Summit CWMA WUI Garlic Mustard Control Program

Contract Number: 202307DG21

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Project Background

Species of Concern

The 2023 Summit CWMA WUI Garlic Mustard Control Program aimed to address issues of limited knowledge of noxious weed distribution and the control of top priority weeds in a sub-section of the overall Summit CWMA management area. The Sun Peak HOA, Utah Olympic Park (UOP) and lands in between were experiencing substantial disturbance as a result of fire mitigation efforts and infrastructure expansion. Garlic mustard was known to occur within the stream corridors of Sun Peak and a few populations had been mapped in the adjacent forest in previous years. Spotted knapweed and Phragmites have been present at the UOP and both appeared to be spreading. This project originally focused on these species, but as inventory proceeded, it became clear these properties are heavily invaded by many species and complete management plans are needed to strategically attack the full suite of invaders.

Project Description

This project focused on 772 acres within the Summit CWMA Garlic Mustard Control Program (18,474 ac) funded in large part by ISM Grants. This smaller project area was chosen for more targeted efforts due to the presence of a popular

Noxious weed species observed in the project area.

Noxious Weed	Class
Garlic mustard	1B
Dyers Woad	2
Houndtongue	3
Spotted Knapweed	2
Canada Thistle	3
Musk Thistle	3
Chamomile sp.	County
Scotch Thistle	3
Hoary Cress	3
Phragmites	3
Yellow Toadflax	2
Dame's Rocker	4
Field Bindweed	3
Dalmatian Toadflax	2
Common St. Johnswort	1B
Tamarisk(Saltcedar)	3
Russian Knapweed	3
Common Burdock	County
Oxeye Daisy	1B

Garlic mustard 1st year rosettes in the Sun Peak HOA stream corridor where several years of control is reducing population density.

recreational trail system, recent fire mitigation actions and the recent installation of the new ski jump at the Utah Olympic Park all occurring in areas of known garlic mustard, spotted knapweed and Phragmites populations.

Our greatest concern in this location was the fire mitigation work and the UOP infrastructure expansion. Use of machinery for both have spread garlic mustard and spotted knapweed. Inventory of these disturbed areas and their edges along with areas adjacent is critical to understanding how far garlic mustard and knapweed has currently spread and where they and other noxious weeds may be moving to next.

Approximately 80 percent of the project area is forest. Other habitats include minimal grassland and alpine meadows, sagebrush shrubland, oak and maple shrublands and developed areas with surrounding vegetation. Adjacent, contiguous forest are owned by private landowners and local and federal governments.

As a wildland-urban interface (WUI), the project area needs to act as a noxious weed fire line that prevents noxious weed invasion from escaping into less traveled and vast forest where it would go undetected and uncontrolled. Noxious weeds in the WUI can be challenging because many private landowners abut forested lands but lack noxious weed education so often fail to control them before they escape into the forest. Gaining access to these private lands can take great effort and time. This project area is unique in that the HOA recognized an increase in noxious weeds last season following spring fire mitigation work and called for help. This provides us an opportunity to treat but also an opportunity to educate HOA residents while we have their attention, and the issue is very visible.

Meeting Local and Partner Goals

This project meets the following goals for the Utah Strategic Weed Plan, Summit County Weed Control Policy, and Snyderville Basin Special Recreation District Weed Control Policy:

- Focuses on state and county listed priority, noxious weed species.
- Integrates multiple weed control methods including hand weeding and herbicide. Each method is applied based on species, site conditions, sensitive natural resources, and timing to have the greatest impact.
- Makes efficient use of resources (labor, funds, equipment and materials) through partnerships with adjacent landowners to meet cross jurisdictional goals.
- Includes an extensive mapping component that creates a detailed database used locally and reporting of data directly to the state using EDDMaps.
- A project manager is used to direct the work and

Common St Johnswort (center) and Phragmites (upper right) located in 2023 within the wetland of Bear Hollow condominiums.

ensure complete reporting of project outcomes and associate datasets.

Project Goals

The primary project goals were to gain a more accurate map of the distribution of noxious weed species and control as many invaded acres as funding and contractor availability would allow. The updated noxious weed mapping data can then be used to strategically plan control efforts and, in time, gain containment of these aggressive invaders. In addition, data specifically collected for the Sun Peak HOA will be used to develop a community weed management plan from which a budget for management will be developed to support their program going forward.

Methods

Our general approach included the use of inventory and monitoring to increase our understanding of species distributions. We prioritized monitoring of areas adjacent to known noxious weed populations, areas connected to known populations through trails, waterways and disturbances and areas that are reported to the CWMA by residents and partners.

Our control methods are varied; however, herbicide remains the primary method as it is most efficient, effective and for some species, the only reliable method. When site conditions and funding allow, we used mechanical methods for species that have been shown to be impacted by mowing, weeding, and digging.

As the Summit CWMA does not have paid staff, all work was either provided by partner staff, contractors, or volunteers. Volunteers are generally used for hand pulling to make this method more economical.

Monitoring / Documentation

Inventory - Noxious Weed Mapping

Inventory efforts for new noxious weed populations were focused along roads, trails, areas of disturbance (fire mitigation areas and infrastructure expansion) and areas adjacent to known populations.

Monitoring

Contractors monitored current populations and areas adjacent the known populations. Additionally, contractors added data to the EDDMaps system for a number of new locations and updated most of the data present prior to 2023. The goals of monitoring is to track population status and identify population distributions and boundaries within the project area to accurately track control progress.

Herbicide Application

Herbicide was applied primarily using backpack sprayers, however, some populations in the UOP lent themselves to the use of an ATV with hose to increase treatment efficiency. Both methods used spot spraying to obtain good control of noxious weeds while limiting non-target plant impacts.

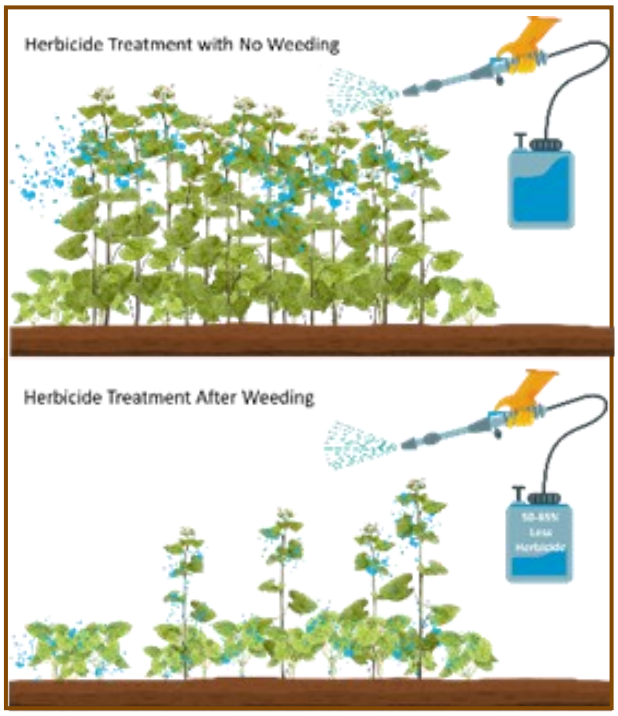
Mechanical Treatment

Hand weeding was used to a limited degree and primarily on garlic mustard and to remove dead biomass of Phragmites so that fall herbicide

Phragmites often accumulates substantial dead biomass that can inhibit herbicide contact with live biomass.

Removal of this biomass early season increases fall treatment efficacy by increasing herbicide contact with live biomass.

UOP 2023



Thinning of 2nd year garlic mustard plants significantly increases control success and reduces overall herbicide use.

treatment was more impactful.

In the case of garlic mustard, we used hand weeding to quickly thin 2nd year plants so that herbicide application will penetrate through that canopy and have good enough coverage to kill 1st and 2nd year plants (also reduces herbicide volume by 50-65%). Where appropriate and to reduce overall herbicide use, we additionally used mulching.

In addition, the larger Summit CWMA program used volunteers to weed noxious weeds. The Garlic Mustard Games has annually relied upon over 100 volunteers and the new Noxious Weed Ambassador Program has increased the focus beyond garlic mustard to include all common noxious weeds. In both programs we provide resources for volunteers to mechanically remove weeds, pick up and dispose of the volunteer bagged weeds and regularly award prizes to incentivize participation.

Results and Accomplishments

Within the184 acres inventoried for this project area, over 400 new populations of noxious weeds were mapped covering 14.4 acres.

Along with the work funded by this project, the UOP hired contractors to treat all noxious weeds except spotted knapweed, Phragmites and garlic mustard which we had agreed to assist them with in order to allow them to use their budgets to cover more ground. Additionally, Snyderville Basin Special Recreation District hired a contractor to treat as many noxious weed populations as budgets allowed along the trail system within the project area and had in-house staff assisting with hand weeding.

The outreach programs and the overall mission of the Summit CWMA to control noxious weeds and empower residents was promoted through a mid-summer interview in partnership with the Summit County Weed Supervisor, David Bingham, on KPCW's "This Green Earth" show and a multi-page article published in the Park Record. Events were posted on the Summit CWMA calendar located on the website and invitations and updates posted on

Noxious Weed	# of Populations Mapped	Known Acres	Treated With Herbicide	Treated With Weeding
Garlic mustard	113	12.63	7.5	
Dyers Woad	69	6.50	0.1	
Houndtongue	111	5.44	0.4	
Spotted Knapweed	51	3.07	0.5	
Canada Thistle	49	2.58	16.7	2.7
Musk Thistle	94	1.28	0.01	
Chamomile sp.	5	0.23		
Scoth Thistle	34	0.15		
Hoary Cress	3	0.09		
Phragmites	5	0.07	0.2	
Yellow Toadflax	1	0.05		
Dame's Rocker	3	0.04		
Field Bindweed	5	0.04		
Dalmation Toadflax	3	0.03		
Common St. Johnswort	1	0.03		
Tamarisk(Saltcedar)	2	0.01		
Russian Knapweed	1	0.01		
Common Burdock	5	0.00		
Oxeye daisy	1	0.00		
Total	**492.00**	**32.24**	**25.36**	**2.7**

*Acres and number of populations include all those mapped in 2023 plus those mapped in previous years within the UWSA project area.

Facebook throughout the season. These programs brought in 125 volunteers who attended weed pull events and pulled on their own using resources provided by our Garlic Mustard Game stations and Noxious Weed ambassador stations. Across the entire Summit CWMA program area, 4,600 pounds of garlic mustard and 475 pounds of other noxious weed species were removed through these programs. Funding of these programs is partially provided by the ISM grants in addition to the UServeUtah grant.

Challenges

In 2023, staffing challenges continued to impact some of the contractors we use for weed control. However, the greater challenge was the late spring which forced contractors to obtain work in the lower elevations of Salt Lake to ensure work for their staff which delayed their return to the Snyderville Basin area to begin work on this project. Regardless, we were able to meet our goals for the season and have additional areas mapped for early spring treatment in 2024.

Financial Summary

This $ 33,898.47 project was funded through direct funds provided by the UWSA Noxious Weed Grant and portions of grant funds from the Utah Department of Agriculture and Food ISM Grants (specifically the Summit CWMA's High and Low Garlic Mustard Control Programs) and the UServeUT Grant. The UWSA grant funded $10,000 of the project and was match by state grants at a rate of 71%. Additional funds remain in the state grants and will allow for spring and early summer weed control to address newly mapped weed populations and the Sun Peak HOA will be investing $3,000 to use the data from this project to develop a new, long-term weed management program. In

Funder	Line Item	Description	Invoiced Amount
UWSA Grant Funded Work			
UWSA	Inventory and Mapping	Inventory and mapping of noxious weeds in new areas to guide herbicide treatments.	$ 6,000.00
	Herbicide Contractor	Herbicide treatment of all noxious weeds	$ 4,000.00
Match			
High Elevation Garlic Mustard ISM Grant	Administration	Project management	$ 678.75
	Inventory and Mapping	Inventory and mapping of noxious weeds in new areas to guide herbicide treatments.	$ 1,291.40
	Monitoring	Monitoring status of known noxious weed populations and adding/ updating EDD Maps	$ 231.00
	GIS Specialist,	Maintenance of GIS data	$ 55.00
	Mechanical	Hand removal of garlic mustard and management of volunteers	$ 7,831.20
	Outreach	Outreach program operation - Garlic Mustard games, Ambassador Program	$ 1,200.50
Low Elevation Garlic Mustard ISM Grant	Administration	Project management	$ 698.40
	Monitoring	Monitoring status of known noxious weed populations and adding/ updating EDD Maps	$ 259.60
	GIS Specialist,	Maintenance of GIS data	$ 782.90
	Mechanical Control	Hand removal of garlic mustard and management of volunteers	$ 3,284.43
	Outreach	Outreach program operation - Garlic Mustard games, Ambassador Program	$ 447.00
	Herbicide Contractor	Herbicide treatment of garlic mustard	$ 6,020.00
USERVE UT	Outreach	Prizes for outreach program competitions	$ 1,118.29
UWSA Total			$10,000.00
State Total			$23,898.47
Project Total			**$33,898.47**

addition, Snyderville Basin Special Recreation District and the UOP hired contractors to assist with control in 2023. These contributions will be reported to the Summit CWMA later this year.

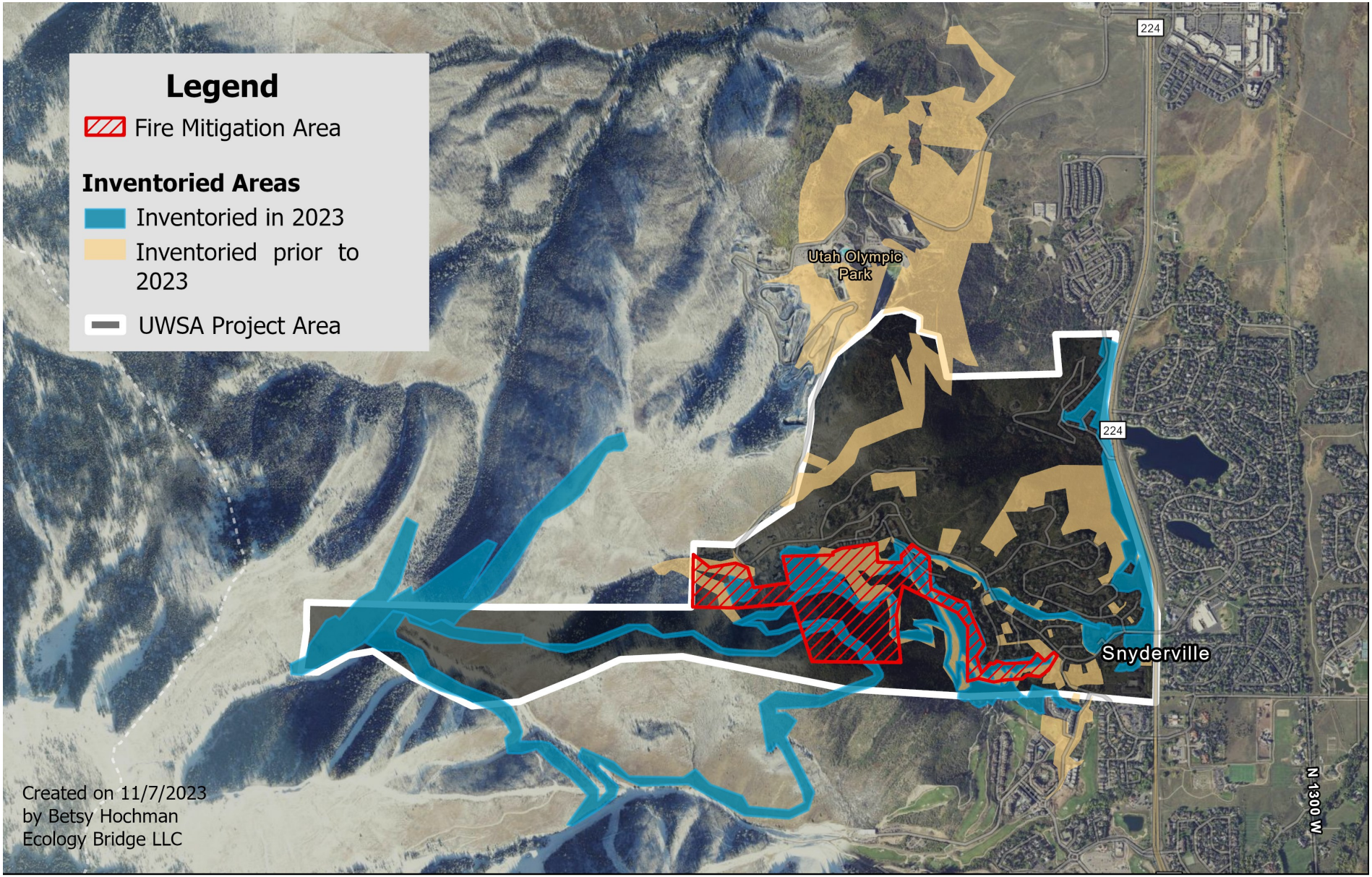
Multiple Partner Involvement

This project involved two local governmental agency partners, four private sector partners, a State partner and the UWSA. Summit County acted as the project fiscal agent and works with the Summit CWMA to coordinate and report on the project.

- Utah Department of Agriculture and Food
- Utah Weed Supervisors Association
- UServe Utah
- Ecology Bridge
- Park City Gardens and Nursery
- Snyderville Basin Special Recreation District
- Sun Peak HOA
- Summit County
- Utah Olympic Park

New spotted knapweed population found on the south-western boundary of the Sun Peak HOA.

Noxious Weed Ambassador Program stations provided tools for residents to mechanically remove a number of common noxious weeds, bag them and submit information on where, what and when they pulled, as well as, enter them in a biweekly drawing for prizes donated by local businesses.

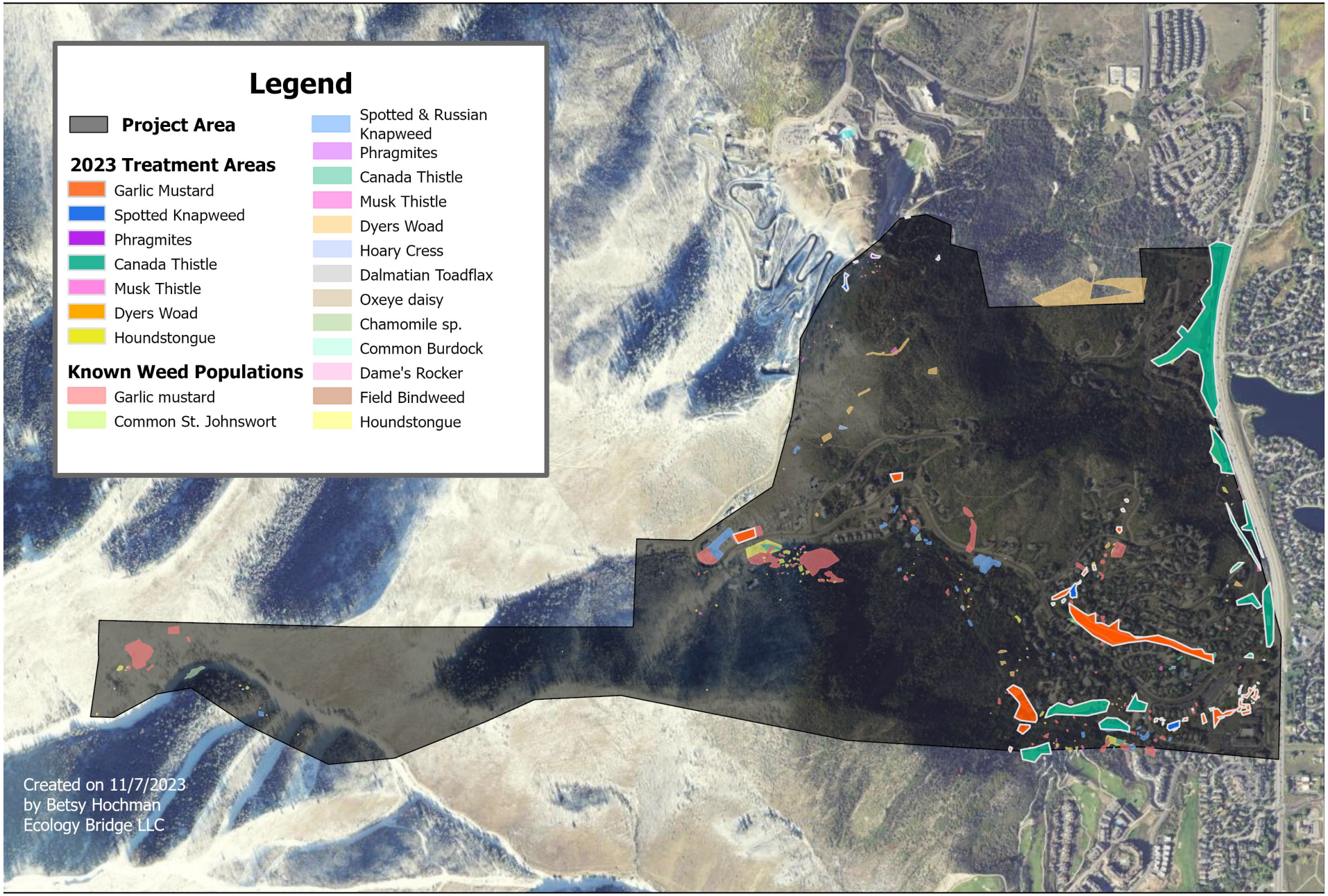


2023 Summit CWMA UWSA Project Area - Inventoried and Monitored Areas

This map displays areas inventoried or monitored for noxious weeds in 2023 and in prior years. Fire mitigation work was recently performed in the area highlighted in red.

N

0 0.3 0.5 Miles



2023 Summit CWMA UWSA Project Area - Known and Treated Populations

This map displays all known noxious weed populations and areas treated in 2023 within the Summit CWMA UWSA Project Area.

N

0 0.13 0.25 0.5 Miles