Best practices to control non-native, invasive Russian olive and tamarisk within the Jordan River Corridor (Utah, USA)

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Introduction

Russian olive (*Elaeagnus angustifolia*) and tamarisk (*Tamarix* species) are non-native, invasive tree species that are common in the Jordan River system. These species outcompete native plant species, reduce the complexity of the ecosystem, and make it difficult for wildlife and humans to access the river. A common goal for land managers along the Jordan River is to control these two species and support the recovery of a diverse riparian plant community (native trees, shrubs, grasses, and forbs). We summarize best practices for controlling these species from our experience and those of practitioners working on the Jordan River in UT.

Important considerations for Russian olive and tamarisk control

In general, plan to remove invasive trees and revegetate with native plants in phases. This will help to mitigate the dramatic and quick loss of structure, habitat, and shade.

Bird habitat

- If there are known high use areas by birds, especially sensitive species, map and monitor these locations. Avoid removals in these areas or wait until nearby higher quality habitat is established and see if birds shift over to these new spots.

- When possible, use a frill cut treatment on large diameter, tall, and straight Russian olive trees to provide perches.

- Typically, it is fine to remove lone Russian olive and tamarisk trees, as they do not provide frequently utilized habitat.

Shade

- In some situations, it may be appropriate to revegetate the project site with native plants prior to removing all of the tall shade-providing invasive trees. Once tall native vegetation is established, the rest of the invasive trees can be removed.

Erosion

- Invasive trees growing on and near the river's edge assist in stabilizing the bank. Removing these trees may lead to bank erosion over time. Consider these effects before removing invasive trees along the river's edge.

Revegetation

Many restoration sites will need active revegetation to restore ecosystem functions and fulfill restoration goals. For more information, see "Best practices for revegetation along the Jordan River (Utah, USA) following control of invasive plant species".

Selection of techniques

There are several different ways to control Russian olive and tamarisk. We highlight a few of the most relevant strategies for the Jordan River below. The cut stump method will kill the tree and allow for the biomass to be chipped or piled. The frill cut method will kill the tree slowly and will result in standing dead branches that may create desirable bird habitat. For small project areas, hand-pulling first-year seedlings works well for preventing infestations. These control treatments can occur any time of year except for when the ground is frozen.

Cut stump for Russian olive and tamarisk

- For tall trees, cut the stumps a few feet tall and clear the biomass away from the tree. Once the biomass is cleared from the area, cut stumps low and **immediately** apply herbicide to the cambium layer, the layer of cells underneath the bark of the tree. No need to apply herbicide to the bark or inner core wood.

- Before applying herbicide, be sure to wipe away any dirt or sawdust from the stump that would inhibit herbicide uptake.

- **Any untreated stumps or whips will vigorously regrow**.

- Consider cutting stumps to ~4" above the ground to allow for retreatment if regrowth occurs.

- Chip or pile the biomass. Piles should be densely packed and be no bigger than 6 x 6 ft. Piles can be burned or left to provide habitat for insects, birds, and small mammals.

- While chainsaws or a skid steer with a mastication head attachment can be used for large trees, heavy duty loppers work well for smaller stems.

Cut stump herbicide application set up

Frill cut for Russian olive

- With a hatchet or ax, chop through the bark into the tree at a downward angle so the frill cut will hold the chemical.

- **Immediately** inject or pour 1ml of herbicide into each frill cut.

- Stagger frill cuts around the stem(s) of the tree, one frill for every 2-3 inches of the tree diameter at breast height.

- Multiple stems should be treated separately.

- Leave the tree in place for at least a year to be sure the tree has been killed.

A frill cut

Recommended herbicide mixtures
You must follow all labels.
- Russian olive – for cut stump and frill cut, undiluted glyphosate
- Tamarisk – for cut stump, undiluted triclopyr or imazapyr at labeled rate
- Penetrant/surfactant for cut stump treatments (e.g., LI-700 at ~2 oz per gallon)
- Dye (at the labeled rate)

Use caution when applying herbicide near native vegetation. Imazapyr herbicides persist in the soil (potentially affecting desirable seedlings) and have more label restrictions.

For more information about the Jordan River Cooperative Weed Management Area please contact Rae Robinson, Jordan River Vegetation Project Coordinator, at raerobinson@utah.gov.