



# **SUMMIT CWMA**

## **Final REPORT**

### **2021**

**EDRR High Elevation Garlic Mustard and  
Control in Summit County**

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# 01

## Project Summary

“Garlic Mustard is widely recognized as the most prevalent and problematic invasive species within our North American deciduous Forests”

Nature Conservancy of Canada

The High Elevation Garlic Mustard ISM EDRR Weed Control project in Summit County is funded through the Utah Department of Agriculture and Food, Invasive Species Mitigation Fund, and partner matching funds and in-kind contributions. The project focuses on the Class 1B state noxious weed, garlic mustard (*Alliaria petiolate*). The Summit County CWMA was awarded \$85,000 for the treatment of garlic mustard during the 2021 fiscal year. Summit County, a member of the Summit CWMA, acted as the fiscal agent, and Ecology Bridge acted as the Project Manager.

The project area was selected based on over 10 years of garlic mustard control data in western Summit County. The High Elevation Garlic Mustard Control Project Area focuses on removing garlic mustard and restoring natural ecosystems for the protection of forest, open space and tributaries to the rivers of the Weber River and Salt Lake County Watersheds.

This year is the ninth year of ISM funded garlic mustard treatment in Western Summit County and seventh year of contiguous treatment of garlic mustard in both the spring and fall of the same year. 2021 is also the fourth year the project used pre-treatment weeding to thin flowering plants for better plant-herbicide contact and weeding in backcountry locations.

This is the third year we partnered with local HOA’s to assist with outreach to their members and obtain access to HOA open space. In 2021, the number of partnering HOAs increased, and 2 HOAs — Summit Park and Pinebrook Master HOA—actively worked

with the CWMA to plan volunteer weed pull events.

Summer 2021 was also the first official year of the annual Garlic Mustard Games. This program was designed to incentivize residents and visitors to assist in garlic mustard control. Through the Garlic Mustard Games, participants not only helped hand weed high priority garlic mustard populations, but also learned how to properly treat noxious weeds for greater success and less environmental impact.

# 02

## Treatment and Data Collection

The High Elevation Garlic Mustard Control Project Area encompasses private and public lands along the Salt Lake and Wasatch County boundaries with Summit County. Many residential and ski resort properties border locally and federally owned open space. Proximity to vast wildlands makes EDRR of noxious weeds critical; detection and treatment of noxious weeds is integral to the protection of watershed and wildlife habitat quality. To effectively control garlic mustard—both identifying and mapping noxious weeds, and applying strategic control—partnerships are essential. The CWMA membership is composed of both private and public owners of large and small amounts of land.

In 2021, multiple contractors were used to ensure control efforts were as timely as possible. PMG largely focused on the Park City, Summit Park, and Pinebrook areas. Ground

## Treatment Methods

### Monitoring and Mapping

Monitoring was used to locate new noxious weed populations, assess growth and treatment status, and assess treatment success and need for retreatment. Mapping allows the CWMA to maintain a record of noxious weed population status and distribution and record treatment and monitoring actions over time. All mapping is done with Arc Collector. Data is updated in EDDMaps to the extent possible given our resources.

### Manual Control

Hand weeding allowed for rapid treatment of backcountry patches, reduced overall herbicide use, and more complete herbicide coverage of plants in all patches.

Dense Patches:

Flowering plants were weeded to thin the garlic mustard canopy and allow more complete herbicide coverage.

Small and Backcountry Patches:

Both flowering and rosette stages were weeded.

### Herbicide Treatment

Six herbicides were selected and applied based on species treated, environmental condition, and land use. Herbicide rates were also tailored for particular locations and sensitive individuals or resources.

Garlic Mustard

2,4-D (Amine): 64oz/ac

MSM 60: 1.5oz/ac

Aquaneet: 2qt/ac

Escourt XP (partner contractors)

Spotted Knapweed

Milestone: 6oz/ac

Weedmaster: 1.5qt/ac

### Revegetation and Mulch

Sunny areas were seeded with native grass. Shady areas were mulched.

Solutions focused on Jeremy Ranch, Armstrong/Thayne's Canyon, Toll Canyon, and remote locations. Greenleaf aided control efforts by picking up Summit Park and Pinebrook properties that signed up to the program late in the season. Ecology Bridge was contracted to manage the project, manually control, monitor infestations and treatments, and complete weeding in remote backcountry areas where follow up herbicide treatment was not necessary or efficient. Ecology Bridge and Ground Solutions along with partners' staff implemented revegetation efforts.

We continue to use the Arc Collector App to capture new garlic mustard populations and other priority noxious weeds, and record treatment actions and herbicide rates. The app collects the following attributes: percent cover (or absence), dominant growth stage, control method used with herbicide rates, contractor or partner that applied treatment, number of bags of garlic mustard pulled from a site, number of hours on site, number of crew members, and notes. The app was used to record areas monitored around known populations, report new populations, map treatment, and facilitate efficient use of herbicide crews.

## 03

### Treatment Results

Property owners consented to the project's treatment of 194 private parcels—including 89 in Summit Park and 47 in Pinebrook—in 2021. Participation rates increased by 84 percent since 2020. HOA partnerships allowed for the treatment of 88 populations of garlic mustard on 29 HOA parcels. We did not require residents to pull flowering plants prior to herbicide treatment this year; low cover of flowering plants made weeding less relevant. Regardless, a few residents informed us that they had pulled their flowering plants.

The Arc Collector App increased efficiency in management of control crews by allowing digital assignment of treatment work and real time crew monitoring. Unfortunately, some contractors still struggled to accurately map control areas. As such, regular data monitoring and follow up with crews was necessary.

From July 1, 2021 to November 2021, approximately 23 acres were weeded and an additional 752 acres were

monitored with small patches manually controlled. Additionally, 575 acres were treated with herbicide. This equates to 4 percent of treatment being hand weeding and 96 percent being herbicide treatment. Due to multiple germinations of garlic mustard, several sites were treated two and three times, July through November. In spring of 2021, approximately 76 acres of garlic mustard were treated with herbicide and 35 acres were hand pulled.

Summit Park showed reduction in garlic mustard density where consistently treated, and garlic mustard spread to open space has been contained. Of the garlic mustard populations treated in the Summit Park/Timberline and Toll Canyon area, 94% were located on private residential property. The majority of garlic mustard in Summit Park is on residential properties, and the populations on open space have continually declined in size and density. Maintaining the line between the open space and residential parcels continues to be one of the highest priorities of this project.

Several populations in the Pinebrook HOA showed reduction in size and density of patches. Of the garlic mustard populations treated in Pinebrook, 58% were on private, residential parcels. Our access to private properties in Pinebrook is far less than in Summit Park; consequently, the extent of invasion within Pinebrook HOA is less understood. Within HOA open space, populations within forested areas remained dense with rosettes, but populations on drier aspects and within shrublands showed significant decline after two years of treatment.

The Sunpeak HOA continued to exhibit a slow decline of garlic mustard within open space. Much of the Sunpeak garlic mustard is located within mid density forest, along a stream corridor. Resident and HOA participation remains lower in Sunpeak than in other HOAs.

Both neighborhoods were newer to the program and newly accessed HOA open space had dense populations and tended to have more flowering plants than those treated in the past. The densest population of these new areas are the Iron Mountain community and the Crescent Ridge Condos. These populations are adjacent and are just down slope from the approximate 30-acre Armstrong population found two years ago. The Crescent Ridge garlic mustard population showed significant reductions along population edges and in project areas. The HOA has become very active in controlling this population. Thayne's Canyon and Iron Mountain have increased residents' participation through community phone call efforts and door to door visits.

Glenwood Historic Cemetery has also increased control efforts. Glenwood cemetery has high wildflower diversity; as such, hand pulling is favored over extensive herbicide application. Because elderly cemetery volunteers are physically unable to complete the labor necessary to control the area's garlic mustard, Glenwood will continue to rely on ISM program assistance.

Deer Valley's largest population of garlic mustard was treated with weeding and herbicide in 2019, and cover has been reduced by 95%. Both the Olympic Park and Colony HOAs have received extensive monitoring and little garlic mustard has been found. Monitoring has, however, identified other weed species these partners are not funded to control.

Percent cover and number of garlic mustard populations continue to decline on all Park City Municipal Corporation and Snyderville Basin Special Recreation District properties where control has been consistent. Basin Recreation properties, in particular, show rapid decline; four locations were reseeded. Park City's Rotary Park may be the greatest success of all historic sites, and seed trials show promise for future restoration efforts.

This is the third year the CWMA worked with Park City Nursery to control garlic mustard along its section of creek. The portion of the population we originally had consent to treat is nearly absent. Expansion of the Nursery grounds upstream allowed us to access and treat more of the population in 2021.

Transects estimated in previous years were monitored again in 2021. The 570 Upper Evergreen and, in particular, Toll Canyon transects show signs of native plant establishment. Limited seeding with native bunchgrass shade mix 4 was applied in fall 2021. Photos of transects can be seen in the Appendix .

The portion of Toll Canyon at the Matterhorn Dr 90 degree corner seeded with grasses and wild flowers showed some establishment of grass, yarrow and, in sunnier areas, phlox. When course biochar was spread with seed, grass establishment was greater. # acres of previously invaded sites reduced to < 20% garlic mustard cover were reseeded in 2021.

Transect Site	2018		2019		2020		2021	
	Pre-Weeding	Post-Treatment	Pre-Herbicide	Post-Treatment	Pre-Herbicide	Post-Treatment	Pre-Herbicide	Post-Treatment
Toll Canyon @ Matterhorn	42%	19%	33%	26%	Not Treated	4%	< 1%	< 1%
570 Upper Evergreen Dr - Summit Park	79%	41%	36%	35%	10%	7%	Not Treated	< 1%

## Additional Partnership Project Components

### Toll Canyon and Rotary Park Seeding Trials

Description: The Summit CWMA was awarded funding from the Utah Weed Control Association for revegetation seed mix, soil amendments and biochar trials for shady garlic mustard treatment sites. Shady sites remain difficult to revegetate due to lack of an effective seed mix and possible soil legacy effects of garlic mustard allelopathy. These trials aim to identify an effective seed mix and/or methods to address soil legacy impacts at these difficult sites.

Both seeding trial locations show high grass establishment. Percent cover of native grass at Rotary Park was slightly higher in 2021 than 2020, but the increase in percent with Toll Canyon was dramatically higher in 2021 indicating the fall application of seed rather than spring application was more effective.

Wild Rye remains the only species flowering within the mix, but there is significant percent cover of non flowering grasses that were not able to be identified. We will monitor these sites again in 2022 in hopes of identifying additional species.

In the initial trials of 2019 we did not include a treatment that seeded into native soil because we assumed soil quality had been reduced by garlic mustard. Given that all soil amendments and seed produce high grass establishment, we established a new set of plots fall of 2021 and added this missing native soil treatment.

### Garlic Mustard - Duracor Trials

Description: Large, dense garlic mustard populations—like the one along the Armstrong Trail in Park City—require large amounts of herbicide and expensive labor to control and are slow to show any progress. Treatment of the whole population is logistically limited. Duracor, a preemergent herbicide, may be effective on mustards

and garlic mustard. Research suggests that one treatment may control garlic mustard for three years. Given that the majority of Armstrong Trail's main garlic mustard population ranges from 80-100% cover, concern over a preemergent preventing natives from germinating was limited. Trial plots were established in 2020 to test how long control would last and whether we could reduce overall herbicide use from 2-3 treatments a year for three years to one treatment in 3 years.

Current Results: Both the spring and fall 2020 treatments significantly reduced garlic mustard. The addition of pre-treatment hand weeding showed only limited increase in control; this finding indicates that the labor cost of weeding is not necessary if Duracor is used. By fall of 2021, treated plots maintained low garlic mustard cover (< 15%).

### Esplanade Trials

Corey Ransom of USU and his crew established and treated Esplanade trial research plots in 2019 to test the effectiveness of Esplanade on garlic mustard control. Plots were established on the Park City Armstrong Trail and Snyderville Basin property of Toll Canyon. He and his crew have been back to monitor these sites. In February 2021, Corey informed us that the results are being analyzed.

### UDAF - ISM Transects

Britany Duncan of UDAF established transects in the Armstrong Trail area and lower Canyons Village to track treatment success under the differing treatment methods. She and her crew have been back to monitor these transects again this year.

# 05

## Outreach

Many residents requested non-chemical garlic mustard control methods that were not as labor intensive as weeding. Reseeding sunny areas after applying a thick layer of compost and soil was recommended. In shady areas, mulching was encouraged. Five residents mulched and three reseeded in 2019. This fall, an additional 30 residents in the project area reseeded spots that showed a reduction in garlic mustard with pollinator native grass seed mixes. It is their hope that they will not have to use herbicide in these areas moving forward.

### Community Weed Pulls

In 2021, community garlic mustard pull events were held under the umbrella of the new Garlic Mustard Games program. Considering the launch of the Garlic Mustard Games and associated incentives, a garlic mustard bounty was not offered this season.

The 2021 Garlic Mustard Games included a weed pull event at Glenwood Cemetery. The high quantity and diversity of wildflowers at this location render herbicide an undesirable option, and elderly historical society volunteers cannot manage extensive hand weeding. Given the situation, a community weed pull was the perfect control solution.

Unfortunately, Armstrong Trail could not be a pull location due to lack of flowering plants. However, Pinebrook HOA and Summit Park HOA held weed pull and education days.

The Garlic Mustard Games champion, Ashely C., is a resident of Summit Park and Olympic gold medalist in freestyle aerobics. She has agreed to be a spokesperson for Garlic Mustard Games in 2022.

### HOA Outreach Program

Many of our partner HOA open spaces are adjacent to or contain waterways and trails that lead to public open space. Consequently, treatment of these areas is important for reducing reinvasion of public open space. Our HOA Partnership program aids in the success of the CWMA in many ways:

- Resident outreach
- Volunteer recruitment
- Opportunity to connect residents to the Summit County weed program for extra assistance and herbicide consultation
- Opportunity to educate residents on other noxious weeds
- Disposal of garlic mustard in HOA dumpsters
- Food truck party location

The Pinebrook Master HOA has become an ongoing partner for the ISM project and is working with Snyderville Basin Special Recreation District to address other noxious weeds and develop a weed program. As of March 2022, Pinebrook added a noxious weed coordinator position to its board and requested a meeting to determine how best to partner going forward. The Summit Park HOA has added noxious weed control requirements and information to their new resident welcome packet and added the garlic mustard program to their list of annual dumpster days tables.

### Pollinator Project

One-on-one conversations have provided residents with research-backed information to calm concerns regarding bees and herbicide. In 2018-2019, the program received a number of negative comments on social media regarding the potential impacts of herbicide on honeybees. In spring of 2020, we partnered with USU Extension and Swaner EcoPreserve to hold educational webinars on pollinators and herbicide. These webinars also received ISM funding (a repost for this project will be submitted separately).

Four residents continue to report on their wildflower and grass seed. Many residents requested more along with direction on soil amendments. Beekeepers remain supportive of the ISM garlic mustard program with one exception. The particular beekeeper noted is relatively inexperienced and is regularly challenged and corrected on

social media by other keepers. New residents continue to request seed to restore areas in which garlic mustard has been controlled through hand removal, mulching, and/or soil amendaments. The majority of requests come from Summit Park HOA; however, residents from Thaynes Canyon, April Mountain, Iron Mountain, Pinebrook and Sun Peak reached out in 2021 as well. Additional funding from the UWSA SGMA grant allowed us to purchase additional seed to support resident revegetation efforts.

This project was born out of a need to combat misinformation and protest related to herbicide and pollinator decline. Through this project, we have not only educated the community and corrected general misinformation, but also gained partners in the beekeeping community. Additionally, we've been able to replace weeds with species that support pollinators and provide season long blooming.

## 07

### Contributors to Success

Multiple factors increase our ability to respond to weather, use time and money efficiently, and collect high quality data and share it across jurisdictions. The following is a list of the project components we found most effective.

#### Multiple contractors

The ability to hire multiple contractors allowed for timelier treatment and response to limiting weather conditions. In years prior to the use of multiple contractors, we often struggled to get crews when we needed them.

#### Use of ESRI Software

Web-based treatment consent facilitated by Survey 123 increased participation of residents and auto-populated our contractor maps, ensuring crews knew where they could treat.

A shared CWMA map on the ArcGIS Collector App allowed for real-time mapping of new weed populations and treatment, and aided communication with all partners and contractors.

#### Monitoring/Survey:

Pretreatment monitoring allowed for assessment of weed status before sending full control crews to the

site; this strategy increased herbicide crew efficiency.

Post-treatment monitoring allowed for assessment of treatment completeness and new plant growth.

#### Local government and weed department support

Partnering with our county and weed department has allowed us to obtain grant funding, access herbicide for partners at affordable rates, incorporate noxious weed trainings, and partner on treatment on private lands where we or the weed department find new priority weed populations

#### Consistent partners and treatment

Communicating with and directing treatment is increasingly more efficient with consistent partners. As an understanding of treatment needs as well as policy requirements is already in place, treatment goes forward without interruption.

#### HOA partnerships

An increasing number of HOAs are partnering to increase resident participation in both the control program and weed pull events. In addition, these partnerships are leading to HOAs creating noxious weed management plans and, in some cases, noxious weed committees.

## 08

### Challenges

Inconsistent participation of individual landowners continues to be a challenge. Each time a property goes two or more years without treatment, we see recovery of garlic mustard populations. We use historical treatment data and current population data to target long-treated parcels in hopes of maintaining the progress made in previous years. However, historically treated parcels at the middle of a neighborhood may be treated secondary to parcels adjacent open space and the edges of invasion fronts.

Some contractors were inconsistent with the use of the Arc Collector App. This inconsistency reduced the efficiency of communication and slowed planning of contractor assignments. After working with their supervisors, use was improved.

Exceptionally late fall rains and snow led to Garlic mustard germination too late in the season to treat due to cold temperatures. This late germination also occurred in sites that have shown drastically reduced or no garlic mustard in recent years. This observation indicates a mass flush of the seedbank. The extensive cover of flowering plants resulting from this flush may make complete control difficult in 2022 and put previous years' success in jeopardy.



Woodward Park City July 2021 Weed Pull

# 08

## Future Treatment Plans

We will continue compiling a list of respectable weed control contractors and landscape crews that can assist residents with weed control. This list will be on the Summit CWMA website. It is our hope that we will minimize contractor costs for mechanical removal by incentivizing residents and facilitating good-hearted weed control competition between community groups.

In order to make it easier for residents to sign up and follow our events, we will add all events to a calendar on our website. A call to action button will also allow residents to sign up for control assistance online.

### Summit CWMA High Elevation Garlic Mustard Control Program 5-Year Plan

Garlic Mustard control began in 2010 as a partnership between the Summit CWMA, Salt Lake County and the Salt Lake Watershed. Garlic mustard has been treated using hand weeding, mulching, herbicide and restoration. Since the program began, thousands of acres of garlic mustard have been treated.





## Project Partners

We'd like to thank all of our partners and sponsors for their contribution to this program. Thanks to the Utah Department of Agriculture and Food for funding this project. Recognition is also due to the following partners for their participation:

### Primary CWMA Member Partners

Deer Valley: Laura Sexton and Paul Hedman

Ecology Bridge: Sara Jo Dickens

Park City Municipal Corporation: Logan Jones

Pinebrook HOA: David Geffen, Don Brown, Stephan Herrera

Summit County: Dave Bingham, Dan Pena and Robin Judd

### HOA Partners

Enclave at Sun Canyon HOA: Jim Simmons

### Contractors

Greenleaf: Buck

Ground Solutions: Sterling Graham

Providia Management Group: Nate Elwood

### Additional Funders

Park City Community Foundation: Diego Zegarra

Sun Peak HOAs: Teresa Wharton

The Colony HOA: Pedro Rodriguez

Utah Department of Agriculture and Food: Brittany Duncan

Utah Olympic Park: Jamey Kimball

Utah State University: Corey Ransom

Utah State University Extension: Elizabeth Cohen

Vail Resorts: John Sale

Woodward Park:



# 10

## Financial Summary

The Garlic Mustard and Spotted Knapweed ISM Project focused on the control of garlic mustard. The project was awarded \$85,000 for July 1, 2020 to June 30, 2021. The Proposed budget allowed for \$8,500 to be spent on administrative costs (fiscal agent and project management). The remaining line item allotment and expenditure is defined in the table below

*Financial summary of expenditures*

<b>Budget Category</b>	
<b>Chemicals</b>	<b>\$ 190.00</b>
<b>Consultants</b>	<b>\$ 70,140.00</b>
<i>Herbicide Consultant</i>	<i>\$ 29,546.00</i>
<i>Mechanical Control Consultant</i>	<i>\$ 24,000.00</i>
<i>Monitoring and Mapping Consultant</i>	<i>\$ 15,233.00</i>
<i>GIS Support Consultant</i>	<i>\$ 1,361.00</i>
<b>Indirect</b>	<b>\$ 7,500.00</b>
<b>Supplies</b>	<b>\$ 7,170.00</b>
<b>Total</b>	<b>\$ 85,000.00</b>

# 11

## Conclusions

Treatment is reducing garlic mustard density and containing populations where treatment has been consistent over the last seven years. Several new, large populations in open space and some residential areas were found and many were treated. With continued, consecutive treatment, garlic mustard can be controlled and may even be eradicated in some areas, however, one of the greatest challenges will be ensuring private property owners remain active in control long enough and monitor for new plants.

Appendix: 570 Upper Evergreen Drive Property Transect Photos June 2022



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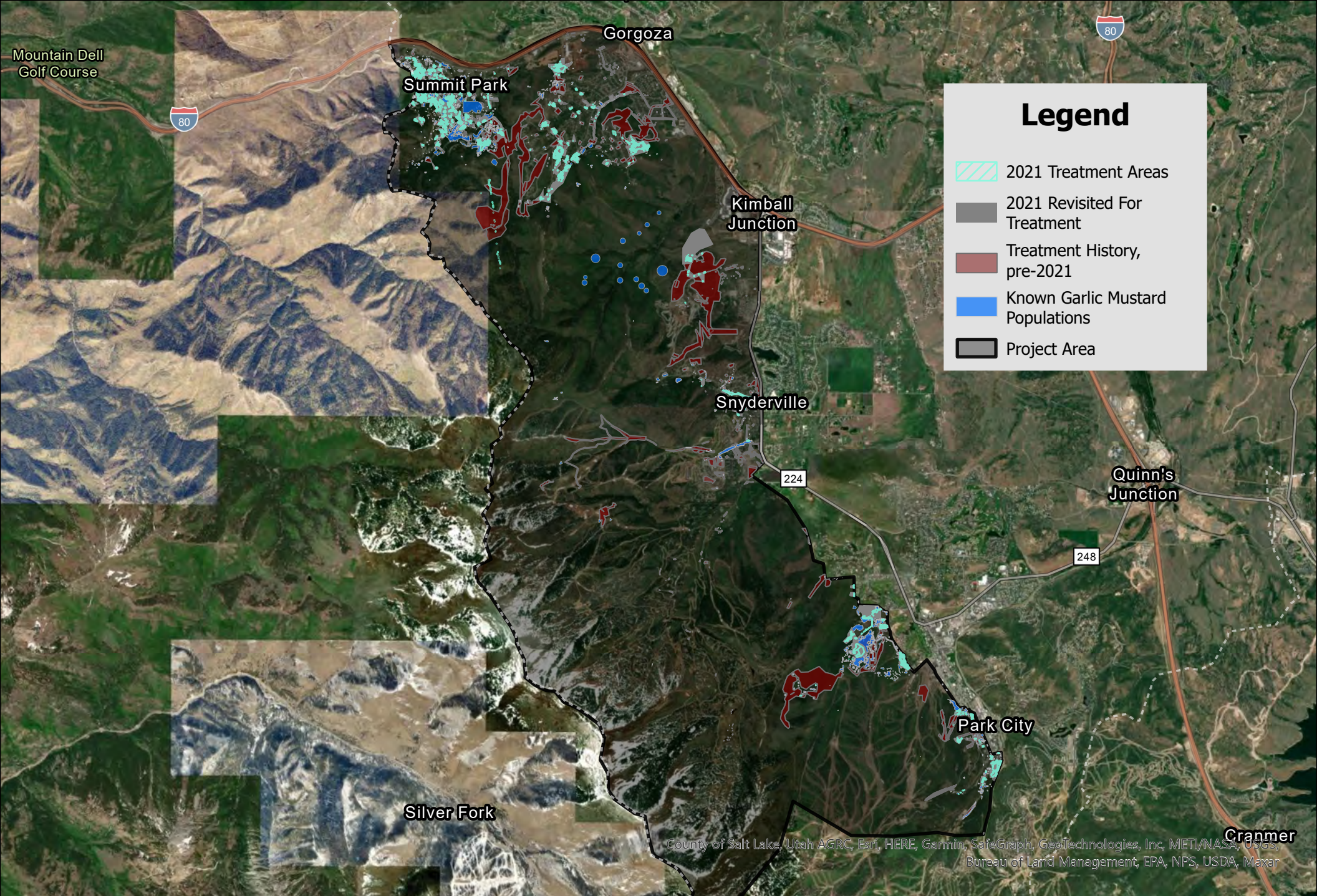
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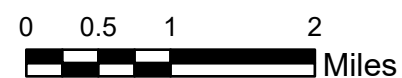
**Full Budget Description 2021-22 (2021 FIY)**

Budget Category	High Elevation GM Line Item	Company	Invoice #	Invoiced Amount
		2021 Expenses		
Consultants/Contracts	GIS Specialist	Spatial Connections	Part of_EB-21-03	\$1,307.00
Consultants/Contracts	GIS Specialist	Spatial Connections	Part of_EB-21-04	\$47.00
Consultants/Contracts	Herbicide Contractor	PMG	5173	\$24,187.95
Consultants/Contracts	Mechanical Control Contractor	Ecology Bridge	Part of_SC20037	\$18,090.00
Consultants/Contracts	Monitoring and Mapping Contractor	Ecology Bridge	Part of_SC20037	\$9,000.00
Indirect	Ecology Bridge Admin	Ecology Bridge	Part of_SC20037	\$60.00
Consultants/Contracts	Monitoring and Mapping Contractor	Ecology Bridge	Part of SC20041	\$2,921.40
Indirect	Administration	Ecology Bridge	Part of SC20041	\$30.00
Supplies	Native Forb Seed Mix	Pawnee Butte Seed	09302021-A	\$688.00
Supplies	Native Grass Seed Mix	Pawnee Butte Seed	09302021-A	\$5,827.25
Consultants/Contracts	Herbicide Contractor	Ground Solutions	Part of EB213	\$2,380.00
Consultants/Contracts	Monitoring and Mapping Contractor	Ecology Bridge	SC20046	\$408.00
Indirect	Administration	Ecology Bridge	Part of 21120	\$30.00
Consultants/Contracts	Monitoring and Mapping Contractor	Ecology Bridge	Part of 21120	\$156.80
Consultants/Contracts	Herbicide Contractor	Ground Solutions	Part of EB214	\$250.00
		2022 Expenses		
Consultants/Contracts	Mechanical Contractor	Nourish Landscaping	2022-007	\$5,910.00
Indirect	Administration	Summit County	NA	\$4,250.00
Consultants/Contracts	Monitoring and Mapping Contractor	Ecology Bridge	2022-015	\$2,746.80
Indirect	Administration	Ecology Bridge	2022-015	\$3,130.00
Consultants/Contracts	Herbicide Contractor	Ground Solutions	EB221	\$1,100.00
Herbicide Contractor	Herbicide Contractor	Ground Solutions	EB221	\$170.05
GIS Specialist	GIS Specialist	Spatial Solutions	May-22	\$7.00
Consultants/Contracts	Herbicide Contractor	PMG	5506	\$1,000.00
Consultants/Contracts	Herbicide Contractor	PMG	5506	\$458.00
Chemical	Herbicide	Summit County		\$190.00
Supplies	Grass Seed	Pawnee Butte Seed	6292022	\$654.75
<b>Total</b>				<b>\$85,000.00</b>

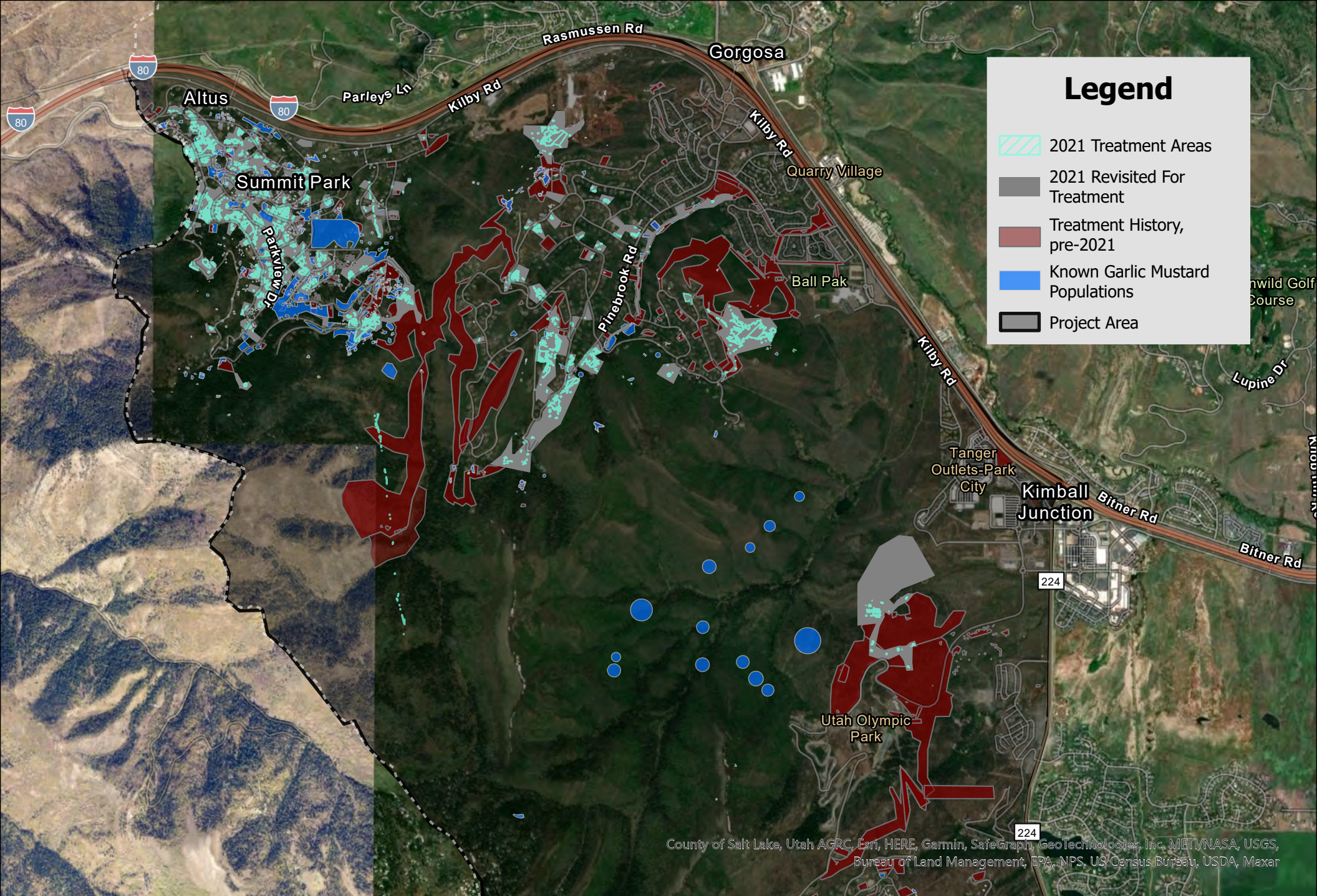


**Summit CWMA High Elevation Garlic Mustard Control ISM Program 2021 Report**

Treatment areas and history for the full 2021 high elevation garlic mustard management area. Known population data is cumulative since 2018.



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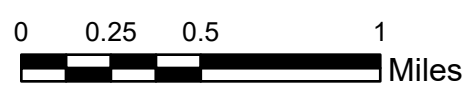
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- 2021 Treatment Areas
- 2021 Revisited For Treatment
- Treatment History, pre-2021
- Known Garlic Mustard Populations
- Project Area

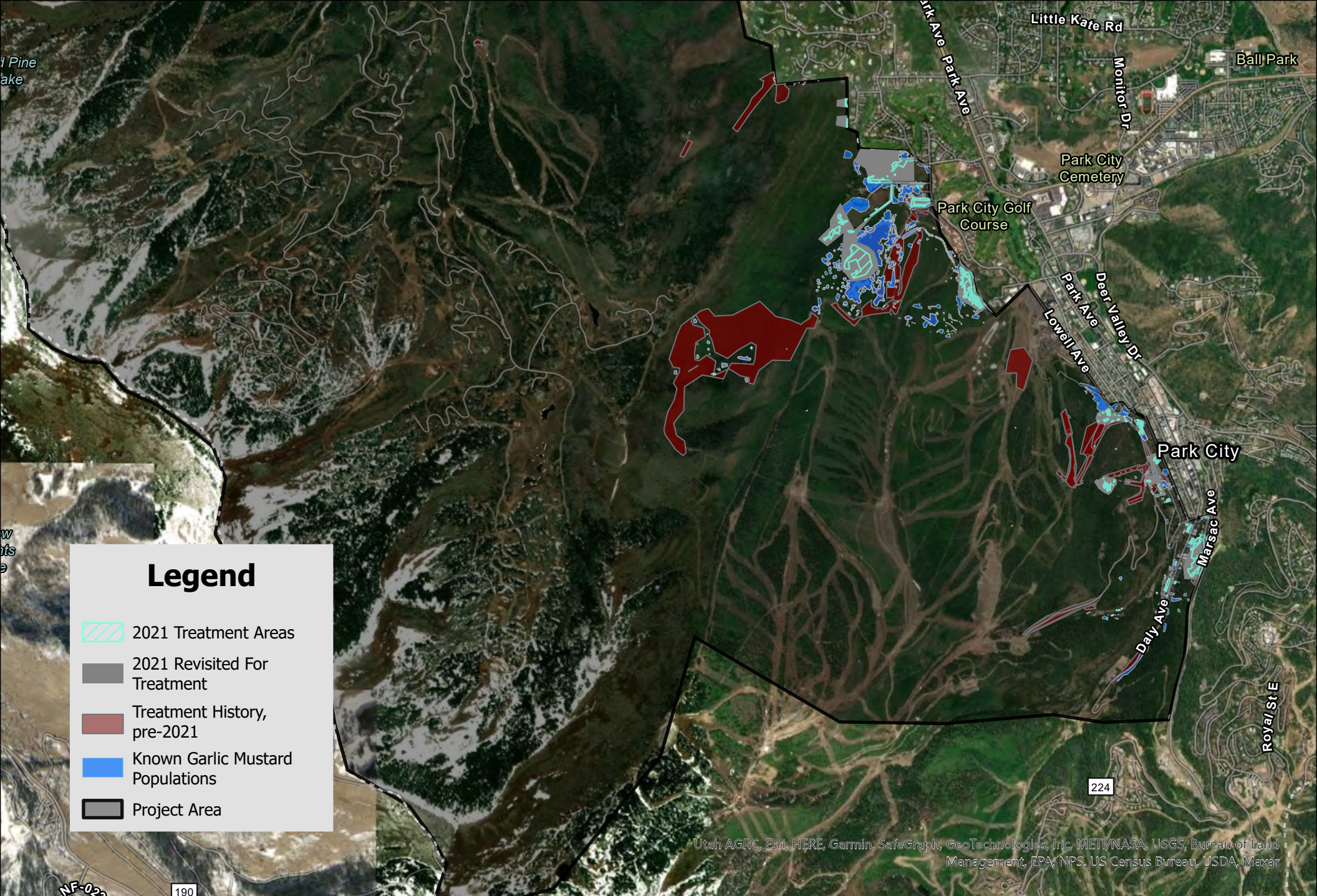
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**Summit CWMA High Elevation Garlic Mustard Control ISM Program 2021 Report**

Treatment history and 2021 treatment areas for the north Snyderville Basin section of the high elevation garlic mustard management area.



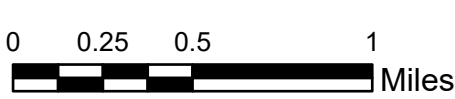
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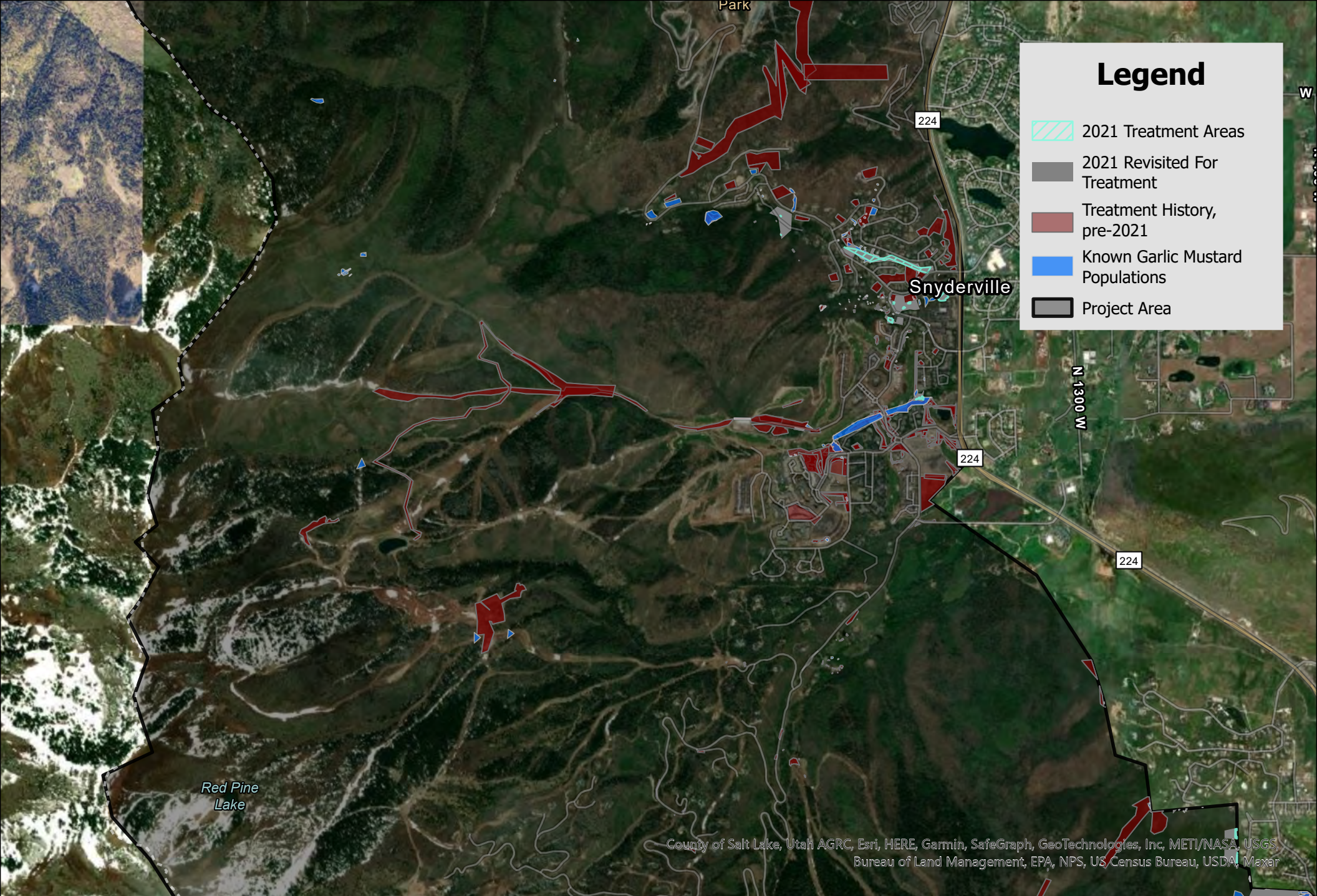
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**Summit CWMA High Elevation Garlic Mustard Control ISM Program 2021 Report**






Treatment history and 2021 treatment areas for the Park City section of the high elevation garlic mustard management area.



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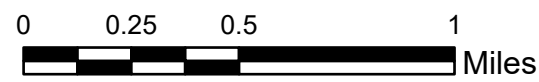


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-  2021 Treatment Areas
-  2021 Revisited For Treatment
-  Treatment History, pre-2021
-  Known Garlic Mustard Populations
-  Project Area

## Summit CWMA High Elevation Garlic Mustard Control ISM Program 2021 Report

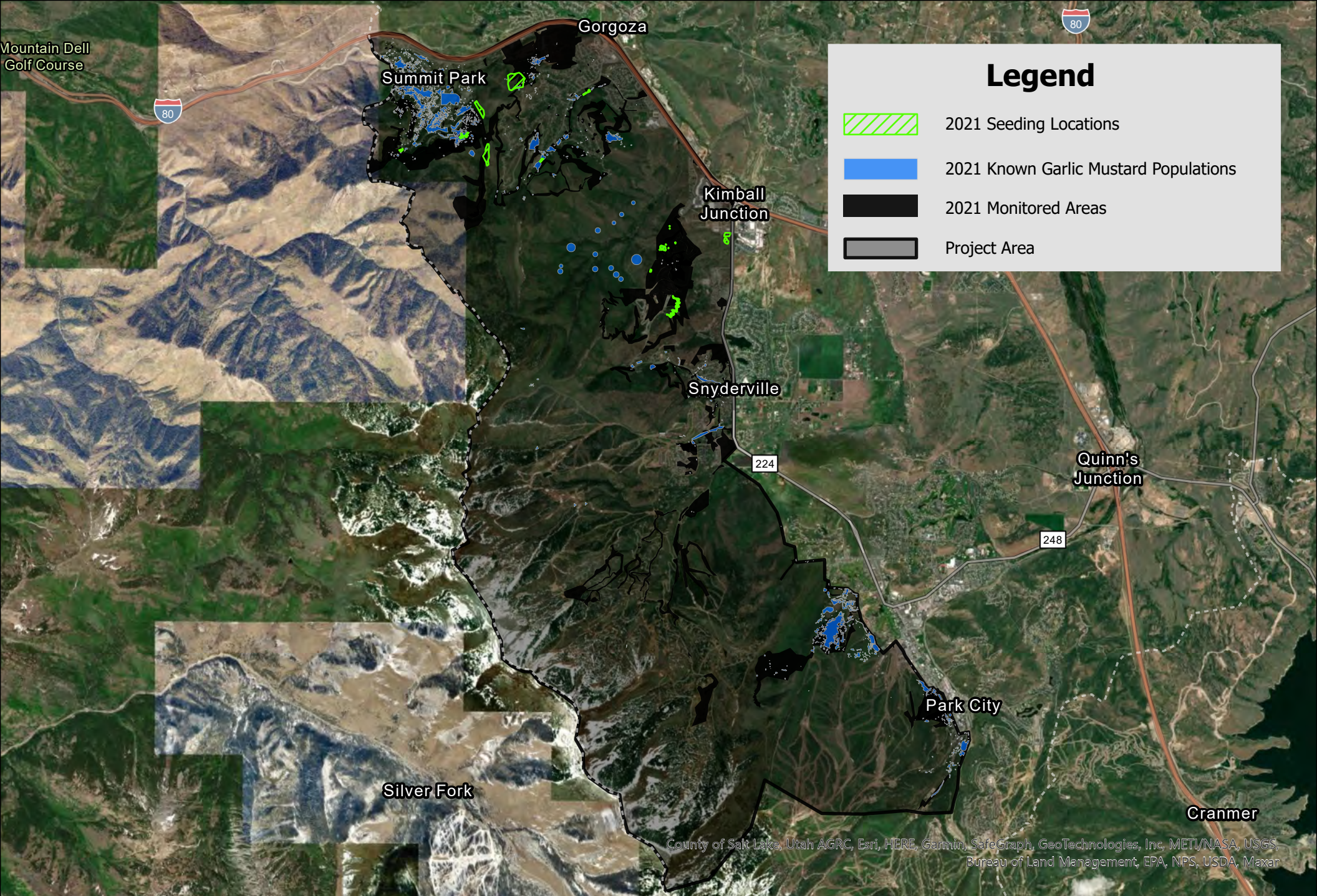
Treatment history and 2021 treatment areas for the south Snyderville Basin section of the high elevation garlic mustard management area.



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County of Salt Lake, Utah AGRC, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, Maxar



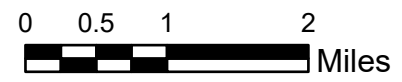


# Legend

-  2021 Seeding Locations
-  2021 Known Garlic Mustard Populations
-  2021 Monitored Areas
-  Project Area

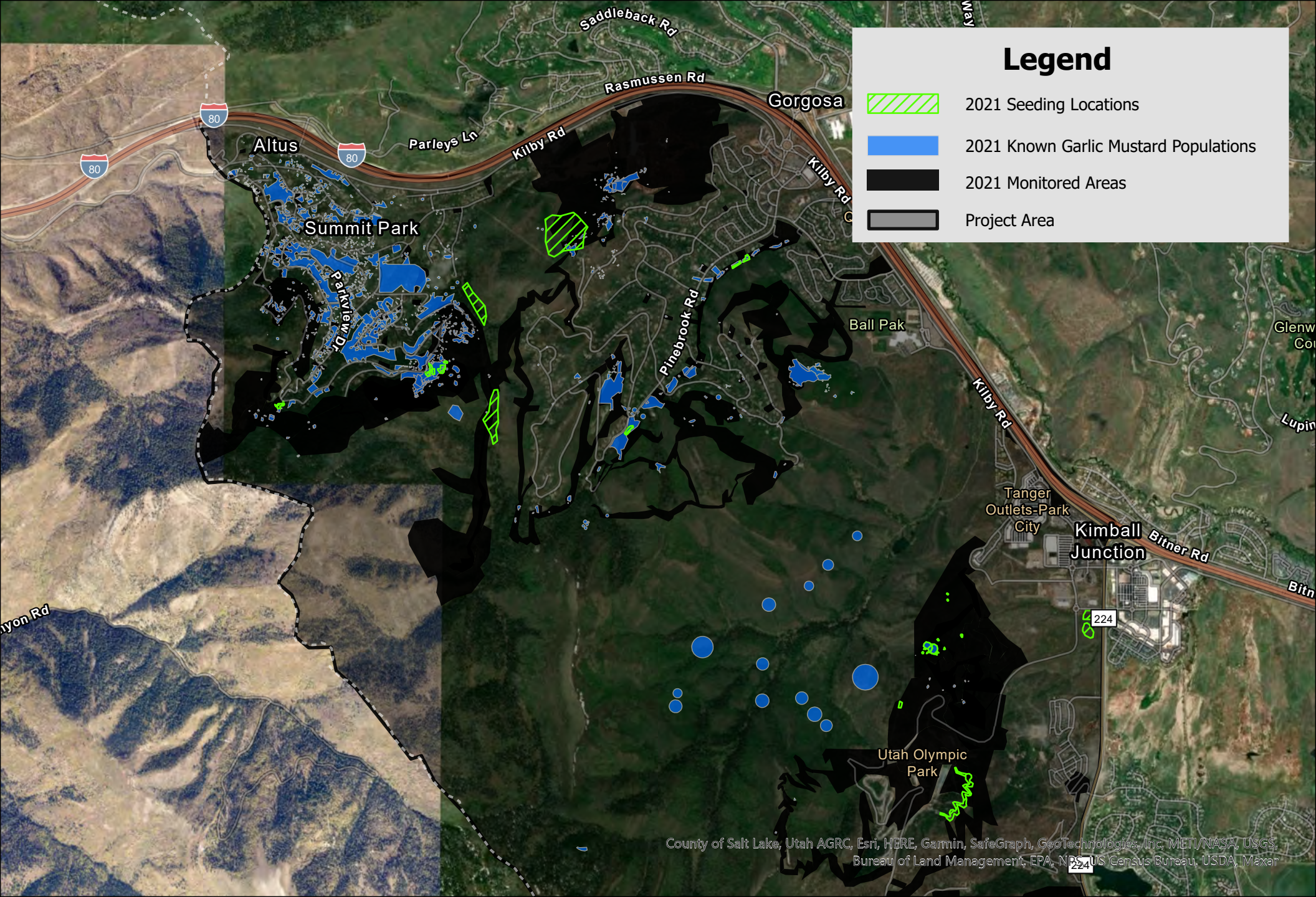
## Summit CWMA High Elevation Garlic Mustard Control ISM Program 2021 Report

All known populations, monitored areas, and seeding locations for the full 2021 high elevation garlic mustard management area. Known populations data are cumulations of data since 2018.



Created 3/28/2022  
 Betsy Hochman  
 betsy@ecologybridge.com

County of Salt Lake, Utah AGRC, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, Maxar



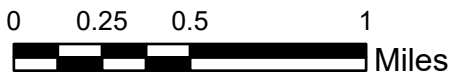
### Legend

- 2021 Seeding Locations
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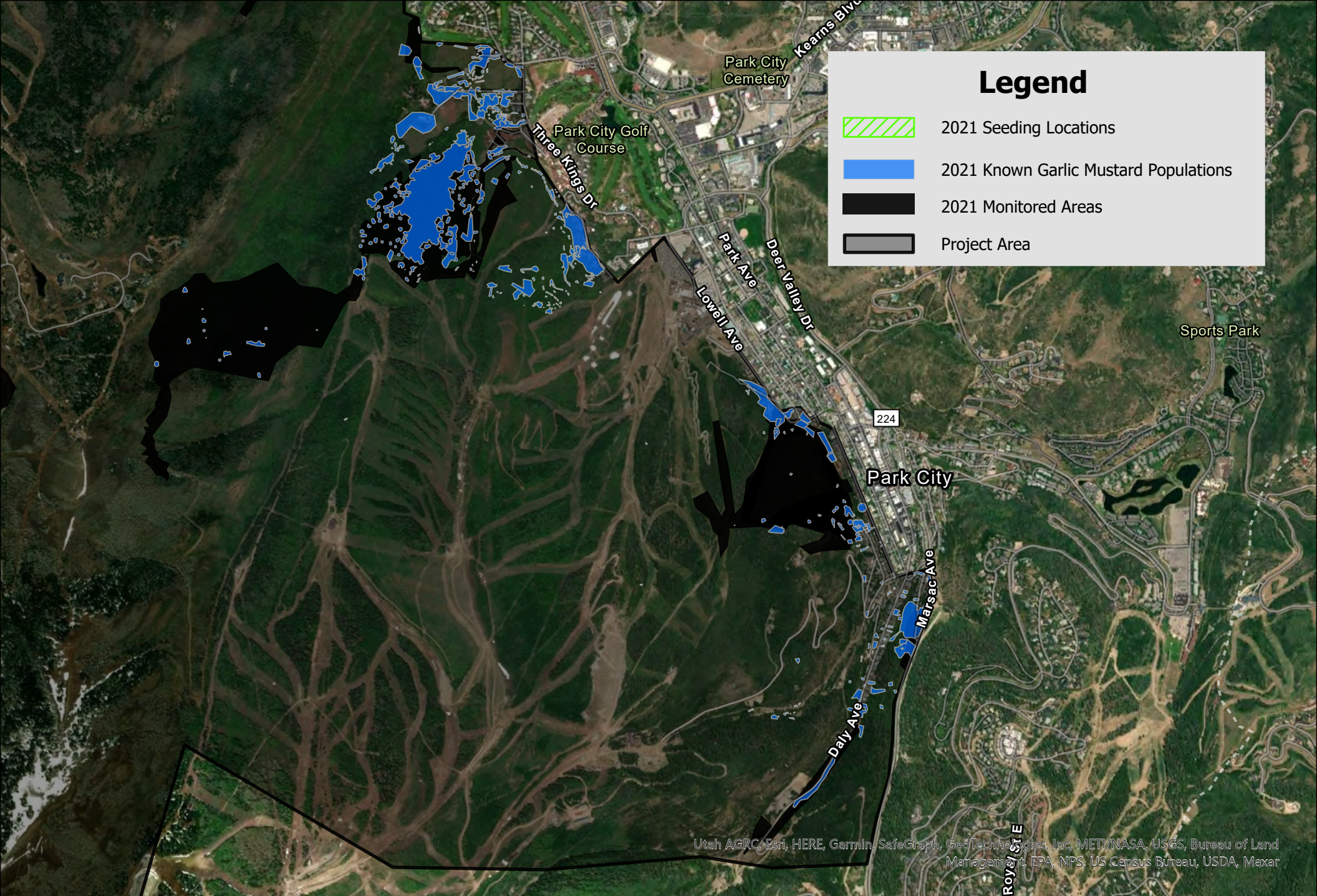
County of Salt Lake, Utah AGRC, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, Maxar

### Summit CWMA High Elevation Garlic Mustard Control ISM Program 2021 Report

Known populations, all monitored areas and 2021 seeded areas in the north Snyderville Basin section of the high elevation garlic mustard management area. Known populations data are cumulations of data since 2018.



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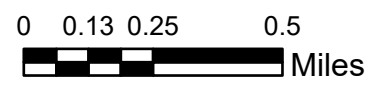


### Legend

- 2021 Seeding Locations
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**Summit CWMA High Elevation Garlic Mustard Control ISM Program 2021 Report**

Known populations, all monitored areas and 2021 seeded areas in the north Snyderville Basin section of the high elevation garlic mustard management area. Known populations data are cumulations of data since 2018.



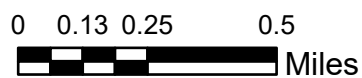
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**Summit CWMA High Elevation Garlic Mustard Control ISM Program 2021 Report**

Known populations, all monitored areas and 2021 seeded areas in the south Snyderville Basin section of the high elevation garlic mustard management area. Known populations data are cumulations of data since 2018.



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