

**Final Report Summarizing Bird Surveys at the
Faith Valley Restoration Project
and Upper Charity Reference Site**



Above: Recently constructed beaver dam analog structures at Faith Valley, Photo by H. Loffland

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Introduction

This report summarizes the results of 4 years of pre-restoration and 1 year of post-restoration multi-species bird monitoring at Faith Valley, and Upper Charity Valley (Figure 1). Also included are the results of broadcast surveys for Willow Flycatcher at Faith Valley. In 2010, 2012, 2017, 2018 and 2024 The Institute for Bird Populations (IBP) utilized two distinct bird survey and monitoring protocols within the Faith Valley project area to provide pre-restoration baseline data. These protocols included *A Willow Flycatcher Survey Protocol for California* (Bombay et al. 2003a) and *Avian monitoring protocol for Sierra Nevada meadows: a tool for assessing the effects of meadow restoration on birds* (Loffland et al. 2011a). The first is a targeted single-species survey protocol used to determine the presence/absence of Willow Flycatchers and the approximate number of territories and their locations. The second protocol is used to assess and describe the larger bird community and to detect population-level changes in meadow-associated bird species in response to restoration activities.

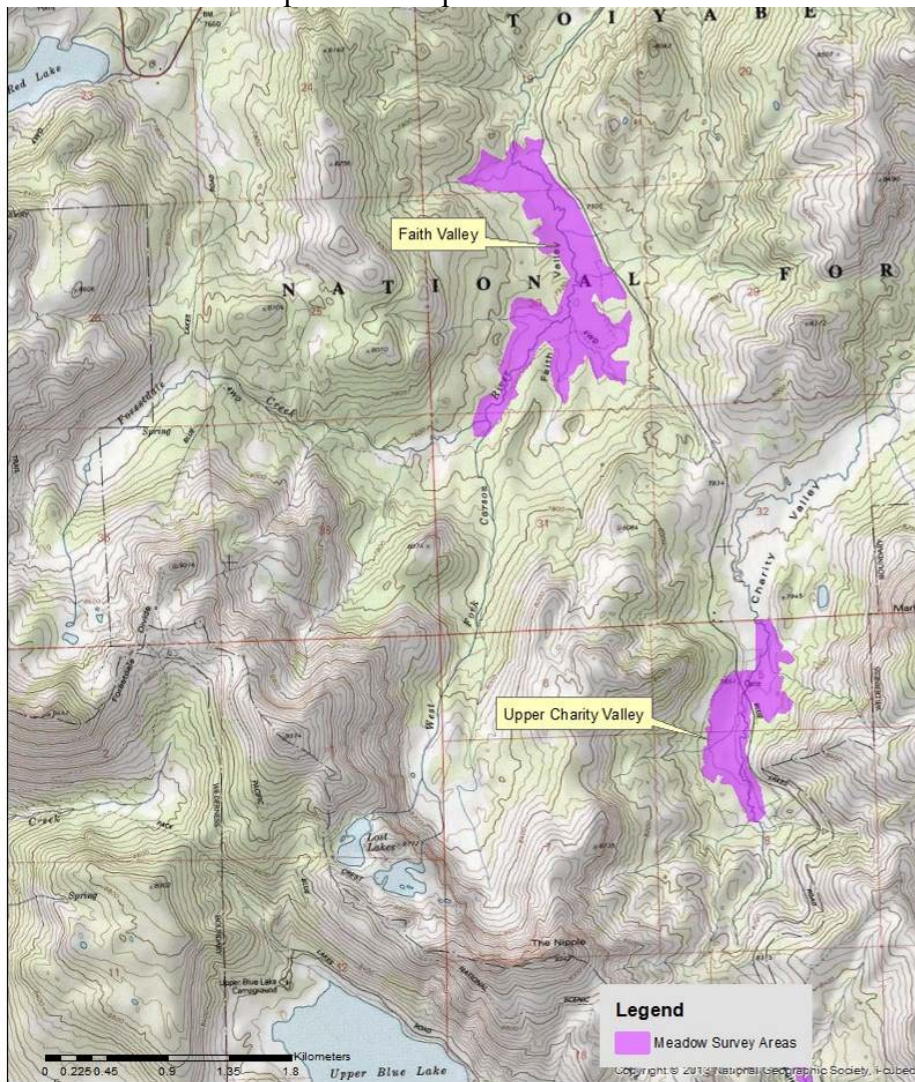


Figure 1. Overview map of Faith Valley and control site at Upper Charity Valley

Methods

Multi-species Bird Monitoring

Multi-species monitoring (all bird species) in the restoration and reference meadows of the Faith Valley project followed Loffland et al. (2011a), and consisted of two primary methods: point counts and area searches. Point counts were conducted at survey stations spaced 250 m apart, and all individuals of all species seen or heard were counted during a 7-minute period (Figures 2 and 3).

Surveys were completed in 2010, 2012, 2017, and 2018 prior to restoration, and again in 2024 after the first year of restoration (Loffland et al. 2011a, 2011b). By collecting data in multiple years prior to restoration, we are improving our ability to detect and interpret any population changes that occur as a result of future restoration activities. This monitoring protocol uses a Before, After, Control, Impact (B.A.C.I.) design requiring that nearby reference sites not undergoing restoration also be monitored. By collecting data at reference sites, we hope to distinguish bird population changes that occur as a result of restoration from those occurring across the local population due to other factors not related to restoration efforts. Therefore, the same multi-species monitoring protocol was applied at Upper Charity Valley in 2010, 2012, and 2024.

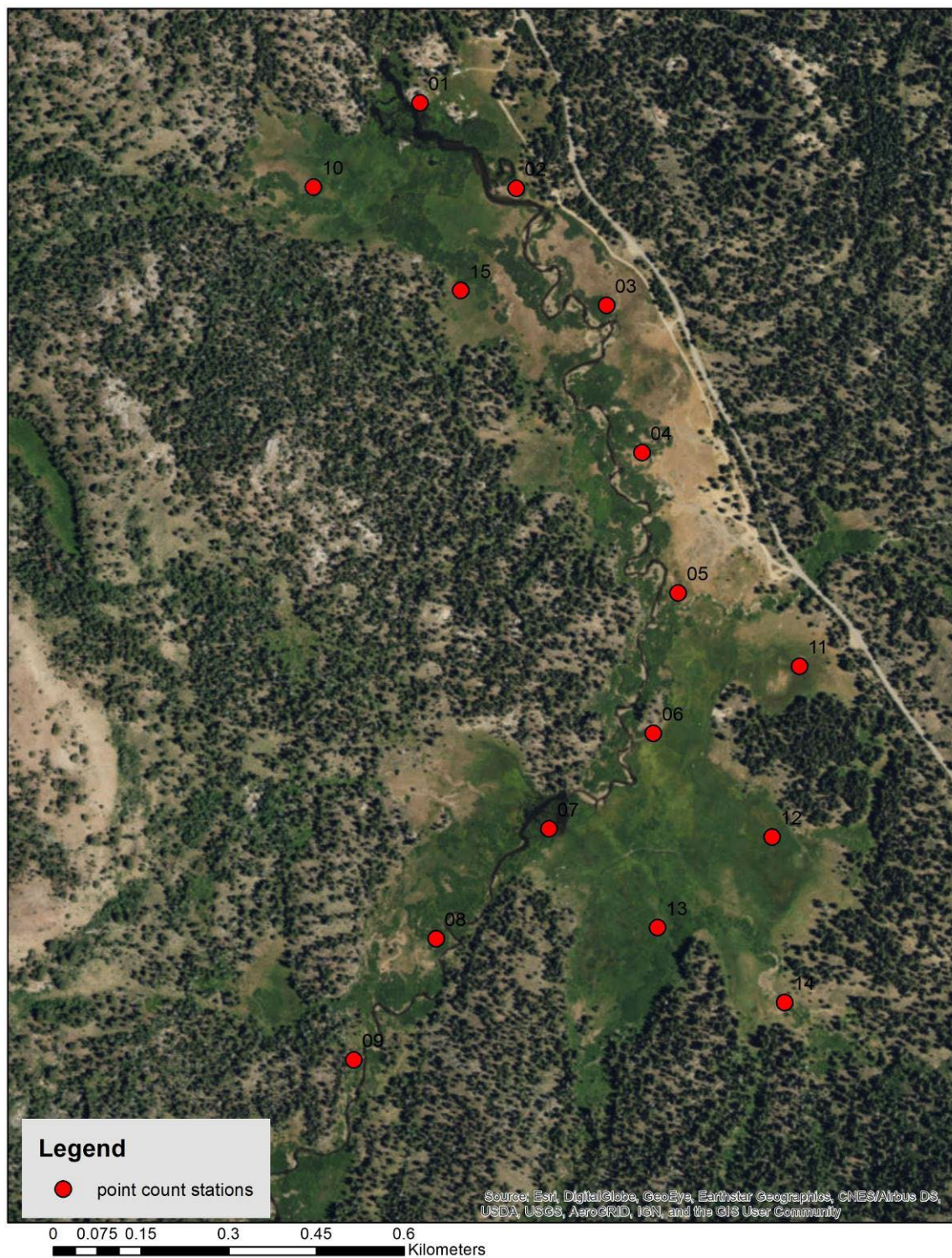


Figure 2. Multi-species point count station locations in Faith Valley.

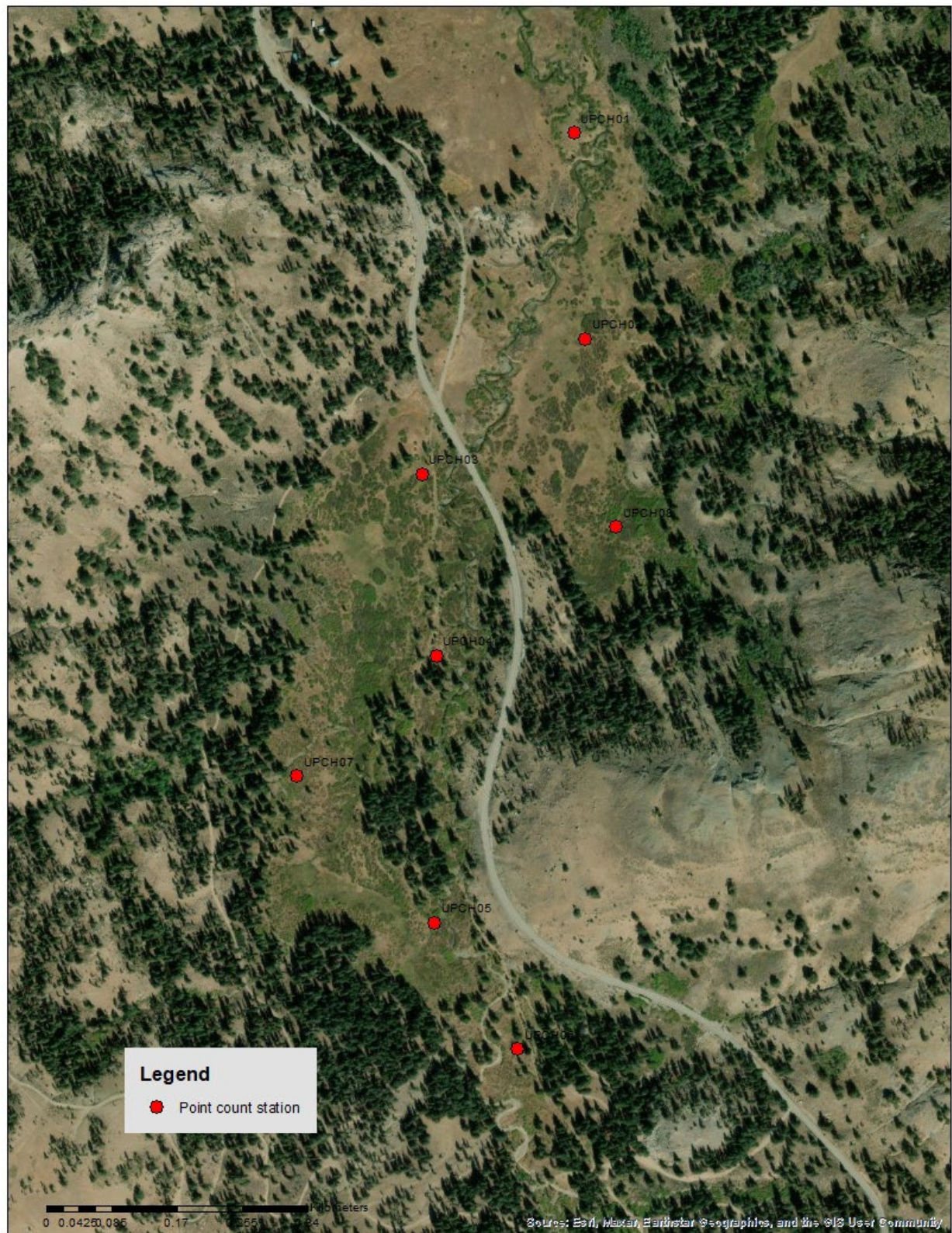


Figure 3. Point count survey stations at Upper Charity Valley control site

Willow Flycatcher Surveys

Willow flycatcher surveys were completed in Faith Valley in 2016 and 2017 and repeated in 2024 during the first post restoration year. To survey for the presence of Willow Flycatchers, Bombay et al. (2003) requires at least one survey visit during the mandatory survey period 2 (June 15 to July 1; Table 1). This mandatory period coincides with the time when Willow Flycatchers are most likely to be in the reproductive stage when singing rates, and therefore detection probabilities, are highest. Typically, another survey visit occurs either before or after survey period 2 depending on the elevation and phenology of the site. During 2016, and 2024 we completed 2 surveys, and during 2017 we completed a single survey visit.

Table 1. Willow Flycatcher survey periods (following Bombay et al. 2003a).

Survey Period 1	Survey Period 2 Mandatory	Survey Period 3
June 1 – June 14	June 15 – June 25	June 26 – July 15

Willow Flycatcher survey stations were delineated within the meadow along transects that parallel the stream channel or areas of shrubby riparian vegetation. Stations were placed 50 m apart, and located only in the areas where riparian shrubs (usually willow) occur (Figure 4). Faith Valley is large, but with a few exceptions riparian shrubs occur primarily along stream channels.

most all stations occur along transects paralleling the West Fork of the Carson River and the associated tributaries. There are a few areas where willows are absent or very sparsely scattered. These areas did not receive Willow Flycatcher survey stations because the willow coverage was not adequate to provide habitat for Willow Flycatchers.

Survey activities at each station during each visit included a 6-minute period of broadcasting pre-recorded Willow Flycatcher vocalizations, and listening for a response. If Willow Flycatchers were detected at a survey station the location of the bird was documented, and nearby survey stations were eliminated during the same visit to avoid excessive disturbance to individual birds

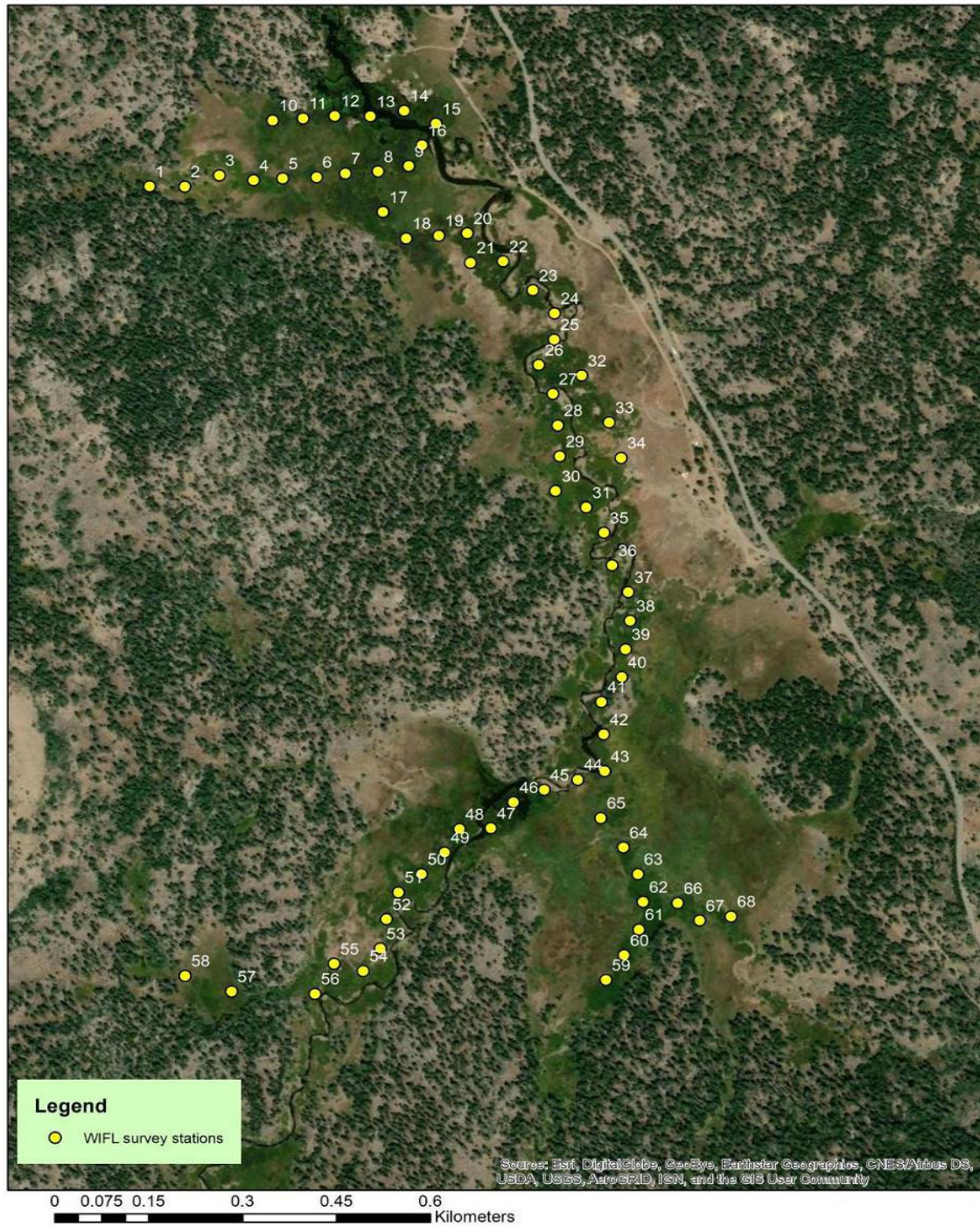


Figure 4. Willow Flycatcher survey stations at Faith Valley.

Vegetation Monitoring

In 2010, 2012, 2018, and 2024 we assessed vegetation, bare ground, surface water, and numerous other biotic and abiotic factors within 50 m of all multi-species point count stations, following Loffland et al. (2011a).

Cover classes were averaged across four quadrants of a 50-m radius circle centered at each point count station, and then averaged across all points within a meadow. These metrics are intended to serve as a point of reference for bird counts but are not intended to replace vegetation monitoring specific to meadow restoration. Habitat characteristics including water cover and riparian shrub cover were estimated because they are known to be particularly important to focal bird species. Additionally, measures of sagebrush and bare ground were recorded because they may provide a rough index of the extent of severely disturbed area within a meadow.

Results

Multi-species Monitoring

In 2010, 2012, 2017, 2018, and 2024 we surveyed 14 multi-species point count survey stations in Faith Valley (Figure 2) and 8 stations at the reference site at Charity Valley (Figure 3). In 2017, and 2018 we surveyed only Faith Valley. All visits to these meadows occurred between late May and early July (Table 2).

Table 2. Dates for multi-species bird monitoring in the Faith Valley area in 2010, 2012, 2017, 2018, and 2024.

	2010	2012	2017	2018	2024	No. Stations	No. species detected 2024
Faith Valley	6/6/2010 6/18/2010	6/10/2012 7/3/2012	6/26/2017	6/11/2018	5/27/2024 7/3/2024	15	40
Charity Valley	6/17/2010 6/30/2010	6/9/2012 7/4/2012			6/4/2024 6/26/2024	8	41

At Faith Valley we detected 40 species in 2024 (62 species across all years of survey), and at Upper Charity Valley we detected 41 species in 2024 (49 species across all years of survey; Appendix A). The most common birds included riparian associates including White-crowned Sparrow and Wilson's Warbler, generalist species such as Brewer's Blackbird, Dusky Flycatcher, and forest species including, Cassin's Finch and Mountain Chickadee (Appendix A, Table 2).

Table 2. Most abundant species in 2024 at Faith Valley and Upper Charity Valley in order of declining abundance

Faith Valley	Upper Charity Valley
White-crowned Sparrow	White-crowned Sparrow
Song Sparrow	Cassin's Finch
Red-winged Blackbird	Pine Siskin
American Robin	Dusky Flycatcher
Dusky Flycatcher	Mountain Chickadee
Mountain Chickadee	Wilson's Warbler
Spotted Sandpiper	Warbling Vireo
Brewer's Blackbird	Dark-eyed Junco
Wilson's Warbler	Lincoln's Sparrow
Dark-eyed Junco	Song Sparrow
Canada Goose	American Robin

For initial baseline surveys in 2010 and 2012 we selected focal species for monitoring based on Loffland et al (2011a), which identified 18 focal bird species expected to respond positively to meadow restoration, or in the case of Brown-headed Cowbird, have other conservation implications making them especially worthy targets of monitoring at meadow restoration sites. In 2013 we worked collaboratively with other researchers to refine this list to a smaller subset of focal species (Table 3) most appropriate for analysis based on expected distribution, sample size, and predicted direction of change with restoration (Campos et al. 2014). The observation status for these species and their typical habitat preferences are indicated in Table 3.

Table 3. Focal bird species observation status during surveys of Faith Valley in 2010-2024

Species	Usual habitat within meadows ¹	Observed in study area?
Wilson's Phalarope	<i>E</i>	<i>Not detected</i>
Wilson's Snipe	<i>E</i>	<i>Point count</i>
Red-breasted Sapsucker	<i>S,A</i>	<i>Point count</i>
Calliope Hummingbird	<i>M,S,A</i>	<i>Point count</i>
Willow Flycatcher	<i>S,E</i>	<i>WIFL survey and point count</i>
Swainson's Thrush	<i>S,A</i>	<i>Not detected</i>
Warbling Vireo	<i>S,A</i>	<i>Point count</i>
Yellow Warbler	<i>S</i>	<i>Point count</i>
MacGillivray's Warbler	<i>S,A</i>	<i>Point count</i>
Wilson's Warbler	<i>S,A</i>	<i>Point count</i>
Song Sparrow	<i>M</i>	<i>Point count</i>
Lincoln's Sparrow	<i>M</i>	<i>Point count</i>
White-crowned Sparrow	<i>S,M</i>	<i>Point count</i>
Black-headed Grosbeak	<i>S,A</i>	<i>Not detected</i>

¹ A = Aspen, cottonwood; E = emergent vegetation and surface water; G = gravel bars and streamside zone; M = open meadow; S = riparian deciduous shrubs

For the purpose of assessing change in these sites over time and in response to future restoration we typically limit our analyses to only those birds detected within 50m of survey stations, in an effort to account for changes in detection probability that occur with increasing distance from an observer. The following results are based only on detections within 50m of survey stations unless otherwise noted.

Species' relative abundance was indexed by the number of individuals detected divided by the number of survey station visits (Appendix A). During our surveys we detected 11 of the focal species at Faith Valley, but some (Red-breasted Sapsucker and Willow Flycatcher) in only one of the five years (Table 4, Figures 5-10). Upper Charity Valley only supported 6 of the focal species.

Table 4. Index of relative abundance¹ for each focal species detected within 50 meters of point count stations at Faith Valley during 2010, 2012, 2017, 2018, and 2024.

	Faith Valley					Upper Charity Valley				
	2010	2012	2017	2018	2024	2010	2012	2017	2018	2024
Wilson's Snipe	0.14	0.04	0.08	0.08	0	0	0.06	NA	NA	0
Calliope Hummingbird	0	0	0.23	0.08	0	0	0	NA	NA	0
Red-breasted Sapsucker	0	0	0	0	0.04	0	0	NA	NA	0
Willow Flycatcher	0	0	0	0	0.04	0	0	NA	NA	0
Warbling Vireo	0	0	0.08	0.08	0	0.07	0	NA	NA	0.13
Yellow Warbler	0.41	0.27	0.23	0.54	0	0	0	NA	NA	0
MacGillivray's Warbler	0	0	0.23	0	0.08	0	0	NA	NA	0.06
Wilson's Warbler	0.18	0	0.62	0.38	0.23	0.07	0.31	NA	NA	0.19
Song Sparrow	0.36	0.35	0.77	0.92	1.04	0.33	0	NA	NA	0.38
Lincoln's Sparrow	0	0.08	0.31	0.08	0.12	0.13	0.19	NA	NA	0.13
White-crowned Sparrow	0.59	0.73	0.77	0.69	0.69	0.73	0.94	NA	NA	1.31

¹Index: number of individuals detected within 50 m of all point count stations averaged across 2 visits and then divided by the number of point count stations per meadow.

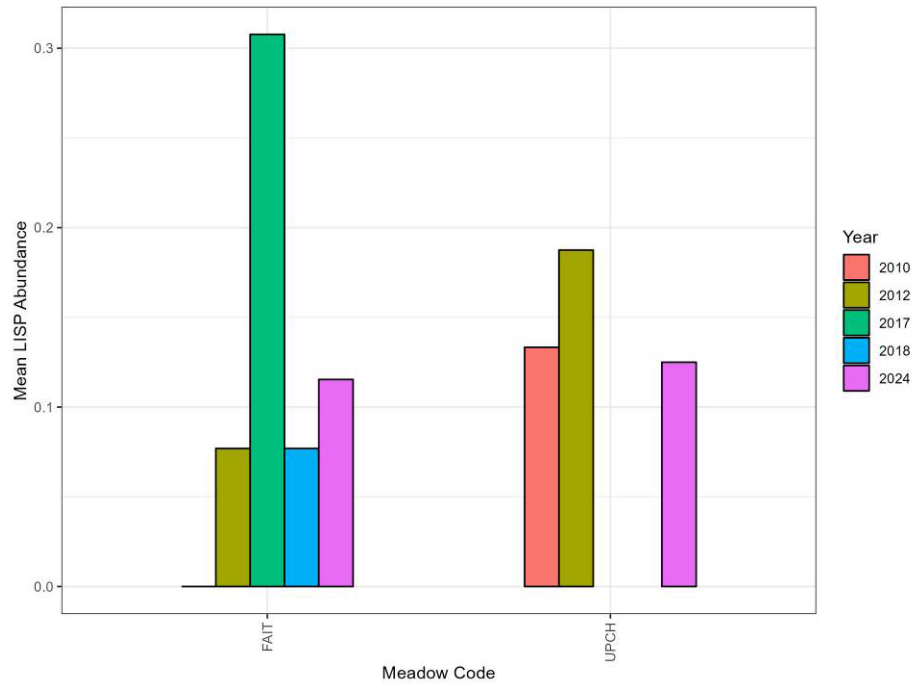


Figure 5. Mean Lincoln's Sparrow abundance per station visit (w/in 50m)

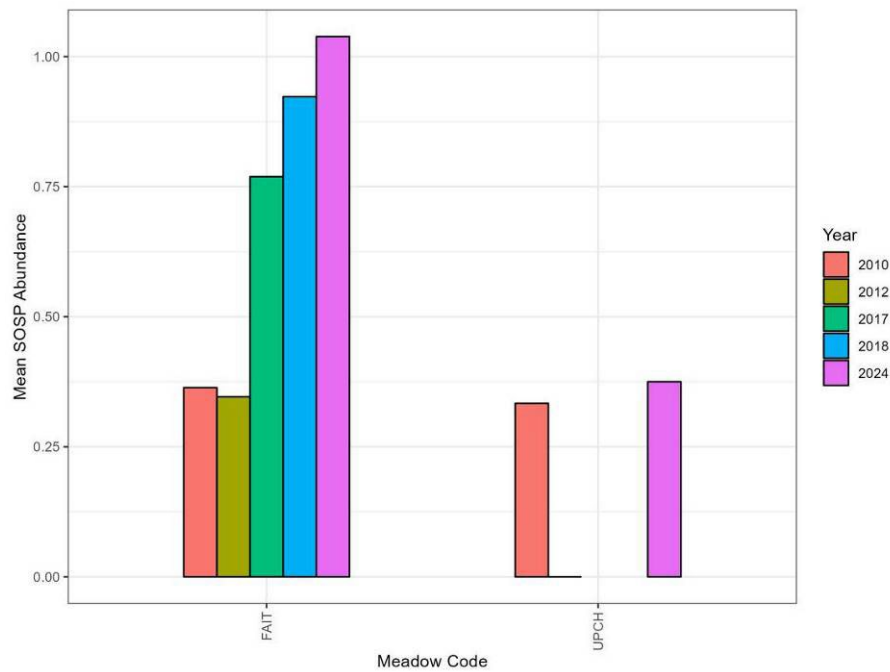


Figure 6. Mean Song Sparrow abundance per station visit (w/in 50m)

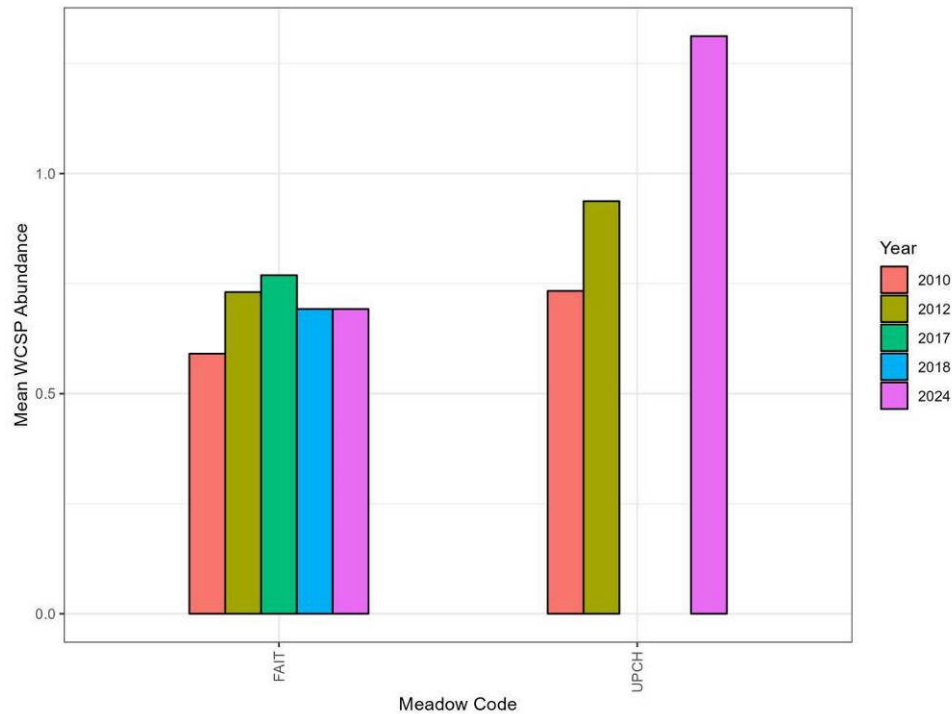


Figure 7. Mean White-crowned Sparrow abundance per station visit (w/in 50m)

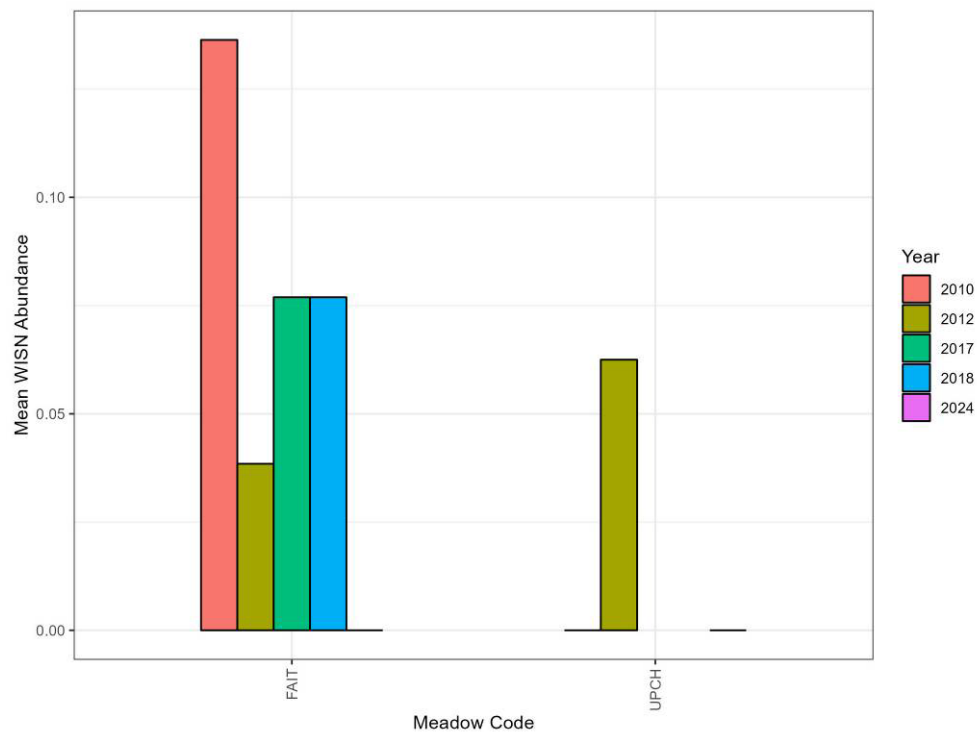


Figure 8. Mean Wilson's Snipe abundance per station visit (w/in 50m)

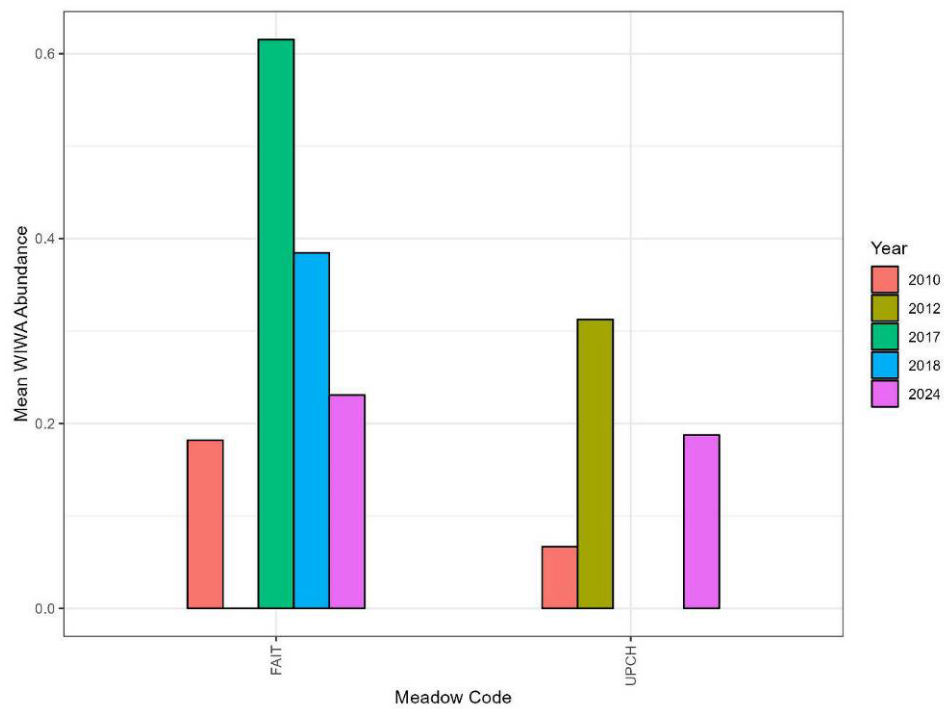


Figure 9. Mean Wilson's Warbler abundance per station visit (w/in 50m)

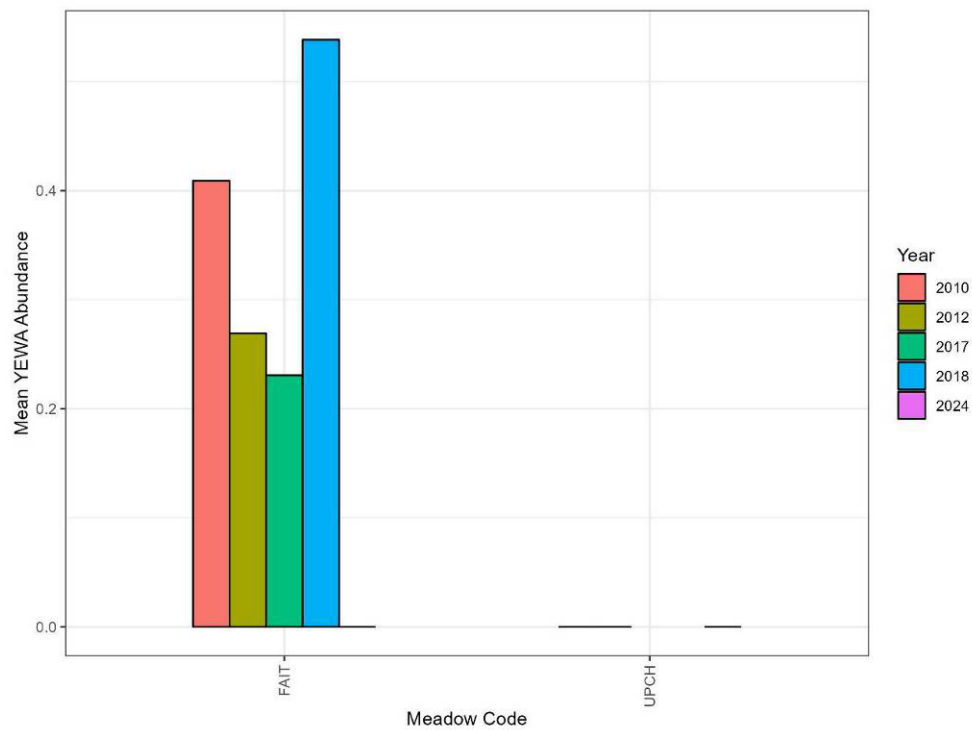


Figure 10. Mean Yellow Warbler abundance per station visit (w/in 50m)

Song Sparrow and White-crowned Sparrow were by far the most abundant focal species present, followed by Yellow Warbler (only at Faith Valley) and Wilson's Warbler. Of our focal species, Song and White-crowned Sparrows have the least restrictive habitat needs and will occur in both wet and dry meadows with smaller amounts of riparian or other shrub cover. Yellow Warblers require abundant riparian shrub (usually willow) cover in both wet and mesic meadow settings, while Wilson's Warblers are usually associated with willow thickets along forest edges and near streams, and at higher elevations. The remaining focal species (Table 4) were detected less frequently within the study site, likely because they are typically associated with conditions that occur only in relatively small portions of Faith Valley. These conditions include: saturated or flooded conditions (Lincoln's Sparrow, Wilson's Snipe), or dense and tall riparian shrubs mixed with riparian deciduous trees (MacGillivray's Warbler, Red-breasted Sapsucker, Warbling Vireo; Ray 1903, Grinnell and Miller 1944, Orr and Moffit 1971, Stewart et al. 1977, Heath and Ballard 2003). Those meadow focal species not detected at all are either associated with marsh or continuously flooded meadow habitat (Wilson's Phalarope) or flooded meadow/riparian habitat in combination with dense shrub and tree cover (Swainson's Thrush).

We saw mixed results in focal species response to restoration in 2023 and to the expansion of beaver activity starting around 2016. Most species showed no significant response to either occurrence but Song Sparrow ($T=-2.81$, $P=0.009$) and Wilson's Warblers ($T=-2.14$, $P=0.041$) increased significantly at Faith Valley when first beaver and then restoration created wetter conditions (Figure 11 and 12). Although there was an increase for Song Sparrow at the control site as well, that response was not significant ($T=-1.01$, $P=0.38$).

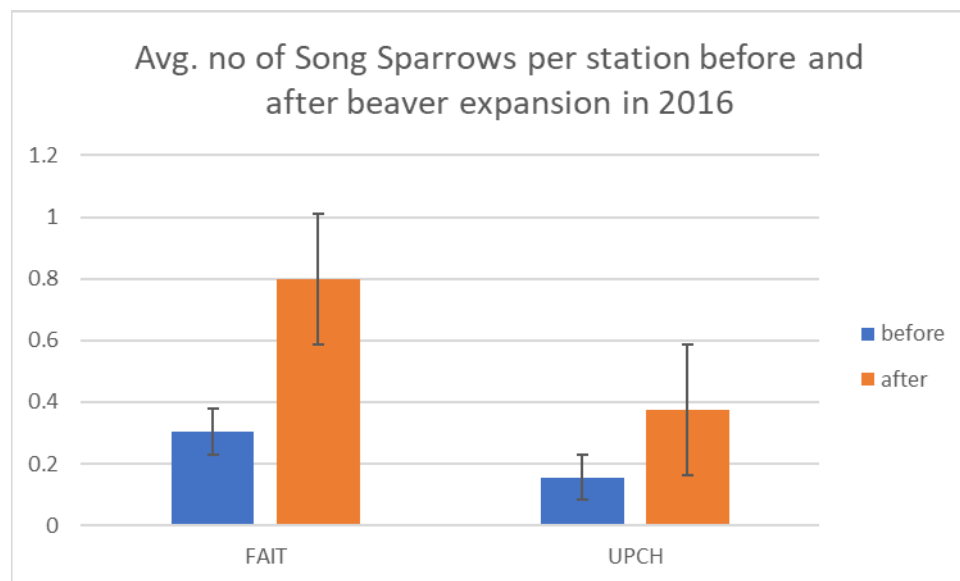


Figure 11. Song Sparrow relative abundance within 50m of survey stations at Faith Valley (FAIT) restoration sites and Upper Charity Valley (UPCH) control site before (2010 and 2012) and after (2017-2024) beaver expanded their population and successfully began damming the main channel of the West Carson River in Faith Valley

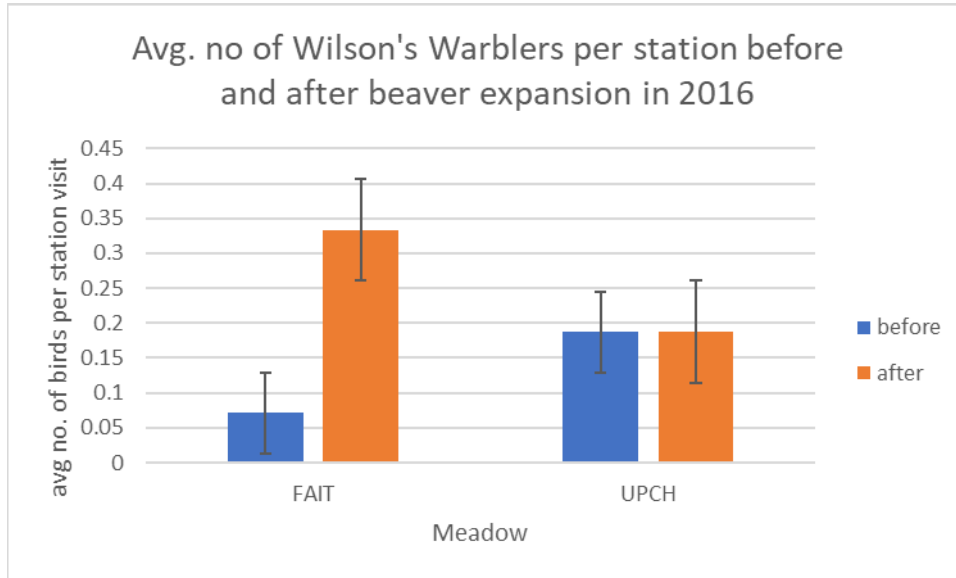


Figure 12. Wilson's Warbler relative abundance within 50m of survey stations at Faith Valley (FAIT) restoration sites and Upper Charity Valley (UPCH) control site before (2010 and 2012) and after (2017-2024) beaver expanded their population and successfully began damming the main channel of the West Carson River in Faith Valley

Vegetation Monitoring

When comparing habitat conditions, we found that Faith Valley had greater cover from herbaceous vegetation, while Upper Charity had more riparian shrub cover and more exposed soil and rock. Measurements of mean vegetative and physical habitat components are shown in table 5 and figure 13.

Table 5. Average vegetation and water cover values (%) for Faith Valley and Upper Charity Valley averaged across all stations and years (2010, 2012, 2017, 2018, 2024).

Row Labels	Faith Valley	Upper Charity Valley
Tree	4.63%	5.21%
Riparian Shrub	25.96%	51.86%
Sagebrush/upland shrub	3.17%	2.89%
Herbaceous vegetation	76.90%	44.62%
Bare Soil/Rock	6.30%	21.51%
Gravel Bar	3.12%	1.42%
Flowing Water	5.40%	5.85%
Standing Water	8.27%	12.10%

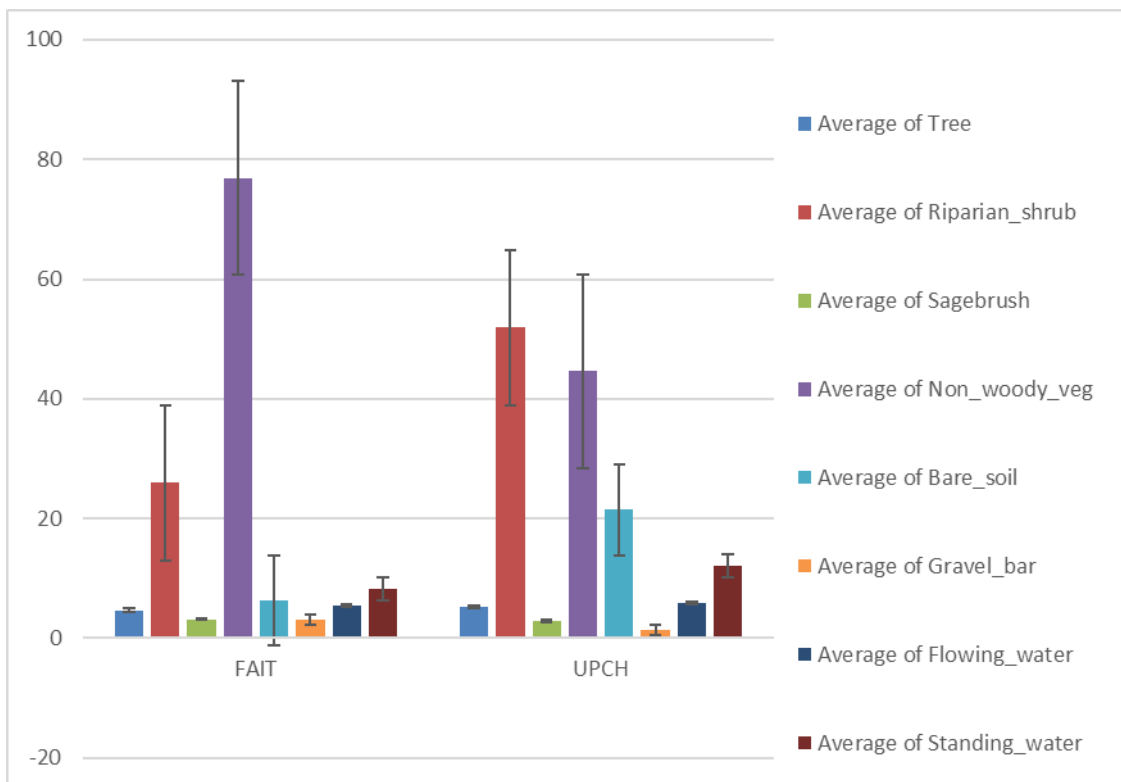


Figure 13. Average vegetation and water cover values (%) for Faith Valley and Upper Charity Valley averaged across all stations and years (2010, 2012, 2017, 2018, 2024).

Riparian shrub cover showed no obvious increase over the course of the monitoring period starting in 2010, in response to the increased beaver activity around 2016, or in response to restoration activities in 2023 (Figure 14). Riparian shrub cover is expected to fluctuate as beaver occupy new portions of the meadow after restoration. Beaver move their dams and lodges in response to flood impacts and with changing food and dam building resources.

Proportions in each of four willow age/height classes showed no distinct response to restoration, or pattern over time (Figure 15). In fact, we saw great variability in percent by age class over the 4 years of monitoring at Faith Valley when compared to the same time period at the control site at Upper Charity Valley. We believe that this intra-site variability could be due to manipulation of willow by beaver as the population at Faith Valley increased and moved up and downstream within the meadow over time. We nonetheless expect increased willow coverage and increased willow heights at Faith Valley as human restoration efforts in 2023 and 2024 help beaver to maintain primary channel dams from season to season, especially in the portion adjacent to survey stations 2 through 6. Due to the inherent heterogeneity introduced by active beaver populations, monitoring at Faith Valley may benefit from a more refined method of monitoring willow cover and age class in addition to the habitat assessments we complete at bird point count stations.

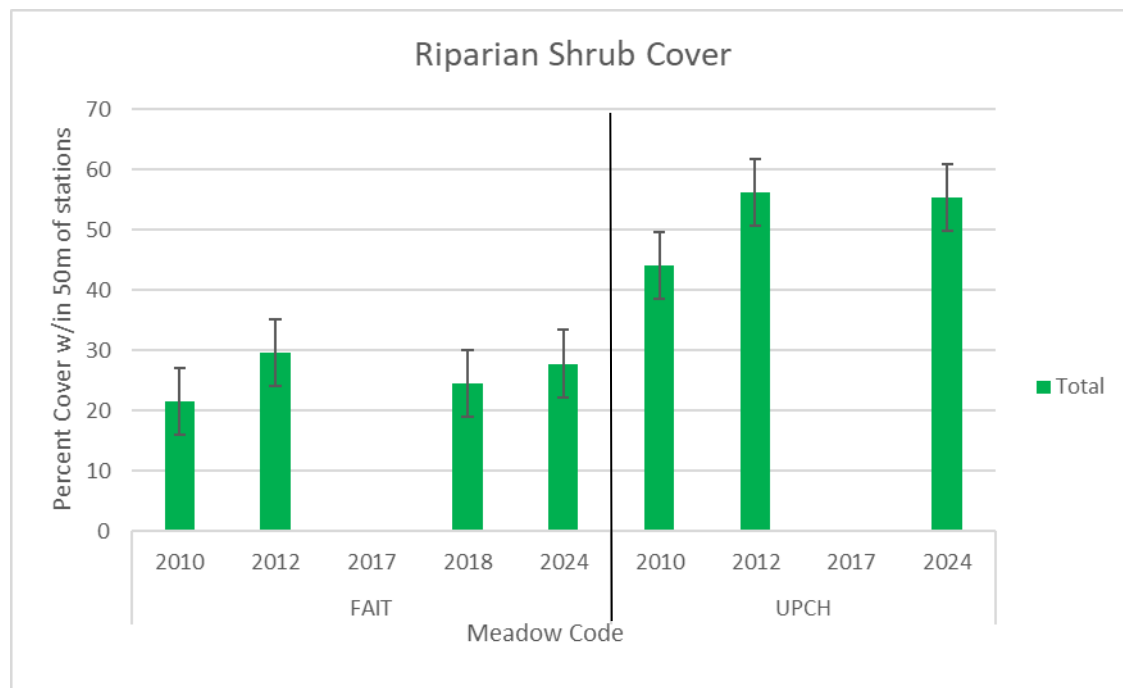


Figure 14. Relative percent cover from riparian deciduous shrubs (primarily willow) within 50m of point count stations at Faith Valley (FAIT) restoration site and Upper Charity (UPCH) control site.

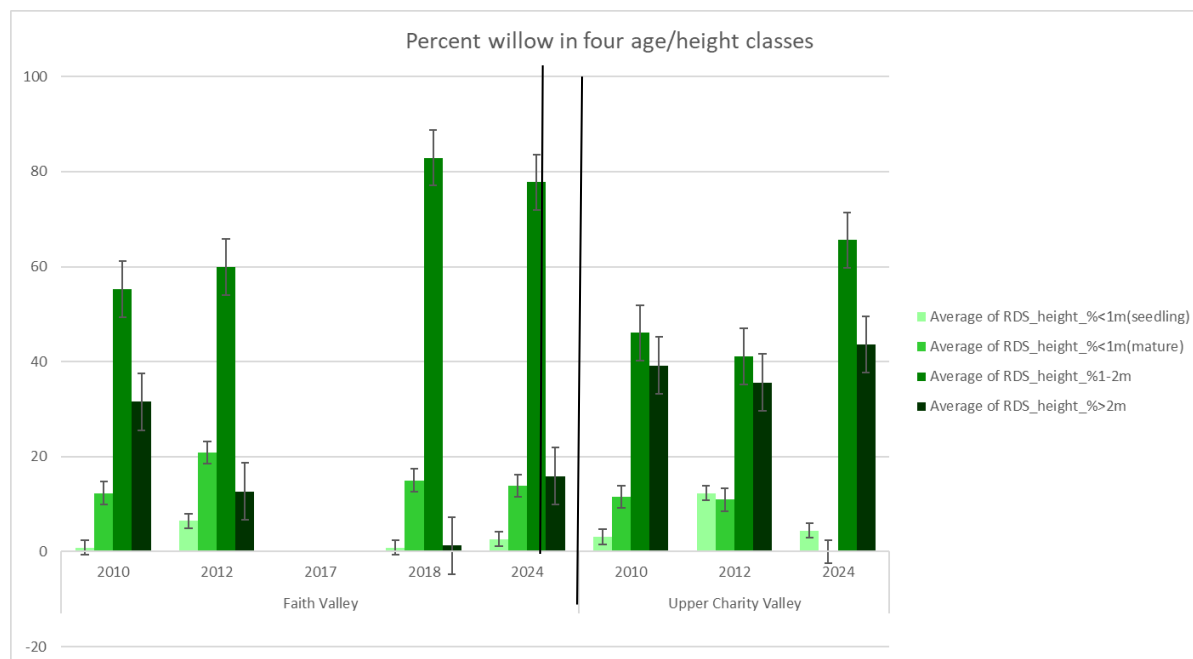


Figure 15. Percent of riparian deciduous shrubs (primarily willow) in each of four age/size classes within 50m of point count stations at Faith Valley (FAIT) restoration site and Upper Charity (UPCH) control site.

Water cover, particularly standing water cover, increased over time at Faith Valley, likely in response to increased dam construction across the main channel of the West Carson river by beaver that began in 2016 (Figure 16). This increase in water cover after beaver expanded the proportion of main river channel that they occupied was significant ($T=-4.29$, $P<0.0001$). No increase in water cover was measured after restoration related construction in 2023, however we expect that as the restoration and beaver begin working together to more completely saturate and flood the meadow, overall water cover will continue to increase. Interestingly, standing water at the control site increased significantly after the period of beaver expansion and restoration at the treatment site (despite no beaver being present at the control; $T=-3.01$, $P=0.003$). We assume this was largely due to the extremely wet winter of 2023 recharging water tables. Upper Charity control site is largely ground water fed with standing water in the form of sheet flow percolating across the slightly sloping surface.

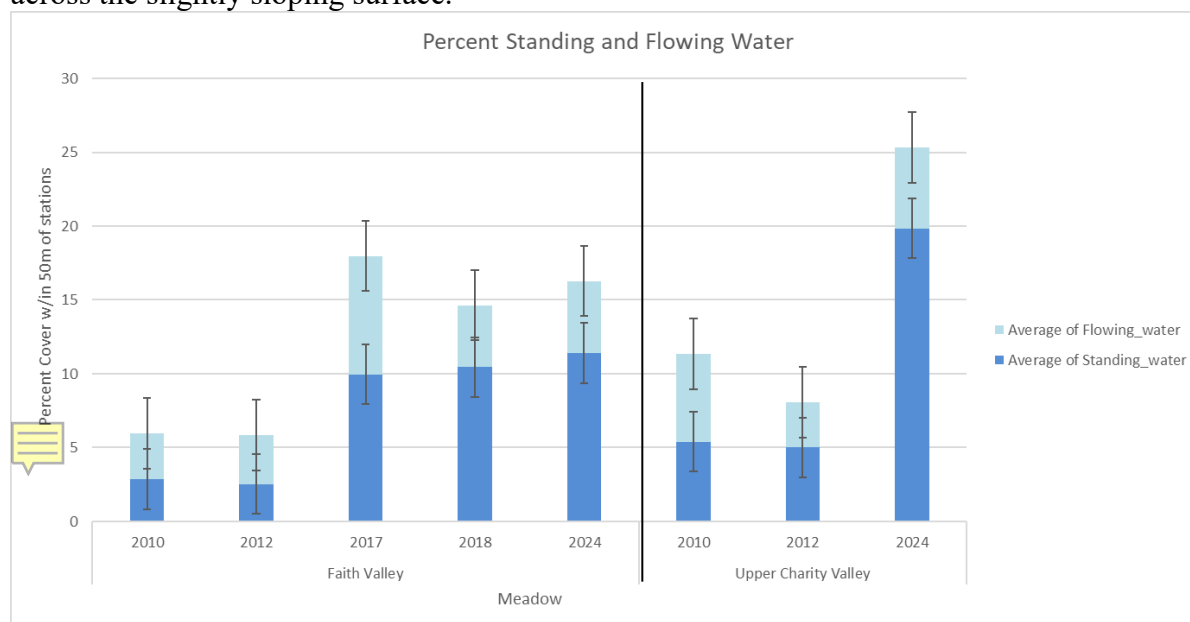


Figure 16. Relative percent cover from standing and flowing water within 50m of point count stations at Faith Valley (FAIT) restoration site and Upper Charity (UPCH) control site.

Willow Flycatcher Surveys

In 2016, 2017 and again in 2024 we completed surveys for Willow Flycatcher following Bombay et al (2003a) at Faith Valley (Table 6; Figure 17).

Table 6. Dates for Willow Flycatcher surveys in Faith Valley in 2016 and 2017.

Year			Follow-up
	Visit 1	Visit 2	
2016	6/21/2016	7/12/2016	-
2017	6/16/2017	-	6/17/2017 6/26/2017
2024	6/20/2024	7/3/2024	6/20/2024 7/3/2024 7/30/2024

Although the site is known to have supported Willow Flycatchers in the 1980s and occasionally in the early 2000s, no Willow Flycatchers were detected in Faith Valley in 2016. A single singing male was detected early in 2017. This flycatcher was detected approximately 500 m south of the river (near Willow Flycatcher survey station 65) in a patch of willow associated with hillslope springs (Figure 4). We conducted multiple follow-up visits to this location and additional survey visits but never detected the flycatcher again, suggesting that this bird was a late migrant using the site as a stopover during northward migration, but not breeding there. On June 20 and on July 3, 2024 a single singing male was detected 100m South of station 16 (Figures 4 and 12). Follow-ups were conducted after surveys were complete on the 6/20 (no flycatcher detected), and again on 7/3, at which time a nest containing a single Brown-headed Cowbird egg was found. The nest was checked again on 7/30, but the remains of the nest were on the ground and no signs of fledging were found. Typically, when nestlings are present you see at least some feces on and around the nest, or the ground beneath. On 7/30 we did additional broadcasting of territorial songs to see if we could detect an adult in the area (either singing or whitting or flying in to investigate). We did not detect a willow flycatcher on that date. Although it is challenging to be certain without at least a weekly or bi-weekly nest monitoring, it is our opinion that this territory likely failed to produce young and that the adults had already abandoned the territory by 7/30/2024.



Figure 17. Top Left: Willow Flycatcher nest; Top Right: closeup of nest containing Brown-headed cowbird egg; Bottom: location of nest within Faith Valley

Discussion

Metrics measuring bird and habitat response to meadow restoration were identified during planning for the Faith Valley project and monitored using standard avian habitat protocols. Success in avian habitat improvement is indicated by an increase in water cover and subsequent increase in riparian shrub cover, as well as, an increase in the number of Willow Flycatchers (Table 7).

Table 7. Faith Valley monitoring metrics related to bird habitat and populations

Metric	Measure of Success	Unit of Measure	Monitoring method
Acres of habitat for Willow Flycatcher and other meadow focal bird species enhanced	Increased extent and duration of standing water near mature willow stands	Percent surface water cover at bird survey stations	IBP avian monitoring protocol
	Increased willow recruitment and extent of willow cover on 105 acres	Extent and height of willow at bird survey stations	IBP avian monitoring protocol
Occurrence of Willow Flycatcher increased on restored site	Increased number of Willow Flycatcher detections	Willow Flycatcher detections	IBP Willow Flycatcher survey protocol

Because many of our metrics of success are tied to establishing additional large and multi-age class stands of willow those metrics were intended to be met within the immediate post restoration period. At the elevation of Faith Valley, mature willow stands can take over a decade to develop to heights greater than 2m (preferred by Willow Flycatchers). We did not see an increase in the total amount of shrub cover or proportion in the tallest height class during our monitoring of bird habitat, but were able to see the contribution beaver presence and restoration combined had on heterogeneity of size classes, compared to the control site. Our monitoring of water cover showed a significant increase in standing water and overall water cover over time, most notably in the years after beaver began building and maintaining multiple dams across the main channel of the West Carson River (approximately 2016). Restoration efforts at Faith Valley occurred in tandem with changes to the flood plain caused by beaver activity and flood events during the monitoring period of 2010 through 2024. Beaver have maintained small tributary dams on the SW end of the meadow since at least 1997 (when Willow Flycatcher last bred there). They did not regularly dam the main channel during those early years (Figure 18). During the period around 2016 beaver began successfully damming the main channel (sometimes maintaining dams year over year) at the downstream end of the meadow (Figure 19). They also maintained one or more main channel spanning dams upstream where the meadow and the Carson River turn the corner to the west. These upper dams blew out sometime around the floods of 2017. Upstream and downstream spanning dams across the main channel appeared again around 2019 (Figure 20). All of these changes over time make it harder to tease apart the effects of human restoration from the activities of beaver. In either case, we saw significantly increased water cover between 2010 and 2017 and then smaller increases between 2018 and 2024. Significant increases occurred at the control site as well, which indicates other climate and weather patterns may also be playing a substantial role.

Willow Flycatchers had not bred in Faith Valley since approximately 2002. During surveys in 2024 we detected a singing male Willow Flycatcher and located a nest near the restoration-flooded oxbow adjacent to survey station 2. Confirmation of nesting is a very meaningful event for a population that has been significantly declining in the Sierra Nevada for the last 2 decades. Recolonization of Faith Valley during the first post-restoration year is a strong indicator of success.



Figure 18. Locations of beaver dams and associated water impoundments (blue circles) that spanned the West Carson River in 2010 (left) and 2012 (right) NAIP imagery

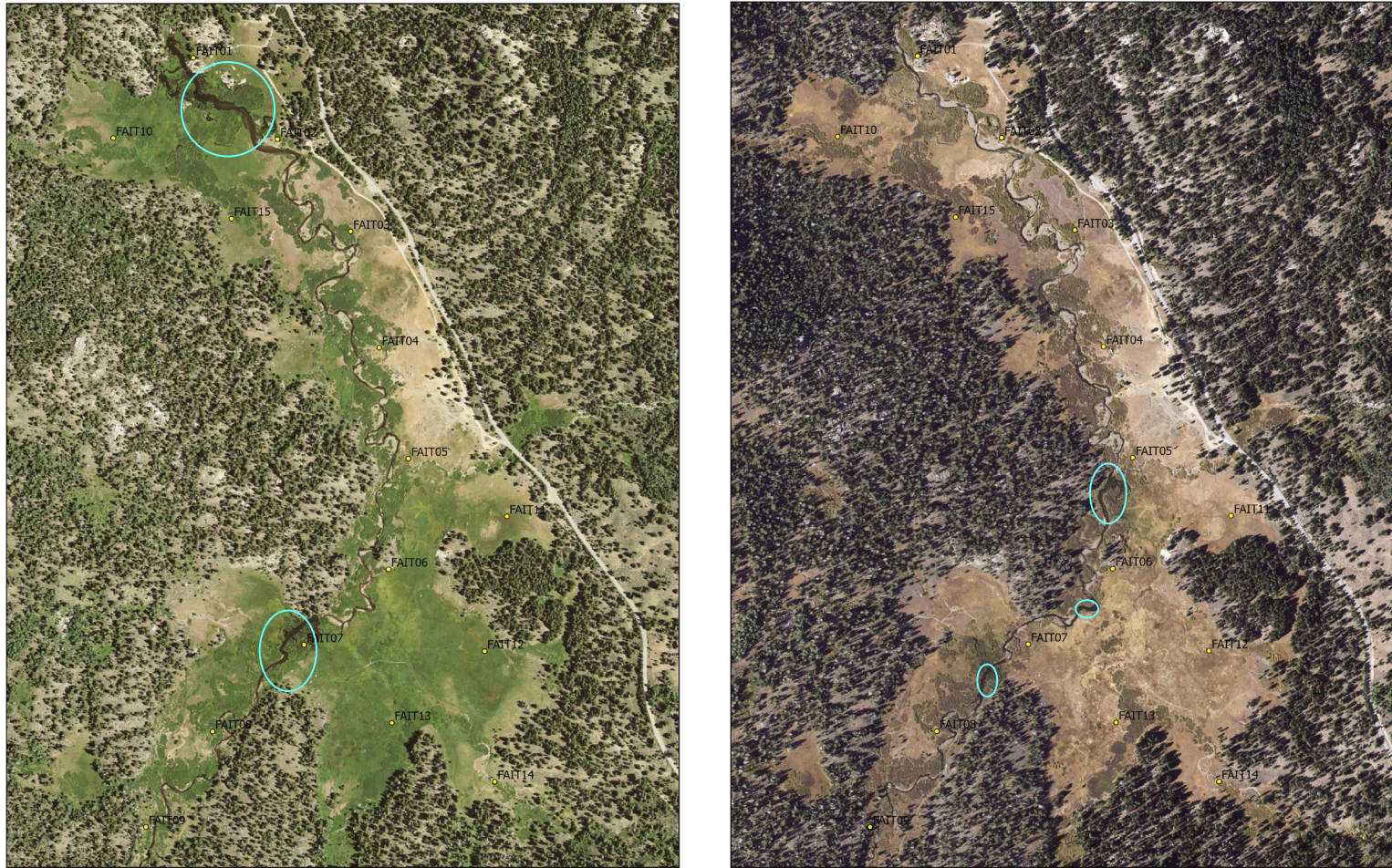


Figure 19. Locations of beaver dams and associated water impoundments (blue circles) that spanned the West Carson River in 2016 (left) and 2018 (right) NAIP imagery

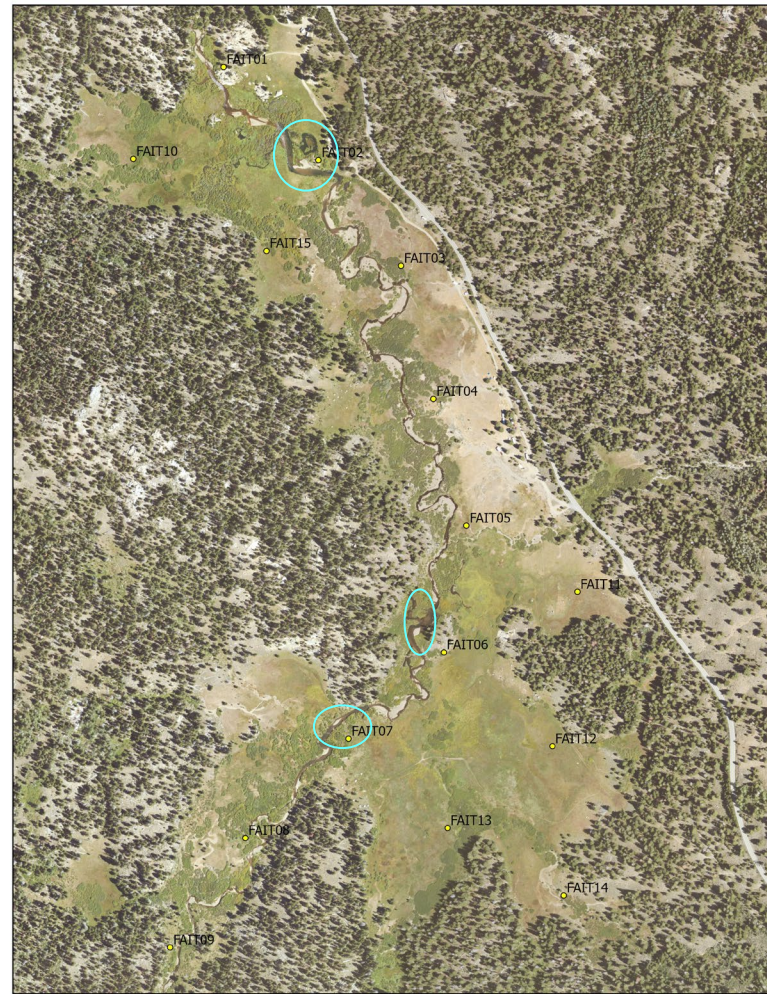
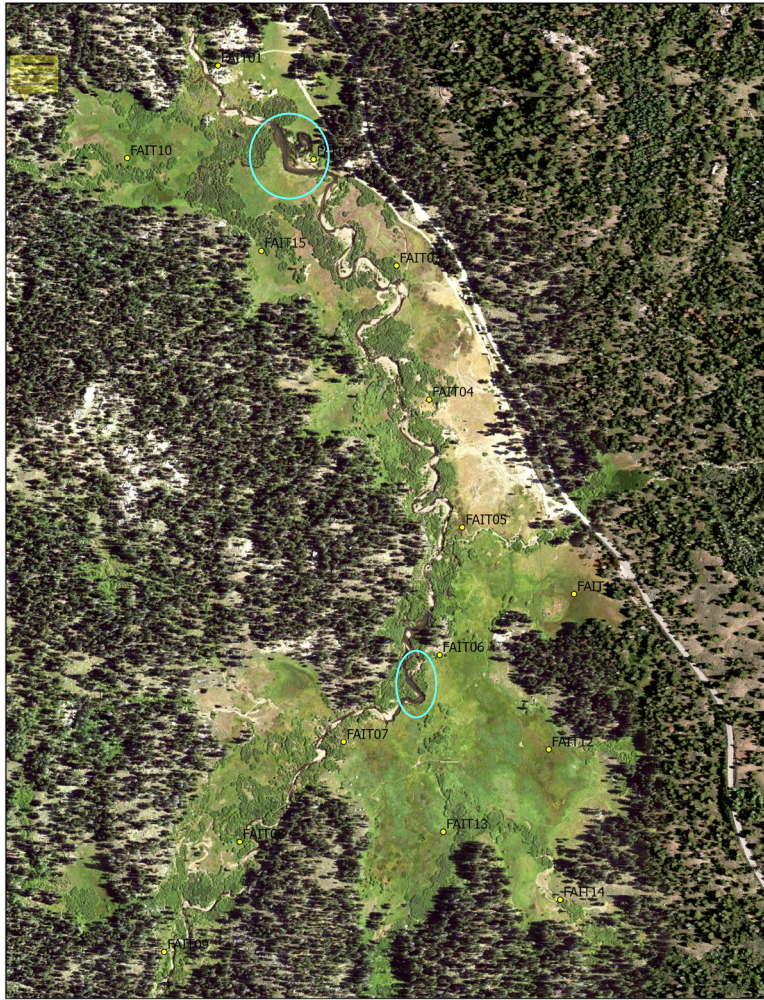


Figure 20. Locations of beaver dams and associated water impoundments (blue circles) that spanned the West Carson River in 2020 (left) and 2022 (right) NAIP imagery

Acknowledgments

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Appendix A. Index of abundance (average number of individuals detected per station during each visit) for bird species observed at all distances of stations in Faith Valley and Upper Charity Valley in 2010, 2012, 2017, 2018, and 2024.

Bird Species	Faith Valley						Upper Charity Valley					
	2010	2012	2017	2018	2024	Avg.	2010	2012	2017	2018	2024	Avg.
Canada Goose	0.00	0.00	0.00	0.00	0.61	0.12	0.00	0.00			0.00	0.00
Mallard	0.09	0.07	0.07	0.07	0.21	0.10	0.06	0.06			0.00	0.04
Green-winged Teal	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00			0.06	0.02
Common Merganser	0.00	0.00	0.00	0.00	0.11	0.02	0.00	0.00			0.00	0.00
Sooty Grouse	0.00	0.07	0.00	0.00	0.04	0.02	0.00	0.13			0.00	0.04
Mountain Quail	0.14	0.39	0.20	0.21	0.18	0.22	0.38	0.06			0.13	0.19
California Quail	0.05	0.00	0.00	0.00	0.00	0.01	0.00	0.00			0.00	0.00
Red-tailed Hawk	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00			0.00	0.00
Virginia Rail	0.00	0.00	0.07	0.00	0.00	0.01	0.00	0.00			0.00	0.00
Spotted Sandpiper	1.09	0.64	0.40	0.71	0.75	0.72	0.63	0.25			0.38	0.42
Wilson's Snipe	0.36	0.32	0.27	0.29	0.07	0.26	0.00	0.19			0.13	0.10
Mourning Dove	0.00	0.11	0.00	0.00	0.00	0.02	0.00	0.00			0.00	0.00
Common Nighthawk	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.00			0.00	0.00
Calliope Hummingbird	0.00	0.00	0.20	0.07	0.00	0.05	0.00	0.00			0.00	0.00
Williamson's Sapsucker	0.05	0.07	0.07	0.00	0.00	0.04	0.00	0.06			0.00	0.02
Red-breasted Sapsucker	0.00	0.00	0.07	0.00	0.14	0.04	0.00	0.00			0.13	0.04
Hairy Woodpecker	0.00	0.00	0.00	0.00	0.07	0.01	0.00	0.00			0.06	0.02
White-headed Woodpecker	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00			0.00	0.02
Northern Flicker	0.09	0.11	0.00	0.14	0.00	0.07	0.19	0.00			0.06	0.08
Olive-sided Flycatcher	0.00	0.00	0.00	0.00	0.07	0.01	0.00	0.13			0.13	0.08
Western Wood-Pewee	0.00	0.07	0.07	0.00	0.11	0.05	0.00	0.06			0.06	0.04
Willow Flycatcher	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00			0.00	0.00
Hammond's Flycatcher	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00			0.00	0.04
Dusky Flycatcher	1.18	0.86	0.93	0.86	1.25	1.02	1.25	0.63			0.88	0.92
Cassin's Vireo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06			0.00	0.02
Warbling Vireo	0.00	0.14	0.27	0.14	0.14	0.14	0.25	0.69			0.88	0.60

Bird Species	Faith Valley						Upper Charity Valley					
	2010	2012	2017	2018	2024	Avg.	2010	2012	2017	2018	2024	Avg.
Steller's Jay	0.00	0.00	0.00	0.07	0.04	0.02	0.13	0.00			0.06	0.06
Clark's Nutcracker	0.00	0.29	0.27	0.07	0.18	0.16	0.00	0.19			0.19	0.13
Common Raven	0.05	0.18	0.00	0.14	0.07	0.09	0.00	0.00			0.00	0.00
Tree Swallow	0.05	0.00	0.13	0.00	0.00	0.04	0.00	0.00			0.00	0.00
Cliff Swallow	0.05	0.00	0.00	0.00	0.00	0.01	0.00	0.00			0.00	0.00
Mountain Chickadee	1.09	0.46	0.13	0.36	0.86	0.58	0.69	0.44			0.88	0.67
Red-breasted Nuthatch	0.05	0.04	0.00	0.07	0.00	0.03	0.00	0.06			0.00	0.02
Brown Creeper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.13	0.04
House Wren	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00			0.00	0.00
Golden-crowned Kinglet	0.00	0.07	0.00	0.00	0.00	0.01	0.00	0.00			0.00	0.00
Ruby-crowned Kinglet	0.14	0.11	0.00	0.00	0.00	0.05	0.06	0.38			0.25	0.23
Hermit Thrush	0.05	0.07	0.00	0.07	0.04	0.04	0.00	0.25			0.19	0.15
American Robin	1.91	0.89	0.73	0.43	1.29	1.05	0.94	0.88			0.63	0.81
Orange-crowned Warbler	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06			0.06	0.04
Nashville Warbler	0.00	0.07	0.00	0.00	0.00	0.01	0.00	0.00			0.19	0.06
Yellow Warbler	1.05	0.86	0.40	0.64	0.04	0.60	0.00	0.06			0.06	0.04
Yellow-rumped Warbler	0.41	0.43	0.13	0.21	0.57	0.35	0.19	0.88			0.38	0.48
Hermit Warbler	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00			0.00	0.00
MacGillivray's Warbler	0.09	0.00	0.20	0.14	0.21	0.13	0.00	0.00			0.19	0.06
Wilson's Warbler	0.27	0.04	0.73	0.64	0.64	0.47	0.50	0.63			0.88	0.67
Western Tanager	0.00	0.18	0.00	0.07	0.00	0.05	0.00	0.13			0.13	0.08
Green-tailed Towhee	0.00	0.11	0.00	0.29	0.43	0.16	0.50	0.25			0.19	0.31
Chipping Sparrow	0.23	0.46	0.00	0.07	0.36	0.22	0.13	0.00			0.13	0.08
Brewer's Sparrow	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00			0.06	0.02
Vesper Sparrow	0.00	0.00	0.00	0.14	0.00	0.03	0.00	0.00			0.00	0.00
Savannah Sparrow	0.36	0.75	0.60	0.43	0.39	0.51	0.00	0.06			0.00	0.02
Fox Sparrow	0.00	0.04	0.00	0.00	0.00	0.01	0.19	0.06			0.13	0.13

Bird Species	Faith Valley						Upper Charity Valley					
	2010	2012	2017	2018	2024	Avg.	2010	2012	2017	2018	2024	Avg.
Song Sparrow	0.91	1.57	1.47	1.36	1.71	1.40	0.81	0.19			0.69	0.56
Lincoln's Sparrow	0.41	0.39	0.47	0.21	0.57	0.41	0.94	1.25			0.75	0.98
White-crowned Sparrow	1.36	2.43	1.93	1.43	1.82	1.80	2.50	3.44			2.81	2.92
Dark-eyed Junco	0.09	0.61	0.20	0.21	0.64	0.35	0.06	0.63			0.81	0.50
Lazuli Bunting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.13	0.04
Red-winged Blackbird	1.23	2.04	0.67	0.79	1.71	1.29	1.25	1.38			0.19	0.94
Brewer's Blackbird	0.68	0.64	0.53	0.36	0.68	0.58	0.44	0.56			0.13	0.38
Brown-headed Cowbird	0.45	0.61	0.33	0.36	0.36	0.42	0.19	0.06			0.06	0.10
Pine Grosbeak	0.00	0.00	0.07	0.00	0.00	0.01	0.00	0.00			0.00	0.00
Purple Finch	0.00	0.04	0.00	0.00	0.07	0.02	0.00	0.00			0.00	0.00
Cassin's Finch	0.73	0.71	0.27	0.14	0.18	0.41	0.69	1.06			0.94	0.90
Red Crossbill	0.00	0.00	0.00	0.00	0.07	0.01	0.00	0.00			0.00	0.00
Pine Siskin	0.00	0.14	0.00	0.00	0.07	0.04	0.00	1.00			0.94	0.65
Lesser Goldfinch	0.00	0.04	0.00	0.00	0.00	0.01	0.06	0.00			0.00	0.02
Evening Grosbeak	0.09	0.00	0.00	0.00	0.00	0.02	0.06	0.00			0.00	0.02