



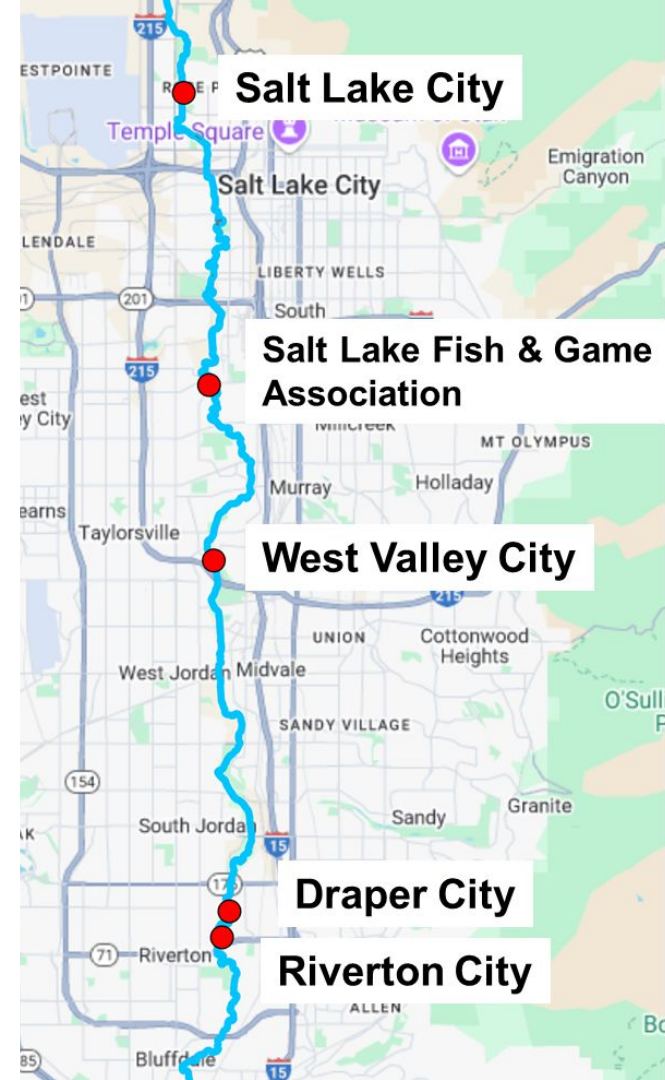
FFSL Update & Phragmites Control

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Forestry, Fire & State Lands Update

- Jordan River CWMA grants
 - Projects up to \$100,000
 - RFP to be shared early 2026
 - Invasive species control and vegetation improvement
 - Multi-year projects



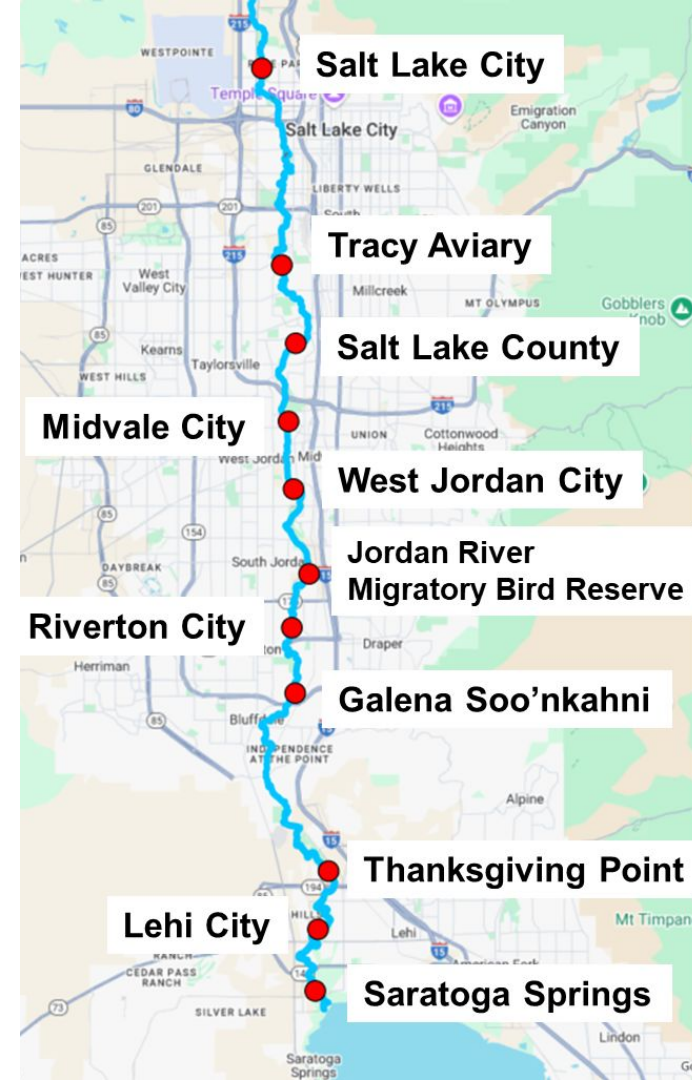
Ongoing FFSL Phragmites Work

- Year 2 of herbicide and mowing treatments
- Pilot projects

Critical need — areas where ecosystem functions and services are at great risk and demand immediate attention

Protection — areas where ecosystem functions and services are of high quality but need management to maintain this status

Leveraged efforts — areas where control efforts would build upon other investments along the Jordan River



Best practices to control non-native, invasive Phragmites within the Jordan River Corridor (Utah, USA)

Rae Robinson, Keith Hambrecht, and Eric McCulley

Version 2 | January 2024

This document was informed by the experience of practitioners working in wetland and riparian areas in the region, including those working with the Jordan River Commission and Division of Forestry, Fire and State Lands.

Introduction

Controlling Phragmites (*Phragmites australis* subsp. *australis*) is a common goal of many land managers working in wetland and riparian areas in North America. In this document we summarize best practices for controlling Phragmites from our experience and those of practitioners working on the Jordan River in UT. We plan to update this document as we make progress treating Phragmites on public and private lands along the Jordan River so that it will be a relevant resource for those working to control Phragmites on the Jordan River.

Non-native, invasive *Phragmites australis* subsp. *australis*

The Phragmites species we reference in this document is the non-native, invasive subspecies that is not originally from North America, has aggressive characteristics, and is on the State of Utah Noxious Weed List. Almost all of the Phragmites in northern Utah is *Phragmites australis* subsp. *australis*. This subspecies outcompetes and replaces diverse native plant communities which sustain diverse resident and migratory wildlife species. Phragmites encroaches into the river channel and up the banks of the Jordan River, impeding human and wildlife access along and to the river. The native subspecies, *Phragmites australis* subsp. *americanus*, does not grow as densely and may have subtle morphological differences (e.g., leaf sheath falls off easily in the native subspecies; it stays tightly attached to the dead culm in the non-native subspecies).



How to prioritize sites

The criteria below may be useful in identifying areas to prioritize Phragmites control and restoration. These criteria were developed by the Phragmites Working Group for the Jordan River.

Critical need — areas where ecosystem functions and services are at great risk and demand immediate attention

Protection — areas where ecosystem functions and services are of high quality but need management to maintain this status

Leveraged efforts — areas where control efforts would build upon other investments along the Jordan River

How to control Phragmites

- We recommend integrating mechanical (i.e., mowing), chemical (i.e., herbicide), and revegetation strategies to control Phragmites on the Jordan River. Research shows that the application of these three strategies is much more effective than one of these techniques alone.
- Typically, Phragmites will need to be controlled with mechanical and chemical treatments within the same year, for 3–5 years. Revegetation will likely be needed to assist in the recovery of native plants.
- Other strategies to control Phragmites, such as grazing and water control, may apply in some places on the Jordan River, however due to the nature of the Jordan River system (e.g., highly developed, regulated flows), these strategies may be less applicable.

Best practices for revegetation along the Jordan River (Utah, USA) following control of invasive plant species

Rae Robinson, Keith Hambrecht, and Eric McCulley

Version 2 | January 2024

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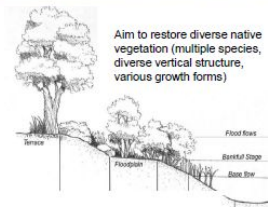
Introduction

A common goal for land managers along the Jordan River is to control Phragmites (*Phragmites australis* subsp. *australis*), Russian olive (*Elaeagnus angustifolia*), tamarisk (*Tamarix* species), and puncturevine (*Tribulus terrestris*) and restore diverse plant communities (with numerous native tree, shrub, grass, and forb species). We summarize best practices for revegetation from our experience and those of practitioners working on the Jordan River in UT.



Why pursue active revegetation

Removing large populations of invasive species may result in the loss of important ecosystem functions (e.g., temperature regulation/shade, nutrient cycling, bank stabilization, habitat). Ideally this loss is temporary and diverse native plants replace (and improve) these ecosystem functions. But often native plants fail to quickly recover, especially if environmental conditions are not favorable, secondary invasions threaten the restoration site, or surrounding native plant populations (in the seedbank and adjacent areas) are insufficient. Active revegetation can accelerate native species establishment and prevent reinvasion of invasive species.



Source: Wang, et al., 2011. Riparian Planting Zones in the Intermountain West. Western States P&S. P&S. Plant Science Center, Berkeley, CA.

When to revegetate

Revegetation can be implemented at a restoration site before, during, or after invasive plant control, depending on the site. The timing of revegetation will depend on restoration goals, the extent of the invasion, and how well the species has been controlled. Multiple years of revegetation may be necessary to achieve the desired cover or density of species.

Revegetation prior to invasive species control

Example: Planting trees earlier in the restoration process gives planted trees a "head start". Caution—be sure not to plant or seed in areas that will be in the way of future invasive species control treatments.

Revegetation during invasive species control

Example: If removing Russian olive and tamarisk trees patch by patch at a site, consider revegetating newly barren patches using a phased approach.

Revegetation after effective invasive species control

Example: When revegetating an area that was previously occupied by a dense Phragmites stand, be sure Phragmites cover and biomass is minimal (after many years of treatment) before proceeding with revegetation.

Revegetation after a disturbance of earth (e.g., utilities, trails, boat ramps)

Revegetate within two weeks of the disturbance, no matter the time of year. Follow up with additional revegetation treatments in the fall and spring.



Phragmites Control - Management Strategy

Chemical



Mechanical



Revegetation



Treatment timeline for Phragmites control

June – July	July – September	October – April
Mowing ^a	Herbicide ^b	Mowing ^c
		Revegetation ^d

Phragmites Control - Chemical Treatment





- Late summer, unless drought stressed
- Aquatic-approved glyphosate
 - High end of labeled rate
 - Non-ionic surfactant (e.g. LI-700)
 - Ammonium sulfate
- Backpack, vehicle, and drone spraying



Phragmites Control - Mechanical Treatment

- Winter, optional spring/early summer
- Wait at least one month between
- Remove biomass for upcoming treatment effectiveness



Plant materials	Brief methods and equipment	Notes
 <p>Seed</p>	<ul style="list-style-type: none"> Sow a species-diverse seed mix (the species in the mix will depend on your restoration goals) Use a handheld seed spreader and rake, Argo or UTV with hopper and harrow, or hydroseeder 	<ul style="list-style-type: none"> Harrow or rake seeds into soil to ensure good seed to soil contact. Many species exhibit dormancy. Fall seedings will allow for greater seed dormancy break. If seeding in the spring, consider a cold stratification treatment. Reach out to the Jordan River Commission for seed mix examples and guidance.
 <p>Potted plants (i.e., plugs, containerized plants of all sizes)</p>	<ul style="list-style-type: none"> Use shovels or machine-powered augers for digging holes Water the hole prior to planting When planting the tree, create a shallow depression around the tree at the soil surface Water the tree immediately after planting 	<ul style="list-style-type: none"> Deep-rooted plants (e.g., 30" tall potted plants) may do better than plants with shallower roots when ground water is less available. Knowledge of site hydrology is key. Supplemental irrigation may be needed in the first two to three years.
 <p>Cuttings/pole plantings</p>	<ul style="list-style-type: none"> Some wetland plants (e.g., willows, cottonwoods) can be propagated from cuttings. See "A Guide for Harvesting, Storing and Planting Dormant Willow Cuttings" (Wildlands Restoration Volunteers, 2008) for more information. 	<ul style="list-style-type: none"> Soak cuttings in water for 2-10 days prior to a dormant planting. Rebar, an auger, or a water stinger can be used to create deep holes (a majority of the cutting will be buried).
 <p>Sod mats</p>	<ul style="list-style-type: none"> Use stakes to secure mats to the ground If hydrology is insufficient to keep roots wet, supplemental irrigation may be needed following installation 	<ul style="list-style-type: none"> Sod mats may be useful in areas with consistent hydrology and a 3:1 slope or less. Native plant nurseries usually need a long lead time to grow sod mats for projects.

Phragmites Control - Key Takeaways

- Be consistent with treatments
- Be thorough with treatments
- One month window between mowing and herbicide
- Consider bank erosion when planning projects
 - Phased removal of phragmites
 - Temporary erosion control (coir fabric/logs)
 - Willow stake plantings
 - Wetland sod mats

