2007 Wildlife Management Activities
Avian and Small Mammal Elements

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Overview

Significant time and resources were spent on prairie dog management and related prairie dog issues in 2007. Sporadic sylvatic plague outbreaks continued to occur in the northern part of the county, but were not overly devastating to local populations. Overall management productivity, though, was still high, since most affected colonies were again on HCA properties and not on agricultural NPD properties targeted for removal. We continued to work with adjoining homeowners on prairie dog management issues on some properties to keep them from moving onto the private properties.

A new bat-monitoring project was developed to investigate possible bat roost sites in foothills mine sites. Initial investigations of some sites around Nugget and Butzel Hills did not indicate use by any bats. This project will continue to be developed and refined, working with our Acquisitions staff to refine their database of mine locations on our foothills properties.

We continued to work with the Colorado Division of Wildlife (CDOW) to monitor and manage Canada geese on County properties. A five-year study of non-migratory geese along the Front Range will probably conclude in 2008, but we will continue to make regular observations of the marked geese on POS properties if the CDOW requests us to. We continued our cooperative efforts with CDOW to monitor wintering waterfowl use of our aquatic habitat. We also coordinated bald eagle winter roost site surveys on POS properties with the CDOW.

Breeding bird surveys are continuing on a cyclic pattern, covering major POS properties or property groups in both the plains and foothills. Our bluebird nest box and monitoring project is growing, with new nest boxes installed on Walker Ranch and Betasso. Twelve volunteers have actively been monitoring these nest boxes with our wildlife technician. Existing raptor nests were again monitored for productivity, and bald eagle nests were monitored on the Keyes North, Braly and Wambsganss properties.

We assisted the Land Use Department and the County Attorney office in addressing a proposed gas well drilling site very proximate to the Wambsganss bald eagle nest site. That matter was resolved in January 2008 when EnCana withdrew this permit request as proposed. Information given to the County Attorney and Land Use Department regarding bald eagle nest requirements during this process will be incorporated into Boulder County's formal comments to the Colorado Oil and Gas Conservation Commission for revising current state policy regarding surface impacts from energy extraction activities in the state.

Many research projects were conducted on POS properties in 2007. A few ongoing research projects continued, with some implementing new phases of previous studies. Projects included a

continued investigation of bat ecology and a study on prairie dog ecology and disease transmission, which were funded by our small grant program. Other research projects included a butterfly distribution survey, an ant ecology investigation, a continued bird banding study by Thorne Ecological Institute, and a grasshopper research project on Rabbit Mountain.

Other major accomplishments in 2007 included: developing a research project to investigate local breeding golden eagle habitat use and movement using GPS telemetry; cooperating with CDOW on monitoring bald eagle nests and winter roost sites on POS properties; working on a mitigation project for lost PMJM habitat on private land that will repair the erosion on Rock Creek from the Highway 128 culvert on the Lindsay property; completing the wildlife habitat planting project at Sisters of St. Francis; having a continued leadership role in the Local Government Prairie Dog Working Group,; participating in the planning team for the Rock Creek Grassland management plan, and the Harney/Lastoka, the Hall/Heil Connector and the Marshall/Superior/Coalton trail planning teams; coordination of a Targeted Inventory Area survey by Colorado Natural Heritage Program biologists on POS sites; continued input to the ongoing lower Boulder Creek restoration planning process; numerous inter-governmental cooperative efforts with regional municipalities on open space wildlife management concerns.

Objectives for 2007

Objective 1:
Continue active management of prairie dogs and remove prairie dogs on at least ten incompatible sites, including sites requiring removal for resource management needs.

Results: We trapped over 1800 prairie dogs on 15 properties between June and mid-November. Contractors also removed over 650 prairie dogs from all of Monarch Park, including the northwest pasture that is being restored and the upland areas to the south and east of the creek. Prairie dogs were also removed from the James Construction property to meet the goals of our agreement with neighboring property owners to reclaim this property and return it to agricultural production. Prairie dogs were controlled, where needed, on or adjacent to reclamation projects in Dowe Flats (Cemex) and the Southeast Agricultural Buffer area (Liley).

Objective 2:
Refine and implement survey methodology for appropriate small mammal species, focusing on mustelid, lagomorph and sciurid species.

Results: We purchased four new digital remote trail cameras to use for detection of mammal occurrence on our targeted properties. These cameras far exceed the capabilities of film cameras in their ability to record significantly more images than film cameras when deployed. We are continuing to develop and test the use of these cameras for small mammal monitoring, using various baits.

We are also developing a targeted survey program for Abert's squirrels in ponderosa pine forests. This will incorporate some volunteer assistance to record sign of Abert's squirrel activity in managed and unmanaged ponderosa pine stands. Subsequently, either POS staff or an outside researcher will continue long-term monitoring efforts.

Objective 3:
Conduct breeding bird and small mammal surveys along established transects or survey routes on properties defined in Appendix A of the Small Mammal, Mesopredator and Avian Monitoring Protocol, using established protocol methodology and timing intervals/durations.

Results: Breeding bird surveys were conducted in June/July on parts of Hall Ranch, Lookout Road agricultural complex, Flagg/Two Creeks complex, and Meyers Gulch (Walker Ranch). Additional surveys were conducted ahead of proposed projects on Heil Valley Ranch (connector trail) and Cemex (vegetation restoration). Surveys were also conducted on HVR and Caribou Ranch for northern goshawk nests in March and April. One nest was confirmed on HVR.

Objective 4:
Conduct bat use surveys of historic mines on foothills properties and historic buildings as appropriate. Coordinate survey needs with appropriate Acquisitions staff and Cultural Resource Specialist.

Results: A new monitoring project was initiated for investigating bat roosting in abandoned mines in POS foothills properties. Four properties were investigated in the summer of 2007. None showed any signs of bat use. Digital recordings of ultrasonic bat calls will be made where bat use is detected. These calls will be analyzed with specialized software to try and determine species. We anticipate working with the Colorado Bat Society on these recording analyses, and recruiting one or two volunteers to help us with these analyses over the course of this project.

Objective 5:
Continue efforts to investigate the use of newly approved chemo sterilization agents on local non-migratory Canada goose breeding populations on POS properties.

Results: I contacted the CDOW and the manufacturer of this oral contraceptive for Canada geese, OvoControl, regarding the use of this compound on some of our resident goose populations. Currently, the CDOW is not permitting its use for Canada goose management. It can be ingested by other bird species besides geese, rendering them infertile as well. Therefore the state and federal agencies are not in favor of its use as currently formulated. Currently the CDOW is still only allowing egg addling as the means of pre-hatching control of local breeding goose populations. Additionally, the manufacturer informed me that the current costs for effective application of this compound would be around $12 per adult goose per season, and this would require multiple applications of the baited compound throughout the year. The application process is also highly visible, which could be problematic in areas such as the Fairground or Walden Ponds where breeding control is most needed.

Objective 6:
Continue coordination efforts with USDA research biologists to possibly test the efficacy of new prairie dog chemo sterilization compounds on POS colonies on NPD and/or MOA properties.

Results: In late 2006, research biologists with the USDA National Wildlife Research Center in Ft. Collins informed local land management agencies of their continued work on new chemo sterilization compounds that may need field trial testing in 2007. We expressed a willingness to have some field trials conducted on POS sites at that time. Since then, some setbacks have occurred in the research and the biologists are continuing their laboratory trials instead, to further refine these compounds and delivery methods prior to conducting field trials. We will continue our communications with the NWRC biologists to reaffirm our support and willingness to partner with them on these field trials in the future.

Objective 7:

Continue communications with CDOW to initiate a research project investigating territory and habitat use by golden eagles in Boulder County.

Results: I submitted a research proposal to CDOW biologists, requesting permission to initially trap and outfit two adult breeding eagles with GPS telemetry transmitters. The CDOW supports this study in principal, but would rather have a larger sample size than only two eagles. I have continued communications with the CDOW on this matter, indicating the probability of purchasing and deploying more transmitters in subsequent years. I described the logic in only deploying two transmitters initially, to assure the proper function of these transmitters in this type of habitat. I have submitted letters of support from other eagle researchers who have conducted similar investigations that started with only a few transmitters as well. Some of these researchers have expressed an interest in partnering with us on this project, especially in helping with the complex task of programming the transmitters for optimal data collection and in the management of that data via commercial satellite management accounts.

The CDOW biologist is currently reviewing this update and will likely approve this permit based on the justification statements submitted by these other researchers and our intent to continue this study with more transmitters, as funding is obtained. We have obtained the first two transmitters and will work with local eagle trappers in 2008 to trap the targeted eagles on Rabbit Mountain and either Heil Valley Ranch/Box Canyon or Meadow Park, depending on where these pairs nest in early 2008. I have been working with our grant administrator to apply for outside funding as well, to help us expand this study. I have also discussed this project with the USFS Boulder District wildlife biologist to hopefully have them partner with us as well. We would work with them to deploy transmitters on a few eagles nesting on USFS land that are proximate to our targeted nesting pairs on POS sites. The City of Boulder Open Space and Mountain Parks biologists did not think that they would have any funding to partner with us on this project in the next few years.

Projects

Small Mammals

Prairie Dogs

We trapped and removed prairie dogs from 15 separate properties in 2007. POS staff trapped all of these properties, including parts of Monarch Park. Two separate contractors removed prairie dogs from Monarch Park as well. Lethal control was conducted on 40 properties, targeting properties or separate colonies with less than 50 prairie dogs remaining. We were able to successfully control 21 of these sites, resulting in total elimination.

An abundant population of prairie dogs on our south county HCA sites precluded us from relocating any prairie dogs onto them from these removal sites. Some mortality from plague continued around Rabbit Mountain/Dowe Flats and HVR, as well as Cushman, Lagerman Reservoir and Imel. However, we are still not relocating prairie dogs back to the HCA areas of Rabbit Mountain/Dowe Flats or HVR in order to allow the Plant Ecologist and Weed Manager to continue working on habitat recovery efforts in those areas. HCA areas around Rabbit Mountain/Dowe Flats are experiencing a fairly rapid repopulation of prairie dogs in many areas already. Colonies have also begun to re-establish in the Red Hill Gulch area of HVR.

Prairie dogs that were trapped and removed from NPD or MOA properties were again donated to the black-footed ferret recovery program and two local raptor rehabilitation facilities. No prairie dogs were accepted from non-BCPOS sites for release on BCPOS properties. Table 1 presents the total number of prairie dogs removed, by property.

Table 1- Prairie Dog Removal Data for 2007: June 6-November 2

Property	Dates	Trap-Hours	Total Trapped	Success Index
Keyes West	6/6/2007-7/12/2007	14817.5	252	0.017007
Lohr	6/6/2007-6/14/2007	945.5	41	0.043363
Monarch	6/7/2007-6/14/2007	429.25	23	0.053582
Monarch (contract)			657	
Keyes North	6/15/2007-8/15/2007	40158.5	783	0.019498
Hodgson-Harris	6/21/2007-6/28/2007	1120.0	16	0.014286
Peck	6/29/2007-7/18/2007	185.0	4	0.021622
Hillside	7/13/2007-8/1/2007	13430.0	109	0.008116
Suitts	8/2/2007-8/23/2007	9082.25	109	0.012001
Quicksilver Berm	8/16/2007-8/23/2007	3980.5	18	0.004522
Fairgrounds	8/20/2007-9/6/2007	41.25	44	0.015079
Burchfield	8/24/2007-9/6/2007	9039.25	69	0.007633
Lynch	9/7/2007-9/26/2007	13111.0	139	0.010602
Monarch East	9/7/2007-9/13/2007	2282.0	19	0.018800
James Const.	9/27/2007-10/10/2007	6877.0	107	0.015559
A. Dawson (East)	10/11/2007-11/2/2007	11600.0	75	0.006466
TOTAL			**2465**	
TOTAL (adjusted)[1]		**127099**	**1808**	**0.014225**

Our field season ran from February to mid December. One seasonal technician was hired in February to conduct lethal control on small coteries. Four other seasonal technicians were hired later to trap prairie dogs off of designated NPD and MOA properties. Trapping began in June. A total of 2465 prairie dogs were removed in 2007. POS technicians trapped 1808 on 15 properties.

[1] Indicates only POS personnel results; excludes contractor results

Roe Ecological Services trapped 484 at Monarch Park, and Animal and Pest Control Specialists flushed an additional 173 from another part of Monarch Park in November (Table 1).

The plague epizootic event that commenced in 2005 sporadically continued to impact colonies on POS properties in northern Boulder County during 2007. Some of this activity happened on MOA and NPD sites this year, as indicated in the reduced acreages shown in Table 2a. Plague has not yet occurred east of the Diagonal Highway on any POS properties that we are aware of.

Colony acreage on NPD sites had continued to increase, even with active management actions, through 2006. In 2007, there was a significant reduction in active colony acreage on NPD sites in 2007. This was mostly the result of plague impacting some of the larger NPD areas in central and northern Boulder County, including Lagerman Reservoir and Imel. Progress was made in removal of prairie dogs on some NPD sites by POS crew and contracted removal as well, including parts of Monarch Park, CHP/RCF, Ertl, Becky, A. Dawson and G.M. Anderson properties. Still, this accounted for only approximately 10% of the NPD acreage reduction outside of the reduction from plague.

The prairie dog crew has continued to coordinate the trapping and transport of prairie dogs to both the FWS black-footed ferret recovery program and the Birds of Prey Foundation raptor recovery program. Recent changes in CDOW and federal policy regarding prairie dog management activities have continued to pose some challenges to our program. Deliveries were successfully coordinated in all situations, though. The majority of prairie dogs again were contributed live to the ferret program. Prairie dogs that were trapped while our holding facility was full, or which the FWS could not promise receipt of within five days of holding, were trapped without any insecticide being applied and humanely euthanized on site, then frozen for use by the raptor program as needed.

The following tables indicate the current status of occupied acreage by prairie dogs, compared to measured acreage in 2006. As in 2006, plague impacted some of our colonies in north Boulder County (Table 2a). Recolonization of previously impacted areas continued around Rabbit Mountain/Dowe Flats as was noted in 2006 as well. Some recolonization also occurred on Beech and adjoining City of Boulder Open Space, as well as north Heil Valley Ranch.

POS plant ecologists and the weed management team are continuing vegetation recovery projects on the Dowe Flats area and HVR. Until these projects are completed and the vegetation has re-established, no prairie dogs will be relocated back onto these HCA properties from other POS properties.

Table 2a: 2005-2007 Black-tailed Prairie Dog Colony Acres and Growth Rate

	2005	2006	2007	2006-2007 Acreage Change	2006-2007 % Change
Classification	**Acres**	**Acres**	**Acres**	**Acres**	**% Change**
HCA	1,564.55	966.60	918.95	-47.65	-4.93%
MOA	975.62	981.43	870.20	-111.23	-11.33%
NPD	603.13	689.80	484.37	-205.43	-29.78%
NSH	131.33	111.51	86.00	-25.51	-22.88%
TBD	0.69	29.81	52.02	22.21	74.50%
Total	**3,275.31**	**2,779.20**	**2,411.54**	**-367.66**	**-13.23%**

Table 2b: Percent Occupancy of Designated Property Management Categories

	Property Total Acreage	2007 Colonized Acres	% Occupancy
Classification	**Acres**	**Acres**	
HCA	5,178.90	918.95	**17.77%**
MOA	4,758.22	870.20	**18.29%**
NPD	16,159.74	484.37	**3.00%**
NSH	17,627.46	86.00	**0.49%**
TBD	1223.25	52.02	**4.25%**

HCA = Habitat Conservation Area
MOA = Multiple Objective Area
NPD = No Prairie Dogs
TBD = To Be Determined
cnm

Some sporadic plague die-offs occurred on some HCA acreage around Dowe Flats and Rabbit Mountain, but were relatively minor compared to the previous die-offs in 2005-2006. No significant loss of HCA acreage occurred in the southern grasslands areas, but some minor retraction of colony edges was recorded on Mayhoffer and the HCA acreage on CHP/RCF.

We still have less than 20% prairie dog occupation on our designated HCA grassland acreage (Table 2), primarily due to the plague impacts on the north county HCA properties. Our HCA acreage in the southern part of the county has not been impacted by plague, and is currently occupied at well over the 25% limit as defined in the prairie dog management plan.

The reduction in MOA acreage resulted from both plague die-offs (Cushman, Imel and Western Mobile, primarily) and management activity (Monarch Park, Liley, Dowe Flats).

Preble's Meadow Jumping Mouse

On November 1, 2007, the FWS published a revised rule on the status of the Preble's meadow jumping mouse under the Endangered Species Act. Preble's will continue to have protection in Colorado as a threatened species, but was removed from listing in Wyoming. A final ruling will be made in June 2008, but the species continues to have protected status in Colorado until that ruling is finalized. With new best available science strongly indicating the genetic uniqueness of this subspecies, it is highly probable that the Preble's mouse will remain protected in Colorado.

There were no direct surveys conducted by POS or other entities on POS properties in 2007. We did permit an environmental consulting firm, Smith Environmental and Engineering, to conduct Preble's surveys on Gage and Pella West properties in August to train their field staff on Preble's survey methods. This was done under their own permit and not as a contractor or operator in any capacity for Boulder County. Their investigations did ascertain that this reach of the St. Vrain River and the South Branch still supported a viable population of Preble's mice.

There has been no progress, to my knowledge, on the refinement and completion of the Boulder County comprehensive Habitat Conservation Plan by Land Use for the Fish and Wildlife Service. With the new revised ruling on this species, and the anticipated final ruling scheduled

for June 2008, we hope that the County will finalize and submit the County Habitat Conservation Plan to the Service for approval. Having this HCP in place will allow us to more efficiently and effectively complete any work projects on POS properties in riparian habitat that will require clearance surveys or mitigation measures for possible impact to Preble's habitat.

We continue to work with the Landscape Architect and Plant Ecologist on the habitat restoration project along the South Branch on the Gage property to improve riparian habitat conditions. Preble's habitat restoration is a targeted goal for this project.

Bats

POS staff continued working with Dr. Rick Adams to investigate bat use of the historic buildings at Bluebird Mine on Caribou Ranch. No bats were detected leaving the historic bunkhouse, but we did detect some use of the nearby stone house by roosting bats. Townsend's big-eared bats did still use the adjacent mine shafts, but no sonographs of emerging bats were obtained.

Dr. Adams continued monitoring for Townsend's big-eared bats and especially for nursery sites on Heil Valley Ranch in response to prior captures of Townsend's big-eared bats on that property. He is also continuing his investigation into bat foraging in various habitats. Results over the past two years continue to indicate a significant and rapid response in foraging use by many bat species in prescribed thinning sites. The complete results of this research by Dr. Adams in 2007 are described in the section on small grant recipient projects below.

We initiated our foothills mine survey project in the summer of 2007. We investigated four sites around Butzel Hill and Nugget Hill near Rowena for any sign of use by roosting or reproducing bats. Exit surveys were initially conducted to determine use. We did not find bat activity in any of these newly surveyed mines in 2007. Ultrasonic calls will be digitally recorded and analyzed with specialized software to try and determine species. We have not yet obtained any digital ultrasonic recordings due to the lack of activity at the sites visited in 2007.

We have a volunteer constructing some more bat roost boxes that we will install on various plains properties, to enhance bat use around some of our more aquatic habitats. This will include Pella West, Stearns Lake at CHP/RCF, and Walden Ponds. Existing structures on Walden Ponds and Pella Ponds East will be taken down and repaired, or replaced if necessary, and additional boxes installed to enhance the recruitment of bats. We anticipate other volunteers being involved in the long-term monitoring of these boxes.

Avian

Raptors

<u>Bald Eagle Nest Monitoring</u>
We continued to coordinate the monitoring of the three bald eagles nests on POS property with the CDOW. The nest on the St. Vrain River on the Braly property was productive again in 2007, with two eaglets fledged. The nest on Wambsganss property east of Panama Reservoir had two eaglets fledge from it as well, after failing in 2006. The nest on the lower St. Vrain River on the Keyes North property failed again in 2007. This was the third year that the pair tried to nest at this site and failed. The causes aren't known for certain, but the proximity of this nest to a subdivision and the frequent access of the river from these residents and other nearby properties could have been a factor.

We worked with the POS Acquisitions paralegal, the County Attorney and Land Use Department staff to address our concern over a proposed EnCana gas well near the Wambsganss property eagle nest. We collaborated with the CDOW, the U.S. Fish and Wildlife Service and various eagle experts to communicate our concern to EnCana and the Colorado Oil and Gas Conservation Commission regarding the proximity of the proposed well to the nest site. Our efforts resulted in EnCana withdrawing their application for this well.

Golden Eagle Nest Monitoring

POS staff and a volunteer monitored the known historic golden eagle nest sites and one new nest on POS properties in 2007. On Heil Valley Ranch, the Box Canyon site was active again and fledged 2 eaglets. The Marietta Canyon nest was not active in 2007. The Lyons Meadow Park nest site on Hall Ranch was established again early in the nesting season, but was later abandoned. It is probable that this failure was related to the increased recreational use of the St. Vrain River directly below the nest since the Town of Lyons had a river kayak recreational course installed there. The Rabbit Mountain nest site fledged one eaglet. Two eagles possibly hatched initially, but one apparently died shortly after hatching and was not seen again. The nest on the Wyn/Forsberg property, north of Lyons, was apparently inactive in 2007.

Burrowing Owls

Two volunteer naturalists monitored all of our historic burrowing owl nesting sites in 2007. Although we had five confirmed nests on POS properties in 2006 and one adjacent to a POS property, no active nests were located in 2007. Our prairie dog technicians surveyed colonies for burrowing owls prior to implementing any active management, but also did not find any nests. A few burrowing owls were observed on some colonies in April and again in late September, but these were likely migrants.

Local burrowing owl nesting populations have been very cyclic in Boulder County over the years. It is not known why this species will be found in significant numbers one year, and then essentially disappear again from the county the next year.

Osprey

The historic nest site at Lagerman Reservoir was successful again in 2007. The seasonal closure of the west end of the reservoir and trail loop ran from April 1st to the end of August. The nesting pair arrived in mid April and was incubating within a week. A total of 3 young were flying by early July. In mid September, just before migrating out of the area, only two young were still observed with the adults.

The Fairgrounds osprey pair returned in early April and resumed nesting on the artificial platform. Two fledged from this nest in 2007. We seem to be noticing an increased tolerance of the adults to human activity within the outdoor arena area and to people fishing in Cattail Pond towards the southern end. There again was some pseudo-nesting activity observed towards the end of the season when sticks and debris were placed on the outdoor arena light pole. If this type of activity is again observed, it will alleviate our concern over the adults rebuilding their nest in the light pole structure. The few sticks that were placed in the light post mostly blew down later in the year and were not considered a management concern.

Prairie Falcon

There were no known nesting prairie falcons on any POS property in 2007. The historic nesting sites on Heil Valley Ranch, Hall Ranch, and Steamboat Mountain were unoccupied.

Goshawks

Surveys for nesting Northern Goshawks were conducted on Caribou Ranch and Heil Valley Ranch. Surveys were initiated in late February, using dawn calling surveys, where the surveyors listened for contact calls between the pairs right around dawn. Subsequent follow-up visits were made in to sites where these calls were heard. One nest was successfully located near Marietta Canyon on HVR, and another probable nest area was investigated on Caribou Ranch. This site was in the North Boulder Creek drainage near our eastern border with the Guercio property. The actual nest location was not located during these subsequent visits, but adult birds were observed in the area. Surveys will again be conducted in 2008 in this area to try and locate the nest.

Breeding Bird Surveys

In 2007, breeding bird surveys were conducted on six properties. All of the surveyed transects were designed and installed in early 2007, and surveyed during the timeframe of June 1st through July 15th. To determine this timeframe, the Rocky Mountain Bird Observatory Point Transect Protocol was followed (Leukering et al. 2006). Surveys were conducted beginning one half hour before sunrise and completed by 10:00 am. All points were surveyed for a five minute period and all bird species and number of individuals were recorded within three distance categories; 0-50m, 50-100m and >100m.

Selection of properties to be surveyed was based on the need for initial baseline information or in response to management activities. As stated in the program of work objectives for 2006, four properties were surveyed for baseline information, and two were surveyed in response to management activities. Properties surveyed for baseline information included Hall West, Lookout, Flagg Park/Two Creeks, and Meyer's Gulch. Properties surveyed in response to planned management activities included Heil Valley Ranch and Cemex.

While Hall Ranch had been surveyed previously on its eastern half, the western half of the property had never been surveyed. Lookout was surveyed to capture information about bird presence on a large agricultural complex. Flagg Park/Two Creeks was surveyed both to obtain baseline information and in response to the planned regional trail system. Meyer's Gulch was surveyed for continuation of data from 2003-2005, by a volunteer ecosteward. This ecosteward was given direction on conducting the County's accepted protocol method, and submitted data directly to the POS wildlife technician.

Heil Valley Ranch was surveyed due to the planned construction of the Heil to Hall connector trail. As this trail will be traversing through an important ecotone, baseline data will be invaluable in determining the impact of our management for recreation. Cemex was surveyed in 2006, with three point count locations. In 2007, these three locations were again surveyed with an additional seven points. The Cemex property is receiving an intensive restoration effort, and surveys were conducted to obtain data on bird response during and after this process.

Appendix A describes all species detected, including those of status located on BCPOS properties in 2007. Status is defined as species occurring on a list compiled federally, by state or individual agency to indicate conservation concerns. Species with status occurred on all surveyed properties in 2007, with the exception of Cemex.

A Relative Abundance Index (RAI) was calculated for all species occurring on surveyed properties (Appendix A). The RAI is determined by the following formula:

Total number of individual birds of one species / Total number of surveys conducted per point

Only birds detected (visual or aural) during the survey period, and within 50 meters (100 meters for grassland habitat [Flagg/Two Creeks, Cemex, Lookout]), were included in the RAI calculations. An X indicates presence on the property as recorded by either incidental observations or occurrences 50m+ during the surveys, and is not included in RAI calculations. All present species, though, are included in the species richness calculation, which quantifies the total number of species present on a property during the protocol timeframe.

Species richness, while quantifying the total number of species present on a property, does not capture the fact that the properties vary greatly in habitat suitability and diversity. In addition, as incidental sightings are included in the richness total, properties receiving more staff visitation were likely to have more reported sightings. It does however give a general representation of species diversity. Species richness from highest to lowest were as follows: Heil Valley Ranch (Connector Trail) = 47, Hall Ranch (West) = 45, Meyer's Gulch = 44, Flagg Park/Two Creeks = 33, Cemex = 20, Lookout = 20.

Bluebird Nest Boxes (Walker Ranch/ Betasso Preserve)

In 2007, twelve volunteers from both the Boulder Audubon Society and the Boulder County Nature Association monitored 56 bluebird nest boxes on Walker Ranch, Meyer's Gulch and Betasso Preserve. Additionally, as part of a collaborative effort with the City of Boulder, five boxes were installed on Shanahan Ridge (these boxes were installed late in the breeding season, and only one was utilized; violet-green swallow nest.) Two boxes were added to the Betasso trail; one housed a pygmy nuthatch nest, which has never before been documented, and the other housed a mountain bluebird nest. As in previous years, all data are being shared with the Cornell Lab of Ornithology-The Birdhouse Network, which monitors nest box data nationwide.

Volunteers worked in pairs and visited their assigned trails once per week. Total volunteer effort equaled 501 hours between late April and late July.

TABLE 3 - Bluebird Nest Box Results for 2005-2007

Year, (# of Nest Boxes)	2005 (48)		2006 (54)		2007 (56)	
Species	Nests	Fledged	Nests	Fledged	Nests	Fledged
Western Bluebird	7	28	13	63	21	89
Mountain Bluebird	19	100	20	88	21	98
Tree Swallow	3	9	4	8	2	6
Violet-green Swallow	0	0	2	6	6	28
Mountain Chickadee	2	5	1	7	1	5
White-breasted Nuthatch	0	0	2	11	1	5
House Wren	7	38	3	18	9	25
Pygmy Nuthatch	0	0	0	0	1	5
Total	**38**	**180**	**45**	**201**	**62**	**261**

Waterfowl

Winter Waterfowl Survey

The Wildlife Specialist assisted CDOW again in 2007 by participating in winter waterfowl surveys on POS ponds on January 3rd and by conducting breeding Canada goose surveys in the summer. Winter surveys were again conducted on Fairgrounds Lake/Cattail Pond, Lagerman Reservoir, Walden Ponds and Stearns Lake. The results of these surveys are in Table 4.

Table 4- CDOW Winter Goose and Waterfowl Survey Results: BCPOS Locations

Site	% Filled	% Frozen	Canada Geese	Ducks
Fairgrounds Lake	100	95	265	19
Cattail Pond	100	100	0	0
Lagerman Reservoir	90	100	50	0
Walden Ponds	100	75	130	110
Stearns Lake	100	80	600	41

Walden Ponds, Stearns Lake and Fairgrounds Lake were not completely frozen and were all occupied by waterfowl. They all supported a good number of diving and dabbling ducks, with Cottonwood Marsh pond at Walden Ponds again having the highest concentration. Long-term trends being compiled by CDOW biologists continue to show that overall numbers of wintering Canada geese are steadily increasing throughout the Front Range urban corridor.

Canada Goose Management

POS staff conducted Canada goose management activities on Fairgrounds Lake on April 19th. A total of 11 nests were addled using an approved CDOW egg oiling method. This was conducted under a CDOW sub-permit from the U.S. Fish and Wildlife Service. Our goal is to reduce the number of urban and agricultural non-migrating nuisance geese that hatch on Fairgrounds Lake.

Russian olive trees were removed from the Fairgrounds Lake islands during the summer of 2007. While this is necessary for the control of this invasive species, it will likely result in an increased level of goose nesting on these islands in 2008 and further need for nest management.

POS staff has continued assisting the CDOW investigation of non-migratory Canada goose populations in Boulder County. On June 12th and 13th, the Wildlife Specialist assisted CDOW in marking geese on Pella Ponds, Fairgrounds Lake and Walden Ponds. Geese were captured and marked with leg bands and neck collars. This project is examining the demographics of local breeding goose populations and monitoring their movement in the area. The analysis of the early data indicates that geese banded on these sites generally do not travel more than five miles from the site where they were trapped. This is especially true for geese banded as goslings.

Cooperative Research Projects

There were five research projects conducted under the guidance of the small mammal and avian Wildlife Specialist in 2007. The Small Grants Program funded two of these projects. One was an examination of prairie dog demographics following a sylvatic plague event. The second study was a continued investigation of bat ecology on HVR. The researcher continued to investigate West Nile Virus impacts to bats. Much attention was given to the response of bats to thinned forest areas and to the monitoring of Townsend's big-eared bat populations on HVR. The third project continued investigating butterfly species occurrence on both foothills and plains properties. More effort was made this year to identify habitat types and associate species occurrences with habitat parameters. Other projects included an investigation of ant ecology, grasshopper research near Rabbit Mountain, continued bird banding on Lykins Gulch, artificial

bluebird nest box monitoring on Walker Ranch and annual Christmas bird counts. These research project results for 2007 are described in detail in another section of this report.

Volunteer Contributions

The wildlife program was fortunate to have several dedicated volunteers contribute hours towards completing our 2007 program of work. Many of these volunteers were newly recruited with outreach efforts, and some have been involved with our program for several years. In total, 30 volunteers contributed 815 hours, and participated in a variety of survey, monitoring and habitat restoration efforts.

Bluebird Trails- (See Bluebird Nest Box Monitoring section of this report.)

- **12 volunteers contributed 501 hours**

Bluebird and Bat Box construction- A volunteer constructed 12 bluebird boxes and 2 bat boxes. Currently, this volunteer is constructing 18 additional bat boxes for installation in 2008. The wildlife department has supplied all construction equipment and materials, and has coordinated closely with this volunteer as to the design of the boxes.

- **1 volunteer contributed 60 hours**

Breeding Bird Surveys- Volunteers accompanied the wildlife technician on breeding bird surveys and also conducted surveys independently. The wildlife technician reviewed all survey results to insure consistency in data collection. Working in pairs also increased safety, as some transects are isolated or located in challenging terrain. Surveys completed independently by volunteers were conducted using the Rocky Mountain Bird Observatory Transect Point Count Protocol and were personally instructed in protocol use and station location before surveys commenced. All data were submitted directly to the wildlife technician.

- **6 volunteers contributed 74 hours**

Burrowing owl surveys- Surveyors tried to locate active nests on BCPOS properties. This program was initiated in 2007 and involved the creation of datasheets and an informal protocol for surveying and monitoring nests. Detailed maps of historic nest site locations were created and the volunteers were accompanied to the sites on the first visits. The datasheets were created to capture information on nest locations, timing of courtship, initiation of nesting, prey deliveries and disturbance to nests. No active nests were located in Boulder County in 2007. However, the volunteers remain enthusiastic, and this effort will continue in 2008.

- **2 volunteers contributed 58 hours**

Northern goshawk surveys- Volunteers helped the Wildlife Technician complete both dawn acoustical and broadcast surveys for northern goshawks. As goshawk surveys are best accomplished in pairs, these volunteers were greatly appreciated. Having two sets of eyes is beneficial in detecting silent approaches or flyovers by goshawks during surveys. Working in pairs also increases safety, as goshawk surveys are conducted off-trail and in remote terrain.

- **2 volunteers contributed a total of 13 hours**

Golden Eagle monitoring- A volunteer continued monitoring the Rabbit Mountain golden eagle nest. The information collected describes courtship initiation, nesting initiation, incubation, fledgling dates, prey type, and nest fate. This information is invaluable in understanding eagle behavior at this historic nest site. This volunteer celebrated his 20th year as a volunteer for BCPOS in 2007.

- **1 volunteer contributed 64 hours**

TABLE 5- Volunteer Contributions 2007

PROJECT	# of Volunteers	Hours Contributed
Bluebird Nest Box Monitoring	12	501
Breeding Bird Surveys	6	74
Bluebird/Bat Nest Box Construction	1	60
Golden Eagle Monitoring	1	64
Burrowing Owl Monitoring	2	58
Goshawk Surveys	2	13
Sisters of St. Francis planting	9	45
	*30	815

***Some volunteers participated in multiple projects.**

Research Projects Unfunded by POS

Butterfly Species Occurrence on Heil Valley and Caribou Ranches

Jan Chu and her associates surveyed 11 POS locations for butterflies in 2007, a continuation of a project that they have been working on since 2002. Their surveys were extended this year to include the Southeast Buffer grasslands and riparian habitat. They found a total of 89 species of butterflies on all properties surveyed, including Boulder OSMP, USFS and Calwood Education center locations. This included 7 species previously unrecorded by this research team, but known to occur historically in Boulder County. The survey encompassed the types of habitats listed below, and the properties surveyed. The investigator also examined basic plant/butterfly species associations. These can be referenced in the 2007 full report from this investigator.

Habitat Types/Associated Properties Surveyed for Butterflies in 2007

Plains	CHP/RCF, Pella Crossing, SE Buffer Grassland
Foothills	Anne U. White, Steamboat Mtn., Rabbit Mtn.
Foothill/Montane	Heil Valley Ranch
Montane	Meyer Gulch, Reynolds Ranch
Upper Montane/Lower Sub-alpine	Caribou Ranch, Mud Lake

Prairie dog genetic effects in post-plague impacted colonies:

Loren Sackett from CU Boulder began research into the genetic impacts of prairie dog colonies that have been recently impacted by sylvatic plague. The genetic study will examine prairie dogs for genetic markers that indicate their relationship within and outside of recolonized plague-impacted colonies. This was the first year of the study, and she trapped and sampled prairie dogs on five county properties (Hall Ranch, Dowe Flats, Beech, Zaharias, CHP/RCF). This study was done in cooperation with another prairie dog study done by Katherine McClure from the same graduate laboratory at CU-Boulder and used the same prairie dogs from the demographic study done by Katherine. These animals were measured and released, after having tissue sampled for genetic analysis and a PIT transponder inserted in them for future identification. The data collected in 2007 will be compared to data collected in 2008 and analyzed against other data collected by colleagues for other research projects on these same properties over the past five to seven years, prior to any recent plague impacts.

Small Grant Recipient Research Projects

Bat Ecology on Heil Valley Ranch:

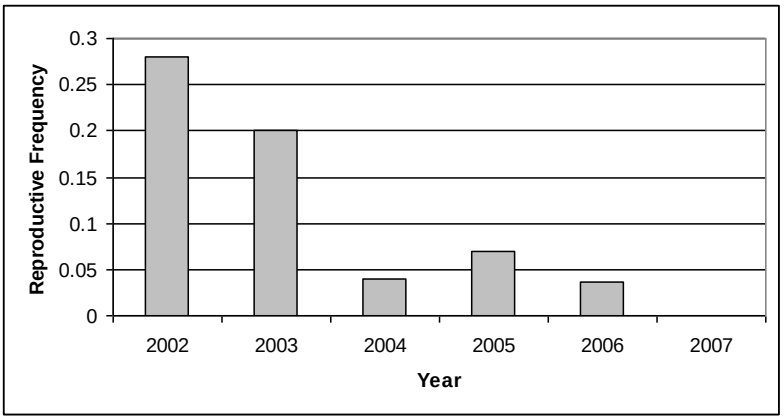
Dr. Rick Adams from the University of Northern Colorado received another small grant to continue his bat research on Heil Valley Ranch in 2007. He also began investigations on Caribou Ranch, although weather conditions during each visit resulted in poor initial survey results. This investigation will continue in 2008. His major findings in 2007 were:

- 139 bats were captured and released
- 6 species were captured altogether
- 53.5% of all captures were Myotis evotis
- Sonar grid data showed significant increase in activity in the Burn site
- A new maternity roost for Townsend's big-eared bat on private land near HVR, which contained about 450 individuals
- West Nile Virus results are still pending
- Developed a model showing water loss due to climate change and potential effects on bat populations in Colorado

One key finding in 2007 was the discovery of another maternity roost for Townsend's big-eared bats in western Boulder County. This site was not on Heil Valley Ranch, but on private land along Highway 7 west of HVR. Dr. Adams netted a female Townsend's big-eared bat at the Ingersoll quarry and attached a telemetry transmitter to it. This bat subsequently led the researchers to the maternity roost approximately 1.7 miles from this capture site.

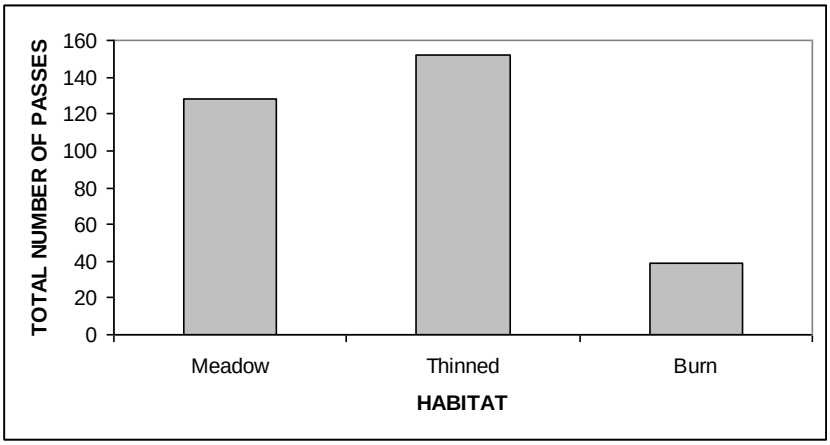
Dr. Adams also continued to monitor habitat use by all bats on HVR, and tested netted bats for WNV exposure via blood samples taken. He found the highest incidence so far of WNV exposure in bats sampled in 2007, compared to the previous years of sampling. However, the correlation of this increased exposure to any effect on mortality rates is unknown. There was a trend, over the past few years of this investigation, of decreased captures of young bats overall (Fig. 1). It is not known if this is indicative of increased mortality of young, possibly from WNV exposure, or decreased reproductive success from other factors.

Figure 1. **Potential decrease in reproductive effort at HVR. In 2002 juveniles composed 28% of all captures, whereas in 2007, juveniles composed 0% of all captures.**



There was also increased foraging in the burned area of HVR, which had the lowest amount of foraging use in previous years. Foraging was still highest, however, in recently thinned forests as opposed to unthinned forests, the burned area or nearby meadows. (Fig. 2)

Figure 2. **Number of passes by foraging bats in different habitat plots (Meadow, Thinned, Burn). As in other years, Thinned habitat had the highest number of passes. There was a distinct change in use of the Burn site in 2007, with 39 passes recorded, the highest over the four years that we have been tracking this site.**



Prairie dog demographics in post-plague impacted colonies:

Katherine McClure from CU Boulder began research into the demographics of prairie dog colonies that have been recently impacted by sylvatic plague. The demographic study will investigate what age classes and genders are found on these colonies, and compare them to colony demographics where plague has not been recorded. This was the first year of their studies, and they trapped and classified prairie dogs on five county properties (Hall Ranch, Dowe Flats, Beech, Zaharias, CHP/RCF). This study was done in cooperation with another prairie dog study done by Loren Sackett from the same graduate laboratory at CU-Boulder and used the same prairie dogs from the genetic study done by Loren. These animals were measured and released, after having a PIT transponder inserted in them for future identification. The data collected in 2007 will be compared to data collected in 2008 and analyzed against other data collected by colleagues working on other research projects on these same properties over the past five to seven years, prior to any recent plague impacts.

Other Projects/Activities

McIntosh Lake/Lohr Prairie Dog Barrier

POS staff completed the installation of chicken wire prairie dog barrier adjacent to the McIntosh Trail to the western edge of the lake. This was done to hinder the migration of prairie dogs from the McIntosh Lake property, which the City of Longmont OST is managing for prairie dog conservation, onto the AHC. The City of Longmont OST will be responsible for all prairie dog management of the colony south of this barrier.

Sisters of St. Francis Wildlife Habitat Planting Project

Weed management was completed by early 2007 on this 7-acre wildlife habitat reclamation project site. Over 300 native shrubs and trees were then planted on the project site on Arbor Day. Nine volunteers worked on this project with the Wildlife Specialist, Dave Hirt and Matt Bruce.

Follow-up work has been done to irrigate the shrubs and manage weeds. Prairie dog control was also done when some prairie dogs became established in the middle of the project area. Continued prairie dog management will be needed until the vegetation becomes established. New shrubs have been ordered to replace those that have died over the past year.

Front Range Prairie Dog Working Group

The Wildlife Specialist has been leading this group of local public land management agencies in 2007. This group regularly addresses many of the key prairie dog management concerns and challenges that we all face along the Front Range communities. The goal of this group is to work towards consensus on many of the matters pertaining to prairie dog management, including conservation and control efforts, and to offer professional support to each other in helping us address these matters to our respective publics and decision makers. To date, we have had updates from researchers investigating control techniques, reviewed and commented on state policy pertaining to prairie dogs, and discussed various management techniques used by the participating resource managers. Our goal in 2008 is to draft a comprehensive management proposal that our working group can propose to the various land management entities along the Front Range who currently don't have any conservation or management plan or program.

Planning Division

The Wildlife Specialist again assisted the Resource Planning division with input into the development of management plans for our Rock Creek Grassland habitat and the Harney-Lastoka property, including trail development plans on each. Other input was given on trail placement related to wildlife concerns for the Hall-Heil connector trail and the Marshall-Superior-Coalton trail.

Objectives for 2008:

1. Continue active prairie dog management, focusing on NPD sites and impacted MOA sites. Target at least 10 properties as prioritized by the prairie dog management team.

2. Conduct breeding bird surveys on 5 properties, as scheduled in the Small Mammal and Avian Monitoring Protocol, including Hall Ranch, HVR and Rabbit Mountain.

3. Continue developing bluebird nest box program, depending on habitat analyses for properties and volunteer availability to monitor. Continue monitoring existing boxes, altering monitoring schedule if necessary to accommodate volunteer availability.

4. Continue development and implementation of nesting raptor monitoring, training and coordinating volunteers.

5. Continue development and implementation of golden eagle GPS telemetry project, working with Colorado Division of Wildlife and NGO partners who have been involved in the design of the GPS transmitters being used.

6. Continue monitoring of foothills mine sites for bat use. Work with volunteers to help collect and/or analyze ultrasonic echolocation sonographs to help determine species occurrence at these sites.

7. Expand bat roost box deployment at Pella Ponds, Walden Ponds, Fairground and Stearns Lake. Work with volunteers to install and monitor boxes being built by other volunteer.

8. Initiate a focused survey for Abert's squirrel populations in ponderosa forests. Investigate occurrences in treated and untreated ponderosa forests. Develop initial presence/absence survey project with volunteers.

Appendix A: Relative Abundance Index[1] (RAI) for BCPOS Breeding Bird Surveys, 2007

[1]Total # of Detections of Species within 50 meters of points / Total # of 5 min. Point Counts per Property. Grassland points were calculated using 100m distance from points.

	LOOKOUT	HEIL RANCH	HALL RANCH	FLAGG PARK	MEYERS GULCH	CEMEX
Species	**n=60**	**n=27**	**n=24**	**n=21**	**n=21**	**n=30**
Survey Year	**2007**	**2007**	**2007**	**2007**	**2007**	**2007**
[2](Species Richness)>	(20)	(47)	(45)	(33)	(44)	(20)
Pied-billed Grebe						
Western Grebe						
American White						
Pelican						
***Double-crested**				**0.14**		
Cormorant						
***American Bittern**						
***Great Blue Heron**				**0.05**		
Snowy Egret						
Green Heron						
***Black-crowned**						
Night-Heron						
Turkey Vulture						
Canada Goose						
Mallard				**0.05**		
Cinnamon Teal						
Northern Shoveler						
***Peregrine Falcon**			X			
Ruddy Duck						
***Northern Goshawk**		**X**				
Prairie Falcon				**X**		
***Northern Harrier**						
Sharp-shinned Hawk						
Cooper's Hawk		X				
***Swainson's Hawk**						
Red-tailed Hawk			X	0.10	X	0.03
American Kestrel			X	0.05		
Blue Grouse			X			
Wild Turkey		X	X			
Killdeer	0.4					
American Avocet						
Lesser Yellowlegs						
Greater Yellowlegs						

App endi

[2]Total # of Species per Property. X = Species detected on property, R = Species reported on the property during the survey period
***BOLD** = Species of Special Concern for Boulder County

x A: Relative Abundance Index[1] (RAI) for BCPOS Breeding Bird Surveys, 2007

	LOOKOUT	HEIL RANCH	HALL RANCH	FLAGG PARK	MEYERS GULCH	CEMEX
Species	**n=60**	**n=27**	**n=24**	**n=21**	**n=21**	**n=30**
Survey Year	**2007**	**2007**	**2007**	**2007**	**2007**	**2007**
[2](Species Richness)>	(20)	(47)	(45)	(33)	(44)	(20)
Wilson's Snipe						
Rock Pigeon			0.04	**X**		
Band-tailed Pigeon				X		
Mourning Dove	.37	0.67	0.5	1.33	0.10	0.20
Great Horned Owl		X		X		
***Burrowing Owl**						
Common Nighthawk		0.11				
Broad-tailed	.03	0.30	0.33		0.60	0.03
Hummingbird						
Hairy Woodpecker		X				
***Three-toed**						
Woodpecker						
Northern Flicker		X	0.13		0.24	
***Olive-sided**					**X**	
Flycatcher						
Western Wood-Pewee		1.15	0.21	0.20	0.20	
***Willow Flycatcher**						
Hammond's Flycatcher		0.07	**0.13**		0.10	
Dusky Flycatcher						
Cordilleran Flycatcher		0.04			0.10	
Say's Phoebe			0.08			
Western Kingbird	.20			0.24		0.10
Eastern Kingbird						
Plumbeous Vireo		0.15	0.08		0.10	
Warbling Vireo					0.67	
Gray Jay						
Steller's Jay		0.15	0.17		0.14	
Clark's Nutcracker						
Black-billed Magpie	.17	X	X	0.76		0.23
American Crow		0.07			0.20	
Common Raven	.07	X	X	X	X	
Horned Lark	1.47			0.33		1.13
Tree Swallow					0.05	

[1]Total # of Detections of Species within 50 meters of points / Total # of 5 min. Point Counts per Property. Grassland points were calculated using 100m distance from points.
[2]Total # of Species per Property. X = Species detected on property, R = Species reported on the property during the survey period
***BOLD** = Species of Special Concern for Boulder County

Appendix A: Relative Abundance Index[1] (RAI) for BCPOS Breeding Bird Surveys, 2007

	LOOKOUT	HEIL RANCH	HALL RANCH	FLAGG PARK	MEYERS GULCH	CEMEX
Species	**n=60**	**n=27**	**n=24**	**n=21**	**n=21**	**n=30**
Survey Year	**2007**	**2007**	**2007**	**2007**	**2007**	**2007**
[2](Species Richness)>	(20)	(47)	(45)	(33)	(44)	(20)
Northern						0.03
Rough-winged Swallow	1.0			0.50		
Violet-green Swallow			0.08		X	
Cliff Swallow	3.83		X	0.95		1.7
White-throated Swift			X			
Barn Swallow						
Black-capped				0.10		
Chickadee						
Mountain Chickadee		0.33	0.21		0.48	
Red-breasted					0.20	
Nuthatch						
White-breasted		0.04	0.08		0.33	
Nuthatch						
***Pygmy Nuthatch**		**0.22**	**0.80**		**0.52**	
Brown Creeper		X			0.05	
Rock Wren			X			
Canyon Wren		X	X			
House Wren		0.04	0.30	0.62	0.71	
Ruby-crowned Kinglet			0.04		0.10	
Blue-gray		0.63	X			
Gnatcatcher						
Eastern Bluebird						
Western Bluebird		0.07	X		0.10	
Mountain Bluebird		X	X		0.10	
Townsend's Solitaire		X	X		0.10	
Hermit Thrush		X			X	
American Robin	0.07	0.11	0.40	0.40	0.20	
European Starling	0.03			0.10		
***Cedar Waxwing**						
Virginia's Warbler						
Yellow Warbler						
Yellow-rumped Warbler		X			0.10	
***MacGillivray's**					**0.33**	
Warbler						

[1]Total # of Detections of Species within 50 meters of points / Total # of 5 min. Point Counts per Property. Grassland points were calculated using 100m distance from points.
[2]Total # of Species per Property. X = Species detected on property, R = Species reported on the property during the survey period
***BOLD** = Species of Special Concern for Boulder County

Appendix A: Relative Abundance Index[1] (RAI) for BCPOS Breeding Bird Surveys, 2007

	LOOKOUT	HEIL RANCH	HALL RANCH	FLAGG PARK	MEYERS GULCH	CEMEX
Species	**n=30**	**n=27**	**n=24**	**n=21**	**n=21**	**n=30**
Survey Year	**2007**	**2007**	**2007**	**2007**	**2007**	**2007**
[2](Species Richness)>	(20)	(47)	(45)	(33)	(44)	(20)
Wilson's Warbler				0.14	0.05	
Gray Catbird			0.17			
Yellow-breasted Chat		0.11	X	0.05		0.07
***Western Tanager**		**0.07**	**0.17**		**0.52**	
Green-tailed Towhee			0.40		0.24	
Spotted Towhee		1.15	0.50			0.40
Chipping Sparrow		0.26	0.50		0.24	
Vesper Sparrow	1.13	0.07	0.13	0.90	0.10	3.17
Lark Sparrow		X		0.10		
***Savannah Sparrow**	0.07	**0.11**	**0.17**			
Song Sparrow					0.14	
Lincoln's Sparrow						
Dark-eyed Junco		0.15	0.04		0.40	
Black-headed			0.04			
Grosbeak						
Blue Grosbeak			X			0.13
Lazuli Bunting		0.48	0.30			0.20
Indigo Bunting						
Red-winged Blackbird	0.77			0.14		0.17
Western Meadowlark	1.17	0.30	0.04	1.67	X	2.90
***Yellow-headed**	X					
Blackbird						
Brewer's Blackbird	0.27		0.04			
Common Grackle	0.13			0.76		
Brown-headed	0.03	0.22	0.08	0.60	0.10	0.13
Cowbird						
Bullock's Oriole			0.08	0.24		0.33
House Finch	0.63	X	0.33	0.95	0.05	0.03
Cassin's Finch			0.08			
Red Crossbill		0.26	1.71		0.80	
Pine Siskin		X			0.20	
Lesser Goldfinch		0.30	0.13	0.10	0.10	
American Goldfinch		0.07	0.33	0.10	X	

[1]Total # of Detections of Species within 50 meters of points / Total # of 5 min. Point Counts per Property. Grassland points were calculated using 100m distance from points.
[2]Total # of Species per Property. X = Species detected on property, R = Species reported on the property during the survey period
***BOLD** = Species of Special Concern for Boulder County

Appendix B: [a]RAI of Species of Special Concern (BCNA) on BCPOS Properties Surveyed

BC Species of	LOOKOUT	HEIL RANCH	HALL RANCH	FLAGG PARK	MEYERS GULCH	CEMEX
Special Concern	n=30	n=27	n=24	n=21	n=21	n=30
Survey Year	2007	2007	2007	2007	2007	2007
[b](Species Richness)>	(20)	(47)	(45)	(33)	(44)	(20)
[4]Double-crested				0.14		
Cormorant						
[3,4,8,Y]Peregrine Falcon						
[4]Great Blue Heron				0.05		
[4]Black-crowned						
Night-Heron						
[1,4]Northern Harrier						
[4]Swainson's Hawk						
[1,4]Burrowing Owl						
[4]Three-toed						
Woodpecker						
[4,7]Olive-sided					X	
Flycatcher						
[2,4]Willow Flycatcher						
[4,7]Pygmy Nuthatch		0.22	0.80		0.52	
[4,5,7,W] Northern Goshawk		X				
[4]Cedar Waxwing		X				
[6]MacGillivray's		0.02			0.33	
Warbler						
[6]Western Tanager		0.07	0.17		0.52	
[4]Gray Catbird			0.17			
[4]Savannah Sparrow	.067	0.11	0.17			
[4]Yellow-headed	X					
Blackbird						

[1]Rare and Declining. [2]Declining. [3] Rare. [4]Isolated or Restricted Populations
[5]Needs Research. [6]Partners in Flight-Downward Population Trends, [7]USFS Sensitive species, [8]Federally listed, [9]CNHP status (W=watchlisted, Y= conservation concern).
[a]Total # of Detections of Species within 50 meters of points / Total # of 5 min. Point Counts per Property. Grassland points were calculated using 100m distance from points.
[b]Total # of Species per Property. X = Species detected on property, R = Species reported on the property during the survey period