

Open Space Advisory Board

Agenda

Wednesday, September 14th, 2016

Louisville Public Library

1st Floor Meeting Room

951 Spruce Street

7:00pm

- I. 7:00 pm Call to Order
- II. Roll Call
- III. Approval of Agenda
- IV. Approval of Minutes
- V. Staff Updates
- VI. 7:15 pm Board Updates
 - a. OSAB Meeting Start Time
 - b. Resources for Native American Content on Interpretive Education Signs
- VII. 7:30 pm Public Comments on Items Not on the Agenda (more time as needed)
- VIII. 7:35 pm Discussion: Result of 2016 Bird Surveys (25 minutes)
Presented by: Paula Hansley, ESCO Associates, INC.
- IX. 8:00 pm Discussion Item: Finalize Candidate Open Space Property Ranking & Acquisition Strategy (30 minutes)
- X. 8:30 pm Discussion Item: Comment on Draft Memo to City Council
Regarding OSAB Operational & CIP Priorities (15 minutes). Draft memo will be provided at the meeting.
- XI. 8:45 pm Discussion Item: Debrief from Joint Meeting with PPLAB & Future Tiger Team Planning (20 Minutes)
- XII. 9:05 pm Discussion Items for Next Meeting on October 12th at the City Services Facility.
 - a. Review Lake Park Open Space Education Sign Concepts
 - b. Agenda for Joint Meeting with Lafayette Open Space in November
- XIII. Adjourn

City of Louisville

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Open Space Advisory Board Meeting Minutes
Wednesday, August 10th, 2016
Louisville Public Library: First Floor Meeting Room
951 Spruce Street
7:00 pm

- I. **Call to Order-** Helen called the meeting to order at 7:04 pm.
- II. **Roll Call-**
Board Members Present: Helen Moshak, Laura Scott Denton, Linda Smith, Missy Davis, Spencer Guthrie
Board Members Absent: Mike Schantz, Graeme Patterson, Christopher Smith
City Council Members Present: Jeff Lipton
Staff Members Present: Ember Brignull
- III. **Approval of Agenda-**
Linda moved to approve the agenda as written. Spencer seconded. The motion was passed unanimously.
- IV. **Approval of Previous Meeting's Minutes-**
Linda moved to approve the minutes as written. Spencer seconded. The motion was passed unanimously.
- V. **Staff Updates-**
 - A. The annual COSA conference is being held in Estes Park this year on September 12th, 13th, and 14th. Ember passed around the conference schedule for OSAB members to look at. Any board members who want to attend should let Ember know ASAP. Ember, Catherine, and Kelsey will all go. There is a lot of interesting content this year including social trails, land acquisition, and rangers so it may be particularly relevant this year.
 - B. City of Louisville Open Space is experiencing a staffing shortage. Harlan Vitoff is moving to Montana next week. The seasonal maintenance employee just gave notice, too. Jeff asked when Harlan's position will get filled. Ember said she is hoping it could be announced within a month, and then it would take several weeks after that. Jeff expressed his frustration over how long the City hiring process seems to take, using the recent ranger hire as an example. Jeff said he'd take this issue up with the City Manager. Helen opined that the City probably loses good candidates when the hiring process takes too long. Ember said she'd track and report to the board about the hiring process. Jeff asked Ember to take particular note of any particular slow points in the process so the City can work on addressing them. Linda asked whether the City's HR department keeps applications from previous hiring cycles and whether re-contacting old candidates could aid in filling the position. Ember said HR does keep application records but wasn't sure for what length of time.
 - C. The City is running water from Helca Lake to Harney Lastoka Open Space for the agricultural tenant. Staff are still learning about these water transfers and the ins-and-out of that process (both maintenance-wise and with regard to legal issues). This is

the second time in a second season that this process has been done with the new reservoir design and working with Public Works, so it is still fairly new.

D. Staff met with the Harney family about their ideas for a historical interpretative sign at Lake Park Open Space.

E. Staff is working on temporary interpretative signs about management practices on Davidson Mesa to help the public understand why we mow, spray, monitor etc. Helen asked how they could be mounted on our windy properties. Ember said that they could be staked to the ground like a real estate sign and would only be put up for a week or two at a time.

F. Purple loosestrife was not found on City Open Space properties for the second year in a row, but it was found at low density on the Golf Course. The State of Colorado mandates aggressive eradication of this noxious weed.

G. Linda asked Ember about the goat herd weed control that had been scheduled for this summer. Ember shared that the contract with the goat herder had been canceled due to the goats getting sick, but they were hoping to try again next spring.

VI. Board Updates-

A. Helen asked for ideas about how to keep OSAB meetings shorter and on a tighter schedule. She thought she would need to “keep a firmer gavel.” She asked whether the board would be open to starting earlier. A few members were open to this idea. Laura wasn’t enthusiastic about an earlier start time, but would go with the majority. Helen also thought it could be harder to start earlier. Mike suggested that there could be a specified end time when the meeting would be cut off. Missy liked the idea of a specified end time, but cautioned against limiting the public input. Spencer and Missy both suggested the idea of selecting a designated time-keeper to help keep time by alerting Helen when items go over schedule. Jeff said that when he was the chair of the Planning Commission they were strict about a 10:00 end time, and when discussion went late the remaining topics got pushed to the next meeting. Helen added that sometimes staff presentations get added to the agenda at the last minute, which extends the meeting agenda out of her control. Missy asked Ember to put together an email survey to ask OSAB members about 6:30 vs. 7:00 start times.

B. Joe Stevens had asked Jeff to inform OSAB about City Council’s recent discussion of underpasses being funded by the Open Space & Park Fund. On Tuesday (last night), Council discussed the Hwy. 42 underpass that would connect Hecla Lake to the Lake to Lake Trail. Council discussed funding it next year, but not relying on the General Fund, since the General Fund has essentially been used up by addressing deferred paving projects. The Hecla Lake underpass would cost about \$300,000 to design in 2017, and possibly cost \$1.3 million to complete. The railroad underpass at Bullhead Gulch would cost \$93,000 to design. Some of the costs for these projects may be shared by BNSF, CDOT, and RTD. Jeff suggested that Council is doing a fund-by-fund review of planned CIPs in public meetings. He suggested that Ember alert OSAB when the Open Space & Parks Fund is going to be discussed, so board members can attend as individual citizens.

VII. Public Comments on Items Not on the Agenda

A. Mr. Steve Rasor (409 Majestic View Drive). Mr. Rasor shared his suggestions for signage for the Davidson Mesa Dog Off-Leash Area. He noted that the current Open Space signs mention a \$1000 fine for not cleaning up after a dog, but the Dog Off-Leash Area didn’t say anything about fines. He thought that more assertive

signs that cite the City Code might help with enforcement. He reported that the noise and pollution from the Dog Off-Leash Area is getting worse and worse. He feels that if there are continued violations of the City codes then the facility itself should be closed. The board liked the idea of signs that cite the fine. Linda liked the “threat of closure” clause on the Mr. Razor’s example sign, because it puts the responsibility for the facility onto the citizens. Spencer feels like the ultimate solution is to have a full on-leash policy, if the City truly wants to control the site. He thinks it’s inevitable. Helen felt better signage may help the ranger enforce City Code. Ember commented that this discussion is timely, since Parks Staff has been asked by the Police Department to add code language to all Park signs. Missy pointed out that Open Space Staff is already working on temporary signs for Davidson Mesa, so better temporary signs for the Dog Off-leash Area could go up fast.

VIII. Discussion Item: Review and Make Final Recommendations on the Design and Text for the Harper Lake Kiosk- Presented by: Michelle Wolf, ECOS Communications

Ms. Wolf presented the final drafts of the two signs planned for the kiosk at Harper Lake. She had large black and white print-outs both the “front” and “back” signs. She asked the board members for final feedback before the signs are generated and installed in October/November. She pointed out how the signs had evolved to reflect the OSAB’s feedback from the previous meeting.

Missy felt that, in the phrase, “growing needs of the city,” the word “city” should be capitalized on the history sign. The board members liked the phrase “growing needs of Louisville” better anyways. Helen was grateful for including a little more about native people on the land. Spencer asked where the information on the Matchless Mine came from. Ms. Wolf answered that it came from the Historical Museum. Laura liked the signs and was pleased how they were turning out. Missy asked whether there were too many fonts on the signs. Ms. Wolf said that the wayfinding map had its own font, but all the other fonts are the actually the same, just in different sizes and sometimes italicized. Mr. Razor asked if the numbers on the historical map reflect the mines’ depth and whether that could be explained, since currently the numbers have no context. Laura didn’t like the phrase, “what slice of nature will you discover today?” since nature doesn’t really get “sliced.” Ms. Wolf suggested the alternative, “what will you discover today?” Missy suggested, “A place for water, wildlife... and You,” instead of “Place for water and wildlife, and your enjoyment.” OSAB agreed that they liked the background maps.

IX. Discussion Item: Acquisition Strategy & Candidate Open Space Property Ranking

Helen reminded the board members of how City Council requested clarification about the property-ranking process. Council also asked for some advice on strategy, rather than just resource value. Mike and Ember met and developed a spreadsheet that lists proposed purposes for target properties and potential means for acquisition, rather than limiting the scope to resource value. Helen asked for comments on this document. Missy really liked it, but she suggested that there should be language about recreation/agricultural opportunity in the goals column. Helen asked whether this information could be added to the general spreadsheet. Spencer pointed out that it seemed that Council wants added subjectivity, when in the July OSAB meeting Ashley seemed to be asking for more objectivity in property rankings. Jeff expressed that Council ultimately feels that this sort of high-level summary and acquisitions recommendation would be useful. Jeff suggested that Council had some concern about

how properties get added to the list, since addition to a list could have land value impacts. Helen asked for guidance on to do this exercise without bothering landowners or having unintended consequences for them. Helen asked Jeff if Council would support the retention of a realtor to fill in information gaps for open parcels within the City. Jeff thought so. Missy asked whether OSAB could donate its budget to help pay for this realtor. Ember thought that might be possible but that Joe and Malcolm are currently discussing when this work should occur. Jeff thought that the big, comprehensive list could identify the top 10 target properties and then Staff could spend about an hour on each of the top properties compiling a dossier summarizing possible goals for it, its history, and its current status. Missy asked that there be some documentation of the City's institutional history/knowledge added to the dossier. Jeff suggested that Boulder County may have templates for this sort of organization that Louisville could use to help with organization. Laura added that the County may even have dossiers on some of these particular properties that are already public information, saving time. Jeff wanted to include information on what the potential effect of development on the properties would be. Spencer felt like this is really a job for a consultant, and maybe the City should simply to pay the necessary money to have it done promptly and well. Several board members agreed with him. Helen summarized what she felt the board was expressing: the board wants summaries and "narratives" for each property, but wants to keep the traditional ranking spreadsheet for the board's purposes. Helen identified two action items:

- Identify a format for dossiers/abstracts for each property.
- Check into whether it would be possible to hire a consultant to do this work.

X. Discussion Item: Louisville Ranger Program Update and Baseline Data- Presented by: Kelsey Harter, Ranger Naturalist

Kelsey introduced herself. She has a background in both recreation management and resource management. She has worked for Boulder County and the City of Boulder. She has training/certification as an EMT, at the Police Academy, and as a wild-land fire fighter. She is excited by the opportunity to build a ranger program for the City from the beginning stages. Putting together the ranger uniform, badge, patches, and equipment (e.g. the radio, truck, baton) ended up being complex and took longer than anticipated, but Kelsey started patrolling in uniform over the July 4th weekend. The Police Department has been very cooperative and helpful. She has also been working with Boulder County Dispatch, so they can dispatch her when there is an issue on City Open Space or Park property. Another issue that had to be resolved before Kelsey could begin regular patrol was an enforcement loophole staff found in the City code over the winter. Staff and PD also had to decide which codes/titles they wanted the ranger to enforce (e.g. camping, trespassing, wildlife, dog rules, etc.). Kelsey and staff have been working on a policy manual to help communicate the ranger's role and responsibilities to the public, City staff, the Police Department, and Boulder County. Kelsey and staff designed and began a contact log so she can collect data on what she's seeing and her interactions with the public. Kelsey passed around a sample log pad for board members to see. They also designed a written warning notice "ticket book" for her, so they can identify repeat offenders (also passed around). Helen asked how a "warning" escalates to an actual summons. Kelsey explained the process and clarified that she also has her own separate ticket booklet for immediate summons without warnings. Laura asked whether any formal warnings had been issued yet. Kelsey answered that she had written several warnings, especially for encroachment

(e.g. neighbors planting on, putting steps/hardscapes onto, or mowing social trails onto Open Space).

After her introduction, Kelsey described her investigation into Police enforcement on Open Space for 2015. The goals were to establish baseline data before the ranger program begins, and also to identify hotspot/problem areas. Kelsey was also interested in determining general use patterns. One big challenge was that the Police Department database didn't have property-name designators for Open Space properties. She had to infer the properties' identification from the Police Department's address listing. This could lead to some past police enforcement on Open Space to be missed in our tabulation of encounters.

She did her own un-uniformed study early this summer at six properties at three times of days. Most violations were dog off-leash violations. Patterns were very weather dependent, with hotter days having fewer dog-walkers. Violations were most frequent in the morning.

Some of the necessary improvements she identified were: improving tracking, giving the ranger direct access to the Police Department database, and giving the properties formal "addresses" to improve logging into the database.

Laura asked whether Kelsey was patrolling more by foot or by bike and which method seemed better. She answered that it was so far it had been about 50/50, and she found that when she was on foot she had more opportunities for education and people seemed to find her more approachable. Mr. Razor asked how many hours a week she was patrolling. Kelsey reported that she patrols approximately twenty-four hours a week. Spencer asked whether people truly don't know that dogs are supposed to be on-leash on City property. Kelsey's impression was that most people do know the rule, but that is definitely not always the case. Laura asked whether people on the properties are generally being civil to her. Kelsey replied that, in general, they are. Mr. Razor asked whether Kelsey goes into the Davidson Mesa Dog Off-leash Area. She replied that she is trying to be visible there and talk to citizens.

XI. Discussion Item: Develop Concepts for Draft Letter to City Council Regarding Ops and CIP Priorities

Helen said that she could write a memo about the OSAB priorities and how City CIPs can align to those priorities. Ember reported that staff is submitting a proposal for a full-time senior natural resource position and for an additional seasonal employee. The natural resource position got approved by both Joe and Malcolm to send it to City Council for review. Helen and Laura suggested that OSAB would like to be able to consult on this position and OSAB is enthusiastic about this potential hire, and felt how it would support OSAB's goal of increasing resource management on Open Space

XII. Discussions Items for Meetings on Thursday, September 1st (7:00) at City Services with the Parks and Public Landscapes Advisory Board-

- A. Results of the citizen survey (presented by Joe)
- B. Dog issues
- C. The OSAB wayfinding project (presented by Laura)
- D. Lake Park/Walnut designation discussion

and the regular OSAB meeting on September 14th-

- A. Review the memo that Helen will be drafting (see Discussion Item XI)
- B. Review the property rankings list
- C. Further discussion of acquisitions
- D. COSA updates

E. Staffing update

F. Presenting the bird survey done this summer by a consultant

XIII. Adjourn-

The meeting adjourned at 9:55 pm.

Louisville 2016 Bird Surveys

Aquarius, Walnut Park, and Davidson Mesa

Open Space Properties

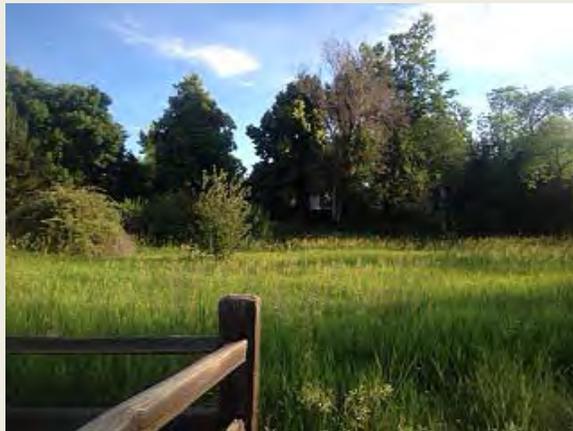


Swainson's Hawk



Walnut Park

A 66-acre parcel of open space in a residential area



Transect 1, looking east



Great - horned Owl fledglings



Hoover Great-horned owl fledglings
(photo – Lynda Kithil)



Great horned owl -- adult



Blue Jay
(Vireo image)



Transect 2, east end



Transect 2, woods



Deer beds along transect 2



Looking west along transect 2
The irrigation ditch is to the right



Spotted towhee
(Kerrie Bryan)



Downy woodpecker at nest hole



House wren

(Vireo image)



Eurasian collared dove

(VIREO image)

Walnut Park Bird Counts

Species	Transect 1	Transect 2	Breeding*
Double-crested cormorant		1	
Great blue heron		1	
Swainson's hawk	1		
American kestrel	1		?
Eurasian collared-dove	3		x
Mourning dove	1		x
Downy woodpecker		1	x
Northern flicker		1	x
Blue Jay		6	x
American crow	6	1	
Black-capped chickadee		3	x
White-breasted nuthatch	1		x
House wren	1	3	x
American robin		14	x
European starling	9	3	x
Spotted towhee		1	x
Red-winged blackbird	1		
Common grackle	2	8	
Brown-headed cowbird	9	4	x
House finch	2	14	x
Lesser goldfinch	8		
American goldfinch	1	5	
House sparrow	1	3	
Total species: 23	15	16	
Total individuals: 116	47	69	

Aquarius Open Space

- 34.5 acres
- Prairie dog town
- Mostly grasses
- Most birds are visitors

Aquarius transects





Transect 1, looking west



© Jim Burns

Cliff Swallow



Cliff swallow nests



Transect 1, looking NW



Great blue heron



Transect 2, looking east



Looking west, area of transect 2



Prickly poppy and cheat grass



Vesper sparrow
(Steve Jones, Boulder)



Smooth Brome



Thistle and cheat grass

Aquarius

Bird

Counts

Species	Transect 1	Transect 2	Breeder*
Mallard		1	
Great Blue Heron	1		
Snowy Egret	1		
Red-tailed Hawk	1	1	
American Kestrel	1		
Killdeer	2	1	
Mourning Dove	2		x
Eurasian collared-Dove	3	6	
Belted Kingfisher	1		
Northern Flicker	1	1	
Western Kingbird	1	2	x
Blue Jay	4	2	x
Black-billed Magpie	2	1	
American Crow	2	3	
Violet-green Swallow	2		
Cliff Swallow	2	5	
Barn Swallow	1		
Black-capped Chickadee	1		
House Wren	2	1	
American Robin	3	3	
European Starling	2		
Vesper Sparrow	1	3	x
Blue Grosbeak		1	
Red-winged Blackbird	1	13	
Western Meadowlark	5	2	x
Common Grackle	3		
Brown-headed Cowbird		1	x
Bullock's Oriole	1	1	x
House Finch	2	15	
American Goldfinch	3	3	
House Sparrow	2	4	
Total Species	31	28	
Total Individuals	123	53	

Davidson Mesa

248 acres

Grasslands

East part surveyed

Many trails



Transect 2

Transect 1

**Spoil material from digging
of Harper Lake basin**

Western wheatgrass

Many non-native grasses

Virtually no shrubs

W. meadowlark nests



Western Meadowlark
(Kerrie Bryan, Longmont)



Transect 2

Transect 2

Relatively intact prairie

Native grasses and shrubs

Grasshopper and vesper sparrows, kingbirds, and meadowlarks are keystone grassland species

Swainson's hawk nests

Lark buntings and sage thrashers in migration





Yucca in bloom, transect 2

Grasshopper Sparrow

Keystone species

Declining

Two colonies in 2016

One pair in 2012

(VIREO image)





Vesper Sparrow carrying food to nest
(Steve Jones, Boulder)



Vesper Sparrow on mullein
tall plants provide rare perches



Swainson's hawk and prairie dog



Transect 3 goes downslope to the NW

Transect 3 Characteristics

Native grassland species

Irrigation ditch to north

Most species (30)

Most individuals (90)

Pheasants nest

Many bird visitors



Alfalfa with purple flowers

Species	Transect 1	Transect 2	Transect 3	Breeder*
Ring-necked pheasant			2	x
Swainson's hawk		1		
Eurasian collared-dove	5	5	4	
Mourning dove			3	x
Northern flicker			2	
Say's phoebe	2	1		
Western kingbird	2	1	1	
Blue jay	1		2	
Black-billed magpie	3	5	4	
American crow	1			
Barn swallow	1		2	
Black-capped chickadee			2	
House wren		2	2	
American robin	3	3	7	
European starling	6	3	2	
Spotted towhee		1	1	
Vesper sparrow	1	3	1	x
Grasshopper sparrow	1	3		x
Red-winged blackbird	1	2	1	
Western meadowlark	8	9	2	x
Common grackle	1	1	3	
Brown-headed cowbird		2	1	?
Bullock's oriole	1	1	1	
House finch	15	12	29	
Lesser goldfinch	1	1	4	
American goldfinch			8	
House sparrow		3	6	
Total species:	27	17	19	23
Total individuals:	199	53	56	90

Comparison of 2012 and 2016

2012

2016

Dry spring
0.01" moisture, March
Ankle-high grasses

Wet spring
3.84" moisture, March
Shoulder-high grasses

98 individual birds
27 bird species

199 individual birds
27 bird species
3 more grassland birds

2016

- **June: High temp, 6° warmer than average
Low temp, 7° cooler than average
Relatively dry**

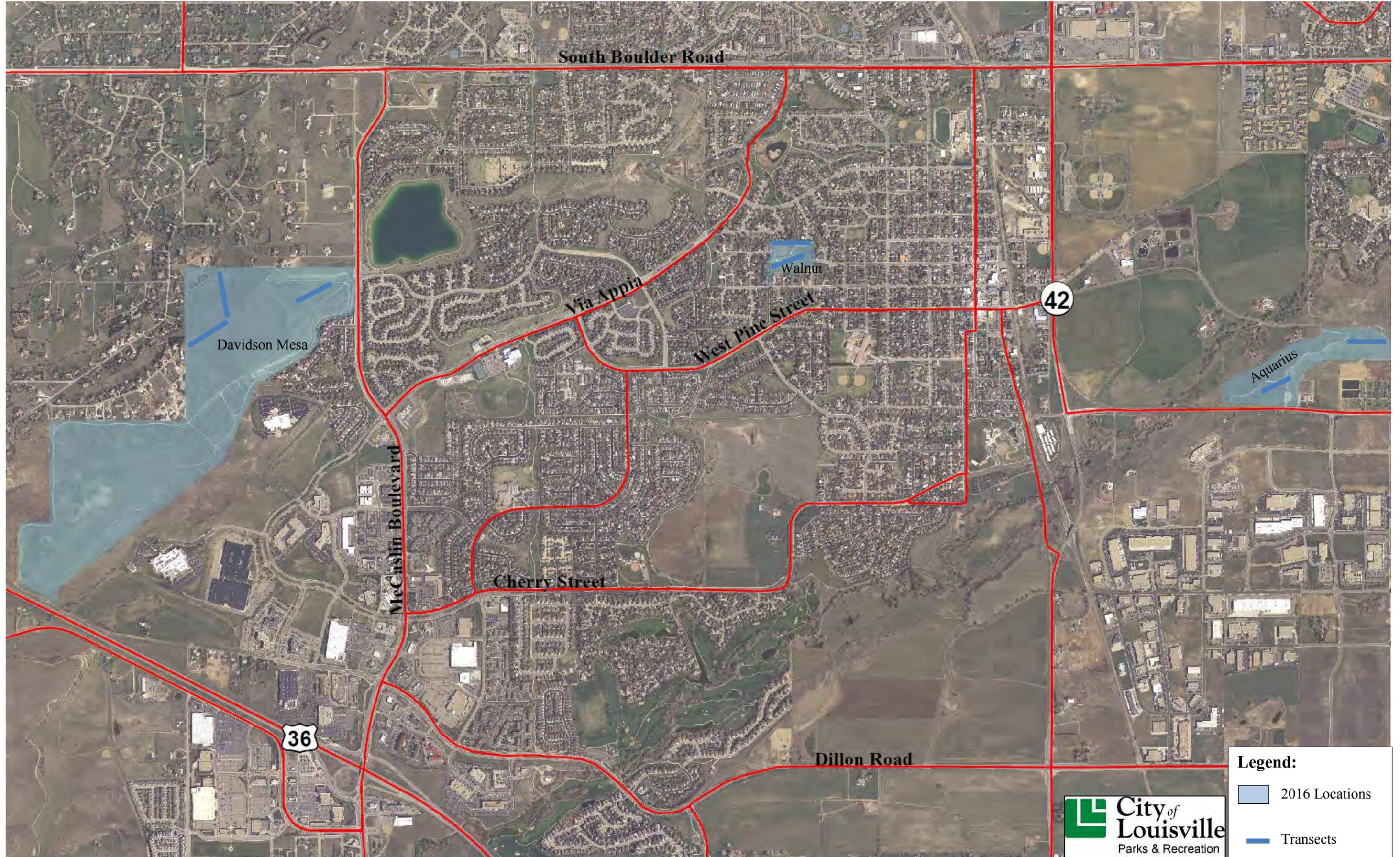
Summary

- **Grasslands on Davidson Mesa and Aquarius Open Space properties provide bird good habitat because people stay on trails**
- **Walnut Park has the most nesting species of the three Open Space areas surveyed due to its wide variety of trees and shrubs**

Summary

- **Two years of bird counts on Davidson Mesa present useful, comparable data even though the climate varied dramatically**
- **Additional bird surveys in Walnut Park and Aquarius will put this year in context**
- **Future surveys on other Open Space areas will be useful for planning**

Open Space 2016 Bird Survey Locations



**Bird Surveys on Three Louisville
Open Space Properties,
June 2016**

Paula L. Hansley

In Association with

**ESCO ASSOCIATES, INC.
5360 Manhattan Circle, Suite 200
Boulder, CO 80303**



Western Meadowlark

(Dr. Kerrie Bryan, Longmont, CO)

Introduction

Quantitative bird surveys were conducted on three Louisville Open Space properties in late June of 2016: Walnut, Aquarius, and Davidson Mesa. These surveys were done in order to determine what species are foraging and (or) breeding in these areas. Late spring to early summer is the best time to census birds, because most resident and migrant (those that winter to the south and return to Colorado to breed in the summer) birds are nesting and raising their young.

All surveys began within one-half hour of sunrise and ended about 7:15 AM, because birds are most active in the early morning-- whether singing, building a nest, or feeding young. The transect method of counting birds was used in all three areas. All birds with the exception of nestlings or dependent young that were heard or seen within 100 m of each transect were counted. Birds flying over the observer were also counted. Care was taken not to record the same bird twice.

An unusually high amount of moisture fell in the area during the spring, making it one of the wettest on record.

Walnut

Walnut is a rectangular-shaped, 6.6-acre parcel surrounded by residential property (Fig. 1). A paved trail winds through the area. The Goodhue Ditch, which is lined by shrubs and trees, borders the northern side of the property. The ditch was full and flowing fast on the day of the counts.

Meadows dotted by sparse scattered trees and shrubs constitute about 75% of the property. Trees include cottonwood, apple, spruce, juniper, Russian olive, and mountain ash. Grasses were waist- to shoulder-high and matted-down areas of grass revealed where deer had bedded down the night before.

Bird Counts

Birds were recorded along two roughly east-west, 183 m transects (Fig. 2 and 3). Transect 1 travels through a grassy meadow with a few, clustered trees and shrubs in the last half. Transect 2 lies parallel to and just south of the northern boundary of the property and goes through relatively thick stands of trees and shrubs for more than half its length.

Transect 1 produced 47 individuals of 15 species. The most abundant species were the brown-headed cowbird, European starling, and lesser goldfinch. The female cowbird is opportunistic as she lays her eggs in almost any available nest. Lesser goldfinches were flocking and foraging in the area preliminary to their breeding in the foothills during July. Along **transect 2**, 69 individuals of 16 species were counted. Robins and house finches were, by far, the most common species. The cormorant was seen flying towards Harper Lake, and the great blue heron was fishing in the irrigation ditch.

A total of 119 individuals of 23 bird species were recorded during both transects (Table 1). The Swainson's hawk seen at dawn was nesting in a large pine on Jackson Circle, just north of the property. Two juvenile great-horned owls that were sitting in a Russian olive had fledged from a nest on Hoover Street, a block west of the property.

A spotted towhee and a black-capped chickadee are shown on Figures 5 and 6.

Discussion

The fact that 23 species were found in Walnut during the breeding season attests to the diversity and richness of the habitat and the proximity of this property to water. Two nests were found during the count. About 50 percent of the species on Table 1 are thought to breed in the property, because the males were being "territorial" by singing in the area.



Figure 1. Bird's eye view of transect 1 (183.5 m), Walnut.



Figure 2. Bird's eye view of transect 2 (183.2 m), Walnut.



Figure 3. Looking east along transect 1, Walnut.



Figure 4. Looking west along transect 2, Walnut.



Figure 5. Spotted towhee. (Dr. Kerrie Bryan)



Figure 6. Black-capped chickadee.

Davidson Mesa Open Space

On Davidson Mesa, approximately 246 acres of grassland designated as Open Space, lie on a relatively flat pediment surface that is blanketed by coarse gravel and pebbly alluvium of Verdos age. The Verdos alluvium has been dated as being ~ 600,000 yr. old by radiometric age determinations on the Lava Creek B volcanic ash, which is a thin layer in the alluvium (Riihimaki et al., 2002). The Upper Cretaceous Fox Hills Sandstone underlies the Verdos alluvium. The alluvium has been covered by a veneer of material, which was excavated to form the Harper Lake basin across McCaslin Boulevard, over much of the eastern part of the Open Space property.

A mixture of native and non-native grasses has developed on the allocthonous material. Native grasses are dominated by western wheatgrass and include other grasses, such as wild buckwheat, slender wheatgrass, and fringed sage. Intermediate wheatgrass dominates the non-native species and is locally joined by smooth brome, Japanese brome, alfalfa, orchard grass, crested wheatgrass, yellow sweetclover, field bindweed, and Kentucky bluegrass (Dave Buckner, personal communication, 2016).

Soil developed in the Verdos alluvium north of the disturbed area contains abundant cobbles and pebbles from the Fox Hills Sandstone. Grasses typical of xeric tall grass prairie, such as big blue stem, needle-and-thread, Colorado green thread, wild buckwheat, fringed sage, june grass, Pacific sage, grow in the soil. Yucca and prickly pear cactus are scattered in the grasslands. Non-native species include cheatgrass, Canada bluegrass, mullein, alyssum, and Dalmatian toadflax.

Bird counts

Three 200-meter transects were laid out in the eastern part of the mesa (Figs. 7 and 8). Due to large amounts of rain during the spring, many grasses were waist to shoulder high when the bird counts were done. Results of the three bird counts are shown on (Table 2).

The beginning of **transect 1** is about 50 m southwest of the parking lot for Davidson Mesa and 25 m west of the trail, which heads west from the parking lot. This transect lies entirely on the transported material. Not one tree and only one small wild rose bush are in the transect area. The end of transect 1 is by a power pole on which there is an American kestrel box (Fig. 9).

Fifty-three individuals of 17 species were observed, including a pair of starlings nesting in the kestrel box. Western meadowlark is the only species that was actually nesting in the grassland. The rest were visitors that were breeding in areas adjacent to the Open Space. At dawn, many birds (i.e., Say's phoebes, western kingbirds, and barn swallows) were hawking insects just over the tops of the grasses.

Transect 2 lies on soil developed in undisturbed Verdos alluvium, and the wide variety of native grasses and forbs reflect this change in substrate (Fig. 10).

Fifty-six individuals of 19 bird species were recorded during the count. Three of these species -- western meadowlark, vesper sparrow and grasshopper sparrow -- were nesting, and the rest were visitors. A small colony of grasshopper sparrows was nesting where mullein provided perches from which males could sing. Two pairs of vesper sparrows had placed their nests under small bushes. Singing and foraging meadowlarks were plentiful. Just west of the transect, a pair of Swainson's hawks was nesting in an evergreen on private property. The hawks hunted for insects, snakes, and an occasional prairie dog in the grasslands.

Transect 3 extends from the northern edge of Davidson Mesa downslope to a flat area and then on to the Davidson Ditch (Fig. 11). It is mapped as "native grassland – nearly intact" (Louisville Master Plan, 2004).

On the rocky slope, native grasses, such as needle- and-thread grass, Indian rice grass, hairy grama, blue grama, Junegrass, sunsedge, Canada bluegrass, cord grass, green milkweed, little bluestem, big bluestem, and purple threeawn can be found (Louisville Open Space Master Plan, 2004; Steve Jones, personal communication, 2016). Abundant yucca and prickly pear cactus are present. Invasive grasses include Kentucky bluegrass, crested wheatgrass, Japanese brome, and cheatgrass.

At the base of the slope where the terrain flattens, varying non-native mixtures of crested wheatgrass, Canada bluegrass, Kentucky bluegrass, and mullein are found as well as a few medium-sized bushes and small trees. Baltic rush, tall fescue, Canada thistle, and broadleaf cattail occur in wetlands just before the Davidson Ditch, which borders the northern edge of the open space. Mature cottonwoods grow next to the ditch.

Ninety individuals of 30 species were observed along transect 3-- many more than on the other transects. Western meadowlark, vesper sparrow, ring-necked pheasant, and mourning dove were the only species nesting in the grassland. House finches foraging in the grasses were again the most abundant species. The pair of pheasants was probably nesting in the area, because pheasants have consistently been seen in this area in past years. These birds may be progeny of pheasants released (along with other game birds) in the 1980s by a farmer who lived about 0.8 km to the north along Eggleston Road west of 76th Street. Two fledgling great horned owls were observed in a cottonwood tree along the ditch after the count.



Figure 9. Transect 1 goes from the white stake in the center of the picture to the pole with a light-colored bird house on its side.



Figure 10. Transect 2 proceeds from the white stake to the evergreens. A Swainson's hawk nested in the pines.



Figure 11. Looking downslope along transect 3 towards the northwest. Long's Peak is the highest peak in the distance. The transect ends at the dark brown field.

Discussion

Most birds using the grassland along transect 3 reflect the wide variety of trees and shrubs and the presence of water adjacent to the northern end of the Open Space. These species are visitors to the grasslands and nest in the residential areas bordering the Open Space. Many of these species were seen catching insects (i.e., Say's phoebes, western kingbirds, and swallows) in the grassland. Others (i.e., orioles, magpies, house sparrows, house finches) were eating seeds of various grasses and perching on stalks of yucca or mullein.

Comparison of Results: 2016 vs. 2012

There was a large difference in the amount of precipitation from January 1st to June 30 in 2016 vs. 2012. In 2016, the total precipitation was 33.88 cm as compared to a scant 14.73 cm recorded during the same period in 2012 (NOAA, 2016). Only 0.03 cm of precipitation fell in March of 2012, the least amount on record since 1893. On the other hand, the 9.75 cm of precipitation that accumulated in March 2016 was well above the March average (NOAA, Earth System Research Laboratory, 2016).

Grasses were waist to head high in June 2016 as a result of abundant spring moisture. In contrast, grasses were barely knee-high in June 2012 due to a dry spring.

Despite differences in moisture, the number (27) of bird species tallied in 2012 vs. 2016 was identical (Table 4). This coincidence is probably due to the fact that many species were visitors from properties adjacent to the grasslands. Differences in precipitation did not affect these visitors, because residential areas are watered artificially in addition to receiving natural precipitation.

Oddly, the count from each year has seven species that were not recorded in the other year's count. For instance, double-crested cormorant, tree swallow, pine siskin, American kestrel, yellow warbler, blue grosbeak, and downy woodpecker were recorded in 2012, but not 2016. The first four species were "flyovers" and the last three were nesting in the area. American crow, ring-necked pheasant, grasshopper sparrow, Swainson's hawk, black-capped chickadee, and brown-headed cowbird were recorded in 2016, but not 2012. The crow was a flyover; the pheasant and grasshopper sparrow were nesting in the grassland; and the Swainson's hawk (Fig. 12), chickadee, and cowbird were nesting on private property adjacent to the Open Space. The grasshopper sparrow is a grassland species that apparently reacted favorably to the more prolific vegetation in 2016.

The major difference between the two years is that 199 individuals were counted in 2016 vs. only 98 in 2012. The house finch was the most common bird in both years; however, the total number of finches is quite disparate — 56 were seen in 2016 vs. 15 in 2012.

The low number of individual birds in 2012 was probably the result of drought conditions, whereas the relatively high number in 2016 was, at least in part, the result of extraordinarily wet spring conditions.

At least two small colonies of grasshopper sparrows (Fig. 13) nested on the Mesa in 2016, but not in 2012. This is very good news, for between 1966 and 2014, this sparrow suffered a cumulative decline of 75% as reported by the North American Breeding Bird Survey (USGS Patuxent Wildlife Research Center, 2014). This sparrow was also listed as “A Common Bird in Steep Decline” in 2014 (North American Bird Conservation Initiative, 2014).

Later in the summer lark buntings and sage thrashers, two keystone grassland species, visited the relatively intact grassland along transect 2 during their post-breeding migration.

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Figure 12. A Swainson ' s hawk straddles a prairie dog on Davidson Mesa.



Figure 13. Grasshopper sparrow.
(VIREO photo)

Aquarius Open Space

At 34.5 acres, Aquarius is one of the smallest Louisville Open Space properties (Fig. 14). It is located south of Empire Road, just north of highway 42. It is bordered by other Open Space properties on the east, north, and west, on the south by the Colorado Technical Center, and on the southeast by the Louisville and Coal Creek Cemeteries.

Two types of native grasslands are found at Aquarius: (1) the grassland on the north-facing slope that is dominated by needle-and-thread grass, and (2) the grassland on the lower slopes that is characterized by western wheatgrass (Louisville Open Space Master Plan, 2004). A prairie dog town lies in a thin strip along the northern border of the property from the western edge two-thirds of the way to the eastern edge. Yucca and prickly pear cactus are common along transect 1. Invasive species include cheatgrass, Scotch thistle, diffuse knapweed, chicory, and Japanese brome. A few large cottonwood trees lie at the end of transect 2.

Bird counts

Birds were surveyed along two roughly east-west transects, each 200 m in length. (see Fig. 14). The results of the bird counts are shown on Table 3.

Thirty-one species and 121 individuals were recorded along transect 1 (Fig. 15). Of these, only the western meadowlark, vesper sparrow, and western kingbird were nesting in the Open Space grassland.

Most bird species counted along transect 2 (Fig. 16) were breeding on adjacent properties. For instance, cliff swallows had nests on the ceilings of the two nearby Coal Creek underpasses under Highway 42. A pair of red-tailed hawks was nesting in a large cottonwood to the west within sight of the Aquarius property. In some years, kingfishers have burrowed into and raised young in the high southern bank of Coal Creek less than 0.4 km upstream from Aquarius. The snowy egret and great blue heron were breeding some distance away, because habitat suitable for their nesting is not locally available.

Black-billed magpies (Fig. 17) and western kingbirds (Fig. 18) were commonly seen perching on tall plants in this grassland habitat.

Discussion

Although too small an Open Space property to provide nesting habitat for many birds, Aquarius provides prime foraging areas for many species, because insects, seeds, small mammals, amphibians, and reptiles are found there. Even water birds use the grasslands as foraging areas, for the great blue heron is known to occasionally nab a baby prairie dog (Hansley, personal observation, 2014), and mallards commonly graze on grass.



Figure 14. Aquarius Open Space is outlined in blue and transects 1 and 2 appear as red lines. Coal Creek, which is lined with bushes and trees, is part of the northwestern Open Space boundary. The Coal Creek Trail is the sinuous white-gray line that cuts through the middle of the property. The parking lot is a pentagonal white area just above Highway 42.



Figure 15. Looking west along transect 1 that lies left of the trail.



Figure 16. Transect 2 heads east toward the trees.



Figure 17. Black-billed magpie on yucca. (Lynda Kithil, Louisville)



Figure 18. Western kingbird on mullein. (Lynda Kithil, Louisville)

Discussion and Conclusions

A cooler than average May caused many bird species to nest at least a week late so that the end of June was a perfect time for counting birds. One of the wettest springs on record furnished abundant moisture that ensured optimal growth of vegetation and an abundant food supply.

The average temperature in Boulder County in June 2016 was -13.8°C higher than normal even though the daily minimum temperature averaged -13.9°C lower than average. Furthermore, June 2016 was one of the driest on record with precipitation 3.6 cm below average (AccuWeather, 2016).

These favorable weather factors strongly contributed to the excellent numbers of bird species and individuals observed on all three Open Space properties. A comparison can be drawn because there are now two years of bird data for Davidson Mesa so that one now has a better idea of what birds could be expected in June.

There are no bird counts from previous years to use as bases for comparison for the bird counts completed in 2016 on Aquarius and Walnut properties. It would be valuable to have at least another year of bird surveys in the future on these Open Space properties with which to compare the results of 2016.

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Letter	Properties	Acreage	STRATEGIC COMMUNITY VALUES														RESOURCE VALUES						Total for Resource Values	Total Score	Note				
			Ecological Significance	Conservation/Restoration Potential	Buffer	Potential for Partners	Trail Connections	Recreational Potential	Agricultural Preservation	Public Visibility	Scenic	View	Comp. Plan	Threat or Development	Undefined Unique Features	Historical Significance	Existing Conditions	Vegetation	Wetlands	Riparian	Wildlife Habitat	Connectivity				Open Water	Topographic & Geological Significance		
D	Mayhoffer-N & S of Empire Road	200	2	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	26.4	2	1	1	2	2	1	2	11.00	37.40	
D.1	Mayhoffer-N of Empire Road	50	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	26.2	1	1	1	2	1	1	1	9.40	35.60	
D.2	Empire Road adj. to Mayhoffer	3	1	2	2	1	1	1	1	2	1	2	1	1	1	2	1	21.6	1	1	1	2	1	1	1	8.20	29.80		
D.3	Empire Road adj. to Mayhoffer	5	1	1	2	1	1	1	1	2	1	2	1	1	1	1	1	19.2	1	0	0	1	1	0	1	6.00	25.20		
N.3	SE of HWY 42 & 96 th St.-eastern	10	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	16.2	1	1	2	1	2	1	1	9.00	25.20		
N.2	SE of HWY 42 & 96 th St.-western	8	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	16.2	1	1	2	1	2	1	1	8.60	24.80		
N.1	SE of HWY 42 & 96 th St.-western small	2	1	1	1	1	1	1	1	2	1	1	1	1	1	0	1	15.6	1	1	1	1	1	1	0	7.40	23.00		
XX	W of and adjacent to Davidson Mesa	19	1	1	2	1	2	2	0	2	1	2	1	1	1	0	1	17.4	1	0	0	1	1	0	1	4.00	21.40		
MM	SE of Dillon & 96th St.	73	1	1	2	1	1	1	1	2	1	1	0	1	0	0	1	16	1	0	0	1	1	0	0	3.60	19.60		
A.2	Phillips 66 NE section	80	1	1	1	1	1	1	0	1	1	1	1	2	0	0	0	13.6	1	1	1	1	1	1	0	5.60	19.20		
II	N of Paradise Lane- Eastern most	9	1	2	1	1	1	1	1	2	1	1	1	2	0	0	1	15.2	1	0	0	1	1	0	0	4.00	19.20		
WW.1	Centennial-Western	6	1	1	1	0	1	2	0	1	1	1	1	1	0	0	1	14.6	1	0	0	1	1	0	1	3.60	18.20		
WW.2	Centennial-Eastern	20	1	1	1	0	1	2	0	1	1	1	1	1	0	0	1	14.6	1	0	0	1	1	0	1	3.60	18.20		
WW	Centennial- Middle	20	1	1	1	0	1	2	0	1	1	1	1	1	1	0	1	14.8	1	0	0	1	1	0	1	3.40	18.20		
GG	N of Paradise Lane- Middle	19	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	12.6	2	1	1	1	1	1	0	5.40	18.00		
ZZ.1	West of GHX	5	1	1	1	0	1	2	0	2	1	1	1	2	0	0	1	14.2	1	0	0	1	1	0	1	3.00	17.20		
C.1	Between S 96th & S. Arthur Ave.- North	5	1	1	1	0	1	1	1	1	1	1	0	1	0	0	1	13.2	1	0	0	1	1	0	0	3.80	17.00		
KK	S of Paradise Lane- Eastern most	9	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	11.4	1	1	1	1	1	1	0	5.60	17.00		
A.1	Phillips 66 SW section	77	1	1	1	1	1	1	0	2	1	1	1	2	0	0	0	12.6	1	0	0	1	1	0	0	3.60	16.20		
C.3	Between S 96th & S. Arthur Ave.- South	33	1	1	1	0	1	1	1	1	1	1	0	2	0	0	1	12.6	1	0	0	1	1	0	0	2.80	15.40		
A	Phillips 66 NW and SE sections	228	1	1	1	1	1	1	0	2	1	1	0	2	0	0	0	12.4	1	0	0	0	1	0	0	2.80	15.20		
C.2	Between S 96th & S. Arthur Ave.- Middle	14	1	1	1	0	1	1	1	1	1	1	0	2	0	0	1	12	1	0	0	1	1	0	0	3.00	15.00		
JJ	S of Paradise Lane- 2nd in from east	10	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	11	1	0	0	1	1	0	0	3.80	14.80		
F	Santillies- SE of S.Bldr Rd & 95th St.	9	1	1	1	1	1	1	1	1	0	1	0	1	0	0	1	11.8	1	0	0	1	1	0	0	2.60	14.40		
J	NW of Hwy 42 & 287-Eastern most	30	1	1	1	1	0	1	1	1	1	1	0	1	0	0	0	11.4	1	0	0	1	1	0	0	2.60	14.00		
EE	N of Paradise Lane- Western most	10	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	10.6	1	0	0	1	1	0	0	3.20	13.80		
FF	S of Paradise Lane- Western most	10	1	1	1	1	1	1	1	0	1	1	0	1	0	1	1	11	1	0	0	1	1	0	0	2.80	13.80		
K	NW of Hwy 42 & 287-2nd in from east	12	1	1	1	1	0	1	1	1	1	1	0	1	0	0	0	11	1	0	0	1	1	0	0	2.60	13.60		
G	NW of Hwy 42 & 287- Western most	3	1	1	1	1	0	0	1	1	0	1	1	2	0	1	0	10.6	1	0	0	1	1	0	0	2.40	13.00		
H	NW of Hwy 42 & 287-2nd in from west	8	0	1	1	1	0	0	1	1	1	1	0	2	1	0	0	11	1	0	0	1	1	0	0	2.00	13.00		

B.1	PSOC -Western	3	1	1	1	0	1	1	0	1	0	1	0	1	1	0	0	9.6	1	0	0	1	1	0	0	3.20	12.80
HH	S of Paradise Lane- 2nd in from west	10	1	1	1	1	0	1	1	0	1	1	0	1	0	0	0	10.2	1	0	0	1	1	0	0	2.60	12.80
ZZ	Between Damaynovich and D. Mesa	22	1	1	1	0	1	1	0	1	1	1	0	1	0	0	1	8.8	1	0	0	1	1	0	0	3.60	12.40
I	NW of Hwy 42 & 287-3rd in from west	17	1	1	1	0	0	0	1	1	0	1	0	2	0	0	0	9.6	1	0	0	1	1	0	0	2.40	12.00
O	Dillon Road Homestead (within Trillium)	5	1	1	0	1	0	1	1	1	1	1	0	1	0	1	1	9.6	1	0	0	1	1	0	0	2.40	12.00
B	PSOC on Dillon West of Warembourg	5	1	1	0	0	0	1	1	1	0	1	0	1	1	0	0	8.4	1	0	0	0	1	0	0	2.20	10.60

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Priority Tiers: Although listed in numerical order, preference for acquisition will be based on the tier level. Tier one (in yellow) reflects the highest priorities for acquisition followed by tier two (in green) and tier three (in blue).

Rating Scale: The scale consist of a 0-2 rating, zero meaning the feature/quality is not present; one meaning the feature/quality is partially represented; and two meaning the feature/quality is fully present.

Strategic Community Values & Resource Values Definitions

Ecological Significance - land with natural areas, wildlife and native plant habitat, important wetlands or watershed lands, potential for sustainable wildlife and native plant populations, and stream corridors.

Conservation/Restoration Potential- well maintained land, well situated to be protected and managed so as to preserve the natural conditions and has opportunities for passive, low-impact types of recreation.

Buffer - Natural divisions providing a discernable break between or within communities.

Potential for Partners - The likelihood that other entities would share the financial burden of acquisition and/ or management of the property.

Trail Connections - land with potential to connect local and regional trail sections and corridors.

Recreation Potential - Feasibility and quality of appropriate recreational use.

Agricultural Preservation - Value in maintaining the active use of farming or ranching and/or preserving the history of prior agricultural use.

Public Visibility - The degree in which a prospective open space parcel can be viewed from public roads or facilities.

Scenic - An area that provides for natural visual enjoyment to an observer while not on the property.

View - An area that provides for natural visual enjoyment to an observer while on the property.

Comp. Plan- The City of Louisville Comprehensive Plan designation for this property is as open space.

Threat of Development- Possibility or probability of new development in the near term.

Undefined Unique Features - Value not captured in other category.

Historical Significance - Contains physical reminders, archeological sites, or historical structures, or there is knowledge of significant past use that is of public value.

Existing Conditions- How close the current state of the property is to the desired state.

Vegetation- The abundance / diversity of native plant species.

Wetlands- Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation.

Riparian - Riparian vegetation and land adjacent to natural flowing water.

Wildlife Habitat - Area that provides sustainable shelter, food, or protection for indigenous wildlife

Connectivity- A piece of land that contributes to an overall open space and or community recreational network.

Open Water - A standing body of water present year round or seasonal that is important to the sustenance of vegetation, wildlife, or recreational opportunities.

Topographic & Geological Significance - Features that act as visual markers, aesthetic formations, geological uniqueness, or vantage points deemed of public value.

Size - Small, medium or large.