

memorandum

date November 5, 2021
to Rosanne Humphrey, City of Carlsbad
cc Terah Donovan, Environmental Science Associates
from Adrienne Lee, Environmental Science Associates
subject Roadkill Study Results – Faraday Avenue and Lionshead Avenue

This memorandum summarizes the results of adaptive wildlife movement monitoring, in the form of roadkill monitoring along Faraday Avenue, between El Camino Real and South Melrose Drive, and Lionshead Avenue, between South Melrose Drive and Business Park Drive, that occurred for 1 year between August 1, 2020, and August 1, 2021. All roadkill species detected were recorded.

Introduction

As stated in the 2015 *City of Carlsbad Wildlife Movement Analysis Final Report*,¹ three primary regional east-west wildlife movement corridors within the city were identified, East/West 1 (EW1), East/West 2 (EW2), and East/West 3 (EW3). EW2 is a wildlife movement corridor that connects Agua Hedionda Lagoon east to Calavera Mountain/Calavera Lake (northern branch) and along Agua Hedionda Creek/La Mirada Creek out to the Carlsbad Raceway Preserve and city of Vista (southern branch). Wildlife movement along the southern branch occurs from Agua Hedionda Lagoon Ecological Reserve towards Agua Hedionda Creek, which runs in a southwesterly direction, through Rancho Carlsbad Golf Club, under Faraday Avenue (EW2-9), along the creek to Melrose Drive (EW2-10) and beyond (**Figure 1**). Both EW2-9 and EW2-10 were considered high priority pinch points, where wildlife movement is restricted or bottle-necked in the 2015 report, as both pinch points have no fencing to guide wildlife away from the road.

The present study focused on wildlife road mortality at the two high priority pinch points—EW2-9 and EW2-10. EW2-9 consists of an arch culvert approximately 3.25 meters high and 6.50 meters wide with apron fencing, surrounded by relatively dense shrub vegetation. EW2-10 consists of an arch culvert approximately 3.50 meters high and 7.00 meters wide with apron fencing, surrounded by scattered, open grass/forbs vegetation. Camera data at EW2-9 suggests that this is a functional undercrossing based on the bobcat, coyote, deer, raccoon, skunk, squirrel, and opossum detections. However, the busy roadways of Faraday Avenue and Lionshead Avenue and lack of fencing guiding wildlife to the undercrossings in these areas create wildlife movement pinch points, which can increase the potential for wildlife to cross “at-grade,” at the street level. Faraday Avenue is a highly-travelled four-lane road with a speed limit of 50 miles per hour. Lionshead Avenue is a moderately-travelled four-lane road

¹ ESA. 2015. *City of Carlsbad Wildlife Movement Analysis Final Report*. Prepared for City of Carlsbad.

with a speed limit of 50 miles per hour. Therefore, both roads are expected to be a barrier for wildlife movement. Direct mortality from vehicle collisions is expected.

The primary focus of this study was to determine if medium to large mammal species are moving across Faraday Avenue and Lionshead Avenue and getting hit by cars. Medium to large mammal species were targeted because these species demonstrate longer-range movement patterns and are likely more threatened by habitat fragmentation from roads.² In order to assess how frequent wildlife deaths from vehicle strikes occur in the intersection, ESA biologists, volunteers from Preserve Calavera, and HMP staff monitored Faraday Avenue and Lionshead Avenue for a year to document roadkill occurrences.

Methodology

On August 1, 2020, ESA biologist Alanna Sullivan, Preserve Calavera volunteers Paige DeCino and Karen Merrill, and the city’s Habitat Management Program (HMP) staff Rosanne Humphrey and Hannah Swarhout finalized the survey area (Figure 1). Faraday Avenue, east of El Camino Real to South Melrose Drive; South Melrose Drive south to Lionshead Avenue; and Lionshead Avenue east to Business Park Drive, were monitored for a year from August 1, 2020, to August 1, 2021, with a minimum of two surveys completed per week. Because roadkill typically persists multiple days, it is assumed that the data collected is representative of wildlife fatalities in the survey area. For the full list of survey dates, see **Attachment A**, *Faraday Avenue and Lionshead Avenue Roadkill Survey Dates and Results*. Additionally, ESA biologists checked the roadkill pick up logs kept by the city’s Public Works Department from July 2017 to September 2021 to supplement roadkill monitoring data.

Monitoring was conducted by ESA biologists, Preserve Calavera volunteers, and a city employee. The survey area was monitored by driving the intersection slowly and scanning the entire roadway and adjacent sidewalk for roadkill. If something was not identifiable from the car, the surveyor wore a safety vest and walked the survey area, using binoculars to scan the road. If roadkill was detected, a photo was taken when road conditions were safe and uploaded onto the citizen scientist mobile application iNaturalist³ to create an “observation” within the University of California, Davis, California Roadkill Observation System (CROS) Project.⁴ Once the observation was recorded, the surveyor called the city’s Public Works department for animal disposal pickup.

² Ng, S.J., J.W. Dole, R.M. Sauvajot, S.P.D. Riley, and T.J. Valone. 2004. *Use of highway undercrossings by wildlife in southern California*. *Biological Conservation* 115: 499–507.

³ iNaturalist. Available from <https://www.inaturalist.org>.

⁴ iNaturalist. California Roadkill Observation System (CROS). Available from: <https://www.inaturalist.org/projects/california-state-roadkill>



SOURCE: ESRI, 2020; ESA, 2021.

Carlsbad Roadkill Study

Figure 1
Faraday Avenue and Lionshead Avenue Roadkill Survey Area

Results

Faraday Avenue

A total of 8 roadkill occurrences were detected during the 106 survey dates within the 2020–2021 year of monitoring. Six (75%) roadkill observations were small mammals: cat, opossums, and rabbits. The remaining roadkill observations (two observations, 25%) were bird species. No medium to large mammal roadkill observations were detected during the year of roadkill monitoring. All roadkill observations and their associated survey dates, times, and surveyor information are listed in **Table 1** and locations of all roadkill observations are displayed in **Figure 2**.

TABLE 1
FARADAY AVENUE ROADKILL DETECTIONS

Date	Survey Time	Surveyor	Species
10/24/20	0914–0923	Karen Merrill ^a	Barn owl
12/12/20	0850–0902	Karen Merrill ^a	Cat
12/15/20	0930–0940	Alanna Sullivan	Opossum
1/13/21	1147–1207	P. DeCino ^a	Opossum
2/24/21	0824–0836	P. DeCino ^a	Raccoon
4/29/21	0905–0934	P. DeCino ^a	Opossum
6/2/21	1038–1050	P. DeCino ^a	Roadrunner
8/1/21	0925–0944	Karen Merrill ^a	Rabbit

^a Volunteer from Preserve Calavera

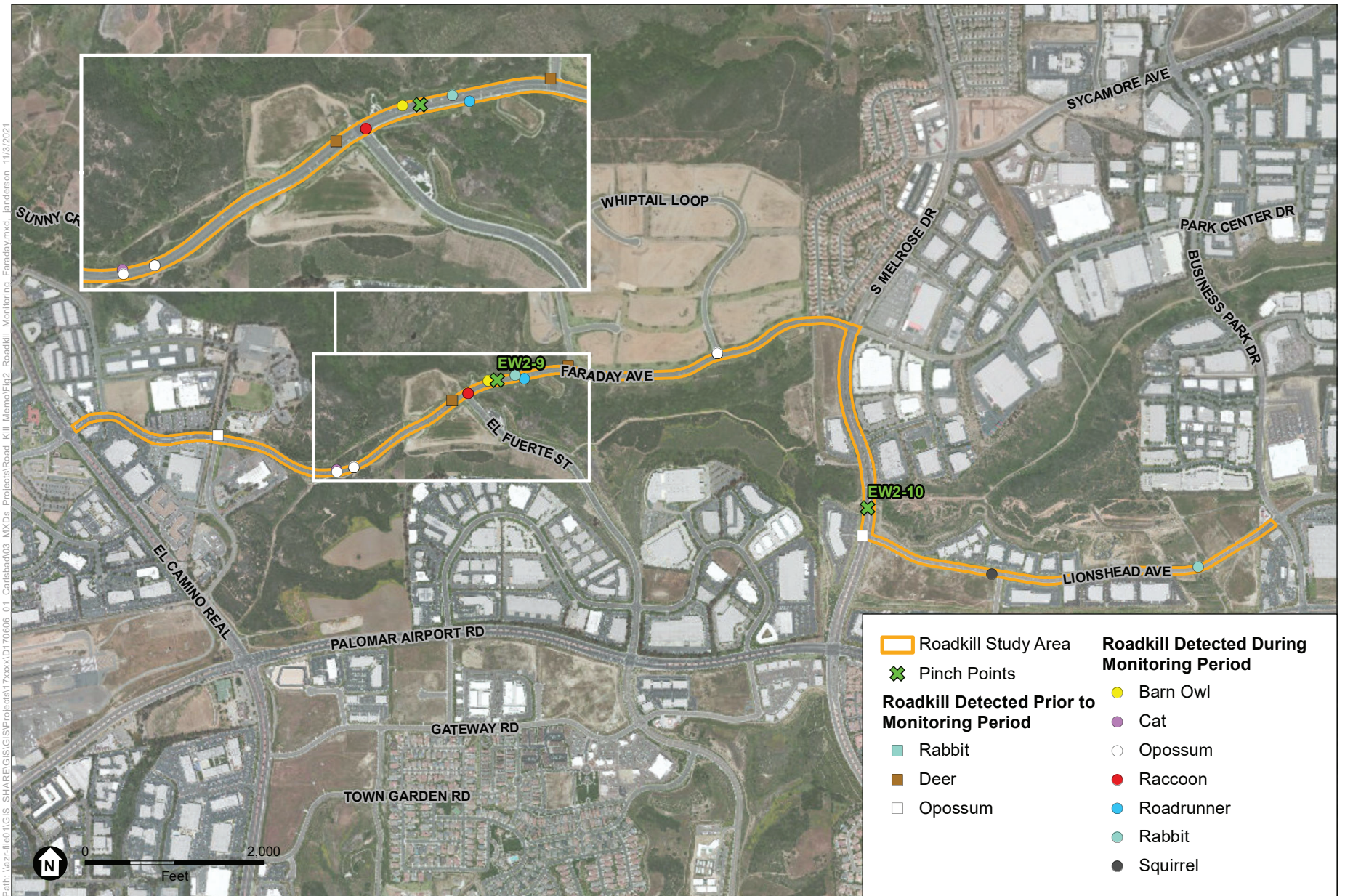
Lionshead Avenue

A total of 2 roadkill occurrences were detected during the 107 survey dates within the 2020–2021 year of monitoring. All roadkill observations were small mammals: rabbit and squirrel. No medium to large mammal roadkill observations were detected during the year of roadkill monitoring. All roadkill observations and their associated survey dates, times, and surveyor information are listed in **Table 2** and locations of all roadkill observations are displayed in Figure 2.

TABLE 2
LIONSHEAD AVENUE ROADKILL DETECTIONS

Date	Survey Time	Surveyor	Species
6/27/21	1002–1012	Karen Merrill ^a	Rabbit
8/1/21	0945–0954	Karen Merrill ^a	Squirrel

^a Volunteer from Preserve Calavera



SOURCE: ESRI, 2020; ESA, 2021.

Carlsbad Roadkill Study

Figure 2
Roadkill Monitoring Results

Discussion

The primary focus of this study was to determine if medium to large mammal species are moving across Faraday Avenue and Lionshead Avenue and getting hit by cars. Medium to large mammals demonstrate longer-range wildlife movement patterns and are likely more threatened by habitat fragmentation from roads than smaller species.⁵ While roadkill monitoring occurred 106 and 107 days out of the year at Faraday Avenue and Lionshead Avenue, respectively, it is likely that these results represent all roadkill data for the year as roadkill persists for more than one day, and animal disposal records from the city's Public Works department were also monitored during the survey year. No medium to large mammal species roadkill were detected during the year of study, suggesting that these species are either able to cross the intersection at street level successfully or are using the EW2-9 and EW2-10 undercrossings instead.

As seen in Figure 2, small mammal and bird species appear to have some difficulty crossing Faraday Avenue. Other studies have found that birds are one of the top taxa to be impacted by vehicle collisions,^{6, 7, 8} particularly in areas that support native vegetation and full-time or migratory habitat for birds.⁹ This may explain the location and why birds represented 257 of the roadkill occurrences in this study, as native vegetation exists on both sides of Faraday Avenue.

ESA continues to monitor animal disposal pickup records from the city's Public Works department to determine potential pinch points within the city that may benefit from future roadkill monitoring.

Attachments

A – Faraday Avenue and Lionshead Avenue Roadkill Survey Dates and Results

⁵ Ng, S.J., J.W. Dole, R.M. Sauvajot, S.P.D. Riley, and T.J. Valone. 2004. *Use of highway undercrossings by wildlife in southern California*. *Biological Conservation* 115: 499–507.

⁶ Kioko, J., C. Kiffner, N. Jenkins, and W.J. Collinson. 2015. *Wildlife roadkill patterns on a major highway in northern Tanzania*. *African Zoology* 50: 17–22.

⁷ Loss, S.R., T. Will, and P.P. Marra. 2014. *Estimation of bird-vehicle collision mortality on U.S. roads*. *The Journal of Wildlife Management* 78: 763–771.

⁸ Wilson, D.D. 2012. *Hotspot analysis of roadkill in Southern California: A GIS Approach*. Master's Thesis for California State University, Northridge.

⁹ Ha, H. and F. Shilling. 2017. *Modelling potential wildlife-vehicle collisions (WVC) locations using environmental factors and human population density: A case-study from 3 state highways in Central California*. *Ecological Informatics* 43: 212–221.

Attachment A

Faraday Avenue and Lionshead Avenue Roadkill Survey Dates and Result

Table 1. Faraday Avenue Roadkill Survey Dates and Results

Date	Time (start–end)	Surveyor	Species	Photo/Uploaded to iNaturalist	Spray-Painted
8/1/20	8:47-8:57 am	K. Merrill	None	NA	NA
8/5/20	7:58-8:24 am	P. DeCino	None	NA	NA
8/6/20	11:41-11:53 am	H. Swarthout	None	NA	NA
8/8/20	9:16-9:25 am	K. Merrill	None	NA	NA
8/12/20	11:05-11:30 am	P. DeCino	None	NA	NA
8/16/20	8:35-8:43 am	K. Merrill	None	NA	NA
8/18/20	6:32-6:41 am	P. DeCino	None	NA	NA
8/26/20	4:48-5:04 pm	P. DeCino	None	NA	NA
8/29/20	9:23-9:31 am	K. Merrill	None	NA	NA
9/1/20	8:05-8:17 am	P. DeCino	None	NA	NA
9/3/20	11:21-11:35 am	H. Swarthout	None	NA	NA
9/5/20	8:38-8:45 am	K. Merrill	None	NA	NA
9/9/20	10:22-10:34 am	H. Swarthout	None	NA	NA
9/9/20	5:01-5:15 pm	P. DeCino	None	NA	NA
9/12/20	8:44-8:52 am	K. Merrill	None	NA	NA
9/17/20	10:19-11:37 am	H. Swarthout	None	NA	NA
9/19/20	8:06-8:14 am	K. Merrill	None	NA	NA
9/23/20	5:31-5:41 pm	P. DeCino	None	NA	NA
9/24/20	11:42-11:55 am	H. Swarthout	None	NA	NA
9/27/20	8:50-8:58 am	K. Merrill	None	NA	NA
9/29/20	7:00-7:12 am	P. DeCino	None	NA	NA
10/3/20	8:14-8:21 am	K. Merrill	None	NA	NA
10/7/20	5:05-5:14 pm	P. DeCino	None	NA	NA
10/10/20	8:28-8:35 am	K. Merrill	None	NA	NA
10/12/20	9:11-9:22 am	P. DeCino	None	NA	NA
10/17/20	8:55-9:02 am	K. Merrill	None	NA	NA
10/22/20	8:43-9:30 am	P. DeCino	None	NA	NA
10/24/20	9:14-9:23 am	K. Merrill	Barn owl	Yes	No
10/28/20	10:37-10:40 am	P. DeCino	None	NA	NA
10/31/20	8:45-8:52 am	K. Merrill	None	NA	NA
11/3/20	10:00-10:12 am	A. Sullivan	None	NA	NA
11/8/20	9:00-9:07 am	K. Merrill	None	NA	NA
11/11/20	8:23-8:53 am	P. DeCino	None	NA	NA
11/13/20	11:00-11:10 am	A. Sullivan	None	NA	NA
11/14/20	8:48-8:55 am	K. Merrill	None	NA	NA
11/18/20	11:10-11:25 am	A. Sullivan	None	NA	NA
11/21/20	8:49-8:55 am	K. Merrill	None	NA	NA
11/24/20	10:41-10:55 am	P. DeCino	None	NA	NA
11/29/20	8:48-8:56 am	K. Merrill	None	NA	NA
12/3/20	4:50-5:02 pm	P. DeCino	None	NA	NA
12/5/20	9:06-9:12 am	K. Merrill	None	NA	NA
12/7/20	9:35-9:45 am	A. Sullivan	None	NA	NA
12/9/20	8:58-9:07 am	P. DeCino	None	NA	NA
12/12/20	8:50-9:02 am	K. Merrill	Cat	No	No
12/15/20	9:30-9:40 am	A. Sullivan	Opossum	No	No

Table 1. Faraday Avenue Roadkill Survey Dates and Results

Date	Time (start–end)	Surveyor	Species	Photo/Uploaded to iNaturalist	Spray-Painted
12/16/20	1:23-1:35 pm	P. DeCino	None	NA	NA
12/20/20	8:39-8:46 am	K. Merrill	None	NA	NA
12/24/20	3:41-3:53 pm	P. DeCino	None	NA	NA
12/27/20	9:48-9:56 am	K. Merrill	None	NA	NA
1/3/21	9:39-9:47 am	K. Merrill	None	NA	NA
1/7/21	1:59-2:04 pm	P. DeCino	None	NA	NA
1/9/21	9:21-9:29 am	K. Merrill	None	NA	NA
1/13/21	11:47-12:07 pm	P. DeCino	Opossum	Yes	No
1/17/21	8:48-8:54 am	K. Merrill	None	NA	NA
1/21/21	8:40-8:45 am	P. DeCino	None	NA	NA
1/24/21	8:38-8:46 am	K. Merrill	None	NA	NA
1/27/21	9:50-10:00 am	P. DeCino	None	NA	NA
1/31/21	8:55-9:03 am	K. Merrill	None	NA	NA
2/3/21	10:30-10:40 am	P. DeCino	None	NA	NA
2/7/21	9:22-9:29 am	K. Merrill	None	NA	NA
2/10/21	9:20-9:30 am	P. DeCino	None	NA	NA
2/13/21	8:58-9:06 am	K. Merrill	None	NA	NA
2/15/21	7:30-7:35 am	P. DeCino	None	NA	NA
2/21/21	8:44-8:53 am	K. Merrill	None	NA	NA
2/24/21	8:24-8:36 am	P. DeCino	Raccoon	Yes	No
2/27/21	9:22-9:30 am	K. Merrill	None	NA	NA
3/4/21	7:02-7:15 am	P. DeCino	None	NA	NA
3/7/21	8:51-8:58 am	K. Merrill	None	NA	NA
3/14/21	9:59-10:07 am	K. Merrill	None	NA	NA
3/21/21	8:54-9:01 am	K. Merrill	None	NA	NA
3/24/21	9:00-9:11 am	P. DeCino	None	NA	NA
3/30/21	11:05-11:13 am	P. DeCino	None	NA	NA
4/3/21	8:30-8:38 am	K. Merrill	None	NA	NA
4/11/21	8:29-8:36 am	K. Merrill	None	NA	NA
4/15/21	11:28-11:31 am	P. DeCino	None	NA	NA
4/18/21	8:37-8:44 am	K. Merrill	None	NA	NA
4/21/21	9:10-9:21 am	P. DeCino	None	NA	NA
4/25/21	9:28-9:35 am	K. Merrill	None	NA	NA
4/28/21	3:10-3:30 pm	A. Lee	None	NA	NA
4/29/21	9:05-9:34 am	P. DeCino	Opossum	Yes	No
5/2/21	9:46-9:54 am	K. Merrill	None	NA	NA
5/5/21	9:39-9:43 am	P. DeCino	None	NA	NA
5/9/21	8:48-8:55 am	K. Merrill	None	NA	NA
5/11/21	11:00-11:15 am	A. Lee	None	NA	NA
5/12/21	3:47-4:01 pm	P. DeCino	None	NA	NA
5/16/21	11:53 am-12:00 pm	K. Merrill	None	NA	NA
5/20/21	2:15-2:45 pm	A. Lee	None	NA	NA
5/23/21	8:20-8:27 am	K. Merrill	None	NA	NA
5/27/21	11:17-11:21 am	P. DeCino	None	NA	NA

Table 1. Faraday Avenue Roadkill Survey Dates and Results

Date	Time (start–end)	Surveyor	Species	Photo/Uploaded to iNaturalist	Spray-Painted
5/29/21	10:30-10:37 am	K. Merrill	None	NA	NA
6/2/21	10:38-10:50 am	P. DeCino	Roadrunner	Yes	No
6/6/21	9:12-9:21 am	K. Merrill	None	NA	NA
6/9/21	12:59-1:11 pm	P. DeCino	None	NA	NA
6/10/21	8:05-8:20 am	A. Lee	None	NA	NA
6/13/21	9:27-9:34 am	K. Merrill	None	NA	NA
6/20/21	8:51-8:59 am	K. Merrill	None	NA	NA
6/27/21	9:54-10:01am	K. Merrill	None	NA	NA
6/30/21	10:23-10:27 am	P. DeCino	None	NA	NA
7/5/21	2:39-2:45 pm	K. Merrill	None	NA	NA
7/8/21	9:30-9:32 am	P. DeCino	None	NA	NA
7/11/21	8:16-8:23 am	K. Merrill	None	NA	NA
7/14/21	8:44-8:54 am	P. DeCino	None	NA	NA
7/18/21	8:04-8:11 am	K. Merrill	None	NA	NA
7/21/21	11:36-11:39 am	P. DeCino	None	NA	NA
7/27/21	9:25-9:33 am	K. Merrill	None	NA	NA
8/1/21	9:25-9:44 am	K. Merrill	Rabbit	Yes	No

Table 2. Lionshead Avenue Roadkill Survey Dates and Results

Date	Time (start–end)	Surveyor	Species	Photo/Uploaded to iNaturalist	Spray-Painted
8/1/20	8:59-9:05 am	K. Merrill	None	NA	NA
8/5/20	7:58-8:24 am	P. DeCino	None	NA	NA
8/6/20	12:00-12:05 am	H. Swarthout	None	NA	NA
8/8/20	9:26-9:31 am	K. Merrill	None	NA	NA
8/12/20	11:09-11:14 am	P. DeCino	None	NA	NA
8/16/20	8:44-8:49 am	K. Merrill	None	NA	NA
8/18/20	6:32-6:36 am	P. DeCino	None	NA	NA
8/26/20	5:54-5:59 pm	P. DeCino	None	NA	NA
8/29/20	9:32-9:37am	K. Merrill	None	NA	NA
9/1/20	8:10-8:14 am	P. DeCino	None	NA	NA
9/3/20	11:26-11:30 am	H. Swarthout	None	NA	NA
9/5/20	8:46-8:50 am	K. Merrill	None	NA	NA
9/9/20	10:26-10:29 am	H. Swarthout	None	NA	NA
9/9/20	5:06-5:10 pm	P. DeCino	None	NA	NA
9/12/20	8:53-8:58 am	K. Merrill	None	NA	NA
9/17/20	10:24-11:34 am	H. Swarthout	None	NA	NA
9/19/20	8:15-8:19 am	K. Merrill	None	NA	NA
9/23/20	5:35-5:38 pm	P. DeCino	None	NA	NA
9/24/20	11:47-11:50 am	H. Swarthout	None	NA	NA
9/27/20	8:59-9:03 am	K. Merrill	None	NA	NA
9/29/20	7:04-7:07 am	P. DeCino	None	NA	NA
10/3/20	8:22-8:26 am	K. Merrill	None	NA	NA

Table 2. Lionshead Avenue Roadkill Survey Dates and Results

Date	Time (start–end)	Surveyor	Species	Photo/Uploaded to iNaturalist	Spray-Painted
10/7/20	5:05-5:08 pm	P. DeCino	None	NA	NA
10/10/20	8:36–8:40 am	K. Merrill	None	NA	NA
10/12/20	9:15-9:18 am	P. DeCino	None	NA	NA
10/17/20	9:03-9:07 am	K. Merrill	None	NA	NA
10/22/20	9:10-9:17 am	P. DeCino	None	NA	NA
10/24/20	9:24-9:28 am	K. Merrill	None	NA	NA
10/28/20	10:41-10:44 am	P. DeCino	None	NA	NA
10/31/20	8:53-8:57 am	K. Merrill	None	NA	NA
11/2/20	12:30-12:45 pm	A. Sullivan	None	NA	NA
11/3/20	10:04-10:07 am	P. DeCino	None	NA	NA
11/8/20	9:08-9:12 am	K. Merrill	None	NA	NA
11/11/20	8:29-8:32 am	P. DeCino	None	NA	NA
11/13/20	11:13-11:25 am	A. Sullivan	None	NA	NA
11/14/20	8:56-9:00 am	K. Merrill	None	NA	NA
11/18/20	11:25-11:35 am	A. Sullivan	None	NA	NA
11/21/20	8:56-9:00 am	K. Merrill	None	NA	NA
11/24/20	10:45-10:50 am	P. DeCino	None	NA	NA
11/29/20	8:57-9:01 am	K. Merrill	None	NA	NA
12/3/20	4:54-4:57 pm	P. DeCino	None	NA	NA
12/5/20	9:01-9:05 am	K. Merrill	None	NA	NA
12/7/20	9:35-9:45 am	A. Sullivan	None	NA	NA
12/9/20	9:02-9:05 am	P. DeCino	None	NA	NA
12/12/20	9:04-9:09 am	K. Merrill	None	NA	NA
12/15/20	9:30-9:40 am	A. Sullivan	None	NA	NA
12/16/20	1:28-1:31 pm	P. DeCino	None	NA	NA
12/20/20	8:47-8:51 am	K. Merrill	None	NA	NA
12/24/20	3:45-3:49 pm	P. DeCino	None	NA	NA
12/27/20	9:57-10:02 am	K. Merrill	None	NA	NA
1/3/21	9:48-9:52 am	K. Merrill	None	NA	NA
1/7/21	1:56-1:59 pm	P. DeCino	None	NA	NA
1/9/21	9:30-9:34 am	K. Merrill	None	NA	NA
1/13/21	12:08-12:10 pm	P. DeCino	None	NA	NA
1/17/21	8:43-8:47 am	K. Merrill	None	NA	NA
1/21/21	8:42-8:44 am	P. DeCino	None	NA	NA
1/24/21	8:47-8:51 am	K. Merrill	None	NA	NA
1/27/21	8:50-8:54 am	P. DeCino	None	NA	NA
1/31/21	9:04-9:07 am	K. Merrill	None	NA	NA
2/3/21	10:44-10:50 am	P. DeCino	None	NA	NA
2/7/21	9:30-9:34 am	K. Merrill	None	NA	NA
2/10/21	9:24-9:28 am	P. DeCino	None	NA	NA
2/13/21	9:07-9:11 am	K. Merrill	None	NA	NA
2/15/21	7:40-7:44 am	P. DeCino	None	NA	NA
2/21/21	8:54-8:58 am	K. Merrill	None	NA	NA
2/24/21	8:42-8:35 am	P. DeCino	None	NA	NA
2/27/21	9:31-9:35 am	K. Merrill	None	NA	NA

Table 2. Lionshead Avenue Roadkill Survey Dates and Results

Date	Time (start–end)	Surveyor	Species	Photo/Uploaded to iNaturalist	Spray-Painted
3/4/21	7:08-7:11 am	P. DeCino	None	NA	NA
3/7/21	8:59-9:03 am	K. Merrill	None	NA	NA
3/14/21	10:08-10:12 am	K. Merrill	None	NA	NA
3/21/21	9:02-9:06 am	K. Merrill	None	NA	NA
3/24/21	9:03-9:07 am	P. DeCino	None	NA	NA
3/30/21	11:08-11:11 am	P. DeCino	None	NA	NA
4/3/21	8:39-8:43 am	K. Merrill	None	NA	NA
4/11/21	8:37-8:41 am	K. Merrill	None	NA	NA
4/15/21	11:32-11:35 am	P. DeCino	None	NA	NA
4/18/21	8:45-8:50 am	K. Merrill	None	NA	NA
4/21/21	9:15-9:18 am	P. DeCino	None	NA	NA
4/25/21	9:36-9:40 am	K. Merrill	None	NA	NA
4/28/21	3:10-3:30 pm	A. Lee	None	NA	NA
4/29/21	9:27-9:30 am	P. DeCino	None	NA	NA
5/2/21	9:55-9:59 am	K. Merrill	None	NA	NA
5/5/21	9:43-9:47 am	P. DeCino	None	NA	NA
5/9/21	8:56-8:59 am	K. Merrill	None	NA	NA
5/11/21	11:00-11:15 am	A. Lee	None	NA	NA
5/12/21	4:01-4:04 pm	P. DeCino	None	NA	NA
5/16/21	12:01-12:04 pm	K. Merrill	None	NA	NA
5/20/21	2:15-2:45 pm	A. Lee	None	NA	NA
5/23/21	8:28-8:32 am	K. Merrill	None	NA	NA
5/27/21	11:21-11:25 am	P. DeCino	None	NA	NA
5/29/21	10:38-10:42 am	K. Merrill	None	NA	NA
6/2/21	10:34-10:37 am	P. DeCino	None	NA	NA
6/6/21	9:23-9:26 am	K. Merrill	None	NA	NA
6/9/21	1:04-1:07 pm	P. DeCino	None	NA	NA
6/10/21	8:05-8:20 am	A. Lee	None	NA	NA
6/13/21	9:35-9:52 am	K. Merrill	None	NA	NA
6/20/21	9:00-9:04 am	K. Merrill	None	NA	NA
6/27/21	10:02-10:12 am	K. Merrill	Rabbit	Yes	No
6/30/21	10:21-10:23 am	P. DeCino	None	NA	NA
7/5/21	2:46-2:50 pm	K. Merrill	None	NA	NA
7/8/21	9:33-9:37 am	P. DeCino	None	NA	NA
7/11/21	8:25-9:29 am	K. Merrill	None	NA	NA
7/14/21	8:47-8:49 am	P. DeCino	None	NA	NA
7/18/21	8:12-8:15 am	K. Merrill	None	NA	NA
7/21/21	10:54-10:55 am	P. DeCino	None	NA	NA
7/27/21	9:35-9:38 am	K. Merrill	None	NA	NA
8/1/21	9:45-9:54 am	K. Merrill	Squirrel	Yes	No