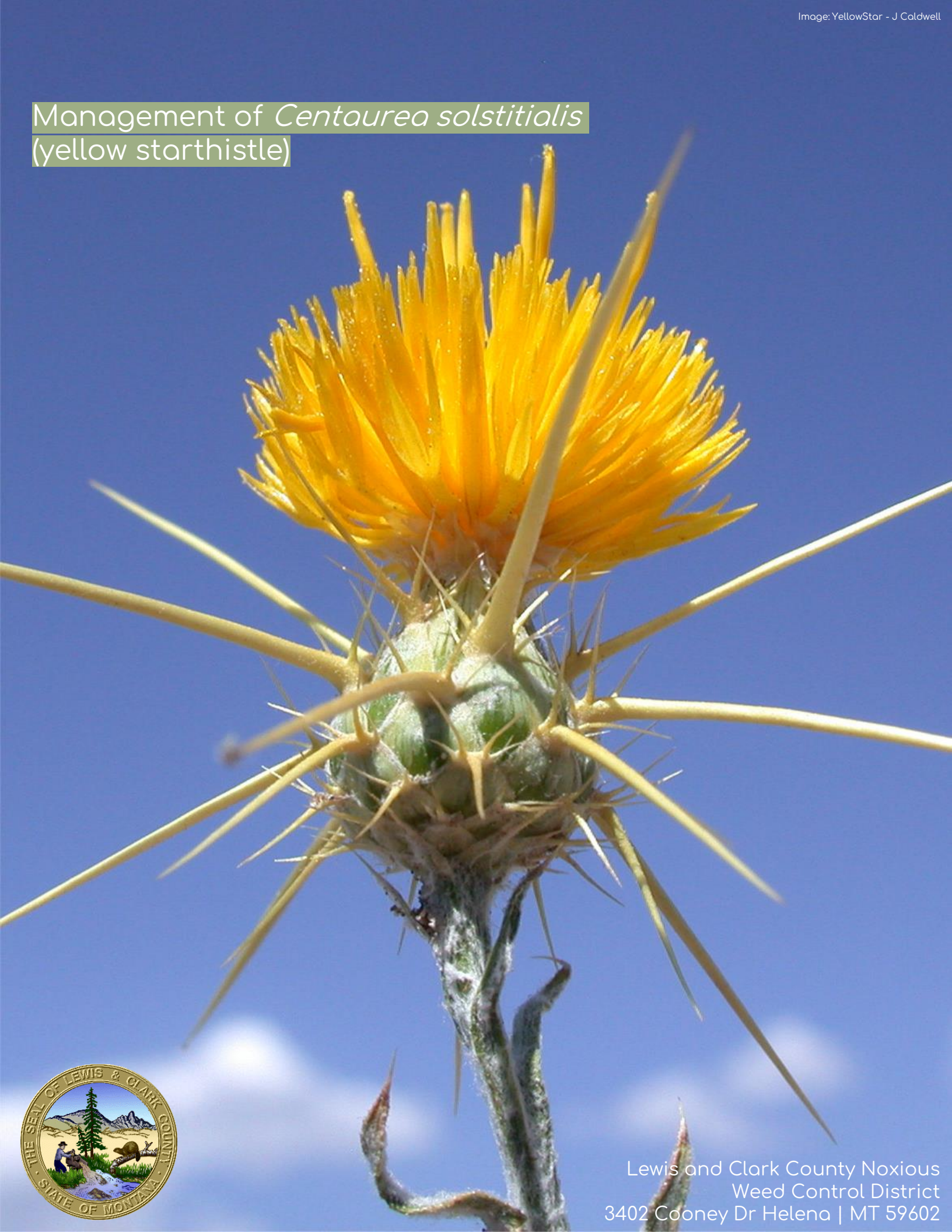

Image: YellowStar - J Caldwell

Management of *Centaurea solstitialis* (yellow starthistle)

Lewis and Clark County Noxious
Weed Control District
3402 Cooney Dr Helena | MT 59602

Montana Priority 1A Noxious Weed

Plant Description

Centaurea solstitialis, yellow starthistle, is a simple to bushy winter annual, that is occasionally a biennial. Like its name suggests, it has spiny yellow flowerheads that are solitary on the stem tips. The spines project outwards in a star-shape. The stems are stiff, wiry, erect, branched, and grow 10-80 cm tall. The stem leaves are entire, linear, have short petioles, and thin wooly hairs. Yellow starthistle reproduces only by seed, with most seeds having plumes to disperse by the wind.

Mechanical Control

Hand removal of small infestations before bloom can provide effective control if all above-ground plant material is removed. Bag and dispose of all plant material. Mow at the correct growth stage to achieve control. Mowing too early, before seed heads reach the spiny stage, or too late, after seed set, increases infestations. Tillage can provide effective control.

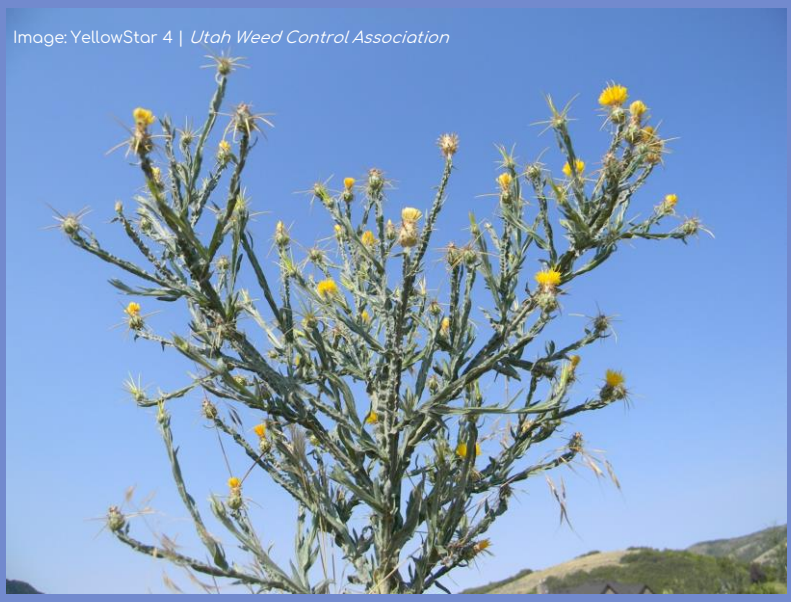

Image: YellowStar 4 | *Utah Weed Control Association*

Biological Control

Several biocontrol agents are established in the western United States, but with limited success. These are: *Bangasternus orientalis* (seed-head weevil), *Larinus curtis* (flower weevil), *Eustenopus villosus* (hairy weevil), *Urophora sirunaseva* (seed-head fly), and *Chaetorellia succinea* (false peacock fly), all of which attack the flower heads. The pathogen *Puccinia jaceae* (Mediterranean rust fungus) is also used to stress plants. It has been released but shown little overall impact on population control of yellow starthistle.

Image: *S. Dewey, Utah State University, Bugwood.org*

Cultural Control

High intensity grazing by livestock before the spiny heads are produced is an effective integrated management method. Controlled burning is effective if timed to coincide with the early flowering stage. This is because fire has little impact on the seeds. Revegetation is important. Introduce desirable species, especially in areas with disturbance. Plant competition helps prevent the invasion of new and existing unwanted vegetation.

Recommended Treatment Timeline			
Control Type	Spring	Summer	Fall
Mechanical	Hand pull, bag and dispose, Mow, Till	Hand pull, bag and trash, Mow, Till	Till
Biological	Contact local Noxious Weed District		
Cultural	Graze, controlled burn, revegetate	Graze	Revegetate
Chemical	Foliar spray	Foliar spray	Foliar spray

Chemical Control

Follow the directions on herbicide labels, the label is the law. Calibrate equipment for accurate application. Commonly used herbicides are listed below, order of listing is not reflective of efficacy or recommendation.

Personal protective equipment must be worn when applying herbicides. Only apply herbicides in appropriate weather conditions.[a]

Use appropriate surfactants as listed in the product label.[a]

[a]Read and follow all instructions in the label of the herbicide.

Chemical Control Table

Use Site	Herbicide (Active Ingredient - Trademark)	Pre-emergent or Soil Residual Activity	Post-emergent (Foliar Applied)	Large Sprayer Rate per Acre	Spot Treatment Rate for Every 1 Gallon of Water	Restricted Entry Interval (Hours)	Application Notes and Environmental Advisories*
Turfgrass	2,4-D - Several products available	no	yes	1 - 1.5 pt for small rosettes (0.48 to 0.72 lb a.e./A); 2 - 4 pt (0.95 to 1.9 lb a.e./A) for larger plants	Consult label	48	Not the most effective treatment. Apply from rosette to beginning of bolting, before flowering.
	2,4-D Amine, Dicamba, MCPA – Gordon's Trimec[b]	no	yes	Consult label	Consult label	48	Do not broadcast apply when air temperatures exceed 90°F. Apply before the flowering stage to prevent seed production; best applied to young plants from the rosette to bolting stage. Toxic to fish and aquatic invertebrates. Groundwater and surface water advisories.
Rangeland, Permanent Grass Pasture, CRP, Natural Areas	Aminopyralid + metsulfuron methyl - Chaparral[b]	no	yes	2.5 - 3.3 oz	0.7 – 1 gram	48	Most effective when applied during the seedling to mid-rosette stage. Use a higher rate for bolting.
Forest	Clopyralid - Transline[b], Sonora[b]	yes	yes	0.25 - 0.67 pt	Consult label	12	Use a lower rate for seedling to rosette stage, and a higher rate for bolted plants.
Forest Use Sites, Non-Cropland Areas, ROW, Grazed Areas on Listed Use Sites	Triclopyr - Garlon 3A[b], Garlon 4 Ultra[b]	no	yes	1.33 pt garlon 3A or 1 pt Garlon 4 Ultra for seedlings, 4 pt Garlon 3A or 3 pt Garlon 4 Ultra for larger plants	Consult label	12	Apply during seedling to bolt stage. Garlon 4 Ultra is a low volatile ester formulation, potential volatilization can cause off-target damage.
Rangeland, Non-Cropland, ROW	Aminopyralid -Milestone[b]	yes	yes	3 - 5 oz	Calibration necessary, consult label for conversion	48	Most effective when applied during the seedling to mid-rosette stage. Use a higher rate for bolting.
	Aminopyralid + metsulfuron methyl - Opensight[b]	no	yes	2.5 - 3.3 oz	0.7 – 1 gram	48	Most effective when applied during the seedling to mid-rosette stage. Use a higher rate for bolting.
Ornamentals	Glyphosate - Roundup ProMax[b]	no	yes	1.33 - 2.67 qt (Roundup ProMax[b])	1 - 2% v/v solution (Roundup ProMax[b])	4	**Nonselective.** Apply when plant is rapidly growing from bolting to the beginning of flowering.

[b]Lewis and Clark County Noxious Weed Control Division does not endorse any trademarks or commercial names listed above.

This table summarizes selected registered use sites and is not intended to represent all approved uses. Pesticide applicability, use sites, and restrictions vary by product and formulation. Applicators must consult and follow the most current product label, which takes precedence over this document.

References

Alligare. *Sonora.* U.S. Environmental Protection Agency Registration No. 81927-69.

Bayer Cropscience. (2020). *Roundup ProMax.* U.S. Environmental Protection Agency Registration No. 524-579.

Corteva Agriscience. (2023). *Chaparral.* U.S. Environmental Protection Agency Registration No. 62719-597.

Corteva Agriscience. (2023). *Garlon 4 Ultra.* U.S. Environmental Protection Agency Registration No. 62719-527

Corteva Agriscience. (2023). *Milestone.* U.S. Environmental Protection Agency Registration No. 62719-519.

Corteva Agriscience. (2023). *Opensight.* U.S. Environmental Protection Agency Registration No. 62719-597.

Corteva Agriscience. (2025). *Tordon* 22k. U.S. Environmental Protection Agency Registration No. 62719-6.

Corteva Agriscience. (2022). *Transline.* U.S. Environmental Protection Agency Registration No. 62719-259.

Ditomaso, J. M., Kyser, G. B., Oneto, S. R., Wilson, R. G., Orloff, S. B., Anderson, L. W., Wright, S. D., Roncoroni, J. A., Miller, T. L., Prather, T. S., Ransom, C. V., Kenneth George Beck, Duncan, C. A., Wilson, K. A., J Jeremiah Mann, Department, Davis., & Weed, Davis. (2013). *Weed control in natural areas in the Western United States.* University Of California Weed Research And Information Center. 62719-259.

Dow AgroSciences. (2016). *Garlon 3A.* U.S. Environmental Protection Agency Registration No. 62719-37.

PBI Gordon Corporation. Trimec Classic BroadleafHerbicide. U.S. Environmental Protection Agency Registration No. 2217-543.

Yellow Starthistle — Centaurea solstitialis. Montana Field Guide. Montana Natural Heritage Program. https://FieldGuide.mt.gov/speciesDetail.aspx?elcode=PDAST1Y0S0

Lewis and Clark County Noxious
Weed Control District
3402 Cooney Dr Helena | MT 59602