



# Summit CWMA 2020 and 2021 ISM Knapweeds and Starthistle Control Report

**Prepared** Spring 2022

**Prepared for**

ISM Program

Division of Plant Industry and Conservation

Utah Department of Agriculture and Food

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## Summit CWMA : 2020-21 ISM Knapweeds and Starthistle Control Report

### Project Overview

Spotted knapweed (*Centaurea stoebe*) and Russian knapweed (*Rhaponticum repens*) are rapidly becoming more prevalent in Summit County. Meanwhile, yellow starthistle (*Centaurea solstitialis*), diffuse knapweed (*C. diffusa*) and common reed (*Phragmites australis*) remain limited in distribution. All knapweeds are high priority in Summit County; however, yellow starthistle, diffuse knapweed, and Russian knapweed are treated as higher priority than spotted knapweed due to their more limited distribution. *Phragmites* has been added to the project because partners are increasingly concerned about its spread; additionally, some monitoring had already been completed through previous ISM and UWSA grants.

A large proportion of the mapped populations of

these noxious weeds in western Summit County are on private property and escaping to public lands. In order to facilitate control of these species and prevent spread into natural lands, cross jurisdictional efforts are essential. This Summit CWMA project assists in creating, maintaining and growing cross jurisdictional partnerships in order to strategically approach weed control.

Due to control efforts in previous years, some partners have had success in reducing spotted and Russian knapweeds, and are revegetating to reduce reinvasion. Establishment of native grasses in these



### Knapweed and Yellow Starthistle Impacts

Control of knapweeds and yellow starthistle prevents degradation of soil health and negative impacts to water quality. Knapweed species are known to alter soil microbial communities, increase soil erosion and displace native plant species. These knapweeds produce allelopathic chemicals that inhibit the germination and growth of native plant species. Knapweeds and yellow starthistle increase soil erosion through an increase in exposed soil. The structure of these species does not cover and protect the soil surface the same way many natives do. This exposure of soil increases soil erosion associated with both wind and precipitation leading to reduced soil health and greater rates of sedimentation into waterways.

Knapweed and yellow starthistle impact grazers and wildlife by displacing higher quality forage. Additionally, the thorns of yellow starthistle can injure eyes, mouths and hooves/feet of wildlife. These species also alter the plant community and structural diversity that several native bird species, such as greater sage grouse, rely on for leks, brooding and forage and cover in winter months. Control of these species increases habitat quality where these species are already present; prevention of further spread will maintain the current quality of adjacent habitat.

areas allows continued control with selective herbicide while facilitating native plant community reestablishment.

We use EDRR approach to contain the spread of spotted, diffuse, and Russian knapweeds, yellow starthistle, and (starting in 2022) phragmites in Summit County. The Summit CWMA implements an integrated approach to weed management that includes surveying, mapping, herbicide application, biological control, revegetation, and monitoring. We additionally provide outreach and support at partner outreach events to increase community awareness of both noxious weeds and proper control and revegetation methods.

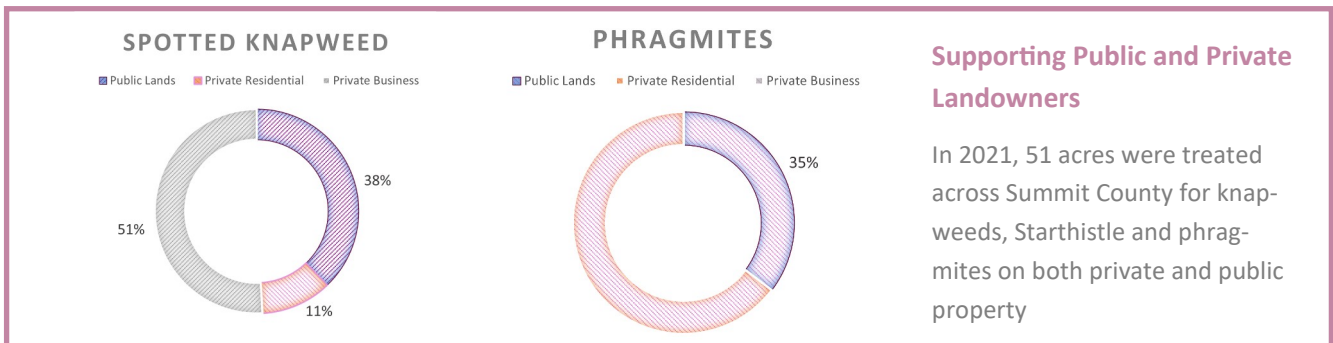
### Methods

Our management area covers 39,197 acres and includes private and public lands. The public lands, for the most part, participate annually in the program; however, private landowners are less consistent in program participation and, therefore, make anticipating annual control needs challenging. The project treatment area was based on monitoring/mapping and treatment data from 2019-2020. Due to the wind blown seed and disturbance-following habit of these noxious weed species, we expect to continue to find new populations of all species as we engage new partners and gain access to new lands, particularly in areas of rapid development.

Monitoring is conducted for three main purposes:

rechecking known populations for status, assessing revegetation status, and surveying new areas to determine if species have spread to new locations. Often these new monitoring sites are identified due to a private landowner’s concerns that their property may contain noxious weeds or a report of the presence of noxious weeds on someone else's land. Additionally, we focus monitoring efforts on the lands adjacent known populations to ensure we have accurately identified the full extent of each populations and to prevent expansion.

Treatment methods depended on population size, plant growth stage and accessibility of the site. Chemical control is our primary control method and is applied during rosette and flowering to just before pre-dormant stages. Chemical applications primarily consisted of a Milestone (6oz/ac) and 2,4D (Weedmaster at 1.5qt/ac) and an appropriate surfactant and colorant. Mechanical control is used only in a few locations—typically in gardens, small patches with difficult access, or situations where mechanical control is necessary to prevent seed spread. Biological control was used for large populations and areas where spraying is inaccessible or restricted due to high potential for off-target species damage or other environmental factors. Biological control agents (three weevil species - *Cyphocleonus achate*, *Bangasternus fausti*, and *Larinus minutus*) were supplied and applied by the Summit County Weed Division or by the landowners.



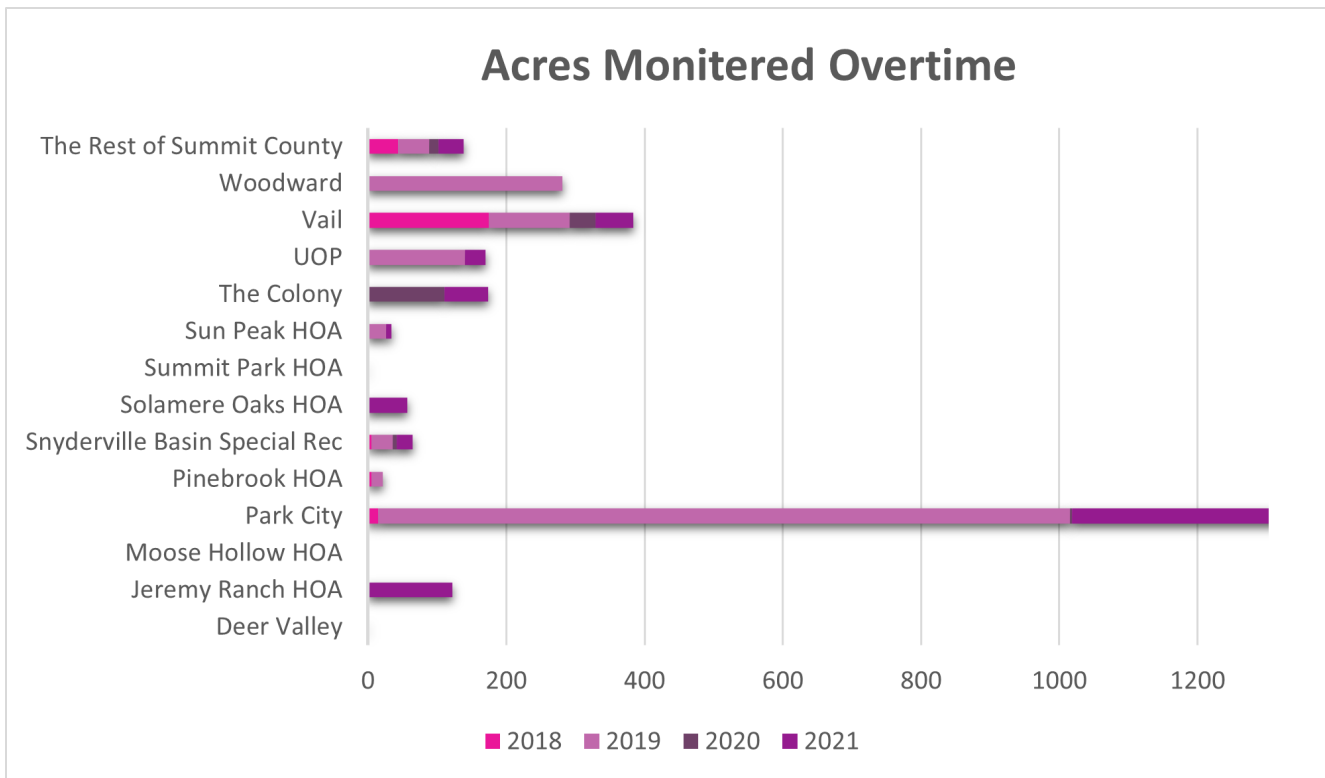
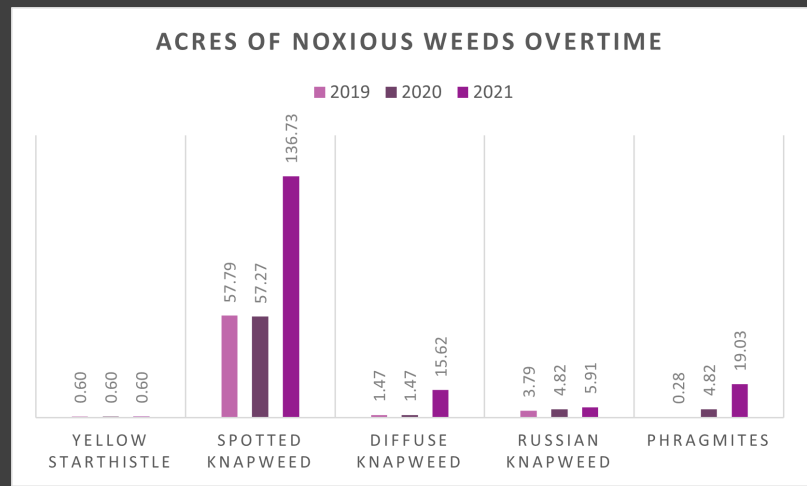
### Supporting Public and Private Landowners

In 2021, 51 acres were treated across Summit County for knapweeds, Starthistle and phragmites on both private and public property



## Knapweeds, Yellow Starthistle and Phragmites Distribution

The number of known populations significantly increased with increased monitoring efforts and access to additional lands.



*The Canyons Resort parking area had several populations of spotted knapweed that were 50-80% cover and are now reduced below 50%.*

As treatments reduce knapweed percent cover, revegetation efforts have begun. Seeding of smaller sites in disturbed soils, at trail heads and along newer trails in Park City and Snyderville Basin were conducted in October 2020 and 2021. Several seed mixes were used, and, thanks to additional funding from the Utah Weed Supervisor Association, a greater number of acres were seeded than our original budget allowed.

As much as funding and time allowed, biochar and compost were applied to poor soils prior to hand seeding with a drought tolerant native grass seed



## Canyons Vail Resorts Spotted Knapweed Control and Restoration Project

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The base of the Canyons Ski Resort has been the focus of spotted knapweed control for several years. One area of particular concern is the Cabriolet, a ski lift whose base had been heavily invaded by spotted knapweed. After several years of treatment, the knapweed density had started to decrease. The area was treated with milestone three times in 2019 to further reduce knapweed. The plan had been to prep the site and reseed fall 2019, however, excessively wet soils and concern from Vail Resort staff regarding the aesthetics of a muddy restoration site during busy event weekends pushed the restoration back until the next spring. In Spring of 2020, topsoil and compost were brought in and spread 4-5 inches thick. This was followed by seeding of native grasses.

Unfortunately, the maintenance crew at the Canyons did not establish the irrigation system until very late in the summer and native grass germination was limited. Spotted knapweed remained less than 10% cover in the restored area. The areas adjacent the restoration had 20-60% cover of knapweed. Both the restored and adjacent areas were treated twice in 2020 and once in 2021. Since the initial restoration, other disturbance following weeds became the dominant species and three new noxious weeds, Scotch Thistle, Cutleaf Vipergrass and puncturevine. Were found These new noxious weeds were likely contaminants in one of the loads of topsoil that came from higher up on the mountain within the Canyons Resort. All three were controlled and monitored through 2020 and again monitored in 2021. In 2021, they were not present.

By summer of 2021, more of the grasses germinated and knapweed remained low in cover, but the most common species remained disturbance-following weeds. Some of the least recovered areas were within an area disturbed for infrastructure enhancement in 2020. Approximately 15% of the original revegetation site was disturbed by the infrastructure improvement project.

Overall, this project has only been moderately successful since the reduction in knapweed cover has been maintained, but the revegetation effort has had poor establishment. We will continue monitoring the site and may reseed fall of 2022 if the Canyon Resorts maintenance crew is willing to alter their methods to include irrigation for a couple years and discontinue mowing at heights below 4 inches.



Pretreatment in 2020



Day of restoration 2020



Late summer 2020



Summer 2021 - Agricultural Weeds

## Quinn's Junction Dog Park



Adjacent the Park City Quinn's Junction Dog Park parking lot, Russian knapweed was found and treated in two small patches. Russian knapweed appears to have been eradicated from these two locations and revegetation efforts have begun. Due to low mowing of the sites, seeded grasses have not established well. Both areas were reseeded in fall of 2021 and we plan to work with the Parks Department to increase the blade height of the mowers to allow for better establishment of grasses. If the Parks Department of Park City can be persuaded to discontinue mowing of these sites, more intense restoration efforts would be appropriate. Such efforts would include the use of 3-5 inches of soil amendment and seeding with native grasses and wildflowers.

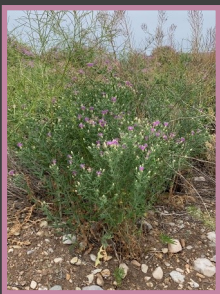
mix. Restoration projects from previous years were revisited and treated as needed with both weed management and reseeding.

### Results

In 2021, 101 acres of private properties participated and 65 acres had knapweed, starthistle or phragmites. One hundred and seventy acres in 2020 and 733 acres in 2021 were monitored for knapweeds and starthistle. Prior to 2021 we reported all acres monitored for the Summit CWMA

priority weeds, including garlic mustard. All monitoring staff were and continue to be directed to map any of the priority species they find regardless of whether they are in a garlic mustard project area or a knapweed project area. Going forward, we will track monitoring by what project area we are monitoring in and what species we are intending to monitor for based on habitat and adjacent weed distributions. The number of acres of knapweeds had substantially increased both due to spread and (mainly) due to our monitoring

## Fairway Connector Trail Russian Knapweed Control and Revegetation Project

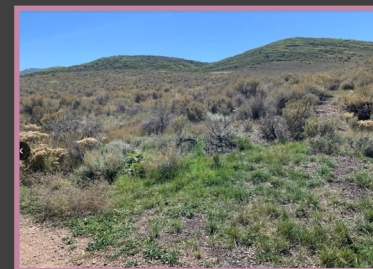


A relatively small area of Russian Knapweed at the intersection of two popular trails within Round Valley Open Space was identified in 2017. For two years, the site was treated with milestone and any plants starting to go to seed were hand pulled. All dead plants were raked out and removed and in 2020 a thin layer of biochar was applied to the site and native grass seed hand broadcasted.

Establishment of seeded grasses was patchy and limited so in fall of 2021, a compost/biochar blend was spread and the area was reseeded with both native grasses and native wildflowers, including the nitrogen fixer, lupine. Percent cover of Russian knapweed continues to remain below 5% so careful spot spraying or hand weeding will be used to maintain control while natives establish.



Fall 2020 conditions



2021 conditions



## Round Valley Pond Russian Knapweed Control and Restoration Project

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Russian knapweed had invaded and dominated areas around the one intact pond in the Round Valley Open Space of Park City. After three years of heavy control with milestone, weeding and raking away of dead knapweed plants, the site was below 5% cover of Russian knapweed; however, native vegetation was not recovering. In addition to the knapweed, the pond had experienced a great deal of erosion .

In 2020, we recontoured the eroded pond banks and turned compost and biochar into the upland areas where Russian knapweed had previously dominated. The bare ground was seeded with native grasses, wildflowers, and native shrub seedlings, and 1-1.5 inch caliper narrowleaf cottonwood (*Populus angustifolia*) were planted. In fall of 2020, willow canes were planted along portions of the pond bank to help stabilize the bank, reduce dog traffic through the areas most sensitive to erosion, and reduce knapweed seed distribution further into the wetland down stream.

In 2021, the area experienced dense establishment of native grasses and sparce establishment of wildflowers. Rubber rabbitbrush shrub seedlings have tripled or more in size and other native shrubs survived the winter. While eighty percent of the cottonwoods that were planted around the pond survived the winter, all but three died during the 2021 summer droughts. Approximately 40% of the willow canes established and were healthy by fall of 2021. Russian Knapweed cover remains below 5% and can be maintained with hand weeding to reduce herbicide impact on establishing native wildflowers.

Through a grant with Park City and TreeUtah, two additional cottonwood trees were planted fall of 2021 to replace two that had died in the drought. In addition, application of compost/biochar was extended another 300 ft north of the original site and seeded. The original site was also reseeded in areas with lower establishment. We will continue to monitor establishment and weed Russian knapweed. If larger patches of knapweed return, herbicide treatment will be reinstated.



2020



2021





## Movie Studio Vipers Bugloss Control and Revegetation Project

Since the initial discovery of this common viper's bugloss population, percent cover of the bugloss has been reduced by over 80% to less than 5% cover. Only limited, scattered bugloss plants have been observed in the area treated with compost and seeding. Most new plants are appearing as individuals along the edge of the composted area and in adjacent areas upslope. This low level of cover will allow for rapid spot treatment of any new plants. Use of a native grass seed mix has enabled continued treatment of bugloss with selective herbicides while the grasses establish. As of September 2020, grasses were establishing in patches; because establishment was not as even as we had hoped, an additional seeding was applied in fall of 2020. By mid-summer 2021, significant grass establishment was observed and bugloss remains a manageable cover of less than 5%. We will continue to treat the bugloss and monitor the restoration for at least three years.



Summer 2018: Pre-treatment



Summer 2019: One year of weeding and herbicide treatment



Summer 2020: Day of Revegetation



August 2020: Native Grasses Establishing



Summer 2021

identifying locations that had previously gone unmapped.

211 acres (several places were treated twice) of knapweed were treated in 2020 and 56 acres (with 130 acres revisited for treatment) were treated in 2021, spotted knapweed being the most common species treated (200 acres in 2020 and 51 acres in 2021). All the previously known Russian knapweed populations were treated along with all but two of the newly identified populations. These two populations were identified too late in the season for effective treatment.

It appears that much of the diffuse knapweed was not treated. It is unclear whether this was because

the plants were not present or because the contractor missed them and/or labeled them spotted knapweed. We were unable to get clarification from the contractor. We will target these areas for monitoring in 2022 to assess current diffuse knapweed distribution.

Percent cover of knapweed in some of the largest populations has been greatly reduced. This is particularly true at some of the sites that previously had the densest knapweed, such as at the Canyons Village, Treasure Hill, and Quinn's Junction of Round Valley.

No new yellow starthistle populations were found in 2020 or 2021. The current populations remain

Table 1: Acres of each species treated 2019-2021 on the lands of major partners.

<b>Partner/Property Owner</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>
<b>Yellow Starthistle (<i>Centaurea solstitialis</i>)</b>			
The Rest of Summit County	0.0002	0.5990	0.5990
<b>Total</b>	<b>0.0002</b>	<b>0.5990</b>	<b>0.5990</b>
<b>Phragmites</b>			
Jeremy Ranch HOA	0.190	0.084	0.000
Moose Hollow HOA	0.026	0.002	0.000
Park City	0.000	0.718	0.001
Pinebrook HOA	0.000	0.265	0.000
Snyderville Basin Special Rec	0.400	0.189	0.000
Summit Park HOA	0.200	0.103	0.350
The Colony	1.413	0.684	0.000
UOP	0.000	0.980	0.000
The Rest of Summit County	0.600	6.018	0.000
<b>Total</b>	<b>2.829</b>	<b>9.043</b>	<b>0.351</b>
<b>Diffuse Knapweed (<i>Centaurea diffusa</i>)</b>			
Park City	0.510	0.012	0.012
Vail	0.000	2.606	0.000
The Rest of Summit County	1.878	0.000	0.000
<b>Total</b>	<b>2.388</b>	<b>2.618</b>	<b>0.012</b>
<b>Russian Knapweed (<i>Rhaponticum repens</i>)</b>			
Park City	0.252	2.328	2.097
Pinebrook HOA	0.017	0.009	0.000
Vail	0.000	2.606	0.000
The Rest of Summit County	0.327	0.628	0.000
<b>Total</b>	<b>0.596</b>	<b>5.570</b>	<b>2.097</b>
<b>Spotted Knapweed (<i>Centaurea stoebe</i>)</b>			
Deer Valley	11.058	17.808	17.808
Jeremy Ranch HOA	0.291	0.200	0.119
Moose Hollow HOA	0.095	0.279	0.092
Park City	7.198	7.247	17.800
Pinebrook HOA	1.523	2.708	3.762
Snyderville Basin Special Rec	2.059	0.500	1.992
Solamere Oaks HOA	0.261	0.000	0.000
Summit Park HOA	1.878	0.189	0.432
Sun Peak HOA	0.822	0.318	2.064
The Colony	0.300	0.540	0.000
UOP	1.007	0.003	0.000
Vail	11.274	48.250	68.817
Woodward	0.030	0.031	0.163
The Rest of Summit County	8.124	122.408	17.927
<b>Total</b>	<b>45.920</b>	<b>200.480</b>	<b>130.976</b>

but appear to be thinning. Given this progress, these sites should be priority for more intense treatment in 2022 followed by revegetation in the fall.

Phragmites was not targeted specifically by the Summit CWMA in 2021; however, partners treated 3 acres.

In fall of 2021, 66 acres were reseeded with several native grass seed mixes. The ISM grant funded seeding with the Dry Mountain Native and Cameron Fire mixes, and the Utah Weed Supervisors Association's SGMA grant funded seeding trial provided additional native grass seed mixes.

In addition to native grasses, sites with percent cover of knapweed less than five percent were also seeded with a wildflower mix. In some areas, the mix included lupine and or sainfoin to aid soil nutrient levels in the future.

## Financials

ISM funds were matched primarily by in kind partner staff time and the UWSA grant. The 2020 funding totaled \$33,615 from ISM and \$18,910 in-kind from partners giving a 36 percent match. In 2021, the ISM grant budget was \$59,689 and an in-

kind match \$12, 717 giving a 18 percent match to the ISM funds. In 2021, partners were struggling with various levels of losses in capacity due to time off for COVID infections and difficulty hiring staff.

## Conclusions

Based on our 2019-2021 data, knapweeds and yellow starthistle are most commonly found on bare slopes, near construction or areas that were not successfully revegetated post-development, and at newly established trails and trail heads. These sites share characteristics of significant bare ground and often poor soil quality. The use of milestone plus 2,4D has been effective at

Partner Match in 2020					
Partner	Item	# people	Rate	Hours/ Quantity	Total
Basin Rec	Full time staff, Basin Rec	2	\$40.00	5	\$400.00
Basin Rec	Seasonal Staff, Basin Rec	3	\$22.00	10	\$660.00
Deer Valley	Deer Valley Weed Program Staff	1	\$15.00	102	\$1,530.00
Deer Valley	Deer Valley Weed Program Staff	4	\$15.00	40	\$2,400.00
Park City	Park City Staff	1	24	20	\$480.00
Park City	Park City Staff	1	26	15	\$390.00
Vail Resort	Vail Resort Weed Staff	2	\$31.50	80	\$5,040.00
Summit Co	Trucks (4x4)	1	\$18.00	5	\$90.00
Summit Co	Truck w/ spray rig	2	\$25.00	20	\$1,000.00
Summit Co	GPS / GIS	1	\$10.00	10	\$100.00
Basin Rec	Trucks (4x4)	1	\$18.00	2	\$36.00
Basin Rec	UTV w/ spray rig	1	\$25.00	10	\$250.00
Basin Rec	BackpackSprayer	4	\$5.00	20	\$400.00
Basin Rec	GPS / GIS	4	\$10.00	2	\$80.00
Deer Valley	Trucks (4x4)	1	\$18.00	3	\$54.00
Summit County	Biological Controls		\$1.00	6000	\$6,000.00
<b>Total</b>					<b>\$18,910.00</b>

Partner Match in 2021					
Partner	Item	# people	Rate	Hours/ Quantity	Total
Basin Rec	Full time staff, Basin Rec	2	\$40.00	5	\$400.00
Basin Rec	Seasonal Staff, Basin Rec	3	\$22.00	10	\$660.00
Deer Valley	Deer Valley Weed Program Staff	1	\$15.00	78	\$1,170.00
Deer Valley	Deer Valley Weed Program Staff	4	\$15.00	40	\$2,400.00
Vail Resort	Vail Resort Weed Staff	2	\$31.50	4	\$252.00
Summit Co	Trucks (4x4)	1	\$18.00	5	\$90.00
Summit Co	Truck w/ spray rig	2	\$25.00	20	\$1,000.00
Summit Co	GPS / GIS	1	\$10.00	10	\$100.00
Basin Rec	Trucks (4x4)	1	\$18.00	2	\$36.00
Basin Rec	UTV w/ spray rig	1	\$25.00	7	\$175.00
Basin Rec	BackpackSprayer	4	\$5.00	15	\$300.00
Basin Rec	GPS / GIS	4	\$10.00	2	\$80.00
Deer Valley	Trucks (4x4)	1	\$18.00	3	\$54.00
Summit County	Biological Controls		\$1.00	6000	\$6,000.00
<b>Total</b>					<b>\$12,717.00</b>



treating knapweeds and starthistle. Where significant progress has been made, revegetation projects are showing recovery of native grasses. Areas we have seeded show significantly greater success where compost or a compost/biochar blend is first applied to the site. This may reflect better nutrient availability, but most likely is a reflection of greater water holding capacity of soil amendments that aids germination.

In 2021, new populations of Russian knapweed indicate it is moving along major roads such as I80 in and over Parley's Summit and SR40 from the junction with I-80 towards Heber. These populations are of particular concern as the winds common along these roads will easily aid the wind-dispersed seed of Russian knapweed in spreading. The Summit CWMA and Summit County Weed Division will continue to watch these populations and the associated I80 and SR40 corridors.

## Pinebrook Common St Johnswort Control and Revegetation Project

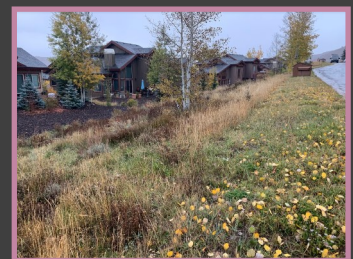
Since the initial discovery of this common St Johnswort population, it has been completely eradicated and revegetation efforts using compost and biochar followed by reseeding with native grasses has taken. Wildflower seed was introduced in 2020 and small populations of the seeded species are establishing; the native penstemon is the primary wildflower of the site and is expanding. The Summit CWMA will monitor the site for an additional two years.



Mature Common St  
Johnswort



Following control, many bare areas were present and revegetated.



2021 native grasses thrive.

# Primary Project Partners

- Deer Valley Resort
- Ecology Bridge
- Moose Hollow HOA
- Park City Municipal Corporation
- Pinebrook Master HOA
- Snyderville Basin Special Recreation District
- Solamere and Oaks HOAs
- Sun Peak HOA
- Summit County
- Summit Park and Timberline HOAs
- Swaner Eco Center
- Utah Department of Agriculture and Food
- Utah State University Extension
- Vail Resorts
- Woodward Park City
- Cove at Eagle Mountain HOA
- Jeremy Ranch HOA
- Mountain Ranch Estates
- Northshore HOA
- Park City Nursery
- Park City School District
- Snyderville Basin Water Reclamation District
- Summit Center
- Utah Olympic Park
- Over 1500 private landowners





**SUMMIT CWMA- SNYDERVILLE BASIN AND PARK CITY AREA- KNAPWEED, STARThISTLE AND PHRAGMITES PROGRAM**

Knapweed and starthistle were added to the garlic mustard ISM Grant in 2019 and a control program specific to knapweed and starthistle is created in 2020.

**2019 through 2021**

In 2019, the Summit CWMA began specifically mapping knapweeds and starthistle to better understand the distribution.

In 2020, the Summit CWMA began targeted control of knapweeds and starthistle and continued to monitor additional lands

Since 2019 we have identified 0.6 acres of starthistle, 158 acres of Knapweed and 19 acres of Phragmites. 2800 acres have been monitored and 65 acres revegetated.

The knapweed, starthistle and phragmites control program area includes primarily western summit county properties but is expanding to the eastern portions of the county as landowners contact the CWMA for assistance.

**2022**

Phragmites will be added to the targeted species list for the program.

The goal is to treat 150 acres and 34.5 acres are proposed as restoration sites at 9 locations

Past Projects to

Monitor

- Movie Studio
- Bugloss
- Pinebrook St
- Johnswort
- Round Valley Pond
- Quinn's Dog Park
- Fairway Connector
- The Canyons

**2023**

The focus will be continued treatment of known populations, monitoring for new populations and maintaining revegetations and enhance any that are not progressing.

Past Projects to

Monitor

- Movie Studio
- Pinebrook
- RV Pond
- Quinn's Dog Park
- Fairway Connector
- Quarry Mt
- Bear Hollow
- The Canyons
- Bad Apple TH
- UOP
- North RV TH
- Prospector
- Deer Valley

**2024**

The focus will be continued treatment of known populations, monitoring for new populations and maintaining revegetations and enhance any that are not progressing

Past Projects to

Monitor

- RV Pond
- Quinn's Dog Park
- Fairway Connector
- Quarry Mt
- Bear Hollow
- The Canyons
- Bad Apple TH
- UOP
- North RV TH
- Prospector
- Deer Valley

**2025**

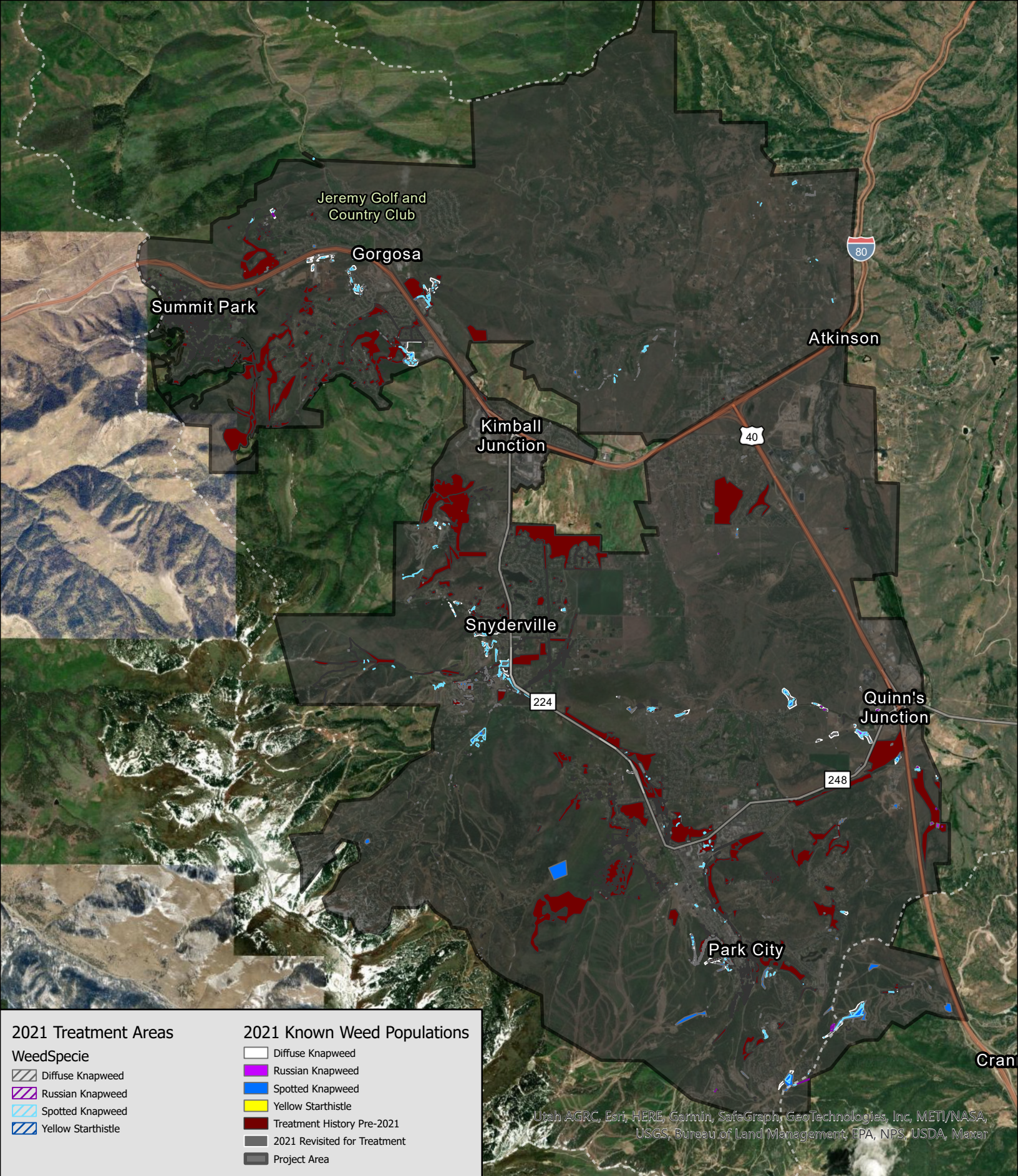
The focus will be continued treatment of known populations, monitoring for new populations and maintaining all revegetations.

Past Projects to

Monitor

- Quinn's Dog Park
- Quarry Mt
- Bear Hollow
- The Canyons
- Bad Apple TH
- UOP
- North RV TH
- Prospector
- Deer Valley





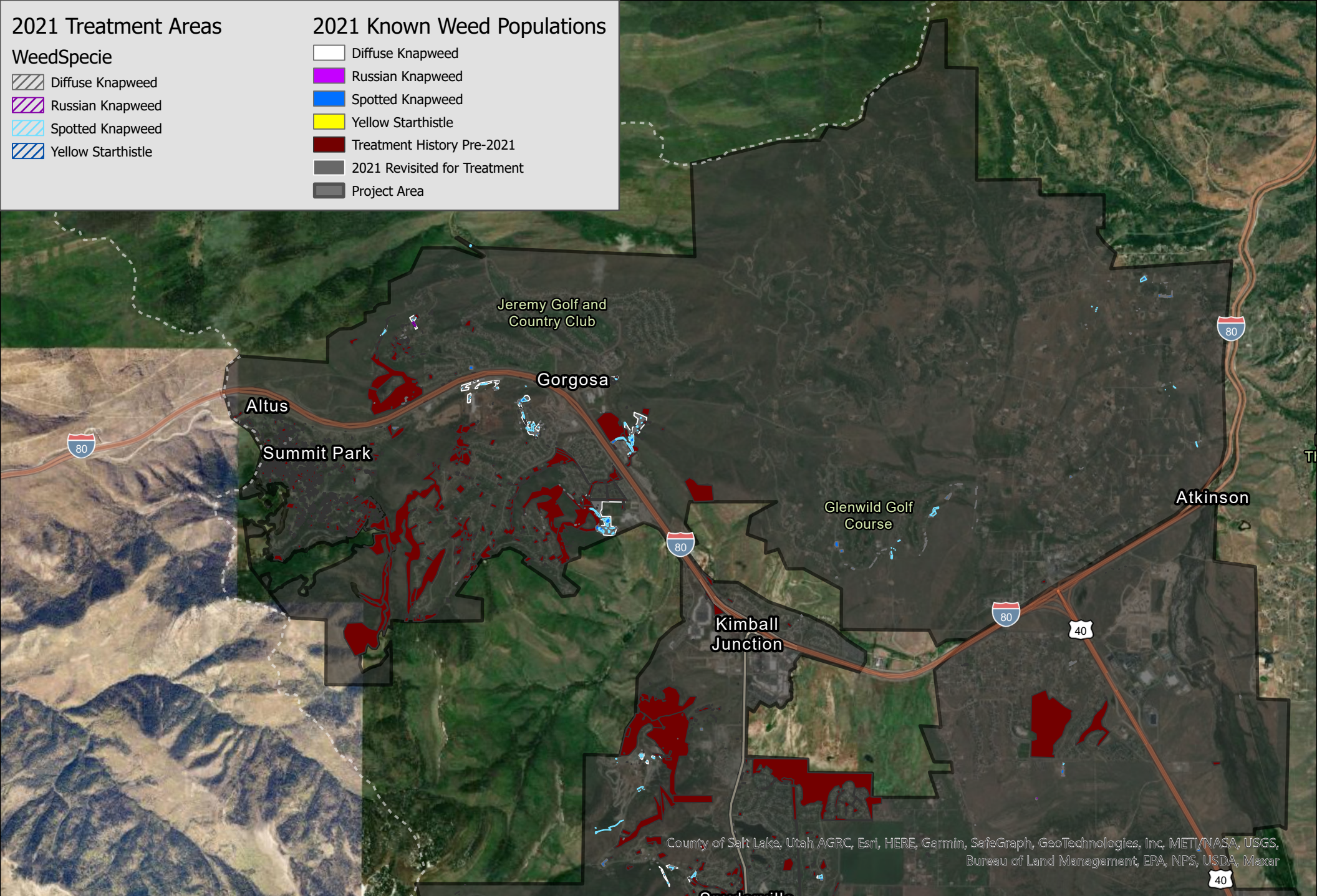
### Summit CWMA Knapweed and Starthistle Control ISM Program 2021 Report

Knapweed and starthistle have been treated in the Snyderville Basin and Park City area for two years and while we continue to find more populations, we also have been making progress at reducing previously known populations.



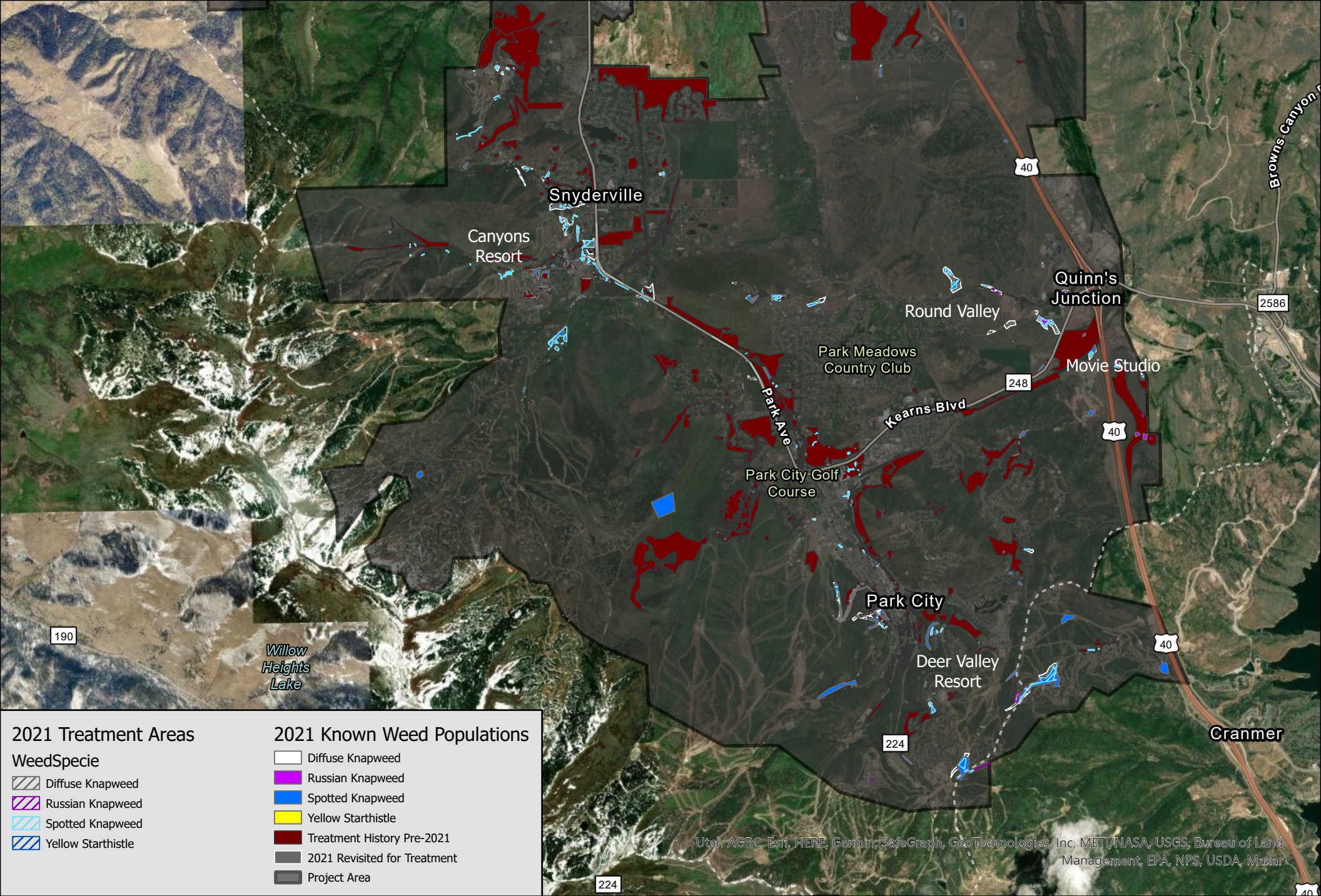
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**Summit CWMA Knapweed and Starthistle Control ISM Program 2021 Report**  
 Treatment history and 2021 treatment areas for the Snyderville Basin section of the Knapweed and Starthistle Control Program Management Area.





### Summit CWMA Knapweed and Starthistle Control ISM Program 2021 Report

Treatment history and 2021 treatment areas for the Park City section of the Knapweed and Starthistle Control Program Management Area





**Summit CWMA Knapweed and Starthistle Control ISM Program 2021 Report**

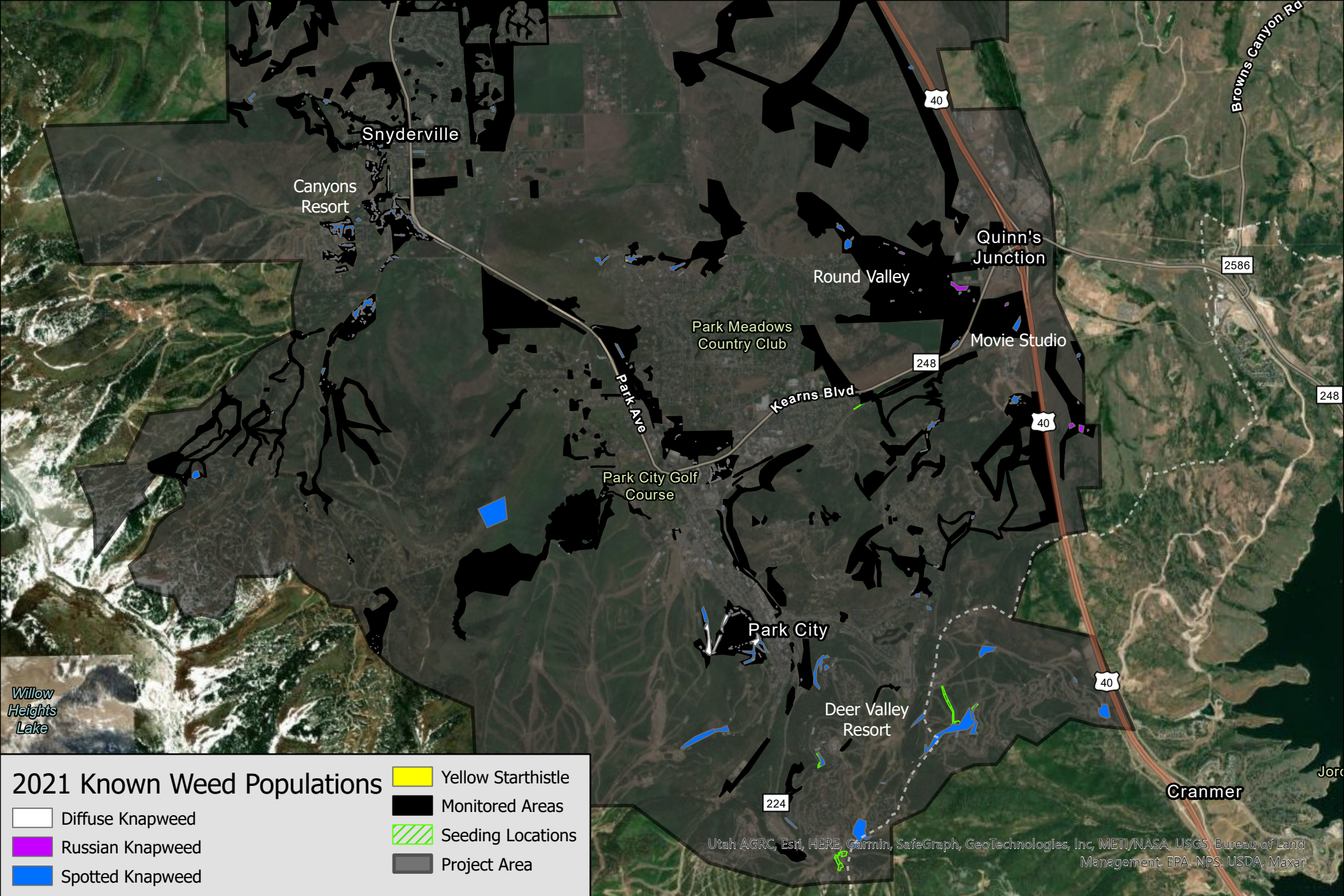
Known populations, all monitored areas and 2021 seeded areas for the Snyderville Basin section of the Knapweed and Starthistle Control Program Management Area. Monitoring and known populations data are cumulations of data since 2018.

0 0.3 0.6 1.2 1.8 Miles

Created 3/23/2022  
 Sara Jo Dickens, PhD  
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Utah AGRC, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, Maxar





## Summit CWMA Knapweed and Starthistle Control ISM Program 2021 Report

Known populations, all monitored areas and 2021 seeded areas for the Park City section of the Knapweed and Starthistle Control Program Management Area. Monitoring and known populations data are cumulations of data since 2018.

