

**Spalding's Catchfly Recovery and Restoration – Seeding
Paradise Ridge/Gormsen Butte Key Conservation Area and Surrounding Areas
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Spalding's catchfly (*Silene spaldingii*) is a regional endemic plant found predominantly in bunchgrass grasslands, sagebrush-steppe, and occasionally in open pine communities, within the Palouse Prairie, Canyon Grasslands, Channeled Scablands and adjacent areas in Washington, Oregon, Idaho, and Montana. Spalding's catchfly was listed by the U.S. Fish and Wildlife Service (USFWS) as a threatened species under the Endangered Species Act on October 10, 2001 (USFWS 2001) and is currently threatened by habitat loss due to a variety of factors. The Spalding's Catchfly Recovery Plan ([USFWS 2007](#)) and the most recent 5-year review ([USFWS 2020](#)) provides details on factors contributing to its threatened status as well as recommendations to support recovery.

Since 2013, the Latah Soil and Water Conservation District (Latah SWCD) has been working in partnership with U.S. Fish and Wildlife Service and private landowners to support Spalding's catchfly recovery efforts within the Paradise Ridge/Gormsen Butte Key Conservation Area (Paradise KCA) in Latah County, ID and throughout the region. These efforts include:

- Contracting with local growers to develop a reliable and local Spalding's catchfly seed/plant source to support restoration efforts since 2012 (Figure 1)
- Conducting Spalding's catchfly planting, seeding and monitoring in the Paradise KCA to reach and maintain the recovery goal of 500+ individuals within the KCA (Figure 2)
- Developing and implementing planting, seeding, and monitoring protocols within the KCA and in the surrounding areas (Figure 3, see [Latah SWCD Resources](#) webpage for documents)
- Supporting private landowners with invasive weed control efforts surrounding Spalding's catchfly plantings on the Paradise KCA

One of the recovery plan's goals is to maintain a minimum of 27 populations with at least 500 reproducing Spalding's catchfly plants per KCA throughout its range ([USFWS 2007](#)). The Paradise KCA is one of 3 KCAs designated in the Palouse Grasslands physiographic region (Figure 4). Spalding's catchfly plants did not naturally occur within the Paradise KCA prior to the start of recovery efforts in 2013. However, the site was chosen as an important site for Spalding's catchfly recovery given the quantity and quality of intact Palouse Prairie remnants containing suitable habitat. Most of the Palouse grasslands and its associated plant communities are currently privately owned and the vast majority have previously been converted for agricultural use. Therefore, there are minimal areas within the Palouse Grasslands where a recovery-scale planting effort would be feasible. In addition to the presence of good quality Spalding's catchfly habitat, the Paradise KCA has multiple private landowners who are dedicated to Palouse Prairie preservation and restoration. Properties where Spalding's catchfly is planted within the Paradise KCA are currently placed in conservation easements, owned by conservation organizations (Palouse Land Trust), or owned by conservation-minded landowners who have given permission to plant Spalding's catchfly on their property.

Spalding's catchfly recovery goals for the Paradise KCA include establishing 500+ individual plants within the KCA boundaries with an upward trending or stable trajectory of the population. Additional details about the Spalding's catchfly outplantings on the Paradise KCA can be found in [Latah SWCD Spalding's Catchfly Planting Protocol](#) on the Latah SWCD website.



Figure 1. Spalding's catchfly seed grow-out operation at Thorn Creek Native Seed Farm on Paradise Ridge, September 2020.



Figure 2. Spalding's catchfly planting location, Paradise Ridge KCA, May 2020.



Figure 3. Latah SWCD field crew planting day on Paradise Ridge KCA, October 2017.

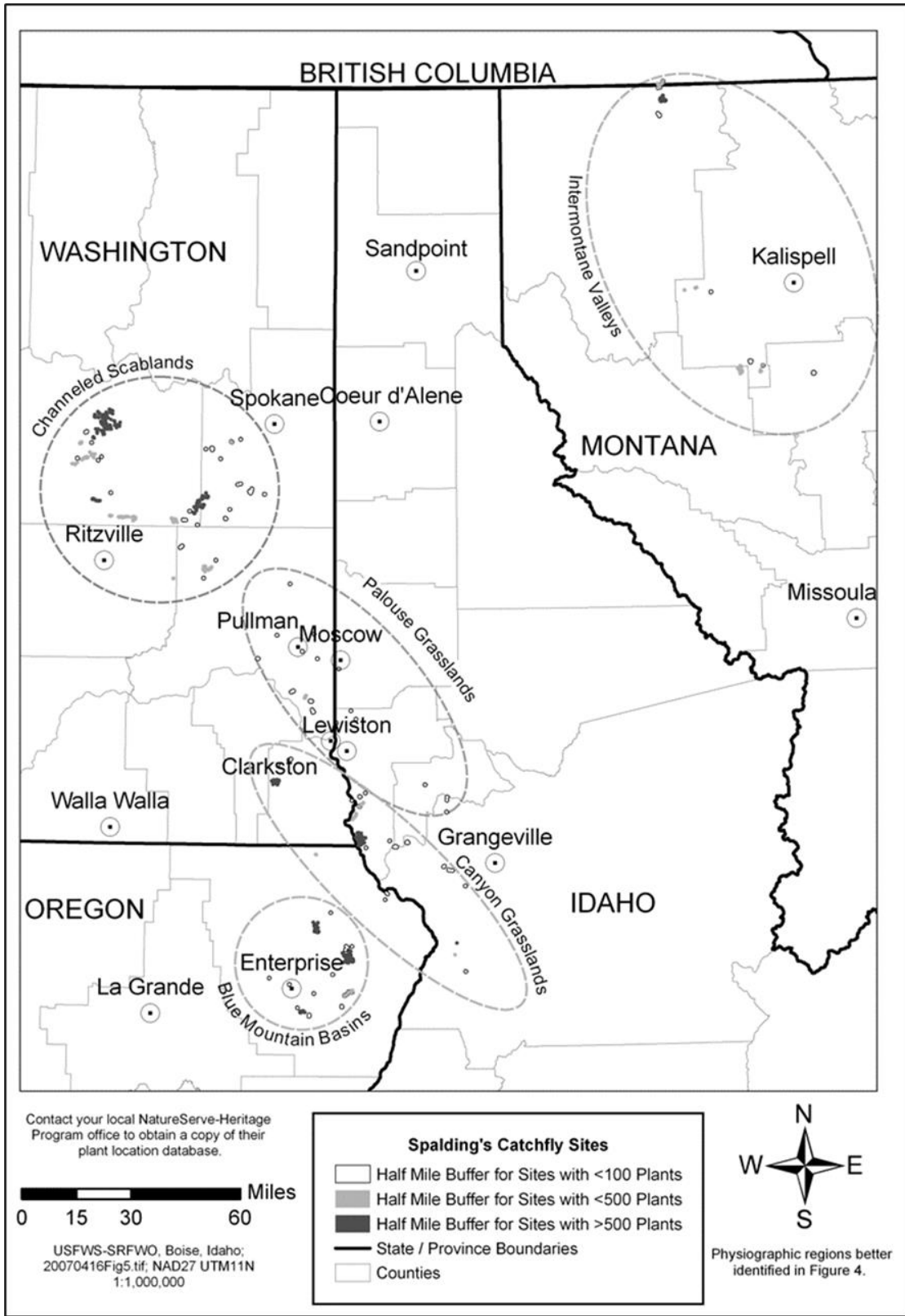


Figure 4. Spalding's catchfly range map. Source USFWS 2007.

This report summarizes Spalding's catchfly broadcast and direct seeding efforts.

In 2013, Latah SWCD began planting efforts in the Paradise KCA to work towards recovery goals. In 2017, Latah SWCD began trial seeding efforts on prairie remnants as well as in Conservation Reserve Program (CRP) sites to determine if broadcast and/or direct seeding could be viable methods of establishing Spalding's catchfly. Given the sensitivity of Palouse Prairie remnants to disturbance, remnant seeding was conducted via hand broadcast seeding while drill-seeding was conducted on CRP ground.

Spalding's catchfly seed is small (~690,000 seeds per pound), brown to light brown, winged, light, and has limited availability (Figure 5). Studies have shown that Spalding's catchfly seed germination increases following cold stratification. Therefore, to maximize germination potential, seeding will be conducted in the fall. Spalding's catchfly seed used for these was produced by Thorn Creek Native Seed Farm from 2015-2023. Original seed sources included multiple natural populations in the Palouse and Canyon Grasslands physiographic regions.



Figure 5. Spalding's catchfly seed, photo by Pat Mason.

To date, broadcast seeding efforts have been conducted on prairie remnants in fall 2017, 2019, 2020, and 2024 (Table 1). Drill seeding was conducted on CRP within the Paradise KCA in fall 2018 and in one CRP location (L-sites) outside of the KCA in fall 2019 (Table 2). All seeded sites were revisited the following spring and will continue to be monitored as needed to determine seeding success. In 2016, the 2015 and 2016 seed lots for Spalding's catchfly seed were tested for viability and results showed >80% seed viability. Spalding's catchfly seedlings have a high mortality rate (P. Lesica *pers. comm.*, Hill and Garton 2015, USFWS 2007.) and the results from these seeding trials confirm this as well. Tables 1 and 2 below provide results of monitoring in both the prairie remnant broadcast seeding trials as well in the CRP direct seeding locations.

See [Latah SWCD Spalding's Catchfly Seeding and Monitoring Protocol](#) for further details.

Results – Broadcast Seeding in Prairie Remnants

Successful seed germination was observed at all sites in year 1 or 2 following fall seeding (Figure 6). At several sites, seedlings were observed in both the first and second years following the seeding.

However, 1st year recruits were not observed until spring 2023. In 2023, 1st year recruits were observed at P6, P7, and P8 sites (Figure 7). This observation was exciting given that survival past the seedling stage had not been observed previously. Of the 1st year recruits observed in 2023, 7 emerged as 2nd year recruits in 2024.



Figure 6. Spalding's catchfly seedlings at P7, 5/18/2021.



Figure 7. Spalding's catchfly rosettes (1st year recruits) at P7, 5/18/23.

Additional summary of results (Table 1):

- SP, C, and H plots all had successful seed germination in the first year following seeding, however, seedling mortality was high in these years and no plants survived from the seeding efforts.
- On the P plots
 - 167 seedlings were observed in spring 2021 and of those, zero 1st year recruits were found in spring 2022
 - 88 new seedlings were observed in spring 2022 as a result of the fall 2020 seeding, of those, 22 returned as 1st year recruits and 7 returned as 2nd year recruits
 - All 1st and 2nd year recruits were observed in the rosette life stage

BROADCAST SEEDING MONITORING DATA - In Prairie Remnants									
Plot Name	Aspect	Planting Year	2018 seedling data	2019 seedling data	2020 seedling data	2021 seedling data	2022 seedling data	2023 plant data	2024 plant data
SP-2	W	2017	4	0	0				
SP-4	NW	2017	24	7	0	0			
SP-6	WNW	2017	1	1	0	0			
SP-8	W	2019			4	0			
SP-9	W	2019			33	0			
C-4	NW	2017	23	7	0	0			
H-6	ridgetop	2019			234	0	0		
P5	W	2020				20	0		
P6	W	2020				44	6	6	0
P7	NW	2020				103	47	11	3
P8	WNW	2020				0	35	5	4

Table 1. Summary of Latah SWCD Spalding’s catchfly seeding monitoring efforts on Palouse Prairie remnants. **Red font** = 1st or 2nd year recruits– returned as rosettes from previous year’s seedlings. Green fill = no data (not seeded yet); Orange fill = no data (monitoring suspended)

Results - Drill-Seeding in CRP (2 sites)

In fall 2018, Spalding’s catchfly was direct-seeded into an existing stand of native grasses and forbs on CRP ground on Paradise Ridge within the Paradise KCA (J-sites, Figure 8). Within this field, the perennial grass component included intermediate wheatgrass (majority) along with native grass and forb strips interspersed throughout. For this drill-seeding event, 2.68 oz. (75.84 gm.) of seed was used over multiple acres. To monitor the success of Spalding’s catchfly in this setting, four transects were established for spring monitoring (Figure 8). Competition from the existing perennial grasses was high and causing difficulty for Spalding’s catchfly seedling and plant detection. To date, Spalding’s catchfly has not been detected at these 4 transect locations (Ja, Jb, Jc, Jd, Table 2), and monitoring has been suspended at these sites.



Figure 8. Jc transect location, 5/29/2020.

In fall 2019, Spalding’s catchfly was seeded into approximately 1-acre of a 50-acre prairie reconstruction project site on CRP ground in Latah County. During the drill-seeding, Spalding’s catchfly seed was added to one opener of the small seed drill box in the Truax drill for application alongside a mix of 10 native grasses and 15 native forbs. One ounce (29 gm) of Spalding’s catchfly seed was used. To establish the monitoring transects, we coordinated with the drill operator, flagged the location of the Spalding’s catchfly seed output, and placed permanent markers at the start and end of three 50-acre transects (L1, L2, L3, Figures 9-12). During the 2020 monitoring event, significant numbers of Spalding’s catchfly seedlings were observed at all three L transects (Table 2). Once located, seedlings were mapped with x- and y- coordinates along the transect for future monitoring. The majority of Spalding’s catchfly seedlings detected in 2020 survived and emerged as rosettes or vegetative stem plants in 2021. New seedlings also appeared in year 2 alongside 1st-year recruits. New plants continue to be found each year resulting in an increase in plant numbers at all transects each subsequent year.



Figure 9. L3 seeded transect, 6/17/2020.



Figure 10. Spalding's catchfly seedlings in L3 transect, 6/17/2020.



Figure 11. Spalding's catchfly rosettes and stem plants in L1 transect, 5/17/2021.



Figure 12. Spalding's catchfly stem plant in L1 transect, 6/5/24.

DRILL SEEDED TRANSECT MONITORING DATA - In CRP fields									
Transect Name	Aspect	Transect length (ft)	Planting Year	2019 seedling data	2020 seedling data	2021 seedling/ plant data	2022 seedling/ plant data	2023 seedling/ plant data	2024 seedling/ plant data
Ja	W	191	2018	0	0	0			
Jb	W	171	2018	0	0	0			
Jc	E to N	243	2018	0	0	0			
Jd	NE to NW	125	2018	0	0	0			
L1	NNW	49	2019		25	34	44	44	54
L2	WNW	50	2019		32	25	53	54	71
L3	flat, slight S	50	2019		20	27	26	21	17

Table 2. Summary of Latah SWCD Spalding’s catchfly drill-seeding monitoring efforts. Green fill = no data (not seeded yet); Orange fill = no data (monitoring suspended)

Discussion - Broadcast Seeding

Recent success with broadcast seeding in prairie remnants, although minimal, has encouraged the continuance of broadcast seeding efforts at select locations in the Paradise KCA. Seed germination has been successful at all sites, however, the survival of the seedlings is low. Spalding’s catchfly has been found to have sporadic recruitment events in native populations as well (USFWS 2007), and it is unclear why greater success was seen following the fall 2020 seeding events in P6, P7, and P8. Conditions are variable both temporally and spatially and it is not clear why some seedlings survived to become 1st and 2nd year recruits following the fall 2020 seeding at the P6, P7, and P8 sites. It is likely that environmental conditions played a role in seedling survival or mortality. Therefore, since elemental conditions cannot be predicted year to year, regular seeding within sites with known survival successes should be continued to further the knowledge about seeding success. Ongoing seeding requires the availability of a reliable seed source as regular seed collection may reduce critical recruitment events in the natural populations.

Discussion – Direct Seeding

Two direct seeding trials have been attempted to establish Spalding’ catchfly seed in CRP. Both trials utilized a no-till Truax drill for direct-seeding. In fall 2018, the first trial was attempted in a CRP field with a dense mixed stand of non-native and native perennial grasses and forbs. Transect relocation

was a challenge in this field, and seedlings, if present, would have been difficult to detect amidst the existing vegetation and ground litter. In the first three years after seeding, no Spalding's catchfly plants were detected in any growth form. Monitoring was suspended due to the lack of Spalding's catchfly detection and the difficulty of transect relocation.

The second trial was conducted in Fall 2019 in a site prepared for a full-field prairie reconstruction planting (Figure 13). Spalding's catchfly seed was installed along with 25 additional native grasses and forbs. This strategy was highly successful at this site and monitoring continues to show that Spalding's catchfly plants are establishing well (Figure 14). Future direct seeding in similar settings would be of interest to determine if this success could be replicated.



Figure 13. Truax drill with native seed mix and Spalding's catchfly seed at L-sites, 11/4/2019.



Figure 14. Prairie reconstruction site with L3 seeded transect with yellow and orange flagging marking select Spalding's catchfly plant locations, 6/5/2024.

References

Latah SWCD. 2025. Spalding's catchfly resources web page for all Spalding's catchfly protocols and reports. <https://www.latahswcd.org/resources>

U.S. Fish and Wildlife Service. 2001. Endangered and threatened wildlife and plants; final rule to list *Silene spaldingii* (Spalding's catchfly) as threatened. Federal Register 66:51598-51606.

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U.S. Fish and Wildlife Service. 2020. 5-Year Review Spalding's Catchfly (*Silene spaldingii*). U.S. Fish and Wildlife Service, Boise, Idaho. 48 pp.