Inventory and Monitoring of Ringtails (*Bassariscus astutus*) in City of Rocks National Reserve: An Area Which May Represent a Significant Northerly Range Expansion

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LIST OF ABBREVIATIONS

CIRO ..... City of Rock National Reserve

CRSP ..... Castle Rocks State Park

SGCN ..... Species of Greatest Conservation Need

NPS ..... National Park Service

IDFG ..... Idaho Department of Fish and Game

ABSTRACT

This report summarizes the results of camera trapping surveys conducted in the spring and summer of 2011 and the spring of 2012 within and around City of Rocks National Reserve (CIRO) and Castle Rocks State Park (CRSP) in south-central Idaho. Following the discovery of a ringtail (*Bassariscus astutus*) carcass in 2003 and subsequent evidence suggesting that ringtails may be utilizing the region, these surveys aimed to investigate the potential occurrence and distribution of ringtails within the region. We utilized remote cameras scent baited with sardines to survey within and around CIRO and CRSP. Over two years we conducted surveys at 30 locations, resulting in the detection of 30 species including 12 mammalian carnivore species. Ringtails were not detected during the surveys, but information on a suite of other species was acquired. A large mustelid, which could not be confidently classified to species, was detected during the surveys. Independent review of the image by carnivore experts familiar with mustelid identification resulted in 3 distinct interpretations. The majority of reviewers believed that the image was of a fisher (*Martes pennanti*), while other reviewers indicated that they thought the image was either a mink (*Neovison vison*) or a marten (*Martes americana*). A significant amount of information was acquired on Western spotted skunks (*Spilogale gracilis*), a species which appear to be in decline across southern Idaho and which are currently being considered for inclusion into Idaho's revision of the State Wildlife Action Plan as a "Species of Greatest Conservation Need" (SGCN). The cliff chipmunk, a species currently listed as a SGCN, was also regularly detected during the surveys.

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INTRODUCTION

This project was a cooperative partnership between the National Park Service (NPS), Idaho Department of Parks and Recreation, and the Idaho Department of Fish and Game (IDFG) to survey for ringtails (*Bassariscus astutus*) within and around City of Rocks National Reserve. The goal of this project was to investigate a possible northerly range expansion by ringtails into southern Idaho and if present, to provide information on the distribution and abundance of ringtails within the City of Rocks National Reserve (CIRO) and Castle Rocks State Park (CRSP). Climate change, along with habitat alteration, invasive species, and increases in the frequency and severity of fires, has been rapidly altering the ecology of the Great Basin ecosystem (Chambers and Wisdom 2009). Temperature changes within the Great Basin are expected to drive both increases in precipitation and decreases in snow pack, resulting in altered ecosystem processes and species distributions (Baldwin et al. 2003, Smith et al. 2006, Fleishman et al. 2009).

Many northern hemisphere temperate species have experienced elevational or northerly shifts in their distributions (Parmesan 2006). Across the northern periphery of the Great Basin, pinon and juniper encroachment into imperiled sagebrush and grassland communities has become a major conservation concern. The encroachment of these species not only jeopardizes threatened biomes such as sagebrush steppe habitats, but is likely to alter species structure and composition by facilitating range expansions of fauna and changing ecosystem processes (Burkhardt and Tisdale 1976, Sankey and Germino 2008, Chambers and Wisdom 2009).

Both CIRO and CRSP are located within the northern periphery of the Great Basin. Characterized by the northern extent of single-leaf pinon (*Pinus monophylla*) and

Utah juniper (*Juniperus osteosperma*), these protected lands accommodate a range of wildlife species which exploit the pinyon-juniper habitat and the distinctive large, granite rock outcrops (Rodhouse et al. 2010). Because of the unique location and habitat of the area, efforts have been made to investigate mammalian populations within CIRO and CRSP (Vincent et al. 2007, Rodhouse et al. 2009, Rodhouse et al. 2010). But despite these efforts, information is still lacking on several species which may be present in the area.

One species, the ringtail, is of key interest because presence of a viable population in this area may represent a significant northerly range expansion (Poglayen-Neuwall and Toweill 1988, Vincent et al. 2007). Ringtails are a mesocarnivore often associated with steep rocky terrain, canyons, and mountain slopes (Trapp 1972) such as those found in CIRO and CRSP. Likewise, they are often associated with juniper, which provides a secure food source, cover, and vertical structure (Yarchin 1990, Lonsinger 2010). Ringtails are capable of exploiting virtually all habitat types within their range (Poglayen-Neuwall and Toweill 1988, Lonsinger 2010), but may preferentially disperse to and settle in habitats similar to their natal habitat (Lonsinger 2010). Consequently, if a viable population of ringtails is present in CIRO and CRSP, this range expansion may have been facilitated by juniper encroachment driven by a combination of climate change, habitat alteration, and increases in the frequency and severity of fires (Burkhardt and Tisdale 1976, Sankey and Germino 2008).

A ringtail specimen from southeast Idaho was recorded by Larrison (1967), but the lack of any other specimens in Idaho since has resulted in the removal of ringtails from Idaho's special status list in 1996 (Vincent et al. 2007). More recently, a ringtail

carcass was discovered just outside of CRSP in 2003 (Wildlife Health Laboratory 2003), tracks which were believed to be ringtail were discovered in 2005, and an observation was reported in CIRO in 2006 (Vincent et al. 2007). It is still uncertain whether or not these reports represent the presence of a viable population. If a viable population does exist in CIRO and CRSP, consideration as a "Species of Greatest Conservation Need" (SGCN) within the Idaho State Wildlife Action Plan (previously known as the Comprehensive Wildlife Conservation Strategy; IDFG 2005) may be warranted and would provide a platform for further study.

METHODS

Study Area and Selection of Sampling Sites

Surveys were conducted within CIRO and CRSP and on adjacent public property (i.e., land managed by the Bureau of Land Management) in Cassia County of south-central Idaho. The area covered by survey sites included a variety of habitat types, but the dominant habitats included pinyon-juniper woodlands and sagebrush steppe (*Artemisia tridentata*). All sites were characterized by the rocky outcrops for which the area was named. Although we proposed selecting random sampling location for surveys, locations were ultimately not randomly selected. Rather, following recommendations from the UCBN staff, sampling locations were selected around previous detections of ringtails and across south facing slopes. Camera locations were chosen to maximize carnivore detection and minimize interference with vegetation (e.g., false triggers due to moving branches) and lighting (e.g., lens flare and glare). We attempted to maintain ≥250 meters between survey locations.

Camera Trapping Surveys

Camera trapping surveys were conducted during the spring and summer of 2011 and spring of 2012. In 2011, 11 camera traps were available for surveys including five cameras provided by the NPS Upper Columbia Basin Network, two cameras provided by the NPS CIRO, and four cameras provided by the IDFG Magic Valley Habitat Program. Only the seven NPS cameras were available for 2012 surveys. Camera trap surveys were conducted at 30 sites (23 in 2011 and 7 in 2012) within and around CIRO (Table 1). Surveys were conducted from 3 March to 23 September 2011 and from 30 March to 9 May 2012, resulting in 1,260 active trap nights (Table 2). Canned sardines were used as bait and were either buried, covered with a cairn, or wired to a tree. Sardines have been effectively used to attract and capture ringtails in other parts of their distribution (Lonsinger 2010). New bait was applied and images were retrieved each time the camera trap was checked.

Table 1. Camera trapping survey locations

Survey Location	Northing*	Easting*	Survey Location	Northing*	Easting*
Site 1	279044	4667606	**Site 16**	276619	4662882
Site 2	279028	4667731	**Site 17**	279148	4667211
Site 3	279188	4668026	**Site 18**	278805	4667855
Site 4	277624	4663445	**Site 19**	279391	4668175
Site 5	278057	4663418	**Site 20**	279520	4668344
Site 6	278326	4663237	**Site 21**	278691	4668146
Site 7	278582	4663098	**Site 22**	278570	4668280
Site 8	278996	4663100	**Site 23**	278779	4667725
Site 9	277840	4662757	**Site 24**	278425	4662261
Site 10	277955	4662601	**Site 25**	278997	4661995
Site 11	278467	4663482	**Site 26**	276726	4660773
Site 12	278122	4663434	**Site 27**	274867	4662772
Site 13	278245	4663406	**Site 28**	274832	4657981
Site 14	276680	4663503	**Site 29**	274669	4658115
Site 15	276556	4663185	**Site 30**	274678	4658347

*Coordinates provided in WGS84 Zone 12 UTM.

Images captured by camera traps were reviewed and classified as either images containing wildlife, images containing people (typically resulting from camera set up and maintenance of bait), or false triggers. Those images classified as wildlife images included all images containing either wildlife species or domestic animals. False triggers included all those images that did not capture wildlife or humans and resulted from wind, precipitation, humans and/or wildlife passing by the camera but remaining out of the field of view, or camera malfunctions. An attempt was made to identify wildlife images to their appropriate class, order, family, and species. Unfortunately, not all images could be classified to species. Small mammals that could not be identified were grouped together.

RESULTS AND DISCUSSION

Camera Trapping Survey Locations

Camera trap surveys were conducted at 30 sites within and around CIRO resulting in 1,260 active trap nights (Appendix A). The total number of active trap nights varied across sites from 0 nights (resulting from camera malfunction) to 122 nights, with an average of 42 active trap nights/camera (median = 40 active trap nights). Due to limited time and resources, surveys continuing beyond May in 2011 were limited to four cameras located in close proximity to the location of the ringtail carcass discovered in 2003 and the detection of a large mustelid in 2011.

Camera trapping efforts resulted in the collection of 37,631 images, of which over 98% (37,032) were collected in 2011 (Table 2). Camera trapping efforts were reduced in 2012 and repairs had been made to several cameras that malfunctioned in 2011 resulting in a significant reduction in false triggers. Consequently, the average number of false

triggers per active trap night fell from 33.47 in 2011 to 0.41 in 2012. From 2011 to 2012, wildlife were detected in 3,588 (~9%) images, while the remaining 34,043 images were the result of either researchers or park visitors (858) or false triggers from weather, animals passing outside the field of view, or camera malfunctions (33,185; Table 2).

Table 2. Summary results of camera trapping by survey locations

Survey Location	Date Set	Date Pulled	Active Trap Nights*	# Images Captured	# Images with Wildlife	%False Triggers
Site 1	3/3/2011	5/27/2011	85	1616	469	65.8%
Site 2	3/3/2011	5/27/2011	85	1062	493	46.7%
Site 3	3/4/2011	5/27/2011	68	478	89	80.1%
Site 4	3/3/2011	4/15/2011	29	5178	131	96.7%
Site 5	3/3/2011	3/20/2011	1	4533	0	99.3%
Site 6	3/3/2011	4/14/2011	28	78	51	24.4%
Site 7	3/3/2011	4/14/2011	42	89	76	6.7%
Site 8	3/4/2011	4/14/2011	41	72	0	77.8%
Site 9	3/4/2011	4/14/2011	40	106	97	3.8%
Site 10	3/4/2011	4/14/2011	41	350	289	8.0%
Site 11	3/4/2011	3/5/2011	0	50	0	20.0%
Site 12	3/20/2011	4/14/2011	7	9081	149	98.3%
Site 13	4/1/2011	4/14/2011	13	39	5	33.3%
Site 14	4/14/2011	5/27/2011	10	12409	509	95.7%
Site 15	4/14/2011	5/27/2011	43	74	15	45.9%
Site 16	4/14/2011	5/27/2011	43	91	14	45.1%
Site 17	4/15/2011	5/27/2011	27	161	87	44.7%
Site 18	4/15/2011	9/23/2011	122	420	256	26.4%
Site 19	4/15/2011	5/27/2011	27	124	82	30.6%
Site 20	4/15/2011	5/27/2011	27	64	49	18.8%
Site 21	7/5/2011	9/23/2011	71	205	137	22.0%
Site 22	7/5/2011	9/23/2011	80	449	136	57.9%
Site 23	7/14/2011	9/23/2011	58	303	212	22.4%
Site 24	3/30/2012	5/9/2012	40	94	56	11.7%
Site 25	3/30/2012	5/9/2012	40	73	13	15.1%
Site 26	3/30/2012	5/9/2012	40	57	20	22.8%
Site 27	3/30/2012	5/9/2012	40	69	29	11.6%
Site 28	3/30/2012	5/1/2012	32	98	28	31.6%
Site 29	3/30/2012	5/9/2012	40	63	16	27.0%
Site 30	3/30/2012	5/9/2012	40	145	80	14.5%
Total			**1260**	**37631**	**3588**	**88.2%**

*Active trap nights does not include those nights when an animal could not be captured by the camera system (e.g., batteries died, memory full).

Mammalian Carnivore Detections

We detected 12 mammalian carnivore species with camera traps including, in decreasing order by number of images, striped skunk (*Mephitis mephitis*), red fox (*Vulpes vulpes*), Western spotted skunk (*Spilogale gracilis*), coyote (*Canis latrans*), domestic dog (*Canis familiaris*), bobcat (*Lynx rufus*), mountain lion (*Puma concolor*), raccoon (*Procyon lotor*), long-tailed weasel (*Mustela frenata*), short-tailed weasel (*Mustela erminea*), American badger (*Taxidea taxus*), and a large mustelid (Table 3). We did not detect ringtails at any camera locations throughout the study. Of the carnivores detected, striped skunks, spotted skunks, and red foxes were the most widely distributed, being detected at 19, 16, and 12 sites, respectively. Mountain lions and long-tailed weasels were detected at four sites, while coyotes, bobcats, and raccoons were detected at two sites. The short-tailed weasel, badger, and large mustelid were each detected at only one site (Table 3).

Table 3. Summary of mammalian carnivores detected during camera trapping surveys

Common Name	**Species**	**Family**	**Images**	**# of Sites Detected**	**# of Camera Nights Detected**
Striped Skunk	*Mephitis mephitis*	Mephitidae	594	19	59
Red Fox	*Vulpes vulpes*	Canidae	587	12	97
Western Spotted Skunk	*Spilogale gracilis*	Mephitidae	369	16	90
Coyote	*Canis latrans*	Canidae	73	2	2
Domestic Dog	*Canid familiaris*	Canidae	30	2	3
Bobcat	*Lynx rufus*	Felidae	11	2	3
Mountain Lion	*Puma concolor*	Felidae	9	4	5
Raccoon	*Procyon lotor*	Procyonidae	8	2	2
Long-tailed Weasel	*Mustela frenata*	Mustelidae	6	4	5
Short-talied Weasel	*Mustela erminea*	Mustelidae	2	1	1
American Badger	*Taxidea taxus*	Mustelidae	1	1	1
Unidentified mustelid	Unknown spp.	Mustelidae	1	1	1

All mammalian carnivore species could be confidently identified from images with the exception of the large mustelid that was detected towards the end of May 2011. Professional carnivore researchers not associated with the project were asked to independently provide comments on the image of the large mustelid. The majority of researchers identified the image as a fisher (*Mustela pennanti*), while the others indicated that the image could be of a mink (*Neovison vison*) or marten (*Martes americana*). The large-bodied appearance of the animal (Appendix B) suggested to us that it was unlikely to be a mink or marten, but without further information (e.g., better images, DNA sample) we are unable to conclusively determine the species. We re-deployed four cameras (through late September) into the area surrounding the detection of the mustelid in an attempt to capture additional images of the animal and identify areas for placement of hair snares for DNA collection. There were no additional detections.

Incidental Detections

Other mammalian species detected included unidentified small mammals, woodrats (*Neotoma* spp.), mule deer (*Odocoileus hemionus*), mountain cottontails (*Sylvilagus nuttalii*), domestic cattle (*Bos primigenius*), cliff chipmunks (*Neotamias dorsalis*), yellow-bellied marmots (*Marmota flaviventris*), least chipmunks (*Neotamias minimus*), and a moose (*Alces alces*; Table 4). Unidentified small mammals and cottontails were the most widely detected species being detected at 14 sites. Woodrats (*Neotoma* spp.) were detected at nine sites while mule deer and yellow-bellied marmots were each detected at eight sites. Cliff chipmunks, a SGCN, were detected at six camera

locations. Seven bird species were also identified and an additional image of a passerine could not be identified to species (Table 4).

Table 4. Summary of mammalian and avian species detected (exclusive of mammalian carnivores)

Common Name	Species	Family	Images	# of Sites Detected	# Camera Nights Detected
Small mammals	Variable	Variable	736	14	83
Woodrats	*Neotoma spp.*	Muridae	670	9	169
Mule Deer	*Odocoileus hemionus*	Cervidae	160	8	29
Mountain Cottontail	*Sylvilagus nuttalii*	Leporidae	93	14	50
Domestic Cattle	*Bos primigenius*	Bovidae	60	1	3
Cliff Chipmunk	*Neotamias dorsalis*	Sciuridae	52	6	21
Yellow-bellied Marmot	*Marmota flaviventris*	Sciuridae	23	8	16
Least Chipmunk	*Neotamias minimus*	Sciuridae	2	1	1
Moose	*Alces alces*	Cervidae	1	1	1
Turkey Vulture	*Cathartes aura*	Cathartidae	46	2	5
Townsend's Solitaire	*Myadestestownsendii*		7	1	4
American Robin	*Turdis americanus*	Turdidae	4	4	4
Western Scrub Jay	*Aphelocoma californica*	Turdidae	4	2	3
Black-billed Magpie	*Pica hudsonia*	Corvidae	2	2	2
Northern Flicker	*Colaptes auratus*	Picidae	1	1	1
Wild Turkey	*Meleagris gallopavo*	Phasianidae	1	1	1
Unidentified Passerines	Unknown	Unknown	1	1	1

Following the 2011 camera trapping field season, we were interested in assessing the influence of climatic variables on carnivore detections in order to improve future sampling periods. Specifically, we noticed that during colder months bait was freezing and we suspected that this freezing may decrease the effectiveness of scent baits. We obtained weather data from the CIRO weather station including Average Temperature, Average Day Temperature, Average Night Temperature, Minimum Daily Temperature,

Maximum Daily Temperature, Average Relative Humidity, Minimum Relative Humidity, Maximum Relative Humidity, Average Wind Speed, Minimum Wind Speed, and Maximum Wind Speed for each day camera traps were active. We coded lunar phase for each trap night from 0 (new moon) to 15 (full moon). We then calculated the number of individual species identified per trap-night, where 1 trap-night was equal to one camera set for a 24 hour period. We assumed that due to the territoriality of carnivore species that any species detected multiple times during the same night at one camera represented the same individual, unless there was evidence to the contrary (e.g., multiple animals in a single image, distinct and identifiable characteristics of an individual).

We employed a logistic regression with carnivore detections coded as either 1 (a carnivore was detected) or 0 (no carnivore was detected). Because logistic regression is sensitive to multicollinearity among predictor variables (Tabachnick and Fidell 1996), we tested for multicollinearity among the 12 variables (66 pairwise comparisons) using the Pearson's *r* Correlation Coefficient. When two climatic variables had a correlation >|0.70| we excluded one of the variables to ensure multicollinearity did not impact model results (Sheskin 2007). As expected, all of the temperature measurements were highly correlated with one another; we retained only the average temperature for analyses. Similarly, all of the relative humidity measures were correlated with one another and thus only the average relative humidity was retained. Average and maximum wind speeds were correlated and the maximum was therefore excluded. Following exclusions, the remaining daily climatic variables utilized in the model included average temperature, average relative humidity, average wind speed, minimum wind speed and lunar phase.

The logistic regression indicated that both average relative humidity and average temperature were significant predictor variables in the model (Table 5) and the overall model was significant (Table 6). Although the results of the logistic regression suggested that temperature did have a significant influence on carnivore detections, they did not support our hypothesis that colder temperatures (resulting in freezing of scent baits) would reduce carnivore detections (Table 5). Rather, the results indicated that for every unit increase in average temperature, the odds of a carnivore detection decreased. This may be related to decreased activity by carnivores in warmer conditions. Alternatively, the decrease in detections associated with increases in temperature may be related to insect activity. Anecdotal observations throughout the surveys suggested that during periods of warmer temperatures, increases in insect activity result in a greater proportion of bait being removed by insects between visits to camera trap locations.

Table 5. Logistic regression analysis from 2011 carnivore detections

Predictor Variables	**Estimate**	**Standard Error**	**z value**	**Pr(>|z|)**
(Intercept)	6.03144	2.18291	2.763	0.00573 *
Average Relative Humidity	-5.09035	1.81218	-2.809	0.00497 *
Minimum Wind Speed	0.04965	0.21367	0.232	0.81627
Average Wind Speed	-0.09032	0.09211	-0.981	0.32678
Average Temperature	-0.05889	0.01913	-3.078	0.00208 *
Lunar Phase	0.07595	0.04030	1.885	0.05946

*Predictor variable significant at α = 0.001
R programming call: glm(formula = Carnivore_Detected ~ Average_Relative_Humidity + Min_Wind_Speed + Average_Wind_Speed + Average_Temp + Lunar_Phase, family = "binomial", data = camera.data.t)

Table 6. Overall logistic regression model evaluation from 2011 carnivore detections

X^2	Degrees of Freedom	p-value
14.52645	5	0.01258949*

*Model significant at α = 0.05

CONCLUSIONS

The discovery of a ringtail carcass on public land adjacent to CIRO in 2003 has resulted in questions regarding this individual's origin. Ringtails, whose distribution historically included portions of southern Idaho, are known to occupy northern portions of Utah and Nevada to the south of CIRO. The presence of a ringtail in the CIRO region could plausibly be the result of (1) individuals dispersing north or (2) a remnant population that has gone undetected. Consequently, efforts to assess whether or not additional ringtails occupy the CIRO region are appealing from both an applied and theoretical perspective.

This project utilized camera trapping techniques to survey portions of CIRO and CRSP with a goal of investigating the composition of mammalian carnivores within the CIRO region with a keen interest in detecting ringtails. If ringtails were detected we aimed to quantify the species distribution and abundance within the region. Survey efforts at 30 locations from 2011 to 2012 did not result in the detection of any ringtails. Although non-detection does not equal absence, ringtails are easily trapped in other portions of their range and we would have expected to capture an image of a ringtail if a population was present. Despite the ease of capture for ringtails, funding and equipment constraints limited survey efforts spatially to only a limited portion of CIRO and CRSP. There are large areas of suitable habitat that we were unable to survey during this effort that should be investigated further.

A substantial amount of information was gained on mammalian carnivores present in the CIRO region. The CIRO region has high levels of mammalian carnivore species richness, with 12 species being detected including red fox, striped skunk, Western

spotted skunk, coyote, bobcat, domestic dog, mountain lion, raccoon, long-tailed weasel, short-tailed weasel, American badger, and a large mustelid. Western spotted skunk populations appear to be declining in portions of southern Idaho and are being considered for inclusion in the revision of the State Wildlife Action Plan as a SGCN. The large-bodied appearance and overall size suggests that the large mustelid detected may be a fisher. Fishers have not previously been detected south of the Snake River in Idaho and if present in CIRO may represent a disperser utilizing the area as a corridor. Future survey efforts should aim to incorporate a non-invasive genetic monitoring component to prevent inconclusive identifications. Incidental detections of 17 other species (9 mammalian and 8 avian) provided additional value to the project. Specifically, we gained useful information on the distribution of cliff chipmunks, an Idaho SGCN that has received little attention previously.

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APPENDIX A

Camera Activity Log

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
3/3/2011	1	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
3/4/2011	1	Woodrat spp.	*Neotoma* spp.	1	8	N
3/4/2011	1	Mountain Cottontail	*Sylvilagus nuttalii*	1	3	N
3/4/2011	1	Mule Deer	*Odocoileus hemionus*	1	3	N
3/5/2011	1	Woodrat spp.	*Neotoma* spp.	1	9	N
3/6/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
3/7/2011	1	Woodrat spp.	*Neotoma* spp.	1	10	N
3/9/2011	1	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
3/10/2011	1	Woodrat spp.	*Neotoma cinerea*	1	3	N
3/11/2011	1	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
3/12/2011	1	Woodrat spp.	*Neotoma* spp.	1	7	N
3/13/2011	1	Woodrat spp.	*Neotoma* spp.	1	6	N
3/14/2011	1	Woodrat spp.	*Neotoma* spp.	1	5	N
3/15/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
3/15/2011	1	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
3/17/2011	1	Woodrat spp.	*Neotoma* spp.	1	14	N
3/17/2011	1	Red fox	*Vulpes vulpes*	1	2	Y
3/18/2011	1	Woodrat spp.	*Neotoma* spp.	1	4	N
3/19/2011	1	Woodrat spp.	*Neotoma* spp.	1	11	N
3/19/2011	1	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
3/19/2011	1	Small Mammal	Unidentified spp.	1	2	N
3/20/2011	1	Woodrat spp.	*Neotoma* spp.	1	8	N
3/20/2011	1	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
3/21/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
3/22/2011	1	Woodrat spp.	*Neotoma* spp.	1	6	N

[a] Number of individuals of the detected species detected within the image
[b] Number of images of the species captured of the species on the given date provided that individuals could not be identified by distinguishing marks
[c] N = the species detected was not a mammalian carnivore; Y = the species detected was a mammalian carnivore; U = Unknown

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
3/23/2011	1	Woodrat spp.	*Neotoma* spp.	1	3	N
3/23/2011	1	Mule Deer	*Odocoileus hemionus*	1	2	N
3/24/2011	1	Woodrat spp.	*Neotoma* spp.	1	6	N
3/25/2011	1	Woodrat spp.	*Neotoma* spp.	1	7	N
3/26/2011	1	Woodrat spp.	*Neotoma* spp.	1	8	N
3/27/2011	1	Woodrat spp.	*Neotoma* spp.	1	4	N
3/28/2011	1	Woodrat spp.	*Neotoma* spp.	1	6	N
3/28/2011	1	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
3/29/2011	1	Woodrat spp.	*Neotoma* spp.	1	7	N
3/30/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
3/31/2011	1	Woodrat spp.	*Neotoma* spp.	1	11	N
4/1/2011	1	Woodrat spp.	*Neotoma* spp.	1	14	N
4/1/2011	1	Yellow–bellied Marmot	*Marmota flaviventris*	1	2	N
4/2/2011	1	Woodrat spp.	*Neotoma* spp.	1	9	N
4/2/2011	1	Woodrat spp.	*Neotoma* spp.	2	2	N
4/3/2011	1	Woodrat spp.	*Neotoma* spp.	1	11	N
4/3/2011	1	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/3/2011	1	Small Mammal	Unidentified spp.	1	2	N
4/4/2011	1	Woodrat spp.	*Neotoma* spp.	1	8	N
4/4/2011	1	Cliff Chipmunk	*Neotamias dorsalis*	1	4	N
4/5/2011	1	Woodrat spp.	*Neotoma* spp.	1	9	N
4/5/2011	1	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
4/6/2011	1	Woodrat spp.	*Neotoma* spp.	1	25	N
4/6/2011	1	Cliff Chipmunk	*Neotamias dorsalis*	1	16	N
4/6/2011	1	Small Mammal	Unidentified spp.	1	2	N

[a] Number of individuals of the detected species detected within the image
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[c] N = the species detected was not a mammalian carnivore; Y = the species detected was a mammalian carnivore; U = Unknown

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/7/2011	1	Woodrat spp.	*Neotoma* spp.	1	8	N
4/7/2011	1	Small Mammal	Unidentified spp.	1	8	N
4/8/2011	1	Woodrat spp.	*Neotoma* spp.	1	3	N
4/8/2011	1	Small Mammal	Unidentified spp.	1	2	N
4/9/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
4/9/2011	1	Small Mammal	Unidentified spp.	1	2	N
4/10/2011	1	Woodrat spp.	*Neotoma* spp.	1	18	N
4/11/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
4/12/2011	1	Woodrat spp.	*Neotoma* spp.	1	5	N
4/12/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
4/12/2011	1	Striped Skunk	*Mephitis mephitis*	1	2	Y
4/13/2011	1	Woodrat spp.	*Neotoma* spp.	1	4	N
4/13/2011	1	Small Mammal	Unidentified spp.	1	2	N
4/14/2011	1	Cliff Chipmunk	*Neotamias dorsalis*	1	2	N
4/14/2011	1	Small Mammal	Unidentified spp.	1	2	N
4/15/2011	1	Woodrat spp.	*Neotoma* spp.	1	8	N
4/15/2011	1	Small Mammal	Unidentified spp.	1	2	N
4/16/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
4/16/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	3	Y
4/17/2011	1	Woodrat spp.	*Neotoma* spp.	1	6	N
4/17/2011	1	Woodrat spp.	*Neotoma* spp.	2	1	N
4/17/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	4	Y
4/18/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
4/18/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	4	Y
4/19/2011	1	Woodrat spp.	*Neotoma* spp.	1	4	N

[a] Number of individuals of the detected species detected within the image
[b] Number of images of the species captured of the species on the given date provided that individuals could not be identified by distinguishing marks
[c] N = the species detected was not a mammalian carnivore; Y = the species detected was a mammalian carnivore; U = Unknown

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/19/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	4	Y
4/20/2011	1	Woodrat spp.	*Neotoma* spp.	1	3	N
4/20/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
4/21/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
4/21/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	7	Y
4/22/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
4/23/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
4/23/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	7	Y
4/24/2011	1	Woodrat spp.	*Neotoma* spp.	1	4	N
4/25/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
4/26/2011	1	Woodrat spp.	*Neotoma* spp.	1	6	N
4/27/2011	1	Woodrat spp.	*Neotoma* spp.	1	3	N
4/29/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
4/29/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
4/30/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
5/1/2011	1	Woodrat spp.	*Neotoma* spp.	1	5	N
5/1/2011	1	Woodrat spp.	*Neotoma* spp.	2	1	N
5/2/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
5/3/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
5/4/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
5/4/2011	1	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/5/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
5/6/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
5/8/2011	1	Red fox	*Vulpes vulpes*	1	1	Y
5/9/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N

[a] Number of individuals of the detected species detected within the image
[b] Number of images of the species captured of the species on the given date provided that individuals could not be identified by distinguishing marks
[c] N = the species detected was not a mammalian carnivore; Y = the species detected was a mammalian carnivore; U = Unknown

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
5/10/2011	1	Mule Deer	*Odocoileus hemionus*	1	2	N
5/10/2011	1	Red fox	*Vulpes vulpes*	1	1	Y
5/12/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
5/13/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
5/15/2011	1	Mule Deer	*Odocoileus hemionus*	1	1	N
5/15/2011	1	Striped Skunk	*Mephitis mephitis*	1	1	Y
5/16/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
5/16/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	3	Y
5/18/2011	1	Red fox	*Vulpes vulpes*	1	1	Y
5/20/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
5/21/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
5/23/2011	1	Woodrat spp.	*Neotoma* spp.	1	2	N
5/23/2011	1	Mule Deer	*Odocoileus hemionus*	1	1	N
5/23/2011	1	Red fox	*Vulpes vulpes*	1	1	Y
5/24/2011	1	Woodrat spp.	*Neotoma* spp.	1	1	N
5/25/2011	1	Striped Skunk	*Mephitis mephitis*	1	1	Y
5/26/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	5	Y
5/27/2011	1	Western Spotted Skunk	*Spilogale gracilis*	1	3	Y
3/3/2011	2	Small Mammal	Unidentified spp.	1	3	N
3/4/2011	2	Woodrat spp.	*Neotoma* spp.	1	5	N
3/5/2011	2	Woodrat spp.	*Neotoma* spp.	1	5	N
3/10/2011	2	Woodrat spp.	*Neotoma* spp.	1	3	N
3/10/2011	2	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
3/10/2011	2	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
3/11/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N

[a] Number of individuals of the detected species detected within the image
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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
3/11/2011	2	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
3/12/2011	2	Mule Deer	*Odocoileus hemionus*	1	3	N
3/12/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	4	Y
3/13/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N
3/13/2011	2	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
3/14/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N
3/15/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N
3/17/2011	2	Woodrat spp.	*Neotoma* spp.	1	4	N
3/17/2011	2	Domestic Dog	*Canid familiaris*	1	3	Y
3/17/2011	2	Small Mammal	Unidentified spp.	1	2	N
3/18/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N
3/18/2011	2	Small Mammal	Unidentified spp.	1	4	N
3/20/2011	2	Woodrat spp.	*Neotoma* spp.	1	2	N
3/20/2011	2	Small Mammal	Unidentified spp.	1	2	N
3/21/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
3/22/2011	2	Woodrat spp.	*Neotoma* spp.	1	15	N
3/22/2011	2	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
3/22/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	6	Y
3/23/2011	2	Small Mammal	Unidentified spp.	1	3	N
3/24/2011	2	Woodrat spp.	*Neotoma* spp.	1	12	N
3/24/2011	2	Small Mammal	Unidentified spp.	1	4	N
3/24/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
3/25/2011	2	Woodrat spp.	*Neotoma* spp.	1	6	N
3/25/2011	2	Red fox	*Vulpes vulpes*	1	7	Y
3/25/2011	2	Small Mammal	Unidentified spp.	1	6	N

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
3/27/2011	2	Woodrat spp.	*Neotoma* spp.	1	12	N
3/27/2011	2	Small Mammal	Unidentified spp.	1	4	N
3/28/2011	2	Woodrat spp.	*Neotoma* spp.	1	8	N
3/28/2011	2	Mountain Cottontail	*Sylvilagus nuttalii*	1	8	N
3/29/2011	2	Townsend's Solitaire	*Myadestes townsendii*	1	2	N
3/29/2011	2	Woodrat spp.	*Neotoma* spp.	1	4	N
3/30/2011	2	Woodrat spp.	*Neotoma* spp.	1	2	N
3/30/2011	2	Small Mammal	Unidentified spp.	1	2	N
3/31/2011	2	Woodrat spp.	*Neotoma* spp.	1	18	N
3/31/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
4/1/2011	2	Woodrat spp.	*Neotoma* spp.	1	17	N
4/1/2011	2	Small Mammal	Unidentified spp.	1	2	N
4/1/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
4/2/2011	2	Woodrat spp.	*Neotoma* spp.	1	2	N
4/2/2011	2	Small Mammal	Unidentified spp.	1	10	N
4/3/2011	2	Woodrat spp.	*Neotoma* spp.	1	3	N
4/4/2011	2	Townsend's Solitaire	*Myadestes townsendii*	1	2	N
4/4/2011	2	Woodrat spp.	*Neotoma* spp.	1	5	N
4/4/2011	2	Small Mammal	Unidentified spp.	1	6	N
4/5/2011	2	Woodrat spp.	*Neotoma* spp.	1	8	N
4/5/2011	2	Small Mammal	Unidentified spp.	1	14	N
4/6/2011	2	Red fox	*Vulpes vulpes*	1	28	Y
4/6/2011	2	Small Mammal	Unidentified spp.	1	12	N
4/7/2011	2	Woodrat spp.	*Neotoma* spp.	1	20	N
4/7/2011	2	Small Mammal	Unidentified spp.	1	6	N

[a] Number of individuals of the detected species detected within the image
[b] Number of images of the species captured of the species on the given date provided that individuals could not be identified by distinguishing marks
[c] N = the species detected was not a mammalian carnivore; Y = the species detected was a mammalian carnivore; U = Unknown

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/7/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	12	Y
4/8/2011	2	Woodrat spp.	*Neotoma* spp.	1	4	N
4/8/2011	2	Mountain Cottontail	*Sylvilagus nuttalii*	1	8	N
4/9/2011	2	Mountain Cottontail	*Sylvilagus nuttalii*	1	4	N
4/9/2011	2	Small Mammal	Unidentified spp.	1	4	N
4/10/2011	2	Woodrat spp.	*Neotoma* spp.	1	4	N
4/10/2011	2	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/10/2011	2	Small Mammal	Unidentified spp.	1	4	N
4/11/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N
4/11/2011	2	Small Mammal	Unidentified spp.	1	2	N
4/11/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	6	Y
4/12/2011	2	Red fox	*Vulpes vulpes*	1	2	Y
4/13/2011	2	Small Mammal	Unidentified spp.	1	2	N
4/15/2011	2	Small Mammal	Unidentified spp.	1	2	N
4/17/2011	2	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/18/2011	2	Small Mammal	Unidentified spp.	1	2	N
4/18/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	7	Y
4/18/2011	2	Western Spotted Skunk	*Spilogale gracilis*	2	1	Y
4/19/2011	2	Small Mammal	Unidentified spp.	1	2	N
4/20/2011	2	Townsend's Solitaire	*Myadestes townsendii*	1	2	N
4/20/2011	2	Small Mammal	Unidentified spp.	1	2	N
4/20/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	7	Y
4/21/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	18	Y
4/22/2011	2	Small Mammal	Unidentified spp.	1	1	N
4/23/2011	2	Striped Skunk	*Mephitis mephitis*	1	11	Y

[a] Number of individuals of the detected species detected within the image
[b] Number of images of the species captured of the species on the given date provided that individuals could not be identified by distinguishing marks
[c] N = the species detected was not a mammalian carnivore; Y = the species detected was a mammalian carnivore; U = Unknown

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/23/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	12	Y
4/26/2011	2	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/26/2011	2	Small Mammal	Unidentified spp.	1	1	N
4/30/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N
5/1/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N
5/2/2011	2	Woodrat spp.	*Neotoma* spp.	1	2	N
5/4/2011	2	Red fox	*Vulpes vulpes*	1	1	Y
5/5/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N
5/6/2011	2	Woodrat spp.	*Neotoma* spp.	1	1	N
5/10/2011	2	Townsend's Solitaire	*Myadestes townsendii*	1	1	N
5/10/2011	2	Red fox	*Vulpes vulpes*	1	2	Y
5/18/2011	2	Small Mammal	Unidentified spp.	1	1	N
5/20/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
5/22/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	11	Y
5/24/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	5	Y
5/25/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	9	Y
5/26/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	16	Y
5/27/2011	2	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
3/11/2011	3	Woodrat spp.	*Neotoma* spp.	1	2	N
3/11/2011	3	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
3/12/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
3/13/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
3/14/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
3/15/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
3/16/2011	3	Woodrat spp.	*Neotoma* spp.	1	2	N

[a] Number of individuals of the detected species detected within the image
[b] Number of images of the species captured of the species on the given date provided that individuals could not be identified by distinguishing marks
[c] N = the species detected was not a mammalian carnivore; Y = the species detected was a mammalian carnivore; U = Unknown

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
3/17/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
3/18/2011	3	Woodrat spp.	*Neotoma* spp.	1	7	N
3/18/2011	3	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
3/18/2011	3	Western Spotted Skunk	*Spilogale gracilis*	1	3	Y
3/19/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
3/20/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
3/21/2011	3	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
3/22/2011	3	Red fox	*Vulpes vulpes*	1	2	Y
3/22/2011	3	Western Spotted Skunk	*Spilogale gracilis*	1	16	Y
3/23/2011	3	Woodrat spp.	*Neotoma* spp.	1	2	N
3/24/2011	3	Woodrat spp.	*Neotoma* spp.	1	2	N
3/26/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
3/27/2011	3	Red fox	*Vulpes vulpes*	1	1	Y
3/30/2011	3	Woodrat spp.	*Neotoma* spp.	1	3	N
3/30/2011	3	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
3/31/2011	3	Woodrat spp.	*Neotoma* spp.	1	2	N
4/1/2011	3	Woodrat spp.	*Neotoma* spp.	1	2	N
4/1/2011	3	Small Mammal	Unidentified spp.	1	1	N
4/2/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
4/2/2011	3	Small Mammal	Unidentified spp.	1	2	N
4/3/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
4/4/2011	3	Woodrat spp.	*Neotoma* spp.	1	2	N
4/6/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
4/7/2011	3	Woodrat spp.	*Neotoma* spp.	2	2	N
4/10/2011	3	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y

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[c] N = the species detected was not a mammalian carnivore; Y = the species detected was a mammalian carnivore; U = Unknown

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/11/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
4/11/2011	3	Western Spotted Skunk	*Spilogale gracilis*	1	4	Y
4/15/2011	3	Woodrat spp.	*Neotoma* spp.	1	4	N
4/15/2011	3	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
4/19/2011	3	Red fox	*Vulpes vulpes*	1	1	Y
4/21/2011	3	Woodrat spp.	*Neotoma* spp.	1	1	N
4/23/2011	3	Yellow–bellied Marmot	*Marmota flaviventris*	1	3	N
4/24/2011	3	Unidentifiable image	Unknown	1	1	U
4/27/2011	3	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
5/5/2011	3	Woodrat spp.	*Neotoma* spp.	1	2	N
5/11/2011	3	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
3/4/2011	4	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
3/4/2011	4	Small Mammal	Unidentified spp.	1	6	N
3/5/2011	4	Small Mammal	Unidentified spp.	1	8	N
3/9/2011	4	Small Mammal	Unidentified spp.	1	1	N
3/11/2011	4	Least Chipmunk	*Neotamias minimus*	1	2	N
3/11/2011	4	Small Mammal	Unidentified spp.	1	4	N
3/12/2011	4	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
3/12/2011	4	Small Mammal	Unidentified spp.	1	2	N
3/15/2011	4	Small Mammal	Unidentified spp.	1	3	N
3/16/2011	4	Long–tailed Weasel	*Mustela frenata*	1	2	Y
3/17/2011	4	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
3/18/2011	4	Small Mammal	Unidentified spp.	1	3	N
3/19/2011	4	Small Mammal	Unidentified spp.	1	5	N
3/20/2011	4	Small Mammal	Unidentified spp.	1	1	N

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
3/23/2011	4	Woodrat spp.	*Neotoma* spp.	1	1	N
3/24/2011	4	Small Mammal	Unidentified spp.	1	1	N
3/25/2011	4	Small Mammal	Unidentified spp.	1	1	N
3/29/2011	4	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
3/31/2011	4	Striped Skunk	*Mephitis mephitis*	1	39	Y
3/31/2011	4	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
4/1/2011	4	Striped Skunk	*Mephitis mephitis*	1	42	Y
3/25/2011	6	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
3/25/2011	6	Red fox	*Vulpes vulpes*	1	2	Y
3/25/2011	6	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
3/26/2011	6	Red fox	*Vulpes vulpes*	1	15	Y
3/26/2011	6	Striped Skunk	*Mephitis mephitis*	1	3	Y
3/26/2011	6	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
3/29/2011	6	Red fox	*Vulpes vulpes*	1	2	Y
4/3/2011	6	Striped Skunk	*Mephitis mephitis*	1	11	Y
4/4/2011	6	Striped Skunk	*Mephitis mephitis*	1	2	Y
4/6/2011	6	Red fox	*Vulpes vulpes*	1	9	Y
4/8/2011	6	Red fox	*Vulpes vulpes*	1	2	Y
4/11/2011	6	American Badger	*Taxidea taxus*	1	1	Y
4/11/2011	6	Red fox	*Vulpes vulpes*	1	1	Y
3/16/2011	7	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
3/19/2011	7	Small Mammal	Unidentified spp.	1	3	N
3/25/2011	7	Striped Skunk	*Mephitis mephitis*	1	8	Y
3/26/2011	7	Striped Skunk	*Mephitis mephitis*	1	1	Y
3/27/2011	7	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y

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Appendix A. Camera Activity Logs.

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4/1/2011	7	Red fox	*Vulpes vulpes*	1	1	Y
4/1/2011	7	Striped Skunk	*Mephitis mephitis*	1	56	Y
4/2/2011	7	Red fox	*Vulpes vulpes*	1	1	Y
4/4/2011	7	Striped Skunk	*Mephitis mephitis*	1	2	Y
4/7/2011	7	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
4/9/2011	7	Striped Skunk	*Mephitis mephitis*	1	1	Y
3/7/2011	9	Small Mammal	Unidentified spp.	1	1	N
3/16/2011	9	Small Mammal	Unidentified spp.	1	1	N
3/24/2011	9	Striped Skunk	*Mephitis mephitis*	1	5	Y
3/26/2011	9	Red fox	*Vulpes vulpes*	1	9	Y
3/29/2011	9	Striped Skunk	*Mephitis mephitis*	1	5	Y
4/5/2011	9	Small Mammal	Unidentified spp.	1	5	N
4/5/2011	9	Striped Skunk	*Mephitis mephitis*	1	8	Y
4/6/2011	9	Striped Skunk	*Mephitis mephitis*	1	58	Y
4/7/2011	9	Striped Skunk	*Mephitis mephitis*	1	1	Y
4/10/2011	9	Red fox	*Vulpes vulpes*	1	4	Y
3/18/2011	10	Cliff Chipmunk	*Neotamias dorsalis*	1	2	N
3/18/2011	10	Short-tailed Weasel	*Mustela erminea*	1	2	Y
3/25/2011	10	Striped Skunk	*Mephitis mephitis*	1	28	Y
3/26/2011	10	Striped Skunk	*Mephitis mephitis*	1	15	Y
3/27/2011	10	Striped Skunk	*Mephitis mephitis*	1	10	Y
3/29/2011	10	Striped Skunk	*Mephitis mephitis*	1	2	Y
4/2/2011	10	Small Mammal	Unidentified spp.	1	3	N
4/3/2011	10	Small Mammal	Unidentified spp.	1	20	N
4/3/2011	10	Striped Skunk	*Mephitis mephitis*	1	14	Y

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/4/2011	10	Small Mammal	Unidentified spp.	1	10	N
4/4/2011	10	Striped Skunk	*Mephitis mephitis*	1	134	Y
4/5/2011	10	Striped Skunk	*Mephitis mephitis*	1	22	Y
4/6/2011	10	Striped Skunk	*Mephitis mephitis*	1	21	Y
4/6/2011	10	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
4/8/2011	10	Striped Skunk	*Mephitis mephitis*	1	4	Y
3/21/2011	12	American Robin	*Turdis americanus*	1	1	N
3/21/2011	12	Unidentified passerine	Unidentified spp.	1	1	N
4/2/2011	12	Red fox	*Vulpes vulpes*	1	147	Y
4/3/2011	13	Striped Skunk	*Mephitis mephitis*	1	4	Y
4/7/2011	13	Striped Skunk	*Mephitis mephitis*	1	1	Y
4/14/2011	14	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
4/15/2011	14	Small Mammal	Unidentified spp.	1	57	N
4/16/2011	14	Small Mammal	Unidentified spp.	1	35	N
4/17/2011	14	Small Mammal	Unidentified spp.	1	9	N
5/11/2011	14	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/11/2011	14	Small Mammal	Unidentified spp.	1	16	N
5/12/2011	14	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/12/2011	14	Small Mammal	Unidentified spp.	1	10	N
5/13/2011	14	Small Mammal	Unidentified spp.	1	21	N
5/14/2011	14	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/14/2011	14	Small Mammal	Unidentified spp.	1	21	N
5/14/2011	14	Small Mammal	Unidentified spp.	2	1	N
5/15/2011	14	Small Mammal	Unidentified spp.	1	146	N
5/15/2011	14	Small Mammal	Unidentified spp.	2	1	N

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5/16/2011	14	American Robin	*Turdis americanus*	1	1	N
5/16/2011	14	Small Mammal	Unidentified spp.	1	185	N
5/11/2011	14	Moose	*Alces alces*	1	1	N
4/16/2011	15	Wild Turkey	*Meleagris gallopavo*	1	1	N
4/18/2011	15	Mountain Lion	*Puma concolor*	1	2	Y
4/24/2011	15	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/25/2011	15	Striped Skunk	*Mephitis mephitis*	1	2	Y
4/27/2011	15	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/2/2011	15	Long–tailed Weasel	*Mustela frenata*	1	1	Y
5/8/2011	15	Red fox	*Vulpes vulpes*	1	1	Y
5/9/2011	15	Mountain Lion	*Puma concolor*	1	1	Y
5/11/2011	15	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/18/2011	15	Striped Skunk	*Mephitis mephitis*	1	3	Y
5/22/2011	15	Mule Deer	*Odocoileus hemionus*	1	1	N
4/18/2011	16	Mountain Lion	*Puma concolor*	1	1	Y
4/22/2011	16	Striped Skunk	*Mephitis mephitis*	1	2	Y
5/5/2011	16	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
5/7/2011	16	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
5/11/2011	16	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
5/11/2011	16	Yellow–bellied Marmot	*Marmota flaviventris*	2	2	N
5/14/2011	16	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/19/2011	16	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
5/20/2011	16	Yellow–bellied Marmot	*Marmota flaviventris*	1	4	N
4/15/2011	17	Woodrat spp.	*Neotoma* spp.	1	3	N
4/16/2011	17	Woodrat spp.	*Neotoma* spp.	1	3	N

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Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/17/2011	17	Woodrat spp.	*Neotoma* spp.	1	9	N
4/18/2011	17	Woodrat spp.	*Neotoma* spp.	1	4	N
4/19/2011	17	Woodrat spp.	*Neotoma* spp.	1	6	N
4/20/2011	17	Woodrat spp.	*Neotoma* spp.	1	13	N
4/21/2011	17	Woodrat spp.	*Neotoma* spp.	1	11	N
4/21/2011	17	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/22/2011	17	Woodrat spp.	*Neotoma* spp.	1	2	N
4/23/2011	17	Woodrat spp.	*Neotoma* spp.	1	4	N
4/24/2011	17	Woodrat spp.	*Neotoma* spp.	1	2	N
4/25/2011	17	Woodrat spp.	*Neotoma* spp.	1	1	N
4/26/2011	17	Woodrat spp.	*Neotoma* spp.	1	1	N
4/27/2011	17	Woodrat spp.	*Neotoma* spp.	1	2	N
4/30/2011	17	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
5/1/2011	17	Woodrat spp.	*Neotoma* spp.	1	1	N
5/5/2011	17	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
5/6/2011	17	Woodrat spp.	*Neotoma* spp.	1	2	N
5/8/2011	17	Striped Skunk	*Mephitis mephitis*	1	1	Y
5/8/2011	17	Western Spotted Skunk	*Spilogale gracilis*	1	3	Y
5/9/2011	17	Woodrat spp.	*Neotoma* spp.	1	1	N
5/11/2011	17	Woodrat spp.	*Neotoma* spp.	1	1	N
5/11/2011	17	Western Spotted Skunk	*Spilogale gracilis*	1	3	Y
5/12/2011	17	Woodrat spp.	*Neotoma* spp.	1	6	N
5/12/2011	17	Woodrat spp.	*Neotoma* spp.	2	1	N
5/12/2011	17	Small Mammal	Unidentified spp.	1	1	N
5/12/2011	17	Western Spotted Skunk	*Spilogale gracilis*	1	3	Y

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/15/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
4/15/2011	18	Striped Skunk	*Mephitis mephitis*	1	1	Y
4/16/2011	18	Woodrat spp.	*Neotoma* spp.	1	2	N
4/16/2011	18	Striped Skunk	*Mephitis mephitis*	1	2	Y
4/17/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
4/18/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
4/19/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
4/20/2011	18	Woodrat spp.	*Neotoma* spp.	1	3	N
4/21/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
4/22/2011	18	Unidentifiable image	Unknown	1	1	U
4/23/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
4/23/2011	18	Striped Skunk	*Mephitis mephitis*	1	2	Y
4/23/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	12	Y
4/24/2011	18	Mountain Cottontail	*Sylvilagus nuttalii*	1	3	N
4/25/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
4/25/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	7	Y
4/26/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
4/27/2011	18	Woodrat spp.	*Neotoma* spp.	1	3	N
4/27/2011	18	Striped Skunk	*Mephitis mephitis*	1	2	Y
4/27/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	6	Y
4/29/2011	18	Red fox	*Vulpes vulpes*	1	4	Y
4/30/2011	18	Striped Skunk	*Mephitis mephitis*	1	1	Y
5/1/2011	18	Woodrat spp.	*Neotoma* spp.	1	3	N
5/2/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
5/4/2011	18	Woodrat spp.	*Neotoma* spp.	1	6	N

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Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
5/4/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
5/6/2011	18	Woodrat spp.	*Neotoma* spp.	1	2	N
5/12/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
5/13/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
5/15/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
5/16/2011	18	Woodrat spp.	*Neotoma* spp.	1	2	N
5/18/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
5/19/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
5/20/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
5/21/2011	18	Long–tailed Weasel	*Mustela frenata*	1	1	Y
5/22/2011	18	Mule Deer	*Odocoileus hemionus*	1	1	N
5/22/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
5/22/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
5/23/2011	18	Large Mustelid	Unidentified spp.	1	1	Y
5/26/2011	18	Woodrat spp.	*Neotoma* spp.	1	1	N
7/7/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
7/8/2011	18	Mule Deer	*Odocoileus hemionus*	1	2	N
7/8/2011	18	Red fox	*Vulpes vulpes*	1	13	Y
7/9/2011	18	Red fox	*Vulpes vulpes*	1	5	Y
7/10/2011	18	Mule Deer	*Odocoileus hemionus*	1	4	N
7/10/2011	18	Mule Deer	*Odocoileus hemionus*	2	1	N
7/10/2011	18	Red fox	*Vulpes vulpes*	1	9	Y
7/11/2011	18	Red fox	*Vulpes vulpes*	1	2	Y
7/12/2011	18	Red fox	*Vulpes vulpes*	1	2	Y
7/15/2011	18	Mule Deer	*Odocoileus hemionus*	1	1	N

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Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
7/15/2011	18	Mule Deer	*Odocoileus hemionus*	2	1	N
7/15/2011	18	Red fox	*Vulpes vulpes*	1	41	Y
7/15/2011	18	Red fox	*Vulpes vulpes*	2	7	Y
7/18/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
7/18/2011	18	Red fox	*Vulpes vulpes*	2	1	Y
7/19/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
7/22/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
7/23/2011	18	Red fox	*Vulpes vulpes*	1	5	Y
7/23/2011	18	Red fox	*Vulpes vulpes*	2	2	Y
7/24/2011	18	Mule Deer	*Odocoileus hemionus*	1	1	N
7/24/2011	18	Mule Deer	*Odocoileus hemionus*	3	1	N
7/24/2011	18	Red fox	*Vulpes vulpes*	1	2	Y
7/28/2011	18	Red fox	*Vulpes vulpes*	1	2	Y
7/30/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
8/1/2011	18	Mule Deer	*Odocoileus hemionus*	2	1	N
8/2/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
8/7/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
8/8/2011	18	Raccoon	*Procyon lotor*	1	4	Y
8/9/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
8/10/2011	18	Red fox	*Vulpes vulpes*	1	5	Y
8/11/2011	18	Red fox	*Vulpes vulpes*	1	2	Y
8/12/2011	18	Red fox	*Vulpes vulpes*	1	4	Y
8/16/2011	18	Mule Deer	*Odocoileus hemionus*	1	1	N
8/19/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
8/20/2011	18	Red fox	*Vulpes vulpes*	1	2	Y

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Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
8/20/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
8/24/2011	18	Mule Deer	*Odocoileus hemionus*	1	1	N
8/24/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
8/29/2011	18	Unidentifiable image	Unknown	1	1	U
8/30/2011	18	Red fox	*Vulpes vulpes*	1	22	Y
8/31/2011	18	Red fox	*Vulpes vulpes*	1	3	Y
9/1/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
9/1/2011	18	Striped Skunk	*Mephitis mephitis*	1	2	Y
9/2/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
9/3/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
9/5/2011	18	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
9/6/2011	18	Unidentifiable image	Unknown	1	1	U
9/7/2011	18	Mule Deer	*Odocoileus hemionus*	1	1	N
9/8/2011	18	Red fox	*Vulpes vulpes*	1	1	Y
9/9/2011	18	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
9/12/2011	18	Mountain Lion	*Puma concolor*	1	2	Y
4/19/2011	19	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/20/2011	19	Mountain Cottontail	*Sylvilagus nuttalii*	1	3	N
4/20/2011	19	Unidentifiable image	Unknown	1	1	U
4/21/2011	19	Western Spotted Skunk	*Spilogale gracilis*	1	6	Y
4/22/2011	19	Woodrat spp.	*Neotoma* spp.	1	1	N
4/22/2011	19	Small Mammal	Unidentified spp.	1	2	N
4/22/2011	19	Western Spotted Skunk	*Spilogale gracilis*	1	4	Y
4/23/2011	19	Woodrat spp.	*Neotoma* spp.	1	1	N
4/23/2011	19	Small Mammal	Unidentified spp.	1	2	N

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[c] N = the species detected was not a mammalian carnivore; Y = the species detected was a mammalian carnivore; U = Unknown

Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/23/2011	19	Western Spotted Skunk	*Spilogale gracilis*	1	15	Y
4/24/2011	19	Small Mammal	Unidentified spp.	1	2	N
4/24/2011	19	Striped Skunk	*Mephitis mephitis*	1	5	Y
4/24/2011	19	Western Spotted Skunk	*Spilogale gracilis*	1	14	Y
4/27/2011	19	Western Spotted Skunk	*Spilogale gracilis*	1	8	Y
4/28/2011	19	Western Spotted Skunk	*Spilogale gracilis*	1	5	Y
5/1/2011	19	Unidentifiable image	Unknown	1	1	N
5/1/2011	19	Western Spotted Skunk	*Spilogale gracilis*	1	4	Y
5/2/2011	19	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
5/3/2011	19	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
5/11/2011	19	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
5/11/2011	19	Small Mammal	Unidentified spp.	1	1	N
5/12/2011	19	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/12/2011	19	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
4/16/2011	20	Woodrat spp.	*Neotoma* spp.	1	1	N
4/17/2011	20	Western Spotted Skunk	*Spilogale gracilis*	1	4	Y
4/19/2011	20	Small Mammal	Unidentified spp.	1	2	N
4/23/2011	20	Western Spotted Skunk	*Spilogale gracilis*	1	16	Y
4/24/2011	20	Striped Skunk	*Mephitis mephitis*	1	1	Y
4/26/2011	20	Small Mammal	Unidentified spp.	1	6	N
4/26/2011	20	Western Spotted Skunk	*Spilogale gracilis*	1	14	Y
5/2/2011	20	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
5/4/2011	20	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
5/11/2011	20	Unidentifiable image	Unknown	1	1	U
5/11/2011	20	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
7/17/2011	21	Red fox	*Vulpes vulpes*	1	16	Y
7/18/2011	21	Red fox	*Vulpes vulpes*	1	4	Y
7/19/2011	21	Red fox	*Vulpes vulpes*	1	1	Y
7/20/2011	21	Red fox	*Vulpes vulpes*	1	1	Y
7/21/2011	21	Red fox	*Vulpes vulpes*	1	5	Y
7/23/2011	21	Red fox	*Vulpes vulpes*	1	4	Y
7/23/2011	21	Turkey Vulture	*Cathartes aura*	1	21	N
7/23/2011	21	Turkey Vulture	*Cathartes aura*	2	10	N
7/23/2011	21	Turkey Vulture	*Cathartes aura*	3	5	N
7/24/2011	21	Red fox	*Vulpes vulpes*	1	1	Y
7/25/2011	21	Turkey Vulture	*Cathartes aura*	1	1	N
7/27/2011	21	Red fox	*Vulpes vulpes*	1	3	Y
8/4/2011	21	Red fox	*Vulpes vulpes*	1	1	Y
8/5/2011	21	Red fox	*Vulpes vulpes*	1	2	Y
8/7/2011	21	Red fox	*Vulpes vulpes*	1	14	Y
8/8/2011	21	Red fox	*Vulpes vulpes*	1	21	Y
8/13/2011	21	Red fox	*Vulpes vulpes*	1	2	Y
8/14/2011	21	Red fox	*Vulpes vulpes*	1	1	Y
8/17/2011	21	Red fox	*Vulpes vulpes*	1	9	Y
8/19/2011	21	Red fox	*Vulpes vulpes*	1	2	Y
8/20/2011	21	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
8/22/2011	21	Mule Deer	*Odocoileus hemionus*	1	1	N
9/1/2011	21	Striped Skunk	*Mephitis mephitis*	1	4	Y
9/1/2011	21	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
9/3/2011	21	Striped Skunk	*Mephitis mephitis*	1	2	Y

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
9/16/2011	21	Striped Skunk	*Mephitis mephitis*	1	1	Y
9/17/2011	21	Unidentifiable image	Unknown	1	1	U
9/19/2011	21	Black-billed Magpie	*Pica hudsonia*	1	1	N
9/19/2011	21	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
7/9/2011	22	Mule Deer	*Odocoileus hemionus*	1	25	N
7/10/2011	22	Mule Deer	*Odocoileus hemionus*	1	1	N
7/13/2011	22	Mule Deer	*Odocoileus hemionus*	1	59	N
7/17/2011	22	Red fox	*Vulpes vulpes*	1	3	Y
7/19/2011	22	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
7/25/2011	22	Striped Skunk	*Mephitis mephitis*	1	8	Y
7/26/2011	22	Striped Skunk	*Mephitis mephitis*	1	3	Y
7/28/2011	22	Unidentifiable image	Unknown	1	1	U
7/31/2011	22	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
8/3/2011	22	Red fox	*Vulpes vulpes*	1	1	Y
8/13/2011	22	Turkey Vulture	*Cathartes aura*	1	9	N
8/19/2011	22	Red fox	*Vulpes vulpes*	1	2	Y
8/20/2011	22	Red fox	*Vulpes vulpes*	1	5	Y
8/20/2011	22	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
8/21/2011	22	Red fox	*Vulpes vulpes*	1	4	Y
8/22/2011	22	Red fox	*Vulpes vulpes*	1	3	Y
8/23/2011	22	Unidentifiable image	Unknown	1	1	U
8/28/2011	22	Red fox	*Vulpes vulpes*	1	1	Y
9/2/2011	22	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
9/3/2011	22	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
9/6/2011	22	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
9/19/2011	22	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
9/22/2011	22	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
9/23/2011	22	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
7/15/2011	23	Red fox	*Vulpes vulpes*	1	8	Y
7/15/2011	23	Striped Skunk	*Mephitis mephitis*	1	5	Y
7/16/2011	23	Mule Deer	*Odocoileus hemionus*	1	13	N
7/16/2011	23	Striped Skunk	*Mephitis mephitis*	1	2	Y
7/19/2011	23	Red fox	*Vulpes vulpes*	1	3	Y
7/23/2011	23	Mule Deer	*Odocoileus hemionus*	1	1	N
7/23/2011	23	Striped Skunk	*Mephitis mephitis*	1	3	Y
7/24/2011	23	Striped Skunk	*Mephitis mephitis*	1	3	Y
7/25/2011	23	Red fox	*Vulpes vulpes*	1	1	Y
7/25/2011	23	Striped Skunk	*Mephitis mephitis*	1	2	Y
7/28/2011	23	Striped Skunk	*Mephitis mephitis*	1	2	Y
7/29/2011	23	Domestic Cattle	*Bos primigenius*	1	10	N
7/30/2011	23	Striped Skunk	*Mephitis mephitis*	1	2	Y
8/3/2011	23	Striped Skunk	*Mephitis mephitis*	1	5	Y
8/4/2011	23	Striped Skunk	*Mephitis mephitis*	1	4	Y
8/8/2011	23	Red fox	*Vulpes vulpes*	1	1	Y
8/11/2011	23	Domestic Cattle	*Bos primigenius*	1	29	N
8/12/2011	23	Red fox	*Vulpes vulpes*	1	1	Y
8/13/2011	23	Red fox	*Vulpes vulpes*	1	1	Y
8/14/2011	23	Red fox	*Vulpes vulpes*	1	2	Y
8/15/2011	23	Red fox	*Vulpes vulpes*	1	3	Y
8/16/2011	23	Red fox	*Vulpes vulpes*	1	35	Y

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
8/16/2011	23	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
8/29/2011	23	Red fox	*Vulpes vulpes*	1	19	Y
8/29/2011	23	Western Spotted Skunk	*Spilogale gracilis*	1	4	Y
8/30/2011	23	Mule Deer	*Odocoileus hemionus*	1	3	N
8/30/2011	23	Red fox	*Vulpes vulpes*	1	9	Y
8/31/2011	23	Red fox	*Vulpes vulpes*	1	3	Y
9/3/2011	23	Red fox	*Vulpes vulpes*	1	1	Y
9/9/2011	23	Domestic Cattle	*Bos primigenius*	1	21	N
9/9/2011	23	Mule Deer	*Odocoileus hemionus*	1	2	N
9/10/2011	23	Red fox	*Vulpes vulpes*	1	1	Y
9/20/2011	23	Mountain Lion	*Puma concolor*	1	3	Y
9/20/2011	23	Mule Deer	*Odocoileus hemionus*	1	1	N
9/20/2011	23	Unidentifiable image	Unknown	1	1	U
9/21/2011	23	Striped Skunk	*Mephitis mephitis*	1	1	Y
9/22/2011	23	American Robin	*Turdis americanus*	1	1	N
9/23/2011	23	Raccoon	*Procyon lotor*	1	4	Y
4/3/2012	24	Cliff Chipmunk	*Neotamias dorsalis*	1	7	N
4/3/2012	24	Western Scrub Jay	*Aphelocoma californica*	1	1	N
4/10/2012	24	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/13/2012	24	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/13/2012	24	Northern Flicker	*Colaptes auratus*	1	1	N
4/15/2012	24	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/18/2012	24	Mountain Cottontail	*Sylvilagus nuttalii*	1	7	N
4/20/2012	24	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/21/2012	24	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
5/5/2012	24	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
5/7/2012	24	Cliff Chipmunk	*Neotamias dorsalis*	1	2	N
5/9/2012	24	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/2/2012	25	Small Mammal	Unidentified spp.	1	3	N
4/3/2012	25	Small Mammal	Unidentified spp.	1	4	N
4/4/2012	25	Small Mammal	Unidentified spp.	1	2	N
4/5/2012	25	Small Mammal	Unidentified spp.	1	1	N
4/16/2012	25	Small Mammal	Unidentified spp.	1	1	N
4/3/2012	26	Yellow–bellied Marmot	*Marmota flaviventris*	1	1	N
4/5/2012	26	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
4/6/2012	26	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
4/10/2012	26	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/14/2012	26	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
4/19/2012	26	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/20/2012	26	Woodrat spp.	*Neotoma* spp.	1	1	N
4/24/2012	26	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/26/2012	26	Woodrat spp.	*Neotoma* spp.	1	1	N
4/28/2012	26	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/7/2012	26	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
5/8/2012	26	Mountain Cottontail	*Sylvilagus nuttalii*	1	2	N
4/13/2012	27	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/29/2012	27	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/1/2012	28	Mule Deer	*Odocoileus hemionus*	1	25	N
4/4/2012	28	Mountain Cottontail	*Sylvilagus nuttalii*	1	1	N
4/3/2012	29	Cliff Chipmunk	*Neotamias dorsalis*	1	2	N

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Appendix A. Camera Activity Logs.

Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/6/2012	29	Black-billed Magpie	*Pica hudsonia*	1	1	N
4/8/2012	29	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/9/2012	29	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/12/2012	29	Small Mammal	Unidentified spp.	1	1	N
4/12/2012	29	Western Scrub Jay	*Aphelocoma californica*	1	2	N
4/13/2012	29	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
4/14/2012	29	Western Scrub Jay	*Aphelocoma californica*	1	1	N
4/17/2012	29	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
5/2/2012	29	Cliff Chipmunk	*Neotamias dorsalis*	1	1	N
5/7/2012	29	Small Mammal	Unidentified spp.	1	1	N
5/3/2012	30	Small Mammal	Unidentified spp.	1	1	N
5/6/2012	30	Small Mammal	Unidentified spp.	1	1	N
5/7/2012	30	Small Mammal	Unidentified spp.	1	2	N
5/9/2012	30	American Robin	*Turdis americanus*	1	1	N
4/4/2012	26	Unidentifiable image	Unknown	1	1	U
4/5/2012	26	Unidentifiable image	Unknown	1	1	U
4/17/2012	26	Unidentifiable image	Unknown	1	1	U
4/12/2012	29	Unidentifiable image	Unknown	1	1	U
4/13/2012	29	Unidentifiable image	Unknown	1	1	U
4/5/2012	24	Coyote	*Canis latrans*	1	10	Y
4/13/2012	24	Bobcat	*Lynx rufus*	1	4	Y
4/15/2012	24	Bobcat	*Lynx rufus*	1	5	Y
4/23/2012	24	Striped Skunk	*Mephitis Mephitis*	1	7	Y
4/24/2012	24	Western Spotted Skunk	*Spilogale gracilis*	1	1	Y
4/26/2012	24	Striped Skunk	*Mephitis Mephitis*	1	4	Y

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Date	Site #	Common Name	Species	# of Individuals[a]	# of Images[b]	Carnivore[c]
4/8/2012	25	Western Spotted Skunk	*Spilogale gracilis*	1	2	Y
4/21/2012	27	Domestic Dog	*Canis familiaris*	1	2	Y
5/5/2012	27	Domestic Dog	*Canis familiaris*	1	23	Y
5/5/2012	27	Domestic Dog	*Canis familiaris*	1	2	Y
4/5/2012	28	Long–tailed Weasel	*Mustela frenata*	1	1	Y
4/9/2012	28	Long–tailed Weasel	*Mustela frenata*	1	1	Y
4/12/2012	30	Bobcat	*Lynx rufus*	1	2	Y
4/16/2012	30	Coyote	*Canis latrans*	1	63	Y

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APPENDIX B

Voucher Images of Species Detected

Voucher Image 1. Striped skunk (*Mephitis mephitis*)

Voucher Image 2. Western spotted skunk (*Spilogale gracilis*)

Voucher Image 3. Red fox (*Vulpes vulpes*)

Voucher Image 4. Coyote (*Canis latrans*)

Voucher Image 5. Bobcat (*Lynx rufus*)

Voucher Image 6. Mountain lion (*Puma concolor*)

Voucher Image 7. Raccoon (*Procyon lotor*)

Voucher Image 8. American badger (*Taxidea taxus*)

Voucher Image 9. Long-tailed weasel (*Mustela frenata*)

Voucher Image 10. Short-tailed weasel (*Mustela ermine*)

Voucher Image 11. Domestic dog (*Canis familiaris*)

Voucher Image 12. Large mustelid

Voucher Image 13. Small mammals

Voucher Image 14. Woodrats (*Neotoma* spp.)

Voucher Image 15. Yellow-bellied marmots (*Marmota flaviventris*)

Voucher Image 16. Mountain cottontails (*Sylvilagus nuttalii*)

Voucher Image 17. Cliff chipmunks (*Neotamias dorsalis*)

Voucher Image 18. Least chipmunks (*Neotamias minimus*)

Voucher Image 19. Mule deer (*Odocoileus hemionus*)

Voucher Image 20. Moose (*Alces alces*)

Voucher Image 21. Domestic cattle (*Bos primigenius*)

Voucher Image 22. Wild Turkey (*Meleagris gallopavo*)

Voucher Image 23. Turkey Vulture (*Cathartes aura*)

Voucher Image 24. Black-billed Magpie (*Pica hudsonia*)

Voucher Image 25. Western Scrub Jay (*Aphelocoma californica*)

Voucher Image 26. American Robin (*Turdis americanus*)

Voucher Image 27. Townsend's Solitaire (*Myadestes townsendii*)

Voucher Image 28. Northern Flicker (*Colaptes auratus*)