

**Coyote Creek South Breeding Birds
and Streaked Horned Larks, 2020**



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Introduction

The 309-acre Coyote Creek South property, owned by the Oregon Department of Fish and Wildlife (ODFW), is undergoing habitat restoration in cooperation with the Long Tom Watershed Council (LTWC). The habitat restoration includes conversion of former grass seed fields to wet prairie and vernal pool habitat. Phase 1 is 112 acres of wet prairie and 12 acres of vernal pools on the northern part of the property along Cantrell Road. Phase 2 is 53 acres of wet prairie on the southern part of the property at the end of Halderson Road. Phase 3 is 29 acres of wet prairie adjacent to and south of Phase 2. All three areas have provided suitable habitat for the Federally Threatened Streaked Horned Lark (hereafter lark) since the initiation of restoration activities.

Objectives

The primary objective was to conduct breeding season surveys and monitoring to document the occurrence, abundance, and nesting status of larks and other priority bird species (e.g., Western Meadowlark, Grasshopper Sparrow) to assess project effectiveness for ODFW Strategy Species, and provide a baseline on populations for ongoing and future habitat management. A secondary objective was to provide real-time updates of lark nest locations to assist ODFW and LTWC staff in planning restoration and other activities on the site.

Methods

Avian community surveys were conducted at the Phase 1 and Phase 2 sites using a point count protocol (Ralph et al. 1995). Three previously established point count stations at Phase 1 and two newly established point count stations at Phase 2 were surveyed during three visits on May 23, June 10, and July 3. Each survey was completed before 9:30 am during favorable weather conditions. All species and individuals detected within the area of the prairie restoration (i.e., not those detected in adjacent forest or shrubland) were documented during a 5-minute listening period at each station. The distance to each detection was estimated. Relative abundance was calculated as the number of detections/point count survey within 100 meters.

Lark survey methodology was an area search technique in which the observer moves freely through a defined area emphasizing time spent in locations where birds are occurring (Ralph et al. 1995). Each survey occurred during the morning before 11:00 am, and lasted 1-2 hours/site (i.e., Phase 1 site and Phase 2/3 together as one site) during favorable weather conditions.

From April 12 to August 17, 27 area search surveys were conducted at the Phase 1 site, and 30 surveys at the Phase 2 site. During the breeding season (May-July), there were usually two visits/week, and there were two additional visits in April (pre-breeding) and two visits in August (post-breeding). Each visit took approximately 1-2 hours/site. There were fewer and shorter visits to the Phase 1 site when by mid-June no larks were being detected, and more time was spent at the Phase 2/3 sites. The number, gender, and age of all larks was recorded. Results are presented as total count of birds by gender and by adults versus hatch-year.

In addition to area search population counts, most of the time was spent trying to locate lark nests. Nests were located by using systematic and behavioral approaches (Martin and Conway 1994), and opportunistically when walking through an area and flushing a bird off a nest. Nests were marked by placing colored flags 3-4 meters in two opposite directions from the nest, and revisited in a manner to minimize predator attraction and investigator-induced predation (Martin and Conway 1994). To determine nest outcome, nests were checked every 1-4 days until either the young fledged or the nest failed. A nest fledging at least one young was considered successful. If nest contents (eggs or nestlings)

were removed more than two days before the projected fledging date, and the parents could not be found feeding fledglings or behaving in a protective manner, the nest was considered depredated. Causes of nest failure were surmised based on examinations of the nests and the surrounding area (Patterson and Best 1996). At 5-6 days of age, each nestling was uniquely color-banded with two bands on each leg, a USFWS aluminum band and color band on one leg and two color bands on the other leg.

Results

Bird Surveys

There were 14 bird species detected during point count surveys at Phase 1 (Table 1). This included only one detection of a lark, on 5/23. The highest relative abundance was for Savannah Sparrow (4.89 birds/point count).

Table 1. Point count survey results from Coyote Creek South, Phase 1 site, May-June, 2020.

Species	Relative Abundance ¹	Dates
American Goldfinch	0.78	7/3
Red-tailed Hawk	0.11	7/3
Common Yellowthroat	0.22	5/23
Greater Yellowlegs	0.56	5/23
European Starling	0.11	7/3
Grasshopper Sparrow	1.11	5/23, 6/10, 7/3
Streaked Horned Lark	0.11	5/23
Killdeer	0.11	7/3
Red-winged Blackbird	0.44	5/23, 6/10
Savannah Sparrow	4.89	5/23, 6/10, 7/3
Lazuli Bunting	0.11	7/3
Tree Swallow	0.44	5/23, 7/3
Western Kingbird	0.56	5/23, 6/10
Western Meadowlark	0.22	5/23

¹ Number of detections/point count survey.

There were eight bird species detected during point count surveys at Phase 2 (Table 2). There were no detections of larks, despite the known occurrence of larks at the site. The highest relative abundance was for Savannah Sparrow (3.0 birds/point count).

Table 2. Point count survey results from Coyote Creek South, Phase 2 site, May-June, 2020.

Species	Relative Abundance ¹	Dates
American Robin	0.33	5/23, 6/10
Barn Swallow	0.17	7/3
European Starling	0.67	6/10, 7/3
Oregon Vesper Sparrow	0.17	5/23
Savannah Sparrow	3.00	5/23, 6/10, 7/3
Lazuli Bunting	0.17	7/3
Tree Swallow	0.33	7/3
Violet-green Swallow	0.50	7/3

¹ Number of detections/point count survey.

Streaked Horned Lark

Adult larks (1-2 pairs) were detected on the first 10 surveys at Phase 1 (through May), but then only once in the next 13 surveys in June and July until there was a single detection on July 29 (Table 1). No nests were located and no fledglings were detected. It is unlikely that successful nesting occurred in May or was attempted after May with the absence of detections of adults.

Adult larks were detected on all 30 visits to Phase 2/3 (Table 2). There were 2-3 pairs through mid-June, and 1-2 pairs after that through the end of the breeding season. No nests were located and no fledglings were detected, although adult behavior on several visits suggested tending nests or fledglings.

Table 1. Streaked Horned Lark breeding season area search surveys at Coyote Creek South Phase 1, 2020.

Date	Adults			Hatch-Year	Comments
	Male	Female	Unknown		
4/12	2	0	2	0	Unknown likely females
4/29	1	0	0	0	Male heard singing briefly
5/01	0	0	1	0	One call note heard.
5/06	2	1	0	0	Male singing, chasing second male. Pair foraging together near N44.04021, W 123.25328.
5/08	2	0	1	0	Two males singing in flight over area s. of first vernal pond, answering call heard from ground likely female
5/11	2	1	0	0	Two males countersinging n. part of area, later pair together near
5/15	1	1	1	0	Pair seen together plus third bird heard. One male heard singing.
5/20	1	0	0	0	Male singing from ground in center of area, toward powerline. Water levels in ponds up after recent rain, some bare ground being used by larks on previous visits was flooded.
5/23	1	0	0	0	Male singing in flight SW of gate, landed near WP 749 (strip of popcornflower). No countersinging heard. Point counts (6, 7, 8).
5/26	1	0	0	0	Male singing in flight again near WP 749.
5/29	0	0	0	0	No larks detected.
6/02	0	0	0	0	No larks detected.
6/05	1	0	0	0	Male sings in flight, dropped down SW edge of vernal pond close to road. Unbanded, no female, sings persistently so likely unmated
6/10	0	0	0	0	No larks detected. Point counts (6, 7, 8).
6/14	0	0	0	0	No larks detected.
6/17	0	0	0	0	No larks detected.
6/19	0	0	0	0	No larks detected.
6/29	0	0	0	0	No larks detected. Vernal wetlands dry.
7/03	0	0	0	0	No larks detected. Point counts (6, 7, 8).
7/10	0	0	0	0	No larks detected in walk-through targeting vernal areas that have dried up recently.
7/15	0	0	0	0	No larks detected.
7/18	0	0	0	0	No larks detected.
7/22	0	0	0	0	No larks detected. Grasshopper Sparrow fledgling flushed near adult giving alarm calls.
7/26	0	0	0	0	No larks detected. Grasshopper Sparrow adult giving alarm calls in same spot as last time – maybe still active nest?
7/29	1	0	0	0	Male singing in flight over NW part of site.
8/01	1	0	0	0	Male singing in flight over NW part of site, landed a bit SW of main vernal wetland.
8/17	0	0	0	0	

Table 2. Streaked Horned Lark breeding season area search surveys at Coyote Creek South Phase 2/3, 2020.

Date	Adults			Hatch-Year	Comments
	Male	Female	Unknown		
4/12	2	2	0	0	Two pairs
4/29	2	2	2	0	Two pairs (both unbanded) plus 2 more associating with first pair, foraging together as a flock
5/01	3	3	0	0	Three pairs each using different parts of Phase 2. No singing but some territorial interactions by males. Females just foraging with no sign of nest-building or any urgency to get back to nest.
5/06	3	2	0	0	Two pairs. Furtive behavior by one female.
5/08	3	3	0	0	Three males tailchasing along boundary between units.
5/11	2	2	0	0	Two pairs foraging together. One female appeared to be trying to go to nest, managed to disappear.
5/15	3	2	0	0	Males singing, territorial disputes. One female paired but flew over to second male. Foraging, preening, no obvious nesting behavior.
5/20	2	2	1	0	One pair near phase 2/3 edge suspected nesting, second pair flushed again from patch to north (N44.02988, W123.25299, WP 747), plus one heard toward west.
5/23	2	1	0	0	Pair near phase 2/3 edge again plus male singing near Point N. Point counts (N & S)
5/26	2	1	0	0	Pair near phase 2/3 edge again plus male heard singing to north.
5/29	3	2	0	0	Pair near phase 2/3 edge again, second pair near WP 762, plus male heard singing to west. Female near WP 762 hunkered down, then moved off foraging.
6/02	2	2	0	0	Pair near phase 2/3 edge again, second pair near WP 762 (Bob) then seen going out into Phase 3 SE of first pair, probably same pair as near WP 762.
6/05	3	2	0	0	Pair near phase 2/3 edge again, second pair near WP 762, third male also present. Also male VESP singing partial song near WP 762.
6/10	0	0	1	0	Flushed bird from NW part of large bare patch NW of Point S, suspect female incubating. Point counts (N & S).
6/14	3	2	0	0	Female near WP 762 but in smaller bare patch (WP 783). Pair near phase 2/3 edge center. Later territorial interaction by 3 males out in Phase 3, seem to be moving into the new habitat.
6/17	2	2	0	0	Female again near WP 783 +/- 10 ft but could not find nest. Pair near Phase 2/3 edge just foraging. Snipe winnowing, then calling during flyover near SE corner of Phase 2.
6/19	2	1	0	0	Did not find lark in suspected nest area near WP 783 on two checks. Pair in Phase 3 with female gathering nesting material near WP 782.
6/23	1	1	1	0	Pair using big bare patch in Phase 3 and also near Phase 2/3 edge, plus one heard calling in flight over SE Phase 2.
6/24	2	1	0	0	Flushed pair three times in general vicinity of WP 783. Adults came fluttering back, likely caring for fledglings from nearby nest.
6/29	2	1	0	0	Not sure if 2 pairs or 1 pair seen multiple times. Alarm calls in big bare patch in Phase 3, also seemed to be tending fledglings in SE part of Phase 3
7/03	1	1	0	0	Unknown bird flushed silently in Phase 3 bare patch. Later female in same spot, found possible nest start. Point counts (N & S)
7/07	1	0	0	0	Site visit by BA with Abby Colehour.
7/15	1	1	0	0	Unbanded pair in Phase 2 vernal pool near edge with Phase 3. Male singing, female foraging, unconcerned, no alarm calls, no sign of tending young. Phase 2 area was mowed/flailed since previous visit.
7/18	1	1	0	0	Unbanded pair foraging in same area of Phase 2 again. Allowed close approach before alarm calls.

7/22	2	1	0	0	Unbanded pair foraging in same area of Phase 2 again. Heard another male very far off to NW, might have been outside of area.
7/26	2	1	0	0	Male initially seen alone, then flushed female close in same area, reluctant to leave. Male later came back giving alarm calls. Likely nest near WP 793. Area was sprayed on 7/24.
7/27	1	1	0	0	BA visit; flushed pair in same area; flew a short distance but no alarm calls. They moved around a bit always foraging.
7/29	1	1	1	0	Female not with male initially, then gave alarm calls and flew out of west side of suspected nest area. Third bird heard call off to SW.
8/01	2	1	0	0	Male and female in flagged area, female skulking as if going to nest, flushed near N44.02950, W123.25380. Second male singing in flight to NW, harassed by BARS, seems unpaired.
8/17	0	0	1	0	One bird heard in flight



Photos: Lara Jones

Discussion

Breeding Birds

There were several noteworthy results from breeding bird surveys in the prairie habitat of Coyote Creek South in 2020. In particular, the occurrence and nesting status of three ODFW Strategy Species other than the lark.

Western Meadowlarks were seen on several visits at the Phase 1 site, but it was always males and nesting was never suspected. They are known to nest on the adjacent Coyote Creek Prairie, and occasionally forage at Coyote Creek South. However, the frequency of their detections on Coyote Creek South has increased each year as the prairie has developed, which increases the potential for their future nesting. However, the row of trees that fragments Coyote Creek South from Coyote Creek Prairie, may be a barrier to nesting since they prefer a large, open unfragmented landscape which is reduced at Coyote Creek South by the tree line.

There was an influx of Grasshopper Sparrows that are now nesting in both Phase 1 and Phase 2. They were detected throughout the breeding season, with high counts of nine singing males in Phase 1 and two singing males in Phase 2. In 2019, there were two singing birds in Phase 1 at the end of the breeding season, and it was uncertain if they were nesting or it was post-breeding dispersal (Altman 2019). The development of the prairie in Phase 1 provides highly suitable habitat for this species. It is expected that a similar influx may occur in Phase 2/3 as that prairie develops, and that both sites should sustain populations of this species as the prairie restoration stabilizes. The first record of Grasshopper Sparrow in the Willamette Valley was along Cantrell Road in the early 1970s (McQueen 1979), and the West Eugene Wetlands has been a stronghold for this species in recent years (Altman 2015a).

There was an Oregon Vesper Sparrow male singing in Phase 2 for at least one month at the height of the breeding season. No female was ever observed to indicate nesting, although the length of time the male was present suggests a good likelihood of nesting since a singing male will usually leave within 1-2 weeks if it does not find a mate. Oregon Vesper Sparrows have been detected in the pastureland immediately west of Phase 2/3 in the 1990s (personal observation). If there is a population still there, it is likely that this bird moved into Phase 2 from there. This species typically prefers dry, upland prairie, so it is uncertain if a population would establish in the wet prairie of Phase 2/3 once it is fully developed. Oregon Vesper Sparrow is currently under review for listing under the Federal Endangered Species Act.

Species known to be nesting in the prairie outside of larks include Savannah Sparrow, Grasshopper Sparrow, and Killdeer. Additionally, Western Kingbirds nested in a powerline tower within Phase 1 and regularly foraged in the prairie. Several other species nest in the adjacent shrubby habitat and forage in the prairie including American Goldfinch, American Robin, Brewer's Blackbird, Red-winged Blackbird, and Song Sparrow.

Coyote Creek South also provides quality habitat for migrating shorebirds and waterfowl in the spring with vernal pools and fluctuating water-levels. Among the shorebirds species detected this year were Least Sandpiper, Dunlin, Solitary Sandpiper, and Greater Yellowlegs. Waterfowl species included Blue-winged Teal, Green-winged Teal, Wood Duck, Gadwall, and Mallard. Bald Eagles, Great Egret, and Canada Geese were also regularly seen.

Streaked Horned Lark

There were no larks detected during bird surveys in 2014 and 2015 in the former grass seed field at Phase 1 (Altman 2015b). Larks first appeared in 2017 after the initiation of prairie restoration with a population of 4-5 pairs (Altman 2017). This colonization by larks is often seen after ground disturbance that results in significant bare and sparsely vegetated ground. However, larks have high breeding site fidelity, and movement to a new site is usually dependent on the presence of a population nearby that is displaced and seeking suitable nesting habitat. This displacement can be a result of vegetation succession moving a site out of suitability, or disturbance during the nesting season from equipment operations in the fields where they are nesting. It is likely that the settlement of larks at Coyote Creek South is from birds at the private Estergaard property to the north, which is maintained annually as production grass seed fields.

During the breeding seasons of 2017 and 2018, there were 4-5 pairs of larks at the Phase 1 site. The additional pair of larks on the property in 2019 (5-6 pairs) may have been due to a good productivity year in 2018 (Altman 2018). In 2019, it is likely that the 2-3 pairs in the Phase 2 site were birds that moved from the Phase 1 site, as suitable lark habitat there was reduced from vegetation growth after the initial restoration clearing. At the same time, suitable lark habitat in the Phase 2 site was created with

the initial restoration of habitat from spray-outs in spring and fall 2018. The Phase 2 site was not surveyed in 2018, so it is uncertain if larks were present after the initial spray-out in spring.

The reduction in nesting pairs of larks on the Phase 1 site in 2019 was expected. As prairie vegetation becomes more established over the first 2-3 years post-initiation of restoration, the habitat typically becomes less suitable for larks and the population declines. When larks first colonized the Phase 1 site in 2017, there were large areas of completely exposed bare ground (unsuitable nesting habitat) at the beginning of the nesting season due to the recent earth moving and absence of a full growing season for vegetation. However, by June most of the site was suitable for lark nesting the remainder of the 2017 breeding season. In 2018, there was a much better mosaic of vegetated and sparsely-vegetated conditions including smaller areas of denser and/or taller vegetation for hiding cover. In 2019, the site was mostly suitable habitat in the beginning of the breeding season, but by mid-June vegetation growth resulted in large parts of the site becoming unsuitable habitat. Most of the remaining suitable habitat was in the vernal pools.

The reduction in nesting pairs of larks in 2020 is likely due to the further reduction of habitat suitability in Phase 1, and the beginning of reduction in habitat suitability of Phase 2 as vegetation has progressed from the initial restoration clearing. This will likely continue in 2021, although the initiation of prairie restoration in Phase 3 will likely provide more suitable habitat there to potentially counter losses in Phase 1 and Phase 2. Additionally, there may be some reestablishment of suitable habitat in Phase 2 if fall or early spring activities provide appropriate conditions (e.g., spray-out for invasive species). However, the failure to locate any nests or confirm any fledglings in 2020 raises some concern about the potential population in 2021, independent of the amount and location of suitable habitat.

In the long-term, it is likely that 1-2 nesting pairs is the potential lark population that could be maintained at the Phase 1 site, and 0-2 pairs at the Phase 2 site. The reason for only 1-2 pairs at Phase 1 is the observation of fairly quick re-vegetation in some of the vernal pools this year, which if continues will likely reduce overall nesting habitat, and much of what remains suitable will be limited to the early part of the nesting season. The reason for the potential absence of larks at the Phase 2 site is because there will be no vernal pools to provide potential habitat once the prairie vegetation is fully developed. However, there are some natural swales and depressions that could function as vernal pools and provide some of the sparsely vegetated habitat conditions required by larks.

The wet prairie at the Phase 1 site was designed and created with several vernal pools. These are intended to hold water longer in the spring and dry-out at variable rates depending on water depths and other factors. They provide a diversity of habitat conditions in the prairie landscape and potential suitable habitat for several wildlife species including larks, which use the sparsely-vegetated dry-out areas for nesting and foraging. As the prairie becomes less suitable for larks with vegetation development, vernal pools can provide some annual suitable habitat for nesting larks. However, this is dependent annually on the timing of the draw-down of the water (e.g., wet winter/spring versus dry winter/spring), and the degree of sedimentation and seed sources within the vernal pools (which change over time), which will affect the type and rapidity of the vegetation development within the vernal pool.

The small population of larks at Coyote Creek South has a tenuous existence independent of habitat conditions, and can be extirpated with 1-2 poor years of productivity or survival. However, larks have evolved as a landscape-dependent species that is often forced to move locations when their early successional habitat moves in and out of suitability, both between and within breeding seasons. Thus, habitat suitability in the landscape can be more important than habitat suitability at a site, and the availability of multiple suitable sites within a landscape, at different stages in suitability, is likely

important in maintaining a population. Although the current lark population in the landscape south of the Eugene Airport is relatively small, potential habitat to maintain a “meta-population” has been increased with the two new Coyote Creek South sites in last 3-4 years, along with some lark habitat at the adjacent City of Eugene’s Coyote Creek Prairie site and Greenhill Road Prairie site, the private Estergaard property, and at a few locations in the Fern Ridge Wildlife Area. Further, prairie restoration that will be initiated in the next two years at the ODFW’s Coyote Creek Northeast property will not only provide additional options in the landscape, but will likely result in some movement of birds into that site and out of other sites as their habitat suitability is reduced.

Lastly, the local lark population that includes Coyote Creek South is the southernmost known nesting population of larks within their range. Small and edge of range populations are inherently at a greater risk of extirpation due to potential issues of genetic variability and related problems of inbreeding and genetic drift, reduced ability to handle natural and anthropogenic fluctuations in birth and death rates, and reduced ability to handle major stochastic events (Shaffer 1981). The nearest relatively large lark population is the Eugene Airport and adjacent grass fields, approximately 5.5 miles north.

Recommendations

Continue Streaked Horned Lark monitoring on the property. Restoration activities and habitat monitoring are ongoing, especially at the Phase 2 and Phase 3 sites. Thus, efforts to minimize potential negative consequences to lark reproduction through monitoring will be important in maintaining and potentially expanding this population at the southern edge of their range.

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