



December 30, 2009

VIA EMAIL: MHERMES@rfta.com

Mike Hermes
 Director of Property and Trails
 Roaring Fork Transportation Authority
 0766 Industrial Place
 Carbondale, CO 81623

Re: 2008-09 Rio Grande Trail Monitoring Summary

Dear Mike:

The purpose of this letter is to provide you with a summary of observations during the 2008-2009 Rio Grande Trail – Rock Bottom Ranch to Catherine Store Road ecological monitoring field season.

BALD EAGLES & OSPREY

The trail corridor was visited 8 times throughout the winter to collect data on bald eagle winter behavior based on a standardized wintering bald eagle monitoring protocol (Steenhof et al. 2002). All occurrences of bald eagles within the trail corridor were recorded on data forms.

Table 1. Bald (and Golden) Eagle Detections – Winter 2007-08						
Date	Species	Age	N	Observation Description	Observer	Comments
12/08/08	Bald	Adult	1	Flying	Lowsky	Flying west east of Catherine Store Bridge
01/07/09	Bald	Adult	1	Flying	RBR Staff	Flying east over RBR and RGT
01/17/09	Bald	Adult	1	Perched	RBR Staff	Perched in heron nest at RBR-E
01/28/09	Bald	Adult	1	Hunting	RBR Staff	Circling over back pasture
01/29/09	Bald	Adult	1	Perched	Lowsky	Perched over river at confluence of RF River & RBR stream
01/29/09	Bald	Adult	1	Perched	Lowsky	Across from Russell @Flying Fish Rd.
01/29/09	Golden	Adult	1	Hunting	Lowsky	Over wetlands at Waldorf School
02/02/09	Bald	Imm	1	Hunting	RBR Staff	Over river and hayfields
02/02/09	Bald	Adult	1	Hunting	RBR Staff	Over river and hayfields
02/19/09	Golden	Adult	1	Hunting	Lowsky	Between Waldorf and Blue Creek Ranch
02/19/09	Bald	Adult	1	Perched	Lowsky	Perched over river at confluence
02/27/09	Bald	Adult	1	Hunting	Lowsky	Circling RBR near campus

Table 1. Eagles observed by CWS and RBR staff during the 2008-09 winter.

Twelve observations of 10 bald eagles and 2 golden eagles were recorded between December 8, 2008 and February 27, 2009 by CWS and RBR staff. Of the bald eagles observed, 1 was immature and the rest were adults. Only 2 were observed flying east or west, the rest (including the golden eagles) were observed actively using habitat within or adjacent to the trail corridor (Photo 1).



Photo 1. Bald eagle perched over Rio Grande Trail across from Flying Fish Lane on 01/29/2009.

The ospreys returned to their nearby nest in 2009 and fledged 1 young.

MAMMALS

Winter mammal use of the trail corridor was monitored via snow-track count surveys based on the methods developed by D'Eon (2001) and D'Eon et al. (2006). A single transect was established for the entire trail corridor. On 6 days of fresh snow in December (1)¹, January (2), February (2) and March (1)¹ the transect was surveyed and every mammal track crossing the transect centerline was documented.

Three hundred twenty-eight track groups were identified on 7 survey dates between December 18, 2008 and March 10, 2009.

Nine hundred forty-eight individuals of at least 13 mammal species (Vole tracks likely consist of at least 2 species – long-tailed vole and montane vole.) were detected in 2008-2009 via the winter track surveys. Both mule deer and Rocky Mountain elk tracks were numerous with more deer in the beginning and end of winter and more elk tracks mid-winter. There was significantly more ungulate activity west of the Waldorf School in 2008-2009 than in previous winters. All of the documented game trails within the corridor were very heavily used throughout the winter.

On February 19, 2009, I had the fortune to observe 122 elk cows, calves, and spike bulls bedded down adjacent to the trail corridor on Rock Bottom Ranch (Photo 2). In order to gauge their reaction to human presence, I approached them very slowly. As I came within 110 meters² the elk stood. As I broke the 100± meter barrier, they began to move (Photo 3). Once I came within about 85 meters, they began to run. Most of the animals moved began moving west and then most of them crossed the old irrigation channel and crossed the trail and proceeded up into the slopes on the south side of the trail. The rest (10-15) moved further downstream before also crossing the trail along a heavily used game trail and heading onto the lower slopes of the Crown.



Photo 2. One hundred twenty-two elk bedded at RBR.

¹ Only 1 in December due to late snow and 1 in March due to early melting.

² The distances were measured the following day with a Brunton laser rangefinder.



Photo 3. Elk response to human presence on the Rio Grande Trail in winter. This photo shows the animals standing and beginning to walk in response to human presence.

As in previous winters, 3 digital camera traps were placed along the trail to confirm were installed where major game trails intersect the trail corridor to capture images of wildlife using the trail in winter. These images allow us to:

1. Evaluate interactions with the trail;
2. Confirm species using the trail;
3. Identify any species not detected via track surveys; and
4. Determine the time of day when wildlife are most active in the trail corridors.

The cameras captured numerous mule deer and elk using the trail corridor throughout the winter. Both species were active during

the day and at night and the cameras recorded images of both species using the trail and crossing at common game trails. Unfortunately, Camera 3 was knocked away by an elk or deer on 2 separate occasions so it failed to capture any animals for a total of 3½ weeks. Camera 1 was also knocked sideways but continued to successfully capture skewed images of animals. Although tracks were recorded for species such as bobcat and mountain lion none were recorded by the cameras. One image of a coyote was captured.



Photo 4. Image of mule deer crossing the RGT at game trail captured by Camera 2.

In 2008, the RFTA Board requested that Colorado Wildlife Science, LLC (CWS) expand the RGT monitoring effort to include additional taxa during the non-winter months. Pellet/Scat Surveys were selected as the non-winter survey method for ungulates. Unfortunately, this effort revealed little information. The survey protocol was based on the approach

outlined in detail by Smith et al. (1969). This approach uses linear transects with circular plots spaced at regular intervals along the transect. Although spring surveys provided information on both mule deer and elk, the number of pellet groups found on the trail declined rapidly as spring progressed to summer. By late June, few if any pellet groups were found. In late September, the number of pellet groups began to increase again. This method failed to provide adequate, consistent information throughout the non-winter months and was terminated.

Prior to the trail opening, the monitoring cameras were relocated off the RGT to avoid capturing human trail users. The non-winter locations were positioned along game trails within the right-of-way. The cameras. Unfortunately, 2 of the cameras were tampered with mid-summer and all of the photos to that

date were lost. In response, CWS improved the security precautions and, with Mike Hermes' approval,



Photo 5. Image of a black bear approaching the RGT at game trail captured by Camera 3.

increased the frequency of maintenance visits. Interestingly, although the cameras were activated on May 1, 2009, they captured very few (<10) images of mule deer and elk until mid-October when migration began. In the fall, elk were not recorded within the trail corridor until mid-November. One image of a black bear was captured on July 31 (Photo 5).

GREAT BLUE HERONS

The major parameters of interest for long term monitoring of great blue herons (herons) are colony size (i.e., the number of active nests), nesting success (i.e., the proportion of nests successful in fledging young, or conversely the level of abandonment) and nesting productivity (i.e., the number of young fledged per successful and per active nests). Heron monitoring was conducted based on the protocol established by Vennesland and Norman (2003).

The herons returned to the western segment of the Rock Bottom Ranch heronry (RBR-W) on April 8th. The eastern segment (adjacent to the RBR campus) was not active. Following the opening of the RGT on May 1, the heronry was on a trajectory toward a very successful breeding season. On May 17 two nests had fledglings with 10 active nests. Unfortunately, on May 18 a golden eagle began preying on the heronry's fledglings and by May 21 all of the nests were abandoned. For additional information, please see the summary and analysis of these events CWS submitted to RFTA on September 25, 2009.

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Photo 6. Golden eagle in great blue heron nest with adult heron (Photo taken June 3, 2009 by Brittany Biebl).

BIRD MONITORING

Bird Monitoring was conducted on June 9, 2009 according to a modified version of the Rocky Mountain Bird Observatory's Point Transect Protocol (Leukering et al. 1998). Monitoring points are spaced 250 m along the trail corridor (Map 1). Observations commenced approximately 30 minutes before sunrise (5:12 AM). At each station all species seen or heard were recorded with an estimate of the number of each species. Targeted hard-to-detect, rare, and low-density species were recorded during transect between points as well. Although analysis is not complete, monitoring revealed that the most of the birds expected to use the habitat in the trail corridor during the breeding season were indeed there. Two hundred sixty-eight individuals of 46 species (Appendix A) were detected in 2009.

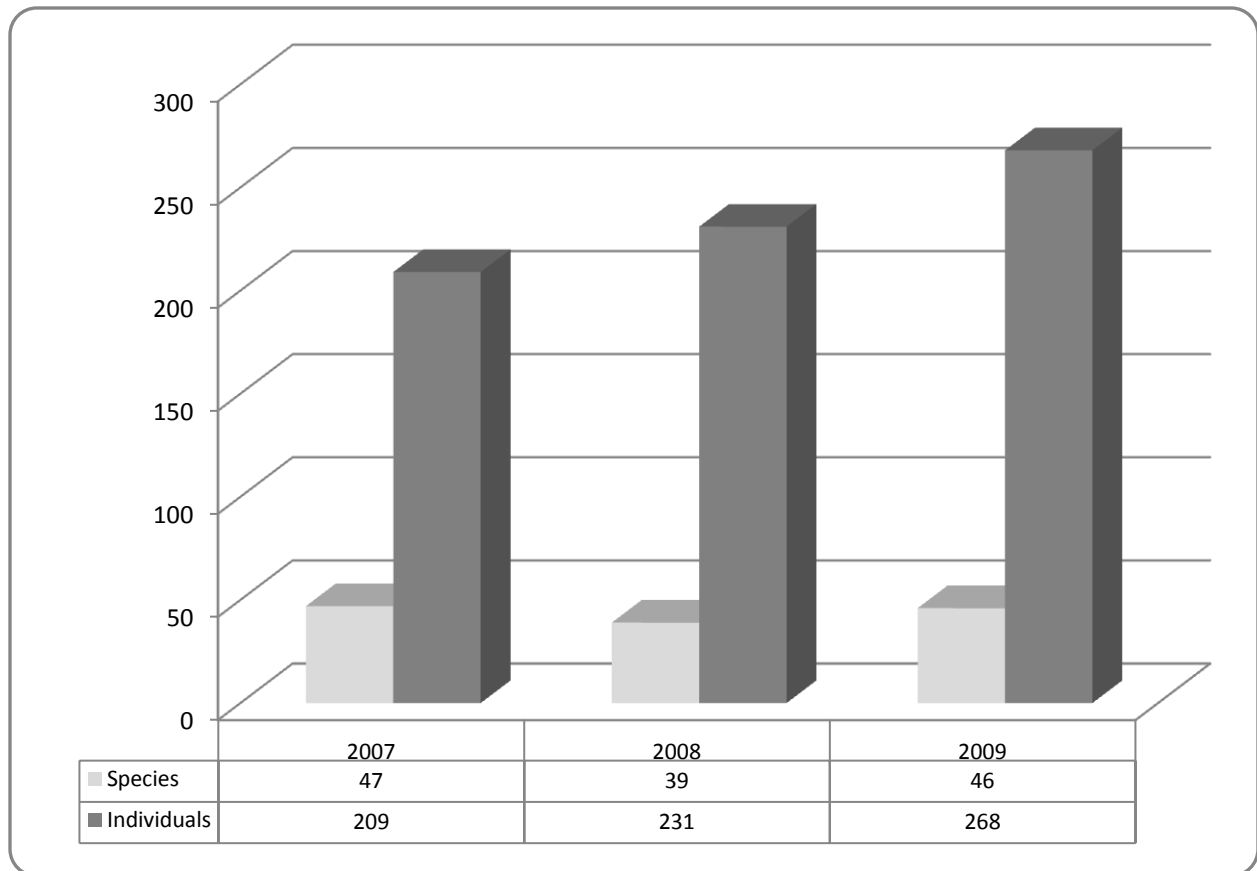


Figure 1. Numbers of species and individuals detected in 2007-2009.

Since 2007, point transect monitoring has detected 62 bird species. In 2009, 5 species were recorded for the first time. Of these, 4 are common species already known to occur (American crow, Brewer's blackbird, Canada goose, red-shafted flicker). One, black-throated gray warbler, is a sensitive species that breeds almost exclusively in mature piñon-juniper woodlands (Kingery 1998) and had not previously been detected in the corridor by CWS. The fifth species, Eurasian collared dove, is an exotic species in that is dispersing rapidly and now resides throughout much of Colorado. This species has shown behavioral dominance over several species of native dove and may be a vector for avian disease (Beckett et al. 2007). Species known to be sensitive to human activity (e.g., blue-gray gnatcatcher, plumbeous vireo); species known to be sensitive to habitat alteration (e.g. dusky flycatcher, Virginia's warbler); and species requiring high quality riparian, shrubland, and piñon-juniper habitat (e.g., black-throated gray warbler, Swainson's thrush, western tanager) were detected in 2009.

WATERFOWL

As discussed above, new components of the RGT monitoring effort were added in 2009. Waterfowl counts were conducted on a pilot basis to determine whether they would provide information regarding the presence of waterfowl and wading birds adjacent to the trail when it was open to the public. Surveys were conducted during the spring migration (February-May), breeding season (March-June), and fall migration (September-November). The 2009 pilot season started in late June and continued until mid-September with a total of 9 survey periods. The Total Count (TC) survey method was used. In the TC method, all waterbirds seen and heard within 100 meters on either side of the transect (that consists of the



Photo 7. Ring-necked ducks observed on October 19, 2009.

entire length of the trail corridor from RBR to Catherine Store Road) are recorded. In the 2009 pilot 2.5season, this method provided information on waterfowl that was previously uncollected. Species richness and composition of waterfowl and wading birds (e.g., spotted sandpiper) within the trail corridor can be determined. Over time, use of the trail corridor by waterfowl as a group and, if sample sizes are sufficient, by individual species will be analyzed for trends.

DISCUSSION

Current methods used to monitor the ecological condition of the trail corridor continue to provide valuable information for managers. The adaptive management plan for the RGT from RBR to Catherine Store Road requires the modification of management actions or implementation of additional strategies to remediate gaps or flaws revealed by monitoring. Results of the 2008-2009 monitoring effort provides information regarding the efficacy of components added to gain additional insight into wildlife responses to the trail and recreational use in the non-winter months. When combined with data collected in 2007 and 2008 and data to be collected in 2010-2012, this data should help to provide managers with a broad view regarding the trajectory of the trail corridor's wildlife communities.

Current methods used to monitor the ecological condition of the trail corridor continue to

While some of the methods added in 2009 were successful, others were not. CWS proposed to add or continue the following methods in 2009 to produce information on the status of target species or suites of species (for additional information on the efficacy of these methods, please see the fall monitoring summary and analysis submitted to RFTA on November 12, 2009).

Targeted Taxa	Method	Time Period(s)	New Or Ongoing	Recommendation
Birds	Point Transect	Early summer	Ongoing	Continue
Mammals	Winter Track Surveys	Dec 1 – April 30	Ongoing	Continue
Mammals	Motion Sensitive Monitoring Cameras	12 months	Ongoing with non-winter period added	Continue
Mammals	Pellet/Scat Surveys	May 1 – November 30	New	Terminate/Replace
Bald Eagles	Surveys concurrent with track surveys	Dec 1 – April 30	Ongoing	Continue
Great Blue Herons	Heronry monitoring	March 1 – July 15	Ongoing	Continue
Waterfowl	Ground surveys	Breeding (March-June) Fall Migration (Sept-November) Spring Migration (February-May)	New	Continue

As in 2007 and 2008, the most troubling event from the 2009 season was the great blue heron abandonment. Although the cause of prior abandonments is the subject of debate, the 2009 abandonment is known. Wintering bald eagles continue to use the trail corridor. It is difficult to say whether use has changed since establishment of the trail. Given that the trail is closed from December 1 through April 30, it is unlikely that there are any negative effects on bald eagles during that period. Currently, there are no

bald eagle nests within or adjacent to the trail corridor. Adult and immature bald eagles have been observed by CWS within the trail corridor during and immediately following the breeding season. These were likely eagles from the Aspen Glen nest. As mentioned above, the osprey nest in the trail corridor was active in 2009 and 1 young successfully fledged. This nest was originally constructed in 2007 but the osprey pair did not lay eggs.



Photo 8. Activity on game trail.

As in 2007 and 2008, wintering mule deer and elk continue to use the trail corridor and Rock Bottom Ranch in large numbers. Both species may actually benefit from current management of the trail corridor. Throughout the winter both species were very active in the trail corridor. Interaction with the trail varied with both species using and crossing the trail which appears to be no impediment to elk and mule deer daily and seasonal movement patterns. Major game trails were very active throughout the winter (Photo 7). Variation in species composition and activity in the corridor continues to vary seasonally and with snow depth. Deer were present in greater numbers early in the season and move on to more appropriate winter range as the snow exceeds tolerable depths. Conversely, elk numbers increased at RBR and the trail corridor when snow depths on their transition range become too deep.

Although the pellet counts failed to produce any useful data, initial analysis of the monitoring camera images revealed some interesting information regarding non-winter use. The 3 cameras captured images of mule deer and elk during the transition periods between summer and winter but only one image of a deer crossing the trail in the summer and no elk. It is important to note, however, that the cameras were tampered with and images were erased. Consequently, no conclusions can be made at this time. Additional efforts will be added in 2010 to gather information on deer and elk use (as well as other mammals) of the trail corridor in the non-winter months. In addition, greater security precautions will be taken to tamper-proof the cameras.

RECOMMENDATIONS

As stated above, preliminary results indicate that most of the monitored wildlife are present and active within the trail corridor. As stated above, it could be argued that wintering animals are presented with improved conditions with diminished human disturbance due to the trail closure. On the other hand, management actions are recommended to gain more information regarding non-winter mammal use, reduce non-winter impacts, and to continue to encourage the great blue herons an opportunity to re-colonize.

A. RECOMMENDED RFTA MANAGEMENT ACTIONS

2. Mule Deer and Elk

- a. **Spotlight Counts** - Since it is the desire of the RFTA Board to monitor ungulates in the non-winter months, and the pellet counts were unsuccessful, CWS proposes to replace that monitoring effort with **Spotlight Counts**. Ungulates are generally difficult to observe during daylight hours because of their secretive behavior and low activity at that time. At night, however, ungulates move into open areas to feed and they tend to be less easily alarmed. Ungulates can be readily detected with spotlights at night because the light reflects from the tapetum of their eyes.

Spotlight counts are essentially simple night time encounter counts that use roads, or in this case the RGT, as transects. Subsequently, the assumptions and requirements for spotlight counts are similar to those for transects. They are used both to estimate population density (absolute abundance), as indices of abundance (relative abundance) and to monitor population trends from year to year.

3. Other Mammals – Spotlight counts should provide information on other mammals using the trail corridor such as black bears, bobcats, coyotes, striped skunks, and weasels.
4. Non-Colonial Birds – No changes required
5. Great Blue Herons
 - a. Continue to work with ACES to protect cottonwood suckers from wild ungulate herbivory.
 - b. Limit activities that alter the landscape, especially landscaping activities involving noisy machinery such as skid steers, power mowers, chainsaws between April 1 and June 1.
6. Prevent additional habitat degradation
 - a. Intensify efforts to control non-native plants and noxious weeds within the trail corridor. Russian olive and reed canarygrass are significant problems in portions of the corridor. Eradicate all occurrences of cheatgrass.

B. RECOMMENDED ACES/ROCK BOTTOM RANCH MANAGEMENT ACTIONS

1. Great Blue Herons -

- a. Habitat protection and improvement measures discussed in the 2008 CWS update memo could help increase the chances that herons will return to the area over the long term.
- b. Identify and protect foraging habitat at RBR. Establish buffers between these foraging areas and areas of active education.
- c. Protect narrowleaf cottonwood regeneration from elk by installing elk proof fencing around saplings and suckers.
- d. Reduction of disturbance to the heronry - There are times during the nesting season that are more critical to the herons' success than others; such times must be taken into consideration when restricting activities or occurrences.
 - i. Limit activities involving noisy machinery in close proximity to the nest stands between April 1 and May 31.
 - ii. Restore portions of the old hayfield between the western heronry segment and the RGT to native narrowleaf cottonwood riparian forest to further screen the herons from the trail.
 - iii. Implement a 300 m closure area around both segments of the heronry to all anglers except those in boats.
 - iv. No boats should be allowed to anchor, beach, or pause as they pass through the closure area.
 - v. Fishing from the bank or wading should be prohibited within the closure area.

C. RECOMMENDED ACTIONS BY THE COMMUNITY AND NEIGHBORS

1. Preserve/restore riparian habitat on properties along the Roaring Fork River.

2. Participate in habitat restoration efforts at RBR.
3. Report closure violations to RFTA.
4. Discourage off-trail recreation within the corridor.

Please let me know if you have any questions.

Sincerely,
COLORADO WILDLIFE SCIENCE, LLC



Jonathan Lowsky
Wildlife Biologist/Principal

Literature Cited

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APPENDIX A

Table A1. Birds detected during the 2009 Point Transect		
	Common Name	Latin Name
1	American crow	<i>Corvus brachyrhynchos</i>
2	American kestrel	<i>Falco sparverius</i>
3	American robin	<i>Turdus migratorius</i>
4	Bank swallow	<i>Riparia riparia</i>
5	Belted kingfisher	<i>Ceryle alcyon</i>
6	Black-capped chickadee	<i>Poecile atricapillus</i>
7	Black-headed grosbeak	<i>Pheucticus melanocephalus</i>
8	Black-throated gray warbler	<i>Dendroica nigrescens</i>
9	Blue-gray gnatcatcher	<i>Poliotilta caerulea</i>
10	Brewer's blackbird	<i>Euphagus cyanocephalus</i>
11	Broad-tailed hummingbird	<i>Selasphorus platycercus</i>
12	Brown-headed cowbird	<i>Molothrus ater</i>
13	Canada goose	<i>Branta canadensis</i>
14	Cedar waxwing	<i>Bombycilla cedrorum</i>
15	Common merganser	<i>Mergus merganser</i>
16	Common raven	<i>Corvus corax</i>
17	Cordilleran flycatcher	<i>Empidonax occidentalis</i>
18	Dusky flycatcher	<i>Empidonax oberholseri</i>
19	Eurasian collared-dove	<i>Streptopelia decaocto</i>
20	Gray catbird	<i>Dumetella carolinensis</i>
21	Great blue heron	<i>Ardea herodias</i>
22	Green-tailed towhee	<i>Pipilo chlorurus</i>
23	House wren	<i>Troglodytes aedon</i>
24	Lesser goldfinch	<i>Carduelis psaltria</i>
25	Mallard	<i>Anas platyrhynchos</i>
26	Mountain chickadee	<i>Poecile gambeli</i>
27	Mourning dove	<i>Zenaida macroura</i>
28	Northern flicker	<i>Colaptes auratus</i>
29	Osprey	<i>Pandion haliaetus</i>
30	Plumbeous vireo	<i>Vireo plumbeus</i>
31	Red-winged blackbird	<i>Agelaius phoeniceus</i>
32	Song sparrow	<i>Melospiza melodia</i>
33	Sora	<i>Porzana carolina</i>
34	Spotted sandpiper	<i>Actitis macularis</i>
35	Spotted towhee	<i>Pipilo maculatus</i>
36	Swainson's thrush	<i>Catharus ustulatus</i>
37	Tree swallow	<i>Tachycineta bicolor</i>

Table A1. Birds detected during the 2009 Point Transect		
	Common Name	Latin Name
38	Violet-green swallow	<i>Tachycineta thalassina</i>
39	Virginia's warbler	<i>Vermivora virginiae</i>
40	Warbling vireo	<i>Vireo gilvus</i>
41	Western tanager	<i>Piranga ludoviciana</i>
42	Western wood-pewee	<i>Contopus sordidulus</i>
43	Wilson's snipe	<i>Gallinago gallinago</i>
44	Yellow warbler	<i>Dendroica petechia</i>
45	Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>
46	Yellow-rumped warbler	<i>Dendroica coronata</i>