burned. Mowing is not effective because the plants will stay short and bloom.



Chemical control:

There are effective herbicide options for Wild Caraway control. Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.

G. Wild Caraway (*Carum carvi*) (continued)

Native Look-Alikes: Examples of similar-looking natives are pictured below. Contact the Land Management office with further questions.



Cow Parsnip
(Heracleum sphondylium)

Stem thicker, leaves much larger and less subdivided than Wild Caraway; seeds lack caraway odor.



Yarrow
(Achillea lanulosa)

Smaller and shorter, leaves more finely divided than Wild Caraway; stem and leaves wooly; seeds lack caraway odor

Porter's Loveage/Osha
(Ligusticum porteri)

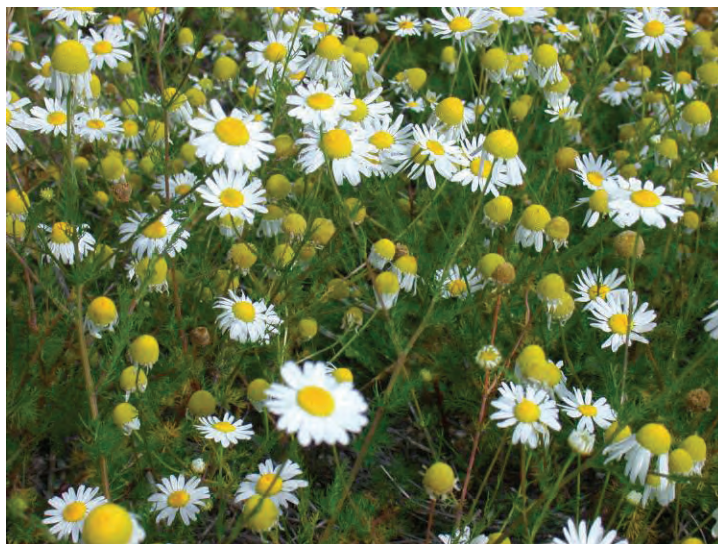
Leaves not as finely divided as Wild Caraway; seeds lack caraway odor.



H. Scentless Chamomile (*Matricaria perforata*)

Key Characteristics:

Scentless chamomile is a member of the Sunflower family. It is an annual that grows 1/2 to 2 feet tall with a **bushy** habit. **Blossoms** are showy with white ray (outer) flowers and yellow centers. **Leaves** are fern-like. **Seeds** are viable as soon as the flower is formed, and remain so up to 15 years when buried, making early control of Scentless Chamomile the key to effective management.



This weed is nearly identical in appearance to the strongly-scented species used for tea, but lacks the distinctive chamomile odor. It has no forage value, and can in fact cause skin rashes and blistering of mucus membranes, sometimes resulting in the ultimate starvation of wildlife who have attempted to eat it.

Locations:

Scentless Chamomile is common along rights-of-way and ditches and in cultivated fields and disturbed sites throughout Pitkin County. It is a typical front-line invader in areas of heavy disturbance.

Biological control:

None known at this time.

Cultural control:

Promptly re-seed disturbed areas with competitive native grasses.

Mechanical control:

Hand pulling is the most effective method to both control Scentless Chamomile populations and prevent their spread into new areas. Once plants are pulled, they should be bagged and trashed if any flowers are present, as they likely contain viable seed.



H. Scentless Chamomile (*Matricaria perforata*) (continued)

Chemical control:

There are effective herbicide options for Scentless Chamomile control. The earlier the application the more effective the control. Herbicide application is not effective on Scentless Chamomile when the majority of the plants are flowering because seed production has already occurred. Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.

Native Look-Alikes:

Foliage and Growth Habit are the keys to distinguishing Scentless Chamomile from white native daisies in Colorado. Stands of Chamomile have a distinctive bushy appearance, and the foliage is very finely divided and fern-like. By contrast, the native white daisies that most closely resembling Scentless Chamomile (e.g., species of *Erigeron* like that pictured below) usually occur small clumps and have leaves that are entire or slightly lobed.



Whiplash Daisy
(*Erigeron flagellaris*)

Note that while the blossom is similar to that of Scentless Chamomile, leaves are basal and entire (left), and stands are not bushy (right).

I. Chicory

(*Cichorium intubus* L.)

Key Characteristics:

Chicory is a member of the Sunflower family. It is native to the Mediterranean region, but now broadly distributed throughout the northern hemisphere. Chicory is a **tap-rooted perennial** that grows 1-6 feet tall and . Low-growing **rosette leaves** resemble dandelion leaves but have fine hairs. Blue flowers (occasionally pink or white) usually close by midday. Leaves are often used in salads and dried roots as a coffee substitute.

Locations:

Patches of Chicory exist along Hwy 133 near the Penny Hot Springs, and along Capitol Creek and Sopris Creek roads.

Biological control:

None known at this time.

Cultural control:

This perennial weed is difficult to eliminate. Prevent invasion by minimizing soil disturbance and use of contaminated seed, eliminating seed production by current infestations, and maintaining healthy native plant communities.

Mechanical control:

Chicory may be controlled by mowing, cutting, or pulling plants before seed production. This process may have to be repeated annually to exhaust nutrient reserves in the roots of the plants as well as to eliminate plants that emerge from the soil seed bank.

Chemical control:

There are effective herbicide options for Chicory control. Best control occurs when the plants are actively growing, and in the fall to rosettes. Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.



J. Chinese Clematis (*Clematis orientalis*)

Key Characteristics:

Chinese clematis is a member of the Buttercup family. It is an **herbaceous to woody perennial vine**, initially introduced as an ornamental. **Stems** reach 10-15 ft, with gray-brown bark, and tend to climb on rocks, fences, bushes, and trees. **Roots** are 5-10 ft long. **Leaves** are opposite and may be in groups of three. Each large solitary yellow **flower** produces numerous feathery, long-tailed seeds which are conspicuous all winter.



Locations:

Chinese clematis stands can be found in the Town of Snowmass Village. It is also present in Garfield County near No Name. There are many native clematis species in Colorado, all having white flowers.

Biological control:

None known at this time.

Cultural control:

The only recommendation available for preventing the spread of this species is by eliminating seed production from established stands, and discontinuing its use as an ornamental.

Mechanical control:

Hand pull woody vine before seed heads mature.

Chemical control:

Contact the Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Look-Alikes:

There are many native Clematis species in Colorado. Western Virgin's Bower (*Clematis ligusticifolia*) is a common example because its leaves are very similar to Chinese Clematis, but it can be distinguished by its flowers which are smaller, white and occur in clusters rather than solitary on stems.

Other native Clematis species include Blue Clematis (*Clematis occidentalis*), and Rocky Mountain clematis (*Clematis columbiana*), both of which have light blue-lavender flowers.



Western Virgin's Bower
(*Clematis ligusticifolia*)



Blue Clematis
(*Clematis occidentalis*)

K. Sulfur Cinquefoil (*Potentilla recta*)

Key Characteristics:

Sulfur Cinquefoil is a member of the Rose family. It is a long-lived, tap-rooted perennial that grows upright to 1-2 ft tall, with hairy stems. **Flowers** are light-yellow in color with a dark yellow center and 5 petals. **Leaves** are palmate and divided into about five saw-toothed leaflets.

Locations:

Although not a new discovery in Pitkin County (it's been around at least eight years) Sulfur Cinquefoil is new to the Pitkin County Weed List. Small patches have been found at the Pitkin County Airport and east of Aspen around North Star, in Woody Creek near Jaffee Park, on the Child Ranch on Capitol Creek Road, up the Frying Pan, and in the Crystal River Valley at the Penny Hot Springs and Filoha Meadows. It is very important to report any sightings of this weed to the County Land Manager, so that it can be treated immediately and not allowed to spread any further.

Biological control:

Insect species have been used in trials, but since Sulfur cinquefoil is similar to strawberries, the insects used are considered pests. For more information, contact the Colorado Department of Agriculture's Insectary in Palisade, Colorado at 970-464-7916. Note that biological control will not eradicate a weed.

Cultural control:

The only recommendation available for preventing the spread of this species is by eliminating seed production from established stands, and discontinuing its use as an ornamental.

Mechanical control:

Mowing is not effective, as new shoots will replace the cut stems. Hand-digging or pulling when soil is moist is effective on small infestations, if the entire root system is removed. Tillage alone will spread the infestation, since root fragments will produce new plants.

Chemical control:

Contact the Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.



K. Sulfur Cinquefoil (*Potentilla recta*) (continued)

Look-Alikes:

There are over 20 native species of Cinquefoil (*Potentilla*) in Colorado. Many can be easily confused with the noxious weed Sulfur Cinquefoil. They all have yellow, 5-petaled flowers, and most are herbaceous plants with a creeping or upright growth habit. The exception are the Shrubby Cinquefoils, (e.g. *P. fruticosa*) which are small, round bushes with yellow flowers, commonly used in landscaping. There are three major ways to distinguish the native plants from the noxious weed:

- **Flower Color:** Native Cinquefoils typically have bright yellow blooms, while the flowers of Sulfur Cinquefoil are usually a paler yellow.
- **Stem Hairs:** Sulfur cinquefoil has long right-angled hairs that are perpendicular to the leaf-stalks and the stem. (hence the species name *P. recta*) While the natives may have hairy stems, these hairs do not stand straight out.
- **Leaf Color:** The underside of the leaves of native Cinquefoils are typically silvery-grey



Beautiful Cinquefoil
(*Potentilla pulcherrima*)

Note bright yellow flowers and prostrate growth habit (left), as well as silvery leaf underside (right).
(Sulfur Cinquefoil is erect with pale yellow flowers and a leaf that is dark green on both sides)

and often hairy, while Sulfur cinquefoil leaves are dark green on both sides.



Shrubby Cinquefoil
(*Potentilla fruticosa*)

Note its woody, shrub-like growth habit, bright yellow flowers, and small, narrow leaves.

(Sulfur Cinquefoil is herbaceous and pale yellow flowers and large, palmately compound leaves.)

L. Dame's Rocket

(*Hesperis matronalis*)

Key Characteristics:

Dame's Rocket is an escaped ornamental. It grows as a biennial or short-lived perennial, ranging in height from 1 to 4 feet tall. **Flowers** range in color from white to pink to purple and consist of 4 **petals** arranged in the cross shape distinctive of the Mustard family. **Leaves** are lanceolate and somewhat wooly in texture, with finely-toothed margins. **Fruit** is a silique.

Locations:

Although rare in Colorado overall, this escaped ornamental is often found in and around garden sites throughout the Roaring Fork Valley. It is particularly common in Snowmass Village and Aspen, but can be found in Old Snowmass and the Pitkin County portion of Basalt, as well as in the Crystal River Valley. Dame's Rocket particularly likes riparian areas and Aspen forest sites, where it quickly invades and displaces valuable native vegetation.



Biological control:

None known at this time.

Cultural control:

Do not plant this weed. There are many equally stunning native alternatives, such as varieties of Penstemon, Columbine, and Echinacea. Contact Land Management for suggestions.

Mechanical control:




Pulling or cutting is very effective. Be sure to bag and dispose of any seed pods present.

Chemical control:

Contact the Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

L. Dame's Rocket (*Hesperis matronalis*) (continued)

Native Look-Alikes:

	<p style="text-align: center;">Fireweed <i>(Chamerion angustifolium)</i></p> <p>Dame's Rocket is commonly confused with native Fireweed (left), which has a similar shape and flower color.</p> <p>The purple flowers of Fireweed have long styles that terminate in four stigmas (below). In addition, the petals of Fireweed are tapered toward the center and more delicate looking.</p> <p>Another distinctive feature of Fireweed is its fruit. The long seed capsule splits open in late summer to expose minute brown seeds with long silky hairs (right).</p>
	



Alpine Wallflower
(Erysimum capitatum)

This native wildflower is also a Mustard and looks very similar to Dame's Rocket, but it is typically orange, maroon, or yellow.

Note the long seed pods (siliques) present. These two-chambered fruits are characteristic of the Mustard family, and are similar to those made by Dame's Rocket.

M. Poison Hemlock (*Conium maculatum*)

Key Characteristics:

Poison hemlock is a member of the Parsley family. It is a biennial introduced from Europe that may grow up to 9 feet tall. It has a fleshy, stout **taproot** and grows its first year above ground as a **fern-like rosette** of pinnately divided leaves. **Stems** of Poison Hemlock have purple spots at all growth stages. The white **flowers** are borne in umbels, each supported by a stalk.

All plant parts are **extremely poisonous** to humans and most domestic livestock. The plants contain the intensely poisonous alkaloid coniine and other related alkaloids. Children have been poisoned by using the hollow stem as a whistle. Adults have been poisoned by mistaking leaves for parsley, roots for parsnips, or seeds for anise. The plant has an unpleasant taste and odor. Symptoms of poisoning are a burning sensation in the mouth and throat, nervousness, trembling, uncoordinated body movements, dilation of pupils, muscular weakness, coldness of extremities, weakened and slowed heart-beat, convulsions, and coma. Death occurs through respiratory paralysis. Socrates was killed with a formulation of Poison Hemlock.

Locations:

Poison hemlock is very widespread in Pitkin County. It is common on East and West Sopris Creek, Prince Creek, Watson Divide, and Woody Creek Roads and in Lenado and Snowmass Village.

Biological control:

The larvae of the Defoliating Hemlock Moth, *Agnopterix alstroemeriana*, chew holes in the leaves and flowers of Poison Hemlock, and feed on seeds prior to pupation. Attacked hemlock plants are extensively defoliated and damaged in the first season of release. Populations of the moth have been released in Snowmass Village and Woody Creek, and seemed to cause substantial damage in their first season. However, it not yet clear whether they have been able to overwinter and reproduce at our altitude.

Cultural control:

Good vegetative cover lessens likelihood of initial infestations of poison hemlock.



M. Poison Hemlock (*Conium maculatum*) (continued)

Mechanical control:

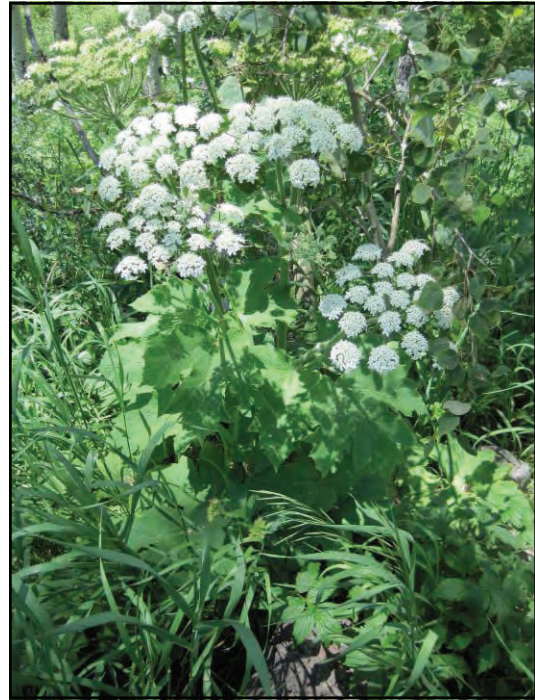
Tillage, digging, and pulling are all effective controls but care must be used when handling. Gloves, eye and mouth protection are recommended, to guard against inadvertent contamination by the extremely poisonous sap of this weed.

Chemical control:

There are some herbicides available that are effective against Poison Hemlock. However, because this plant tends to grow near water and wetlands, herbicide treatment may not be appropriate. Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Native Look-Alikes:

There are many native members of the Parsley family that look very similar to Poison Hemlock. A couple of examples are pictured to the right. **Do not ingest any plant unless you are absolutely positive of its identification.**



Cow Parsnip

(Heracleum sphondylium)

Stem thicker, leaves much larger and less subdivided than Poison Hemlock.



Porter's Loveage/Osha

(Ligusticum porteri)

Leaflets somewhat more rounded, and umbels somewhat less compact than Poison Hemlock.

Porter's Loveage may have purple striations similar to that on Poison Hemlock. These two plants are very similar and misidentification is common.

N. Hoary Cress (“Whitetop”) (*Cardaria draba*)

Key Characteristics:

Hoary cress, a member of the Mustard family, was probably introduced from Europe in alfalfa seed. It is a perennial which reproduces by both root and seed. The extensive **root system** spreads horizontally and vertically with frequent shoots arising from the root-stock. Growth begins in the early spring from a rosette, with bolting, flowering and seed-set occurring my early to mid-summer. Whitetop grows erect from 10 to 18 inches high. **Flowers** are 4-petaled, white, about 1/8 inch across, and numerous in compact, flat-topped clusters. **Leaves** have a blue-green hue. Lower leaves are stalked; upper leaves are alternate, clasp the stem, and are oval or oblong with toothed or almost smooth margins. Each leaf is 1/2 to 2 inches long with blunt ends.



Locations:

Whitetop is becoming increasingly common in parts of Pitkin County. It is extremely prolific and moving quickly throughout the Little Elk Creek and Old Snowmass areas towards East Sopris Creek. Hoary cress is one of the earliest perennial weeds to emerge in the spring. Flowers are produced in late April and May.

Biological control:

No known biological controls at this time.

Cultural control:

Mowing or cultivation effectiveness will be increased if other plants like perennial native grasses or alfalfa are seeded in the whitetop stands as competitors. Maintain range and pasture in good condition. Promote healthy grass growth through proper irrigation and fertilization. Do not overgraze.

Mechanical control:

Tilling will increase infestation due to extensive underground root system. Cutting and removal of top growth is somewhat effective. Repeated cutting/mowing may reduce production and spread of seed.

Chemical control:

There are some herbicides available that are effective against Hoary Cress. Herbicide treatment is most effective when applied before bloom or in the fall. Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

N. Hoary Cress (*Cardaria draba*) (continued)

Native Look-Alikes:



Field Pennycress
(*Thlaspi arvense*)

Field Pennycress is a non-native, non-noxious weed that often appears as a pioneer species in areas of recent ground disturbance. While non-native, Pennycress is not very aggressive and thus not a very pernicious threat to native vegetation. However, it is often confused with Hoary Cress, which looks similar at early growth stages.



The foliage of Field Pennycress is generally more coarsely toothed than Hoary Cress and lacks the latter's blueish-green hue. The fruit is a distinctive "penny" shaped silicle.



Photo by Robert Nagel

Yarrow
(*Acillea lanulosa*)
Distinguish Yarrow from Hoary Cress by its

O. Houndstongue (“Beggar’s Lice”) (*Cynoglossum officinale* L.)

Key Characteristics:

Houndstongue is a member of the Borage family. A biennial introduced from Europe, it reproduces only by seed and lives its first year as a **leafy rosette**. The stout, erect, **stem** appears the second year, growing 1-4 feet high.

Leaves are alternate, oblong to lance-shaped, 1-12 inches long, 1-3 inches wide, lacking teeth or lobes, and with soft, white hairs. **Leaves** often appear dusty or insect-ridden, and may have reddish streaks. **Flowers** are reddish-purple in color. The **fruit** consists of four nutlets, each about 1/3 inch long. The seeds are covered in short prickles which act like Velcro and are rapidly scattered by animals, socks, shoes, etc. Houndstongue is **toxic to horses, livestock, and wildlife**, containing pyrrolizidine alkaloids that can stop liver cells from reproducing. Animals may live up to six months after ingesting a lethal dose.



Locations:

A prolific seed producer and excellent hitch-hiker, Houndstongue is widespread throughout Pitkin County, particularly in areas of past or current livestock grazing, but also along hiking trails, in riparian zones, and other high-traffic areas.

Biological control:

No known biological controls at this time.

Cultural control:

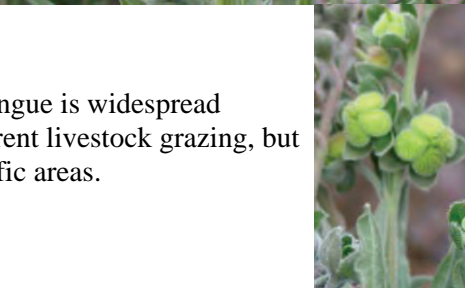
Re-seed disturbed sites with fast-growing native grasses. Maintain range and pasture in good condition. Promote healthy grass growth through proper irrigation and fertilization. Particular care should be taken not to overgraze pastures where Houndstongue is present, as likelihood of lethal ingestion by livestock is greatly increased. Caution should also be taken not to purchase or distribute contaminated hay, as dried and diluted Houndstongue leaves are more palatable to animals.

Mechanical control:

The key to managing Houndstongue is to keep seeds from spreading. This is best achieved by pulling or digging the plant at flowering or early seed formation, bagging, and removing plants. Regular cultivation, digging, pulling and cutting are effective if done frequently — the plant’s hearty taproot can support several re-sprouts in one season if not removed.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.



P. Diffuse Knapweed (*Centaurea diffusa*)

Key Characteristics:

Diffuse knapweed is a member of the Sunflower family. Diffuse knapweed was introduced from Europe and is a biennial or short-lived perennial that reproduces by seed only. The plant usually produces a single main multi-branched **stem** that is 1 ½ to 2 feet tall. The **flower** is white or pink with spiny bracts with a pronounced tip and fringed edges.

Leaves are finely divided, existing as a ground-level **rosette** in the first year of growth. **Seedheads** are retained, and plant becomes a tumbleweed in winter, spreading seed along its way.

Locations:

The largest infestations are found at the base of Smuggler Mountain Road and in Snowmass Village across from the Snowmass Conoco. Plants have also been found along Medicine Bow Road. An early detection and early treatment philosophy could eradicate this weed in Pitkin County.

Biological control:

There are several insects available for release and control of large infestations of knapweed. These include two Seed-Head Gall Flies (*Urophora affinis* and *U. quadrifasciata*), the Sulfur Knapweed Root Moth (*Agapeta zoegana*), the Knapweed Flowerhead Weevil, *Larinus minutus*, and the Knapweed Seed Head Moth (*Metzneria paucipunctella*). Note that biological control is useful to reduce the size of large infestations, but will not result in eradication of the weed.

Cultural control:

Competitive vegetation helps resist infestation, but can still be displaced. Proper fertilization and irrigation will generally support competitive native grass stands. Do not overgraze.

Mechanical control:

The key to managing Diffuse Knapweed is to prevent it from going to seed. This is best achieved by pulling or digging the plant at rosette, flowering or early seed formation stages, then bagging, and removing plants. Regular cultivation, digging, pulling and cutting are effective if done frequently; the plant's hearty taproot can support several re-sprouts in one season if not removed.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.



Q. Meadow Knapweed (*Centaurea pratensis*)

Key Characteristics:

Meadow knapweed is a member of the Sunflower family. It is a perennial that grows 2-4 feet tall, containing many branches each terminating in a single **flower**. **Leaves** are not finely divided like they are with spotted and diffuse knapweed. **Lower leaves** are entire, coarsely lobed, or toothed, while **middle and upper leaves** are entire or toothed. **Flowers** are large pink to purplish-red heads at the end of the branches; **Bracts** are papery, fringed, and brown.

Locations:

Meadow knapweed is rare in Pitkin County, but has been identified in the Little Elk Creek subdivision. This infestation has been monitored and treated since 2006, and is believed to be nearly eradicated.

Biological control:

There are several approved biological control agents for meadow knapweed. For most effective control, use a combination of several different kinds of insects. Contact the Colorado Department of Agriculture Insectary in Palisade for more information.

Cultural control:

Meadow knapweed tends to form monocultures by eliminating other plants. Therefore, sowing desirable plant species is necessary after the weed is controlled. If a meadow knapweed stand is not too old and grasses are still present, stimulating grass growth by irrigation (where possible) should increase grass competition with knapweed and keep it under continual stress. It will still be necessary to remove flowers before they set seed to prevent infestation of new areas.

Mechanical control:

Plants that are periodically mowed will generally continue to flower and produce seed on shorter plants below the mower blade. Repeated cultivation can be effective if combined with monitoring for and control of re-sprouts.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.



R. Russian Knapweed (*Acroptilon repens*)

Key Characteristics:

Russian knapweed is a member of the Sunflower family introduced from Europe. It is a perennial that reproduces by seed and **creeping, horizontal roots**. Upright, branched, stiff, **stems** grow 1 to 3 feet high. **Flowers** develop June-August and are 1/4-1/2 inches wide, pink to lavender, with distinctive papery **bracts**. Russian Knapweed is allelopathic, meaning it contains a toxic substance that inhibits the growth of competing plants. This trait, combined with the plant's extensive root system and prolific seed production, make Russian Knapweed very difficult to control once established.



This plant can be toxic to horses, when consumed over time. Once poisoning occurs horses are unable to chew or advance food to the back of their mouths; swallowing and drinking are severely impaired. Poisoning is irreversible and death by starvation will occur.

Locations:

Numerous small patches of Russian Knapweed exist along Hwy 133 and Snowmass Creek Road from Windstar to the end of the asphalt. It is also found along Brush Creek Road and in the Town of Snowmass Village, as well as on Aspen Valley Ranch in Old Snowmass and Stark Mesa above the Crystal River. The key to Russian knapweed control is to stress the weed until it expends nutrient stores. An Integrated Management Plan should be developed that combines revegetation with mechanical and/or chemical control. A single strategy used alone is typically inadequate.

Biological control:

A gall-forming nematode established in Washington may eventually be available. Contact the Colorado Department of Agriculture Insectary in Palisade for more information.

Cultural control:

Russian knapweed tends to form monocultures by eliminating other plants through allelopathy and aggressive nutrient consumption. Thus, it is important to combine weed control with revegetation. If a Russian knapweed stand is not too old and grasses are still present, stimulating grass growth by irrigation (where possible) should increase grass competition with knapweed and keep it under continual stress.

Mechanical control:

Mowing, pulling and cultivation are ineffective control methods because they do not address the plant's creeping root system (and, in the case of tillage, may actually spread the infestation).

Chemical control:

Timing is critical: apply herbicides at bud stage or after a light frost. Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

S. Spotted Knapweed (*Centaurea maculosa*)

Key Characteristics:

Spotted knapweed is a member of the Sunflower family. Native to central Europe, it is a simple perennial that reproduces from seed and forms a new shoot each year from a taproot. The plant can have one or more shoots up to 4 feet tall. **Flowers** are usually lavender to purple with spotted **bracts**. Spotted knapweed tolerates dry conditions, similar to diffuse knapweed, but will survive in higher moisture areas as well.

Locations:

Spotted knapweed is one of the most invasive, aggressive weeds to plague the western United States. Very rare in Pitkin County, the largest infestation is found in patches along State Highway 82 from east of Aspen to Tagert Lakes. This infestation has been monitored and treated yearly. It is imperative that this infestation not be allowed to spread into the fragile sub-alpine ecosystem.

Biological control:

There are several insects available for release and control of large infestations of knapweed. These include two Seed-Head Gall Flies (*Urophora affinis* and *U. quadrifasciata*), the Sulfur Knapweed Root Moth (*Agapeta zoegana*), the Knapweed Flowerhead Weevil, *Larinus minutus*, and the Knapweed Seed Head Moth (*Metzneria paucipunctella*). Note that biological control is useful to reduce the size of large infestations, but will not result in eradication of the weed.

Cultural control:

If desirable grass competition is evident in spotted knapweed stands, judicious herbicide application that does not injure grasses may release the grass to compete effectively with the weeds. Irrigation may help stimulate grass competition in these cases. Seeding suitable perennial grasses is necessary to prevent weed re-invasion.

Mechanical control:

Tillage, digging, pulling and cutting will reduce or eliminate plants if repeated frequently, thoroughly and prior to seed production.

Chemical control:

Timing is critical: apply herbicides at rosette or early bolt stage. Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Native Look-Alikes:

Our native Tansyaster (*Machaeranthera bigelovii*), can resemble Spotted or Russian Knapweed before flowers fully open. This daisy-like bloom has purple ray flowers surrounding a yellow center and sticky, back-curving bracts beneath.



T. Common Mullein (*Verbascum thapsus*)

Key Characteristics:

Common mullein is a member of the Snapdragon family. It was introduced from Europe, but is native to Asia. A deep tap-rooted biennial growing up to 7 feet tall, it produces a large **rosette** up to 2 feet in diameter the first year. **Leaves** are large, soft, and very hairy leaves. It produces a large **rosette** up to 2 feet in diameter the first year. **Flowers** are yellow and borne in large terminal spikes. Dipped in tallow, mature stalks made good torches in ancient times; called "witch's-stick".



Locations:

Found throughout Pitkin County along dried-up river bottoms, pastures, meadows, fencerows and disturbed areas. Especially prevalent on gravelly soils.

Biological control:

None present and no current research.

Cultural control:

Good vegetative cover is the best way to avoid proliferation of Common Mullein.

Mechanical control:

Will not stand tillage. Pulling or cutting below the root crown when soil is damp is effective if done prior to seed production.

Chemical control:

Only effective when combined with adequate surfactant to allow penetration of hairy leaves. Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

U. Oxeye Daisy (*Chrysanthemum leucanthemum*)

Key Characteristics:

Oxeye daisy, a member of the Sunflower family, is native to Eurasia and was introduced to the West as an ornamental.

Having escaped cultivation, this pretty little plant now crowds out important native vegetation in sensitive riparian ecosystems and has become an aggressive and difficult noxious weed. Ox-eye Daisy grows as an erect, rhizomatous perennial. **Showy blossoms** are a composite of white ray (outer) and yellow disk (inner) flowers, blossoming from June to August. **Lower leaves** are spoon-shaped and appear somewhat waxy; **upper leaves** are narrow and clasp the stem.



Locations:

Originally planted intentionally in Pitkin County in wildflower mixes, this escaped ornamental has spread throughout Pitkin County. Especially common in and around the Redstone area, it is beginning to dominate the Crystal River drainage area. It is also very common in the City of Aspen and Town of Snowmass Village, and can be found throughout Old Snowmass and Woody Creek as well. Alternatives to planting oxeye daisy include native daisies, black-eyed susan, shasta daisy, and blanket flower.

Biological control:

No known biological controls at this time.

Cultural control:

The key to oxeye daisy management is to create strong awareness among homeowners, nurseries, landscapers, and landscape architects that this is a noxious weed and therefore should not be specified in plantings, sold in nurseries, or planted in home gardens or large-scale landscape projects.

Mechanical control:

Repeated tillage or digging will eventually eliminate rhizomes.

Chemical control:

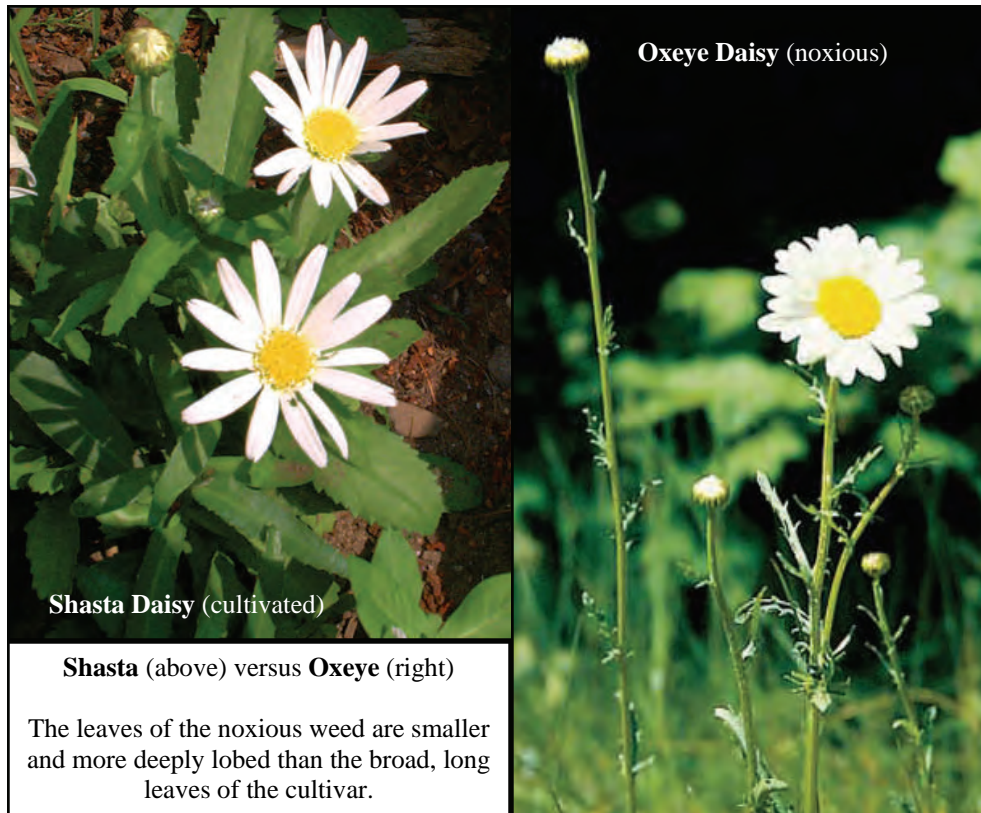
Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.



U. Oxeye Daisy (*Chrysanthemum leucanthemum*) (continued)

Look-Alikes:

Oxeye Daisy is often confused with the non-native ornamental Shasta daisy (*Leucanthemum x superbum*). This confusion is often complicated by the fact that wildflower seed mixes labeled as containing Shasta daisy are often contaminated with Oxeye. Shasta is generally more robust than Oxeye and has larger flowers and foliage, as illustrated by the side-by-side comparison below. Both are prolific seed producers, but in contrast to Shasta daisy (which grows from a root ball) Oxeye has a creeping root system that further allows it to escape cultivation and become quickly and substantially established neighboring wildlands.



V. Perennial Pepperweed ("Tall Whitetop") (*Lepidium latifolium*)

Key Characteristics:

Perennial Pepperweed is a member of the Mustard family and very similar to Hoary Cress in appearance and management. It is a deep-rooted perennial plant with an extensive, vigorous, creeping root system. Perennial Pepperweed stands 1-3 feet high (up to 5 feet in wet areas) with a heavy, sometimes woody, crown.

Leaves are waxy with a distinctive white midrib. **Lower leaves** are oblong with toothed margins; **upper leaves** are lack a petiole but do not clasp the stem. **Flowers** are very white and found in dense rounded clusters.

Perennial Pepperweed can be found in pastures, riparian areas, roadsides, and waste places. This weed has taken over thousands of acres in the San Luis Valley.

Locations:

This plant is found along Hwy 82 in Snowmass Canyon, with a few patches between Old Snowmass and Basalt. It is very difficult to control and should not be allowed to spread.

Biological control:

No known biological controls at this time.

Cultural control:

Re-seed disturbed sites with fast-growing native grasses. Maintain range and pasture in good condition. Promote healthy grass growth via proper irrigation and fertilization.

Mechanical control:

Repeated hand pulling and digging are good for limited infestations. Clean tillage equipment to avoid spreading roots. Do not overgraze.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.



V. Perennial Pepperweed (*Lepidium latifolium*) (continued)

Native Look-Alikes:



Field Pennycress
(*Thlaspi arvense*)

Field Pennycress is a non-native, non-noxious weed that often appears as a pioneer species in areas of recent ground disturbance. While non-native, Pennycress is not very aggressive and thus not a very pernicious threat to native vegetation. However, it is often confused with Hoary Cress, which looks similar at early growth stages.



The foliage of Field Pennycress is generally more coarsely toothed than Hoary Cress and lacks the latter's blueish-green hue. The fruit is a distinctive "penny" shaped silicle.

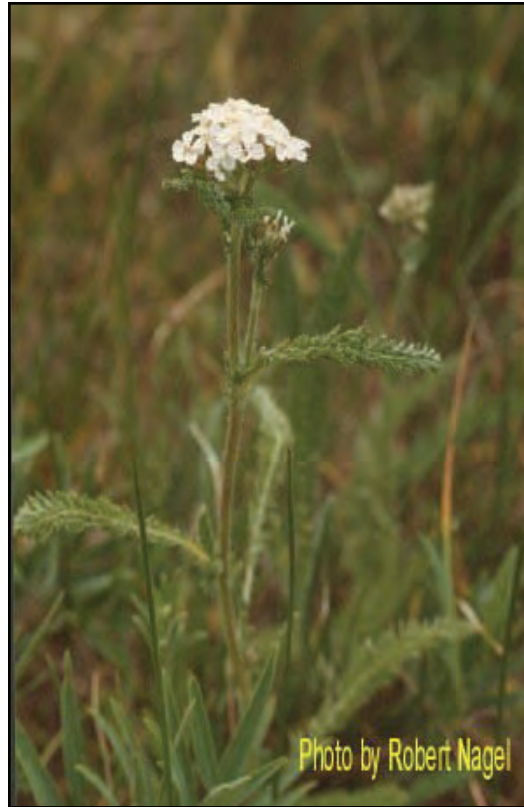


Photo by Robert Nagel

Yarrow
(*Acillea lanulosa*)

Distinguish Yarrow from Hoary Cress by its woolly, finely-divided leaves and hairy stems.

W. Russian Olive (*Elaeagnus angustifolia*)

Key Characteristics:

Russian olive is a member of the Oleaster family. A hardy, fast-growing tree introduced from Europe, Russian olive has been promoted for windrow and ornamental plantings. Russian olive can be found in both dry and moist soils, but does particularly well in sandy flood plains. This tree may reach heights of 10 to 25 feet. The **trunk and branches** are armed with 1 to 2 inch woody thorns. **Leaves** are covered with small scales which give the foliage a **distinctive silvery** appearance. **Flowers** are yellowish-green in color and produce a berry-like **fruit** that silvery when first formed but turns brown at maturity. Russian Olive is rapidly replacing native riparian species and eliminating valuable nesting sites for birds. It should be eliminated whenever possible.

Locations:

To date Russian olive has not been a problem in Pitkin County but has the capability to spread if left unchecked. This weed is starting to establish itself along the Crystal River, Roaring Fork, and Snowmass Creek valleys. Mapping and monitoring efforts have begun in 2009 and will help determine whether infestations are spreading.

Biological control:

No known biological controls at this time.

Cultural control:

Do not plant or propagate Russian Olive. Landscape with native trees wherever possible. Plant and support native vegetation in riparian areas.

Mechanical control:

Russian Olive saplings and sprouts can be hand-pulled or removed with a shovel or other appropriate hand-tool. Do this when the soil is moist to insure removal of the root system. For larger trees, cutting alone (i.e. without herbicide treatment) will actually promote denser re-growth. Burning during the dormant season also results in vigorous re-sprouting.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.



X. Salt Cedar (Tamarisk) (*Tamarix chinensis*; *T. ramosissima*)

Key Characteristics:

Salt cedar, also known as Tamarisk, was introduced from Eurasia and is now wide-spread in the United States. Salt cedar is a member of the Tamarisk family. It is a deciduous or evergreen shrub or small tree that grows from 5 to 20 feet tall. The **bark** on saplings and **stems** is reddish brown. **Leaves** are small and scale-like and **flowers** are pink to white and five-petaled. The stems and leaves of mature plants secrete a salt that forms a crust above and below ground and inhibits native plants from establishing.



Locations:

In Pitkin County, Salt Cedar has most recently been found along the river and retaining ponds at Wingo Ranch, and along Hwy 82 in Snowmass Canyon. Infestations in the Crystal River by Penny Hot Springs are believed to have been eradicated. Salt Cedar is **very** prevalent along the Colorado River. It is **extremely important** that anglers and boaters clean their waders, equipment, and boats before leaving infested areas so as not to bring this invader into the upper Roaring Fork Valley.



Biological control:

The Salt Cedar Leaf Beetle (*Diorhabda elongata*) eats the leaves of Salt Cedar causing stem dieback and potential death of the plant if defoliation is consistent. Populations have been released in eastern Utah and have crossed the border into Western Colorado. The beetle is available for limited distribution. Contact the Colorado Department of Agriculture Insectary in Palisade for more information.

Cultural control:

Competitive vegetative cover helps but cannot prevent spread in susceptible sites. After a Salt Cedar infestation is managed, revegetation is necessary to protect the soil resource and reduce the threat of reinvasion. Seeded grasses, willow stakes, and cottonwood cuttings can reduce the chance of Salt Cedar re-entering managed sites.

Mechanical control:

For small infestations, cut-stump treatments are effective. This means felling via chainsaw or lopper, followed by an application of herbicide directly to the cambium. A bulldozer or prescribed fire can be used to open up large stands of salt cedar for access for further control. To be effective, these methods should be followed up with an herbicide treatment of the re-sprouts when they are 1-2 meters tall.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Y. Cypress Spurge (*Euphorbia cyparissias*)

Key Characteristics:

Cypress Spurge is a member of the Spurge family. It is a perennial that reproduces by both seed and an extensive creeping root system. Leaves are alternate, numerous, small, and narrow. **Stems** are very branched toward their upper ends and reach 4-32 inches in height. When severed, **stems secrete a milky latex** that is toxic to horses and cattle and caustic to human skin. Heart-shaped, leaf-like **bracts** form below inconspicuous flowers. These **bracts** are yellowish-green early in the season, turning reddish-green toward maturity. **Flowers** are yellowish-green and form at the tips of the main stem and upper branches.



Locations:

Cypress Spurge is known to exist in two small patches on private land in Old Snowmass. It appears to have been planted as an ornamental.

Biological control:

None available at this time. Note that the Colorado Department of Agriculture does not accept Biological Control as an acceptable method for List A noxious weed species.

Cultural control:

Do not plant Cypress Spurge! Maintain healthy native vegetation to prevent infestation. Survey your land regularly to detect new invaders. Quickly eradicate any new populations.

Mechanical control:

Hand-pulling or digging can be effective when managing new, small infestations and care is taken to remove the entire root system. Tillage may encourage spread by further dispersing rhizomes. When handling plants wear rubber gloves and eye protection to protect yourself from the irritating milky sap.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.



Z. Leafy Spurge (*Euphorbia esula*)

Key Characteristics:

Leafy spurge is in the Spurge family. It is a perennial that reproduces by seed and an **extensive creeping root system** that makes it difficult to control once established. **Roots** can extend as deep as 30 feet! The plant grows 1-3 feet tall with pale green **shoots** and inconspicuous yellow-green **flowers** enclosed by a pair of yellow-green, heart-shaped **bracts** that have the appearance of flower petals. The plant, including the root, contains a **milky latex** that is damaging to eyes and caustic to skin.

Locations:

Leafy Spurge infestations occur in the Woody Creek Valley and along the Roaring Fork basin from Twining Flats to the Star Mesa subdivision. The Leafy Spurge flea beetle has been released nearly annual in these areas for over a decade and seems to have made some difference in reducing infestation density. Patches of Leafy Spurge also exist on the West Buttermilk subdivision.



Biological control:

Sheep or goats will graze leafy spurge. If livestock graze leafy spurge after seed formation, hold animals in a corral for at least seven days before moving them to an un-infested area to avoid spread of any seeds or root-parts.

There are also several insects available for Leafy Spurge control. Each feeds on a specific part of the plant. When used together, these insects can provide very effective reduction in large, contiguous infestations. Insects available include:

- species of the **flea beetle**, *Apthona*, whose larvae feed on primary and secondary roots. A variety of several complementary *Apthona* species are typically sold together for release.
- the **Red-Headed Spurge Stem Borer** (*Oberea erythrocephala*) — a long-horned beetle that feeds on leaves, bracts, and girdles of stems and is able to survive in shady release sites, unlike the flea beetle species above.
- the **Spurge Shoot-Tip Gall Midge** (*Spurgia esulae*), which lays its eggs upon the shoot tips of the plant and produces two or three generations per year. Feeding larvae stress the plant and help preventing flowering and seed production on the attacked stem.

Cultural control:

Any activity which encourages vigorous grass growth is very important. Do not overgraze.

Mechanical control:

Persistent, almost zealous digging or cultivation is required to be at all successful. Mowing leafy spurge at 14-21 day intervals may cause higher susceptibility to fall applied herbicides.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

AA. Myrtle Spurge
 (“Donkey Tail Spurge”)
 (*Euphorbia myrsinites*)



Key Characteristics:

Myrtle spurge is a highly invasive ornamental plant, popular for use in xeriscapes and rock gardens. This plant is rapidly expanding into sensitive ecosystems, displacing native vegetation, reducing forage, and, in some cases, injuring wildlife. Myrtle spurge is a **low-growing, tap-rooted perennial** with **trailing stems** of **fleshy, blue-green, leaves**. This growth form has given rise to the alternate name, “Donkey-Tail Spurge.”

Inconspicuous **flowers** are surrounded by **yellow-green petal-like bracts** that first appear in early spring. Myrtle spurge reproduces by seed and plant fragments, and is capable of projecting seeds up to 15 feet. This plant exudes toxic, milky latex which can cause severe irritation to skin and mucus membranes.

Locations:

This plant has been known to occupy ornamental gardens on Red Mountain and in Brush Creek Village, the Crystal River Valley, Emma, the City of Aspen, and the Town of Snowmass Village. Large infestations of Myrtle Spurge exist in the City of Glenwood Springs.

Biological control:

No known biological controls at this time.

Cultural control:

Do not plant Myrtle Spurge. If present, do not allow to seed. Re-vegetate disturbed Areas.

Mechanical control:

For small patches of Myrtle Spurge, diligent pulling/digging can be effective. It is important to get the entire root and not leave any plant fragments behind. Make sure to wear protective clothing to protect your skin and eyes against the irritating latex.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Native Alternatives:

There are several native alternatives to Myrtle Spurge for your xeriscaping or rock garden. These include Sulfur Flower (*Erigeron umbellatum*), Kinnikinnick (*Artocostaphylos uva-ursi*), Oregon Grape (*Mahonia repens*), and Yellow Stonecrop (*Amerosedum lanceolatum*).

BB. Common Tansy (“Garden Tansy”) *(Tanacetum vulgare)*

Key Characteristics:

Common Tansy is a member of the Sunflower family. Originally imported from Europe as an ornamental, it is a perennial plant that grows from 1½ to 6 feet tall with yellow **button-like composite flowers** and **fern-like leaves**. Reproducing by both seed and an **extensive root system**, tansy is difficult to control. Tansy is particularly aggressive when growing along irrigation ditches where it can restrict water flow.

Locations:

Common Tansy is found throughout Pitkin County, usually in small dense patches in sub-irrigated areas along roads, ditches, and in waste areas and pastures. Just down-valley of the county line, Common Tansy dominates the Hwy 82 and Rio Grande Trail rights-of-way, making up-valley transport of seed inevitable. This extremely aggressive weed is also often found as an ornamental in gardens throughout the valley. See below for native alternatives.

Biological control:

No known biological controls at this time.

Cultural control:

Do not plant Common Tansy. Competitive vegetative cover helps but does not completely prevent infestation.

Mechanical control:

Repeated mowing or cutting will inhibit seed production, and may stress root system. Pulling and digging are usually ineffective, as these can actually stimulate roots to spread.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Look-Alikes:

Common Tansy can easily be confused Yellow Yarrow, a common garden plant that looks very similar to the noxious weed, but can be distinguished by its grayish-green, wooly leaves, and flower clusters that are more umbrella-like than button-shaped.



CC. Bull Thistle (*Cirsium vulgare*)

Key Characteristics:

Bull thistle is a member of the Sunflower family. It is a biennial, living its first year as a low-growing **rosette**, up to 1 foot in diameter; Bull Thistle bolts in its second year to produce a **stem** 2 to 5 feet tall, bearing many spreading, slightly hairy branches with spiny wings. **Leaves** are alternate, 3-12 inches long, pinnately-lobed, hairy and prickly on the upper side while cottony underneath. Gumdrop-shaped **blooms** appear July through September and are pink to dark purple and 1½ to 2 inches in diameter. Involucres are somewhat tapered and covered with spines. **Seeds** are capped with a circle of plume-like white hairs.



Locations:

Bull thistle can be found in the Crystal River Valley and Capitol Creek regions. Plants have also been found in Snowmass Village and at the Pitkin County Airport.

Biological control:

The **Thistle Stem Gall Fly**, *Urophora stylata*, is used to help control this thistle. Females lay eggs on the seed-head. The maggot then consumes the seed in the flower. This species has overwintered in Colorado, but the limited numbers will not allow for general redistribution. For more information contact the Colorado Department of Agriculture Insectary in Palisade.

Cultural control:

Good vegetative cover helps slow establishment, but Bull Thistle can invade healthy stands including healthy lawns.

Mechanical control:

Bull thistle will not withstand regular cutting or tillage. Don't let it go to seed; carefully cut and bag if flower heads are present.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Native Look-Alikes:

There are several Native Thistles in Pitkin County which may be confused with Bull Thistle. See Appendix B for more information about Native Thistles.

DD. Canada Thistle (*Cirsium arvense*)

Key Characteristics:

Canada thistle is a member of the Sunflower family. It is a perennial which reproduces by seeds and fleshy, **horizontal roots**. The erect **stem** is hollow, mostly smooth, and reaches 1 to 5 feet tall, branching at the top. The lower stem is covered with fine hairs. Flowers are typically pale pink to lavender, sometimes purple.



Locations:

Canada thistle emerges in June in most parts of Pitkin County. It is one of the most widespread and economically damaging noxious weeds in Colorado. Infestations are found in cultivated fields, riparian areas, pastures, rangeland, forests, lawns and gardens, roadsides, and in waste areas. Because of its prolific seed production, vigorous growth, and extensive underground root system, control is difficult. Canada thistle is best managed through an integrated management system that emphasizes competitive desirable plants.

Biological control:

Cattle, goats, and sheep will graze Canada thistle when plants are tender in the Spring.

There are also currently several insects available for Canada Thistle control:

- **Canada Thistle Stem Mining Weevil** (*Ceutorhynchus litura*) attacks the stem of young Canada Thistle plants as they emerge from the soil and begin to elongate.
- **Canada Thistle Flower Weevil** (*Larinus planus*) feeds on flower heads.
- **Defoliating Beetle** (*Cassida rubiginosa*) eats the leaves of Canada, Musk, Plumeless Thistles.

Cultural control:

Maintain soil disturbances, and encourage desirable plant growth.

Mechanical control:

Canada thistle is very difficult to mechanically control because each time a root is cut, it serves to increase the number of plants; regular cutting or tillage can wear down plant reserves and reduce population and vigor but results are often erratic.

Chemical control:

Appropriate timing is critical for effective chemical control of Canada Thistle. Application at bud stage or in the fall after a light frost allow for best translocation of herbicide to the plants' extensive root system. Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Native Look-Alikes:

There are several Native Thistles in Pitkin County which may be confused with Canada Thistle. See Appendix B for more information about Native Thistles.

EE. Musk Thistle (“Nodding Thistle”) (*Carduus nutans*)

Key Characteristics:

Musk thistle is a member of the Sunflower family. Introduced from Eurasia, it is a winter annual or biennial which reproduces by seed. The first year's growth is a large, compact **rosette** from a large, corky **taproot**. The second year stem is erect, spiny, 2 to 6 feet tall. The waxy **leaves** are dark green with a light green midrib and mostly white margins. Purple or magenta **composite flowers** sit solitary on stems, nodding when mature, with pinecone-like prickly bracts below.



Locations:

This species of thistle was once very widespread in Pitkin County but has been drastically reduced by the Seed Head Weevil, *Rinocyllus Conicus*. The plant still occurs on Hwy-133 and in a few areas in Old Snowmass.

Biological control:

When possible, it is best release more than one type of insect on a weed since each type may work on a different part of the plant. Insects currently available for Musk Thistle control include:

- **Musk Thistle Seed Head Weevil**, *Rhinocyllus conicus*, is widespread in Colorado. Larvae of this insect destroy developing seeds but are not 100 percent effective by themselves. The weevil normally impacts seed production by about 50 percent. Herbicides can be combined with weevils if the insects are allowed to complete their life cycles. Unfortunately, *R. conicus* will also attack native thistle populations.
- **Thistle Rosette Weevil**, *Trichosirocalus horridus*, attacks the crown area of musk thistle rosettes and weakens the plant before it bolts. This weevil has reduced stand density in areas where it has become well established.
- **Defoliating Beetle** (*Cassida rubiginosa*) eats the leaves of Canada, Musk, Plumeless Thistles.

Cultural control:

Mitigate soil disturbance and encourage desirable plant growth.

Mechanical control:

Mowing, cutting, digging, pulling or cultivation are all effective if done prior to flowering.

Chemical control:

The best timing for chemical control is when plants are in the rosette or early bud stages. Effective control may require applications in both the spring and fall. Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Native Look-Alikes:

There are several Native Thistles in Pitkin County which may be confused with Musk Thistle. See Appendix B for more information about Native Thistles.

FF. Plumeless Thistle (*Carduus acanthoides*)

Key Characteristics:

Plumeless Thistle is a member of the Sunflower family. Introduced from Eurasia, it is a winter annual or biennial. This plant can be distinguished from Canada Thistle by the presence of many spines along its stem and from Musk Thistle by its smaller blossoms and lack of the prominent white margin present on musk thistle leaves. The plant may grow to a height of 5 feet or more and is an extremely prolific seed producer.. **Flowers** are magenta to purple and are either solitary or clustered. **Taproot** is large and fleshy.



Locations:

While Plumeless Thistle is common throughout Pitkin County, it is rare Colorado at large, found primarily in the tri-county area of Eagle, Garfield and Pitkin Counties.

Biological control:

When possible, it is recommended to release more than one type of insect on a weed since each type may work on a different part of the plant. Insects available for Plumeless Thistle control include:

- **Musk Thistle Seed Head Weevil**, *Rhinocyllus conicus*, is widespread in Colorado. Larvae of this insect destroy developing seeds but are not 100 percent effective by themselves. The weevil normally impacts seed production by about 50 percent. Herbicides can be combined with weevils if the insects are allowed to complete their life cycles. Unfortunately, *R. conicus* will also attack native thistle populations.
- **Defoliating Beetle** (*Cassida rubiginosa*) eats the leaves of Canada, Musk, Plumeless Thistles.
- **Thistle Rosette Weevil**, *Trichosiromus horridus*, attacks the crown area of musk thistle rosettes and weakens the plant before it bolts. This weevil has been introduced to Pitkin County, but appears to be ineffective on Plumeless Thistle.

Cultural control:

Good vegetative cover tends to inhibit establishment but plumeless thistle can invade healthy sites. The best management is to minimize disturbance and revegetate with competitive perennial species.

Mechanical control:

Mowing, cutting, digging, pulling or cultivation are all effective if done prior to flowering.

Chemical control:

The best timing for chemical control is when plants are in the rosette or early bud stages. Effective control may require applications in both the spring and fall. Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Native Look-Alikes:

There are several Native Thistles in Pitkin County which may be confused with Plumeless Thistle. See Appendix B for more information about Native Thistles.

GG. Scotch Thistle

(*Onopordum acanthium*; *O. tauricum*)

Key Characteristics:

Scotch thistle is a member of the Sunflower family. A biennial, it leaves as a **rosette** in its first year and can have leaves up to 2 feet long and 1 foot wide.

Leaves are blueish- or grayish-green, toothed, and spiny. The second year the plant can grow up to 8 feet tall, with a **stalk** that has broad spiny wings. The entire plant is finely hair to woolly. There are 2-3 large, globe-shaped magenta **Flowers** per branch tip, with spiny, needle-like bracts below.

Locations:

Scotch thistle is abundant in Garfield and Eagle Counties, but relatively rare in Pitkin County. Plants have been found in the Town of Snowmass Village and along Emma, Lower River, and Capitol Creek Roads.

Cultural control:

Competitive vegetation helps limit spaces open to invasion.

Biological control:

The **Thistle Stem Gall Fly**, *Urophora stylata*, is used to help control this thistle. Females lay eggs on the seed-head. The maggot then consumes the seed in the flower. This species has over-wintered in Colorado, but the limited numbers will not allow for general redistribution. For more information contact the Colorado Department of Agriculture Insectary in Palisade.

Mechanical control:

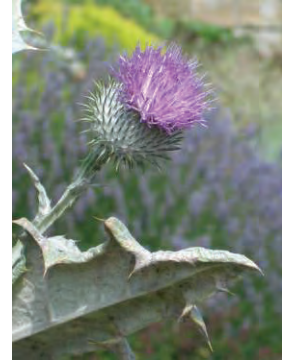
Mowing can stop seed production in short term, but plants can re-grow; digging, cutting and cultivation are effective; monitor for new growth all season long; seed bank will be present for 2-4 years.

Chemical control:

The best timing for chemical control is when plants are in the rosette or early bud stages. Effective control may require applications in both the spring and fall. Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

Native Look-Alikes:

There are several Native Thistles in Pitkin County which may be confused with Canada Thistle. See Appendix B for more information about Native Thistles.



HH. Dalmatian Toadflax
“Wild Snapdragon”
(*Linaria genistifolia*)

Key Characteristics:

Dalmatian toadflax is a member of the Snapdragon family. It was introduced from Europe as an ornamental, but has escaped cultivation and is rapidly invading Western range- and wild-lands. The flower of this creeping perennial closely resembles that of Yellow Toadflax, but the plant can be easily distinguished by its **leaves**, which are blue-green, heart-shaped and clasping the stem. **Flowers** are bright yellow with orange centers, snapdragon-like and spurred. Dalmatian toadflax is especially well-adapted to arid sites and can spread rapidly once established. Its deep, extensive root system, waxy leaves, and heavy seed production, make it difficult to control.



Locations:

Dalmatian toadflax is still relatively rare in Pitkin County but common in Glenwood Springs. Singular plants have been found in isolated locations throughout Pitkin County. More substantial infestations exist along Capitol Creek Road near the Monastery and along Upper Snowmass Creek Road and on BLM Land in the Crown Mountain area.

Biological control:

Contact the Colorado Department of Agriculture Insectary in Palisade for more information about ongoing research into Biological Control for Dalmatian Toadflax.

Cultural control:

Good ground cover helps inhibit, but will not prevent, initial infestation. Re-seed disturbed areas adjacent to toadflax infestations with competitive, native perennial grasses.

Mechanical control:

For small infestations, pulling toadflax by hand can be effective. Pull every year for 5-6 years to deplete the reserves of the root system. Monitor the site for an additional 10-15 years to remove seedlings produced from dormant seeds.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

HH. Dalmatian Toadflax (*Linaria genistifolia*) (continued)

Native Look-Alikes:

Dalmatian (and even Yellow) Toadflax is commonly confused with our native Golden Banner (*Thermopsis montana*) which actually belongs to the Pea family. In fact, Golden Banner is also commonly called “False Lupine,” because its flowers very much resemble that of Lupine, which is also a Pea.

Thermopsis is thus easily distinguished from the noxious weed by its pea-like flowers, leaves, and fruit:

- **Leaves** of Golden Banner are divided into three leaflets, do not clasp the stem, and lack the bluish tint of Dalmatian Toadflax.
- **Flowers** of Golden Banner consist of the distinctive banner, wings, and keel of the Pea family; and lack the spur present on Toadflax.
- **Fruit** of Golden Banner is a bean pod.



Thermopsis montana plant (left) and fruit (right)

II. Yellow Toadflax (“Butter and Eggs”) (*Linaria vulgaris*)

Key Characteristics:

Yellow toadflax is a member of the Snapdragon family and is sometimes called common toadflax or butter and eggs. It was introduced from Europe as an ornamental and has now become a serious problem to rangeland and mountain meadows. It is a perennial reproducing from seed and from its extensive creeping root system. **Leaves** are alternate and linear. **Flowers** are yellow with an orange throat and spurred. Yellow toadflax does well in all types of soils up to 10,000 feet. Its displacement of desirable grasses not only reduces ecological diversity, but also reduces rangeland value and can lead to erosion problems. Because of its early vigorous growth, extensive underground root system, and effective seed dispersal, yellow toadflax is difficult to control.



Locations:

Yellow toadflax is common in Snowmass Village and the City of Aspen, especially along the Roaring Fork River and atop Mountain, and along the Castle Creek and Frying Pan drainages. It also occurs throughout the Crystal River Valley, including the very sensitive Filoha Meadows area, where it grows in and among the exquisite native orchids and is thus effectively impossible to eradicate without severely damaging important native diversity. The number and extent of infestations throughout the County is alarming, as this is a very difficult weed to kill, and success has been very limited.

Biological control:

Several species are currently in development at the Colorado Department of Agriculture Insectary in Palisade. Contact them for more information.

Cultural control:

Maintain competitive communities of desirable species. Re-seed any open ground with native, perennial grasses to prevent invasion by yellow toadflax and other weed species.

Mechanical control:

Hand-pulling and digging are not recommended for control of Yellow Toadflax because it is unlikely that the entire root system will be removed, and any root part left behind will further the infestation. In cases of very small infestations of a handful of plants successful mechanical eradication may be possible. Tillage is also not recommended.

Chemical control:

Contact Pitkin County Land Management Department for more specific information about herbicide products, application rates, and equipment calibration.

6.32.06 Pitkin County Weed Watch List

A. Why a Weed Watch List?

The most critical tool for effective Weed Management is *Prevention*. The easiest weed to control is the one we don't have. Prevention requires vigilance, and vigilance requires awareness of what is likely to be at our doorstep. For Pitkin County, this means being aware of what invasions exist in neighboring counties. The Pitkin County Watch List consists of high-priority weeds present in the neighboring counties of Garfield, Gunnison, and Eagle but not yet known in Pitkin. With more information about what to look for and likely means of transport, we can be ready to nip any new invasions in the proverbial (and literal) bud.

B. Japanese Knotweed (*Polygonum cuspidatum*)



Key Characteristics

Japanese Knotweed is a member of the Buckwheat family, is native to Asia, and was originally imported as an ornamental screen or hedge plant. It is a robust, bamboo-like perennial that spreads by long creeping rhizomes to form dense thickets. It prefers moist areas like ditch- and streambanks. It is a member of the Knotweed Complex, which also includes its hybrid, Bohemian Knotweed, and the closely-related Giant Knotweed. Containment and control of these knotweeds is very difficult.

Although a major problem in other western states, such as Washington, and present in some areas in Colorado, Japanese knotweed has not yet been included on the Colorado Noxious Weed List. It is sometimes sold as *Fallopia japonica* (the Latin name for this plant in Europe and in *Flora of North America*).

Stems are stout, cane-like, hollow between nodes, somewhat reddish-brown, 5 to 8 feet tall, and branched. **Stem nodes** are swollen and surrounded by thin papery sheaths. **Leaves** are thick and tough in texture, spade-shaped with a truncate base and an abruptly narrowed leaf-tip, 2 to 7 inches long and about two-thirds as wide. **Flowers** are small, creamy-white to greenish-white, and grow in showy plume-like, branched clusters from leaf axils near the ends of the stems.

Locations nearest Pitkin County

An infestation of Japanese Knotweed exists in El Jebel in Eagle County, along the ditch bank between the Park-and-Ride and El Jebel Road.

Control Methods:

Contact the Pitkin County Land Management Office or the State Weed Coordinator to discuss options for controlling Japanese and other invasive knotweeds.

C. Mediterranean Sage (*Salvia aethiopsis*)

Key Characteristics

Mediterranean Sage is a member of the Mint family, and native to the Mediterranean region and northern Africa. It has been designated as a List A species by *The Rules* and thus must be eradicated from the State of Colorado.

Mediterranean Sage grows erect from a stout **taproot**, living as a **biennial** or short-lived perennial. First year rosettes are blue-green and covered with woolly white hairs. Bolting in the second year produces more leaves along a flowering stem that can grow 2 to 3 feet tall and branches to resemble a candleabra. This branching stem breaks off in the fall to become a **tumble weed** that disperses many thousands of seeds (mature plants can produce 100,000 seeds each). **Leaves** are woolly and have a pungent odor when crushed. **Flowers** are white to yellowish-white; the upper 2 petals form a lip resembling a hooked beak; the lower 3 petals form 3 lobes, with outer lobes larger than the central ones.

Locations nearest Pitkin County

Infestations of Mediterranean Sage exist in Garfield County along I-70 corridor near the No Name Tunnel. This infestation is particularly alarming because it exists in a high-traffic zone.

Biological Control

Biological Control is not an effective method of eradication. For this reason, Biological Control agents are not included in the management plans prescribed by the State of Colorado for control of List A species, which are mandated for eradication from Colorado.

Cultural Control

Report any suspected infestations of Mediterranean Sage to the Pitkin County Land Management office! The key to effective control of this highly aggressive noxious weed is preventing its establishment in the first place. **Maintain healthy pastures and rangeland** and continually monitor your property for new infestations, especially near current known infestations, since tumbleweed mobility of this plant can spread seeds far and wide. **Do not purchase or plant this weed.** Be aware of what your local garden center is selling and report any noxious weeds for sale.

Mechanical Control

Hand pull or shovel when soil is moist. Make certain to pull up all the roots or sever at least 2 to 3 inches of taproot with a shovel. If plant is not yet in flower, shake excess soil from plant and turn over to dry out. If plant is flowering, bag carefully so as not to scatter seeds which may be present.

Chemical Control

Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.



D. Purple Loosestrife (*Lythrum salicaria*)

Key Characteristics

Purple Loosestrife is a member of the Loosestrife family, native to Europe, and introduced to North America as an ornamental. It has since escaped into natural areas, especially stream banks, shallow ponds, and wetlands, where it quickly replaces the diverse and ecologically important plant community with a single monoculture. These stands have little habitat value for wildlife, and can impede water flow in canals and ditches. It is a List A weed in Colorado.

Purple Loosestrife reproduces primarily by seed, annually producing up to 3 million seeds which can remain viable in the soil for 5 to 20 years. Pieces of root or stem can also produce new plants.

Stems are four-sided and grow 2 to eight feet tall. **Leaves** are 2-5 inches long, lance-shaped, and occur in whorls. **Flowers** are tightly grouped in long, vertical racemes that bloom from the bottom up from late June through September; **Blooms** are pinkish-purple about one inch long, and have five to seven petals;

Locations nearest Pitkin County

An Infestation of Purple Loosestrife exists in Eagle County on private property near Rock Bottom Ranch.

Biological Control

Biological Control is not an effective method of eradication. For this reason, Biological Control agents are not included in the management plans prescribed by the State of Colorado for control of List A species, which are mandated for eradication from Colorado.

Cultural Control

Report any suspected infestations of Purple Loosestrife to the Pitkin County Land Management office! The key to effective control of this highly aggressive noxious weed is preventing its establishment in the first place. **Do not purchase or plant this weed.** Be aware of what your local garden center is selling and report any noxious weeds for sale. Monitor your property for invaders, especially in areas close to known infestations.

Mechanical Control

Hand removal of isolated individual plants can be effective on small infestations, but should be done prior to seed set. It is important to remove the entire rootstalk to avoid re-growth from root fragments. If the plant does flower, all flower heads should be carefully cut and bagged, even if chemical treatment is to be applied. This will prevent or reduce seed production.




Chemical Control

Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.





D. Purple Loosestrife (*Lythrum salicaria*) (continued)

Look-Alikes

	<p style="text-align: center;">Fireweed (<i>Chamerion angustifolium</i>)</p> <p>Purple Loosestrife is often confused with native Fireweed at first sight, as the latter has a similar shape and flower color (left).</p> <p>However, where Loosestrife flowers have 5-7 petals, Fireweed has only 4. Fireweed flowers can be further distinguished by their long styles terminating in four stigmas (below).</p> <p>Another distinctive feature of Fireweed is its fruit. The long seed capsule splits open in late summer to expose minute brown seeds with long silky hairs (right).</p> <p>A final rule of thumb is that, generally speaking, Fireweed typically grows in drier, open, sunny areas, while Purple Loosestrife prefers wetland.</p>	 
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In addition to Fireweed, there are many alternatives to planting Purple Loosestrife that are both better suited to Colorado and more beneficial to wildlife. These include:

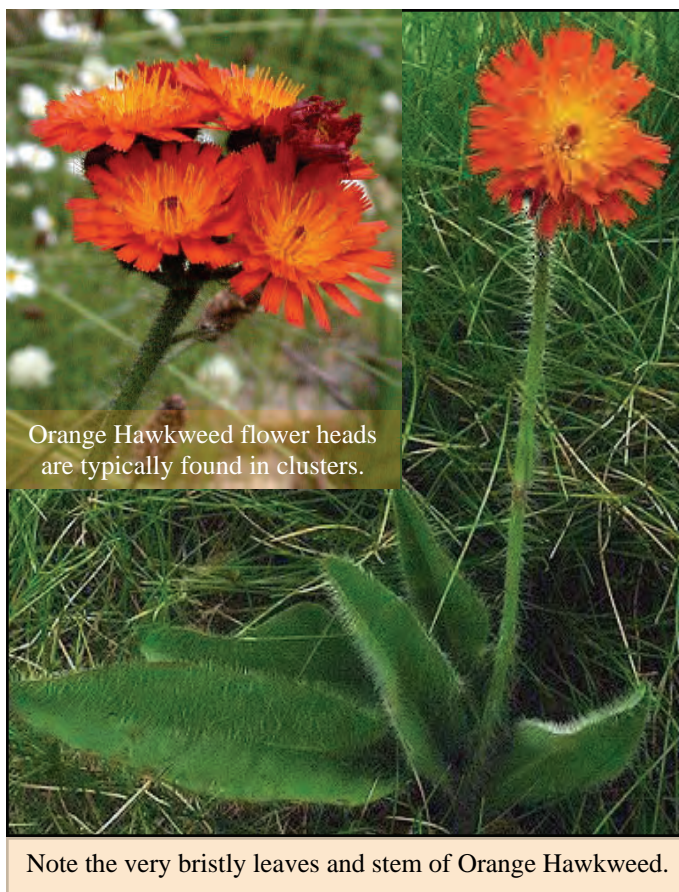
<p style="text-align: center;">Rocky Mtn. Penstemon (<i>Penstemon strictus</i>)</p> 	<p style="text-align: center;">Columbine (<i>Aquilegia sp.</i>)</p> 	<p style="text-align: center;">Lupine (<i>Lupinus sp.</i>)</p> 
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E. Orange Hawkweed (*Hieracium aurantiacum*)

Key Characteristics

Orange Hawkweed belongs to the Sunflower family, is native to Europe, was likely brought to North America as an ornamental, and is now a List A Noxious Weed in Colorado. With an incredible capacity to propagate itself (underground by rhizome and root bud and above ground by runner and seed), Orange Hawkweed quickly forms dense infestations, displacing native plants and dominating sites as a solid mat of rosettes and seedlings. It prefers moist sites such as mountain meadows and woodlands, but can also invade lawn, pasture and range.

Blooms are clusters of red-orange-yellow, dandelion-like flowers with strap-shaped **petals** notched at the tip. **Leaves** primarily basal; sometimes one or two small leaves along the stem. **Stem and Leaves** **bristly**. Plant contains a **milky juice**.



Locations nearest Pitkin County

Infestations of Orange Hawkweed have been treated in Gunnison County.

Biological Control

Biological Control is not an effective method of eradication. For this reason, Biological Control agents are not included in the management plans prescribed by the State of Colorado for control of List A species, which are mandated for eradication from Colorado.

Cultural Control

Report any sightings of Orange Hawkweed to the Pitkin County Land Management office!

The key to effective control of this highly aggressive noxious weed is preventing its establishment in the first place. **Do not purchase or plant this weed.** Be aware of what your local garden center is selling and report any noxious weeds for sale. Monitor your property for invaders, especially in areas close to known infestations.

Mechanical Control

Mechanical Control is **NOT** recommended for Orange Hawkweed, do to this weed's ability to reproduce by stolons, rhizomes, and root fragments, which are typically stimulated or even further spread via pulling, digging, and tillage.

Chemical Control

Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.

E. Orange Hawkweed (*Hieracium aurantiacum*) (continued)

Look-Alikes

Orange Hawkweed closely resembles Yellow Hawkweed (*Hieracium fendleri*), which can be distinguished by its yellow flowers. Our native Orange Agoseris (*Agoseris aurantiaca*) also looks similar, but flowers are solitary and the leaves and stem are either smooth or have only a few white hairs.



Yellow Hawkweed
(*Hieracium fendleri*)



Orange Agoseris
(*Agoseris aurantiaca*)



Monoculture of Orange Hawkweed.

F. Yellow Starthistle

(*Centaurea solstitialis*)

Key Characteristics

Yellow Starthistle is a member of the Sunflower family, is native to Northern Spain, and now a List A Noxious Weed in Colorado.

Yellow Starthistle is a winter annual, meaning it typically germinates in the fall, over-winters as a seedling, and forms its rosette in March-May, bolting in Summer and flowering June-October. With optimal conditions (~70°F and ample moisture), however, this weed can germinate in 16 hours or less, making it possible to produce multiple generations in a single growing season. Yellow Starthistle is an incredible seed producer — a single large plant can produce up to 100,000 seeds. Imagine how fast even a small an infestation can grow in a single season!



Plants grow 1 to 4 inches tall from a vigorous **taproot**. **Flowers** are bright yellow and surrounded at their base by sharp, stiff **spines** reaching 3/4 of an inch in length. **Stems and leaves** have a bluish-green color. **Basal leaves** are 1-3 inches long and deeply lobed, while **upper leaves** are smaller and narrower. **Stems** appear winged and both stem and leaves are covered with a slight whitish nap (short cottony hairs). This plant is **fatally poisonous to horses**, causing Chewing Disease.

Locations nearest Pitkin County

An extensive infestation of Yellow Thistle exists near Paonia in Delta County.

Biological Control

Biological Control is not an effective method of eradication. For this reason, Biological Control agents are not included in the management plans prescribed by the State of Colorado for control of List A species, which are mandated for eradication from Colorado. However, Insects are available for control of Yellow Starthistle. Contact the Colorado Department of Agriculture Insectary in Palisade for more information.

Cultural Control

Report any sightings of Orange Hawkweed to the Pitkin County Land Management office!

The keys to effective control of this highly aggressive noxious weed are prevention of seed-set in existing populations, frequent scouting for new infestations, rapid treatment of newly discovered infestations, and prevention of introduction of this weed to new areas. **Do not purchase hay, straw, seed, or soil from areas known to be infested with Yellow Starthistle.**

Mechanical Control

Hand-pull when soil is moist, making sure to pull out all the roots. Bag carefully to prevent seed-scatter if flowering, and be sure to include dried skeletons as these may still contain seed. Plants vary greatly in size so be sure to look for plants that are only a few inches tall, as well as plants that are several feet tall. Mowing is **NOT** recommended, as it can extend the life of the plant and stimulate additional flowering, lower to the ground.





Chemical Control

Contact the Pitkin County Land Management Department for more specific information about products, rates, and equipment calibration.

F. Yellow Starthistle (*Centaurea solstitialis*) (continued)

Look-Alikes

There are several common native and non-native (but non-noxious) plants that can be mistaken for Yellow Starthistle. These include the non-native Western Salsify (*Tragopogon dubius*) and Safflower (*Carthamus tinctorius*), and the native Curlycup Gumweed (*Grindelia squarrosa*) and Buffalo Bur (*Solanum rostratum*).

		NON-NATIVE	
			
		<p>Western Salsify (<i>Tragopogon dubius</i>)</p> <ul style="list-style-type: none"> • Dandelion-like flower • Bracts not thorns — they are soft • Leaves and stem have milky latex • Leaves linear, strap-shaped 	<p>Safflower (<i>Carthamus tinctorius</i>)</p> <ul style="list-style-type: none"> • Annual oilseed/die crop • Large, broad, spine-edged bracts rather than slender spines only • Overall more branched than Starthistle
N A T I V E			
	<p>Buffalo Bur (<i>Solanum rostratum</i>)</p> <ul style="list-style-type: none"> • Flower has five broad petals • Entire plant covered in sharp spines (not just directly below flower) • Leaves dark green, large, deeply lobed 	<p>Curlycup Gumweed (<i>Grindelia squarrosa</i>)</p> <ul style="list-style-type: none"> • Biennial or short-lived perennial • No spines; bracts curl backward and are very sticky, with a strong medicinal scent • Leaves toothed 	

6.32.070. Early Detection, Rapid Response

A. The EDRR Approach

Pitkin County has adopted a philosophy of “Early Detection, Rapid Response” (EDRR). Early detection is the swift identification and documentation of weed species newly introduced (or newly discovered) in an area. Rapid Response is the immediate follow-up treatment, outreach, and prevention to eradicate the infestation and avoid re-introduction. EDRR can stop the spread of new and emerging invasive plant species before they become established. It is one of the most cost-effective and ecologically viable methods for controlling invasive weeds.

Pitkin County’s approach to weed management is modeled off the EDRR program administered by the Colorado Department of Agriculture. The goals of the State EDRR program are to:

- provide alert lists, identification resources, and reporting protocols for targeted plant pest species
- build an invasive plant network that incorporates professionals and outdoor enthusiasts alike throughout Colorado to detect new and emerging species in our state
- provide information and planning assistance to rapidly respond to and successfully manage newly detected species.

Crucial to the success of EDRR is a clear understanding of the jurisdictional break-down of an area. Knowing who is responsible for enforcement and who for treatment makes for more efficient reporting, documentation, elimination, and monitoring of new infestations. According to *the Act*:

It is the duty of all persons to use integrated methods to manage noxious weeds if the same are likely to be materially damaging to the land of neighboring landowners. (C.R.S. 35-5.5-104)

Here, “persons” are defined as:

an individual, partnership, corporation, association, or federal, state, or local government or agency thereof owning, occupying, or controlling any land, easement, or right-of-way, including any city, county, state, or federally owned and controlled highway, drainage, or irrigation ditch, spoil bank, borrow pit, gas and oil pipeline, high voltage electrical transmission line, or right-of-way for a canal or lateral.

Because different entities manage different areas and different assets in Pitkin County, be they public or private, the responsible “persons” will vary depending on the location(s) of the weed or infestation in question. This can get confusing. The following section outlines the jurisdictional divisions of Pitkin County, lists the typical weed species present in each, and describes new or otherwise alarming weed infestations.

B. Jurisdictional Overview of Pitkin County

1. Private Property

The private landowners are ultimately responsible for ensuring that their property complies with applicable laws, including *the Act, the Rules*, and this Plan. This includes lands held by a corporation or other such entity. These laws outline the enforcement authority of the local governing body (e.g. municipality or county), should the property in question not be in compliance.

It is important for private landowners and their neighbors to be educated and vigilant about noxious weeds, especially with regard to new or rare weeds in Pitkin County. This will increase the likelihood of discovery of new outbreaks before they become widespread. Especially important weeds to watch for on private property in Pitkin County include:

- Absinth Wormwood (*Artemisia absinthium*)
 - Invasive Ornamental
 - Known infestations in Pitkin County exist in the AABC and North Forty neighborhoods, on Red Mountain, in Old Town Basalt, along Thompson Creek, Maroon Creek, and Capital Creek Roads, and along Hwy 133 near the Garfield-Pitkin County Line and near Marble.
- Dame's Rocket (*Hesperis matronalis*)
 - Invasive Ornamental
 - Rare state-wide
 - Found on private and public property throughout Pitkin County, especially in Snowmass Village and Aspen.
- Sulfur Cinquefoil (*Potentilla recta*)
 - Known infestations exist near lower Brush Creek Road, on the Child Ranch on upper Capitol Creek, and at Filoha Meadows in the Crystal River Valley.
- Meadow Knapweed (*Centaurea pratensis*)
 - Invasive Ornamental
 - Known to exist in Little Elk Creek Village
- Salt Cedar (*Tamarix chinensis*; *T. ramosissima*)
 - Known infestation treated in 2009 at Wingo
 - Infestation along the Crystal River by Penny Hot Springs believed to have been eradicated
- Cypress Spurge (*Euphorbia cyparissias*)
 - Invasive Ornamental
 - Known to exist on a few properties on lower Snowmass Creek Rd.
- Myrtle Spurge (*Euphorbia myrsinites*)
 - Invasive Ornamental
 - Known to exist on Red Mountain and on scattered properties in Brush Creek Village, Snowmass Village, Basalt, Emma, and the Crystal River Valley.
 - Heavy infestations exist in Glenwood Springs.
- Dalmatian Toadflax (*Linaria genistifolia*)

- Invasive Ornamental
- Common in Garfield County, rare in Pitkin.
- Found in on upper Capitol Creek and upper Snowmass Creek roads, and in the Redstone area.

These weeds are rare in Pitkin County overall, should not be planted or sold, and must be eradicated when found. Early and persistent enforcement of applicable laws on private property is crucial for keeping these weeds from becoming widespread in Pitkin County.

2. Municipalities

a. *City of Aspen*

Responsibility for noxious weed management within the City of Aspen (COA) falls under the jurisdiction of the Aspen Parks Department. The Parks Department has had a treatment program in place since 1995 on its Parks and Open Space and Trails lands. The Department has also been increasing enforcement efforts on private properties within the city limits. Escaped ornamentals are a big problem in Aspen, especially the following:

- Absinth Wormwood (*Artemisia absinthium*)
- Scentless Chamomile (*Matricaria perforata*)
- Dame's Rocket (*Hesperis matricaria*)
- Oxeye Daisy (*Chrysanthemum leucanthemum*)
- Myrtle Spurge (*Euphorbia myrsinites*)
- Common Tansy (*Tanacetum vulgare*)
- Yellow Toadflax (*Linaria vulgaris*)

For more information on the City of Aspen Noxious Weed Program, contact Chris Forman, City of Aspen Forester, at chrisf@ci.aspen.co.us or 970-429-2026.

b. *Town of Snowmass Village*

The Town of Snowmass Village (TOSV) Public Works department coordinates noxious weed programs within the town limits. Currently, weed management activities are contracted annually to a commercial herbicide application company, overseen by the Town Landscape Foreman. Town Staff have increased enforcement efforts on infested private properties in recent years. Common weed species in TOSV are:

- Scentless Chamomile (*Matricaria perforata*)
- Oxeye Daisy (*Chrysanthemum leucanthemum*)
- Poison Hemlock (*Conium maculatum*)
- Common Tansy (*Tanacetum vulgare*)
- Canada Thistle (*Cirsium arvense*)
- Plumeless Thistle (*Carduus acanthoides*)

In 2008, TOSV and County and Town staff released the Defoliating Hemlock Moth (*Agonopterix alstroemeriana*) on two infestations of Poison Hemlock on upper Brush Creek. They seemed to have an effect in their first season, and should be monitored to see if the insect population continues to reproduce and over-winter.

Several new noxious weed species have begun popping up in patches around Town in recent years. These include:

- Chicory (*Cichorium intybus*)
- Hoary Cress (*Cardaria draba*)
- Spotted Knapweed (*Centaurea maculosa*)
- Russian Knapweed (*Acroptilon repens*)
- Diffuse Knapweed (*Centaurea diffusa*)
- Myrtle Spurge (*Euphorbia myrsinites*)
- Yellow Toadflax (*Linaria vulgaris*)

Treatment and close monitoring of these infestations should continue to prevent them from spreading to new areas or growing to large to control. Monitoring and enforcement at the new base village and other highly disturbed areas, as well as enforcement of re-vegetation requirements, should remain a priority.

For more information on the Town of Snowmass Village Noxious Weed Program, contact Pam Mulleavey, Town of Snowmass Village Landscape Foreman, at pmulleavey@tosv.com or 970-923-5110 x 303.

c. *Town of Basalt*

The Town of Basalt (TOB) lies in both Pitkin and Eagle counties. It is recommended that Basalt adopt both counties' noxious weed lists. Most noxious weed issues are addressed by the Town's Public Works Department. In the past, the TOB has taken a primarily mechanical approach to weed control, with varied success. The most common weeds in Basalt are:

- Oxeye Daisy (*Chrysanthemum leucanthemum*)
- Common Tansy (*Tanacetum vulgare*)
- Canada Thistle (*Cirsium arvense*)
- Musk Thistle (*Carduus nutans*)
- Plumeless Thistle (*Carduus acanthoides*)

Alarming new or rare infestations in the TOB include:

- Absinth Wormwood (*Artemisia absinthium*)
- Leafy Spurge (*Euphorbia esula*)
- Myrtle Spurge (*Euphorbia myrsinites*)
- Dame's Rocket (*Hesperis matricaria*)

These weeds are highly invasive and difficult to control without herbicide once established. Elimination of these species should be a high priority.

For more information on the Town of Basalt Noxious Weed Program, contact Lisa DiNardo, Town of Basalt Horticulturist/Certified Arborist, at basaltgardens@basalt.net or 970-927-4723 x 404.

3. County Lands

Pitkin County is responsible for treatment of weeds on its properties, and has enforcement authority over private property in the unincorporated portions of the County. County properties can be categorized as follows: Rights-of-Way, Airport, Solid Waste Center, Open Space and Trails, General Fund parcels, and Grounds.

a. Rights-of-Way

Pitkin County maintains about 300 miles of County roads and rights-of-way (ROW). The BOCC adopts an official Pitkin County Road List showing all roads that have been incorporated into the County road system. This list is updated to reflect additions, deletions, and alterations. The current road list can be found in the most recent version of the Pitkin County Asset Management Plan (AMP), available from the Pitkin County Public Works Office, or online at:

<http://www.aspenpitkin.com/Portals/0/docs/county/PublicWorks/2006AMPfinal.pdf>.

This list includes US Forest Service roads which are maintained by Pitkin County at the direction of the Forest Service. It also includes roads for which special circumstances, such as additional road maintenance agreements and settlements, exist. Such special agreements include Intergovernmental Agreements, Contracts with private individuals/companies, and Special road maintenance agreements. These agreements may redirect responsibility for ROW vegetation maintenance to another entity, such as the local metro district or HOA. For more information about the road list and these agreements, contact the Pitkin County Land Management Office.

Unlike for such maintenance activities as snow-plowing and surface improvements, the level of Noxious Weed Maintenance on County ROW is dictated by the extent and type of infestation present, rather than by the AMP-designated Service Level. ROW treatment starts every year at lower elevations in the County where the growing season starts earlier (generally speaking, in the northwestern portion of the County). Treatment typically begins in these areas in late April or early May. Each County-maintained right-of-way is aimed to be treated a minimum of once per year. Heavily traveled and heavily infested ROW, and ROW containing high-priority weeds or weeds that require special control measures, may be treated a second and possibly a third time, in order to meet State and local management objectives.

It has been the County's philosophy to minimize the use of herbicides, and thus the impacts on desirable vegetation, and maximize treatment efficiency by selectively spot treating noxious weeds with a handgun attached to a truck-mounted, pressurized spray unit. There will be no general herbicide applications on County ROW to weeds not listed in this WMP, unless specifically requested by the County Transportation Department or the BOCC to improve sight and safety conditions.

b. *Airport*

The Airport consists of about 250 acres of treatable land and has undergone extensive expansion since 2002. Because of this widespread soil disturbance, significant weed control is required. The primary weeds at the airport are:

- Scentless Chamomile (*Matricaria perforata*)
- Houndstongue (*Cynoglossum officinale*)
- Canada Thistle (*Cirsium arvense*)
- Plumeless Thistle (*Carduus acanthoides*)
- Oxeye Daisy (*Chrysanthemum leucanthemum*)

Other rarer weeds to watch for and eradicate at the Airport include:

- Absinth Wormwood (*Artemisia absinthium*)
- Black Henbane (*Hyoscyamus niger*)
- Sulfur Cinquefoil (*Potentilla recta*)
- Russian Knapweed (*Acroptilon repens*)
- Leafy Spurge (*Euphorbia esula*)
- Bull Thistle (*Cirsium vulgare*)

c. *Solid Waste Center*

The Solid Waste Center (SWC) consists of about 45 acres, with about 20 acres of treatable land. This area continues to be a priority for weed treatment as it is a center of activity, in terms of both traffic volume and dissemination of materials. The primary weeds at the SWC are:

- Scentless Chamomile (*Matricaria perforata*)
- Leafy Spurge (*Euphorbia esula*)
- Canada Thistle (*Cirsium arvense*)
- Plumeless Thistle (*Carduus acanthoides*)

Because materials and traffic from all over the region come to the SWC, any weed species could hitch-hike in and be again dispersed elsewhere. For this reason, it is important to maintain diligent and effective weed control at the SWC.

d. *Open Space and Trails*

The Pitkin County Open Space and Trails (OST) program includes over 2000 acres of property. In terms of management objectives and methods, this WMP does not make a distinction between lands managed by Pitkin County Land Management and those managed by OST. For specific management goals of OST properties, please contact the OST Land Steward at garyt@co.pitkin.co.us or 970-920-5355.

e. *General Fund Parcels*

Pitkin County owns many parcels which are simply owned by the General Fund, rather than any of the above entities. These parcels are scattered throughout the County including the Redstone Coke Ovens area, two parcels on Shield O Mesa, and

some land adjacent to the Rio Grande Trail in Woody Creek near River Woods Road. These properties can be located using the Pitkin County Geographic Information System Mapping Online (GISMO) at <http://www.aspenpitkin.com/GISMO>. Weeds present vary with location, but typical weeds include:

- Field Bindweed (*Convolvulus arvensis*)
- Scentless Chamomile (*Matricaria perforata*)
- Houndstongue (*Cynoglossum officinale*)
- Common Mullein (*Verbascum thapsus*)
- Canada Thistle (*Cirsium arvense*)
- Musk Thistle (*Carduus nutans*)
- Plumeless Thistle (*Carduus acanthoides*)

Generally speaking, the closer these parcels are to the backcountry, the higher priority the infestations, regardless of the weeds present. This is in addition to the priorities and management objectives set by *The Rules* and set forth in this WMP.

f. *Grounds*

The Buildings and Grounds Maintenance Department (BGM) manages the grounds around County buildings. In terms of management objectives and methods, this WMP does not make a distinction between lands managed by Pitkin County Land Management and those managed by BGM. For specific management goals and techniques of BGM properties, please contact the Groundskeeper at 970-618-9964.

4. **State Lands**

a. *Colorado Department of Transportation*

Since 1991, Pitkin County has held an Intergovernmental Agreement with the Colorado Department of Transportation (CDOT) to treat noxious weeds on Highway 82 and Highway 133 ROW. This agreement is renewed on an annual basis for the control of weeds on the CDA Noxious Weed List.

SH-82

There are 55 miles of State Highway 82 (SH-82) ROW in Pitkin County, which are estimated to be 10% infested. This is a reduction from the estimates of the 1987 Pitkin County Weed Control Manual, which put the infested percentage at 50%. The major weeds on Hwy 82 are:

- Field Bindweed (*Convolvulus arvensis*)
- Scentless Chamomile (*Matricaria perforata*)
- Downy Brome (*Bromus tectorum*)
- Houndstongue (*Cynoglossum officinale*)
- Common Mullein (*Verbascum thapsus*)
- Oxeye Daisy (*Chrysanthemum leucanthemum*)
- Common Tansy (*Tanacetum vulgare*)
- Canada Thistle (*Cirsium arvense*)

- Plumeless Thistle (*Carduus acanthoides*)

East of Aspen on SH-82, the following weeds are of special concern:

- Dame's Rocket (*Hesperis matronalis*)
- Russian Knapweed (*Acroptilon repens*)
- Spotted Knapweed (*Centaurea maculosa*)
- Yellow Toadflax (*Linaria vulgaris*)

In Snowmass Canyon and points near Emma, Perennial Pepperweed (*Lepidium latifolium*) has established itself and has proven difficult to eradicate. It is vital that this tenacious weed is at a minimum eliminated seasonally before it sets seed, in order to prevent it from spreading to new areas of the County.

Other rare weeds that have been found in patches at various points along SH-82:

- Absinth Wormwood (*Artemisia absinthium*)
- Black Henbane (*Hyoscyamus niger*)
- Diffuse Knapweed (*Centaurea diffusa*)
- Russian Knapweed (*Acroptilon repens*)
- Spotted Knapweed (*Centaurea maculosa*)
- Leafy Spurge (*Euphorbia esula*)
- Bull Thistle (*Cirsium vulgare*)
- Scotch Thistle (*Onopordum acanthium*, *O. tauricum*)

SH-133

The 20 miles of State Highway 133 (SH-133) ROW in Pitkin County are estimated to be 10% infested. This is a decrease of 5% since 2006. The primary weeds are:

- Scentless Chamomile (*Matricaria perforata*)
- Musk Thistle (*Carduus nutans*)
- Yellow Toadflax (*Linaria vulgaris*)

Oxeye Daisy (*Chrysanthemum leucanthemum*) has become a growing concern in the Crystal River Watershed, on both public ROW and private property. Enforcement and Education should be a priority in this region of the County, to prevent Oxeye from dominating critical wetland and riparian habitat and further disturbing agricultural lands.

In addition, the following weeds are present in patches and less common:

- Absinth Wormwood (*Artemisia absinthium*)
- Hoary Cress (*Cardaria draba*)
- Plumeless Thistle (*Carduus acanthoides*)
- Common Tansy (*Tanacetum vulgare*)
- Russian Knapweed (*Acroptilon repens*)

- Dalmatian Toadflax (*Linaria genistifolia*)

b. *Colorado Department of Natural Resources State Land Board*

The Colorado State Land Board owns approximately 475 acres of land which comprise most of Williams Hill between Watson Divide and Old Snowmass.

5. Federal Lands

a. *White River National Forest*

The United States Forest Service has extensively mapped and inventoried its land in Pitkin County, and mapping and treatment of List A and high-priority List B species is ongoing. For more information contact Wayne Ives, Range Technician, White River National Forest Sopris Ranger District at 970-963-2266 or WIves@fs.fed.us.

b. *Bureau of Land Management*

In 2008, the Bureau of Land Management (BLM) completed a weed inventory on all disturbed areas on BLM Land in Pitkin County. These areas included roads, range improvements, trails, trail heads, campsites, and drainages. The agency is continuing to treat infestations of Plumeless Thistle, Canada Thistle, and Houndstongue on its lands in the Prince Creek Drainage and Crown Mountain areas of Pitkin County. In 2009 several new infestations of Dalmatian Toadflax were found on Crown Mountain. For more information contact Dereck Wilson, Rangeland Management Specialist for the BLM, at 970-876-9070 or Dereck.Wilson@blm.gov.

C. Cooperative Weed Management Areas

Another important tool in any EDRR program is the establishment of Cooperative Weed Management Areas (CWMAs) to coordinate Weed Management efforts regionally. The National Network of Invasive Plant Centers (NNIPC) defines Cooperative Weed Management Area as a “partnership of federal, state, and local government agencies, tribes, individuals, and various interested groups that manage noxious weeds or invasive plants in a defined area.” The following description is taken from the NNIPC website at: www.invasiveplantcenters.org/cwmas.html:

CWMAs often function under the authority of a mutually developed Memorandum of Understanding or Cooperative Agreement and are governed by a steering committee. Together, CWMA partners develop a comprehensive weed management plan for their area. At the least, CWMA plans include weed surveying and mapping components as well as plans for integrated weed management. More comprehensive plans may include education and training, early detection of new invaders, monitoring, revegetation, and annual evaluation and adaptation of the weed management plan.

Five characteristics of a CWMA:

- Defined geographical area distinguished by a common geography, weed problem, community, climate, political boundary, or land use.
- Involvement or representation of the majority of landowners and natural resource managers in the defined area
- Steering committee
- Commitment to cooperation
- Comprehensive plan that addresses the management or prevention of one or more noxious weeds or invasive plants.

The establishment of CWMA's in Pitkin County will be an important tool in the further prevention and management of new weed species, as well as in the protection of "weed-free" zones.

6.32.080 Enforcement

A. Statutory Enforcement Provisions Govern

The Colorado Noxious Weed Act, § 35-5.5-101, C.R.S. (2009), et seq., (hereinafter *the Act*) states that certain invasive weeds pose a threat to the continued economic and environmental value of the land in Colorado; designates these weeds as “noxious” in Colorado; and mandates their management by all landowners in the State. *The Act* contains specific provisions empowering the County to enforce its terms, including without limitation §§ 35-5.5-108.5, -109, and -110. This WMP shall be enforced in accordance with those statutory provisions and any other applicable laws. A flow chart that generally illustrates the sequence of enforcement activities currently set forth in *the Act* is appended hereto; this flow chart is provided for illustrative purposes only, and does not supersede the provisions of *the Act*. Users of this WMP are advised to consult the language of *the Act* itself, as its terms will control over any inconsistency that may be depicted in the flow chart.

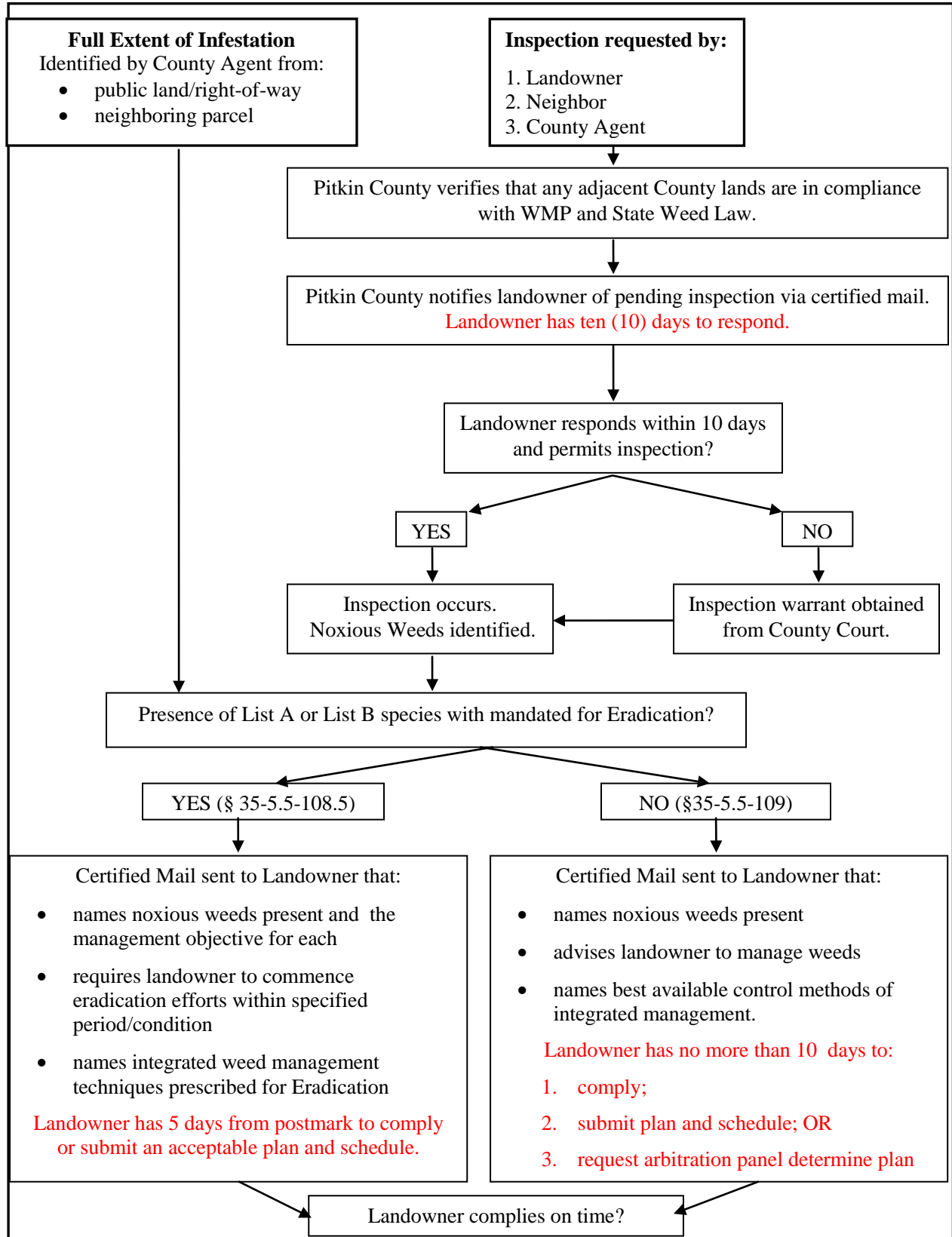
B. Noxious Weeds Declared a Public Nuisance

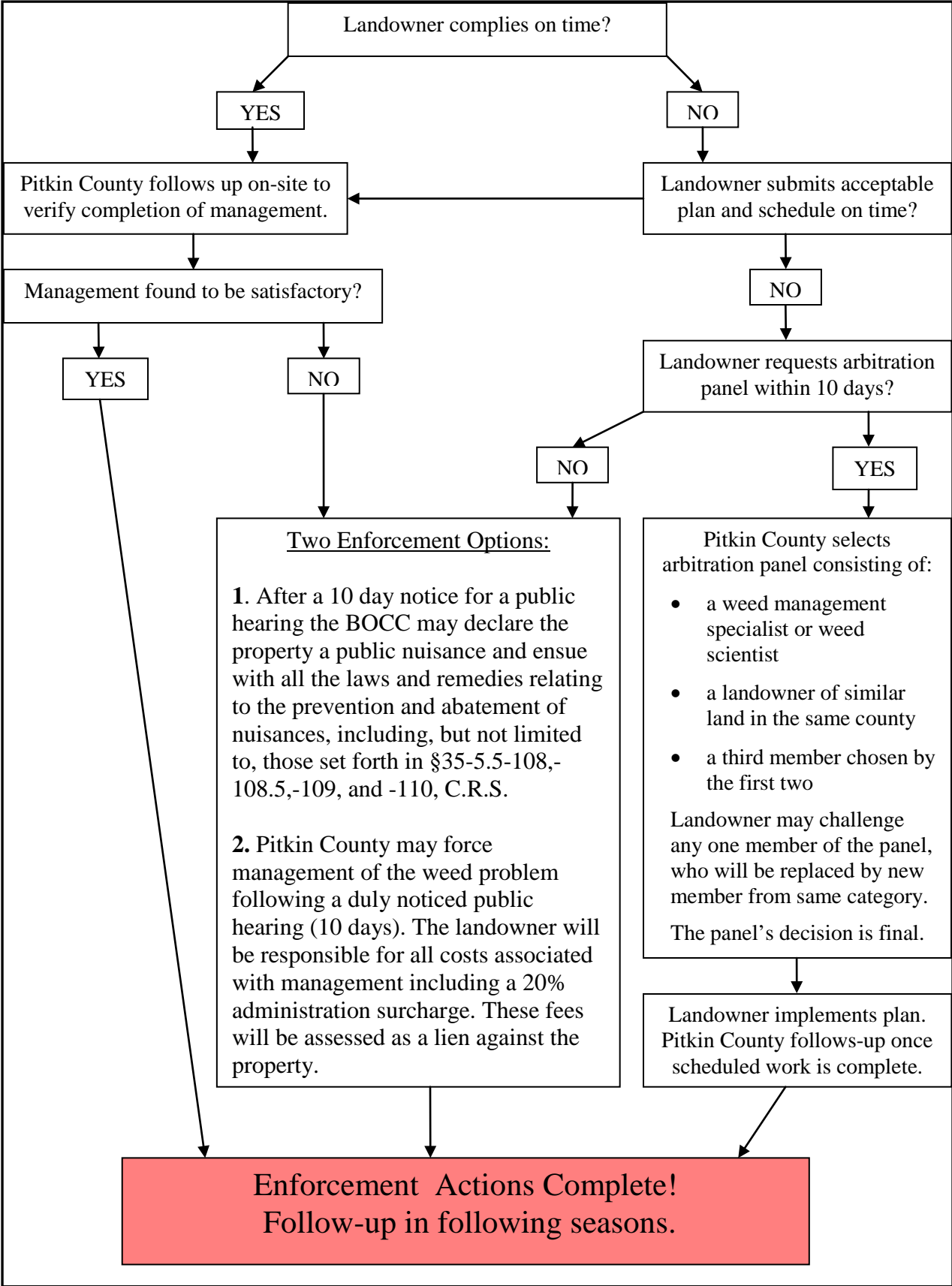
The noxious weeds listed in Section 3 of this WMP, at any and all stages, are subject to all the laws and remedies relating to the prevention and abatement of nuisances, including, but not limited to, those set forth in *the Act*.

C. Authorized Agents for Enforcement

Pursuant to §35-5.5-105(2), C.R.S., The Pitkin County Land Manager, the Pitkin County Code Enforcement Officer, the Pitkin County Sheriff and their respective designees are hereby designated as “authorized agents,” empowered to enforce *the Act* and this *NWMEP* in unincorporated Pitkin County, by utilizing those procedures set forth in §35-5.5-108, -108.5, -109, C.R.S and any other applicable local, State and Federal statutes, rules, regulations, and ordinances, including the remaining provisions of this Section.

D. Enforcement Flowchart





Landowner complies on time?

YES

NO

Pitkin County follows up on-site to verify completion of management.

Landowner submits acceptable plan and schedule on time?

Management found to be satisfactory?

NO

YES

NO

Landowner requests arbitration panel within 10 days?

NO

YES

Two Enforcement Options:

1. After a 10 day notice for a public hearing the BOCC may declare the property a public nuisance and ensue with all the laws and remedies relating to the prevention and abatement of nuisances, including, but not limited to, those set forth in §35-5.5-108,-108.5,-109, and -110, C.R.S.

2. Pitkin County may force management of the weed problem following a duly noticed public hearing (10 days). The landowner will be responsible for all costs associated with management including a 20% administration surcharge. These fees will be assessed as a lien against the property.

Pitkin County selects arbitration panel consisting of:

- a weed management specialist or weed scientist
- a landowner of similar land in the same county
- a third member chosen by the first two

Landowner may challenge any one member of the panel, who will be replaced by new member from same category. The panel's decision is final.

Landowner implements plan. Pitkin County follows-up once scheduled work is complete.

**Enforcement Actions Complete!
Follow-up in following seasons.**

6.32.090. Priorities and Goals

A. Priorities

1. Outreach, Education, and Training

Outreach and Education are pivotal to the sustained success of this WMP. Most weed species, if detected early, can be eradicated before they become established. It is important that the public is able to identify noxious weeds and is aware of and committed to the necessity of rapid response to new infestations. In addition, it is important that all land managers – be they public or private – are trained in Best Management Practices, in order to maximize efficiency and effectiveness of treatments while minimizing environmental impact.

Groups targeted for noxious weed education include those with agricultural interests, homeowners associations, the green industry, developers, recreational groups, environmental and open space land management non-profit organizations, youth groups, and schools. This instruction will be coordinated by the Land Management department in cooperation with the Weed Advisory Board.

2. Integrated Control

Carry out weed control practices on Pitkin County owned lands and rights-of-way.

3. Surveying and Mapping

In a continuing effort to manage noxious weeds with sound strategy, existing noxious weed inventories will be compared to new mapping data. These data will encompass County, State, and Federal properties, as well as major rights-of-way that are not County-maintained and private lands. Private lands will be included after written permission has been granted by the owner and occupant.

4. Intergovernmental Agreements

Formal cooperative agreements will be sought and maintained between Pitkin County, Federal and State landowners, and local governments, to facilitate a coordinated regional effort in managing the noxious weeds listed in this WMP.

5. Partnerships

Partnerships with environmental non-profit organizations and private landowners will also be sought. Such partnerships may include: Cooperative Weed Management Areas, Watershed-scale management projects, Natural Resources Conservation Service Environmental Quality Incentives Program (NRCS EQIP) grant projects, and cost sharing programs.

6. Prevention and Early Detection

It will be a distinct priority of the Land Management department both to prevent the establishment of new noxious weeds, and to manage existing infestations to prevent them from spreading into previously un-infested areas. Prevention will include the attachment of strict revegetation requirements to County-issued permits for projects causing land disturbance, as well as a commitment to prompt revegetation of disturbance on County properties and ROW.

B. Goals

1. Short Term Goals

- Continue managing existing infested acreage aggressively to prevent spread and reduce population density.
- Implement control activities for noxious weed species that are new to the County through education and rapid response.
- Encourage the implementation of noxious weed control activities on all infested acreage within the district.
- Increase awareness of *The Act* (C.R.S. § 35-5.5-101 et seq.) and *The Rules* (8 CCR 1206-2).
- Coordinate the formation of Cooperative Weed Management Areas.
- Develop a cooperative spirit within County departments that encourages prevention of noxious weeds through pro-active planning efforts.
- Continue and expand the use of biological control releases throughout the area, where appropriate.
- Survey County and (where permission granted) Private land holdings for noxious weeds and record digitally for use in Noxious Weed GIS data layer.
- Meet the State mandate of **Eradication** of:
 - **Absinth Wormwood** (*Artemisia absinthium*)
 - **Black Henbane** (*Hyoscyamus niger*)
 - **Chinese Clematis** (*Clematis orientalis*)
 - **Salt Cedar** (*Tamarix chinensis*; *T. ramosissima*)
 - **Diffuse Knapweed** (*Centaurea diffusa*)
 - **Spotted Knapweed** (*Centaurea maculosa*)
 - **Perennial Pepperweed** (*Lepidium latifolium*)
 - **Dalmatian Toadflax** (*Linaria genistifolia*)
 - **Plumeless Thistle** (*Carduus acanthoides*)
(only in the Crystal River Watershed)

and the State mandate of **Containment** of:

- **Sulfur Cinquefoil** (*Potentilla recta*)
to the area demarcated by the northern border of Pitkin County, Longitude 106° 56'17" W, Longitude 39° 14'59" N, and Latitude 107° 3'48" W. For all land within these boundaries, suppression is the specified State management objective (see Figure 1).
- **Hoary Cress** (*Cardaria draba*)

to the area demarcated by the northern border of Pitkin County, Longitude 106° 48'46" W, Latitude 39° 11'15" N, and Longitude 107° 7'33" W. For all land within these boundaries, suppression is the specified State management objective (see Figure 2).

- **Russian Knapweed** (*Acroptilon repens*)

to the area demarcated by the northern border of Pitkin County, Longitude 106° 48'45" W, Latitude 39° 11'14" N, and Longitude 107° 3'44" W. For all land within these boundaries, suppression is the specified State management objective (see Figure 3).

- **Leafy Spurge** (*Euphorbia esula*)

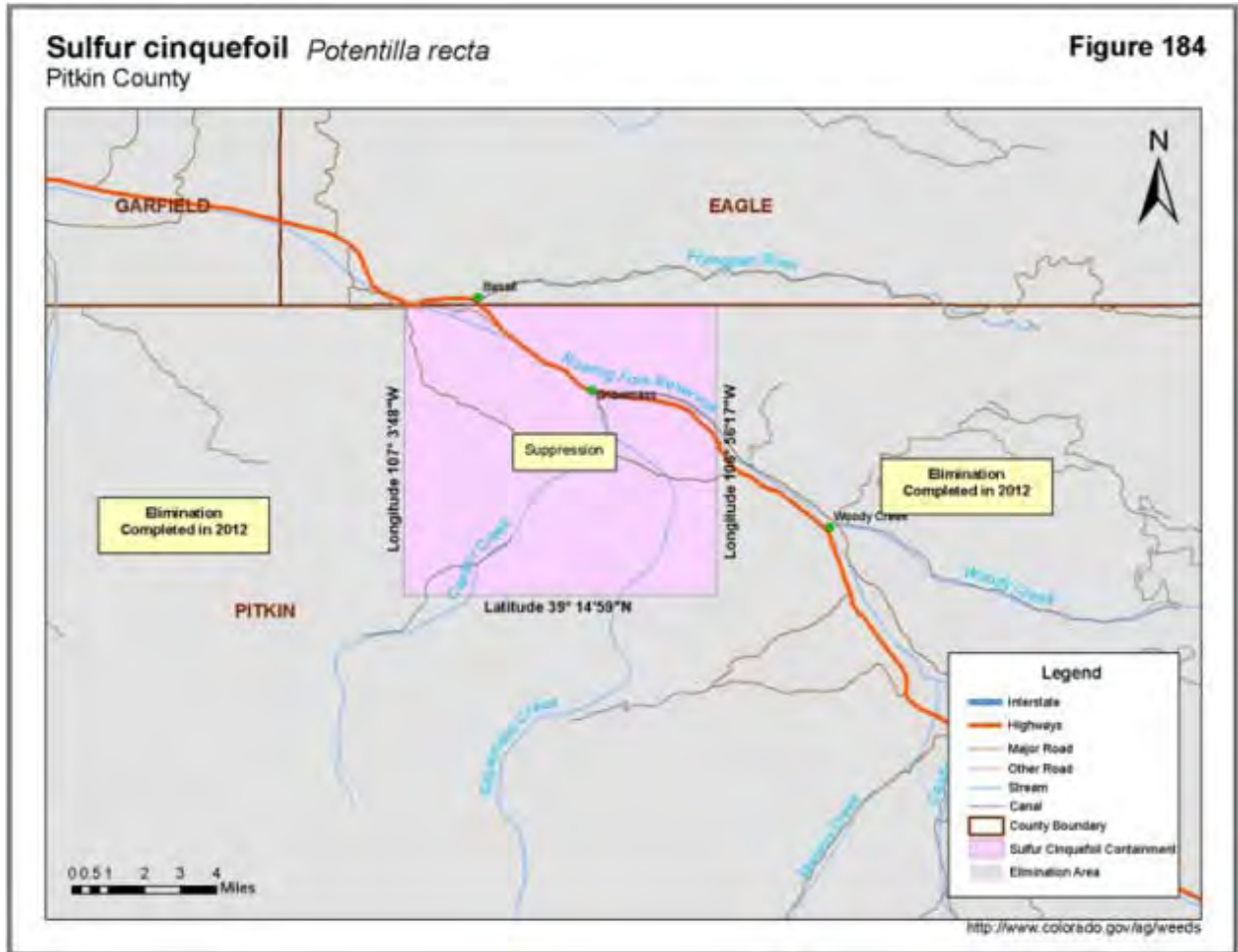
to the area demarcated by the northern border of Pitkin County, Longitude 106°45'1" W, Latitude 39°9'57" N, Capitol Creek, and State Highway 82. For all land within these boundaries, suppression is the specified State management objective (see Figure 4).

2. Long Term Goals

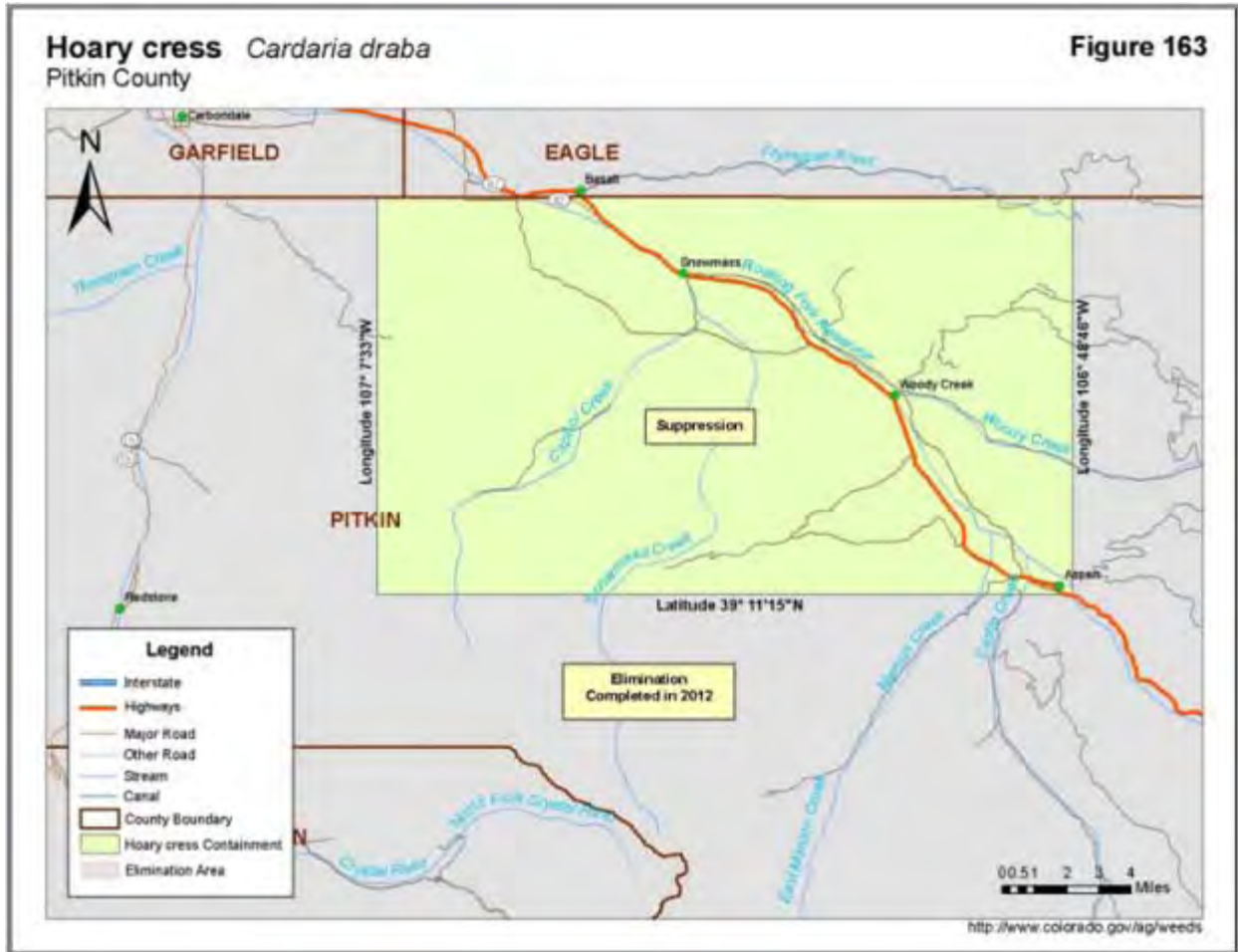
- Update the existing Noxious Weeds GIS layer and distribute population information through the Pitkin County website.
- Further develop and implement revegetation guidelines in cooperation with other district entities.
- Maintain relationships with municipal authorities to put into practice a comprehensive weed management program for all lands within the boundary of the district.
- Maintain agreements with federal agencies, state agencies, and local governing bodies to maximize effectiveness of weed management efforts.
- Maintain agreements and contracts with non-governmental organizations interested in environmental protection with regard to noxious weed management.
- Federal, State, Municipal, County, and private land holdings' noxious weed survey data to the Pitkin County Noxious Weeds GIS layer.

C. Figures

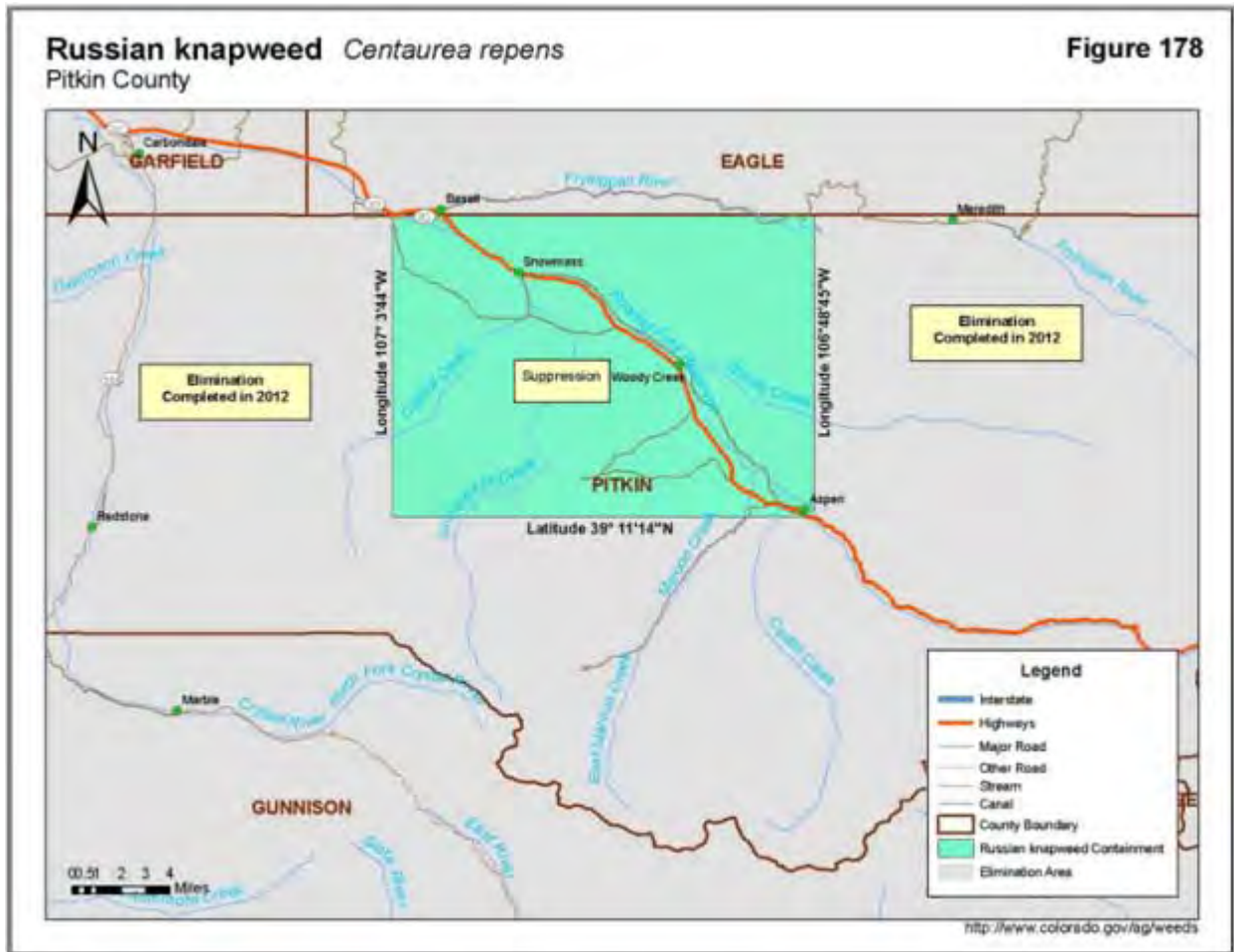
1. Sulfur Cinquefoil Containment Map



2. Hoary Cress Containment Map



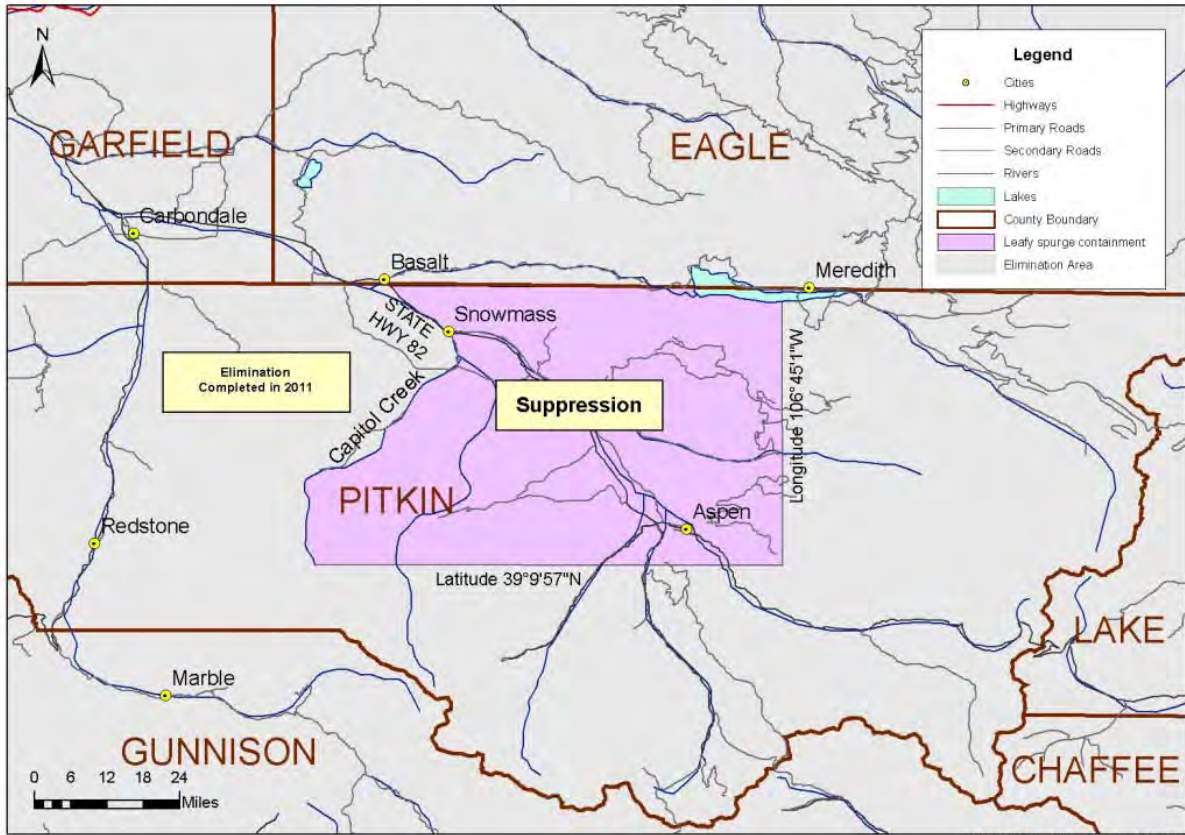
3. Russian Knapweed Containment Map



4. Leafy Spurge Containment Map

Leafy spurge *Euphorbia esula*
Pitkin County

Figure 138



6.32.100. Additional Requirements

Pitkin County requires disturbed areas to be re-vegetated and properly maintained after development activities, in order to prevent new noxious weed infestations from taking hold. These requirements are typically included in the application process for Right-of-Way, Access, and Earthmoving permits and for Land Use applications. Details for such requirements can be found in the Land Use Code and Asset Management Plan, both available online at:

www.aspenpitkin.com/Departments/County-Code/

Appendix A The Threat of Escaped Ornamentals

Most plants used for landscaping purposes lack the ability to proliferate outside of the cultivated environment of the home garden. Yet certain exotic plants and seeds were imported to the United States for their aggressive growth habits, xeriscape potential, or re-seeding capabilities. Many of these plants have escaped cultivation and become aggressive invaders of wildlands. Known as Escaped Ornamentals or Invasive Ornamentals, these plants include (among others) Dame's Rocket (*Hesperis matronalis*), Common Tansy (*Tanacetum vulgare*), Mediterranean Sage (*Salvia aethiopsis*), Oxeye Daisy (*Chrysanthemum leucanthemum*), Purple Loosestrife (*Lythrum salicaria*), Scentless Chamomile (*Matricaria perforate*) and Yellow Toadflax (*Linaria vulgaris*).

The very aggressive growth traits which make these plants desirable for a garden or landscape may also enable them to thrive outside cultivated areas and become fierce competitors with our native vegetation. Because they exist here without the presence of sufficient environmental controls or natural predators, these plants have the ability to spread extensively and pose a severe threat to the delicate balance of our native ecosystems.

Since various invasive ornamental plants are attractive and establish themselves quickly, they are popular with landscapers and gardeners and may even be purchased through certain nurseries in the Roaring Fork Valley. It is imperative that we educate landscape architects, gardeners, and nursery growers about the need to eliminate such plants from their landscape plans. Otherwise, these plants will inevitably escape from the cultivated garden and jeopardize the natural wildflower and plant communities that we cherish. Native wildflowers such as Colorado Blue Columbine, our state flower, cannot compete with aggressive, invasive ornamental plants for nutrients, sunlight, and water. As a result, our biologically diverse mountain meadows, grasslands, and wetlands are in danger of being overrun by monocultures of non-native species.



Native stand of wildflowers with a small population of oxeye daisy.



Same site two years later

Appendix B Native Thistles in Pitkin County

You've learned about how bad some thistles can be for our environment. You're primed and ready to pull or spray. Good for you! But before you target all thistles, remember that there are 20 native thistle species in Colorado, and these play an important role for wildlife. **Native thistles should not be killed, because they are not noxious weeds.**

How do you tell a native thistle from a noxious thistle?

While there is no steadfast rule to determining native thistles from noxious ones (other than actual identification!), there are some general guidelines:

- If the stand of thistles is very dense or very tall (6+ feet), it is usually noxious.
- If you are above timberline and see a thistle, it is probably native.
- Native thistles tend to be shorter than non-native ones, and are often found as individual plants or in very small groups of 2-4 plants.
- A thistle with a white or yellow flower (the FLOWER, not the fluffy dandelion-like seeds), is probably native. **An exception is Yellow Starthistle, which is a VERY invasive Noxious Weed!**

Here are a few common native thistles in Pitkin County

American Thistle

Cirsium centaurae

American thistle is a perennial, growing to 3 feet tall, in colonies, with erect, reddish, cobwebby stems. Flowering time is June to August. Flower heads are 1 ½ inches high, without ray flowers. Disk flowers are white to tan-colored, with purple stripes; bracts are spine-tipped, with lattice-like hairs. Leaves are deeply incised, whitish and hairy beneath, and spiny. Note reddish stem and whitish brown flowers for distinction from noxious thistles.

American thistles are commonly found in ravines and forest openings, and on rocky slopes and banks.



Frosty Ball Thistle

Cirsium scopularum

Frosty Ball Thistle is a perennial growing to 2 feet tall. The flowers are perfect (have both male and female organs) and are pollinated by bees, flies, moths, butterflies, and beetles. The plant prefers light (sandy), medium (loamy) and heavy (clay) soils. The plant prefers acid, neutral and basic (alkaline) soils. It cannot grow in the shade. It requires moist soil.

Look for Frosty Ball Thistle in sunny areas in meadows, slopes, and along roadways or trails. There are populations on Independence Pass.



Meadow Thistle or Elk Thistle

Cirsium scariosum

This is a fairly easy thistle to identify, because it is frequently found without a stem. When present, stems are generally very short and thick, with the flower heads sessile. Flowers are white to a pale pink-purple. The leaves are spiny, but entire to somewhat scalloped. This plant flowers from June into August.

True to its name, Meadow Thistle grows in meadows and other moist places from the foothills to 10,500 feet.



Creamy Thistle or Prairie Thistle

Cirsium canescens

Creamy thistle is a perennial growing to 3 feet tall, with a stout, branched, cobwebby stem. Creamy thistle flowers from July to September. Flower heads are 1 ¼ inch high, with creamy white to pink disk flowers and no ray flowers. Leaves are up to 8 inches long, bright green on top and whitish beneath, extending down the stem, with spines of varying lengths on the margins. This thistle is a much lighter pink (or even white), so it is easy to distinguish from musk thistle, and is generally taller with bigger flower heads than Canada thistle.



Parry's Thistle

Cirsium parryi

Parry's thistle grows from the foothills to 10,500 feet tall. Habitat for parry's thistle is moist meadows and stream sides. Flowers bloom from mid July to August. Flowers are greenish-yellow to yellow. Outer leaves are straight with terminal spines and spiny margins. Involucres with long hairs, appearing cob-webby.



Appendix C

Pitkin County
Landowner Weed Management Plan

Landowner Name: _____

Mailing Address: _____

Physical Address of Property: _____

Phone Number: _____ Parcel I.D. # _____

Noxious weed(s) to be treated:

I will be using mechanical control methods (check where appropriate)

_____mowing _____hand cutting _____pulling _____grazing

I will be using herbicides:

Herbicide (s): _____

Date(s) of Treatment: _____

I plan to purchase the services of a commercial weed control company:

Company Name: _____

Date(s) of Treatment: _____

Landowner Signature: _____ Date: _____

Approval: _____ Date: _____
(Land Manager Signature)

**Appendix D
Resource Directory**

GOVERNMENT RESOURCES

Agency	Physical Address	Mailing Address	Phone	Website
City of Aspen Parks	585 Cemetery Ln, Aspen, CO 81611	SAME	(970) 920-5120	aspenpitkin.com
Town of Snowmass Village Public Works	130 Kearns Rd Snowmass Village CO, 81615	P.O. Box 5010 Snowmass Village CO, 81615	(970) 923-5110 x 303	tosv.com
Town of Basalt Public Works	200 Fiou Lane Basalt, CO 81621	SAME	(970) 927-4723	basalt.net
Pitkin County Land Mgmt	76 Service Center Rd. Aspen, CO 81611	SAME	(970) 920-5214	aspenpitkin.com
Eagle County Weed & Pest	Office A-103 3289 Cooley Mesa Rd. Gypsum, CO 81637	P.O. Box 250 Eagle, CO 81631	(970) 328-3544	eagle-county.com
Garfield County Vegetation Mgmt	0567 County Rd. 352 Rifle, CO 81650	P.O. Box 426 Rifle, CO 81650	(970) 625-8601	garfield-county.com
Mount Sopris Conservation District	258 Center Drive Glenwood Springs CO, 81602	SAME	(970) 845-5494 x 105	
Natural Resources Conservation Service	258 Center Drive Glenwood Springs CO, 81602	SAME	(970) 945-5494 x 106	
CO Dept. of Ag. State Weed Coordinator	700 Kipling St. Suite 4000 Lakewood, CO 80215	SAME	(303) 239-4173	colorado.gov
CO Dept of Ag. Insectary	750 37.8 Rd. Palisade, CO 81526	SAME	(970) 464-7916	colorado.gov
CO Dept of Transportation Weed Coordinator	15285 S. Golden Rd. Building 45 Golden, CO 80401	SAME	(303) 512-5506	dot.state.co.us
CSU Extension	Campus Delivery 4040 Fort Collins, CO 80523	SAME	(970) 491-6281	ext.colostate.edu
White River National Forest	Sopris Ranger District 620 Main Street Carbondale, CO 81623 OR Aspen Ranger District 806 W. Hallam Aspen, CO 81611	SAME	(970) 963-2266 OR (970) 925-3445	fs.fed.us/r2/whiteriver
BLM Rangeland Mgmt	2300 River Frontage Rd Silt, CO 81652	SAME	(970) 876-9070	blm.gov

ON THE WEB

Agency	Website
Pitkin County Land Management	www.aspenpitkin.com/weeds
Colorado Weed Management Assoc.	www.cwma.org
Colorado Department of Agriculture Noxious Weed Management Program	www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1167928159176
Colorado Department of Agriculture Early Detection and Rapid Response	www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1204322434735
CSU Extension Fact Sheets	www.ext.colostate.edu/pubs/pubs.html#ag
Western Society of Weed Science	www.wsweedscience.org
USDA Plants Database	plants.usda.gov
USDA APHIS Invasive Plant Page	www.aphis.usda.gov/ppq/weeds/weedhome.html
USDA National Invasive Species Information Center	www.invasivespeciesinfo.gov/toolkit/detection.shtml
North American Weed Mgmt. Assoc.	www.nawma.org
National Invasive Species Council	www.invasivespecies.gov
Federal Interagency Committee for the Mgmt of Noxious & Exotic Weeds	www.fs.fed.us/ficmnew/index.shtml
EPA Pesticide Safety Programs	www.epa.gov/pesticides/safety
The Nature Conservancy's Global Invasive Species Team	http://tncinvasives.ucdavis.edu/