

# Noxious Weed Management on Douglas County Roads and Open Space

Douglas County is heavily invested in efforts to control noxious weed infestations on all county property. Intensive management programs are consistently utilized to prevent, eradicate, contain, and suppress these non-native plants. Noxious weeds are aggressive plants that are not native to our area and require close management to produce effective results.

Since 1994, the Douglas County Road System has been systematically sprayed for noxious weeds. Unfortunately, noxious weed seeds last for 10-100 years depending on the species of weed encountered. Therefore, we continue to vigorously seek and destroy any infestations we find on our road system.

In addition, since the fall of 2009, we have been coordinating with the Open Space staff to systematically treat noxious weeds on the 13,000 acres they manage for the county. Maps are available on the Douglas County website at [www.douglas.co.us/weedmanagement/Noxious Weed Information.html](http://www.douglas.co.us/weedmanagement/Noxious_Weed_Information.html)

## **In Colorado, priorities for control of the following noxious weeds have been established:**

### **A-list: weeds to be eradicated when found are:**

Purple loosestrife - ( <i>Lythrum salicaria</i> )	Orange hawkweed - ( <i>Hieracium aurantiacum</i> )
Yellow starthistle - ( <i>Centaurea solstitialis</i> )	Myrtle spurge - ( <i>Euphorbia myrsinites</i> )
Dyer's woad - ( <i>Isatis tinctoria</i> )	Mediterranean sage - ( <i>Salvia aethiopsis</i> )
Medusahead - ( <i>Taeniatherum caput-medusae</i> )	Rush skeletonweed - ( <i>Chondrilla juncea</i> )
Squarrose knapweed - ( <i>Centaurea virgata</i> )	Meadow knapweed - ( <i>Centaurea pratensis</i> )
Camelthorn - ( <i>Alhagi pseudalhagi</i> )	Common crupina - ( <i>Crupina vulgaris</i> )
African rue - ( <i>Peganum harmala</i> )	Cypress spurge - ( <i>Euphorbia cyparissias</i> )
Tansy ragwort - ( <i>Senecio jacobaea</i> )	Hydrilla - ( <i>Hydrilla verticillata</i> )
Giant salvinia - ( <i>Salvinia molesta</i> )	

### **B-list: weeds also to be eradicated when found are:**

Absinth wormwood - ( <i>Artemisia absinthium</i> )	Spotted knapweed - ( <i>Centaurea biebersteinii</i> )
Russian knapweed - ( <i>Acroptilon repens</i> )	Plumeless thistle - ( <i>Carduus acanthoides</i> )
Bull thistle - ( <i>Cirsium vulgare</i> )	Hoary cress - ( <i>Cardaria draba</i> )
Perennial pepperweed - ( <i>lepidium latifolium</i> )	Chinese clematis - ( <i>Clematis orientalis</i> )
Salt cedar - ( <i>Tamarix chinensis, T. parviflora, T. ramosissima</i> )	

### **B-list: weeds to be contained or controlled when found are:**

Dalmatian toadflax - ( <i>Linaria dalmatica, L. genistifolia</i> )	Scotch thistle - ( <i>Oniopordum acanthium, O. tauricum</i> )
Musk thistle - ( <i>Carduus nutans</i> )	Diffuse knapweed - ( <i>Centaurea diffusa</i> )
Yellow toadflax - ( <i>Linaria vulgaris</i> )	Leafy spurge - ( <i>Euphorbia esula</i> )
Canada thistle - ( <i>Cirsium arvense</i> )	Houndstongue - ( <i>Cynoglossum officinale</i> )

### **B-list weeds to be monitored and suppressed as funds are available:**

Black henbane - ( <i>Hyoscyamus niger</i> )	Bouncingbet - ( <i>Saponaria officinalis</i> )
Common tansy - ( <i>Tanacetum vulgare</i> )	Common teasel - ( <i>Dipsacus fullonum</i> )
Corn chamomile - ( <i>Anthemis arvensis</i> )	Cutleaf teasel - ( <i>Dipsacus laciniatus</i> )
Dame's rocket - ( <i>Hesperis matronalis</i> )	Eurasian watermilfoil - ( <i>Myriophyllum spicatum</i> )
Mayweed chamomile - ( <i>Anthemis cotula</i> )	Moth mullein - ( <i>Verbascum blattaria</i> )
Oxeye daisy - ( <i>Chrysanthemum leucanthemum</i> )	Quackgrass - ( <i>Elytrigia repens</i> )
Russian-olive - ( <i>Elaeagnus angustifolia</i> )	Scentless chamomile - ( <i>Matricaria perforata</i> )
Spurred anoda - ( <i>Anoda cristata</i> )	Sulfur cinquefoil - ( <i>Potentilla recta</i> )

Venice mallow - (*Hibiscus trionum*)  
Yellow nutsedge - (*Cyperus esculentus*)

Wild caraway - (*Carum carvi*)

**When any of the state declared noxious weed species listed above are found on Douglas County owned rights-of-way and open space, the following control methods and strategies are utilized.**

**Prevention, Eradication, and Control** – There are three general weed management strategies we use to control noxious weed infestations on county land. Prevention using good cultural practices is the first line of defense to keep weeds from growing in an area. Strategies to totally eradicate new invasive species are implemented when a new infestation is first discovered. The most effective control strategy we use is an integrated weed management technique that includes a combination of prevention, cultural control, biological control, mechanical control, and herbicidal control. Best management practices include at least two of these methods.

**Grass Seeding** - After we have reconstructed or improved a county road or open space trailhead, we reseed it with competitive grasses and mulch with noxious weed seed free straw to reduce the chance of noxious weed infestations coming into an area. We have been asked, “If there are already noxious weeds in a given area, why does the county go to the extra expense of using certified seed and mulch?” The answer is uncertified seed or mulch material may contain additional weed species that might be introduced into the area. Douglas County personnel plant grasses between October 1st - April 15<sup>th</sup> to achieve success in controlling new weed growth.

**Mowing** - Each year Douglas County crews mow roadsides to improve safety for motorists in the spring. In the late summer and fall, the county mows from fence to fence to reduce snow drifts that might form from tall grass acting as a snow fence. This mowing activity also helps to reduce weed seed production. In open space we mow down the old stalks from the previous year’s weed growth. This helps to slow the spread of noxious weeds such as scotch thistle, diffuse knapweed, and common mullein and allow for more complete control of new seedlings when sprayed in the spring.

**Biological Control** – Whenever available, the county coordinates the release of beneficial insects, nematodes, and mites with the Colorado Department of Agriculture to control noxious weeds on our open space land. There have been releases, since 1991 on diffuse knapweed, leafy spurge, musk thistle, yellow toadflax, and bindweed with some success. At best, biological controls work only 30% of the time even after a 3 - 5 year establishment period. The Open Space staff is doing some experimentation to determine what grazing techniques will help reduce weed infestations on their lands.

**The following noxious weed species are occasionally found on Douglas County owned rights-of-way and open space. Strategies and control methods for each of these species are identified below:**

**A-list and B-list Noxious Weeds Eradicated when found on Douglas County property**

Intensive eradication methods are implemented for the following noxious weeds occasionally found on Douglas County properties:

Purple loosestrife - (*Lythrum salicaria*)

Orange hawkweed - (*Hieracium aurantiacum*)

Myrtle spurge - ( <i>Euphorbia myrsinites</i> )	Absinth wormwood - ( <i>Artemisia absinthium</i> )
Spotted knapweed - ( <i>Centaria biebersteinii</i> )	Russian knapweed - ( <i>Acroptilon repens</i> )
Plumeless thistle - ( <i>Carduus acanthoides</i> )	Bull thistle - ( <i>Cirsium vulgare</i> )
Hoary cress - ( <i>Cardaria draba</i> )	Perennial pepperweed - ( <i>lepidium latifolium</i> )
Chinese clematis - ( <i>Clematis orientalis</i> )	Salt cedar - ( <i>Tamarix chinensis, T. parviflora, and T. ramosissima</i> )

The high priority weeds listed above are eradicated and eliminated whenever and wherever found on county properties. Since each site is different and these weeds are less frequently encountered, we evaluate the situation and use the herbicide best suited for their elimination.

**B-list Noxious Weeds Contained or Controlled when found on Douglas County property**

A variety of treatment methods are used to control and suppress growth of the following plant species when found on Douglas County properties:

Dalmatian toadflax - ( <i>Linaria dalmatica &amp; L. genistifolia</i> )	Musk thistle - ( <i>Carduus nutans</i> )
Scotch thistle - ( <i>Oniopordum acanthium &amp; O. tauricum</i> )	Diffuse knapweed - ( <i>Centaurea diffusa</i> )
Yellow toadflax - ( <i>Linaria vulgaris</i> )	Leafy spurge - ( <i>Euphorbia esula</i> )
Canada thistle - ( <i>Cirsium arvense</i> )	Houndstongue - ( <i>Cynoglossum officinale</i> )

Common noxious weeds found on Douglas County property are controlled to the best of our ability each year utilizing the following control methods:

**DALMATION TOADFLAX:**

**Herbicide treatments:**

Adjacent to water, a shallow water table, or in the root zone of desirable trees, we use Panoramic/Plateau at 12 oz/acre (in the fall only) or Telar at 1.33 oz/acre + Edict at 2 oz/acre.

In marshy areas we use Rodeo at 1 gallon/acre with aquatic surfactants.

In non-sensitive rangeland and roadside areas we use Tordon 22K at 1 qt/acre + Telar at 1 oz/acre + Edict at 1 oz/acre.

**Biological control:**

A leaf defoliating moth, a stem-mining weevil, and a seed-feeding weevil have been introduced to attack these weeds. Unfortunately, none of these insects have proven to be effective in Douglas County.

**SCOTCH THISTLE:**

**Herbicide treatments by site are:**

Adjacent to water, a shallow water table, or in the root zone of desirable trees, we use Chaparral at 2.5 oz/acre, Telar at .5-1 oz/acre, or Milestone at 7 oz/acre.

In marshy areas we use aquatic labeled 2,4-D at 2 lb/acre in the spring and fall (repeated for 3 years), or Rodeo at 4.5 pt/acre.

In non-sensitive rangeland and roadside areas we use in the fall – Tordon 22K at 1 pt/acre; spring – Banvel at 1 pt/acre; 2,4-D amine at 1 lb/acre + Tordon 22K at .5 pt/acre; or Banvel at 1 pt/acre.

For scotch thistle with bolted elongated flower stalks we use 2,4-D at 1 lb/acre with Escort at .25 oz/acre or Telar at .5 oz/per acre. At early bloom stage we increase Escort to .5 oz/acre or Telar to 1 oz/acre.

**Biological control:** Goats are the only control currently listed, effectiveness is unknown.

**MUSK THISTLE:**

**Herbicide treatments by site are:**

Adjacent to water, a shallow water table, or in the root zone of desirable trees we use Chaparral at 2.5 oz/acre, Telar at .5-1 oz/acre (non-cropland), or Milestone at 5 oz/acre.

In marshy areas we use 2# aquatic labeled 2,4-D spring and fall (repeated for 3 years), or Rodeo 4.5 pt/acre.

In non-sensitive rangeland and roadside areas we use in the fall - Tordon 22K at 1 pt/acre; spring - Banvel at 1 pt/acre; 2,4-D amine at 1 lb/acre + Tordon 22K at .5 pt/acre; or Banvel at 1 pt/acre.

For musk thistle with bolted elongated flower stalks we use 2,4-D at 1 lb/acre with Escort at .25 oz/acre or Telar at .5 oz/per acre. At early bloom stage we increase Escort to .5 oz/acre or Telar to 1 oz/acre.

**Biological control:**

Head weevils have been released to control this weed and have spread over the county. Rosette weevils have been released since 1991 and were very effective when introduced in combination with the head weevil. The rosette weevil has not spread throughout the county as well as the head weevil.

**DIFFUSE KNAPWEED:****Herbicide treatments by site are:**

Adjacent to water, a shallow water table, or in the root zone of desirable trees we use Chaparral at 3 oz/acre, or Milestone at 5 oz/acre.

In marshy areas we use aquatic labeled 2,4-D at 2 lb/acre in the spring and fall (repeated for 3 years), or Rodeo at 4.5 pt/acre.

In non-sensitive rangeland and roadside areas we use Tordon 22K 1 pt/acre, or tank mixes of Banvel + Tordon at ½ pt/acre + ½ pt/acre, or tank mixes of 2,4-D amine at 1 lb/acre + Tordon at 1 pt/acre

For knapweed with bolted elongated flower stalks we use Curtail at 1 qt/acre and Escort at .5 oz/ acre.

**Biological control:**

Seed head gall flies attack the seed heads of diffuse knapweed and have been released in large numbers throughout the front-range since 1990. Other insects have been released, but to date, year-in and year-out weed population reduction has not occurred.

**LEAFY SPURGE:****Herbicide treatments by site are:**

Adjacent to water, a shallow water table, or in the root zone of desirable trees we use Panoramic /Plateau at 12 oz/acre in the fall only.

In marshy areas we use aquatic labeled 2,4-D at 2 lb/acre in the spring and fall (repeated for 5 years), or Rodeo at 4.5 pt/acre.

In non-sensitive rangeland and roadside areas we use Tordon 22K at 1 qt/acre or Banvel at 2 qt/acre or 2,4-D amine at 1 lb/acre + Tordon 22K at 1 qt/acre.

**Biological control:**

Flea beetles comprise the majority of the efforts to control this weed via beneficial insects. Available in 3 species depending on the site, they are successful only 1/3 of the time.

**CANADA THISTLE:**

**Herbicide treatments by site are:**

Adjacent to water, a shallow water table, or in the root zone of desirable trees we use Chaparral at 2.5 oz/acre, Milestone at 7 oz/acre, Telar at .5-1 oz/acre or Milestone and Telar combined.

In marshy areas we use aquatic labeled 2,4-D at 2 lb/acre in the spring and fall (repeated for 5 years), or Rodeo at 4.5 pt/acre.

In non-sensitive rangeland and roadside areas we use Tordon 22K at 1 qt/acre or Banvel at 2qt/acre; or 1oz of Escort at 1 oz/acre (for spot spraying), or 2,4-D amine at 1 lb/acre + Tordon22K at 1qt/acre.

**Biological control:**

Stem mining weevils and stem and shoot gall flies have been released in Colorado. Unfortunately, none of these have proven consistently effective.

**HOUNDSTONGUE****Herbicide treatments by site are:**

Adjacent to water, a shallow water table, or in the root zone of desirable trees we use Chaparral at 3 oz/acre, or Telar + Escort at 1oz/acre each.

In marshy areas we use aquatic labeled 2,4-D at 2 lb/acre in the spring and fall (repeated for 3 years), or Rodeo 4.5 pt/acre.

In non-sensitive rangeland and roadside areas we use 2,4-D amine at 1 lb/acre + Tordon 22K at 1pt/acre

**Biological control:** Goats are the only control currently listed, effectiveness is unknown.

**General Program Information**

Since 1994, Douglas County has hired a contractor to spray the main rural roadsides and large open space areas for noxious weeds annually. In addition to normal open space, there exists additional county land dedicated for future schools, parks, and other purposes. There are about 500 of these parcels which vary from .2 acres to 60 acres in size. These sites are also sprayed by contractors each year.

We have achieved enough success that we are now at a point where county staff's primary mission is to seek and destroy new noxious weed infestations as they are found on county property. Occasionally, plants survive near fences as applicators attempt to spray close to property lines or as Canada thistle and yellow toadflax bloom late and are not always visible. But overall, county property has very few noxious weeds. Still, as seed survives for years and noxious weeds often have extensive root systems, continued vigilance will be required for the future.

To aid in our mission, the county utilizes a 725 gallon roadside sprayer primarily in the densely populated areas of the county. A 100 gallon unit and backpack sprayers are utilized in off-road areas. A 1,000 gallon trailer mounted sprayer is used to spray open space parcels and a truck mounted 300 gallon sprayer used for roadway and open space parcel spraying. We have four staff members that spray full-time in the growing season, weather permitting.

Sometimes new infestations appear or plants get missed. When this happens, we invite the public to call Douglas County at 303-660-7480 so we can address any problem areas.