during all applications to increase leaf adhesion and absorption in dusty or wet conditions. Hi-Light Blue Indicator Dye was added as a visual aid for tracking field applications and serves to prevent under or over application to targeted areas. This dye is inert, temporary, and typically disappears over time. The amount of time this takes is contingent upon on the soil types and environmental conditions following application.

A summary of herbicides applied, active ingredients, and the total number of acres treated is included in Table 2: 2019 Herbicide Applications at Pikes Peak . The first herbicide treatment solution treated a cumulative area of 1 acre, and the second treatment solution treated a cumulative area of 1.5 acres. The third solution was applied during the first treatment session in 2019 to target the myrtle spurge growing in the southern gravel pit. A total of 2.57 acres was treated during the 2019 growing season. Habitat Management's applications were made along road corridors, rangeland, drainage ways, areas of disturbance, and gravel stockpiles used by the highway. Note, no herbicides were applied directly to water or to noxious weeds submersed in water. Herbicide application records have been provided to the highway upon completion of each treatment session.

Table 2: 2019 Herbicide Applications at Pikes Peak America's Mountain

Herbicide Name	Acitive ingredient (AI)	Application Rate (oz./acre)	Area Treated with Herbicide (acres)
Weedar 64	2, 4-D Amine	32	1
Milestone	Aminopyralid	6	
Induce	N/A	20	
Hi-Light Blue Dye	N/A	12	
Freelexx	2, 4-D Amine	32	1.5
Milestone	Aminopyralid	6	
Locktite MSO	N/A	16	
Hi-Light Blue Dye	N/A	16	
Vanquish	Diglycolamine	36	0.07
Dyne-Amic	N/A	75	
Hi-Light Blue Dye	N/A	15	
Total Area Treated (acres)			2.57

First Treatment Session

The first 2019 treatment session was implemented on June 19, 2019 and finished on June 20, 2019. The treatment encompassed the highway from the front entrance parking lot to Crystal Reservoir. Habitat Management inspected the Crystal Reservoir overlook for bouncingbet; no individuals were identified at this time. This is the only known location of bouncingbet on the highway corridor. To ensure that the species is eradicated from the highway it should continue to be monitored and treated as necessary. Common mullein and diffuse knapweed were the most common noxious weed on the shoulder of the roads. Both species were in their rosette stage of growth during the treatment. Canada thistle was more prevalent on the downhill side of the road in areas that were more shaded and near the creek that runs adjacent to the road. Yellow toadflax and common mullein were more common on the uphill side of the road on the dry, rocky slopes. In past year's treatments, the parking lot at the entrance gate has been infested with common mullein. During this treatment the population size of the common mullein infestation has shown a regression in its size.

Crowe Gulch has been a priority in Habitat Management's treatments along the highway. In 2018, oxeye daisy was identified and treated in the willows bordering the parking area. In 2019, oxeye

daisy rosettes were identified in their rosette growth stage. Habitat Management has been able to extend the boundaries of the treatment area behind the willows in the picnic area. This is due to the upgrade of equipment, the UTV spray rig has longer hoses than in the past and this allows for personnel to target weeds in areas that are inaccessible with the UTV. Persistent herbicide treatments have pushed this infestation deeper back into the willows away from the highway expanding our treatment area. Significant reductions in weed populations right along the highway has led to our crews away from the highway in efforts to beat the infestation back from the easiest accessed routes.

The treatment on June 20, 2019 focused on the highway from Crystal Reservoir to the halfway picnic area, the maintenance area, gravel pits, and the eight-mile sediment basin. Due to the colder weather in the spring, the number of weeds identified above the starting area for the hill climb was much lower than previous year's treatments. Habitat Management thoroughly inspected the eight-mile sediment basin for orange hawkweed. The population of orange hawkweed that was treated in previous growing seasons appears to be nonexistent, but a new small population was found near a historical location that may have moved by seed dispersal. Myrtle spurge was treated in the southern gravel pit at its historical location. Habitat Management used an herbicide solution in the 2019 growing season treatments to specifically target the myrtle spurge. The Colorado Department of Agriculture (CDA) recommends using the active ingredient chemical called Diglycolamine to treat myrtle spurge. Results from this application of a new product will be determined in 2020.

Second Treatment Session

The second treatment session of the 2019 growing season, was implemented on August 3, 2019 and ended on August 4, 2019. On August 3, 2019 treatments covered the highway from the parking lot at the main entrance to Crystal Reservoir. The bouncingbet population located at the Crystal Reservoir overlook was inspected, and no herbicide treatments were necessary. The Crowe Gulch picnic area was inspected for oxeye daisy. A small population of oxeye daisy was identified and treated in the same location it was identified in the first treatment of 2018. Lower elevation parts of the highway were inspected and treated for diffuse knapweed and common mullein. Both noxious weeds were in their flowering stage of growth with a few plants in the rosette stage. With both plants being biennial noxious weeds, they live through two growing seasons. In the first growing season the plant stays in its rosette stage and absorbs as many nutrients as possible and in the second growing season the plant bolts, flowers, and sets seed. The second treatment was very effective on these plants because the first-year rosettes were treated, and the flowering biennials were sprayed and killed before they could set seed. This will prevent more seed from entering the seed bank along the shoulders of the highway and fewer second year biennial plants will be visible.

On August 4, 2019 treatments were performed along the highway, from Crystal Reservoir to the half-way picnic area including the eight-mile sediment basin, the maintenance facility, and the Crystal Reservoir gravel pits. The immediate roadside harbored minor infestations of common mullein, yellow toadflax, and Canada thistle. Heavier infestations occurred approximately 20 to 50 feet off the highway corridor. The highway's shoulders were the priority to inspect because of the feasibility of weeds to spread to other areas, using vehicles as a vector. The shoulders are also very visible to visitors and keeping these areas free of noxious weeds adds to the aesthetic of the

drive. Habitat Management treated from the highway's adjacent areas to the visible yellow USFS boundary signs. The large timber clearing area that Habitat Management began treating in 2018, has shown a lot of success in native vegetation establishment. In 2018, a great deal of time was used to treat the noxious weeds growing here from equipment disturbance. Because herbicide treatments began immediately after the area was cleared, the noxious weeds couldn't establish a seedbank in this area and treatments suppressed weeds and along native grasses to release and fill in the disturbed area without competition.

Widespread infestations of yellow toadflax were treated in the eight-mile sediment basin along with isolated infestations of Canada thistle and common mullein. Orange hawkweed was identified in this area during the first treatment of 2019. Orange hawkweed wasn't identified during the second treatment session where it was previously treated. The maintenance facility had infestations of yellow toadflax along the rocky slopes that surround the area. A widespread infestation of common mullein and Canada thistle was treated in the drainage way on the northside of the maintenance facility. Care should be taken to avoid this area with vehicle or equipment traffic to reduce the chances of spreading this infestation into other areas around the facility.

The Crystal Reservoir gravel pits were inspected, and noxious weed were treated when identified. The CDA recommends mechanically controlling myrtle spurge in areas where the site conditions are ideal. These ideal conditions are nonstable, rocky slopes, that have recently received rainfall. Identified myrtle spurge populations at the gravel pits met this criteria and conditions allowed HMI to mechanically remove remaining myrtle spurge plants. Many of the plants located in this population were dead from the first treatment in 2019, but the surviving plants were hand pulled and disposed of offsite. Hand removal was deemed as the most effective way of controlling myrtle spurge if one can fully remove the plant's roots. A small infestation of mayweed chamomile was identified in the northern gravel pit. This noxious weed has not been identified in this location in past treatments. Habitat Management treated the weed with herbicide and marked its location for future herbicide treatments.

DISCUSSION AND RECOMMENDATIONS

Main Entrance Gate to Crystal Reservoir

This area is the first object visitors see when arriving to Pikes Peak America's Mountain or the North Slope recreational area, and it is very important to have a good first impression, so visitors return and recommend family and friends to visit. This area has a high potential for spreading noxious weeds throughout the area by vehicle traffic. Common mullein is the most regular occurring weed in this area. The road leading to the front gate from the North Pole has an abundant amount of common mullein that is outside of the property boundary. Cars most likely bring seeds from these plants to the front gate where the seeds are deposited. It may be necessary to request treatment from local governments to help stop reintroduction to the entrance gate. It may also be suggested that this area be reseeded by hydromulching with native grass seeds to start the reestablishment of desirable grasses and shrubs to provide competition for reintroduced noxious or nuisance weeds.

The section of highway from the entrance gate to Crystal Reservoir, has shown regression in the size of noxious weed infestations. The area will need continued treatment and monitoring of