



Photo credit: G. Carr



Photo credit: J.M. DiTomaso



Photo Credit: C. Roche

### Key ID Tips

- Bracts have a spiny tip that points down.
- Thin, pinnately lobed leaves covered in short hairs.
- Perennial knapweed with a deep taproot.

### Origin

Native to Asia

### Description

Squarrose knapweed is a bushy perennial that grows to about 3 ft tall and has a deep taproot. Leaves are alternate, thin, pinnately lobed, and covered in short woven gray hairs. They start as a basal rosette in the fall and winter and bolt to flowering stems in late spring and summer. Flowers are in clusters of four to ten, with small pink to purple compound flower at the top. The base of each flower is narrow and covered in comb-like bracts with a spine at the tip that curves out.



Photo credit: J.M. DiTomaso

### Biology

Squarrose knapweed reproduces solely by seed, which fall close to the parent plants. While seeds do not remain viable in the soil for more than 2 to 5 years, some varieties have been known to survive for longer. Squarrose knapweed prefers disturbed sites and is adapted to drought and cold temperatures. It prefers exposed and sunny sites and does not grow for long in shaded areas.

### Locations

No known populations have been detected on the Navajo Nation.

### Ecological Threat and Management Concerns

Squarrose knapweed can form dense clumps, replacing native plant cover. Plants can spread when flowers cling to animals or humans, transporting them to new sites. They favor open disturbed sites, including rangelands and roadsides. While it does not spread vegetatively, carbohydrate stores in its taproot can stimulate regrowth, making control difficult.

## Squarrose knapweed (*Centaurea virgata*)

Additional safety measures and limitations may apply to each method. Refer to the [Navajo Nation Integrated Weed Management Plan](#) for more information.

### Mechanical/Manual Removal

Manual removal is feasible for small and scattered populations and should be repeated over the growing season for a few years. Manual removal should remove as at least 2 to 4 inches of the taproot below the soil surface, if not the entire taproot. Manual removal should occur before seed production. Mowing is not effective at any stage, but can remove dead material before herbicide applications.

### Biological

No biological control organisms are available for use on the Navajo Nation.

### Cultural Control

Grazing is not recommended or effective as it can promote regrowth and germination. Fire is not effective as it can stimulate regrowth. Maintaining and restoring perennial native plant cover can prevent establishment and reduce populations

### Chemical

Use of herbicides can be effective. Refer to the product labels for application rates, timing, and approved application methods.

Recommended herbicides include:

- 2,4-D
- Aminopyralid
- Clopyralid
- Dichlobenil
- Fluroxypyr
- Picloram\*

\*Restricted Use by U.S. EPA

### References

DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center. University of California. 544 pp.

USDA, NRCS. 2023. PLANTS Database. Available at <https://plants.sc.egov.usda.gov/>. National Plant Data Team, Greensboro, NC 27401-4901 USA



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