Troublesome Weeds of New Mexico

Mark Renz and Frank Sholedice

College of
Agriculture and Home Economics
Cooperative Extension Service

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by

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New Mexico State University
College of Agriculture and Home Economics
Cooperative Extension Service
MSC 3AE
P.O. Box 30003
Las Cruces, NM 88003-8003

Table of Contents

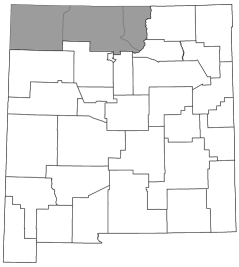
Invasive weeds pose a serious and increasing threat to New Mexico's environment and economy. These weeds are tough competitors and can spread rapidly, creating large stands that can persist for many years in the environment resulting in several negative impacts to our ecosystem. While these impacts are species specific, weeds have been documented to cause the following: displacement of native plants and animals, increased fire danger, increased soil erosion, increased flood severity, increased soil salinity, and decreased water quality. In agricultural and rangeland settings, these weeds can cause severe economic impacts by decreasing crop yields and lowering available forage for range animals, resulting in a decrease in livestock health.

This booklet focuses on helping land managers, farmers, homeowners, recreationists, and others identify troublesome weeds found in New Mexico, because early identification is critical in order to effectively manage weeds. Forty-two plant species are included in this booklet with brief descriptions, photographs, information on what areas they invade, where they are currently located in New Mexico, and some general information on management. We urge readers to consult other resources and local experts to help in determining the most appropriate management methods for your area. Early detection and rapid response to new infestations can save many dollars and help maintain the health, diversity, and functionality of our ecosystem.

We would like to express our gratitude to Dr. Joseph M. DiTomaso and Evelyn A. Healy for allowing us the use of their forthcoming book Weeds of California and Other Western States. Their detailed and extensive book was invaluable in the preparation of this booklet. We would also like to thank Ken Boykin from the New Mexico Cooperative Fish and Wildlife Research Unit for creating the maps of weed infestations for this booklet. Finally, we would like to thank both New Mexico's State Forestry and Department of Agriculture, as they were both critical partners that assisted in the development of this booklet.

Black henbane / *Hyoscyamus niger*

Black henbane / *Hyoscyamus niger*



Annual or biennial that infests disturbed, open areas such as fields, roadsides, and waste areas; grows best in sandy, well drained soils. All parts of the plant are toxic to humans and livestock if ingested, and it is often described as having a foul odor.

Also Known As: Cassilata, henbell, insane root, Jupiter's bean

Stems/Leaves: Stems (1-3 ft. tall) have some branching and are densely covered with long hairs; leaves (2-8 in. long, up to 6 in. wide) alternate, gray-green, oblong or lanceolate, densely covered with sticky hairs, with toothed or lobed margins

Flowers: Five fused petals (0.8-1.2 in. long) are yellow-green in color with conspicuous purple veins and a purple throat; seeds found in green, oblong pods (0.5-1.2 in. long) that are covered with long hairs, with an opening at one end that resembles a five-pointed crown

Roots: Taproot

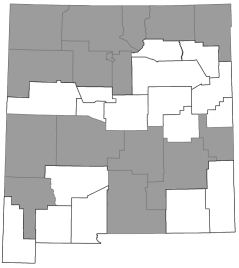
Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts

- Physical removal and mowing are effective if performed before seeds are produced
- Burning can be used to kill plants bearing seed
- Herbicides are effective

Bull thistle / *Cirsium vulgare*

Bull thistle / *Cirsium vulgare*



Biennial (perennial under some conditions) that infests disturbed areas such as ditches, roadsides, streams, and fences.

Also Known As: Bur thistle, common thistle, spear thistle

Stems/Leaves: Several to many branches (1-6 ft. tall); stems and shoots have broad, prickly wings and some fine hairs; leaves (3-12 in. long) are dark green, lobed or toothed, often hairy, with spines (0.2-0.6 in. long) along the margins; stem leaves are more lobed and spiny than basal leaves

Flowers: Flower heads (1.5-2 in. diameter, 1-2 in. long) found at end of each branch, gumdrop shaped or spherical, often covered with fine, cobweb-like hairs; flowers are purple, rarely white; below flowers are many long, stiff, yellow or green spiny bracts (1-1.5 in. long)

Roots: Taproot

Reproduction: Seed; successful management prevents seed production/spread

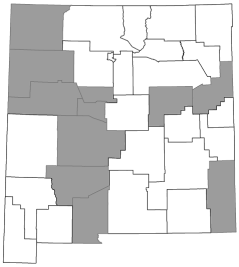
Management Do's and Don'ts

- Proper identification is important – can be confused with native thistles like endangered Sacramento mountain thistle
- Mechanical removal should cut roots below soil surface and remove stems before flowering
- Herbicides are effective
- DO NOT mow during/after flowering to prevent seed dispersal
- DO NOT use fire – it creates favorable conditions for growth

Camelthorn / *Alhagi maurorum*

Camelthorn / *Alhagi maurorum*

Herbaceous perennial that infests a wide range of areas, particularly semi-arid areas along rivers and floodplains where plants communities are degraded, as well as disturbed areas such as roadsides, ditches, and fields.



Also Known As:
Alhagi pseudoalhagi

Stems/Leaves: Multiple green stems (1-4 ft. tall) with fine branching; mature stems glabrous; narrow to oblong leaves (<1 in. long) alternate; stems and branches end in thorny spines (0.5-1.0 in. long)

Flowers: Pea-like flowers with pink, purple, or white petals (0.3-0.4 in. long) found on short racemes of 1-8 flowers; produces reddish brown fruit pods (0.4-1.2 in. long) with distinct restrictions around seeds

Roots: Extensive creeping perennial root system; semi-woody

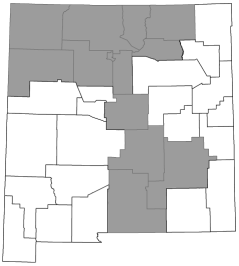
Reproduction: Vegetative or seed reproduction; root reproduction is most common, though seeds can remain viable for years

Management Do's and Don'ts
- Prevention and maintenance of a healthy plant community are the best management methods
- Hand removal is effective if most of the root system can be removed
- Herbicides are effective
- Mechanical removal techniques spread root fragments and are ineffective

Canada thistle / *Cirsium arvense*

Canada thistle / *Cirsium arvense*

Perennial that infests disturbed sites such as roadsides and open fields, as well as hillsides, open forests, pastures, rangeland, crop fields, stream banks, and other riparian areas.



Also Known As:

Corn thistle, creeping thistle

Stems/Leaves: Stems (1-4 ft. tall) are nearly glabrous, branched near top, green to brown; leaves (2-8 in. long) are green, oblong to lanceolate; leaf margins are wavy, lobed, or toothed with prickly spines (0.1-0.25 in. long)

Flowers: Produces flower heads in clusters; individual heads (0.5 in. in diameter, 0.5-1.5 in. long) are oval to bell-shaped, with dark-tipped bracts below flowers; flowers are pink, purple, or white

Roots: Extensive creeping perennial root system

Reproduction: Creeping perennial roots and seed reproduction

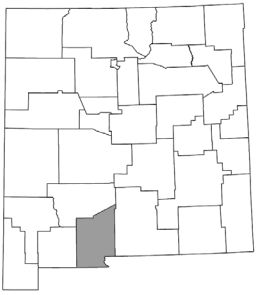
Management Do's and Don'ts

- Early detection and eradication are the most effective control methods
- Repeated cultivation, mowing (before seed production), or hand removal is effective
- Herbicides are effective
- Maintaining a healthy plant community can prevent establishment and slow spread

Crimson fountaingrass
Pennisetum setaceum

Crimson fountaingrass
Pennisetum setaceum

Tufted perennial grass that infests disturbed areas such as ditches, roadsides, and urban areas, as well as desert shrubland.



Also Known As:
Fountaingrass, tender fountaingrass

Stems/Leaves: Round stems (up to 3.5 ft. tall) form dense clumps; leaves (8-26 in. long, 0.08-.016 in. wide) are flat, sometimes with a keeled midvein; leaf margins have long, white hairs, especially near sheaths; sheaths are closed and extend 1.5-3 in. down stem

Flowers: Tufted, bristly panicles (3-12 in. long, 1.5-2 in. wide) are pink to purple and may droop

Roots: Deep, fibrous root system

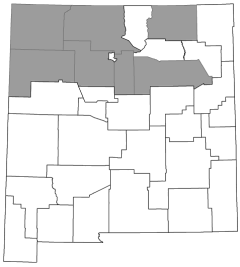
Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts
- Prevention and early detection are the most effective control methods
- Hand removal of individual plants is most effective in preventing new infestations
- Herbicides are effective
- Fire is NOT effective

Diffuse knapweed
Centaurea diffusa

Diffuse knapweed
Centaurea diffusa

Herbaceous biennial (sometimes annual or short-lived perennial) that tolerates a wide range of conditions, but mostly infests disturbed areas such as roadsides, ditches, open fields, semi-arid deserts, rangelands, and grasslands.



Also Known As:
White knapweed

Stems/Leaves: Numerous branching, bushy stems (1-3 ft. tall) are green to brown; leaves (4-8 in. long) alternate, often covered with grayish hairs; lower leaves are deeply lobed; upper leaves are linear and entire, DO NOT form wings on stem

Flowers: Single flower head (0.5 in. long, 0.2 in. wide) at end of each branch with white flowers (sometimes rose to light purple); below flowers are several straw-colored bracts each with comb-like edges and a spiny tip

Roots: Taproot

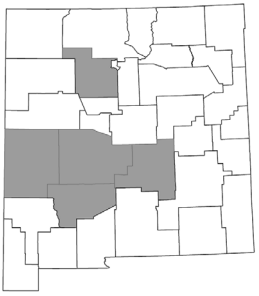
Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts
- Mechanical removal must remove at least 3-4 in. of root crown
- Thirteen biological control agents have been introduced
- Herbicides are effective with proper timing
- Mow plants at late bud or early bloom to reduce seed production
- Fire is NOT effective

Eurasian watermilfoil
Myriophyllum spicatum

Eurasian watermilfoil
Myriophyllum spicatum

Aquatic perennial that infests riparian areas such as lakes, ponds, rivers, streams, and irrigation ditches; usually found in still or slow-moving water, but occasionally in fast-moving streams or rivers.



Also Known As: Spike watermilfoil

Stems/Leaves: Submersed stems (up to 15 ft. long) branched near water surface, green, brown, or reddish; leaves (0.5-1.5 in. long) normally 4-whorled, pinnate-divided, with opposite pairs of narrow lobes (0.4 in. long), usually more than 14 pairs per leaf; lobes are linear and green to brown

Flowers: Four pinkish petals or sepals (0.04-0.12 in. long) as well as small, bract-like leaves (0.04-0.12 in. long); numerous small flowers found on erect or emersed inflorescence (1.6-3.2 in. long)

Roots: Numerous creeping, branched rhizomes that form large, thick surface or subsurface mats

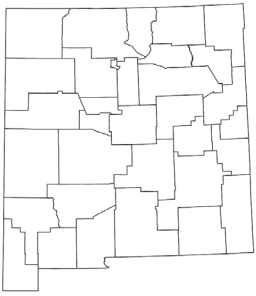
Reproduction: Vegetative reproduction from rhizomes, stem fragments, or buds on leaf axils

Management Do's and Don'ts

- Repeated mechanical removal is effective at controlling density, but stem fragments may escape and form new infestations
- Removing stem fragments and plant parts from boats, lines, and fishing gear can help prevent spread of infestations
- Herbicides are effective

Meadow knapweed
Centaurea pratensis

Meadow knapweed
Centaurea pratensis



Perennial that infests rangeland, pastures, grasslands, meadows, and open forests.

Also Known As:
Bull clover

Stems/Leaves: Several branching stems (1.5-3.3 ft. tall); basal leaves (up to 6 in. long, 1.25 in. wide) are tapered at both ends, lower stem leaves are lanceolate with entire or shallow lobed margins, upper stem leaves are smaller and entire

Flowers: Single flower head (0.75 in. in diameter) grows at the end of each branch, oval or globe shaped, with light or dark brown to black papery bracts; flowers are purple or rose, sometimes white

Roots: Taproot

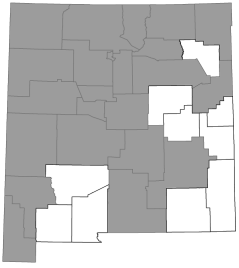
Reproduction: Perennial root crown and seed

Management Do's and Don'ts
- Physical removal and cultivation are effective
- Herbicides are effective
- Seed head gall fly, *Urophora quadrifasciata*, is an introduced biological control

Musk thistle / *Carduus nutans*

Musk thistle / *Carduus nutans*

Biennial that typically infests disturbed open areas, waste areas, stream banks, ditches, and roadsides.



Also Known As: Nodding thistle, plumeless thistle

Stems/Leaves: Stems (2-6 ft. tall) have some branching, sometimes densely hairy, with narrow wings formed by leaf bases; leaves (4-15 in. long) are dark green with light green center, deeply lobed, with spiny margins

Flowers: Flower heads (1.5-3 in. in diameter) mostly spherical, found at branch ends, and often droop; flowers are pink to purple in color, rarely white; below flowers are numerous green, purple, or straw-colored bracts (0.1-0.3 in. wide), often covered with cobweb-like hairs; bracts are usually lanceolate

Roots: Taproot

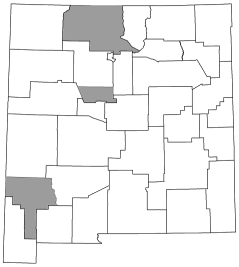
Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts

- Mechanical removal should cut roots below soil surface and remove stems before flowering
- Herbicides are effective
- Several biological controls exist but none are legal in NM
- DO NOT use fire – it creates favorable conditions for growth
- DO NOT mow during/after flowering to prevent seed dispersal; mow plants in late bud or early bloom to reduce seed production

Purple loosestrife
Lythrum salicaria

Purple loosestrife
Lythrum salicaria



Perennial found in wetlands along rivers, streams, lakes, ponds, floodplains, reservoirs and ditches, as well as in some disturbed areas.

Also Known As: Bouquet violet, purple lythrum

Stems/Leaves: Multiple branched stems (1-6 ft. tall) are green to purple or brown, 4-5 sided, often covered with small hairs; plants may form a clump or bush; leaves (2-6 in. long) are narrow or lanceolate with smooth margins, attach directly to stem in opposite or whorled arrangement

Flowers: Found on elongated racemes; 5-7 pinkish-purple petals (< 0.5 in. long) surrounding a yellow center

Roots: Taproot with locally spreading perennial roots

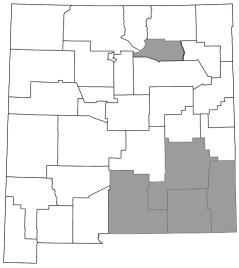
Reproduction: Stem fragments or seed reproduction, but mostly through seed

Management Do's and Don'ts

- Prevention and early detection are the most effective control methods
- Physical removal before flowering for single plants/ small infestations
- Several effective biological control agents have been introduced
- Herbicides are effective
- DO NOT MOW

Purple starthistle
Centaurea calcitrapa

Purple starthistle
Centaurea calcitrapa



Annual to perennial that infests open fields, roadsides, grasslands, rangelands, and especially disturbed areas; also found in fertile or alluvial soils.

Also Known As:
Red starthistle

Stems/Leaves: Numerous, highly branched stems (up to 4 ft. tall); plants may form clumps or bushes; leaves (4-8 in. long) alternate, covered with long, wooly hairs; lower leaves deeply lobed; upper leaves pinnate-divided with narrow leaflets, DO NOT form wings on upper stems

Flowers: Oval shaped flower heads (0.75-1 in. long) borne on leafy stems; flowers are deep purple to lavender; below flowers are several stiff, straw-colored spines (0.4-1 in. long)

Roots: Taproot

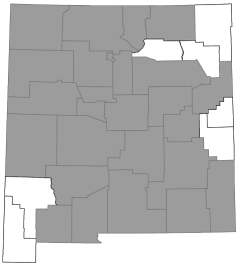
Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts
- Physical removal before seed production for single plants/small infestations
- Herbicides are effective
- DO NOT MOW

Russian knapweed
Acroptilon repens

Russian knapweed
Acroptilon repens

Herbaceous perennial that invades pastures, degraded croplands, alfalfa fields, rangeland, roadsides, riparian areas, and irrigation ditches.



Also Known As:
Hardheads, Russian starthistle, Turkestan thistle

Stems/Leaves: Numerous branching stems (1-3 ft. tall); lower leaves (1.5-4 in. long) alternate and have lobed or wavy margins; upper leaves are linear or lanceolate; leaves are green to light green and DO NOT form wings on stems; leaves and stems covered with dense gray hairs

Flowers: Flower heads (0.25-0.5 in. in diameter) round or hemispheric with pink, lavender, or white flowers; below flowers are numerous green, papery bracts

Roots: Extensive creeping root system; roots have a brown to black scaly appearance, especially near soil surface

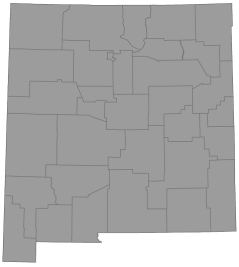
Reproduction: Vegetative and seed reproduction; most reproduction is from buds on creeping perennial root system

Management Do's and Don'ts
- Prevention and early detection are essential; large infestations are extremely difficult to control
- Prevention and maintenance of a healthy plant community are the best management methods
- Herbicides are effective

Saltcedar / *Tamarix spp.*

Saltcedar / *Tamarix spp.*

Small shrubs or trees that infest riparian areas such as rivers, streams, lake and pond shores, and irrigation ditches, as well as roadsides and rangeland.



Also Known As:
Tamarisk, tamarix

Stems/Leaves: One or more trunks (5-25 ft. tall) may be covered with rough bark; numerous dense, thin, branching stems and twigs have smooth, reddish-brown bark; leaves (0.06-0.14 in. long) small and scale-like, alternate, oval to lanceolate, often overlapping; green, gray-green, or blue-green in color

Flowers: Produces long racemes (0.12-0.2 in. wide, several in. long) with numerous small flowers; flowers have four to five sepals or petals that are white to dark pink in color

Roots: Taproot with numerous spreading lateral roots

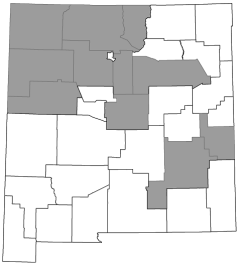
Reproduction: Root crown or seed reproduction, but primarily through seed

Management Do's and Don'ts
- Physical removal is only effective if the root crown is removed
- Herbicides are effective, but above ground tissue must be removed after treatment
- Individual tree methods should be utilized in low density stands
- Established native vegetation can out compete saltcedar seedlings

Scotch thistle
Onopordum acanthium

Scotch thistle
Onopordum acanthium

Biennial that infests disturbed sites such as roadsides, ditches, and open fields, as well as pastures, rangelands, grasslands, riparian areas, and irrigation ditches.



Also Known As: Cotton thistle, heraldic thistle, jackass thistle, Queen Mary's thistle, wooly thistle, winged thistle

Stems/Leaves: Stems (4-12 ft. tall) are branched near the top, covered with wooly, gray hairs, and have conspicuous broad, spiny wings along the entire stem; leaves (4-20 in. long, 0.8-1.2 in. wide) are oblong, covered with wooly, gray hairs, margins are toothed or lobed with sharp, stiff spines

Flowers: Flower heads (up to 2 in. in diameter) are round or hemispherical, covered with numerous green to purple or straw-colored, overlapping, spiny bracts (0.2 in. long or less), often with wooly hairs; flowers are white to purple

Roots: Taproot

Reproduction: Seed; successful management prevents seed production/spread

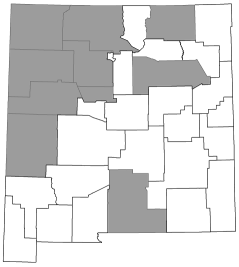
Management Do's and Don'ts

- Physical removal before seed production is effective for small infestations
- Minimizing open areas and establishing competitive plants, especially perennial grasses, can discourage invasion
- Herbicides are effective

Spotted knapweed
Centaurea biebersteinii

Spotted knapweed
Centaurea biebersteinii

Herbaceous biennial to short-lived perennial that tolerates a wide range of conditions, but mostly infests disturbed areas such as roadsides, ditches, open fields, semi-arid deserts, rangelands, and grasslands.



Also Known As:
Centaurea maculosa

Stems/Leaves: Numerous branching stems (up to 4 ft. tall); leaves (4-8 in. long) alternate, often covered with grayish hairs; lower leaves deeply lobed; upper leaves pinnate-divided with narrow, entire leaflets; upper leaves DO NOT form wings on stems

Flowers: Single flower head (0.4-0.5 in. long, 0.3-0.5 in. wide) at end of each branch; flowers usually pinkish-purple, sometimes light purple to white; below flowers are green bracts, each with a dark brown to black comb-like tip

Roots: Taproot

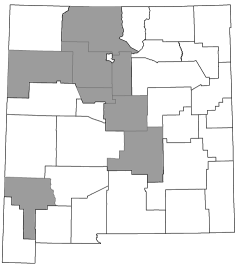
Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts
- Preventing seed dispersal and establishing competitive vegetation is essential
- Mechanical removal must remove at least 3-4 in. of root crown
- Thirteen biological control agents have been introduced
- Herbicides are effective
- Fire is NOT effective

Dalmatian toadflax
Linaria dalmatica

Dalmatian toadflax
Linaria dalmatica

Herbaceous perennial that invades disturbed areas along roadsides, ditches, abandoned lots and fields, rangelands, riparian communities, and crop fields.



Also Known As: Broad-leaf toadflax, wild snapdragon

Stems/Leaves: Stems (up to 4 ft. tall) are smooth and waxy at the base, herbaceous and branching near the top; leaves (0.5-2.3 in. long) alternate and clasp stem; waxy, bluish-green in color; oval, heart shaped, or lanceolate

Flowers: Resemble snapdragons; petals are 0.75-1.5 in. long; flowers are two-lipped, yellow, with an orange, bearded throat and a long spur

Roots: Taproot and creeping perennial roots

Reproduction: Vegetative and seed reproduction; most new populations are established by seed

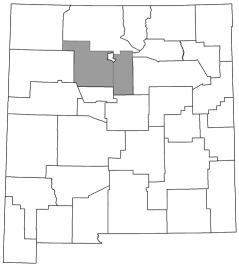
Management Do's and Don'ts

- Prevention and maintenance of a healthy plant community are the best management methods
- Hand pull small infestations
- Eight biological control agents have been approved for use
- Herbicides are effective
- Fire and mowing are NOT effective control methods

Dyers woad
Isatis tinctoria

Dyers woad
Isatis tinctoria

Annual, biennial, or short-lived perennial that infests gravel pits, roadsides, trails, railroads, and other disturbed areas with sandy or rocky soil; also infests hay and grain fields



Also Known As:
Marlahan mustard

Stems/Leaves: Stems (1-4 ft. long) are highly branched near top; leaves (1.5-7 in. long, 0.4-1.5 in. wide) are green to blue-green in color, lanceolate, clasp the stem, and have a conspicuous cream colored midvein from base to tip

Flowers: Small, bright yellow flowers found in clustered inflorescences on upper stems, four petals (0.125 in. long) per flower; seed pods (0.375 in. long, 0.125 in. in diameter) are flattened, teardrop shaped, suspended from a small stalk; immature pods are green while mature pods are dark purplish-brown to black.

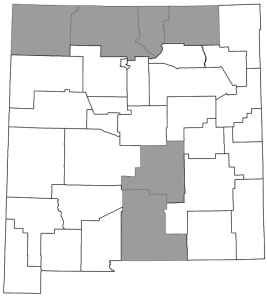
Roots: Taproot

Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts
- Mechanical removal should remove roots at least 3-4 in. below soil
- Mowing at early- to mid-flower stage PRIOR TO seed formation is effective
- Herbicides are effective

Leafy spurge / *Euphorbia esula*

Leafy spurge / *Euphorbia esula*



Herbaceous perennial that is adapted to many soil types and habitats; typically invades disturbed and undisturbed areas such as pastures, rangelands, abandoned croplands, roadsides, wetlands, woodlands, floodplains, riparian areas, mountain ridges, and prairies; its milky sap may cause skin and eye irritation in humans and be toxic to cattle if ingested in large quantities.

Also Known As: Faitours-grass, wolf's milk

Stems/Leaves: Stems (1-3 ft. tall) are woody at the base, branched at top, glabrous, with milky sap; leaves (1-4 in. long) are linear to oblong in shape, mostly alternate, with smooth margins; stems and leaves are pale blue/green

Flowers: Produces showy, green to yellow, heart- or kidney-shaped bracts at ends of stems; flowers form within bracts with one three-chambered ovary on top of 11-21 smaller, 5-sepaled male flowers

Roots: Extensive creeping perennial root system

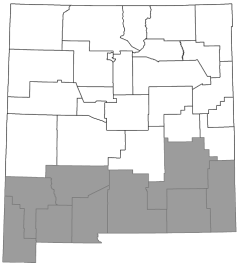
Reproduction: Perennial roots and seed reproduction

Management Do's and Don'ts

- Prevention and maintenance of a healthy plant community are the best management methods
- Physical removal is largely ineffective
- Numerous effective biological control agents have been introduced
- Herbicides are effective

Malta starthistle
Centaurea melitensis

Malta starthistle
Centaurea melitensis



Annual (occasionally biennial) that infests disturbed areas such as roadsides and open fields, as well as rangelands, grasslands, open woodlands, pastures, and crop fields.

Also Known As: Tocolote, Maltese starthistle

Stems/Leaves: Stiff, wiry stems (1-3 ft. tall) often branched; leaves (0.8-6 in. long) are green to blue-green, covered with fine hairs; basal leaves are oval to linear, entire to lobed margins; stem leaves are narrow, entire to wavy margins, with bases that extend down the stem creating wings (0.12 in. wide)

Flowers: Flower heads (0.4-0.8 in. in diameter) found singly or in groups of 2-3 at ends of stems, oval in shape, with yellow flowers; stiff purple or brown bracts (0.2-0.6 in. long) are found beneath flowers

Roots: Taproot

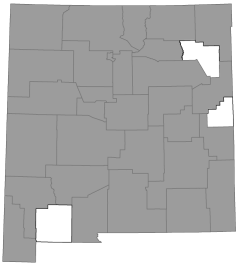
Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts

- Prevention and early detection are the most effective control methods
- Frequent cultivation is effective
- Mow plants in late bud or early bloom to reduce seed production
- Burning is effective if done before seed production
- Herbicides are effective

Russian olive
Elaeagnus angustifolia L.

Russian olive
Elaeagnus angustifolia L.



A perennial tree or large shrub that infests grasslands, rangelands, woodlands, desert shrubland, and especially riparian areas, as well as disturbed areas such as roadsides, ditches, and open fields.

Stems/Leaves: One to six main stems or trunks (16-40 ft. tall, 4-20 in. thick) with gray or brown bark, sometimes coarse or scaly; leaves (0.8-4 in. long, 0.5-1.5 in. wide) are alternate, entire, oblong to linear or lanceolate, dull to gray-green in color with a silvery underside

Flowers: Flowers (0.12-0.5 in. long) grow in clusters at branch ends, have four yellow to white petals, and are fragrant

Roots: Extensive root system with a root crown and creeping perennial roots

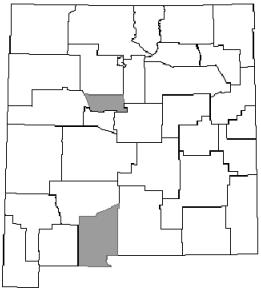
Reproduction: From root crown, creeping perennial root, or seed; most reproduction and spread occurs through seeds and creeping perennial roots

Management Do's and Don'ts

- Prevention and early detection are the most effective control methods
- Mowing saplings and cutting or removing mature trees are all effective controls if repeated often
- Herbicides are somewhat effective

Sahara mustard
Brassica tournefortii

Sahara mustard
Brassica tournefortii



Short-lived annual that invades disturbed, arid areas; typically found along roadsides.

Also Known As: Wild turnip, African or Asian mustard

Stems/Leaves: Branching stems (4 in.-3 ft. tall); large basal leaves (3-12 in. long) pinnate-divided with 6-14 pairs of leaflets with toothed margins; upper stem leaves bract-like; stems and leaf surfaces may be covered with simple hairs

Flowers: Small, pale yellow flowers with four petals (0.15-0.5 in. long, 0.1-0.3 in. wide); seed pods (siliques) are 1.5-2.5 in. long, narrow, with a pronounced beak at the end; seed pods constrict around seeds and appear beaded

Roots: Taproot

Reproduction: Seed; successful management prevents seed production/spread

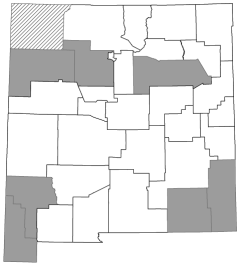
Management Do's and Don'ts

- Hand pulling or hoeing is effective if repeated several times a year
- Mowing is effective if all leaf material is destroyed
- Herbicides are effective
- Fire is NOT effective

Yellow starthistle
Centaurea solstitialis

Yellow starthistle
Centaurea solstitialis

Annual (occasionally biennial) that infests disturbed areas such as roadsides and open fields, as well as rangelands, grasslands, open woodlands, pastures, and crop fields. Yellow starthistle is toxic to horses if consumed.



Also Known As: Golden starthistle, yellow cockspur, St. Barnaby's thistle

Stems/Leaves: Stiff, wiry stems (1-6 ft. tall) are often branched; leaves (1.5-6 in. long) are blue- to gray-green, densely covered with fine, cotton-like hairs, alternate, linear to oblong in shape with smooth, toothed, or lobed margins; leaf bases extend down the stem creating wings (up to 0.2 in. wide)

Flowers: Flower heads (0.5-1.5 in. in diameter) found singly at stem ends, oval or round with a yellow flower; several stiff, sharp, straw colored bracts (0.75 in. long) are found beneath the flower

Roots: Taproot

Reproduction: Seed; successful management prevents seed production/spread

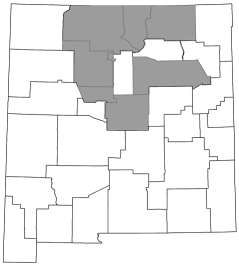
Management Do's and Don'ts

- Prevention and maintenance of a healthy plant community are the best management methods
- Frequent cultivation is effective
- Mow plants in late bud or early bloom to reduce seed production
- Burning is effective if done before seed production
- Numerous effective biological control agents have been introduced
- Herbicides are effective

Yellow toadflax / *Linaria vulgaris*

Yellow toadflax / *Linaria vulgaris*

Herbaceous perennial that aggressively invades disturbed communities such as roadsides, graded areas, abandoned lots, rangelands, and riparian communities.



Also Known As: Butter and eggs, wild snapdragon, common toadflax

Stems/Leaves: Stems (1-3 ft. tall) sometimes hairy, often branched near top, woody at the base and herbaceous at the top; leaves (1-2.5 in. long, 0.1-0.2 in. wide) are pale green, soft, linear in shape, and DO NOT clasp stem

Flowers: Found in racemes at ends of stems; flowers (0.5-1.5 in long) are bright yellow or white, snapdragon-like with an orange bearded throat and a yellow spur

Roots: Extensive creeping perennial root system

Reproduction: Creeping perennial roots and seed reproduction

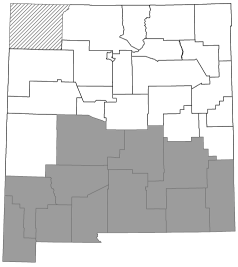
Management Do's and Don'ts

- Prevention and maintenance of a healthy plant community are the best management methods
- Physical removal is effective if continually repeated for 5-15 years to deplete seed bank
- Revegetation with competitive species is effective
- Eight biological control agents have been approved for use
- Herbicides are effective

African rue / *Peganum harmala*

African rue / *Peganum harmala*

Perennial that infests disturbed areas such as roadsides, open fields, and ditches, as well as arid and semi-arid desert areas. All parts of the plant are toxic to humans and livestock if ingested.



Also Known As: Harmal, isband, ozallaik, ruin weed

Stems/Leaves: Numerous dense, branching stems (not more than 1-1.5 ft. tall); leaves (0.8-2 in. long) are bright green, fleshy, unevenly branched, linear, and glabrous

Flowers: Five white, oblong petals (0.5 in. long); five green sepals (0.5 in. long) that resemble leaves are found below each flower; flowers grow at leaf axils along stem; produces round, three-chambered seed pods (0.25-0.6 in. in diameter) green, orange, or brown in color

Roots: Woody taproot with creeping lateral roots that can develop shoot buds

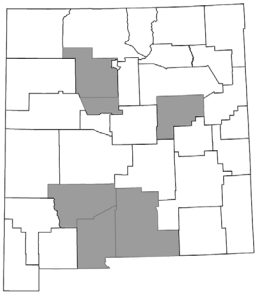
Reproduction: Root crown, perennial roots, or seed reproduction; reproduces primarily through seed

Management Do's and Don'ts

- Prevention and early detection are the most effective control methods
- Physical removal is effective if most or all of the root system is removed
- Herbicides are effective

Arundo / *Arundo donax*

Arundo / *Arundo donax*



Bamboo-like perennial grass that infests riparian areas, floodplains, and irrigation ditches.

Also Known As: Giant reed, bamboo reed, elephant grass, wild cane

Stems/Leaves: Semi-woody, inflexible stems (up to 24 ft. tall, 0.5-1.5 in. thick) are hollow except at nodes, often branched at the base; leaves (1-3 ft. long, 1-3 in. wide) are flat with rough margins, lanceolate with a sharp tip; leaf bases are broad, have long hairs, and clasp stem, often yellow to green in color

Flowers: Plume-like panicles (1-2 ft. long) are cream to purple or brown in color, with numerous fine branches

Roots: Large creeping and branching rhizome system

Reproduction: Vegetative reproduction from rhizomes, root crowns, and stem fragments

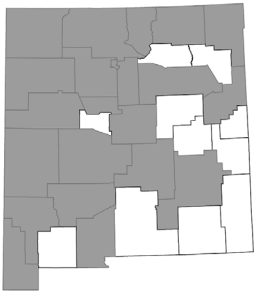
Management Do's and Don'ts

- Physical removal must remove rhizomes and stem fragments
- Herbicides are effective, especially when used in conjunction with cutting

Cheatgrass / *Bromus tectorum*

Cheatgrass / *Bromus tectorum*

Annual grass that infests disturbed areas such as roadsides, open fields, and ditches, as well as crop fields, rangelands, grasslands, and desert areas.



Also Known As: Downy or drooping brome, military grass, June grass, bronco grass

Stems/Leaves: Narrow stems (1-24 in. long) often droop; leaves (several inches long, 0.05-0.25 in. wide) are green to purple with closed sheaths that extend at least halfway down the stem, with some long hairs on sheaths and leaf base

Flowers: Multiple, slightly flattened grass spikes (2.5-8.5 in. long) are found at the ends of thin stems and often droop; each spike has 4-8 seeds (0.3-0.5 in. long) and each seed is tipped with a stiff bristle (0.3-0.7 in. long); spikes and seeds are green to purple or red in color

Roots: Fibrous root system

Reproduction: Seed; successful management prevents seed production/spread

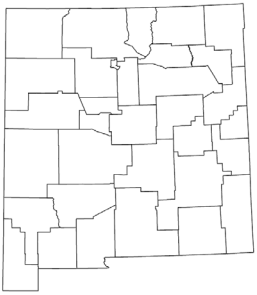
Management Do's and Don'ts

- Prevention and maintenance of a healthy plant community are the best management methods
- Burning before seed dispersal will destroy seed but may leave the site susceptible to re-invasion in following years
- Mowing within a week after flowering will reduce seed production
- Herbicides are effective

Giant salvinia / *Salvinia molesta*

Giant salvinia / *Salvinia molesta*

Perennial aquatic fern that infests riparian areas with a still or slow-moving flow such as lakes, ponds, reservoirs, rivers, streams, or irrigation ditches.



Also Known As:

Aquarium watermoss, butterfly fern, karibaweed, koi kandy

Stems/Leaves: Simple to heavily branched stems of varying length; leaves (1-2.5 in. long) may be on or below water surface and are flat, oval, surfaces densely covered with "eggbeater"-shaped hairs (0.08-0.16 in. long); submersed leaves are brown, pinnate-divided, and resemble roots

Flowers: Ferns lack true flowers; some submerged leaves can develop chains or groups of spores (0.04-0.12 in. in diameter) that are not viable

Roots: Lacks true roots; submerged leaves look like fine, white root-like filaments (up to 0.8 in. long)

Reproduction: Vegetative reproduction from stem fragments

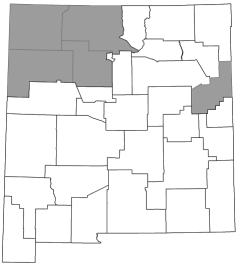
Management Do's and Don'ts

- Physical removal is effective if all plant fragments are removed
- Removing stem fragments and plant parts from boats, lines, and fishing gear can help prevent spread of infestations
- Herbicides are effective

Halogeton / *Halogeton glomeratus*

Halogeton / *Halogeton glomeratus*

Annual that infests open, disturbed areas such as roadsides, open fields, and especially arid or semi-arid areas; is adapted to soils with high alkaline or salt content. All parts of the plant are toxic to livestock if ingested, especially sheep.



Also Known As:
Barilla, saltlover

Stems/Leaves: Stems (2-18 in. tall) are branched at the base, usually erect but sometimes spreading, often shaded purple or red; leaves (0.15-0.85 in. long, 0.04-0.08 in. wide) alternate, dull green to blue-green, look like fleshy cylinders with a stiff bristle (aprox. 0.05 in. long) at the tip

Flowers: Found in dense bunches at leaf axils; flowers lack true petals but have five sepals, each with a fan-like tip (0.08-0.12 in. long), greenish-yellow to red in color with conspicuous veins

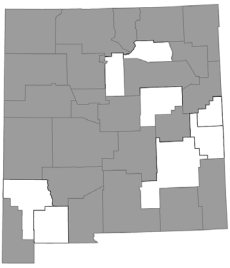
Roots: Taproot

Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts
- Physical removal is effective for small infestations
- Revegetation with desirable perennials is an effective management technique because halogeton is a poor competitor
- Herbicides are effective
- DO NOT use fire – it creates favorable conditions for growth

Hoary cress / *Cardaria spp.*

Hoary cress / *Cardaria spp.*



Perennial that infests moist areas such as irrigated pastures, rangelands, hay fields, and other crop fields; also infests disturbed sites such as roadsides, railways, and ditches. Three species occur in New Mexico: lens-podded hoary cress (*C. chalapensis*), heart-podded hoary cress (*C. draba*), and globe-podded hoary cress (*C. pubescens*); heart-podded is most common. Some botanists place these plants in the genus Lepidium with the same species names (*L. chalapensis, L. draba, L. pubescens*).

Also Known As: Whitetop, little whitetop, hairy whitetop, *Lepidium* spp.

Stems/Leaves: Mostly single stems (6-24 in. tall) are hairy with some branching near top; leaves (0.5-4 in. long, 0.1-1.5 in. wide) are alternate, gray-green, oblong to narrow in shape, sometimes hairy, with entire to toothed margins; upper leaves clasp stem

Flowers: Numerous small, white, fragrant flowers with four petals (0.08-0.16 in. long) form rounded or flat-topped inflorescences at stem ends; seed pods (0.1-0.2 in. long and wide) are round, oval, or heart-shaped, light green to brown, with a short projection (0.04-0.08 in. long)

Roots: Extensive creeping perennial root system

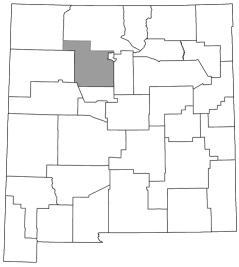
Reproduction: Perennial roots and seed reproduction

Management Do's and Don'ts

- Physical removal must remove root system
- Repeated cultivation 1-2 times per month for 2-4 years is effective
- Mowing at early flower growth stage may lower stem density and reduce seed production
- Herbicides are effective

Hydrilla / *Hydrilla verticillata*

Hydrilla / *Hydrilla verticillata*



Aquatic perennial that infests riparian areas with a still or slow-moving current such as lakes, ponds, reservoirs, rivers, streams, and irrigation ditches.

Also Known As:
Florida elodea, waterthyme

Stems/Leaves: Stems are green to brown, length varies with environmental conditions; leaves (0.25-0.8 in. long, 0.04-0.16 in. wide) are linear or lanceolate, 2-8 whorled with toothed margins

Flowers: Three sepals or petals (0.12-0.2 in. long) white to reddish; sometimes produces reproductive structures called turions (0.12-0.5 in. long) at leaf axils, dark green, mostly conical

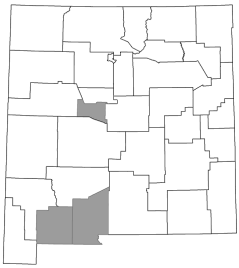
Roots: Slender, un-branched, submerged roots may form dense mats

Reproduction: Root structures, stem fragments, and turions

Management Do's and Don'ts
- Physical removal is effective if all plant fragments are removed
- Removing stem fragments and plant parts from boats, lines, and fishing gear can help prevent spread of infestations
- Herbicides may be effective
- Sterile grass carp can be an effective biological control

Onionweed / *Asphodelus fistulosus*

Onionweed / *Asphodelus fistulosus*



Annual or short-lived perennial that infests disturbed areas such as roadsides, ditches, open fields, and pastures. Its foliage does NOT smell like onion.

Also Known As:
Pink asphodel

Stems/Leaves: Numerous narrow, hollow stems (up to 2.5 ft. tall) with some branching; leaves (4-16 in. long), found at the base of the plant, are linear, smooth to rough, and curled almost into a cylinder

Flowers: Found on racemes at stem ends; six white to pale pink petals (0.2-0.5 in. long), each with a brown stripe down the middle

Roots: Long and fibrous root system

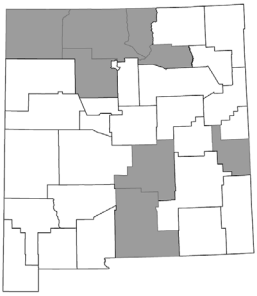
Reproduction: Seed; successful management prevents seed production/spread

Management Do's and Don'ts
- Hand removal is effective for small populations
- Cultivation is successful for large populations if performed in the dry season and followed by rigorous revegetation with desirable plants (onionweed is a poor competitor)
- Herbicides are effective

Oxeye daisy/*Leucanthemum vulgare*

Oxeye daisy/*Leucanthemum vulgare*

Perennial found in a variety of habitats including rangelands, grasslands, roadsides, open fields, ditches, and other disturbed areas; grows well in poor soils.



Also Known As:

Butter daisy, golden flower, *Chrysanthemum leucanthemum*

Stems/Leaves: Stems (up to 3 ft. tall) are often clumped together, little to no branching; leaves (2-6 in. long) are lanceolate, pinnate-divided, green to dark green and alternate

Flowers: Single flower on each stem (1-40 stems per plant); flowers (1.2-2.75 in. in diameter) have numerous white petals (0.4-0.8 in. long) surrounding a yellow center

Roots: Extensive creeping perennial root system

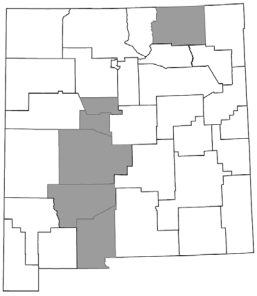
Reproduction: Perennial roots, root fragments, and seed reproduction

Management Do's and Don'ts

- Physical removal must remove root system
- Cultivation in summer to a depth of 6 in. followed by repeated shallow cultivation is effective at destroying roots and seedlings
- Herbicides are effective

Parrotfeather
Myriophyllum aquaticum

Parrotfeather
Myriophyllum aquaticum



Aquatic perennial that infests riparian areas such as lakes, ponds, rivers, streams, and irrigation ditches; usually found in still or slow-moving water, but occasionally in fast-moving streams or rivers.

Also Known As: Brazilian watermilfoil, thread-of-life

Stems/Leaves: Emersed stems (up to 15 ft. long, 0.2 in. in diameter) may be branched, gray-green to reddish; leaves (0.5-1.5 in. long) 5-6 whorled, pinnate-divided with 10-15 pairs of opposite or alternate lobes (up to 0.3 in. long); lobes are linear and the main leaf axis is broader than the lobes

Flowers: Tiny flowers with translucent white petals or sepals (0.05-0.15 in. long) found at middle or upper leaf axils

Roots: Numerous creeping, branched rhizomes that form large, thick surface or subsurface mats

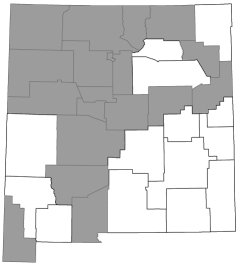
Reproduction: Vegetative reproduction from rhizomes, stem fragments, or buds on leaf axils

Management Do's and Don'ts

- Repeated mechanical removal is effective at controlling density, but stem fragments may escape and form new infestations
- Removing stem fragments and plant parts from boats, lines, and fishing gear can help prevent spread of infestations
- Herbicides are effective

Perennial pepperweed
Lepidium latifolium

Perennial pepperweed
Lepidium latifolium



Creeping herbaceous perennial found mostly in riparian areas, irrigation ditches, floodplains, and wetlands.

Also Known As: Tall whitetop, peppergrass

Stems/Leaves: Numerous semi-woody stems (2-5 ft. tall) are glabrous, waxy, with some branching near the top; leaves (4-11 in. long, 1-3 in. wide) are green to gray-green, oval to narrow in shape, glabrous, alternate, and DO NOT clasp stem; basal leaves have serrate margins, stem leaves are entire to serrate

Flowers: Small, white flowers with four petals (0.15 in. long) form dense inflorescences that are rounded on top

Roots: Creeping perennial root system; white to cream color with distinct odor

Reproduction: Perennial roots, root fragments, and seed reproduction

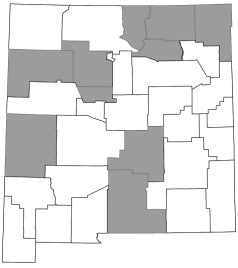
Management Do's and Don'ts

- Prevention and maintenance of a healthy plant community are the best management methods
- Hand pull all roots and seedlings
- Mowing is not an effective control method, but can prevent seed formation if done before flowering
- Herbicides are effective

Poison hemlock
Conium maculatum

Poison hemlock
Conium maculatum

Biennial (sometimes annual or short-lived perennial) that typically infests open fields, pastures, ditches, riparian areas, and crop fields. All parts of the plant are extremely toxic to humans and livestock.



Also Known As: Deadly hemlock, spotted hemlock, poison parsley, poison stinkweed

Stems/Leaves: Stems (up to 10 ft. tall) are hollow except at the nodes, ribbed, often with purple or reddish spotting or streaking, but sometimes without streaking; leaves (4-12 in. long) are triangular, glabrous, and pinnate-divided with toothed leaflets

Flowers: Several inflorescences grow in small bunches with a single axis; flowers are very small and white

Roots: Taproot

Reproduction: Seed; successful management prevents seed production/spread

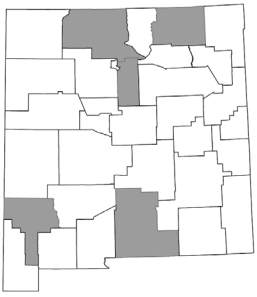
Management Do's and Don'ts

- Hand pulling or cutting below the root crown is effective for small infestations
- Repeated cultivation or mowing (before seed production) is effective for controlling large infestations
- Herbicides are effective

Quackgrass / *Elytrigia repens*

Quackgrass / *Elytrigia repens*

Tufted perennial grass that infests disturbed areas such as roadsides, ditches, open fields, and urban areas, as well as crop fields.



Also Known As:

Couchgrass, devil's grass, dog grass, quickgrass, twitchgrass, wiregrass, *Elymus repens*

Stems/Leaves: Round grass-like stems (up to 3.5 ft. tall) with swollen nodes; flat, drooping leaves (1.6-12 in. long, 0.08-0.55 in. wide) are green to blue-green, have ribbed veins with large spaces between veins, and open sheaths; leaf blades have a constriction near tip

Flowers: Produces grass seeds on an elongated stem (2-8 in. long); the seeds alternate along the stem and are 0.35-0.6 in. long

Roots: Large perennial creeping and branching rhizome system, often with a tough brown covering

Reproduction: Rhizome and seed reproduction

Management Do's and Don'ts

- Prevention and maintenance of a healthy plant community are the best management methods
- Cultivation is effective but must be repeated to ensure that all rhizomes are destroyed
- Herbicides are effective

Siberian elm / *Ulmus pumila*

Siberian elm / *Ulmus pumila*

A deciduous tree that invades rangelands, grasslands, pastures, semi-arid areas, and riparian areas, as well as disturbed areas such as roadsides, ditches, and open fields.

Also Known As: Chinese elm, dwarf elm, Asiatic elm

Stems/Leaves: Woody trunk (10-60 ft. tall) has light or dark gray bark with numerous ridges or furrows; produces numerous branching stems; leaves (0.75-3 in. long, 0.3-1 in. wide) are alternate, oval to oblong, green to dark green, with serrate margins

Flowers: Small, inconspicuous flowers grow in drooping clusters, lack petals, and are greenish in color with many small stalks that each bear a single flower; seed pods (0.5 in. in diameter) are thin, papery, green to brown, round or oval with a deep notch at the tip

Roots: Deep and extensive root system

Reproduction: From root crown or from seed; most reproduction and spread occurs through seed

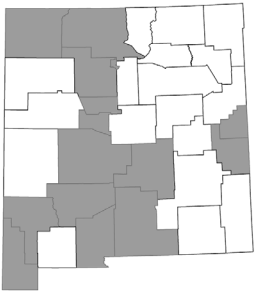
Management Do's and Don'ts

- Physical removal is effective for seedlings or small trees
- Girding is effective for mature trees if performed properly
- Herbicides are effective

Tree of heaven / *Ailanthus altissima*

Tree of heaven / *Ailanthus altissima*

Deciduous tree that can tolerate shade, pollution, and harsh soil conditions; typically infests disturbed areas such as roadsides, ditches, and waste areas, as well as natural sites such as riparian areas and woodlands.



Also Known As: Ailanthus, copal tree, varnish tree

Stems/Leaves: Erect tree with a single trunk (up to 65 ft. tall); small trees have smooth, gray-brown bark while larger trees have rough bark with diamond shaped fissures; pinnate-divided leaves (1-3 ft. long) have 10-22 pairs of opposite leaflets and one terminal leaflet; leaflets (3-5 in. long) are lanceolate with mostly smooth margins except for 2-4 rounded teeth at the base, often with small, circular glands on undersides of leaflets; leaves have a skunky odor when crushed

Flowers: Develop in bunches 4-8 in. long; flowers are small, greenish-yellow to white with five petals; seed pods (1-2 in. long, 0.5 in. wide) are flat, constrict around a single seed, straw-colored to reddish-brown, and grow in bunches

Roots: Taproot with shallow, creeping perennial lateral roots

Reproduction: Root crown, lateral roots, and seed reproduction

Management Do's and Don'ts

- Prevention and maintenance of a healthy plant community are the best management methods
- Physical removal is effective only if root crown and creeping lateral roots are removed
- Herbicides are effective

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Glossary

alternate – leaves that grow singly along the stem and are not opposite

annual – a plant that completes its life cycle in a single year and reproduces by seed only

axil – the point at which a leaf joins the stem

basal – referring to the base of the plant

biennial – a plant that completes its life cycle over two years

bract – a leaf- or scale-like structure, usually small, found on or just below a flower or flower head

creeping – a root or root system that grows horizontally either above or below the soil surface

emersed – growing above the water surface

entire – leaf margins that are smooth and do not have teeth or lobes

floret - a small or reduced flower, especially one of the grasses or sunflowers

glabrous – without hairs

herbaceous – a plant with the characteristics of a herb (i.e. leafy and green) and that is not woody

inflorescence – a group or cluster of flowers on a stem

keeled – a leaf with a raised or projected midvein that resembles the keel of a boat

lanceolate – shaped like a lance, much longer than wide, broad at the base and tapered towards the end

linear – a very narrow leaf, much longer than wide, with parallel edges

lobed – a leaf edge that has lobes, usually rounded, the edges of which cut deeply to the midvein

margin – the edge of a leaf

midvein – the middle and often most prominent vein on a leaf

noxious – any foreign plant (not native to the US) that has the potential to be harmful to crops, livestock, other useful plants and animals, agricultural interests, or public health

oblong – a leaf that is two to four times longer than it is wide, with edges that are parallel or nearly parallel

opposite – leaves that grow in pairs along a common axis and are directly across from one another

panicle – a compound inflorescence in which the branches are racemes, with younger flowers growing at the top

perennial – a plant that completes its life cycle in more than two years

pinnate – a compound leaf with leaflets that grow oppositely on two sides of a common, elongated axis

raceme – an inflorescence with flowers growing singly along an elongated, unbranched axis or stem

rhizome – an elongated stem that grows partially or completely below the soil surface

sepal – leaf- or petal-like appendages that are the outermost part of a flower, usually found just below the petals

serrate – a leaf edge with numerous small teeth that resemble the teeth on a saw and point towards the leaf end

sheath – the lower, tubular portion of a leaf that normally surrounds the stem

spreading – growing along the ground

submersed – growing below the water surface

taproot – the main root of a plant that grows vertically into the soil

toothed – a leaf edge that has teeth-like projections

wavy – a leaf edge with curls, wrinkles, or waves, but NOT teeth, lobes, etc.

whorled – three or more leaves that are arranged in a circle around a stem or common axis

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