

## SUMMIT COUNTY WEED MANAGEMENT PLAN 2009

### I. INTRODUCTION.

Several species of non-native plants have become a threat to the economic and environmental value of land in Summit County, Colorado. These plants are not indigenous to this country and have no natural predators or diseases to keep them in check. They are rapidly displacing native vegetation, causing a loss of native ecosystem stability and diversity, while affecting recreational resources. Pursuant to § 35-5.5-101, *et seq.*, C.R.S., The Colorado Noxious Weed Act, the state of Colorado has mandated that “a countywide plan must be implemented by every county to prevent further damage by these noxious weed species”. The County has appointed the Summit County Weed Advisory Board, hired a noxious weed program coordinator, and first adopted a Summit County Weed Management Plan in 2001, pursuant to Resolution No. 2001-18, for the purposes of fulfilling its responsibilities with respect to the Act and managing all of the unincorporated lands in the County with respect to noxious weeds. Since 2001, the Act has been revised and therefore certain provisions of the original Summit County Weed Management Plan also are in need of revision to accurately reflect the provisions of the Act.

### II. DEFINITIONS.

- A. All language definitions used within this plan shall be consistent with the “*Colorado Noxious Weed Act*” §§ 35-5.5-101-119 C.R.S. (2003) and the “*Permanent Rules Pertaining to the Administration and Enforcement of the Colorado Weed Management Act*” 8 C.C.R. 1203-19.
- B. “Act” shall refer to §§ 35-5.5-101-119 C.R.S. (2004) the Colorado Noxious Weed Act, as amended.
- C. “BMPs” shall refer to “best management practices,” which are techniques or policies that are recognized by science as the most efficient means of limiting or eliminating species of noxious weeds. BMPs will change over time as more scientific information has been tested on those noxious weed species.
- D. “BOCC” shall refer to the Board of County Commissioners of Summit County Colorado.
- E. “Control” shall mean to manage the populations of noxious weed species so that the population is maintained or reduced in size.
- F. “County” shall refer to the unincorporated areas of Summit County, Colorado.
- G. “Elimination” shall refer to the removal of seed source.
- H. “Eradication” shall mean removing the reproductive successes of noxious weed species

or specified noxious weed populations in largely uninfested to zero and permanently or eliminating the species or populations within a specified period of time.

- I. "Program Manager" shall refer to the Summit County Colorado noxious weed program manager.
- J. "Rules" shall refer to §§ 8 C.C.R. 1203-19 the Permanent Rules Pertaining to the Administration and Enforcement of the Colorado Weed Management Act, as amended.

### **III. STATEMENT OF SUMMIT COUNTY'S WEED PROBLEM.**

- A. Thousands of acres of land in the County are already infested with weed species listed in this document. Experts in weed science estimate that this figure increases 15 percent annually if no control measures are imposed. Such an increase in weed populations poses a serious threat to the economic value and environmental stability of the land and water in the County.
- B. The weed problem in the County is of concern not only to the agricultural community, but to the urban, recreational and small landowner communities as well. Problem areas include roadsides, open space, housing subdivisions, municipal areas, private property, state and federal lands.
- C. The BOCC has declared all noxious weeds listed below and all noxious weeds identified in the Rules to be subject to integrated management in accordance with the requirements of these regulations, the Act and the Rules. The specific noxious weed species listed below have been identified by the BOCC to be present in the County, to be undesirable and are designated to be managed in accordance with the requirements of the Act and Rules:
  - 1. List A Noxious Weeds: All List A noxious weed species listed below, and any newly discovered infestation of other List A noxious weed species, shall be eliminated or eradicated in accordance with applicable provisions of the Act and Rules.
    - a. *Myrtle spurge (Euphorbia myrsinintes)*
    - b. *Orange hawkweed (Hieracium Aurantiacum)*
  - 2. List B Noxious Weeds: All List B noxious weed species listed below, and any newly discovered infestation other List B noxious weed species, shall be managed in accordance (eliminated, eradicated, contained or suppressed, see appendix A) in accordance with applicable provisions of the Act and rules.
    - a. *Absinth wormwood (Artemisia absinthium)*
    - b. *Black henbane (Hyoscayamus niger)*
    - c. *Bull thistle (Cirsium vulgare)*
    - d. *Canada thistle (Cirsium arvense)*
    - e. *Chinese clematis (Clematis orientalis)*

- f. *Common tansy (Tanacetum vulgare)*
  - g. *Dalmatian toadflax (Linaria dalmatica)*
  - h. *Dame's rocket (Hesperis matronalis)*
  - i. *Diffuse knapweed (Centaurea diffusa)*
  - j. *Hoary cress (Cardaria draba)*
  - k. *Houndstongue (Cynoglossum officinale)*
  - l. *Leafy spurge (Euphorbia esula)*
  - m. *Mayweed chamomile (Anthemis cotula)*
  - n. *Musk thistle (Carduus nutans)*
  - o. *Oxeye daisy (Chrysanthemum leucanthemum)*
  - p. *Perennial pepperweed (Lepidium latifolium)*
  - q. *Plumeless thistle (Carduus acanthoides)*
  - r. *Russian knapweed (Centaurea repens)*
  - s. *Saltceder (Taarix sp.)*
  - t. *Scentless chamomile (Matricaria perforata)*
  - u. *Spotted knapweed (Centaurea maculosa)*
  - v. *Sulfur cinquefoil (Potentilla recta)*
  - w. *Wild caraway (Carum carvi)*
  - x. *Yellow toadflax (Linaria vulgaris)*
3. List C Noxious Weeds: All List C noxious weed species listed below, Shall be controlled at a level determined by this weed management plan (see appendix A) in accordance with the minimum standards of List A and List B species.
- a. *Common mullein (Verbascum thapsus)*
  - b. *Downy brome (Bromus tectorum)*
  - c. *Field Bindweed (Convolvulus arvensis)*
  - d. *Poison hemlock (Conium maculatum)*

**IV. SUMMIT COUNTY WEED MANAGEMENT PLAN GOALS.**

- A. Management and Prevention. The primary goals of the Summit County Weed Management Plan are to prevent establishment of new invasive species and manage existing populations of Rules list A, B and C noxious weeds species to prevent spread to previously uninfected areas in accordance with the requirements of the Act and Rules. In order to accomplish this goal, Summit County Government, through the Program Manager, will:
- 1. Establish weed management areas.
  - 2. Identify areas requiring intensive management.
  - 3. Identify methods of noxious weed control in environmentally sensitive areas i.e. wetlands, waterways and wilderness areas.
  - 4. Identify methods of control for subdivisions and residential areas.
  - 5. Manage existing weed infestations aggressively to prevent spread and reduce weed density.
  - 6. Aggressively locate and fight all new invasive species through weed awareness

- education and rapid response to new infestations.
7. Comply with and enforce the provisions of the Act and Rules.
  8. Expand biological control release sites to include all areas of the County.
  9. Control undesirable plants on Summit County Government owned properties and rights-of-way.
  10. Initiate and maintain communications with landowners who are affected by List A species and populations of List B species designated for elimination or eradication by the commissioner.
  11. Provide affected landowners with technical assistance for the eradication of List A species and populations of List B species designated for elimination or eradication by the commissioner.
  12. Carry out sufficient measures, including project oversight and enforcement, as may be necessary to ensure the elimination or eradication of List A species and populations of List B species designated for eradication by the commissioner.
  13. Provide the commissioner with assistance in disseminating financial resources to affected landowners and mapping data pursuant to rules promulgated by the commissioner.
  14. Assist affected landowners in determining the BMP for their situation.
  15. Work within the framework of “*Colorado’s Strategic Plan to Stop the Spread of Noxious Weeds*”.
- B. Public Education. Education is essential to the sustainable success of the Plan. The Program Manager will reach out to County residents through educational workshops, private consultations and newspaper articles. The BOCC, through the Program Manager, and other government agencies will provide this instruction to increase public awareness of the Act and the Summit County Weed Management Plan. Groups targeted for public education include those with agricultural interests, homeowners associations, landscapers, nurseries, developers, recreational groups, youth groups and schools. Workshops will be held throughout the year to provide information on the following subjects:
1. Noxious weed identification & management methods,
  2. Mapping techniques,
  3. Compliance with the Act, and
  4. Integrated weed management.
- C. Departmental Cooperation. Certain departments of Summit County Government are in an excellent position to make positive impacts on the weed problem in Summit County. The Program Manager will identify and work with these departments to institute management practices that stress the importance of preventing the spread of and damage by noxious weeds. Examples of possible cooperative interdepartmental efforts include:
1. Improvement of weed management practices on Summit County Government owned or operated lands and right-of-ways.
  2. Implement and enforce revegetation requirements for areas where soils have

been disturbed due to development through a cooperative effort with Summit County Government's planning department.

- D. Intergovernmental Cooperation. Summit County Government, through its Program Manager, will seek to enter into needed cooperative agreements with federal, state and other local governments to manage weeds across property lines and jurisdictional boundaries. Summit County Government will also revisit and renew existing cooperative agreements with federal, state and local governments to maximize current weed control efforts within the County.
- E. Inventory and Mapping. Summit County Government, through its Program Manager, will develop a countywide noxious weed inventory to ensure that comprehensive management strategies are implemented. Summit County Government, through its Program Manager, will regularly update existing map data and perform new mapping of federal, state, unincorporated, incorporated and private lands within the County. In a continuing effort to manage noxious weeds with sound strategy, noxious weed inventories will be compared to mapping data. This data will encompass properties of Summit County Government, the State, BLM, and USFS, as well as, major right-of-ways not maintained by Summit County Government and private lands at the landowner's request or with the landowner's permission. The data will contribute to the state quarter quad map in cooperation with the Colorado Department of Agriculture.

V. **MANAGEMENT METHODS.**

Existing Rules prescribed integrated management techniques will be utilized in Summit County Government's management of Rules list A and list B weeds. In addition to the requirements set forth in the Rules for the management of all list A and list B weed species, BMPs may be utilized in Summit County Government's management of any designated noxious weed for which specific Rules prescribed integrated management techniques do not exist, and also when any specified Rules prescribed integrated management technique has proven ineffective in meeting the management goal.

- A. Integrated management techniques include, but are not limited to cultural management, chemical management, biological management and mechanical management. It is to be understood that many or all of these methods may be inadequate for control as a stand-alone solution. In particular, cultural, mechanical and biological methods will need support from one or more methods mentioned. If the reference population stand in question is not reduced, the method used will not be considered adequate.
- B. Summit County Government Refer to the Rules for existing general and specific Rules prescribed integrated management techniques and to the attached Appendix "A", "Accepted Best Management Practices for Individual Species", for existing BMPs regarding management of weed species for which specific Rules prescribed

integrated management techniques do not yet exist.

**VI. ENFORCEMENT.**

The control of undesirable plants shall be the responsibility of the subject property's landowner or occupant. The Program Coordinator will provide technical advice and support.

Enforcement of the Summit County Weed Management Plan shall be in accordance with the applicable provisions of the Act, as said Act may be amended from time to time. The Program Manager is authorized to enforce the Summit County Weed Management Plan to the full extent authorized by the Act.

**VII. CONCLUSION.**

Many non-native species of weeds that have become established in the County are deep-rooted perennial plants that are extremely difficult to control. Eradication of these species is often not a realistic goal, however when new infestations are detected eradication measures shall be taken. Through a concerted cooperative effort, we can manage these plants to prevent further disruption of the many and varied plant communities that make up our inter-mountain region.

For a list of all Colorado noxious weeds:  
<http://www.ag.state.co.us/DPI/home.html>

Respectfully submitted by:

Chairman, Summit County Weed Advisory Commission  
Rick Higgins

Date: June 30, 2009

Prepared by:  
Summit County Weed Advisory Committee

**APPENDIX A**  
**Accepted Best Management Practices for Individual Species**

**List A**

1. **Myrtle spruce:** A perennial that spreads by seed and creeping rootstocks. This plant is rapidly expanding into sensitive ecosystems, displacing native vegetation and reducing forage for wildlife. Management methods:
  - a. Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
  - b. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
  - c. Biological: None known.
  - d. Mechanical: Small infestations can be dug or pulled, depending upon the size of the infestation.
  
2. **Orange hawkweed:** A perennial forb that spreads by seeds, stolons and rhizomes. Orange hawkweed is found in mountain meadows and clearings, and prefers well-drained coarse-textured soils. Management methods:
  - a. Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
  - b. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
  - c. Biological: None known.
  - d. Mechanical: Small infestations can be carefully dug out by hand, taking care not to scatter root and stolon parts from which the plant can regrow. Mowing will prevent seed productions, but encourages increased vegetative reproduction.

## List B

3. **Absinth wormwood:** A perennial forb or herb, drying back to ground every year, has strong sage odor. Management Methods:
  - a. Cultural: Is not generally considered a serious problem on well established maintained pastures and rangeland. The plant tends to invade over-grazed or disturbed areas where there is little competition from other plant species. Therefore the best control measure for Absinth wormwood is prevention.
  - b. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
  - c. Biological: None known at this time
  - d. Mechanical: Tillage can prevent establishment of Absinth wormwood in crop production areas. Mowing may prevent seed production if mowed several times throughout the growing season, but may be difficult in fence rows or rocky areas. Burning is not effective and may increase populations.
4. **Black henbane:** A biennial forb that spreads by seed. Commonly found in pastures, fencerows, roadsides, waste areas and riparian areas. Management methods:
  - a. Cultural: Maintain a healthy cover of perennial plants. Due to long seed viability of black henbane, control practices must be maintained annually.
  - b. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
  - c. Biological: None known.
  - d. Mechanical: The most commonly recommended method for control is cutting, hoeing or digging isolated plants before seed production. Since black henbane seeds may remain viable for several years, any mechanical control method must be maintained annually.
5. **Bull Thistle, Musk Thistle, and Plumeless Thistle:** Biennial weeds that require the same management methods. Biennial weeds are best controlled in their first year of growth, commonly referred to as the rosette stage. Management methods:
  - a. Cultural: The best way to prevent or reduce the amount of biennial thistle is to manage areas that are susceptible to invasion to promote vigorous stands of competing vegetation. Adapted grasses have been proven to be effective competitors against the biennial thistles, for a list of these grasses please contact Natural

Resource Conservation Service or Summit County Noxious Weed program.

- b. **Biological:** *Rhinocyllus conicus* is a seed head weevil, which is widely distributed in Summit County. This weevil consumes most of the seeds in the terminal flower heads, but has no effect on buds which form later in the season. The conicus weevil can be an effective control method only if it is combined with chemical or mechanical controls. *Trichosiromus horridus* is a crown weevil, which feeds on the growing tip of the thistle rosette. This weevil has been released on numerous occasions in Summit County but has not yet become established.
- c. **Chemical:** Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. **Mechanical:** Since these thistles are biennials and do not resprout, they are easily killed by tillage or any method that severs the taproot below the root crown of the plant. If dug or cut after seed heads have formed, the plants should be sent to a sanitary landfill in plastic bags to ensure seeds will not spread. Mowing is effective only if done when the first flowers are in bud stage. A second mowing may be necessary because the plants may recover and produce viable seed later in the growing season.

**6. Canada Thistle:** A perennial weed with an extensive root system, Canada thistle reproduces both by seed and by vegetative buds on the roots. This weed requires a much more extensive management plan than the biennial thistles. Successful management of Canada thistle will only be accomplished by combining two or more of the control methods listed below. Management methods:

- a. **Cultural:** Competitive grasses may be used to control Canada thistle infestations. Choose an array of aggressive adapted grasses with early, mid and late season vigor to plant in areas where Canada thistle is present, for a list of these grasses please contact Natural Resource Conservation Service or Summit County Noxious Weed program. This staggered approach will allow the competitive grasses to stress the Canada thistle through out the growing season. Dormant burning has shown some success by means of giving the native vegetation a competitive advantage.
- b. **Biological:** *Ceutorhynchus litura* is a stem weevil whose larvae mine tissues of the leaf, root crown and root. Outward signs of damage by these larvae are not readily apparent but other organisms, which enter the plants through exit holes made by the larvae, cause secondary damage. *Urophora cardui* is a stem gallfly whose larvae cause galls to form on the stem of Canada thistle plants. The galls reduce the plant's vigor making it less able to compete with other plants or to resist pathogens or to attacks by other insects. It is essential that both of these insects be combined with other methods of control for adequate management of Canada thistle.
- c. **Chemical:** Contact Summit County Noxious Weed Program or a licensed commercial

applicator for specific recommendations for herbicide use.

- d. **Mechanical:** Mowing can be an effective tool when combined with herbicide treatment. Mowing, alone, is not effective unless conducted at two-week intervals over several growing seasons. Mowing should always be combined with cultural and chemical control. Cultivation may increase the number of plants by spreading the roots to new areas where they may become established.

**7. Chinese Clematis:** A Perennial herbaceous plant with a woody vine. Flowers are solitary with four yellow petals, often nodding. The species is very difficult to control once it has become established. To date, only one population of Chinese clematis has been located in Summit County. Infestations in Clear Creek and Eagle Counties are a continuing threat to Summit County’s borders. Management methods:

- a. **Cultural:** Recognize infestations of this plant early.
- b. **Biological:** None known at this time.
- c. **Chemical:** Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. **Mechanical:** No scientific recommendations in place at this time.

**8. Common Tansy:** An introduced ornamental, which has the ability to competitively outgrow many of our native plants. Management methods:

- a. **Cultural:** Keep existing native vegetation healthy. As an ornamental this plant may be available from some out of state vendors. Please check all seed packet to be sure they do not contain this specie.
- b. **Biological:** There is no research available on biological control of common tansy.
- c. **Chemical:** Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- e. **Mechanical –** No specific recommendations are known, however, mowing or cultivation when possible will reduce seed production and stand density.

**9. Dalmatian Toadflax:** An introduced perennial with a creeping root system. This plant will suppress desirable native plants even in well-managed wildlands. Management methods used for Yellow toadflax may also be used on dalmatian toadflax.

**10. Dame’s Rocket:** An introduced ornamental, which has been touted as “deer resistant” as one

of its main selling features. This plant is a biennial or short-lived perennial, which reproduces by seed. Management methods:

- a. Cultural: Keeps existing native vegetation healthy. As an ornamental this plant may be available from some out of state vendors. Please check all seed packet to be sure they do not contain this specie.
- b. Biological: No biological control is known at this time.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: Hand pulling or cultivation prior to seed production will reduce the stand density of this plant. Revegetation should follow any control option.

**11. Diffuse Knapweed:** Biennial or short lived perennial; weed, which has become one of the most damaging wildland weeds in the inter-mountain area.

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\*Management methods:

- a. Cultural: Seeding of adapted grasses can inhibit the spread of Diffuse knapweed in dry climates, for a list of these species please contact Natural Resource Conservation Service or Summit County Noxious Weed program.
- b. Biological: Same as Spotted knapweed
- c. Chemical: Same as Spotted knapweed
- d. Mechanical: Same as Spotted knapweed
- \* Comments: Early detection and management of invading plants is the key to managing knapweed.

**12. Hoary Cress:** A perennial plant that is very competitive with native vegetation. Its early seeding habits make it difficult to effect control in a timely manner. Management methods:

- a. Cultural: The effectiveness of mowing or cultivating will be increased if perennial grasses are seeded as competitor species, for a list of these grasses please contact Natural Resource Conservation Service or Summit County Noxious Weed program. Promote healthy grass stands by using proper irrigation and fertilization techniques. Promptly revegetate all disturbed areas with an adapted grass to prevent establishment of this specie.
- b. Biological: No insects are known to be effective for controlling this weed.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial

applicator for specific recommendations for herbicide use.

- d. Mechanical: No scientific data is available on mechanical control for this species. Mowing just prior to seed set may reduce overall seed production, but must be repeated several times during the growing season.

**13. Houndstongue:** A biennial weed that is toxic to herbivores. The seed is contained in pods, which are covered with barbs enabling them to stick to clothing or animal hair, thus, are readily transported. Management methods:

- a. Cultural: Maintain vegetation in good condition through proper irrigation and fertilization and planting of adapted grasses, for a list of these grasses please contact Natural Resource Conservation Service or Summit County Noxious Weed program.
- b. Biological: No biological control is available at this time.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: Severing the taproot below the root crown will control houndstongue. After cutting, the plants should be removed if they are in pre to post bloom to prevent seed formation.

**14. Leafy Spurge:** A perennial that spreads by seed and creeping rootstocks. An extensive root system with vast nutrient reserves makes this plant extremely difficult to control\*. Management methods:

- a. Cultural: Seeding adapted perennial grasses can be an effective management tool, for a list of these species please contact Natural Resource Conservation Service or Summit County Noxious Weed program. Early emerging plant species that utilize early season moisture have reduced leafy spurge density and limited the spread and establishment of new infestations.
- b. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- c. Biological: Grazing with sheep or goats can stress leafy spurge making it more susceptible to other control methods. *Apthona flava* and *Apthona nigriscutis* are two species of flea beetles that have been introduced to attack leafy spurge. Adults feed on foliage during summer and lay eggs at the base of spurge plants. The larvae tunnel through the soil and mine the roots, as well as the fine root hairs. These insects alone will not control leafy spurge, but they can weaken the plant making it more susceptible to herbicide treatments or other control methods.

- d. Mechanical: Mechanical methods have not been proven to be an effective management tool on this plant.

\*Comments: A complex of insects, grazing, plant diseases and chemical methods will be necessary to stress the plant sufficiently to attain acceptable control.

**15. Mayweed /Scentless Chamomile:** An escaped ornamental plant, this annual has become widely established in Summit County and is a threat to native plant communities. Management methods:

- a. Cultural: Learn to identify the plants and physically remove them when they first appear. Seed competitive, cool season grasses that out competes this plant at its early stage of growth, for a list of these grasses please contact Natural Resource Conservation Service or Summit County Noxious Weed program.
- b. Biological: No known biological controls.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: since it is an annual plant, hand pulling, cultivation, or any type of physical disturbance can control chamomile.

**16. Oxeye Daisy:** A short-lived perennial forb, this plant has taken over many native high altitude areas in Summit County. Management method:

- a. Cultural: Maintain vegetation in good condition through irrigation, fertilization and adapted grasses, for a list of these grasses please contact Natural Resource Conservation Service or Summit County Noxious Weed program.
- b. Biological: None known at this time.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: Mowing will not affect stand density or duration. Handpulling of areas can result in good control as long as the plants are pulled prior to seeding and disposed of properly. Repeated cultivation twice a year for two years will slow the spread and reduce seed population. Seeding of competitive grasses should follow any of these treatments.

- 17. Perennial Pepperweed:** This introduction from Eurasia has a vast underground root system and can be a very aggressive colonizer of disturbed sites and native vegetation stands. Management methods:
- a. Cultural: The effectiveness of mowing or cultivation will be increased if perennial grasses are seeded as competitor species, for a list of these grasses please contact Natural Resource Conservation Service or Summit County Noxious Weed program. Promote healthy grass stands by using proper irrigation and fertilization techniques. Promptly revegetate all disturbed areas with an adapted grass to prevent establishment of this specie.
  - b. Biological: No insects are known to be effective for controlling this weed.
  - c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
  - d. Mechanical: Mowing just prior to seed set may reduce overall seed production, but must be repeated several times during the growing season.
- 18. Russian Olive:** Deciduous introduced shrub or small tree that grows up to 30 feet. The crown is usually dense and rounded. Management methods:
- a. Cultural: Learn to identify the plants and physically remove them when they first appear.
  - b. Biological: No insects are known to be effective for controlling this weed.
  - c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
  - d. Mechanical: Fire in combination with herbicide treatment of stumps can prevent Russian- olive from sprouting from the root crown.
- 19. Russian Knapweed:** A creeping perennial weed, which, once established, becomes extremely difficult to control. In heavy infestations, few plants can grow in competition. Allelopathic chemicals have been extracted from Russian knapweed. Management methods:
- a. Cultural: Dry range, seeded with adapted grasses, can cause stress in knapweed by using up moisture prior to the weeds spring growth, for a list of these species please contact Natural Resource Conservation Service or Summit County Noxious Weed program.

- b. Biological: A leaf & stem gall-forming nematode (*Subanguina peridus*) has been released in the U.S. This nematode has shown limited success in controlling Russian knapweed. Goats' grazing has shown some success in limiting seed production and stressing this plant.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: Due to the extensive energy reserves in the root system, removal of top growth alone will not provide adequate control of Russian knapweed. In fact, recent studies have shown mowing alone increases Russian knapweed density and stimulate growth.

**20. Saltcedar:** Aggressive, woody invasive deciduous, loosely branched shrubs or small trees.  
Management methods:

- a. Cultural / Preventive: No matter how effective initial treatment is, it is important to re-treat saltcedar that is not killed by initial treatment. After killed other vegetation must be established to protect soil resource and to prevent reinvasion.
- b. Biological: Chilik Saltceder leaf beetle. Use must be approved by the Colorado Department of Agriculture.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: As an alternative to herbicides, a bulldozer or prescribed fire can be used to open up large stands. Once open, resprouts need to be treated with an herbicide.

**21. Spotted Knapweed:** Spotted knapweed is a biennial or short-lived perennial that greatly reduces the native ecosystem carrying capacity and specie diversity. Management methods:

- a. Cultural: Good vegetation management is one of the best defenses against the spread of knapweed on wildlands. Disturbance on any ground should be promptly revegetated with adapted grasses to help prevent the establishment of these species, for a list of these adapted species please contact Natural Resource Conservation Service or Summit County Noxious Weed program.
- b. Biological: At present, there are fourteen different insects that the Colorado Department of Agriculture is testing biocontrol for this plant. It is estimated that it will take all fourteen varieties of insects working together to affect any control.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.

- d. Mechanical: Deep root removal can reduce the stand density.
- 22. Sulfur cinquefoil:** A perennial forb with fibrous roots and lateral rhizomes. Populations limited in Summit County. Management methods:
- a. Cultural: Frequent plowing or tilling.
  - b. Biological: None are available at this time.
  - c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
  - d. Mechanical: Small infestations can be controlled by hand digging. Can not be controlled by mowing.
- 23. Wild Caraway:** A biennial or sometimes perennial forb is commonly found in mountain meadows, hayfields, and along irrigation ditches and roadsides. Management methods:
- a. Cultural: Wild caraway plants are sensitive to root disturbance and could be eliminated by tilling, although such practices are not likely to be suitable for natural areas. Best preventive practices include the elimination of seed production, and maintaining healthy native communities.
  - b. Biological: None known.
  - c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
  - d. Mechanical: Wild caraway plants can be cut or pulled prior to seed set.
- 24. Yellow Toadflax:** A deep-rooted perennial plant that is an aggressive invader of wildlands. Once established on a site it is one of the most difficult noxious weeds to control. Management methods:
- a. Cultural: Maintain vegetation in good condition through irrigation, fertilization and planting of adapted grasses, for a list of these grasses please contact Natural Resource Conservation Service or Summit County Noxious Weed program.
  - b. Biological: The *Calophasia lunula* moth larvae can reduce the root reserves and general vigor of yellow toadflax by defoliating new growth and eating buds and flowers. *Gymnetron antirrhini* is a capsule weevil, which can reduce the amount of seed produced but has little, if any, effect on stand density. Combine the use of either

of these insects with chemical or mechanical control for best results.

- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: Mowing will not affect stand density or duration. Handpulling of small areas can result in good control as long as the plants are pulled prior to seeding and disposed of properly. Repeated cultivation twice a year for two years will slow the spread and reduce seed population. Seeding of competitive grasses should follow any of these treatments.

### **List C**

**25. Common mullein:** A biennial forb that is found throughout Colorado in pastures, meadows, fencerows, waste areas, and along river bottoms. Management methods:

- a. Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- b. Biological: A curculionid weevil that is specific to common mullein has been introduced and is capable of reducing seed production by 50%.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: Pulling before seed set, digging, mowing or cutting is an effective method of control.

**26. Downy Brome:** An annual or winter annual grass that is found in recently burned rangeland and wildlands, winter crops, waste areas, abandoned fields, eroded areas and overgrazed grasslands. Management methods:

- a. Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- b. Biological: Livestock grazing can be helpful with two grazing periods each spring required for at least two consecutive years.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.

- d. Mechanical: Cutting is not recommended. Plants cut before seed ripening will produce new stems and seeds at the cut height. Hand-pulling small infestations eliminate current seed production, but will not eliminate the infestation.

**27. Field bindweed:** A deep-rooted perennial forb that is a serious threat to native plant communities because it has such a great capacity for regeneration. Management methods:

- a. Cultural: none
- b. Biological: Currently, there has been little evidence of a biocontrol agent that significantly damages or reduces populations of bindweed.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: Cutting, mowing, or pulling has a negligible effect unless the plants are cut below the surface in the early seedling stage.

**28. Poison Hemlock:** A biennial forb that is poisonous to livestock, wildlife and humans. The plant is scattered in riparian areas, along streams, roadsides ditch banks and irrigation ditches. Management Methods:

- a. Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- b. Biological: The European palerctic moth feeds on poison hemlock.
- c. Chemical: Contact Summit County Noxious Weed Program or a licensed commercial applicator for specific recommendations for herbicide use.
- d. Mechanical: Poison hemlock can be controlled by digging, repeated mowing, pulling or by spring/winter burns.