ELAEAGNUS ANGUSTIFOLIA

Synonyms:
Elaeagnus iliensis
Elaeagnus umbellata

Common Names:
Russian Olive
Silverberry
Oleaster

Identification and Introduction

Russian Olive is generally a shrub or may grow as a small tree. It may measure from 25 to 30 feet tall, 8 inches in diameter and some plants are armed with thorns. The bark peels in long strips and older trunks are deeply grooved. Simple, alternate leaves are about 1 ½ to 3 inches long, have a lance or oblong shape with smooth margins. The lower leaf surfaces are gray-white and dense with scales and brown dots.

Russian Olive flowers and sets fruit at 3 years old. The cluster inflorescences occur in leaf axils and the light yellow, fragrant flowers appear after leaf emergence in early spring. The yellow appendages are sepals, not petals, and they have a silvery tone on the outside. The flowers bloom late in the spring season. This shrub got its common name from the plump, oval fruits that resemble olives. Ripe fruits are yellow-red, dry and covered with gray scales, copious in quantity and maturing in late summer. The shrub reproduces primarily by seed but also will propagate vegetatively.

This species has been noted to escape cultivation in 35 states and is declared a state noxious weed in New Mexico and Colorado. Even up to middle of the 1980s, groups such as extension and state forestry agencies subsidized distribution of Russian Olive seedlings to private lands in 16 of the 17 western states for wildlife usage.

Natural History

Russian Olive is indigenous to Europe and western Asia. First planted in the United States in the late 19th Century as an ornamental, by the middle of the 20th Century the shrub escaped cultivation into the central and western states and is now naturalizes in those western states. This species is common in the Great Basin at 800 to 2000 feet above sea level, in the Platte River in Nebraska, the intermountain basins in the Rockies (Big Horn Basin and Unitah Basin). Russian Olive also is found in the east, such as Virginia to Pennsylvania.

This invasive species has become a great problem in riparian woodlands in the west, inhibiting growth of strong native trees such as the cottonwood. Russian Olive spreads to form monocultures that changes hydrology, nutrient cycling and ecosystem structure.

Life Cycle and Ecological Impacts

Russian Olive is found primarily in marshes, stream courses, riverbanks, flood plains and irrigation ditches in the western states at sea level up to 2,438 feet in elevation.

The shrub starts to fruit at 3 to 5 years old and these fruits are consumed and dispersed by birds. The seed coats are resistant to digestion. These seeds may be viable for up to 3 years and will germinate over a wide range of environmental conditions, anytime in fall to spring, giving seedling establishment great favor over the native riparian species. Stratification in moderately wet sand for about 3 months at 41 F encourages the germination process. Russian Olive can establish itself without fires or floods that would eliminate other species and in disturbed environments the plant competes with indigenous woody species.

Russian Olive performs its best in sand or loam soils that have low salinity and alkaline properties (100 to 3500 p/m), and a pH range from 6 to 9. The shrub is drought tolerant and will grow in short lived riparian or dry areas. It needs a minimum of 12 inches of annual rainfall to grow. Russian Olive plants possess a high evapotraspiration rated which takes away water resources from nearby native species and may turn the riparian areas into dry uplands and establish itself as the climax vegetation. This invasive species is tolerant of temperatures ranging from -50 to 115 F.

Once present in a watershed, Russian Olive will remain there because seeds germinate and thrive in the understory of cottonwood and other native trees. When the cottonwoods die the invasive shrub will become dominant by sexual and vegetative reproduction.

Russian Olive stands may be deter populations of native animal species long term. Riparian areas have been documented by higher diversity of bird species as correlated with native plants as opposed to areas taken over by the shrub. It is presumed that this observation may be due to fewer insects in Russian Olive stands.

Management and Control Methods

Seedling may be hand pulled in moist soil. A weed wrench can be used to pull plants with trunk diameters of less than 3 ½ inches. Continuous mowing gives good control. Large shrubs cut or girdled produce new growth unless herbicide is immediately applied. Prescribed burning may be used as a pretreatment method or with another control method, that is, a process of integrated pest management.

A cut stump herbicide application is the most effective method of control for large mature shrubs. The trunk or stem is cut close to the ground and within a few minutes herbicide is brushed on to the cambium of the cut. Hacking and frilling, girdling and an herbicide application or injection also is a good method to kill Russian Olive.

Glyphosate and triclopyr ester (Garlon 4) may kill mature Russian Olive shrub. One method used 50% solution of Garlon 4 in a cut stump treatment on shrubs with less than 4 inch diameter trunks. Leaf sprays on root sprouts using 25% solution of Garlon 4 for the following 2 years results in less than 3 sprouts per acre.

Contain damaged 75% of trees in Washington State. Concentrations used were 4% solution; 14% active ingredient). Large shrubs were damaged in the upper half of canopies and younger shrubs and sprouts illustrated damage throughout the whole canopy.

Spraying with triclopyr (Garlon 4 or Remedy) on the bottom 2 feet of stem gave good top kill and the native species were not affected. The whole circumferences of stem clumps are wetted but not to run-off. This method is used effectively with small shrubs that have smooth bark. For larger shrubs, include some smooth bark located upwards from the bottom 2 feet. Apply herbicide when the shrubs are growing, that is, from May to September. Burn to remove the above ground growth of Russian Olive and then apply herbicides on re growths.

Bibliography

Elaeagnus angustifolia L., (http://www.biosurvey.ou.edu/shrub/elan.htm). Last update 10 September 1999. Accessed 2 February 2009.

Tu, Mandy., The Nature Conservancy's Wildland Invasive Species Team., Element Stewardship Abstract for *Elaeagnus angustifolia* L., (http://tncinvasives.ucdavis.edu/esadocs/documents/elaeang.rtf) Accessed 19 February 2009.