



Figure 1. Naturalized stand of *Elaeagnus angustifolia* along the Snake River, Idaho. (Photo by F.L. Knopf).

Russian Olive – A Dangerous Invader

The purpose of this Tip of the Month is three-fold: 1) to provide information to the community about the dangers of the Russian olive tree, which is native to Asia; 2) to encourage identification and elimination of small saplings along our river (I hope to enlist help for this effort); and 3) to appeal to residents with mature trees to do the right thing for our environment by replacing this banned species with native trees. These mature Russian olives are the source of the seeds that give rise to river saplings.

Description

A bush or tree up to forty feet tall, with alternate lance-shaped silver-green leaves, 1 to 3 inches long, 3/8 to 1-1/4 inches wide; yellowish-green flowers in spring; stems with stiff woody thorns 1-2 inch long; fruit resembles olives, seed is a small white or brown stone; can also spread by suckers from the extensive roots. They are invasive in seventeen western states. Seeds are readily spread by birds, mammals and water flow from residential areas to river bottoms.¹ Colorado banned the sale of Russian olive in 2004. They were originally sold for wind breaks and as an ornamental, before their catastrophic effects on the environment were revealed.

Dangers

Fire: Russian olive competes with native trees, producing dense thickets that consume water at a greater rate than native trees.^{1,2} Fire threat is heightened because Russian olive alters the structure of invaded communities by increasing vertical and horizontal canopy density, fuel continuity and volatile fuel ladders.^{1,3,4} In one study, Russian olive established along the Middle Rio Grande floodplain formed dense, fire-prone thickets that developed into monospecific stands because of vigorous root-sprout growth following fire, as well as re-sprouting from trunks and root crowns in response to dead or damaged above-ground portions of the tree.⁵

Loss of Bird Habitat: Studies have shown that Russian-olive "... competes with native trees that provide nesting and roosting for birds²," thereby decreasing species richness. One study found nests of eleven bird species in Russian olive stands compared to twenty-nine in native river woodlands.⁶ Birds and other animals (including rodents) are attracted to the seed-containing fruit, but they typically don't live or nest in Russian olives.⁴ A test of the structural importance for bird roosting of Russian olive (*E. angustifolia*) compared bird use of willow (*Salix*) and *E. angustifolia* habitats of similar structure along the Snake River in Idaho. In the winter season, more foraging guilds (groups) were found in *Salix* than in *E. angustifolia* stands, but no other differences existed. In the breeding season, species richness, abundance and density were significantly greater in *Salix* than in *E. angustifolia* habitats, and all foraging guilds avoided *E. angustifolia*.⁴ Certain bird guilds, such as cavity nesters, appear to be consistently absent from *E. angustifolia* stands in New Mexico.^{1,6}

Competition with Native Tree Species: Russian olives are able to establish below the canopy of native trees, and are more tolerant of large salt-content soils and drought, although they consume water at higher rates than native trees.¹ "Russian olives seeds are readily spread by birds between suburban areas and river bottoms⁸." "Roots are extensive, suckers may come from roots. Large seeds and shade tolerance allow them to become established under the canopy of native trees²." Also, unlike most invasives, they are not dependant on disturbed soil to be become established. "...if [native] cottonwood forests cannot replenish themselves by recruiting seedlings, Russian olive may continue to invade and eventually come to dominate these riparian forests⁴." The seeds of Russian olive remain viable longer (up to three years), and germinate under a wider range of conditions than those of cottonwood and other native plant taxa¹. In comparison, cottonwood seeds are short-lived, produced in one springtime

pulse, and germinate under a narrow range of conditions. Further, Russian olive seeds are bird and animal-dispersed. These characteristics may give Russian olive an advantage.

Treatment

Russian olive saplings can simply be pulled or uprooted using a weed wrench, or cut near the base and the sprouts repeatedly removed as they form, until the roots are starved. Mature trees can be cut near the base and the suckers that grow from the stump and roots repeatedly removed until the roots are starved. Repeated cutting is necessary as sprouts form. I do not recommend the use of herbicides, and there are no bio-control agents available.

Russian olive is on the Colorado List B of invasive species, requiring local governments to develop plans to prevent spread.² Larimer County encourages removal.

Plea

I urge everyone to help eliminate the species from Pinewood Springs in order to reduce our fire vulnerability, preserve our precious river and its habitat (our primary source for water), and maintain our diversity of birds, mammals and botanical species. There are several large stands of mature Russian olive trees in the community, which produce an immense number of seeds; a large portion will end up at the river. There is ample evidence along the river near the Seneca and Cree Court bridges that Russian olives are spreading to the river area. With a cursory investigation only near the bridges, around twenty saplings have been found already.

I am starting a campaign to eradicate the invader from the river banks and hopefully from the entire community. The time for action is now when the spread to the river banks can be controlled, and trees are small and much easier to treat. We owe it to our neighbors and future residents to prevent the destruction of our river environment. I hope I can have general support of the community in this effort (and a few dedicated helpers).

Thank you.

Tom Tuer: (303) 823-5937 or tuer@umich.edu

References:

1. G.L. Katz & P.B. Shafroth, "Biology, ecology and management of *Elaeagnus angustifolia* L. [Russian Olive]," Wetlands Vol.23, pp. 763-777, 2003.
2. Alicia Doran, Steve Anthony & Cathy Shelton (eds.), Noxious Weeds of Colorado, 11th edition, prepared by Colorado Weed Management Association, 2013.
3. K. Zouhar, J.K. Smith, S. Sutherland & M.L. Brooks, Effects of Fire on Nonnative Invasive Plants and Invasibility of Wildland Ecosystems, USDAFS General Tech. Report RMRS-gtr-42, vol. 6, 2008.
4. Colorado River Basin Tamarisk and Russian Olive Assessment, Prepared by parties of the Central Arizona Water Conservation District, the Colorado Water Conservation Board, the New Mexico Interstate Stream Commission, the Six Agency Committee, the Southern Nevada Water Authority, the Utah Division of Water Resources, and the Wyoming State Engineer's Office, December 2009.
5. Wildland fire in ecosystems: fire and nonnative plants, Ogden, UT: USDA Forest Service Rocky Mountain Research Station. General Technical Report No. RMRS-GTR-42, vol. 6, 2008.
6. F.L. Knopf & T.E. Olson, Naturalization of Russian-olive: Implications to Rocky Mountain Wildlife, Wildlife Society Bulletin 12:289-298, 1984.
7. Weed Management Reference Guide, Larimer County Department of Natural Resources, Land Stewardship Program, 6th edition.

Additional references:

T. Caplan, "Controlling Russian Olives within Cottonwood Gallery Forests along the Middle Rio Grande Floodplain (New Mexico)," Ecological Restoration 20(2):138-139, 2002.

S.H. Stoleson & D.M. Finch, "Breeding Bird Use of and Nesting Success in Exotic Russian Olive in New Mexico," Wilson Bulletin 113(4):452-455, 2001.

K. Zouhar, Elaeagnus angustifolia in Fire Effect Information Systems, 2005.



Figure 3. Distribution of *Elaeagnus angustifolia* in 17 western United States. Figure is modified from Olson and Knopf (1986). ● = occurrences of *E. angustifolia* reported by Olson and Knopf (1986). ○ = occurrences reported by the Great Plains Flora Association (1977). ⊗ = occurrences reported by Olson and Knopf (1986), but excluded by Brock (1998). Shaded areas represent regions of extensive naturalization, according to Olson and Knopf (1986). ▲ = occurrences noted between 1997–2001 (J. M. Friedman, unpublished data).