

Boulder County Parks and Open Space 2020 Burrowing Owl Monitoring Summary



Prepared by:

**Sue Cass, Boulder County Nature Association (volunteer coordinator)
Stephen Jones, Boulder County Audubon Society (report review)
Michelle Durant, Wildlife Biologist, Boulder County Parks and Open Space**

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Thank you, Volunteers!

On behalf of Boulder County Parks & Open Space, I would like to thank all the Boulder County Nature Association and Boulder County Audubon Society members who participated in the 2020 survey effort, and to those who have continued to support the program year after year.

Thank you to all **29** program participants: Beccy & Joe Pem, Brinda Henley, Carol McCasland, Carol Stock, Connie Redak, Danielle Pyevich, Elena Klaver, Emily Friedberg, Howard Witkin, Jean Crawford, Jenny Dalton*, John Nelson, Kerrie Bryan, Kristin Laubach, Lark Latch, Lawrence Arp, Linda Andes-Georges, Lysa & Mort Wegman-French, Maureen Lawry, Michelle Durant*, Paula Hansley, Sandra Laursen, Steve Jones, Sue Cass, Susan Spaulding*, Tim Henson, Viki Lawrence.

Special thanks to Paula, Kristin, Connie, and Linda for their additional field efforts and reporting on nest sites, and to the biologists at City of Boulder Open Space and Mountain Parks (OSMP) for sharing insights and updates on the status of owls on OSMP. Thanks to Colorado Parks and Wildlife (CPW) officers Tyler Aznicar, Joe Padia, and Sam Peterson for providing support and guidance on issues that inevitably arise when we find burrowing owls.

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Sensitive Data Policy

Annual summaries of burrowing owl monitoring do not include discrete locations or detailed maps of nest sites but will provide general locality so that participants might understand the distribution of the species from year to year. Boulder County Parks and Open Space adopted a Sensitive GIS Data Policy which describes the criteria used for determining which data are sensitive, and provides guidance for the handling, release, and protection of information related to those cultural and natural resources. The nest locations of burrowing owls and other raptors is included in this policy because it is considered sensitive information. As stewards of natural resources, BCPOS has the responsibility to balance the protection of these resources - in this case the nest sites of rare, declining, and protected species- with the desire of the community to appreciate and preserve them. Under specific inter-agency agreements, nest locations and data are shared with appropriate entities on an annual basis.

Burrowing Owl Action Team

Boulder County Parks & Open Space is a diverse agency with staff disciplines based in natural resource, agriculture, recreation, planning and outreach specialties. It is a complex organization engaged in many projects at once. To address the need for improved communications across divisions regarding the presence, status, and protection of nesting burrowing owls on open space, a multidisciplinary team was assembled. The **Burrowing Owl Action Team (BOAT)** crafted and piloted a plan which clarifies internal communications with the intention of keeping staff aware of burrowing owl locations and avoiding disturbance or damage to nest sites. From the time an owl is confirmed on open space, until the time fledglings have left the nest area, regular updates are provided to BOAT members. When owl nests are located on active agriculture properties, tenants are engaged in a Burrowing Owl Protection Plan agreement and kept updated on the status of the owls.

From April to the end of October, more than 21 internal communications were initiated for the purpose of informing staff and coordinating actions on open space with the intention of protecting burrowing owls. Three agencies, two county departments, and 7 work groups at BCPOS were engaged over the course of the season.

Introduction

For the thirteenth consecutive year, Boulder County Nature Association and Boulder County Audubon Society recruited volunteers to monitor Boulder County Parks and Open Space properties for nesting burrowing owls. The purpose of this study is to locate burrowing owl nests in prairie dog colonies, determine the rate of nesting success, and devise strategies for protecting and enhancing nesting areas.

Due to worldwide pandemic COVID-19, our spring volunteer training was cancelled, and we relied on the experience of our volunteers to carry out monitoring duties without the benefit of a refresher. When possible, most volunteers choose to return to familiar survey locations year after year. Due to the nature of prairie-dog control on agriculture land, not all properties are available for survey each year, and some properties may be removed from survey efforts when no prairie dogs remain on a parcel.

Location and Effort

Boulder County Parks & Open Space Properties included in the 2020 monitoring effort:

AHI, Longmont Turkey Farm, Autrey, Beech, Broomfield North, Centennial Ranch, Cohig, Darby, DeBerry, Dowe Flats, Imel, Lagerman Reservoir, Liley, Mayhoffer, Mountainview Egg Farm, Rabbit Mountain, Rock Creek Farm, Stephenson-Nelson, Suitts, Warembourg, and Wolf Run. Wildlife staff performed single surveys at previous nest sites at Swanson and Carlson-Lastoka.

During 2020, 26 volunteers plus 3 BCPOS staff biologists devoted **312 total hours** to the field monitoring effort. Volunteer and staff recorded 267 field hours, 5 field training hours, plus an additional 40 hours of coordination, communications, training, and data and report reviews by Sue Cass and Steve Jones. Total hours are generally higher, however not all staff site visits or meetings with volunteers are recorded, and in 2020 a group training was postponed due to the pandemic.

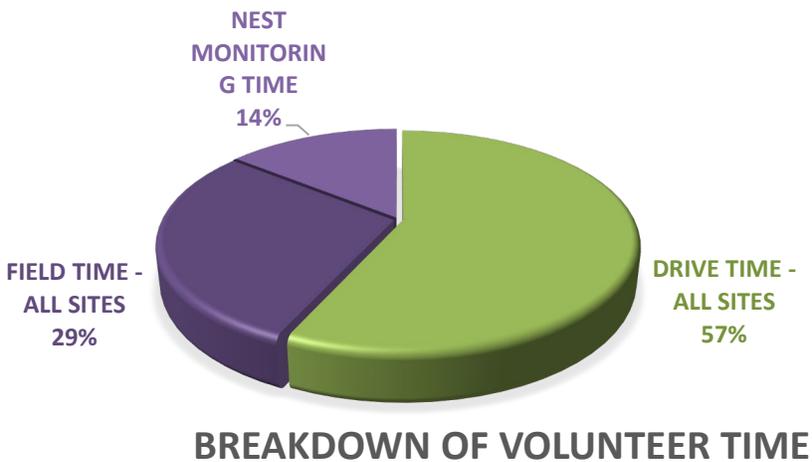


Figure 1: Breakdown of volunteer time spent driving to/from field sites, field time completing surveys, and the proportion of time spent monitoring nests.

Methods

Monitoring was conducted from mid-April to mid-August, with each volunteer or team of volunteers visiting their adopted prairie dog colony one time during each of four survey blocks. Volunteers who discover burrowing owls nesting on their assigned colony begin weekly monitoring until the owls depart the nesting territory, usually in late September or October.

General surveys consisting of ten-minute observations from fixed points were conducted from approximately 115 points on 24 properties. There are four general survey periods, with at least one survey occurring within each of four time periods: 15 April-15 May, 16 May-15 June, 16 June-15 July, and 16 July-15 August. Suspected nests were observed weekly until all young had fledged or the nesting attempt was determined to have failed. Volunteers submitted a field form after each observation detailing what they had seen. Volunteers are encouraged to continue observation and reports while young disperse throughout the colony, which assists staff with internal management inquiries that continue through fall. Volunteers are also asked to submit observations of other raptors and other Boulder County birds of special concern (Hallock and Jones 2010).

Results and Discussion

Three pairs of burrowing owls were observed on Boulder County Parks & Open Space properties during the breeding season: two individuals on a southeast parcel, a pair utilizing a Gunbarrel Hill cropland parcel, and a pair on agriculture grazing land in the northwest county. Two of the three locations were previously occupied territories, while the third site was a new location near a previously occupied site on private land. One nest failed prior to nestlings being observed above ground, the remaining two nests produced 10 young, and 8 survived through fledging. The City of Boulder Open Space and Mountain Parks (OSMP) observed fewer nest attempts this year, and 2 of their 5 nests failed. OSMP generally has more nest events than BCPOS are more consistent re-use of nest sites. In addition to the two local agencies, Boulder Parks and Recreation wildlife monitors observed no burrowing owls in protected grasslands and prairie dog colonies surrounding Boulder Reservoir and Coot Lake during the April-August surveys.

It is unclear why BCPOS has somewhat inconsistent nesting, however differences exist between the habitat characteristics and management activity on BCPOS and OSMP that may provide some clues: the presence or lack of human disturbance or recreation, prairie dog colony characteristics, and agricultural practices which all may cause changes in habitat suitability.

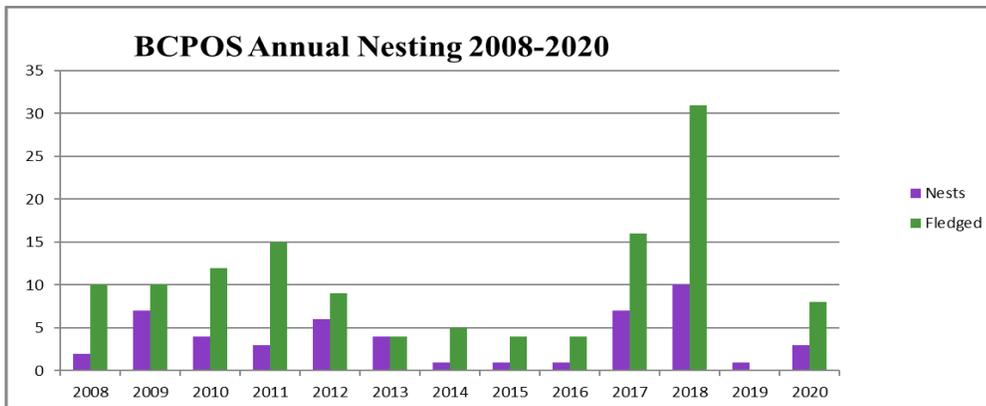


Figure 2: Annual nesting results 2008-2020 shows the number of nests located and monitored on BCPOS and the number fledged each year. After a banner year in 2018, BCPOS once again had only one nest event in 2019 and three in 2020.

Site	# Nests	Dates adults observed	Estimated Start of Incubation	Estimated Hatch Date	Young above ground (emergence)	# Young	Fledge Dates	No longer at site
Northwest County	1	4/30/2020	5/3/2020	6/1/2020	6/18/2020*	?	N/A	N/A
Northeast County	1	4/21/2020	5/3/2020	6/3/2020	6/17/2020	4	7/11/2020	10/13/2020
Southeast County	1	4/20/2020	5/9/2020	6/6/2020	6/22/2020	6	7/16/2020	10/13/2020

*Table 1: Comparison of nest chronology from three sites. *Young likely at entrance to burrow, based on prey delivery and feeding behavior by adults. **Date Adults Observed:** Volunteer or staff located and observed burrowing owl adult or pair. **Estimated Start of Incubation:** Calculated as 44 days prior to observed emergence date. **Estimate Hatch Date:** Calculated as emergence date minus 14 days. **Fledge Date:** First date recording nestlings moving away from natal burrow, usually more than 50m. **No Longer at Site:** Date when young burrowing owls are no longer detected in the dispersal areas near the nest site.*

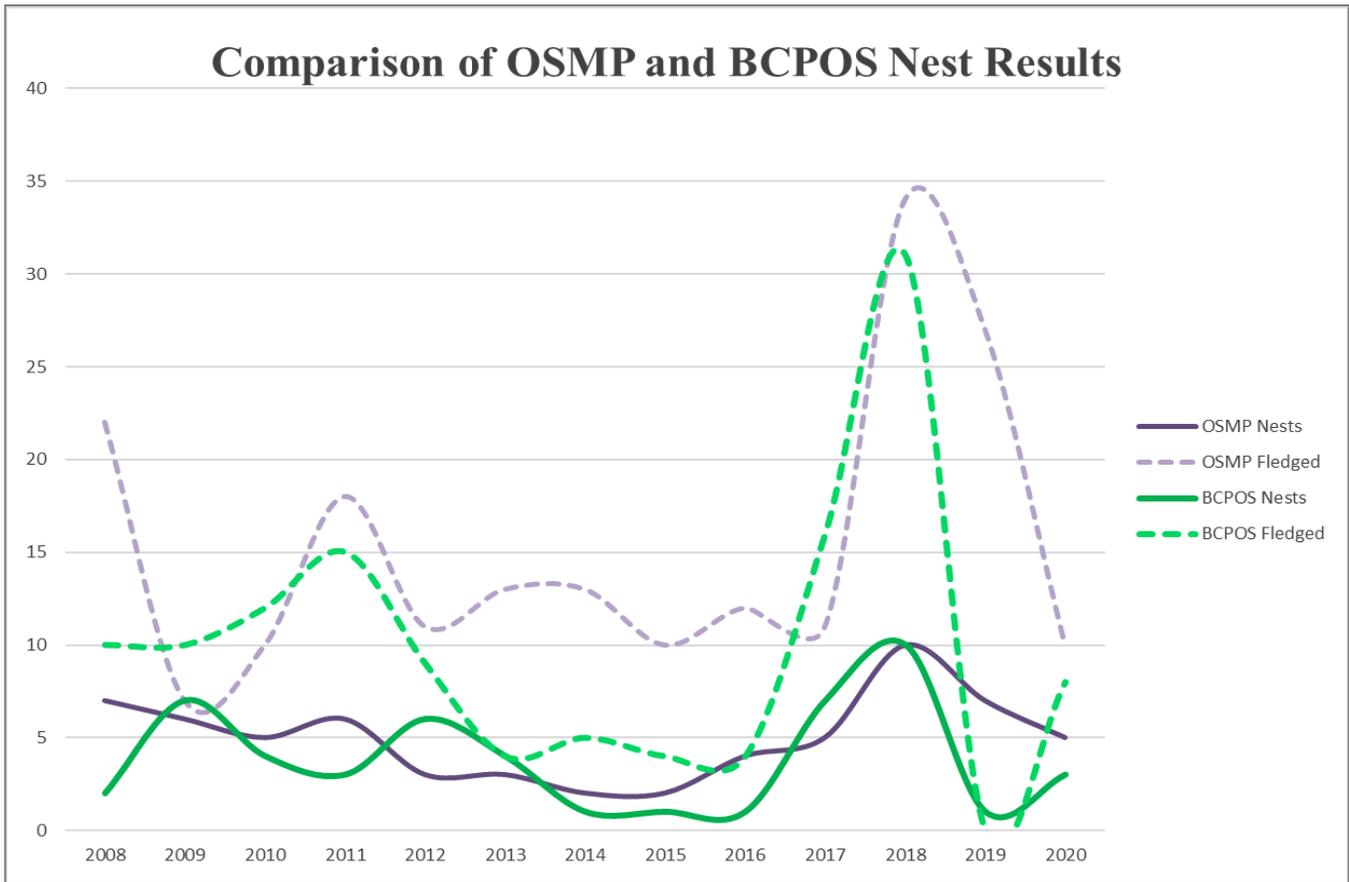


Figure 3: Comparison of annual nest and fledge counts over time, City of Boulder OSMP and BCPOS.

From 2008 to 2020, the number of burrowing owl nests and fledged young has fluctuated, and through the years a pattern may become more evident. **Figure 2** shows only those nests located and monitored on Boulder County Parks & Open Space, while **Figure 3** displays BCPOS data compared to OSMP’s nest count and productivity during the same timeframe. OSMP generally has more nests and produces more fledglings, but the fluctuating nature appears to be similar for both agencies.

Prairie Dog Management on BCPOS

Boulder County manages prairie dogs in a comprehensive way so prairie dogs thrive where appropriate on open space properties. The goal of Boulder County is to preserve, protect, and enhance viable prairie dog populations on suitable grassland habitat. On October 15, 2012, the county adopted the [Prairie Dog Habitat Element of the Grassland and Shrubland Management Policy](#). The plan was updated on February 25, 2016.

The plan strives to achieve wildlife habitat protection goals while also preserving agriculture and maintaining good neighbor relations. The plan reflects the values and vision of a broad cross-section of county residents, describes the main strategies for achieving the vision, and serves as a decision-making guide for property-specific management plans. The plan divides areas within the county open space system into **three categories**:

1. **Habitat Conservation Areas (HCA):** suitable prairie dog habitat
2. **Multiple Objective Areas (MOA):** can support prairie dogs along with other activities such as trails, grazing, etc
3. **No Prairie Dog Areas (NPD):** not appropriate prairie dog habitat by virtue of their land uses

The plan lays out the framework for maintaining appropriate habitat as well as parameters for removing prairie dogs from No Prairie Dog Areas. The plan also provides guidelines for relocating prairie dogs to maximize the chance of a successful relocation.

An annual stakeholder meeting is held in January, and is an opportunity for staff to update the public on prairie dog management on open space. A Powerpoint presentation slideshow from the 2019 Stakeholders Meeting can be found here: <https://assets.bouldercounty.org/wp-content/uploads/2020/01/prairie-dog-meeting-presentation.pdf>

Total acreage of prairie dog colonies on BCPOS-managed land have increased in recent years, in part due to additional land purchased with colonies already present, lack of control in Habitat Conservation Areas and Multiple Objective Areas, and natural variables that may influence populations.

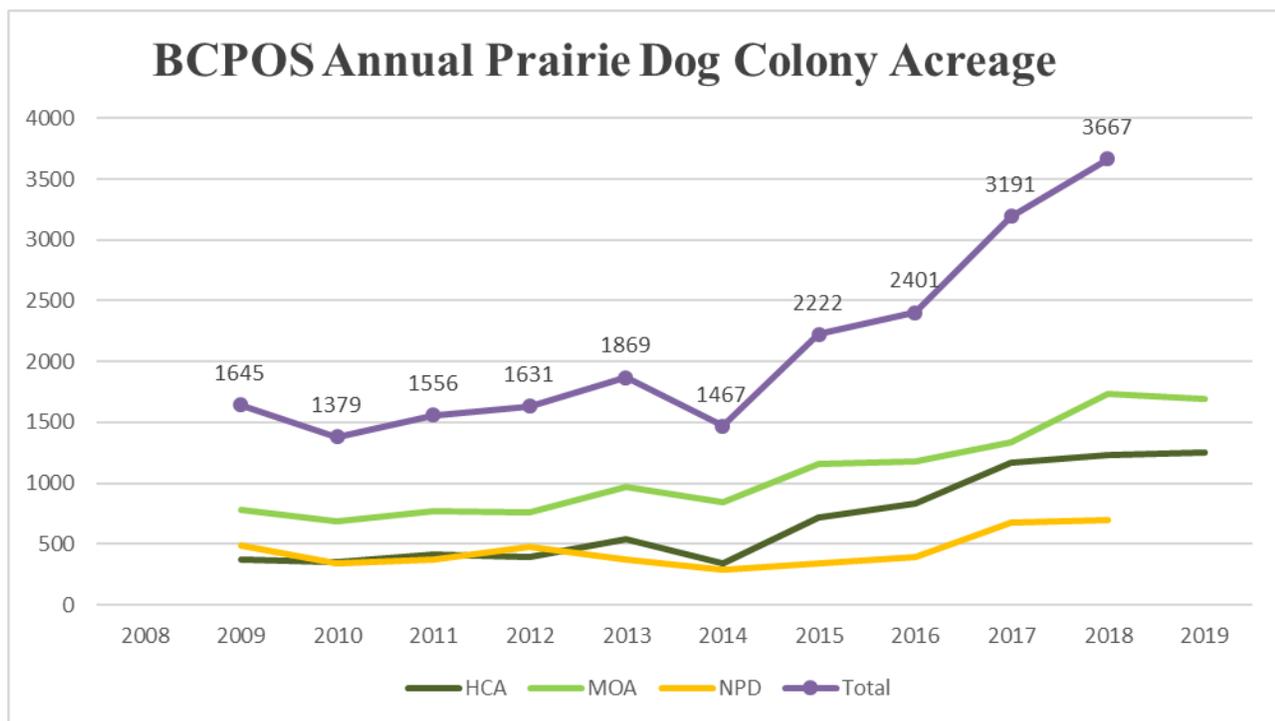
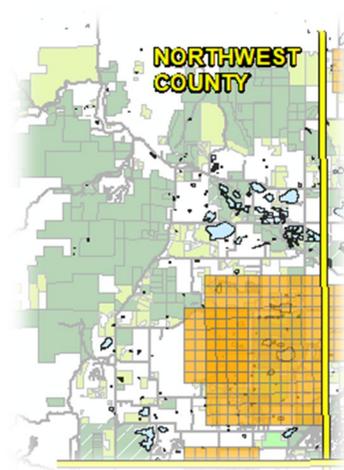


Figure 4: Annual prairie dog occupied acreage totals for the three management categories: HCA: Habitat Conservation Area; MOA: Multiple Objective Area; NPD: No Prairie Dog area. Colony extent is mapped on foot annually.

2020 Nest Observations

Northwest County – Active Nest, Failed



*Grazing is the primary activity on northwest parcels with historical or active burrowing owl nest sites. Due to agricultural use, most of these parcels are categorized as **No Prairie Dog** and **Multiple Objective Areas** in the 2012 **Prairie Dog Habitat Element of the Grassland and Shrubland Management Policy**. Agricultural tenants and adjacent landowners regularly request reduction and elimination of prairie dog numbers and colony size on these parcels.*

In 2019 and 2020, focused control efforts were applied to the Lagerman-Imel-AHI complex of parcels, reducing or eliminating approximately 500 acres of active prairie dog colony. Wildlife staff was able to negotiate retention of one small colonized area in the Habitat Conservation Area west of Lagerman Reservoir originally designated for northern harrier nesting. However, the installation of prairie dog barrier fencing along the perimeter to reduce spread of the colony into NPD and restoration areas

creates additional movement barriers to other species. Retention of prairie dogs in habitat preserved for harrier nesting may not be compatible. Of the 7 locations owls have occupied or been observed, few historical locations currently retain prairie dogs, and the sites are likely no longer suitable.

In 2020, previously cleared areas were re-occupied by prairie dogs and a pair of burrowing owls established a nest. Pasture restoration activity near the nest site was paused, and the tenant signed a Burrowing Owl Protection Plan.

Summary:

A pair of owls was located on the Lagerman-Imel-AHI complex and nest event proceeded somewhat normally however; the female was observed above ground more frequently than expected during incubation. Overall, this pair's behavior was somewhat different than the other two nesting pairs monitored by BCPOS volunteers and staff. Adults reverted to courtship behaviors when nestlings should have been emerging from the burrow, and then appeared to abandon the area. Field surveys by Michelle Durant did not find evidence of predation, and the nest burrow was undisturbed. Nest failure was suspected but still unconfirmed and a game camera was installed at the site to record presence/absence. No owls were detected, however the pending arrival of surplus cattle and their impact on the site was recorded. From 7/2 to 7/9, no owls or predators were detected at the site, but the camera photographed cottontails, prairie dogs, and of course, many cattle.

At previously monitored nest sites with low grazing activity, burrowing owls do not appear to be negatively impacted by livestock. Since burrowing owls evolved and coexisted successfully on a landscape with herds of large herbivores, it may be assumed that livestock grazing is unlikely to negatively impact nest events. However, this assumption is typically under the premise of dispersed animals for short duration on open range. Owls nesting in areas with pastured livestock, especially at higher stocking rates, could experience a much higher rate of disturbance and site alteration leading to nest failure or abandonment. From our camera data, the duration and frequency of cattle on or near the

nest burrow was analyzed. Due to the intensity of activity and stocking rate observed at this location, in the event of future nesting under similar circumstances, it is strongly advised that staff and tenants consider stocking rates and travel paths of herds moving to/from water or food resources when developing the Burrowing Owl Protection Plan. Tenants and BCPOS staff should take additional steps to protect the nest site and nest buffer area from grazing activity. Prior to the nest failure and the transfer of cattle to pasture at the Lagerman-Imel-AHI complex, BCPOS staff had discussed additional site protection measures such as electric fencing to avoid impact to the nest site.

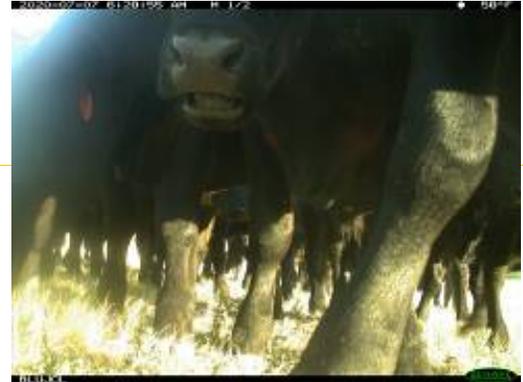


Photo 1: 7/7/20 Grazing activity on nest site following nest failure demonstrates the condensed activity that may lead to nest failure or abandonment.

Row Labels	Sum of Duration (mins)
Cows near but not on nest site (grazing)	3
Cows near but not on nest site (moving)	8
Cows on nest site (grazing or loafing)	17
Cows on nest site (moving)	48
Duration of events (min)	76
Recorded total of cow activity on nest (mins):	65

Table 2: Breakdown of camera photos of cattle near or on failed nest site.



PHOTO 2: Typical herd activity on nest site.

Observations:

30 April One owl observed. Andes-Georges.

6 May Pair and territory confirmed. Durant.

7 May Tenant informed, begin Burrowing Owl Protection Plan steps. Schwartz & Durant.

12 May Quick site check, courtship behaviors and hunting by male. Durant.

17 May Allopreening observed. Andes-Georges.

18 May Copulation, courtship behaviors. Durant.

19 May M. Durant and S. Spaulding observe male delivering food to burrow then copulation. Durant.

25 May Courtship display; very few cows present in adjacent pasture Andes-Georges.

1 June Male feeding mate &/or young in burrow. Andes-Georges.

6 June One prey delivery to burrow. Andes-Georges.

17 June BCPOS staff, Park Ranger and tenant site visit, signed Protection Plan agreement, noted female above ground for some time (not good). Tenant notes ~100 cows will be in this pasture in about two weeks because COVID-related market transaction issues and broker ceased operations, which has resulted in tenant retaining many steers/cows.

18 June Steady prey delivery from male to burrow (5 prey in 45 min.). Andes-Georges.

24 June Prey delivery continues; coyotes present but not appearing interested in owls [Still no cows in pasture]. Andes-Georges.

28 June Sudden reversion to courting behavior for both mates; no signs of young or prey delivery; coyotes present; [no cows] Andes-Georges.

****Nest failure or cause of failure likely occurred between 6/24 and 6/28, but no cows were observed inside the nesting pasture at this time.*

2 July No owls observed by SS and MD during site visit to install game camera. Assumed failure, but camera may help confirm any persisting activity. Durant.

2 July No owls visible in 45 min.; cows are now here in abundance and they stampede madly through middle pasture. Andes-Georges.

7 July No owls, and cows are now a big nuisance, again stampeding from north pasture through middle to south (longhorn appears to guide them). Andes-Georges.

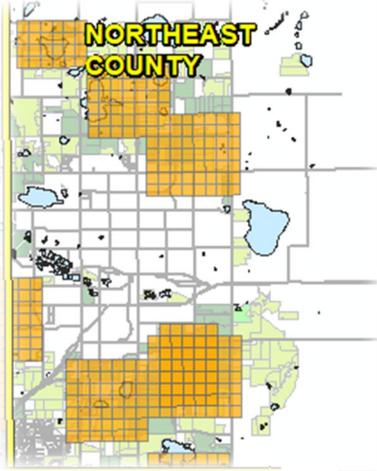
9 July MD retrieved game camera for status check, no photos of owls at all, intense grazing activity. No indication of predation of owls or owlets around nest site. Durant.

13 July Tenant informed that the nest has failed, and any restricted operations may resume.
Durant/Schwartz

2 August No owls observed from monitoring points during final general survey Andes-Georges.

SUMMARY: ONE NEST EVENT, FAILED.

Northeast County – Active nest.



Northeast county historical nesting areas where have different characteristics. A former northernmost site is now an active organic farm which previously retained a small prairie dog colony supporting one nesting pair for several years. Current conditions include pivot irrigation, tilling in the Multiple Objective Area (MOA), and the remaining colony is reduced and unsuitable for supporting burrowing owls. A second site occupied by owls in 2018 is under non-irrigated agricultural lease for grazing a small herd of cattle and is categorized as MOA. A portion of the existing rangeland is currently part of a carbon sequestration project, and prairie dogs are occasionally controlled due to neighboring landowner complaints. A third site south of Longmont was occupied for several years but following years of intensive management and staff coordination, the site was deemed no longer suitable or feasible to support.

In 2020, a new nest site was located on agricultural land categorized as No Prairie Dog on Gunbarrel Hill. The site's prairie dog control measures were relaxed for several years and a large colony with many dispersed individuals has established. In recent years, a pair of owls had successfully utilized an adjacent private land Conservation Easement, and due to choice of nest site by this experienced pair, it is possible one or both individuals are the same owls.

Summary:

A male burrowing owl was again sighted near a previously used nest site near the intersection of 95th and Lookout Road. BCPOS prairie dog control crew reported the owl to wildlife staff and the owl was confirmed the next day. Surprisingly, crews and heavy equipment appeared for the final stages of roadwork along 95th Street that took place in 2019.

For nearly four weeks, contracted work was projected to be completed within a week, yet several phases of the project continued. An on-site meeting between Colorado Parks and Wildlife, BCPOS biologist Michelle Durant, Ranger Jason Vroman, site foreman, and agriculture tenant was held to clarify expectations and nest site protections. Boulder County Transportation was informed of all developments and agreements with project managers and contracted crews. Nest buffers were delineated on the ground for both work crews and tenant. The nest continued to be frequently approached at close range by the public and there is concern about the frequency of this kind of intrusion.

We believe these are the same owls who have nested along 95th & Lookout for several years in a row. To both prevent another unsafe roadside nest and subsequent fledgling mortality at this location, and to meet requirements that prairie dogs be controlled on NPD agricultural land, prairie dogs will likely be euthanized, and the burrows collapsed before spring 2021. At this time, there is a growing colony of prairie dogs on adjacent OSMP farmland and private land.

Observations:

- 21 April** BCPOS prairie dog crew alerts wildlife staff to one burrowing owl roadside on 95th, staff confirmed on 4/21. Light-colored burrowing owl flew back and forth between a roadside cluster of prairie dog burrows and west to planted strip that has emerging wheat, and several active prairie dog burrows.
- 22 April** Request monitoring help. Tenant verbally informed of BUOW. Michelle notices new paint on roadway across from roadside burrows.
- 23 April** Two BUOWs confirmed by volunteer, one on burrow (light plumage) and making short flights, second owl is in burrow (darker). [Vol, email]
- 24 April** Arrived to find a very active roadside maintenance project underway. Heavy road maintenance activity with crews and heavy equipment. Pair observed in agriculture strip west of the original roadside burrow location. Crew foreman contacted immediately and a plan to avoid the roadside burrow discussed. Waddle-removal with several side-dumps, crew of 12+ persons and 5 vehicles, bobcat, front-end loader working in both directions. Delineated a 100-foot buffer with flagging and agreed on no waddle removal near roadside burrow. BCPOS will have to deal with removal of all stakes, flagging, and waddles in fall. Disturbance from adjacent waddle removal from 8am - 11am. Multiple persons walking roadway and near roadside burrow, heavy equipment and belly-dump trucks moving along roadway. Most intense work near roadside burrow lasted 20 minutes. Owls remained west in/on other burrows or out of sight. Male returned to roadside burrow about 45 minutes after construction moved along. After the roadwork was completed, the male returned to the roadside burrow but continued to go back and forth quite a bit. Pair was initially observed 330 feet west of the original roadside burrow. Female was out of view much of the time, with only two sightings (foraging) in the field. **Male brought material to two different burrows** (one roadside, one to west) and a worm to the roadside nest. Male foraged, ate beetle, left second worm on a burrow. Durant.
- 29 April** Soil and burrow where owl pair was previously observed appears disturbed or disced? Owls visiting 2 different burrows in winter wheat strip. Kristin Laubach.
- 4 May** Michelle continues to monitor phased roadside construction and maintenance, again given different completion date.
- 5 May** On-site meeting arranged with **Colorado Parks & Wildlife**, Boulder County **Parks Ranger** Vroman, and construction **Foreman**. Andrew Barth from **Boulder County Transportation** contacted to confirm agreements and halt work if necessary. Buffer is expanded. Neither owl approached the roadside burrows while the crew was present, as they had before. The owls returned to a roadside burrow after crews left (I returned to observe from 5-7:30pm). Observed copulation plus some neat flights by the male. Then the female headed to the burrows in the wheat strip and didn't return while I was there.

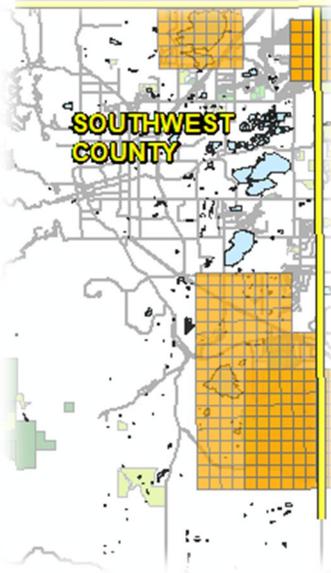


May 5 – Roadside maintenance and a burrow just feet from the asphalt. We wondered if incubation was underway and what this disturbance might result in.

- 6 May** One owl believe to be male due to size and coloration. Majority of time spent on burrow.
- 9 May** Male spotted taking several short flights. Standing on burrow close to pipe on west side of road.
- 11 May** After back-and-forth between burrows, concluded pair selected the roadside burrow. L and D.
- 16 May** Observed male delivering food to nest 5 times in the hour. Female at burrow entrance. Female emerged, stretched and took short flight before returning to burrow. Kristin Laubach.
- 18 May** Nest buffer boundary delineated with stakes and flagging for farmer-tenant. Durant, Kischer.
- 10 Jun** Both male and female were out of nest. Female made 2 short flights and returned to nest. Male made several short flights and delivered food to female.
- 16 June** The female and male were both very active & both bringing food to the burrow. A change I noticed was the female was taking the food into the burrow. I got the feeling there might be babies. [Michelle suspects owlets will be visible above ground soon.]
- 17 June** Volunteer saw 2 owlets above ground, then 4. [Kristin Laubach. email]
- 24 June** Male, female and 4 chicks observed. Scooter on shoulder causes alarm. Kristin Laubach.
- 5 July** Four young are now away from the nest site and spread out in the surrounding field. 2 young are taking short flights. 1 young went into a different burrow than the nesting burrow. **Male continues to fly to the east to forage and is frequently perching on the telephone wire (noted change in perch location).** Female seems less active than male in bringing food to young. Young are foraging independently. Kristin Laubach.
- 7 July** **First owlet killed by vehicle strike:** MD pickup up dead BUOW on 95th next to nest. Female foraging to west and two owlets in a roadside burrow. MD *suspects owlets are approaching male who now perches and possibly foraging on east side of 95th.*
- 14 July** MD observed briefly, 3 owlets and dark adult female far west of roadside burrow. Durant.
- 15 July** 3 Juveniles are spending most of their time on a burrow south of the nesting burrow. Male continues to forage to the east. One juvenile flies into road when male brings insects to young. Female was not seen today. Kristin Laubach.
- 18 July** **Second owlet killed by vehicle strike.**
- 19 July** One juvenile and adult male observed. Kristin Laubach.
- 20 July** Michelle connected with Boulder County Transportation about fencing install on 7/21 to deter owlets from flying low into roadway.
- 7 August** No owls observed from Point #1. Kristin Laubach.
- 7 August and 8/8** One juvenile in field, others report seeing male still in area. Kristin Laubach.
- 10 August** Owlets are not hanging around natal burrow anymore. On 8/12 MD and Vol search and find two owlets further into agriculture field.
- 20 September** One owl observed taking short flights, perching on plant stalk. Kristin Laubach.
- 25 September** MD confirms two fledgling owlets still on Autrey. First owl is still in same burrow as two weeks ago, but second owlet has moved SW about 100' and is hard to see.
- 30 September** Disking the field today and I didn't want to get in the way of the GIANT tractor. 1 owl observed going in and out of the burrow. Kristin Laubach.
- 13 October** Michelle Durant and Kris Laubach survey site for remaining owls, none are located.

SUMMARY: ACTIVE NEST, FLEDGED 2 OF 4.

Southwest County – Not active



The South County Grasslands complex is approximately 3000 acres of County and municipal joint purchases. Parcels were purchased between 1990 and 2007, including adjacent OSMP parcels that contribute to the acreage. Much of the property is categorized as Habitat Conservation Area and is actively grazed using a rotational grazing plan.

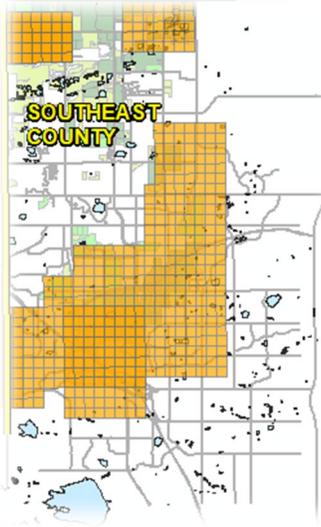
Four nesting pairs of owls were located on the northern half of the property in early 2018, a banner year for burrowing owls in Boulder County. Unfortunately, an undetermined event resulted in the collapse of the prairie dog colony in this area, and by late 2019, only small areas of prairie dogs remained despite previous treatment with Sylvatic Plague Vaccine. In 2020, the remaining prairie dogs were treated with an updated vaccine, as this site could be included in black-footed ferret recovery efforts in the future if healthy colonies can be retained.

Two recorded nest events in 2017 and 2018 occurred on the southern half of the property. Although rotational grazing occurs, there is little to no prairie dog control and no off-trail recreation access. In 2017 a pair nested and fledged 6 young on a pasture hillslope and using a similar area in 2018 they produced only one fledgling while 4 nests nearby produced nearly 15 young.

In 2020, with far fewer prairie dogs and burrows beginning to collapse, no owls were detected at or near previous nest sites. On OSMP land where annual nesting typically occurs, fewer nest events were recorded.

SUMMARY: NO NEST EVENTS.

Southeast County – Active Nest



The survey areas of the Southeast County quadrant primarily focus on prairie dog colonies in the most southeast portion of the county. The prairie dog colonies are dispersed over several property groups such as Rock Creek Farm, Ruth Roberts, and the jointly owned county/municipal properties Stephenson-Nelson and Mountainview Egg Farm near Flag Park. Various uses occur across these parcels including a regional trail system, irrigated cropland, oil and gas development, and grazing. A small designated burrowing owl preserve on Rock Creek Farm is surrounded by irrigated cropland and grazing fields which are categorized as No Prairie Dog areas, and no nesting has been documented since 2012.

In early 2020, BCPOS staff began the process of updating the management plan for Carolyn Holmberg Preserve at Rock Creek Farm, and priority topics include prairie dog management, farm operations, grassland restoration, public access, and of course, maintaining suitable burrowing owl nesting habitat.

Summary:

In the southeast quadrant of the county, a burrowing owl was located by an experienced owl monitor on 4/20/2020. Staff confirmed the presence of a male owl on territory, and prior to determination of a mate and the nest location, prairie dog control measures were implemented by Broomfield along an adjacent bike path. A field meeting was arranged to provide staff and biologists from CPW, City of Broomfield, and BCPOS an opportunity to meet and discuss concerns.

Initial observations were completed by the assigned volunteer until a substitute and staff took over nest observations mid-season. Due to time constraints, no formal surveys were completed at survey points; however, staff repeatedly checked the area for additional nests or owls.

This site was designated a burrowing owl Habitat Conservation Area in the Rock Creek Grasslands Management Plan. It is closed to the public and recreation is on-trail only and excludes use of access roads utilized by BCPOS staff and oil and gas development.

Observations:

- 20 April** Volunteer recorded seeing an owl on the property. Female owl came out of nest hole; male came closer after a few minutes and was sitting 10' away in grass; female preened; she then dug in the dirt at top of the burrow with her feet, I could see dirt flying. [email]
- 6 May** Two-hour observation determined BUOW present but unable to determine location of nest. Durant. Territory confirmed by volunteer; [email to MD]
- 6 May** Collapsed burrows and pdog treatment on adjacent Broomfield parcel where owl was foraging. Owl not observed. Broomfield is responsible for controlling pdogs along city bike path. Activity ceased after communications.

- 6 May** Field meeting with Broomfield staff and CPW. Owl located again over the weekend, in the same vicinity as early observations. Durant.
- 6 May** Received photo of male on site and nest location, from volunteer monitor.
- 21 May** Adult owl observed on southern end of mesa near observation point #130, and then it flew north to other end of mesa. Emailed volunteer, requested obs help from 2nd volunteer. Durant.
- 29 May** Delivery of food. Owl foraged north and south of the burrow. It took insects(?) down into the burrow and came back right away. I assume that the female is in the burrow. It flew back to the burrow with a vole, then moved off to another mound and ate it.
- 01 June** Male/A2 perches on burrow near top of mesa and is very alert. Female/A1 exited burrow after observing for some time. MD approached and confirmed nest location, observed nest material, scat, pellets, and prey debris at burrow entrance. Male delivered small insect into burrow and exited quickly. Owls remain in area of burrow when observer is approximately 34m away. No bobbing, but short flights and vigilance. Female is darker, male is very pale and small. Determination of number of young could be difficult from lower observation point but alternative viewing locations may be too distracting to the owls. Attempted field confirmation for mapping and staff information.
- 02 June** Female owl went in the burrow and male stayed outside nearby. Male flew away, returned, and male went in burrow and the female flew off. Paula Hansley
- 08 June** Nest site confirmed by MD, location shared with adjacent land ownership (Broomfield).
- 08 June** Male went to female who was sitting by hole; they touched beaks; sitting very close together. Female still in hole; male is sitting in grass. Male looks like he is asleep. Noisy planes flying low; military helicopter flew low over the hill at 11 am; it seemed to bother the female, she hunkered down.
- 14 June** Both owls were sitting by the hole. The female went in for a couple of minutes then came out. She did this a couple of times while I was there. Paula Hansley
- 22 June** Male delivered several mice(?) to the female and she fed the babies; female hunted close to the nest (20') and male flew out of sight; female scratched at the dirt around the hole once rather vehemently (dirt was flying); the young were downy; I think this may have been their first time out of the burrow. The female went back into the hole several times; I think there are more chicks. The male brought small mammals, probably mice or voles. Paula Hansley
- 22 June** Volunteer sends confirmation photos of 5-6 nestlings above ground, female is delivering prey into burrow for additional young. Many prey deliveries, and nestlings are beginning to wander away from mound and walking into vegetation. Volunteer observes man walking dog off-leash through pdog towns, makes contact and records license plate. Rangers alerted and sent photos of plates for search, and increased patrol.
- 27 June** Delivery of food, digging in dirt of hole, foraging, preening, flapping wings, two babies were hunting, one caught a butterfly. Mom gave prey to one baby each time; they all ran to her as if they were hungry. Paula Hansley
- 29 June** Paula on leave, Connie and MD will cover nest obs, but perhaps unable to do formal point surveys due to staffing and time constraints.
- 01 July** Female standing on nest burrow and male to left of burrow on preferred "perch burrow" about 15' from nest. Owlets were mostly hiding low in burrow, and only once did I briefly see the tops

of a few heads at the burrow entrance. Male left once to forage to the north of burrow but did not appear to return with prey. Both adults seemed to be sun-basking, not very active. Michelle briefly disturbed the nest today with a walk-by to drop a camera 6' southeast of the nest burrow. Camera is concealed and adjacent to a log. We hope to get data on prey deliveries and chick development, predation if it happens, etc. Hopefully the camera will not malfunction. Michelle observed the nest briefly (subbing for Paula) but the primary reason for visit was to install a game camera on the nest. Michelle Durant. [*the camera malfunctioned*]

- 07 July** I observed both adults and fledglings preening, stretching their wings and hunting. Two of the fledglings are quite large but one seems very little by comparison. I saw the adult female bring prey...probably a mouse but I am not sure. The two larger fledglings rose up and flew to meet her and fought over the food. The third fledgling remained on the nest mound and did not eat. airplanes flew over and cyclists rode by but I did not notice any reaction to them by the owls. Their nest is quite far away from the trail. Connie Redak.
- 16 July** Owlets are now split and foraging in two areas, with an adult present at each of two locations within the BUOW conservation area. Female with 3 fledglings hunting small prey (insects), occasionally adult delivered food item to young. Male with 2 visible young foraging on top of the mesa, occasionally delivering small prey to a fledgling and would occasionally fly back near the burrow (another fledgling?). Female is scrutinized and lightly mobbed by 3 blackbirds. Fledglings were hunting small prey items, but occasionally an adult would also deliver an item to one of the owlets in their area. Owls appeared to ignore the constant small craft airplanes overhead, the large helicopter did get some stares. Michelle Durant.
- 24 July** The owls were widely dispersed. Some were flying while others were perched on prairie dog mounds. One was on the ground the whole time. I am sure I saw at least 4 young. Some of the owls appeared to be hunting for insects on the ground but I could not see what they were catching. The male flew near the nest area but did not stay. Connie Redak.
- 06 August** The owls are more widely dispersed than before. Three were together, the rest were spread out but not doing much. The adults made long flights in and out of the area but I did not see them bring any food. Connie Redak. [*very dry conditions, fewer insects observed*]
- 20 August** The owls are widely dispersed in the same area we have been seeing them. One owlet was observed for most of my visit preening and then flew to the top of a dead thistle and hunted insects...I think. I could not see what it was eating but it did catch several things. The female came flying in with another of the owlets and further to the north I think I saw the male with another owlet. They are not all together and moving around a lot so it was hard for me to get a good count. Connie Redak.
- 25 August** All three were making short flights, hunting, walking around. Two were juveniles, the third appeared to be the adult male. *Camera data shows owls still making an appearance on nesting burrow but infrequently. One fledgling pounced on a small insect; another flew to the adult. Observer presence caused one owlet to fly about 10' and "bob" briefly. Saw total of three BUOW on mesa just east of nest site. Michelle Durant. [*Camera data retrieved, no indication of visits from predators, just a wood rat, mice, and resident cottontail. I did retrieve what looks like recently ejected skeletal remains of a tiny nestling that didn't make it...interesting that pdogs have not yet reclaimed this burrow!*]

01 September I saw one very dark adult which I felt must be the female and two young. The adult was about 50 feet from the others preening and then flying off alone. The two young owls stayed near the entrance of a prairie dog mound and did not emerge while I was there. Just as I was leaving, I startled a young owl from a burrow and watched it fly about a hundred yards where it landed on another prairie dog mound in tall weeds and disappeared. I do not know if it was a third owlet or one of the first two that I observed. Connie Redak.

25 September Brief field check, MD confirms 2-3 young owls still utilizing post-fledge area.

13 October Owlets no longer on Mesa and may have vacated the area around the nest site. Thorough recon of the area turned up sign (feathers) from barn owl and harrier in area, along with two kestrels still present. Small pile of BUOW feathers could be predated nestling from earlier in the season, but molt of fledglings can leave many feathers in area. Michelle Durant.

SUMMARY: ACTIVE NEST, FLEDGED 6.



All Photos by Paula Hansley. Thanks, Paula!

Wildlife Observations

Of 200 submitted Wufoo Reports, 63% included observations of raptors, passerines, and other wildlife.

Volunteer's avian observations are listed in the records kept by Boulder County wildlife staff. Any observations on nesting raptor nests are added to the county's GIS Raptor Database, which is shared with Colorado Parks and Wildlife annually through a Sensitive Data sharing agreement. Species of concern or special interest recorded by volunteer monitors are listed below.

Bird species and other wildlife observed:

Coyotes, rattlesnakes, bullsnakes, bull elk, cottontail rabbits, chorus frogs, American goldfinch, American kestrel, American robin, American robin, bald eagle, barn swallow, black-billed magpie, black-capped chickadee, blue grosbeak, bobolink, brown-headed cowbird, Bullock's oriole, Canada geese, common grackle, common merganser, common yellowthroat, common raven, dickcissel, eastern phoebe, European starling, ferruginous hawk, golden eagle, grasshopper sparrow, great-blue heron, horned lark, house wren, killdeer, lazuli bunting, lesser goldfinch, loggerhead shrike, mountain bluebirds, northern flicker, osprey, red-naped sapsucker, red-tailed hawk, red-winged blackbird, sage thrashers, savanna sparrow, Say's phoebe, Swainson's hawk, tree swallow, turkey vulture, vesper sparrow, western kingbird, western meadowlark, western wood pewee, American pipit, Wilson's snipe, yellow warbler, yellow-breasted chat.

Raptors and Birds of Special Concern*

Bald Eagle*

- 04-27 Rock Creek Farm - 287. Bald Eagle perched for quite a while on a tree located along railroad tracks between points 103 and 113. Mort Wegman-French.
- 04-27 Wolf Run/ Centennial Ranch. 1 immature bald eagle flying over. Jean Crawford.
- 05-27 Rabbit Mountain. 3 Bald Eagles, 4 Red tailed Hawks flying and perching. Tim Henson.
- 05-29 Mountainview Egg Farm. Bald Eagle was soaring high overhead, hunting. Paula 2020-05-29.
- 06-08 Mountainview Egg Farm. Bald Eagle on power pole far away. Paula Hansley.
- 06-11 AHI - Double Dove. Bald eagle flying over point 203. Danielle Pyevich.
- 06-26 Dowe Flats. 3 Red-tailed hawks, 1 bald eagle, 4 ravens. All were flying and perching. Tim Henson.
- 06-28 AHI - Turkey Farm. 2 bald eagles on south slope; one with prey. One flies to snag; the other, seeing roaming coyotes, attempts to struggle away carrying rather heavy prey in one foot. Coyotes (2) do not notice these. Linda Andes-Georges.
- 07-26 Autrey. 1 bald eagle seen perching on telephone wire south of observation point- other bald eagles, 1 adult and 3 juveniles fly over, south of site. 4 bald eagles observed south of site. Kristin Laubach.
- 09-19 Autrey. Bald eagle flyover directly overhead. Kristin Laubach.

Cooper's Hawk

No 2020 reports included sightings.

Ferruginous Hawk*

10-13 Mountainview Egg Farm. First FEHA sighting at Mountainview. Michelle Durant.

Golden Eagle*

04-24 Autrey. Post survey, 1 adult Golden eagle caught and ate a prairie dog on OSMP, 1 immature Golden eagle on standby for scraps. Michelle Durant.

04-29 Beech. Two Golden eagles being seriously harassed by 2 ravens. Lark Latch.

05-27 Autrey. Juvenile Golden Eagle, Adult Northern Harrier. Kristin Laubach.

08-10 Beech. Two Golden eagles fly over. Lark Latch.

Great Horned Owl

04-21 Rock Creek Farm- Parrot's Beak. Great-horned owl perched halfway between 115 and 121. Jenny Dalton.

2020-04-23 DeBerry. Saw a great-horned owl in a tree on western edge of property in tree. Carol Stock.

Loggerhead Shrike*

04-29 Beech. Loggerhead shrike at 239. Lark Latch.

Lark Bunting*

No sightings.

Northern Harrier*

04-30 AHI - Turkey Farm. 1 Northern harrier, female, perched for 10 min. on salt flat S of Plateau Rd fenceline, no obvious reason. Linda Andes-Georges.

05-09 Autrey. Northern Harrier flyover-2 times. Kristin Laubach.

05-13 Autrey. Northern Harrier hunting in area. Kristin Laubach.

05-27 Autrey. Juvenile Golden Eagle, Adult Northern harrier. Kristin Laubach.

05-30 Autrey. Northern Harrier. Kristin Laubach.

06-08 Mountainview Egg Farm. Northern Harrier flew low over the prairie dog town about 75 m away. Paula Hansley.

06-28 Autrey. Northern Harrier, American Kestrel. Kristin Laubach.

08-02 Autrey. Northern Harrier hunting to the west of observation point. Kristin Laubach.

08-16 Autrey. Northern harrier seen on east side of 95th. Kristin Laubach.

08-19 Autrey. Red-tailed Hawk flyover, Northern Harrier in field to the north of where owls are located. Kristin Laubach.

09-09 Autrey. Northern Harrier flyover close to area. Kristin Laubach.

Osprey

04-30 AHI - Turkey Farm. 1 osprey on nest platform. Linda Andes-Georges.

05-16 Mountainview Egg Farm. Osprey as noted. Paula Hansley.

05-25 AHI - Turkey Farm. Adult osprey on eastern platform; chick on western nest could be seen moving, after yesterday's cold rain. Linda Andes-Georges.

06-01 AHI - Turkey Farm. 2 adult ospreys on nest, feeding nestling. Linda Andes-Georges.

06-06 AHI - Turkey Farm. 2 adult osprey FY (did not see number of nestlings). Linda Andes-Georges.

06-14 Lagerman. Osprey. Kerrie Bryan.

07-02 AHI - Turkey Farm. 2 adult Osprey on nest, 1 Bald Eagle perched for 45+ minutes. Linda Andes-Georges.

07-07 AHI - Turkey Farm. no osprey or young on nest platform. Linda Andes-Georges.

07-14 Lagerman. Osprey. Kerrie Bryan.

08-02 AHI - Turkey Farm. 2 osprey rendezvous on nest; one remained, rearranging sticks & preening. Red-tailed hawk fledgling, begging (in vain). Linda Andes-Georges.

08-09 Darby. Pair of osprey, hunting. Swainson's, juvenile red-tail perching. Kristin Laubach.

08-14 Lagerman. Osprey on nest. Juvenile bald on post. Kerrie Bryan.

Prairie Falcons and Peregrine Falcons*

04-28 Rabbit Mountain. Prairie falcon. Tim Henson.

07-07 Mountainview Egg Farm. Prairie falcon hunting small prey. Connie Redak.

08-08 Beech. 2 prairie falcons. Lark Latch.

08-25 Mountainview Egg Farm. Immature peregrine falcon hunting low and fast, scattering everything in its path! Covered a great deal of distance in just a few seconds. Michelle Durant.

Red-tailed Hawk (nests only)

No specific nest locations were reported by volunteer monitors, but many of you saw red-tails and were screamed at, investigated, and soared over during your surveys!

04-06 Mountainview Egg Farm. 4 red tailed hawks, one pair (mating observed) and 2 singles. Paula Hansley.

04-21 Mountainview Egg Farm. Two Red-tailed Hawks have a nest in the area. Paula Hansley.

06-15 Warembourg. Red-tailed hawk. Soaring and perched screaming at me. Viki Lawrence.

08-11 Warembourg. Red-tailed hawk in nearby trees screaming. Flew across the small pond as a flock of geese were getting ready to land, they flew off and returned in a couple of minutes. Viki Lawrence.

10-04 Autrey. Motorist hit red tail hawk on 95 just north of observation point 1. Bird appeared to be stunned man said he would call Birds of Prey if hawk didn't fly off. Kristin Laubach.

Swainson's Hawk

04-27 Liley. Swainson's Hawk circling over NE quad. Sue Cass.

04-30 Broomfield North. Swainson's Hawk, light morph, sitting on pole. Sandra Laursen.

05-21 Imel. Swainson's Hawk in area of nest. Was roosting at first then flew off. Red-tailed Hawk in same area, roosting near Swainson's nest. Howard Witkin.

08-07 Broomfield North. Swainson's Hawk - startled it from the ground when I came over the hill, then circling over colony. Sandra Laursen.

Other Observations and Disturbances:

Broomfield North, 08-07. This property looks like it has been devastated - the vegetation is eaten down to the ground. Compared to earlier in the season, there are many fewer prairie dogs visible, even on a warm sunny morning. Sandra Laursen.

Cohig, 05-23. Several prairie dogs survived the plague. Maureen Lawry.

Cohig, 06-17. The area was mowed and all the burrows had tread marks on them, including the burrow where the 5 babies were last month. The tractor intentionally drove over each burrow, perhaps to avoid the blade going over the high dirt mound. Maureen Lawry.

Darby, 05-08. Walked around area but was unable to locate Prairie Dogs, site appeared to be recently plowed. Kristin Laubach. [*Darby has now been removed from survey list*]

DeBerry, 06-26. Man was playing bagpipes while on his riding lawn mower on the property just south of DeBerry. He's played before on his west deck while I've been out, but this was a new experience! Carol Stock.

DeBerry, 08-12. Lovely day. Very quiet. Loads of prairie dogs in multiple shades of brown. Carol Stock.

Dowe Flats, 05-21. 1 Many baby prairie dogs. Tim Henson.

Imel, 04-23. All cattle and calves on property, very few prairie dogs. New road, new fence, and a lot of cattle in the area. Howard Witkin.

Imel, 05-21. Many prairie dogs. First time I've observed cattle in this area. Did not survey OB's 182 and 179 due to extermination process. Howard Witkin.

Imel, 07-09. PD' being eradicated to the east, cattle in pasture. All PD's eradicate no sign of any raptors. Howard Witkin.

Lagerman, 04-22. Lots of healthy and active prairie dogs. Joe Pem.

Liley, 06-15. PD colony appears healthy with a significant number of pups/adults observed at burrow entrances in the NE quad; fewer PDs overall in the SW quad; the area is very dry. Sue Cass.

Liley, 07-13. The area is very dry/parched; overall the PD colony is in good shape with considerably more

individuals observed above ground in the north N and NW quads than in the SW. Sue Cass.

Liley, 08-06. Considerably fewer PDs observed above ground than on other 2020 visits! Sue Cass.

Mayhoffer-Coalton Trail, 04-27. Higher density of prairie dogs on Scriffany and Lindsay. Very few prairie dogs, potentially 40-50 total in entire Mayhoffer, Carlson-Lastoke, Scriffany, Lindsay complex. Jenny Dalton.

Rabbit Mountain, 06-29. Lots of butterflies of multiple species es. Fritillaries. Good sightings of dung beetles which I haven't seen before on Rabbit Mtn. Tim Henson.

Rock Creek Farm - 287, 05-23. As we neared survey point 113 from the north, we noticed a coyote about 200 yards east of us. It had been walking northward but reversed its direction when we noticed it. As we sat monitoring point 113, it barked the whole time. We suspect there was a den in the vicinity. Mort Wegman-French.

Stephenson-Nelson, 05-29. The female coyote trailed me for a while but eventually fell back and just watched me leave. Connie Redak.