

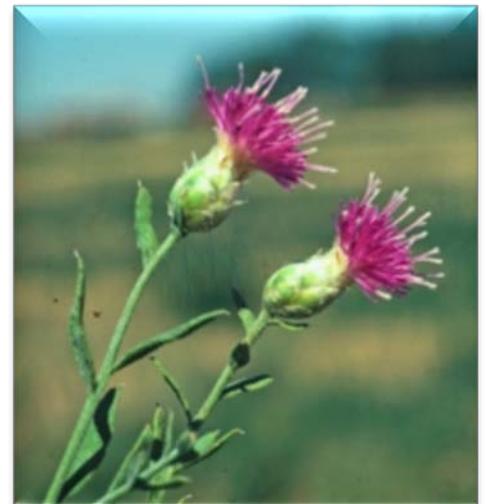
STEVE'S Weed of the Month

Russian Knapweed

Also Known As: Turestan thistle, creeping knapweed, mountain bluet, Russian cornflower

Class B Noxious Weeds: Non-native species that are either absent from or limited in distribution in some portions of the state but very abundant in other areas. The goals are to **contain** the plants where they are already widespread and **prevent** their spread into new areas.

Native to Eurasia, Russian knapweed (*Acroptilon repens* (L.)), is a perennial forb that emerges from root buds in early spring. Rosette leaves are gray-green, unlobed to deeply lobed, and 2–4 inches long. While basal leaves are mostly oblong and deeply lobed, intermediate leaves are smaller, less lobed and slightly toothed, and upper leaves are narrowly lanceolate to linear, with margins that are generally smooth but can be slightly serrated. The stems are erect, openly branched, and when young are covered with cobwebby grayish-white hairs. Mature Russian knapweed plants are bushy and stand 1–3 feet tall. During the summer and into fall, Russian knapweed produces flowers that can be pink, purple, or white. Urn-shaped flower heads, found at the tips of leafy branches, measure about $\frac{1}{4}$ – $\frac{1}{2}$ inch in diameter. Distinctive bracts with broad papery tips shroud the base of the flower heads in overlapping rows. These bracts surround the seeds as they develop. The fruits (achenes) are ivory to light brown, oblong, flattened, and have a bristly pappus at the apex that falls off at maturity. Seed production is relatively weak, partly because the bracts of the flower head do not readily release them; the seeds may remain viable in the soil for 2–3 years. The principal means of seed dispersal is believed to be via contaminated hay. Although Russian knapweed reproduces by seed, its primary means of propagation is a creeping rootstock. Shoots develop from adventitious



buds on a rhizomatous root system that grows vertically and horizontally in the soil and can exceed depths of 20 feet. The roots appear scaly and are brown to black, as if they had been burned, distinguishing this knapweed species from others. The extensive root system allows this species to survive indefinitely, and populations have been known to persist for more than 75 years. Russian knapweed is capable of forming dense monocultures, not only because it can virtually clone itself through vegetative regeneration, but also because it is allelopathic—releases chemicals that inhibit the growth of other plants.

Above photo by: Steve Dewey, Utah State University, Bugwood.org

The most reliable way to distinguish the knapweed species is by their bracts:



Photo by: Noxious & Nuisance Plant Management Information Systems (PMIS) USDA - ARS

Spotted knapweed:
black-tipped bracts



Photo by: Cindy Roche, Bugwood.org

Diffuse knapweed:
spiny crab-like bracts

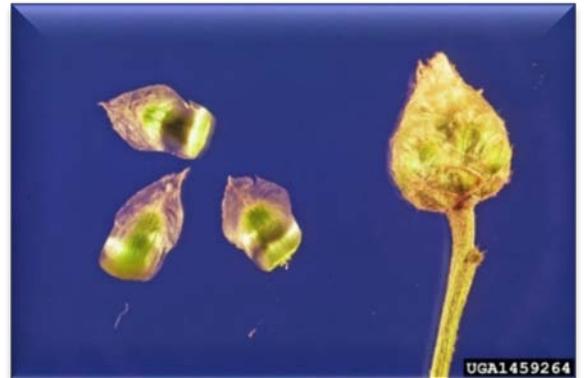


Photo by: Steve Dewey, Utah State University, Bugwood.org

Russian knapweed:
bracts with opaque papery tips

Russian knapweed inhabits many soil types. While it can often be found in poorly drained saline/alkaline soils, it prefers deeper soils with available moisture, such as irrigation ditches, flood plains, and river corridors. It is known to infest pastures, rangeland, roadsides, orchards, hay fields, and cultivated fields. It can often be found growing with whitetop (*Cardaria draba*).

Russian knapweed can cause chewing disease—a fatal nervous disorder—in horses if ingested in substantial quantities.

Control Methods

Russian knapweed is one of the most difficult perennial weeds to control. Proper land management that creates a healthy plant community is the best way to ward off invasive/noxious plants, but is not always enough. Monitoring the land is always important and enables early detection of new invasions of unwanted plants. For established populations of Russian knapweed, the overall objective should be to prevent seed production and vegetative spread while continually stressing the plants in order to exhaust the energy reserves stored in their root system. A single control strategy is usually not enough. Instead, an effective management plan should combine several control methods.

Physical/Mechanical Control: Young plants can be hand-pulled or dug, but because Russian knapweed primarily reproduces from rootstocks, it is important to remove as much of the root system as possible. Manual control efforts should occur before flowering and, in any case, all plant remains should be bagged and removed from the site. Knapweed species can be toxic to the skin, so protective gear should be worn. Repeated mowing before seed set may reduce the plant's energy reserves, but if not timed right, will merely stimulate vegetative regrowth and delay seed production. Cultivation also has its limitations. Intensive cultivation merely spreads root fragments, only to have them quickly reestablish. These mechanical methods work much better if combined with at least one other control method. For instance, mowing every 2–3 weeks during the growing season, applying herbicides in the fall, followed by seeding of a competitive plant species (sod-forming perennial grasses work better than bunch grasses, depending on precipitation) would be more effective than any one of these methods by itself.

Note: Light tillage is often necessary to overcome the residual allelopathic effects of Russian knapweed.

Fire: Because rootstocks are insulated from fire, burning results in rapid regeneration and spread of Russian knapweed. Further research is needed to determine whether prescribed burns can be effectively integrated with other measures for control of Russian knapweed.

Chemical control: Russian knapweed can be difficult to control with herbicides. Herbicides are dependant on seasonal timing and the developmental stage of the plant. Soil residual herbicides have been effective for Russian knapweed control when applied after several hard frosts. The herbicides which have been documented to be the most effective for controlling Russian knapweed are aminopyralid, chlorsulfuron, clopyralid, imazapic, metsulfuron and picloram.

**More information can be found in the
[PNW Weed Management Handbook](#)**

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

Biological control: The nematode *Subanguina picridis* forms galls on the stems, leaves, and root crowns of Russian knapweed, reducing plant vigor. However, its effectiveness in Washington is not yet known. Other biocontrol agents are being further studied.



Photo by: Norman Rees, USDA Ag Research Service, Bugwood.org



Photo by: Tony Caesar, USDA Ag Research Service, USA



Photo by: Norman Rees, USDA Ag Research Service, Bugwood.org

Grazing: Because livestock generally avoid Russian knapweed due to its bitter taste, grazing may not be an effective control method. Horses should never be allowed to access infested areas because Russian knapweed can be deadly if ingested by them.

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