Grand County Noxious Weed Management Plan

Adopted in 1997
Rev. 2001, 2007, 2013, 2018

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I. DEFINITIONS

All language definitions used within this plan shall be consistent with the "*Colorado Noxious Weed Act"* §35-5.5-101-119 C.R.S. and the "*Permanent Rules Pertaining to the Administration and Enforcement of the Colorado Weed Management Act."*

a. "Act" means the Colorado Noxious Weed Act, §35-5.5-101 through 119 CRS.
b. "Compliance waiver" means a written exemption granted to a local governing body or landowner by the Commissioner that releases the local governing body and/or landowner from certain management obligations for a specific population of a List A or List B species.
c. "Elimination" means the removal or destruction of all emerged, growing plants of a population of List A or List B species designated for eradication by the Commissioner. It is the first step in achieving eradication and is succeeded by efforts to detect and destroy newly emerged plants arising from seed, reproductive propagule, or remaining root stock for the duration of the seed longevity for the particular species.
d. "Infested acreage" means an area of land containing one or more plants of a noxious weed species.
e. "Eradication" which means reducing the reproductive success of a noxious weed species or specified noxious weed population in largely uninfested regions to zero and permanently eliminating the species or population within 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.
f. "Containment" which means maintaining an intensively managed buffer zone that separates infested regions, where suppression activities prevail, from largely uninfested regions, where eradication activities prevail.
g. "Suppression" which means 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.
h. "Population" means a group of designated noxious weeds of the same species occupying a particular geographic region and capable of interbreeding.
i. "Ordinary high water mark" means that line on the shore of any river or perennial or intermittent stream established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.
j. "Public open space" means publicly-owned land that is managed for its natural or agricultural value.
k. All definitions in §35-5.5-103 CRS apply to these Rules.

II. INTRODUCTION

Statement of Compliance

This plan complies with the Colorado Noxious Weed Act (§35- 5.5-1201-119 CRS) as revised by the Colorado Legislature. The purpose of the Grand County Noxious Weed Management Plan (NWMP) is to outline which noxious weed species are present in the County and the legal requirements for control of those species (as defined by the *Act* and *Rules*). The Plan also serves to inform the public as to the methods available to Grand County Natural Resources (GCNR) to achieve necessary controls as outlined in the *Rules*. The County adopted the first Weed Management Plan in 1997, which has been revised in 2001, 2007, 2013 and in 2018 in order to remain current with the amended *Act* and new discoveries of noxious weed species in Grand County.

County Policies

The BOCC will appoint the Grand County Noxious Weed Advisory Board (GCNWAB) and it will have powers outlined in §35-5.5-107 CRS. The GCNWAB will provide policy and advice for weed control in Grand County with the approval of the BOCC.

GCNR will implement the NWMP and will control weeds on County ROW's, County properties and on governmental properties and rights-of-way under intergovernmental cooperative agreements between the federal, state, county and local governments found within the County. In addition, the Colorado State University Cooperative Extension Service, the Middle Park Conservation District, and the Natural Resources Conservation Service will work in conjunction with the GCNR and landowners for the management of weed populations found on their properties. Requests for assistance from the public will be directed to the GCNR, Grand County Colorado State University Extension Service or Natural Resources Conservation Service.

Operating Budget

Funding sources include, but are not limited to, Grand County budgets, cooperative funding, grants and revenue producing contracts.

Public Comment

Public comment and participation is encouraged. Public comments will be taken at the Grand County Natural Resources, Colorado State University Extension Service Office or at any meeting of the Grand County Noxious Weed Advisory Board (GCNWAB). Grand County Noxious Weed Advisory Board meetings and agendas will be posted at the Grand County Courthouse.

III. SITUATION STATEMENT OF THE NOXIOUS WEED PROBLEM IN GRAND COUNTY

Grand County continues to have somewhat manageable noxious weed populations due to the existence and continued work of GCNR and our public land agency partners, USFS

and BLM and the work of the incorporated Towns in the County. The invasive nature of these plants creates an environment where a major problem could develop in a very short period of time without prompt and accurate identification and diligent control. The increased soil disturbance through the development of land into residential and recreational areas, as well as increased use of public and private lands may create a noxious weed problem. As a major headwater county, it is imperative that the Grand County noxious weed control program continue to monitor populations throughout the county and initiate control programs before noxious weed densities become unmanageable.

Transportation corridors are common avenues for noxious weed species to travel. In Grand County the major travel corridors consist of the following:

1. Colorado Department of Transportation (CDOT) Highways – 40, 34, 9, 134 and 125 (336 lane miles)
1. County roads (1641 lane miles)
2. United States Forest Service (USFS) and Bureau of Land Management (BLM) Service Roads (approx. 500 lane miles)
3. Others: Railroad (63 mainline miles) and power line rights-of-way.

New construction, improvement and maintenance operations on state and county rights-of-way, power lines and railroad rights-of-way create effective passageways for the proliferation of noxious weeds. All such areas require a continual monitoring program for early noxious weed identification and control. Each year, the County sees increases in population and tourists alike, coming from all areas of the country. Trailering ATVs and other off-road vehicles; bicycles; cars; campers, boats, hiking boots, etc. bringing seeds from wherever they came from to potentially establish here. New noxious weed species have been found in the County in the past 5-7 years and there is no reason to expect that wouldn't continue.

The majority of lands within Grand County are public lands (68%). Grand County continues to have assistance agreements with USFS, BLM, Colorado Parks and Wildlife (CPW), Colorado State Land Board, CDOT and the Middle Park Habitat Partnership Program (HPP) that enables GCNR to cooperatively manage noxious weed infestations on public lands. GCNWAB will adhere to state guidelines in §35-5.5-111 CRS for cooperating with state and federal agencies.

County Awareness of Noxious Weeds

West Grand County (West of Byers Canyon) – Historically West Grand County has aggressively controlled noxious weeds because of private agricultural concerns. This end of the county consists primarily of ranches and public lands, although "small parcel" development is taking place. Invasive noxious weed problems are increasing on lands being developed for rural housing and/or subdivisions. Primary weed species of concern are: Hoary cress, Houndstongue, Cheatgrass, Canada thistle, Bull thistle and Musk thistle. There are pockets of severe infestations of Yellow toadflax and Leafy spurge in the Williams Fork area.

East Grand County (Hot Sulphur Springs, Granby, Grand Lake and Fraser Valley) – Education and outreach programs have increased the awareness of the need for noxious weed control. The large influx of new owners and developments of "small parcels" along with the associated land disturbance has created countless new noxious weed infestations. In response Grand County Planning and Zoning Department is now requiring the revegetation of disturbed sites and the treatment of noxious weeds during the development phase. Primary weed species of concern are: Orange hawkweed, Oxeye daisy, Yellow toadflax, chamomiles and non-native thistles.

Designation of Noxious Weeds

Section 35-5.5-108 of the *Act* states that Noxious Weeds will be designated by rule and that the commissioner shall classify them into one of a minimum of three categories: List A; List B; or List C. A local governing body may adopt eradication, containment, or suppression standards that are more stringent than the standards adopted by the commissioner. The Colorado State Noxious Weed Advisory Board has designated the following noxious weed species and management goals:

List A

List A species are rare noxious weeds for which state wide eradication is the goal, per 8 CCR 1206-2 (*Rules*), sections 3.2, 3.3, 3.4, 3.5. There are 19 species listed, of those, GCNR has identified 4 List A species present or have been present in Grand County:

Cypress spurge (*Euphorbia cyparissias*)

- Infestation limited to a small area, approximately 100'x100' in size on private property. GCNR has been treating annually since 2009 and has since shrunk the patch to be approximately 30'x 30'.

Myrtle spurge (*Euphorbia myrsinites*)

- Have been found in gardens on private property in Grand County.

Orange hawkweed (*Hieracium aurantiacum*)

- There have been two areas of rather extensive infestations in the County. One in the Grand Lake area and the other in the Fraser Valley, along the Fraser River. GCNR has actively treated the infestation in the Grand Lake area for many years on private properties and on CDOT ROW. Populations here seem to be holding steady or even shrinking slightly. The Fraser Valley infestations are primarily on USFS and Town of Fraser properties along the Fraser River. GCNR has participated in 3 years of coordinated/cooperative assistance to these entities in an effort to get the infestations under control and prevent further spread.

Purple loosestrife (*Lythrum salicaria*)

- This species was discovered in 2009 in one area only, on private property. Through the cooperation of the landowner, GCNR was able to treat and eradicate.

List B

List B (*Rules*, Part 4) noxious weed species are species for which state noxious weed management plans have been written and are designed to eradicate or stop the continued spread of these species. For the specific management requirements for the following species in Grand County, please refer to *Rules*, section 4. There are 38 species on the list, of which 22 have been found in Grand County:

Black henbane (*Hyoscyamus niger*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.6 for Grand County management requirements.
- The County has pockets of this invasive, most are east of the town of Hot Sulphur Springs, with one exception which is in the central part of the county north of Hwy 40. Most populations are less than ¼ acre in size and are found on CDOT ROW and private properties.

Bull thistle (*Cirsium vulgare*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.19 for Grand County management requirements.
- This invasive can be found anywhere in Grand County. Fortunately we do not have any known areas with large (>1 acre) infestations. Most are single plants or small bunches on ROW.

Common Tansy (*Tanacetum vulgare*)

- See *Rules*, Sections 4.2, 4.4, 4.5, 4.6 and 4.7.30(a) for Grand County management requirements.
- This invasive is found randomly in Grand County. Most are singular plants or small bunches on ROW, residential lots or old homestead areas. A small population on USFS Elk Mountain areas was reported in 2017.

Dalmatian toadflax (*Linaria dalmatica*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.12 for Grand County management requirements.
- This species is rare in Grand County, except for a known small population on private property. Generally a plant or two may show up on CDOT ROW every few years.

Dame's rocket (*Hesperis matronalis*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.26 for Grand County management requirements.
- Most occurrences of this plant in Grand County are in private gardens. In those instances, GCNR makes an effort to educate the homeowner/landowner.

Diffuse knapweed (*Centaurea diffusa*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.7 for Grand County management requirements.
- Grand County has a few stubborn populations of this plant in the Williams Fork area and then it sporadically shows up on CDOT ROW, mostly on Hwy 40.

Hoary cress/Whitetop (*Cardaria draba*).

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.16 for Grand County management requirements.
- This species is primarily found in the western part of the County. Routt County is heavily infested and it is probable that most of our infestations have come from there.

Houndstongue (*Cynoglossum officinale*).

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.10 for Grand County management requirements. See Containment map, Figure 9.05 in Appendix.
- The majority of populations are in western Grand County, more prevalent where there are livestock and large herds of wildlife. It also occurs in pockets along the high water line of Lake Granby.

Leafy spurge (*Euphorbia esula*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.13 for Grand County management requirements.
- The Williams Fork area has some severe infestations, one covering 50-100 acres on private property that has been around for 50+ years with sporadic treatment efforts; Outside this area, it is present in few places in eastern Grand County and is treated aggressively.

Musk thistle (*Carduus nutans*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.21 for Grand County management requirements.
- Musk thistle is present in all areas of the County with a few locations of heavy infestations on private properties as well as on federal lands.

Oxeye daisy (*Chrysanthemum leucanthemum*)

- See *Rules,* Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.8 for Grand County management requirements. See Containment map, Figure 7.09 in Appendix.
- This is a species of Eastern Grand County, particularly in the area from Grand Lake south to the Fraser Valley where there are moderate to severe infestations on both public and private lands. A large infestation in the Williams Fork near the old Leal town site and former Ptarmigan Work Center.

Perennial pepperweed (*Lepidium latifolium*)

- See *Rules,* Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.11 for Grand County management requirements.
- Not well known in Grand County but a few populations on USFS property in Williams Fork Valley and near Grand Lake; Railroad ROW near CR 201; Trough Road area.

Plumeless thistle (*Carduus acanthoides*)

- See *Rules,* Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.3 for Grand County management requirements.
- A sporadic thistle that is often confused with Bull thistle and perhaps even Musk thistle. Low overall infestation rates throughout the County, often in old clearcuts.

Russian knapweed (*Centaurea repens*)

- See *Rules,* Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.17 for Grand County management requirements.
- To date three known populations have surfaced. One in 2008 on Hwy 125 this has since been eradicated. The second was just found on Hwy 134 in 2011. This new infestation was treated and will continue to be monitored. The third consists of a few plants on the west end of the Granby Airport.

Salt cedar (*Tamarix chinensis, T. parviflora,* and *T. ramosissima*)

- See *Rules,* Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.5 for Grand County management requirements.
- Original infestation was found on Wolford Reservoir in the first few years of its existence. It is believed to have been brought in with heavy equipment used to construct the Reservoir. This infestation was thought to be eradicated until about 2012 when populations of young trees were found along shoreline. The Colorado River District has been treating and monitoring these new invasions but have not been able to determine the source.

Scentless chamomile (*Matricaria perforate*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.22 for Grand County management requirements.
- This species is by far the most prevalent of ANY noxious weed in the County. Almost non-existent in the west, it overruns the eastern part of the County and is directly related to amount of development and disturbed ground.

Scotch thistle (*Onopordum acanthium* and *Onopordum tauricum*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.22 for Grand County management requirements.
- This was thought to be gone from Grand County, but a population was found in 2009 in the Kremmling area and has been aggressively treated since then.

Spotted knapweed (*Centaurea maculosa*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.4 for Grand County management requirements.
- Most are just single plants that show up on ROW's and a few known infestation on private property that GCNR has been monitoring and educating the landowner. These incidents seem to have come from imported material/gravel

Wild caraway (*Carum carvi*)

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.31 for Grand County management requirements.
- Known to be in the Fraser Valley, most in irrigated pastures. GCNR has had reports of in the Kremmling area, again in irrigated pastures. GCNR does not have a good idea of the amount of this species within County ROW's but it is treated when found.

Yellow toadflax (*Linaria vulgaris*).

- See *Rules*, Sections 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.9 for Grand County management requirements. See Containment map, Figure 8.07 in Appendix.
- The Williams Fork area has severe infestations of this noxious weed and GCNR works cooperatively with CPW, BLM and USFS to treat in this area. There are also a few, small, dense infestations found in the towns of Hot Sulphur Springs and Granby; the Fraser Valley and along Hwy 125 as well as various areas on USFS lands.

List C

List C species (*Rules*, Part 5) are species where the goal will be to provide additional education, research, and biological control resources to jurisdictions that choose to

require management of these species. These are typically species of noxious weed that are widespread throughout Colorado. At this time, there are 13 species on this list and four are present in Grand County:

Common mullein (*Verbascum thapsus*) is present in fair amount throughout the County and the GCNR treats populations to prevent further spread. ***Downy brome*** (*Bromus tectorum*) is also present in many areas of the County; GCNR does not have a good idea of how much is present but have been discussing options to begin a management program for this species perhaps integrating efforts with the BLM and USFS. ***Field Bindweed*** **(***Convolvulus arvensis*) is a sporadic species that seems to be on the rise. GCNR has been treating it to prevent further spread since 2009. ***Halogeton*** (*Halogeton glomeratus*) has been observed on CDOT ROW just west of Kremmling on Highway 40, fewer than 24 plants. No further species have been noted since 2009.

State Watch List Species

Watch List (*Rules*, Part 6) weed species are species for which the Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, has determined to pose a *potential* threat to the agricultural productivity and environmental values of the lands of the state. The Watch List is intended to serve advisory and educational purposes only. Its purpose is to encourage the identification and reporting of these species to the Commissioner in order to facilitate the collection of information to assist the Commissioner in determining which species should be designated as noxious weeds. Grand County only knows of one species, of twenty on the list, currently present in the county. ***Baby's breath*** (*Gypsophila paniculata*) is present in Grand County, though GCNR does not believe it to be present in quantity enough to warrant any action. GCNR will continue to monitor this species and consult with our partners in the BLM and USFS to determine if and when any action may be necessary in the future.

Other Species of Interest

- Kochia (*Kochia scoparia*) – an annual, non-native plant that is not on the State lists due to its long time and widespread presence in the State. It started to show up in Grand County around 2010 and has become a nuisance in certain areas. GCNR treats it aggressively on just a few County properties.

- Yellow sweetclover (*Melilotus officianalis*) – a biennial or short-lived perennial that can become a nuisance in certain areas like trail edges and road ROWs. GCNR began treating on County ROW and County gravel pits around 2015 in an effort to push it back off the edges of the roads to maintain visibility and to avoid attracting wildlife to the edge of the road.

- Russian thistle (*Salsola iberica*) – the original, "western tumbleweed." An annual, non-native plant that thrives on disturbance. There have been several incidents in the past decade in the State and other areas of the southwest where

the sheer volume of tumbleweeds have created mini-disasters in smaller communities; stacking up as tall as buildings and causing the need for removal, costing some areas a fairly substantial amount of money in hauling costs. GCNR treats seedlings if found in time.

IV. PRIORITIES AND GOALS

Public Education

The GCNR, Natural Resources Conservation Service and the Colorado State University Cooperative Extension Office will place timely articles in local papers, newsletters and other publications as educational pieces. Additionally, a spokesperson will be provided for local community and civic organizations as part of the educational program. Public education could be conducted through the use of posters, seminars, newspaper articles, radio interviews, newsletters, FFA meetings, 4-H meetings, public meetings and direct contact with the public.

Operation Priorities

The Grand County Noxious Weed Advisory Board will promote an Integrated Pest Management Program (§35-5.5-102 CRS), which includes chemical, mechanical, biological, cultural and revegetation methods for the control of noxious weeds. A listing of local contractors to assist landowners with reseeding and other control practices is available from GCNR as well as on their webpage.

Economic Priorities

Best management practices (BMP) will be implemented based on environmental concerns and economic feasibility.

Environmental Priorities

Environmental concerns including human interactions, water, air, wildlife, fisheries, amphibians, soil, plants and beneficial insects will be considered when selecting and implementing a specific noxious weed control program.

Endangered Species

In 2005, Grand County, along with Colorado Dept. of Natural Resources and Colorado Parks and Wildlife, commissioned a Survey of Critical Biological Resources by Colorado State University and the Colorado Natural Heritage Program. The goal of the survey was to identify the locations of rare species, significant natural plant communities, and their habitat. Through this survey, the following rare plants and their habitats were catalogued:

1. Kremmling Osterhout milkvetch (*Astragalus osterhoutii*) - approximately 1,019 acres of habitat north of the town of Kremmling in the Troublesome valley.
2. Penland Penstemon or Penland's beardtongue (*Penstemon penlandii*) – approx. 835 acres of habitat on the eastern side of the Troublesome valley

GCNR has worked with Colorado Natural Heritage Program botanists' to locate these sites and have developed Best Management Practices to protect these sites from potential harm.

Short Term Goals (2018-2021)
Grand County Natural Resources and the GCNWAB will:

1. Continue to develop public education and outreach programs, focusing on identification, prevention and control of targeted noxious weeds.
2. Increase efforts to aid private landowners, both large and small, to identify and control noxious weeds.
3. Continue to maintain reasonable control of the targeted noxious weeds through GIS mapping to monitor the progress of the noxious weed control program.
4. Identify and monitor new noxious weed infestations.
5. Continue efforts in gaining the cooperation of all landowners, private and public, in noxious weed control.
6. Continue cooperative agreements with federal and state land management agencies.

Long Term Goals (2018-2028)
Grand County's long-term goal is to contain and reduce the present infestations of noxious weeds found in Grand County. In accordance with the *Act*, total eradication of List A weed species found in Grand County is a top priority. Grand County Natural Resources and the GCNWAB will continue its efforts to prevent the introduction of additional noxious weed infestations through educational and outreach programs for both the public and private sectors. BMP's including chemical, mechanical, biological and re-vegetative methods will be implemented.

V. MANAGEMENT METHODS

Prescribed integrated management techniques will be utilized in the management of noxious weeds as outlined in the *Rules*. BMPs may also be used by GCNR where prescribed integrated management techniques do not exist or where specified techniques have been proven ineffective in meeting the management goal. Tools to be used include:

1. Cultural Management – cultivating desirable vegetation to minimize invasion by noxious weeds. This includes revegetation with desirable and competitive species; grazing; fertilization to give desirable plants a competitive advantage.
2. Mechanical Management – most effective on small infestations on annual and biennial species. Hand pulling, mowing, tilling are common methods.
3. Biological Management – the use of living organisms to suppress the noxious weed infestation to an acceptable level. Insects, pathogens and nematodes are the most common methods available. It should be noted that the use of Biological controls are not applicable in all situations. Insect use generally requires a large

population of a noxious weed in order to sustain itself and be effective. It is also a slow process and at best, only offers control and not eradication.

4. Chemical Management – use of appropriate herbicides at the appropriate time on targeted species.

A combination of two or more of the above mentioned tools are usually the most successful. A No Action method is not applicable as the *Act* legally requires some level of management to be taken.

The integrated management options listed above will be used for controlling the noxious weeds in the various environmental sites they are found. Additional combinations of management techniques are possible which may be submitted by private landowners. GCNR, with consultation with NRCS, will assist in establishing criteria for revegetation of rights-of-way as well as disturbed areas on private and public lands. Non-compliance procedures will be followed as outlined in the *Act*.

Preventative control means using BMPs, which will stop or forestall noxious weeds from contaminating an area. These are often the most practical and cost effective means of noxious weed control. Recommended practices for Grand County include:

1. Requiring revegetation with weed-free seed and mulch applied to all disturbed areas.
2. Promoting the Colorado Weed Free Hay and Forage Program (§35-27.5-101 et seq. CRS), Colorado Nursery Act and Colorado Seed Act (§35-27-101 et seq. CRS).
3. Prioritizing noxious weed management in areas that contain abundant noxious weed concentrations and escalating dispersion rates to reduce the potential spread.
4. Minimize soil disturbance on new development sites or other soil disturbing activities such as excessive grazing (where applicable).

See Appendix A for specific BMP and management techniques for Grand County noxious weed species.

<u>Resource Information</u>

1. Colorado Department of Agriculture
2. Colorado Weed Control Handbook – Current edition
3. Weeds of Colorado, CSU Cooperative Extension Service
4. Noxious Weeds of Colorado, CWMA
5. Weeds of the West
6. CSU – Service in Action Sheets
7. NRCS Technical Guides
8. Biology and Management of Noxious Rangeland Weeds

VI. <u>ENFORCEMENT</u>

Control of noxious weeds shall be the responsibility of the landowner. GCNR will provide technical advice and support. Enforcement of the Grand County Noxious Weed Management Plan will be in accordance with the *Act* and its amendments found in §35-5.5-11.

VII. CONCLUSION

The invasion of non-native species is one of the major threats to biodiversity worldwide. Noxious weeds displace native plant species, degrade wildlife habitat, adversely affect Threatened and Endangered species, have a negative impact on recreational activities, and reduce the value of land and crops. Grand County is THE headwater county for the Colorado River that serves four states as well as Mexico; plus transcontinental diversions to the Front Range. The control of noxious weeds is responsible resource management to prevent the spread to neighbors, as well as supporting the Grand County Master Plan ideals of preserving wildlife habitat, maintaining productive ranch lands and improving water quality. Middle Park serves as critical winter habitat for several wildlife species and by maintaining healthy, diverse native vegetation we allow this habitat to support the wildlife. Through cooperative effort, we can manage these invasive species to maintain and improve our ecosystem, preventing a larger, more difficult problem in the future.

The *Act* and the *Rules* are updated regularly and as such this document will be updated accordingly to stay in compliance with the law, without the need of a public meeting. Current versions of the *Act* and *Rules* can be accessed on Grand County Natural Resources web page on the Grand County website.

APPENDIX A
ACCEPTED BEST MANAGEMENT PRACTICES FOR INDIVIDUAL SPECIES

A **No Action** method is not applicable as the *Act* legally requires some level of management to be taken.
Any Biological control method provided here only applies to the State of Colorado. The Colorado Department of Agriculture Insectary, located in Palisade, CO provides information and assistance to private landowners, municipalities and counties. Please contact them, toll free at (866)324-2963, or through the CDA website for further information.

LIST A

Cypress Spurge: A low growing perennial that spreads by seed and lateral root buds. Prefers full sun and commonly occurs in dry to moderately moist sites. Usually introduces as an ornamental. Management methods include:

- Cultural: Prevention of invasion by maintaining healthy desirable vegetation and minimizing soil disturbance.
- Mechanical: Small infestations can be hand pulled, being careful to get all root pieces as leaving any behind will spur more shoots to form. Mowing is not effective.
- Biological: None known, nor an accepted method by Colorado Department of Agriculture (CDA) for List A species.
- Chemical: Contact Grand County Natural Resources (GCNR) for specific recommendations.

- **Orange Hawkweed**: A perennial forb that spreads primarily by root. Prefers shady, well-drained sites near water. This plant forms mats of vegetation, crowding out desirable vegetation. USFS is finding more small populations along roads and trails and within areas salvage-harvested. Management methods:
    - Cultural: Preventing infestation by maintaining healthy desirable vegetation and minimizing soil disturbance.
    - Mechanical: Not generally recommended due to the ability of plant to sprout from root pieces left behind. Small infestations can be hand dug/pulled if careful to remove all of the root and runners.
    - Biological: None known, nor an accepted method by CDA for List A species.
    - Chemical: Contact GCNR for specific recommendations.

Purple Loosestrife: Perennial, tap-rooted forb. Found in water and along waters edge, forms dense stands, crowding out vegetation and wildlife. Management methods:

- Cultural: Prevention of infestation by minimizing soil disturbance.
- Mechanical: Hand-pulling is effective on small infestations, being careful to remove all of the rootstock.
- Biological: None known, nor an accepted method by CDA for List A species.
- Chemical: Contact GCNR for specific recommendations.

LIST B

Black Henbane: a biennial, sometimes annual species that is poisonous to livestock. Henbane generally likes disturbed areas, i.e. roadsides, borrow ditches. Henbane spreads by seed only. Management methods include:

- Cultural: maintaining healthy, desirable vegetation to prevent the opportunity for Henbane to become established.
- Mechanical: Hand pulling, hoeing or digging isolated plants prior to seed development is very effective.
- Biological: None known.
- Chemical: Contact GCNR for specific recommendations.

Bull thistle, Musk thistle, Plumeless thistle and Scotch thistle: all are biennial weeds that require similar control methods. All are easiest to control in the first year/stage (vegetative, rosette) prior to flower and seed set.

- Cultural: Maintaining healthy, vigorous stands of desirable vegetation works very well to keep these species at bay.
- Mechanical: These species do not spread by root and thus are readily controlled by hand pulling, cutting or mowing, but note of caution: if cut after bolting, plants can and will resprout its flowering stem and can still go to seed if the flower is left behind.
- Biological: For Bull thistle: Urophora stylata, a fly that lays eggs in the seed head and the larva then feed on the seeds has been effective in other areas. In Grand County, our populations are not dense enough or large enough to sustain a population of these insects. For Musk and Plumeless thistles there are seed head weevils and crown weevils that are effective for control in other areas of CO. There were releases in Grand County in the early 2000's, but the insects were not able to overwinter here and died out.
- Chemical: Contact GCNR for specific recommendations.

Canada thistle: a perennial weed with extensive root system that spreads primarily by root. This is a very persistent weed due to the extensive roots and requires diligent and consistent management to be successful.

- Cultural: Maintaining healthy, vigorous stands of desirable species to outcompete the Canada thistle.
- Mechanical: Mowing or hand-pulling is not recommended due to the ability of the plant to send more runners and roots to create new plants when cut. If pulling, you must get ALL of the root and root system to prevent further resprouting, so is only applicable on young/new infestations that do not have established root systems.
- Biological: According to the CDA insectary, insects have not proven effective. But goats and cows have been used to reduce and sometimes eliminate populations. This takes intensive management and control of the animals to be successful. A new discovery of a native fungal rust on some Canada thistle populations is being experimented with by the CDA Insectary.

- Chemical: Contact GCNR for specific recommendations.

Common tansy: An introduced ornamental, perennial forb reproduces by seed or root.

- Cultural: Do not plant as an ornamental as it quickly takes over due to root spread. Maintain healthy, vigorous stand of desired vegetation.
- Mechanical: hand cutting in conjunction with other methods can be done, but this plant spreads by root, so must be sure to get the entire root or mow repeatedly to prevent flower and spread by root.
- Biological: None at this time.
- Chemical: Contact GCNR for specific recommendations.

Corn/Mayweed/Scentless chamomile: An annual forb, very prolific! Heavily established in the east end of Grand County. Management methods include:

- Cultural: Reseed disturbed areas as soon as possible and maintain healthy stands of desirable vegetation.
- Mechanical: Hand pulling can be very effective at first stages of infestation, root depth is shallow. However, after 1 year of infestation, hand pulling can disturb the soil enough to allow seeds found in soil to surface and germinate. In addition, the numbers of rosettes can be overwhelming.
- Biological: None at this time.
- Chemical: Contact GCNR for specific recommendations.

Dalmatian toadflax: An introduced perennial that reproduces by seed and root. Aggressive root spreader makes it very difficult to control. Management methods include:

- Cultural: Maintaining healthy, vigorous stands of desirable vegetation can improve chances of keeping this plant out, but not a guarantee.
- Mechanical: Hand pulling small infestations can be effective if done annually/semi-annually for 5-6 years to deplete the root reserves.
- Biological: Calophasia lunula, a predatory noctuid moth, feeds on leaves and flowers of Dalmatian toadflax. Eteobalea intermediella, a root boring moth, and Mecinus janthinus, a stem boring weevil, are also available. For more information, contact the Palisade Insectary of the Colorado Department of Agriculture.
- Chemical: Contact GCNR for specific recommendations.

Dame's rocket: A biennial or short-lived perennial, introduced as an ornamental that reproduces by seed. Management methods include:

- Cultural: Maintain healthy, vigorous stand of desirable vegetation; read seed packets to be sure this plant is NOT included.
- Mechanical: Hand pulling can be effective in small infestations; seed longevity in soil is unknown. Plant can resprout from root left behind.
- Biological: None known at this time.
- Chemical: Contact GCNR for specific recommendations.

Diffuse knapweed: Biennial or short-lived perennial reproduces by seed. Flowers are usually white, with spiny bracts. Management methods include:

- Cultural: Prevention by maintaining healthy stands of desirable vegetation and reseeding of disturbed areas.
- Mechanical: Hand pulling is effective in small infestations, being sure to get all of the root to prevent resprouting.
- Biological: The seedhead weevil (Larinus minutus) and the root weevil fly (Cyphocleonus achates) provide fair to good control when used in combination with each other.
- Chemical: Contact GCNR for specific recommendations.

Hoary cress/Whitetop: A perennial plant spreading primarily by root, making control very difficult once established. Routt County and Summit County have populations encroaching into the western part of Grand County. Management methods include:

- Cultural: Prevention by maintaining healthy stands of desirable vegetation.
- Mechanical: Mowing repeatedly throughout the growing season can help to deplete root stores and weaken plant. This in combination with chemical treatment can be very effective.
- Biological: None at this time.
- Chemical: Contact GCNR for specific recommendations.

Houndstongue: A biennial forb with extensive taproot. This plant is toxic to livestock and other grazing wildlife. It reproduces by prolific seed development. The seed sticks to clothing, animal fur, and tires. Management methods include:

- Cultural: Prevention is the key.
- Mechanical: Digging at rosette stage or before seed set is very effective.
- Biological: None approved for use in CO yet. Montana is testing a root weevil, Mogulones cruciger that has shown success in Canada.
- Chemical: Contact GCNR for specific recommendations.

Leafy spurge: A perennial forb that reproduces by seed, but primarily by root. Roots are extensive and deep, with new plants able to emerge from root buds at any depth, makes this plant extremely difficult to eradicate. Management methods include:

- Cultural: Prevention by not disturbing soil; using certified weed free hay; cleaning equipment from other areas before coming onto your property.
- Mechanical: Due to the extensive root system, hand pulling this plant is not a viable option. Mowing will reduce seed production if repeated every 2 to 4 weeks during the growing season, but will provide little long-term control.
- Biological: Both sheep and goats can be effective grazers of leafy spurge. The flea beetles Apthona nigriscutis, A. lacertosa, and A. cyparissiae, are effective especially when combined with grazing and/or herbicides.
- Chemical: Contact GCNR for specific recommendations.

Oxeye daisy: A perennial forb that has taken over many high altitude areas in CO, and Grand County is no exception. Reproduces primarily by root making control very difficult once established. Management methods include:

- Cultural: Prevention, minimize disturbed area. Use certified weed-free hay; equipment cleaning.
- Mechanical: Hand pull small infestations and bag plants, being sure to get the entire root to prevent resprout and increased density.
- Biological: Goats or sheep can be effective in the control of Oxeye daisy. There are no insect biological controls available for Oxeye daisy.
- Chemical: Contact GCNR for specific recommendations.

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 include:

- Cultural: The effectiveness of mowing or cultivation will be increased if perennial grasses are seeded as competitor species. Promote healthy grass stands by using proper irrigation and fertilization techniques and promptly vegetate all disturbed areas.
- Mechanical: Mowing just prior to seed set may reduce overall seed production, but must be repeated several times during the growing season.
- Biological: No insects are known to be effective for controlling this weed.
- Chemical: Contact GCNR for specific recommendations.

Russian knapweed: a creeping perennial that becomes extremely difficult to control once established. Flowers generally pink to lavender and are toxic to horses. Management methods include:

- Cultural: Prevention by minimizing soil disturbance and maintaining healthy stand of vegetation. Use certified weed-free hay.
- Mechanical: Mowing repeatedly in a season can help deplete root reserve, this in combination with herbicide treatment can be very effective.
- Biological: A gall forming nematode, Subanguina picridis, is currently being monitored for effectiveness but is not yet available to the public. For more information, contact the Palisade Insectary of the Colorado Department of Agriculture, 970-464-7916.
- Chemical: Contact GCNR for specific recommendations.

Spotted knapweed: A short-lived perennial or biennial forb that reproduces by seed only. Seed prolifically, up to 40,000 seeds/plant! Management methods include:

- Cultural: Prevention by maintaining vigorous stands of desirable vegetation and minimizing soil disturbance. Using certified weed free hay.
- Mechanical: hand pulling or digging out root and bagging plant that has gone to flower/seed can reduce population.
- Biological: Root and Seed head weevils (Cyphocleonus achates and Larinus minutus) attack the roots and reduce seed production in Spotted and Diffuse

knapweeds. This is an option for large infestations, though optimum results take 3-5 years.
- Chemical: Contact GCNR for specific recommendations.

Wild caraway: Typically a biennial, sometimes a perennial, reproducing by seed only. Found in mountain meadows, hayfields and along ditches and roadsides. Management methods include:

- Cultural: Prevention by maintaining healthy stands of vegetation. Shallow tillage can also be effective, but typical populations are not conducive to this practice.
- Mechanical: Can be cut or pulled prior to seed production. If already in flower, be careful to bag flower/seed heads as they shatter easily.
- Biological: None at this time.
- Chemical: Contact GCNR for specific recommendations.

Yellow toadflax: Perennial forb spreading primarily by extensive root system making control extremely difficult once established. Escaped ornamental sometimes referred to as Butter and Eggs. Management methods include:

- Cultural: Prevention by minimizing soil disturbance, maintaining healthy stands, using certified weed free hay, checking seed packets to be sure this plant is not included.
- Mechanical: Hand pulling or digging is not recommended for eradication of Yellow toadflax because it's unlikely that the entire root will be excavated and a new plant is likely to occur. A single new plant might be an exception. Tillage is not recommended due to the creeping root system.
- Biological: Calophasia lunula, a predatory noctuid moth, feeds on leaves and flowers of Yellow toadflax. Eteobalea intermediella, a root boring moth and Mecinus janthinus a stem boring weevil are also available.
- Chemical: Contact GCNR for specific recommendations.

LIST C

Common Mullein: A biennial forb that is common along roadsides and disturbed areas. Reproduces by seed only. It is present in fair amount throughout the County and the GCNR treats populations to prevent further spread. Management methods include:

- Cultural: Prevention by minimizing soil disturbance and early detection.
- Mechanical: Hand pulling or digging is an effective method of control if done prior to seed set.
- Biological: a curculionid weevil, Gymnaetron tetrum, has been released in the US for Mullein control. Currently it is not available from the CO insectary.
- Chemical: Contact GCNR for specific recommendations.

Downy Brome/Cheatgrass: An annual or winter annual grass found in any disturbed area or roadside. Very invasive and can outcompete native vegetation and creates high fire danger in rangelands and roadsides. It is present in many areas of the County; though

GCNR does not have a good idea of how much is present, we have been discussing options to begin a management program for this species. Integrating efforts with BLM and USFS will be critical. Management methods include:

- Cultural: Prevention by minimizing soil disturbance and early detection/eradication.
- Mechanical: Hand pulling can be effective if infestation is small enough and prior to seed set. Mowing is not recommended as plants cut before seed set will produce new stems and seeds below mower height.
- Biological: Grazing can be effective if timed when green and before seed set. Known areas of this species do not allow for grazing as they are primarily on roadsides and would create a hazard for the travelling public.
- Chemical: Contact GCNR for specific recommendations.

Field Bindweed: Deep rooted perennial forb that spreads prolifically by root and stolons. It is an aggressive invader that can take over very quickly. Bindweed has been a sporadic species that seems to be on the rise in Grand County and GCNR has been treating to prevent further spread since 2009. Management methods include:

- Cultural: Prevention by minimizing soil disturbance and cleaning equipment before moving to another area.
- Mechanical: NOT recommended as ANY plant part left behind in or on the soil can re-root.
- Biological: There are two species of insect available for Bindweed suppression. The first is a mite, Aceria malherbae, which stunts the growth and seed production of the plant. The second is a moth, Tyta luctuosa, which has only been able to survive in the Grand Valley near Grand Junction but NOWHERE else in the country. Not a viable option for Grand County.
- Chemical: Contact GCNR for specific recommendations.

Halogeton: An annual, fleshy forb that likes dry, alkaline soils and is toxic to livestock. Management methods include:

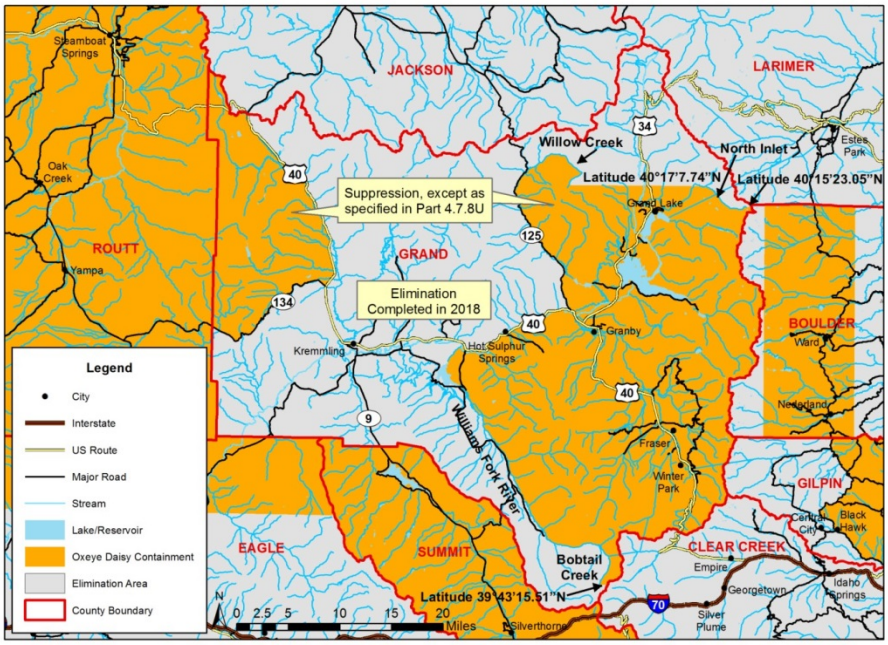
- Cultural: Prevention by minimizing soil disturbance and revegetation when there is disturbance.
- Mechanical: Hand pulling is effective if a small infestation.
- Biological: None in US at this time.
- Chemical: Contact GCNR for specific recommendations.

Watch List: Intended to encourage the identification and reporting of these species to the State Commissioner of Agriculture in order to facilitate the collection of information to assist in determining if a species warrants listing in Colorado. This list changes every few years and as such we will not list species in this document. Please refer to the CDA website for current information.

APPENDIX B
NOXIOUS WEED CONTROL REQUIREMENTS MAPS & TABLES

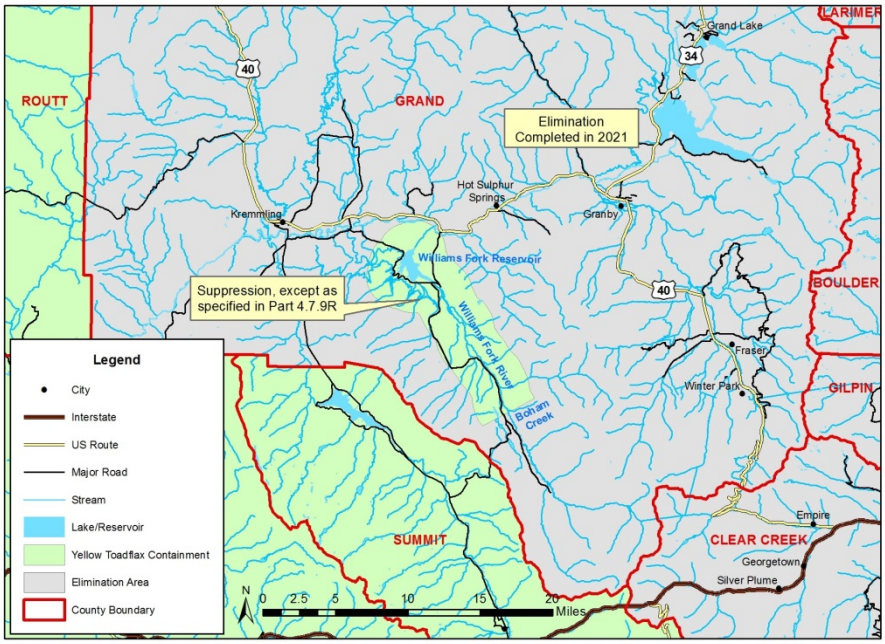
Oxeye daisy *(Leucanthemum vulgare)* Figure 7.09

Grand County



Yellow toadflax *(Linaria vulgaris)* Figure 8.07

Grand County



Houndstongue *(Cynoglossum offinale)* Figure 9.05

Grand County

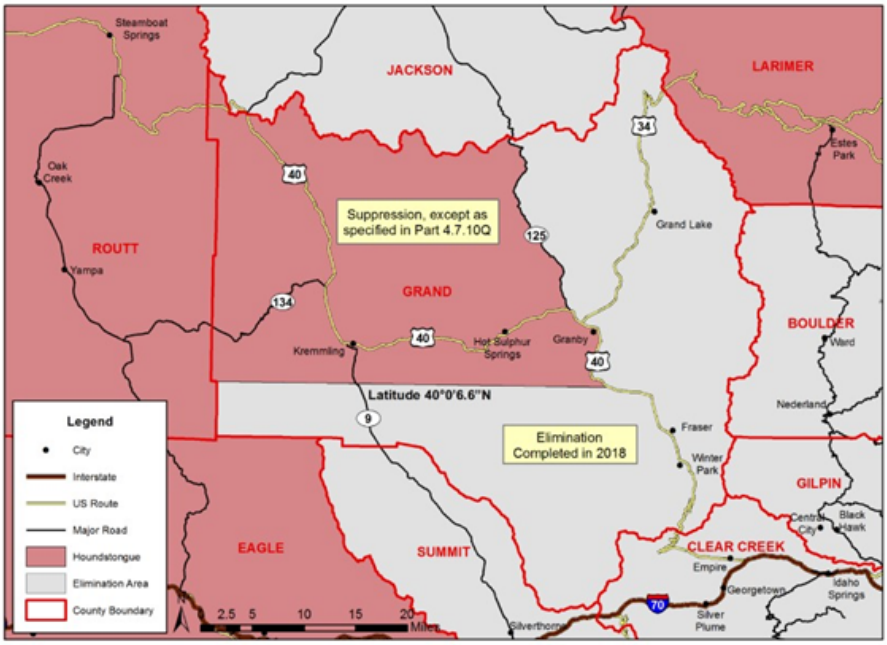


Table 1. State Reported Species and Acres for Grand County

Colorado Noxious Weed Summary Statistics & Management Plans

Grand County Species	Infested Acres	Statewide Infested Acres	# of Counties Impacted	Management Plan (View Containment Map)	Data Collection Year
Salt cedar	0	27,963	46	Eliminate by 2019	2014
Wild caraway	0	114	8	Eliminate by 2016	2011
Yellow nutsedge	0	15,049	12	Eliminate by 2017	2012
Plumeless thistle	1	1,182	13	Eliminate by 2018	2013
Russian knapweed	1	55,719	52	Eliminate by 2019	2014
Scotch thistle	1	56,510	38	Eliminate by 2020	2009/2015
Common tansy	2	473	19	Eliminate by 2016	2011
Dalmatian toadflax	2	18,360	32	Eliminate by 2019	2014
Dames rocket	2	175	27	Eliminate by 2014	2010
Perennial pepperweed	2	21,739	39	Eliminate by 2019	2014
Black henbane	7	206	18	Eliminate by 2020	2013
Spotted knapweed	11	4,921	40	Eliminate by 2018	2013
Diffuse knapweed	14	68,968	45	Eliminate by 2021	2014
Bull thistle	44	6,899	44	Suppress	2015
Leafy spurge	66	39,577	48	Eliminate by 2021	2014
Hoary cress	69	30,044	54	Eliminate by 2021	2014
Yellow toadflax	345	33,532	46	Contain: Figure 8.07	2014
Canada thistle	845	129,572	55	Suppress	2015
Houndstongue	961	73,598	41	Contain: Figure 9.04	2013
Oxeye daisy	963	15,806	38	Contain: Figure 7.08	2013
Musk thistle	2,361	87,431	56	Eliminate by 2020	2015
Chamomiles**	7,600	18,594	26	Suppress	2011
	13,297	706,432			
Data Updated: 4/1/2017	Does not necessarily include USFS and State Land acres				

This table represents the acres reported to the State by Grand County Natural Resources. It does not necessarily include all acres and species treated by USFS, Colorado Parks and Wildlife or State Land Board property. The three species at the top of the list, with zero acres reported represent species that are present or have been present but acreage has not been mapped or updated since the State CDA adopted a reporting system. Yellow nutsedge is not known to be in the County but it has not been searched for either.