

**Latah Soil and Water Conservation District  
Paradise Ridge/Gormsen Butte Key Conservation Area  
Spalding's Catchfly Recovery and Restoration Efforts  
Prepared by Brenda Erhardt, Latah SWCD, updated April 2024**

From 2013-2023, the Latah Soil and Water Conservation District (Latah SWCD) has planted 3,293 *Silene spaldingii* (Spalding's catchfly) to support recovery efforts within the Paradise Ridge/Gormsen Butte Key Conservation Area (Paradise KCA) in Latah County, ID. One of the Spalding's catchfly recovery plan's goals is to maintain a minimum of 27 populations with at least 500 reproducing Spalding's catchfly plants per KCA throughout Spalding's catchfly range ([USFWS 2007](#)). The Paradise KCA is one of 3 KCAs in the Palouse Grasslands physiographic region (Figure 2). Spalding's catchfly plants did not naturally occur within this KCA prior to the start of transplanting 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 have previously been converted for agricultural use. Therefore, there are minimal areas 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. All properties where Spalding's catchfly is planted within the Paradise KCA are currently placed in conservation easements, owned by conservation agencies (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 a minimum of 500 individual plants within the KCA boundaries. Monitoring should show 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 the [Latah SWCD Spalding's catchfly planting protocol](#) on the Latah SWCD website.



Figure 1. Spalding's catchfly planting location, Paradise Ridge, May 2020.





Figure 3. Planted Spalding's catchfly, May 22, 2017.

To date, Spalding's catchfly has been planted in more than 20 different locations and across 6 different private landowner's properties within the Paradise KCA. A permanent monitoring transect was established at each planting location to monitor a minimum of 20% of the plants installed at each location. Additional details about the Spalding's catchfly monitoring strategy on the Paradise KCA can be found in the [Latah SWCD Spalding's Catchfly Monitoring Protocol](#) on the Latah SWCD website. Outplanting locations are revisited in the spring to collect annual presence/absence data. Survival rates are calculated from the presence/absence data for transect locations with 3 or more years of data (Table 1). Given that Spalding's catchfly can be dormant for up to 3 years, survival is determined if a plant is present in at least one of three consecutive annual monitoring events. Plant mortality is determined if a plant is absent for three consecutive annual monitoring events. Tables 1 and 2 summarize Spalding's catchfly survival rates and total plant counts. Sites with less than three years of monitoring data were omitted from the table and will be included in future summary reports once survival rate requirements have been met.



Figure 4. Latah SWCD field crew planting day on Paradise Ridge KCA, October 2017.

**Table 1 – Spalding’s catchfly survival data.** Survival rates were determined for plants present in at least 1 of 3 consecutive annual monitoring events. Note that west, northwest, and west-northwest aspects appear to have higher survival rates while north aspects seem to have lower survival rates. Sites will not be included in this table until data has been collected for a minimum of 3 consecutive years post-planting.

Site	Planting Season/Year	Aspect	Total SISP Planted	2015-2017 (%)	2016-2018 (%)	2017-2019 (%)	2018-2020 (%)	2019-2021 (%)	2020-2022 (%)	2021-2023 (%)
J1	Fall 2013	E	99	45	5	5	5			
J2	Fall 2013	W	98	45	35	35	35	30	30	
J3	Spring 2014	E	20	10	15	15	5			
J4	Spring 2014	W	20	20	5	5	0			
J5	Fall 2018	N	250						28	
J6	Fall 2018	W	250						46	28
J7	Fall 2018	N	250						6	
H1	Spring 2014	ridgetop	74	15	5	5				
H2	Spring 2014	NW	71	5	0	0				
H3	Fall 2014	NW	42	25	0	0				
H4	Fall 2014	N	43	5	5	5				
H5	Fall 2019	ridgetop	160						14	
D1	Fall 2014	N	86		4	4	2			
D2	Spring 2015	N	100		20	20	10			
P1	Fall 2015	NW	72			90	40	25	25	25
P2	Fall 2015	NW	71			85	60	45	35	35
P3	Spring 2016	NW	50			70	35	35	35	35
P4	Spring 2016	W	49			85	65	65	60	50
SP1a	Fall 2016	ridgetop	32				53	50	22	6.25
SP1b	Fall 2017	W	125					59	52	36
SP5	Fall 2017	WNW	125					68	60	60
SP7	Fall 2019	W	160						66	66

**Table 2. Spalding’s catchfly (SISP) plant estimates on the Paradise KCA.** Estimates are based on the most recent survival rate (%) multiplied by total number of plants installed per site. Established plant estimates are included from sites with a minimum of 3 years of monitoring data. Additional sites will be added as the minimum requirement is met. Sites where monitoring was discontinued will utilize the most recent monitoring data to estimate plant numbers. Sites with low survival rates (<10%) are not included in this table and will not be included as a part of the total plant estimate.

Site	Planting Season/Year	Aspect	Total SISP Planted at Site	Presence in minimum of 1 of 3 years - 2018-2020 (%)	Presence in minimum of 1 of 3 years - 2019-2021 (%)	Presence in minimum of 1 of 3 years - 2020-2022 (%)	Presence in minimum of 1 of 3 years - 2021-2023 (%)	Estimated SISP count: last survival % x total SISP planted
J2	Fall 2013	W	98	35	30	30	n/a	29
J6	Fall 2018	W	250			46	28	70
D2	Spring 2015	N	100	10				10
P1	Fall 2015	NW	72	40	25	25	25	18
P2	Fall 2015	NW	71	60	45	35	35	25
P3	Spring 2016	NW	50	35	35	35	35	18
P4	Spring 2016	W	49	65	65	60	50	25
SP1a	Fall 2016	ridgetop	32	53	50	22	6.25	2
SP1b	Fall 2017	W	125		59	52	36	45
SP5	Fall 2017	WNW	125		68	60	60	75
SP7	Fall 2019	W	160			66	66	106
<b>APPROXIMATE SISP ESTIMATE AS OF SPRING 2023</b>								<b>*423</b>
*This number is a conservative estimate as it does not include more recently planted sites and it does not include the sites with consistently low SISP counts (see Table 1 above)								



## Survival Rate and Total Count Discussion

Monitoring transects are established at each planting location during the initial planting and are monitored annually each spring (see [Latah SWCD Spalding's Catchfly Monitoring Protocol](#) for details). Transects showing little to zero Spalding's catchfly presence following two or three monitoring events have been dropped from the annual monitoring schedule. Much has been learned from these monitoring plots through the years and these lessons learned have allowed for planting strategy adjustments, which have resulted in greater planting efficiency.

### Lessons Learned

- Pot size - Comparison of 10 cubic inch and 58 cubic inch pot sizes from 2013 through 2016 plantings showed no difference in survival rates based on pot sizes. Therefore, future plantings utilize 10 cubic inch plants primarily. This pot size is beneficial as they are smaller, lighter, and easier to transport to the planting locations than the larger 58 cubic inch pots.
- Planting Season – Overall comparison of fall versus spring plantings from 2013-2016 showed fall plantings achieving a slightly higher survival rate than spring plantings (36% fall, 32% spring). A mixed effects logistic regression found no seasonal effect; however, these results were highly influenced by two monitoring plots (H and D sites) which had very low presence and survival rates across fall and spring plantings. Fall planting was better for all sites except for the H and D sites. Therefore, following 2016, fall plantings were resumed and spring plantings were discontinued.
- Planting Locations – To date, Spalding's catchfly has been planted on over 20 different sites across 6 different landowner's properties within the Paradise KCA. Aspects have ranged from north, east, west, northwest, west northwest, and ridgetop. So far, west and northwest aspects have seen the greatest survival success. Therefore, future plantings are being focused on locations that have already proven to have optimal presence and survival rates. Additional analysis may be completed comparing aspect and Spalding's catchfly survival rates in the future.
- Mulching – While no comparison data has been taken on mulching plants post-planting, our planting protocol includes applying a certified weed-free shredded straw mulch after planting. Placing mulch around the base of the plants has several benefits including: retaining soil moisture, inhibiting weed encroachment during establishment, and assisting with plant relocation the following spring. There may be other benefits to mulching as well and we have found that this is an important and worthwhile step in our planting protocol.
- Monitoring timing – Spalding's catchfly can take multiple different growth forms during its life cycle. On any given year a plant can be a rosette, stem, or reproductive flowering plant. It can also be dormant for up to 2 or 3 years showing no above ground structure during that time. Therefore, monitoring Spalding's catchfly survival in the spring has been beneficial for determining accurate survival counts. Spring monitoring allows for easier observance of plants emerging as a rosette. Rosettes can be small, and the leaves often dry up and disintegrate or become less detectable later in the summer. On the other hand, reproductive status is not able to be determined with spring only monitoring. Given limited time and funding for these efforts, spring monitoring will be continued, and a mid to late summer monitoring trip may need to be added as time allows and as we transition into population trend monitoring.

- Trial broadcast seeding efforts are being undertaken within the Paradise KCA alongside the plantings. Recent success with seeding Spalding’s catchfly within the prairie remnants is encouraging the continuation of these efforts to try to establish Spalding’s catchfly by seed. These data will be incorporated into total plant counts for the KCA as soon as more data are gathered. See the [Latah SWCD Spalding’s Catchfly Seeding Summary Report](#) on the Latah SWCD website for further details.

From 2013 through 2023, Spalding’s catchfly Recovery funds have provided a consistent funding source to implement plantings and to monitor new and previously established outplantings on the Paradise KCA. Funding consistency is imperative to achieve the consecutive years of monitoring required to determine long-term survival rates of newly planted Spalding’s catchfly to achieve recovery goals. Through this annual monitoring strategy, Latah SWCD has found multiple planting locations with survival rates at or above 35% (Table 1). This evidence informs future planting strategies to focus planting efforts within the vicinity of previously successful planting locations rather than continuing to explore for new unplanted sites. This increased efficiency optimizes Spalding’s catchfly recovery plantings and will expedite recovery goals within the Paradise KCA.

It is important to continue Spalding’s catchfly outplantings and monitoring for at least the next three to five years to capitalize on the investment that has already been made within the Paradise KCA, as well as to keep the momentum gained to date.



Figure 5. Spalding’s catchfly plant within the Paradise KCA, May 29, 2020.

### Site Maintenance

In addition to Spalding’s catchfly outplantings, restoration activities are conducted annually within the Paradise KCA. The entirety of the Paradise KCA is in private ownership with multiple landowners and Latah SWCD supports private landowner weed control and restoration activities surrounding the Spalding’s catchfly planting areas as funding allows.

Examples of these efforts include:

- Latah SWCD field crew re-seeding ATV tracks with native grass and forb seeds following unauthorized trips through Paradise Ridge and Spalding's catchfly planted areas (1/3 acre), 2017
- Latah SWCD field crew assisting private landowners with tall oatgrass control, 2021
- Purchasing native seed for private landowners following weed control activities. Weed control focus species include, but are not limited to:
  - *Ventenata* (*Ventenata dubia*)
  - Tall Oatgrass (*Arrenatherum elatius*)
  - Rush Skeletonweed (*Chondrilla juncea*)
  - Canada thistle (*Cirsium arvensis*)

Private landowners regularly scout their property for weeds, spot-treat weeds with mechanical and chemical treatments as required, and then follow weed treatments with native seed application as needed on approximately 160 acres within the Paradise KCA. Private landowner's restoration efforts have been supported by the recovery funds through Latah SWCD field crew labor, as well as with weeding materials and native seed purchases.



Figure 6. Latah SWCD field crew re-seeding an unauthorized ATV track through Palouse Prairie remnant, October 2017.

## References

Erhardt, B. 2021. Latah SWCD Spalding's Catchfly Planting Protocol. <https://www.latahswcd.org/spaldingscatchfly>.

Erhardt, B. 2022. Latah SWCD Spalding's Catchfly Monitoring Protocol. <https://www.latahswcd.org/spaldingscatchfly>.

U.S. Fish and Wildlife Service. 2007. Recovery Plan for *Silene spaldingii* (Spalding's Catchfly). U.S. Fish and Wildlife Service, Portland, Oregon. Xiii + 187 pages.