Spotted Knapweed

Spotted knapweed (Centaurea maculosa), a perennial, is a taprooted Eurasian weed invading rangeland throughout the western United States and Canada. This weed has spread to 20 counties in the Pacific Northwest by 1960, and to 48 counties by 1980. Between 1980 and the present, the range of spotted knapweed rapidly increased to include 326 counties in the western United States, including every county in Washington, Idaho, Montana, and Wyoming. Spotted knapweed invasion is associated with reductions in biodiversity, wildlife and livestock forage, and increased soil erosion.

Identification
Spotted knapweed is a deeply taprooted, rosette-forming plant in the sunflower (Asteraceae) family. Basal rosette leaves are borne on short stalks and grow up t 8 inches long and 2 inches wide. Rosette leaves are deeply divided into lobes on both sides of the center vein. Flowering stems stand 8 inches to 4 feet tall. Spotted knapweed stems branch on their upper half. Spotted knapweed also has a black margin at the bract tips, and obvious dark longitudinal veins. Spotted knapweed flowers are purple to pink, rarely white, with 25 to 35 flowers per head. Spotted knapweed flowers bloom from June to October. The flowerheads usually remain on the plant.

Origin, History, Distribution
The native range of spotted knapweed is central Europe and east to central Russia, Caucasia, and western Siberia. Spotted knapweed was introduced to North America in the late 1800's as a contaminant in alfalfa. Early introductions were also through discarded soil used as ship ballast. The first record of spotted knapweed was in Victoria, British Columbia, in 1883 (Groh 1944). This weed spread further in domestic alfalfa seeds and hay before it was recognized as a serious problem.

Impacts
Spotted knapweed reduces livestock and wildlife forage. Researchers found that spotted knapweed infestations decreased bluebunch wheatgrass yield by 88%. Elk use, as estimated by pellet groups/acre, was reduced by 98% on spotted knapweed-dominated range compared to bunchgrass-dominated sites.

Spotted knapweed dominance on bunchgrass rangeland is also detrimental to water and soil resources. John Lacey, MSU Extension, determined that surface water runoff and stream

sediment yield were 56% and 192% higher, respectively, for spotted knapweed-dominated sites compared to bunchgrass-dominated sites. Water infiltration rates were less on spotted knapweed sites than on bunchgrass sites.

Biology and Ecology
Spotted knapweed is a perennial that lives up to nine years and is capable of producing seeds each year. Seed production of spotted knapweed ranges from 5,000 to 40,000 seeds per square meter per year. Site conditions and precipitation during the growing season have the greatest effect on the number of seeds produced per year. More seeds are produced during wet years.

Seeds germinate in the fall and early spring when moisture and temperature are suitable. Fall and early spring germinating seedlings are capable of maturing into seed-producing adults in one year. Seedlings develop into rosettes; most root growth occurs at this stage. If rosettes do not bolt, they die back to the root crown to overwinter. Root crowns form rosettes in the early spring and bolt in early June and flowering occurs from July through September. Mature seeds are formed by mid-August. Most spotted knapweed seeds are shed upon maturity; very few overwinter in the seedheads.

Spread
Spotted knapweed populations are largely extended through peripheral enlargement of existing stands. Bracts of the flowerheads open when dehydrated, two to three weeks after maturity, and wind or passing animals can flick the loosely held seeds up to one yard from the parent plant. Long distance transport occurs when seeds become attached to passing animals, or by rodents and birds. Spotted knapweed flowerheads also become attached to the undercarriages of vehicles, are transported long distances in mud, and commonly become attached to or drop into shoes. Seeds of spotted knapweed spread through rivers and along watercourses and are transported in crop seed an hay.

Habitat
Spotted knapweed infests soils of all types but especially likes welldrained soils which are common in Park County. It tends to grow in open and disturbed areas but will take over range sites no matter what their condition. Spotted knapweed can and will take over a range site unless control activities are undertaken by the landowner. Housing development sites are ideal for Knapweed because of the disturbance, vehicle traffic, and over or under grazed rangeland. Also these development sites tend to be on welldrained areas.
Source: Montana Weed Control Association