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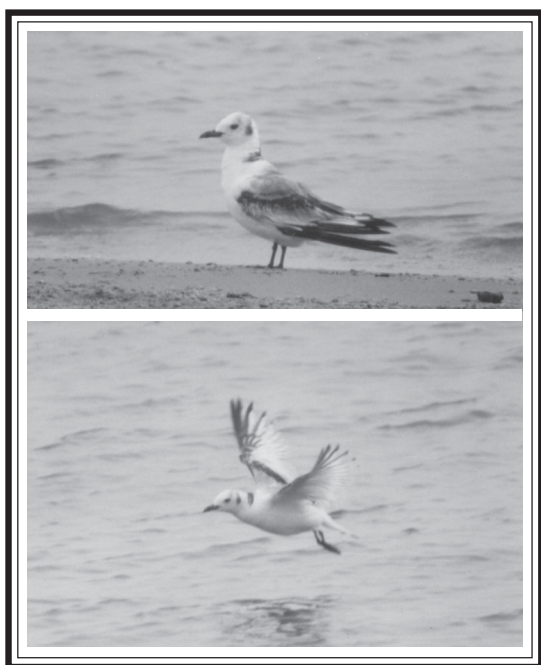


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COLORADO FIELD ORNITHOLOGISTS’
MISSION STATEMENT

The Colorado Field Ornithologists exists to: promote the field study, conservation, and enjoyment of Colorado birds; review sightings of rare birds through the Colorado Bird Records Committee and maintain the authoritative list of Colorado birds; publish the *Journal of the Colorado Field Ornithologists*; and conduct field trips and workshops, and hold annual conventions.

Cover photos: Black-legged Kittiwake at Chatfield Res., by Dean F. Hill

BIOTIC AND ABIOTIC FACTORS THAT INFLUENCE DIRECTIONAL NEST CAVITY PLACEMENT IN NORTHERN FLICKERS

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ABSTRACT—We asked the question: Why do Northern Flickers (*Colaptes auratus*) excavate cavities in the direction that they do? We developed a map of cavity-bearing trees within a three-acre study area and indicated nest cavity direction on each cavity-bearing tree. We then tested for possible relationships between nest cavity orientation and the location of water, the edge of the forest stand, and the direction of sunrise. We found that more cavities faced the nearest water source than what can be attributed to chance alone, but we found no relationship with direction to forest edge or direction of sunrise. We additionally found that cavities were significantly closer to the nearest water source than chance would predict. We conclude that proximity to a nearby water source is likely to be important to Northern Flickers when excavating cavities.

Introduction

Many studies have been done on the factors that influence cavity placement in cavity-nesting birds (e.g. Li and Martin 1991; Picman et al. 1993; Braden 1999; Hooge et al. 1999; Joy 2000), but information on factors influencing nest cavity direction seems to be lacking. The direction a cavity faces may be just as important as its location. The purpose of this observation study was to explore factors that may influence directional placement of nest cavities.

One factor that might affect cavity placement is proximity to a water source. Cavity nesters can maximize resource utilization not only by building close to a water source, but also by facing the water. This would allow the bird to observe feeding conditions (availability of insects and vegetation) from inside its cavity without exposing itself or disclosing the location of its nest to predators or competitors.

Predation is another important factor when choosing potential nest sites

(McCleery et al. 1996; Yanes and Onate 1996). Some studies suggest that the distance a nest site is from the forest edge may influence predation rates on that species (Li and Martin 1991; Picman et al. 1993), but these studies do not mention anything about cavity direction. Cavity nesters could increase their protection against predation by facing away from the edge, as well as by nesting away from the edge. This would decrease the visibility of the nesting cavity, as well as the audible levels of nest occupants as heard by potential predators from the forest edge. Facing inward may also decrease visibility of nest-cavities to potential inter-specific and intra-specific competitors. By facing outward, the nesting cavity may more easily attract the attention of competitors, such as the European Starling (*Sturnus vulgaris*) (Ingold 1989, 1994, 1998; Moore 1995).

Further sources on nesting cavities state that microclimate effects such as temperature, wind, and rain have a significant affect on cavity placement (Li and Martin 1991; Hooge et al. 1999). The effects of wind and rain can also be minimized, not only by maximizing the number of trees between the nest-site and the edge, but also by building nest cavities facing inward. In addition, cavities that are oriented towards the east could take advantage of the heat of the morning sun during the cool morning hours. Occupants of cavities that receive greater amounts of solar radiation may have reduced energy costs due to a decrease in heat production (Inouye et al. 1981; Ingold 1996), thereby increasing survivorship of nestlings. We chose to investigate directional cavity placement in the Northern Flicker, an abundant cavity-nesting bird distributed throughout most of the United States (National Geographic 1999). Based on the preceding information, we developed three hypotheses for describing which direction Northern Flicker cavities will face: (1) **Water hypothesis:** Flickers build nest cavities facing the nearest water source, (2) **Edge hypothesis:** Flickers build nest cavities facing away from the nearest edge, and (3) **Sunrise hypothesis:** Flickers build nest cavities facing the approximate direction of sunrise (74 degrees NNE during the time of flicker excavation, personal communication with Jeff Rautus, Denver Museum of Nature and Science). Our null hypothesis stated: There is no pattern to nest-cavity orientation; directional placement is random, and any correlation with our hypothesized factors can be attributed to chance alone.

Study Area and Methods

Study area: Our study area was a riparian cottonwood (*Populus* spp.) forest, approximately three acres in size. The entire study area has a closed canopy except for a meadow with a 15-meter diameter opening. The area is bordered to the east by open fields and to the west by a private fence line, beyond which is forested land (see Fig. 1). It is located in the town of Laporte, Colorado, along

the Cache La Poudre River (R69W, T8N, Section 29, SW $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$). The site supports several Northern Flickers and is an active nesting area. Our study took place 19 February – 19 April 2000.

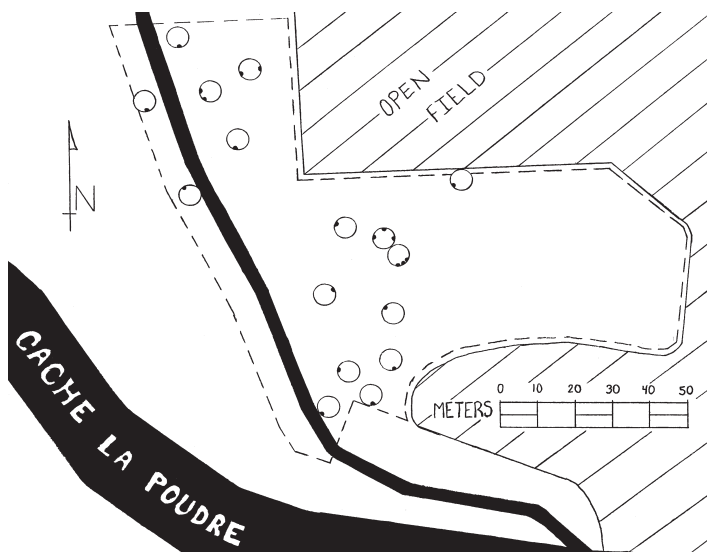


Figure 1. Map of our study area. Study area is located within the dashed line. Each circle represents a cavity-bearing tree, with one or more cavities.

Methods: We began our study by counting the number of flicker nesting cavities in the area. Since there are also Downy Woodpeckers (*Picoides pubescens*) in the area, the following criteria were used to differentiate between the two. Any cavity housed in a branch or trunk with a width greater than or equal to 13 cm (Li and Martin 1991), and having an entrance approximately 5.5 cm or greater in diameter (Kerpez and Smith 1990; Moore 1995), was considered to be a flicker cavity and not a Downy Woodpecker cavity. Using these methods we located 22 flicker cavities. Because Northern Flickers in this area do not begin preparing cavities or nests until approximately late April (personal observation) it is unknown whether any of the cavities were ever used. We never encountered individual birds entering or exiting from any of the cavities during our study.

For each flicker cavity, the following data were gathered: 1) the relative geographical location of the cavity-bearing tree as measured by pace counts; 2) the compass orientation of the cavity (later corrected to true north); and 3) line-of-sight to the nearest water source. If the water was visible from the cavity, that cavity was said to have a positive line-of-sight. If the water was not visible, it was said to have a negative line-of-sight. Using these data, we made a map of the study area (Fig. 1).

For each of the three hypotheses mentioned in the Introduction, we developed a template style model (Fig. 2) with which we could determine if each nest cavity was oriented in a manner that would either support or refute one or more of our hypotheses. Each circular model was divided into four 90-degree quadrants. The non-shaded quadrants in Figures 2a, b, and c, represent those portions of a tree's circumference where, if located, a cavity entrance would support the respective hypothesis.

Fig.2a Water Hypothesis

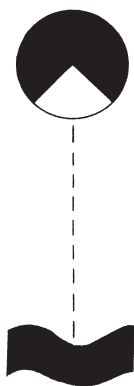


Fig.2b Edge Hypothesis



Fig.2c Sunrise Hypothesis

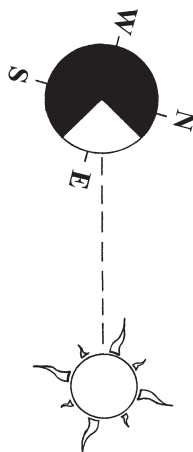


Figure 2. a) Model showing 90-degree quadrant that is directly facing the nearest water source. b) Model showing 180-degree hemisphere facing directly away from the forest's edge. c) Model showing 90-degree quadrant that is facing the average direction of sunrise during the breeding season.

These models were superimposed separately over each cavity-bearing tree on the map, and then oriented towards the nearest water source, the nearest edge, or to 74 degrees NNE, with respect to the model. The location of each cavity entrance was then recorded along the model's circumference (Fig. 3). The ratio of cavity entrances within the shaded vs. the non-shaded quadrants were counted and recorded separately for each model. Based on these data, each hypothesis was assigned a (+) value equal to the number of cavities within the non-shaded area, and a (-) value equal to the number of cavities within the shaded area. One cavity faced in the direction of the nearest water source, but did not have a direct line-of-sight to the water. To take this into account, we switched the data point representing this cavity from a (-) to a (+) value for the water hypothesis even though the cavity technically "faced" the water.

The data from each model were statistically analyzed using the chi-square test to see if the number of data points supporting each hypothesis was greater than what could be attributed to chance alone.

Fig.3a Water Hypothesis



Fig.3b Edge Hypothesis



Fig.3c Sunrise Hypothesis

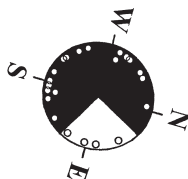


Figure 3. Location of nest cavity entrances with respect to water, edge, and sunrise.

Results

There was no correlation between nest-cavity orientation and the edge of the forest ($P^2 = 0.727$, $df = 1$, $p = 0.451$), nor was there a correlation between nest-cavity orientation and the direction of sunrise ($P^2 = 0.483$, $df = 1$, $p = 0.483$). In these two instances we fail to reject the null hypotheses. However, more Flicker cavities faced towards a water source than what can be attributed to chance alone ($P^2 = 4.909$, $df = 1$, $p = 0.027$).

Table 1. Summary of data used in statistical analyses, and resulting *p*-values. See text for details.

	Facing Water		Facing Inward		Facing Sunrise	
	Observed	Expected	Observed	Expected	Observed	Expected
(+) values	10	5.5	13	11	4	5.5
(-) values	12	16.5	9	11	18	16.5
<i>p</i> -value	0.027		0.451		0.483	

Discussion

The goals of this study were to see if correlations existed between directional cavity placement and the location of water, the forest edge, or light availability. The only relationship that seemed to exist was between cavity entrance direction and water location, suggesting that Northern Flickers benefit from having a direct line-of-sight to the nearest water source. If this is true, we might expect that Northern Flicker cavities would also be located geographically closer to the nearest water source than chance would predict. To test this idea, we created a “null” data set of flicker cavities located every 8.3 meters in checkerboard fashion throughout the entire study area except for the meadow mentioned in our methods section. After measuring the distances to the nearest water source for both our “null” and “real” data sets, we ran a 2-sample *t*-test to determine if existing flicker cavities were significantly closer to water. Results showed that Northern Flicker cavities were significantly closer to the nearest water source than a null model would predict ($t = 3.53$, $p < 0.001$), thus strengthening the idea that Northern Flickers benefit from cavity proximity to water. Since we only included one study area, these inferences may be applicable on a limited spatial scale. Replication of this study across multiple sites would be required to conclusively establish that Northern Flickers choose the direction of cavity excavation based on orientation to the nearest water source.

So far two other woodpeckers have been shown to demonstrate cavity-entrance orientation preferences: the Gila Woodpecker (*Melanerpes uropygialis*; Inouye et al. 1981; Korol and Hutto 1984) and the Gilded Flicker (*Colaptes chrysoides*; Zwartjes and Nordell 1998). Both of these North American desert birds show a preference for excavating northwest-facing cavities in the cactus they nest in. Zwartjes and Nordell (1998) reason that this northwest orientation is to escape heat stress by avoiding the sun in the south

while benefitting from the cooling effects of prevailing westerly winds. Notice that this explanation emphasizes the importance of the birds' environment in determining cavity orientation just as our explanation does for Northern Flickers.

There are other likely contributing factors to nest cavity orientation besides proximity to water that are not easily tested in a short period of time and were not tested in our study. One such factor is that of tree condition. Northern Flickers, being weak excavators (Ingold 1998), may place their cavity entrance primarily based on ease of build. Rotting wood is certainly softer and is preferred by many cavity-nesting birds (Li and Martin 1991). Snags are a common nesting site for Flickers (Ritter 1997), and many of the cavities presented here were found in dead portions of a tree, i.e. limbs or one side of a tree. It might be hypothesized that orientation would correlate to the dead part or side of the tree. Another possible factor is utilization of Downy Woodpecker cavities since Northern Flickers are occasionally secondary cavity-nesters (Moore 1995). In this case, selection would be determined by the Downy Woodpecker and not the Northern Flicker. In spite of these potential confounding factors a statistically significant number of the cavity entrances were in fact oriented towards water, and we feel justified in asserting that proximity to a water source is important to Northern Flickers when excavating cavities.

Acknowledgments

An earlier version of this manuscript received a helpful review by Meghan Gannon. We would like to thank Paul Sweet in the Biology Department at Colorado State University for his comments and suggestions regarding this study. We also thank Jeff Rautus of the Denver Museum of Nature and Science for providing information concerning solar orientation, and the National Weather Service for providing information on seasonal wind and general weather patterns.

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CFO PROJECT FUND GUIDELINES

Project Fund Committee

CFO has a limited amount of money generated by the PROJECT FUND from which to make grants to qualifying individuals or organizations for projects that will have a lasting benefit to Colorado birds and the habitats upon which they rely. CFO urges those applying for grants to become members of Colorado Field Ornithologists. CFO PROJECT FUND grants can be considered matching funds for other grants. *The Project Fund Committee requests that the recipients of funding publish a year-end summary of their funded work in the JCFO and/or present some of their findings at the CFO convention in May of the next calendar year.*

1. All applications should contain name, address, and telephone number of the person or organization applying for the grant.
2. Applications should include a description of the project—what will be done, who will direct the project, who will actually do the work, timetable, and rationale (explaining how the project will support the Mission of CFO).
3. All applications must be postmarked no later than December 1, and must be submitted directly to the chairperson of the PROJECT FUND Committee.
4. All projects must have an anticipated starting and completion date. Projects should be realistic in terms of time required to complete the project.
5. Applicants must submit a complete budget. Projects should be realistic in terms of financial and volunteer resources. Applications should contain all items that the project requires and the items the applicant is seeking funding from CFO for, and should specify the amount requested from CFO.
6. Travel expenses and equipment readily available from private sources (such as cameras, spotting scopes, and office equipment) are usually not funded.
7. Application should specify the amount already funded from other sources.

8. Following the receipt of a grant and completion of the project, the applicant must submit a final report, in writing, to the chairperson of the PROJECT FUND by February of the next calendar year. This report should include a full description of the project activities and an accounting of money spent.

All monies not used will be returned to the CFO treasurer.

Please include three copies of the grant proposal. If there are additional brochures or copies of financial reports included in the grant application, please include three copies, one for each of the committee members.

Applicants will be notified after the winter (February) CFO Board meeting whether or not their project has been funded.

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EFFECTS OF SKI RESORT FRAGMENTATION ON WINTERING BIRDS IN SOUTHWEST COLORADO

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ABSTRACT—Little is known about how forest fragmentation resulting from ski resort development affects populations of wintering birds. In this study, we conducted point-count surveys at the Durango Mountain Resort and at the less-disturbed Cascade Creek area in La Plata County, Colorado, during January and February 2001. We found that the two areas were similar regarding the mean number of individual birds and the mean number of species observed on each survey. However, we observed a dramatic difference in species composition. Specifically, we observed significantly more corvids and significantly fewer non-corvid passerines at Durango Mountain Resort than at Cascade Creek. The implications of this study are that (1) nest predation by corvids might be higher at the ski area, possibly contributing to local declines of other birds, and (2) development and human activity contribute to changes in bird communities.

Introduction

Significant population declines have been reported for at least 109 neotropical migratory birds that breed in North America (Rappole and McDonald 1994; Ortega 1998). Forest fragmentation has often been blamed as one of the major sources of these declines as it appears that the abundance of birds is positively correlated with forest patch size (Ambuel and Temple 1983). Additionally, fragmentation creates edge habitat, and because the edge has characteristics of both adjacent communities, both diversity and abundance of birds tend to increase in edges (Gates and Gysel 1978; Brittingham and Temple 1983). However, while edges may benefit some species, they can be ecological traps to others. Paton (1994) suggested that most breeding bird studies demonstrate low nest success close to or within edge habitat; this has largely been attributed to predators (Andrén and Angelstam 1988; Yahner and Scott 1988; Yahner et al. 1989; Laurance et al. 1993; Rudnicki and Hunter 1993; Picman and Schriml 1994) and brood-parasitic Brown-headed Cowbirds (*Molothrus ater*; Brittingham and Temple 1983) that are attracted to edge habitat.

Fragmentation can be created for many purposes, including agriculture, roads, timber harvesting, development, and recreation. Ski resorts have recently been criticized for large-scale clearcutting, development and expansion because they clearcut sizeable areas of forest, which alters the community and creates edge habitat. Additionally, heavy human traffic and noise may modify species composition and abundance within and surrounding ski resorts.

While it is known that fragmentation is often detrimental to breeding birds, less is known about how fragmentation affects communities of wintering birds. In this study, we investigated the effects of a ski resort on wintering bird populations in southwestern Colorado. The study was conducted at Durango Mountain Resort, also known as Purgatory Ski Resort, which is located north of Durango in La Plata County. This ski area is expected to grow dramatically in the next ten years; therefore, the importance of understanding how this kind anthropogenic change affects the bird community is unequivocal. We hypothesized that Durango Mountain Resort would support a different bird community than the nearby but relatively undisturbed Cascade Creek. We further expected that the abundance of birds, such as corvids, that typically associate with humans would be higher at Durango Mountain Resort than at Cascade Creek.

Methods

Durango Mountain Resort is located approximately 32 km north of Durango in La Plata County. The elevation of the resort varies from 2700 m at the base to 3300 m at the summit. The resort has 11 lifts and 486 ha of ski runs. It is dominated by Engelmann spruce (*Picea engelmannii*) and aspen (*Populus tremuloides*). We selected Cascade Creek as a control because it has relatively little human activity and is similar to Durango Mountain Resort with regard to slope, angle, aspect, vegetation, elevation, and size. Cascade Creek, in the San Juan National Forest, is located approximately 8 km north of Durango Mountain Resort.

We conducted 10 point-count surveys from mid-January through February in 2001. We set up one transect in both study sites with 10 count stations 150 m apart in each transect at an elevation of approximately 2680 m. At Durango Mountain Resort, the transect was in the buffer zone between the outermost edge of the ski slopes and the natural forest. We counted birds within a 30-m radius of each station for 10 minutes (Reynolds et al. 1980; Martin et al. 1997) and also counted birds between stations. All surveys were conducted before noon, and we alternated the order in which we conducted surveys at Durango Mountain Resort and Cascade Creek.

Our data were not normally distributed; therefore, we used two-tailed Mann-Whitney *U*-tests, corrected for ties, to determine if there were significant differences in rank values (Zar 1984). Standard deviations are provided with all means, and we considered an alpha level of $P \leq 0.05$ to be significant.

Results

We observed a total of 89 individuals of 9 species at Durango Mountain Resort and 94 individuals of 12 species at Cascade Creek (Fig. 1). There was no significant difference in the total mean number of birds observed per survey at Durango Mountain Resort (8.9 ± 5.5 SD, $n=10$ surveys) and Cascade Creek (9.4 ± 7.6 SD, $n=10$ surveys, $P=0.82$, $z=0.228$, Mann-Whitney *U*-test). There was also no difference in mean number of species observed between Durango Mountain Resort (3.6 ± 1.6 SD, $n=10$ surveys) and Cascade Creek (3.4 ± 2.1 SD, $n=10$ surveys, $P=0.70$, $z=0.386$, Mann-Whitney *U*-test).

Species composition, on the other hand, was strikingly different between Durango Mountain Resort and Cascade Creek (Fig. 1). We observed a significantly higher mean number of individual corvids at Durango Mountain Resort (6.5 ± 4.1 SD, $n=10$ surveys) than at Cascade Creek (1.8 ± 2.0 SD, $n=10$ surveys, $P=0.002$, $z=3.017$, Mann-Whitney *U*-test). Conversely, the mean number of individuals excluding corvids was significantly higher at Cascade Creek (7.6 ± 6.0 SD, $n=10$ surveys) than at Durango Mountain Resort (2.4 ± 2.4 SD, $n=10$ surveys, $P=0.035$, $z=2.145$, Mann-Whitney *U*-test).

Discussion

While we found no difference between Durango Mountain Resort and Cascade Creek regarding number of species and number of individuals, there was a significant difference in species composition between the ski resort and Cascade Creek. We observed significantly more corvids and significantly fewer non-corvids at Durango Mountain Resort than at Cascade Creek, supporting our hypothesis that species composition would differ between the two areas. This was not surprising as Whitcomb et al. (1981) and others reported that in the eastern United States, forest fragmentation often results in very different avian assemblages.

Corvids are well known to associate with humans; most corvids are unwary of humans, and they will even solicit food scraps from humans. The relatively high density of corvids may result in increased competition for other resources, which may explain the low number of non-corvid passerines at Durango Mountain Resort. Similarly, Ambuel and Temple (1983) found that high density of forest edge species tended to exclude forest-interior migrants from small woodlots, and Askins et al. (1987) suggested that small or

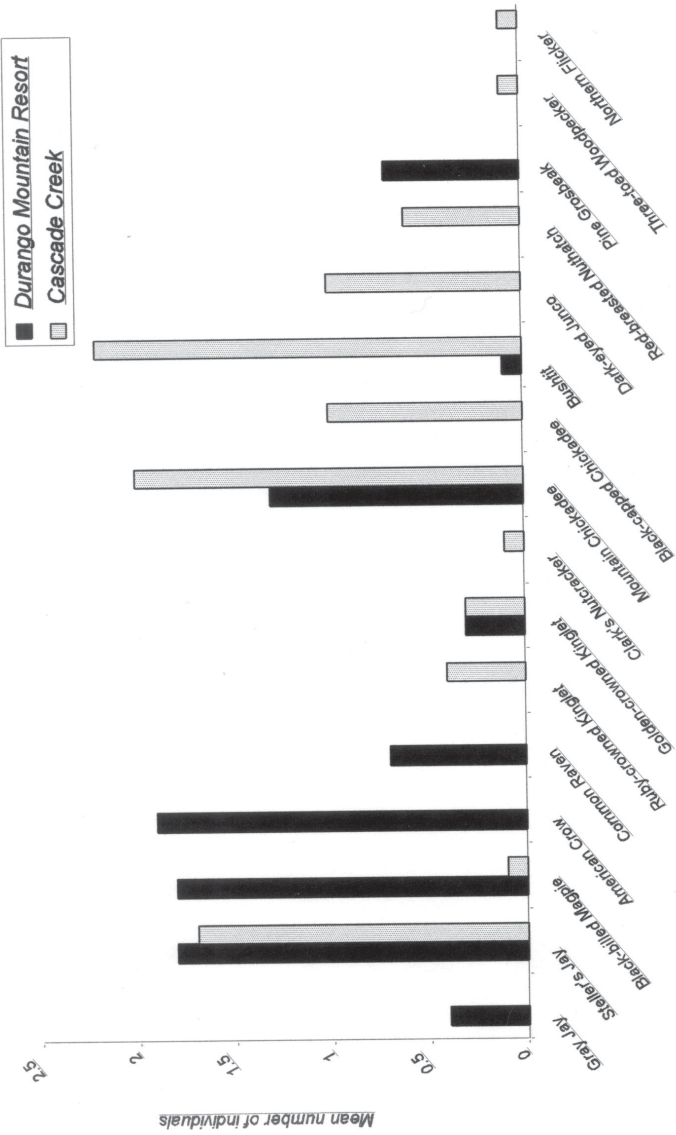


Fig. 1. Mean number of individuals observed over 10 surveys at Durango Mountain Resort and Cascade Creek in La Plata County, Colorado, January-February, 2001. Scientific names are listed in Appendix I.

fragmented woodlots have fewer forest-interior birds. Alternatively, the lower abundance of non-corvid passerines might be a response to higher human presence as well as subtle or not so subtle anthropogenic changes in the habitat.

High rates of nest predation in forest fragments are usually attributed to a few key predator species, such as raccoons (*Procyon lotor*), gray foxes (*Urocyon cinereoargenteus*), squirrels, and corvids, which show increased density along forest edges (Gates and Gysel 1978). Our results are significant because corvids can be particularly important predators on other nests, especially other passerines. For example Andrén (1992) found that the density of corvids increased with forest fragmentation, resulting in an increase in nest predation in small forest fragments. The high number of corvids at the ski resort suggests that there might be an increase in nest predation during the breeding season, possibly contributing to local declines of other passerine populations.

Forest fragmentation is hypothesized to be a major cause of population decline for some forest-dwelling birds because fragmentation reduces nesting success (Chasko and Gates 1982; Brittingham and Temple 1983; Robbins et al. 1993; Robinson et al. 1995). Future studies on nest predation in the same areas might show more direct effects of increased corvid populations. Nest predation is also attributed to mammals; thus, it would be useful to conduct a study on mammalian communities in these areas to better understand potential predation patterns. Additionally, it is important to follow this study with a nest success study because density of birds does not necessarily suggest habitat quality (Van Horne 1983; Johnson and Temple 1986).

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Appendix. Species observed on 10 surveys at Durango Mountain Resort and Cascade Creek in La Plata County, Colorado, January-February 2001.

Three-toed Woodpecker	<i>Picoides tridactylus</i>
Northern Flicker	<i>Colaptes auratus</i>
Gray Jay	<i>Perisoreus canadensis</i>
Steller's Jay	<i>Cyanocitta stelleri</i>
Clark's Nutcracker	<i>Nucifraga columbiana</i>
Black-billed Magpie	<i>Pica pica</i>
American Crow	<i>Corvus brachyrhynchos</i>
Common Raven	<i>Corvus corax</i>
Black-capped Chickadee	<i>Poecile atricapilla</i>
Mountain Chickadee	<i>Poecile gambeli</i>
Bushtit	<i>Psaltiriparus minimus</i>
Red-breasted Nuthatch	<i>Sitta canadensis</i>
Golden-crowned Kinglet	<i>Regulus satrapa</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Pine Grosbeak	<i>Pinicola enucleator</i>



CALL FOR NOMINATIONS FOR RONALD A. RYDER AWARD

On February 25, 1995, the CFO Board of Directors passed a resolution establishing the Ronald A. Ryder Award and presenting the first of these awards to Dr. Ryder. The award was presented to Dr. Ryder for distinguished service to the Colorado Field Ornithologists organization and goals, for scholarly contribution to Colorado Field Ornithology, and for sharing knowledge of Colorado field ornithology with the people of the state. These criteria were established as those which would govern presentation of the award to others in the future. Recipients of the Ronald A. Ryder award are presented a plaque at the annual CFO convention and are granted a life-time membership in the organization. Details are published in the *Journal*, and that issue features a cover photograph of the award recipient.

The award, which is presented when nominations have been presented to and recommended by the Awards Committee and approved by the Board of Directors, has been presented to three distinguished members of the Colorado birding community since that time: Harold R. Holt (Schofield and Finch 1998), Hugh E. Kingery (Levad 1999), and Bob Righter (Echelmeyer, Willcocksen, and Pantle 2000).

Members of CFO are encouraged to submit nominations for the award. Nominations may be submitted to Rich Levad, chair of the Awards Committee, by U.S. mail or via e-mail (addresses are printed on the inside of the front cover). Nominations should include a full description of the nominee's contributions to the Colorado Field Ornithologists and to Colorado field ornithology.

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BEHAVIORAL RESPONSES OF SONGBIRDS TO THE THREAT OF SHARP-SHINNED HAWKS

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ABSTRACT—According to the Breeding Bird Survey, the abundance of Sharp-shinned Hawks (*Accipiter striatus*) has significantly increased nationwide since 1966. Additionally, Sharp-shinned Hawks appear to be less migratory; the increased abundance and shift in migration patterns may be a result of increased foraging opportunities at birdfeeders nationwide. In this study, we investigated whether songbirds are able to recognize Sharp-shinned Hawks as a threat. We placed a stuffed Sharp-shinned Hawk 1 m from a bird feeding station in Durango, Colorado, January–March, 2001. We quantified aggressive behavior and number of birds within 10 m of the model. We used a stuffed American Robin (*Turdus migratorius*) as a control. Six of seven songbird species were significantly more aggressive toward the Sharp-shinned Hawk than the American Robin. Significantly more bird observations occurred when the American Robin was presented (200 observations) than when the Sharp-shinned Hawk was presented (104 observations). Only large corvids appeared as often or more often when the Sharp-shinned Hawk was present compared to when the American Robin was present. Our data suggest that most songbirds recognized Sharp-shinned Hawks as a threat and responded by either staying away from the feeding station or behaving aggressively toward the Sharp-shinned Hawk.

Introduction

According to the Breeding Bird Survey, the abundance of Sharp-shinned Hawks (*Accipiter striatus*) has significantly increased nationwide since 1966 ($P < 0.01$, Sauer et al. 1999). Their winter range also appears to have shifted. Sharp-shinned Hawks were once thought to be highly migratory, leaving the northern states to winter further south. More recently, however, they have been counted in higher numbers in northern latitudes during the winter (Viverette et al. 1996).

While fluctuations in bird populations are not uncommon, it has been suggested that increases in Sharp-shinned Hawk and Cooper's Hawk (*Accipiter cooperii*) populations and changes in their migratory patterns may result from an increase in the number of birdfeeders nationwide (Boal and

Mannan 1999). Songbirds are the primary food resource for Sharp-shinned Hawks and Cooper's Hawks, and they opportunistically seize birds at birdfeeders. Therefore, birdfeeders provide Sharp-shinned Hawks and Cooper's Hawks with a steady supply of food through the winter.

The predator-prey relationship between songbirds and Sharp-shinned Hawks is well known, but to our knowledge, no work has been published regarding whether songbirds are able to recognize Sharp-shinned Hawks as a threat and how songbirds behave in the presence of Sharp-shinned Hawks. However, ample studies have been conducted on recognition by songbirds to the threat of brood parasitism (Edwards et al. 1950; Smith et al. 1984; Cruz et al. 1990; Ortega and Cruz 1991; Prather et al. 1999; and many other references in Ortega 1998) and predation (Duckworth 1991) at the location of active nests.

In this study, we observed the ability of songbirds at a birdfeeding station to recognize Sharp-shinned Hawks as a threat; specifically, we compared songbird responses to stuffed Sharp-shinned Hawks and stuffed American Robins (*Turdus migratorius*). American Robins generally do not feed from elevated birdfeeders, nor do they prey upon songbirds; therefore, they should be perceived as neither a threat nor a competitor. We tested two null hypotheses: 1) a stuffed Sharp-shinned Hawk and a stuffed American Robin would elicit similar aggressive responses by songbirds, and 2) the total number of songbird observations within 10 m of the models would not differ between the presence of a stuffed Sharp-shinned Hawk and a stuffed American Robin.

Methods

Our study was conducted in a small town back yard between 20 January and 24 March 2001 in Durango, Colorado. The back yard bordered Durango Mountain Park, and the dominant vegetation was Gambel oak (*Quercus gambelii*) and rabbitbrush (*Chrysothamnus nauseosus*). We began feeding birds a mixture of sunflower seeds, safflower seeds, millet, peanut hearts, cracked corn, thistle, and milo on a platform feeder on 14 October 2000, and continued feeding the birds with the same food throughout the study.

On nine consecutive Saturdays, beginning at 8:30 a.m., we presented, in alternating order, a stuffed Sharp-shinned Hawk and a stuffed American Robin. We placed the model 1 m from the feeding station and observed behaviors for 10 minutes; we allowed 10 minutes between trials.

We quantified bird behavior toward the models in order of increasing aggression and multiplied the behavior category value by the appropriate

duration value (modified from Robertson and Norman 1976). The behavior categories with corresponding values are the following: (0) no apparent reaction toward the model, (1) silent observation of the model at 5–10 m from model, (2) silent observation of the model at < 5 m from model, (3) alarm calling at 5–10 m from model, (4) alarm calling at < 5 m from model, (5) fly-by investigation of model, (6) guarding feeder without feeding, (7) skulking or hovering above the model, and (8) attacking the model. The duration values were (1) response given briefly or only once, (2) response given several times or continuously for up to 1 minute, (3) response given for 1–5 minutes, and (4) response given for 5–10 minutes. The product of the behavior value and the duration value yielded an aggression value for each observation of an individual. For example, if a bird gave an alarm call within 5 m of the model for 30 seconds, the aggression value would be 8 (4 for behavior value \times 2 for duration value).

In addition, we recorded the total number of strikes on the model and control, and we recorded the total number of bird observations within a 10 m radius of the model (from here referred to as the observation circle). We defined an observation as a bird present within the observation circle until it left the observation area. Therefore, if an individual was present, left the observation circle, and returned to the observation circle, it would be counted as another observation. This was necessary because the birds were not individually marked. We assume that biases in these methods were similar between trials with the Sharp-shinned Hawk and the American Robin.

Our data were not normally distributed; therefore, we used nonparametric tests for statistical analyses. We calculated mean aggression values (\pm standard deviations) for each species and used two-tailed Mann-Whitney *U* tests, corrected for ties, to determine differences in rank values (Zar 1984). We used a binomial test to determine a significant difference in number of strikes and a Chi-square goodness of fit test to determine differences in the number of bird observations within the observation circle (Zar 1984).

Results

Mean aggression values were significantly higher towards the Sharp-shinned Hawk than the American Robin for 6 of 7 species that appeared within the observation circle for both experimental and control trials (Table 1). We observed a total of 10 strikes on the Sharp-shinned Hawk and none on the American Robin ($P < 0.05$, binomial test). All strikes occurred during a single mobbing event by 7–9 Steller's Jays. Significantly more bird observations occurred when the American Robin was present (200 observations) than when the Sharp-shinned Hawk was present (104 observations, $P < 0.001$, $\chi^2 = 30.32$,

DF = 1). Only large corvids appeared as often, or in the case of Steller's Jays more often, when the Sharp-shinned Hawk was present compared to when the American Robin was present (Fig. 1).

Table 1. Mean aggression values (\pm SD) for birds visiting a feeding station with a stuffed Sharp-shinned Hawk or American Robin within 1 m of the feeding station, Durango, Colorado, January-March 2001.

Species	American Robin		Sharp-shinned Hawk		<i>P</i> *	<i>z</i>
	Mean (\pm SD)	<i>n</i>	Mean (\pm SD)	<i>n</i>		
Steller's Jay	1.3 \pm 2.4	27	4.4 \pm 2.8	49	0.000	4.369
Western Scrub-Jay	1.5 \pm 2.4	26	2.6 \pm 1.7	25	0.048	1.974
American Crow	2.0 \pm 0.0	2	4.8 \pm 0.4	6	0.021	2.309
Black-capped Chickadee	0.4 \pm 1.3	9	2.8 \pm 1.8	5	0.018	2.366
European Starling	0.1 \pm 0.5	17	4.0 \pm 0.0	3	0.002	3.873
Dark-eyed Junco	1.3 \pm 2.4	88	2.8 \pm 1.0	12	0.000	3.673
House Finch	1.0 \pm 1.9	8	4.0 \pm 0.0	1	0.157	1.414

*Two-tailed Mann-Whitney *U* tests, corrected for ties

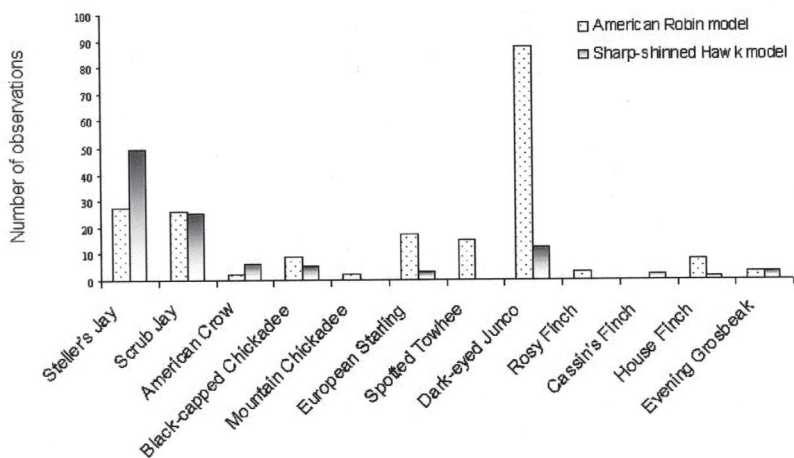


Fig. 1. Number of observations of songbirds at a feeding station when a stuffed Sharp-shinned Hawk and an American Robin were placed 1 m from feeding station, Durango, Colorado, January-March, 2001.

Discussion

Neither of our null hypotheses were supported. Our data suggested that most of the birds that fed at the station were able to recognize the Sharp-shinned Hawk as a threat and either stayed out of the observation circle or when they did enter, they demonstrated higher aggression values. European Starlings, Spotted Towhees, Dark-eyed Juncos, and House Finches were common daily visitors to the feeding station and regularly visited when the American Robin model was present but often stayed away from the feeding station when the Sharp-shinned Hawk model was presented. Given that the American Robin model was nearly the size of the Sharp-shinned Hawk model, we do not believe that these small passerines responded to size alone.

Another study suggested that small songbirds were able to recognize European Kestrels (*Falco tinnunculus*) and never mobbed the Kestrel (Pettifor 1990). Pettifor (1990) suggested that the presence of a European Kestrel was a sufficient enough threat to result in lower feeding rates of songbirds because they needed to increase vigilance. While we did not measure feeding rates, our data of fewer observations suggested that feeding rates at the station were lowered during presentation of the Sharp-shinned Hawk. When the small songbirds did feed at the station during presentation of the Sharp-shinned Hawk, they often grabbed a seed and quickly left instead of remaining on the feeding station as they did during presentation of the American Robin.

Western Scrub-Jays, Steller's Jays, and American Crows were particularly aggressive toward the Sharp-shinned Hawk model. Perhaps because of their larger size, they did not feel threatened enough to abandon the feeding station. However, they were significantly more aggressive toward the Sharp-shinned Hawk model than the American Robin model, suggesting that they were able to recognize the Sharp-shinned Hawk as a threat. Their mobbing and aggressive behavior toward the Sharp-shinned Hawk model also suggested that it would benefit the songbirds to drive the hawk away. Flasskamp (1994) suggested in the "move on" hypothesis that the risks of being killed or injured by a retaliating predator are outweighed if the mobbers are successful in driving the predator away. Interestingly, we observed no strikes on the Sharp-shinned Hawk by individuals who were alone.

Sharp-shinned Hawks are the primary predator on songbirds at birdfeeders, and domestic cats (*Felis domesticus*) are the second most important predator (Dunn and Tessaglia 1994). Therefore, it is important to understand whether songbirds can recognize Sharp-shinned Hawk and other *Accipiter* species as threats in order to more fully understand how providing food for birds might be

affecting songbird and *Accipiter* populations. While we cannot responsibly come to definitive conclusions based upon one study, our data suggest that recognition by songbirds of Sharp-shinned Hawks may reduce (but not eliminate) the effects of predation at birdfeeders. We encourage more studies such as this one to more fully address the problems that may be associated with birdfeeders.

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Appendix. Scientific names of species in tables and figures.

Common name	Scientific name
Steller's Jay	<i>Cyanocitta stelleri</i>
Western Scrub-Jay	<i>Aphelocoma californica</i>
American Crow	<i>Corvus brachyrhynchos</i>
Black-capped Chickadee	<i>Poecile atricapilla</i>
Mountain Chickadee	<i>Poecile gambeli</i>
European Starling	<i>Sturnus vulgaris</i>
Spotted Towhee	<i>Pipilo maculatus</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Rosy-Finch	<i>Leucosticte</i> spp.
Cassin's Finch	<i>Carpodacus cassinii</i>
House Finch	<i>Carpodacus mexicanus</i>
Evening Grosbeak	<i>Coccothraustes vespertinus</i>



A BRIEF HISTORY OF HARLEQUIN DUCKS IN COLORADO

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Harlequin Ducks are usually described as breeding in tumbling mountain streams, both in Eastern Canada and from Alaska to as far down the Rocky Mountains as Yellowstone National Park, and wintering along both the Atlantic and Pacific Coasts. However, they were reported from Colorado as early as 1875 until about 1888 before suddenly disappearing from the mountains. Since then, three individuals have been reported in the last 113 years.

There are so few reports from Colorado that they can be listed in detail:

1875: one male was collected at Border's Ranch on Tarryall Creek in South Park County by Edwin Carter on May 15, 1875, according to the CFO Sight Record Files at the Denver Museum of Nature and Science (DMNS). This specimen is listed as lost.

1876: Edwin Carter collected both a male and female at the Cozier Ranch on Michigan Creek, Jackson County on May 21, 1876, again according to the CFO Sight Record Files (DMNS). These two specimens are archived at DMNS and are numbered #387 and #388 respectively.

1881: Frank M. Drew, calling the Harlequin Duck by the scientific name *Histrionicus minutus*, writes simply, "Common: said to breed" in San Juan County, Colorado (Drew 1881).

1883: A. W. Anthony collected a downy young Harlequin on July 15, 1883 on Vallecito Creek, La Plata County. The specimen was archived at the Carnegie Museum of Natural History (CM 21786) and not recognized until 1976 as the sole confirmation of Harlequin Ducks breeding in Colorado (Parkes and Nelson 1976).

1885: Frank M. Drew includes the Harlequin duck (again as *Histrionicus minutus*) in his "On the Vertical Range of Birds in Colorado," listing 10,000 feet as the upper limit of range in summer and autumn and says that it breeds between 7,000 and 10,000 feet. No further details are given (Drew 1885).

1888: Charles F. Morrison, writing "A List of Some Birds of La Plata County, Col., with Annotations," published in September, 1888, calls the Harlequin duck "*Histrionicus minutus*" and writes "common at 10,000 feet, where it breeds near some small lakes, or rather Buffalo wallows." By November, 1888, in "A List of the Birds of Colorado," published in Ornithologist and Oölogist as was his previous work, he uses the scientific name *Histrionicus histrionicus* and quotes Drew's work. Then he adds, "For my part I believe it breeds in both the San Juan and La Plata counties, as I have had a duck described to me by ranchmen, as breeding, which I can only refer to this. I have often seen it through the winter below Fort Lewis, on the Ute reservation, together with *G. Islandica* (Gmel). I know of no eggs having been taken." Please note that Fort Lewis, in 1888 was located on the La Plata River, south of what is now Hesperus, CO, and that *Glaucionetta islandica* was the name Morrison used for Barrow's Goldeneye (Morrison 1888).

After 1888, there were no further first hand reports for 52 years. W. W. Cooke in his *The Birds of Colorado* references Drew's and Morrison's work and then writes "... This is regularly a northern species, breeding far north and coming into Colorado in the winter as it does over the Mississippi Valley to the eastward. But a few remain to breed at about 10,00 feet in the mountains more particularly of western Colorado...", although no one today would describe the Harlequin Duck as wintering regularly in the Mississippi Valley (Cooke 1897). In 1900, Cooke reviewed the Edwin Carter collection, shortly after Mr. Carter's death: "Mr. Carter has found it breeding in Middle Park and on the Blue river a little below Breckenridge at 9,200 feet" (Cooke 1900). Later authors such as William L. Sclater (*A History of the Birds of Colorado* 1912) and William H. Bergtold (*A Guide to Colorado Birds* 1928) repeat the reports of Drew, Morrison and Cooke.

Bailey and Niedrach, in *Birds of Colorado*, list the Harlequin as "straggler, rare" and dismiss claims of its having bred in the state, since Carter did not apparently collect any eggs, Drew did not give any references and Morrison's claims were not supported by specimens (Bailey and Niedrach 1965).

Then next reported sighting of a Harlequin Duck in Colorado occurred in 1940. According to the CFO Sight Record Files (DMNS), Sam Gadd on March 12, 1973, wrote a personal letter describing his sighting of a female February 25, 1940, on a small pond beside Paseo Road near Palmer Park in northeast Colorado Springs. The file quotes Mr. Gadd as writing, "I studied the bird most carefully at a distance of, I suppose, 15 yards at times; the face markings were unmistakable." I do not know where the original or a full copy of this letter can now be found. The Records Report makes no reference to accepting this dated,

one-person sighting.

Then, only 36 years later, Robert Andrews and Thomas Shane reported observing for about 30 minutes a female or immature Harlequin Duck on October 24, 1976, at Barr Lake in Adams County. Details and sketches were reported to the Records Committee and the record was accepted (CFO Sight Record Files (DMNS)).

January 12, 2001, Dean Hill and I noticed a small duck on the Animas River near 29th Street and Third Avenue in Durango, Colorado about midday. Later that afternoon, we refound the duck a few blocks further north, still on the Animas River. The next afternoon (January 13, 2001), Susan Allerton of Durango accompanied us and we located the duck on the river, a few blocks south of the original sighting. With Susan's help, we finally gave up trying to make it into a female surf scoter with an abnormally small bill and identified it as a female Harlequin Duck. Susan began notifying local Durango birders and we posted the finding on COBIRDS and the New Mexico and Colorado Rare Bird Reports. By sunset on the 13th, at least five additional Durango birders had seen the duck as well, eclipsing the number of known observers in Colorado over the previous 125 years. Numerous additional observers arrived over the next few days.

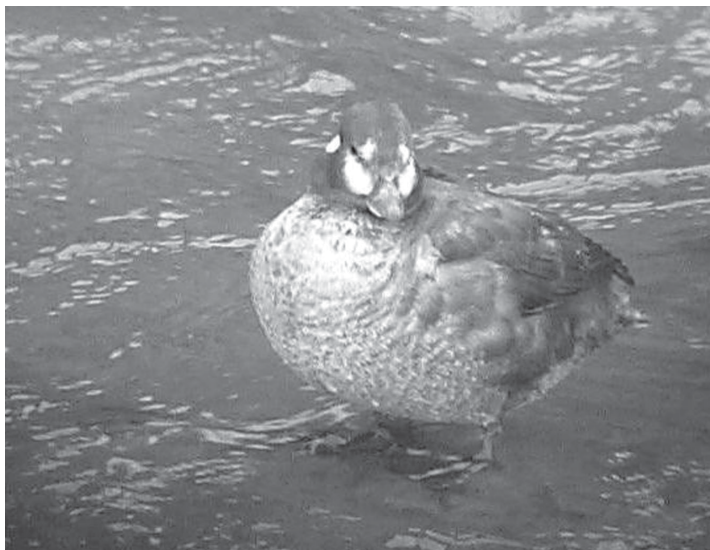


Photo by Dick Maxfield

By January 20th, the Harlequin Duck had moved downstream to just west of the bridge where the Animas goes under Main Street in Durango. Ric Olsen located the bird at this site (personal communication from Vic Zerbi). The duck stayed until March 16, 2001 (personal communication from Susan Allerton) or March 17, 2001 (personal communication from Terry D. Steinberg). During its stay, birders from Colorado, New Mexico and from at least as far away as Minnesota reported seeing the duck. During the time the bird was staying west of Main Street, Terry D. Steinberg named the duck "Maggie" and graciously permitted a number of out-of-town birders access through her salon and day spa so that they could observe the bird more closely. The CFO Board of Directors has awarded her a plaque of recognition for this kindness.

I believe the dates recorded for the female's presence probably closely reflect the time she spent on the Animas River in Durango. Mert and Harry Goff, Durango residents who, like Dean and me, frequently walk along the Animas, found the bird independently on the morning of January 13th. Of course, if the bird was either up or downstream where the river is not readily observable, either before or after the recorded dates, it is most unlikely she would have been observed.

Andrews and Shane, observing their bird in October, cautiously and correctly identified it either as a female or an immature male. The Durango bird, by January and certainly by March, should have been developing lateral neck and breast markings had it been an immature male (Johnsgard 1978). We observed that the white spot over the eye became more clearly defined as time passed and the gloss on the wings appeared more pronounced, suggesting that the bird was a first winter female.

It is always exciting to find a rare or out-of-range bird, but it is especially exciting to find one that has returned to what was its historical range. The early reports and specimens suggest a widespread mountain population in the 1870s and 1880s, although numbers were probably small. Perhaps with increased awareness and more birders in the area, more Harlequin Ducks will be found.

Acknowledgement: To Alan Versaw for advice about early references.

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CFO SUPPORTS ETHICS CODES

The Colorado Field Ornithologists is dedicated to the conservation of avian species and to increasing the public awareness of human impact on birds. As one step toward achieving these goals, the CFO Board has endorsed the American Birding Association's (ABA) *Birding Code of Ethics* and the Ornithological Council (OC) of North American Ornithological Societies' *Code of Ethics*. The full text of the ABA *Code* and a synopsis of the OC *Code* can be found in the October 1999 issue of the *JCFO*.

BOOK REVIEW: ANNOTATED BIBLIOGRAPHY OF COLORADO VERTEBRATE ZOOLOGY

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A review of the Annotated Bibliography of Colorado Vertebrate Zoology, 1776–1995, by Richard G. Beidleman, Reba R. Beidleman, and Linda H. Beidleman. Published 2000 by University Press of Colorado. 447 pages. \$125.00

Just when you thought it was safe to tell your professor, reviewer, or editor that nothing has been published on _____ (insert your current vertebrate paper or article topic here), along comes this hefty tome from the Beidleman family. Pick your subject, be it cutthroat trout, collared lizards, or *Empidonax* flycatchers, and this book provides you with an instant bibliography on the subject as it pertains to Colorado.

Although the limitations of the book are obvious—nothing published subsequent to 1995 is included, and only articles with a direct link to Colorado are referenced—it provides an astonishingly thorough treatment of all that is advertised in the title. The listed price of the volume will preclude its inclusion in most private personal libraries, but no credible research library in Colorado should be without it. No electronic database of biological articles comes close to providing the breadth and depth of specialized coverage accumulated by the Beidlemans.

This volume should prove particularly useful to ornithological researchers. Although vertebrates from fish to mammals each occupy their own sections between the front and back covers, the avian bibliography claims nearly half of the volume's pages.

We should hope that the Beidlemans have catalogued their information in a database that can be updated and made available to the aforementioned research libraries. Already, the cutoff date of 1995 makes this volume much more important as a reference to historical data than as a reference to current research. While the historical information will continue to prove useful to a variety of students, most researchers will also desire access to a bibliography of more current research.



**NEWS FROM THE FIELD:
WINTER 2000–2001 REPORT (DECEMBER–FEBRUARY)**

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The 2000–2001 winter season was more usual than the last two in terms of temperature and snowfall. Most lakes and reservoirs on the Front Range froze in late December, and did not open up until the end of the season. The exception was Pueblo Reservoir, which remained mostly open and, as usual, attracted many uncommon to rare species that wintered there. These included Red-throated Loon, Long-tailed Duck, Great Black-backed Gull, and Glaucous-winged Gull. Other very rare Colorado birds seen this season were Black Brant in Greeley and American Woodcock at Lake Henry, near Ordway.

However, undoubtedly the star of the winter season was the female Harlequin Duck that spent most of the season on the Las Animas River in downtown Durango. It was found in mid-December by Mona and Dean Hill, who had recently moved to Durango. The bird was very cooperative, and was seen by many Colorado birders. This is only the fifth documented occurrence of Harlequin Duck in Colorado, and the first since 1976. The first three are from the 1880s, also from the same area. One of these sightings documents young of the species in nearby Vallecito Creek. The last sighting was of one bird in the fall of 1976 at Barr Lake.

David Leatherman and other observers reported larger than usual numbers of Mountain Chickadees, Red-breasted and White-breasted Nuthatches, and Brown Creepers on the Eastern Plains this season. There were also some northern species that had unusual distributions in Colorado this season. Bohemian Waxwings, Snow Buntings and Common Redpolls were seen in small numbers in widely scattered flocks, and not in larger flocks, as usual.

Thanks to everyone who mailed or e-mailed me their reports, especially to Brandon Percival who collected many of the sightings from the CoBirds mailing group. An underlined species means that documentation is desired by the CFO Records Committee; please send rare bird forms, which can be downloaded from the CFO web site, on these species to Tony Leukering at cbrcc@cfo-link.org or P.O. Box 157, Arvada, CO 80001.

Note: County names are in italics.

Red-throated Loon: One was seen at Pueblo Res, *Pueblo* between 13 and 16 Dec (BKP, MJ).

Pacific Loon: Two were at Pueblo Res, *Pueblo* between 1 Dec and 13 Jan (BKP, m.ob.), and one was at Lake Trinidad, *Las Animas* on 13 Dec (VAT).

Common Loon: Up to five spent the entire season at Pueblo Res, *Pueblo* (BKP, m.ob.), and one was at Lake Trinidad, *Las Animas* on 13 Dec (VAT).

Red-necked Grebe: One was seen at Valmont Res, *Boulder* on 4 Dec (LS), and one was on the Arkansas River, *Pueblo* on 16 Dec (DSi, SC, LE).

American White Pelican: Two were at John Martin Res, *Bent* on 3 Dec (BKP, MJ, DN), one was seen at Lake Hasty, *Bent* on 15 Jan (DAL), two were at Highline Ponds, *Otero* on 25 Feb (SO, MJ, BKP), and 10 were seen at Lake Henry, *Crowley* also on 25 Feb (MJ, BKP).

Great Egret: One was seen at Totten Res, *Montezuma* on 6 Dec (SA, DF).

Greater White-fronted Goose: There were reports of more than 20 birds this season, all from the Front Range and Eastern Plains of Colorado.

Ross's Goose: Away from the far Eastern Plains, where they are regular and fairly common, one was seen at Dodd Res, *Boulder* on 2 Dec (RS, m.ob.), one was in Pueblo, *Pueblo* between 13 and 16 Dec (BKP, m.ob.), one was in Denver, *Denver* on 1 Jan (KS), one was at Cherry Creek Res, *Arapahoe* on 3 Jan (BB), two were seen in Fort Collins, *Larimer* on 21 Jan (DAL), three were seen near Delta, *Delta* on 3 Feb (LS), and three were south of Barr Lake, *Adams* on 20 Feb (LS).

Black Brant: One was seen in Greeley, *Weld* between 15 and 21 Jan (DB, SMk, PG).

Trumpeter Swan: Three were seen at Long Pond in Fort Collins, *Larimer* on 30 Dec (RKol).

Tundra Swan: Two were seen at the Rocky Mountain Arsenal, *Adams* on 1 Jan (HEK), two adults were at Lake Cheraw, *Otero* on 19 Feb (MJ, BKP), at Highline Ponds, *Otero* on 24 and 25 Feb (SO, MJ, BKP), and at Lake Henry, *Crowley* on 25 Feb (MJ, BKP).

Cinnamon Teal: The first of the spring was a male near Fort Lyon, *Bent* on the rather early date of 4 Feb (BKP, MJ, DN).

Greater Scaup: There were reports of more than 20 birds this season, all from the Front Range, except three males that were seen at McPhee Res, *Montezuma* on 6 Dec (DF).

Harlequin Duck: The highlight of the season was a female on the Animas River in Durango, *La Plata* between 12 Jan and 28 Feb (M&DH, m.ob.).

White-winged Scoter: The only report was of an immature male seen at

Lafayette, *Boulder* on 4 Dec (LS).

Long-tailed Duck: Two were seen at Warren Lake in Fort Collins, *Larimer* on 3 Dec (DAL), an adult female was at Totten Res, *Montezuma* on 6 Dec (DF), one was at Lake Trinidad, *Las Animas* on 13 Dec (VAT), an immature female was at Pueblo Res, *Pueblo* between 16 Dec and 13 Jan, and again between 10 and 27 Feb (MJ, BKP, m.ob.), and up to three females spent much of the season on the Platte River, *Adams* (PG, GG).

Barrow's Goldeneye: Again, there were reports of more than 20 birds from the Front Range this season, and a couple of reports from the Southwest corner of the state in *La Plata* and *Montezuma* (DF).

Hooded Merganser: Good-sized flocks of this species from the West Slope were 32 by Highway 151, *Archuleta* on 5 Dec (DF), and 24 at McPhee Res, *Montezuma* on 6 Dec (DF).

Red-shouldered Hawk: An immature of the eastern race was seen at Rocky Ford State Wildlife Area, *Otero* on 3 Dec (MJ, BKP).

Sandhill Crane: One spent the months of Dec and Jan in Carbondale, *Garfield* (JMe).

Greater Yellowlegs: One was seen at Fountain Creek Regional Park, *El Paso* on 22 Dec (AV) and between 4 Jan and 17 Feb (KP), and three were seen at Brighton, *Adams* on 30 Dec (BK, m.ob).

American Woodcock: One was seen at Lake Henry, *Crowley* on 19 Feb (MJ, BKP); it seems that this species is being seen more regularly in Colorado.

Mew Gull: A bird in first-basic plumage was seen at Pueblo Res, *Pueblo* on 2 Dec (BKP), and an adult in basic plumage was at the Littleton Historical Park, *Douglas* on 17 Dec (AS).

Lesser Black-backed Gull: An adult was seen at Standley Lake, *Jefferson* on 12 and 23 Dec (LS), and another adult in basic plumage was at Pueblo Res, *Pueblo* between 31 Jan and 2 Feb (BKP, m.ob.).

Glaucous-winged Gull: One in first basic plumage was seen at Pueblo Res, *Pueblo* on 25 Feb (VAT, BKP).

Glaucous Gull: Two were seen at Chatfield Res, *Jefferson* on 16 Dec (JK, AS), one in first basic plumage was at Standley Lake, *Jefferson* on 22 Dec (LS), one in first basic plumage was at Barr Lake, *Adams* between 30 Dec and 15 Jan (TL, LS), and one in second basic plumage was seen at Greeley, *Weld* between 4 and 9 Jan (DM).

Great Black-backed Gull: An adult was seen at Cherry Creek Res, *Arapahoe* between 1 and 7 Dec (BB), and another adult stayed at Pueblo Res, *Pueblo* between 15 Dec and 25 Feb (BKP, m.ob.).

Eurasian Collared-Dove: This species was seen in several new locations in Colorado this season. Four were seen in Monte Vista, *Alamosa* all

season (JJR), two were seen at Canon City, *Fremont* on 17 Dec (TL), Up to eight were seen in Greeley, *Weld* between 1 Jan and 10 Feb (IS, TE, DM, PG, BD), and nine were in Sterling, *Logan* on 9 Feb (SMk).

Inca Dove: Up to five were seen at Rocky Ford, *Otero* between 1 Dec and 1 Jan (SO, m.ob.), and one was in Fort Collins, *Larimer* between 20 Dec and 18 Jan, and again on 11 Feb (LZ, DAL, LS).

Northern Pygmy-Owl: This was a good season for this species, with about 20 reports mostly from right along the Foothills of Eastern Colorado.

Short-eared Owl: One was seen at Wellington State Wildlife Area, *Larimer* on 7 Dec (RKol), one was at Pueblo Res, *Pueblo* on 16 Dec (LS, DF, TL, MJ), another was seen near Fort Morgan, *Morgan* also on 16 Dec (JRi), at least three were at Lower Latham Res, *Weld* between 30 Dec and 10 Feb (NE, JK, SSt, CLW, m.ob.), one was on the Barr Lake Christmas Count, *Adams* on 30 Dec (BT), two were at Lagerman Res, *Boulder* on 5 Jan (PG), one was seen in north central *El Paso* on 4 Feb (AV), and one was near Castlewood Canyon, *Douglas* on 17 Feb (LM, GG, GW).

Boreal Owl: One was just north of Mancos, *Montezuma* on 27 Dec (M&GSM), and one was at Montgomery Pass, *Jackson* on 18 Feb (BSc).

Northern Saw-whet Owl: One was seen at Pueblo Res, *Pueblo* on 16 Dec (PH, SO), an adult was in Crow Valley Campground, *Weld* between 30 Dec and 6 Jan (NE, JK, SSt, CLW, m.ob.), and one was seen at Colorado Springs, *El Paso* on 17 Feb (KP, m.ob.).

Black-chinned Hummingbird: An immature male stayed at Grand Junction, *Mesa* until 10 Dec (LA); first documented winter sighting for Colorado.

Acorn Woodpecker: A male was seen at Fort Carson, *El Paso* between 12 Jan and 8 Feb (BM, RBu), and up to eight were seen just west of Durango, *La Plata* between 14 Jan and 19 Feb (m.ob.), where they are resident.

Williamson's Sapsucker: A female was seen at Colorado City, *Pueblo* on 13 Dec (DSi).

Yellow-bellied Sapsucker: An immature female was seen at Pueblo City Park, *Pueblo* on 10 Dec (PH) and 26 Jan (BKP, GR, SSh), an adult male was also at Pueblo City Park, *Pueblo* on 16 Dec (DF, LS, BKP, MJ, m.ob.) and 18 Feb (MY, LB), an immature was at Sterling, *Logan* on 30 Dec (NE, JK, SSt, CLW), one was seen at Brainard Lake, *Boulder* on 7 Jan (LAG), and an immature male was at Blende, *Pueblo* between 26 and 30 Jan (SSh, BKP, GR, m.ob.).

Say's Phoebe: One was seen at Valco Ponds, *Pueblo* between 13 and 15 Dec and 12 Feb (BKP), one was at Rocky Ford, *Otero* on 18 Dec (BKP, m.ob.), and one was at Colorado City, *Pueblo* on 12 and 13 Jan (DSi).

Bushtit: Several were seen in unusual locations along the Front Range this

season. Ten were at Brighton, *Adams* between 1 and 3 Dec (GG), 14 were seen on the Loveland Christmas Count, *Larimer* on 31 Dec (LS), seven were at Bow Mar, *Jefferson* between 8 and 27 Jan (TJ), and one was seen at Red Rocks Park, *Jefferson* on 20 Feb (KS).

Pygmy Nuthatch: A very unusual sighting of this species on the far Eastern Plains was eight in Rocky Ford, *Otero* on 18 Dec (BKP, m.ob.) and two were in the same location on 14 Feb (SO).

Carolina Wren: One was seen in Colorado Springs, *El Paso* on 24 Dec (DSm).

Winter Wren: Two were seen at Colorado City, *Pueblo* between 1 and 30 Dec (DSi, m.ob.), one was at the Pueblo Nature Center, *Pueblo* on 16 Dec (BKP), one was seen at Rock Canyon in Pueblo, *Pueblo* on 16 Dec (BKP), one was at Two Buttes Res, *Baca* on 12 Jan (DAL), and one was seen in Boulder, *Boulder* on 13 and 14 Jan (DW, m.ob.).

Eastern Bluebird: Away from the Eastern Plains, two were seen on the Pueblo Res Christmas Count, *Pueblo* on 16 Dec (BKP, LS), and up to eight were seen at Canon City, *Fremont* on 11 Feb (SMo). The resident flock in Grand Junction, *Mesa* was also present all season.

Hermit Thrush: One was seen at Durango, *La Plata* on 15 Jan (IS).

Gray Catbird: One was seen at Colorado City, *Pueblo* on 28 Dec (DSi), and one was at Two Buttes Res, *Baca* on 12 Jan (DAL).

Northern Mockingbird: One was seen at Pueblo Res, *Pueblo* between 2 Dec and 17 Feb (BKP, m.ob.), one was at the Las Animas Cemetery, *Bent* on 3 Dec (BKP, MJ, DN), one was at Canon City, *Fremont* between 17 Dec and 24 Feb (DF, AV, m.ob.), one was seen at the Wheatridge Greenbelt, *Jefferson* between 10 and 18 Jan (DSc, RS), and one was at Doudy Draw, *Boulder* on 23 Feb (BK).

Sage Thrasher: Two spent most of the winter at Pueblo Res, *Pueblo* between 15 Dec and 17 Feb (BKP, MJ, m.ob.).

Brown Thrasher: One was seen at Valco Ponds, *Pueblo* on 16 Dec (BKP), one was at the Wheatridge Greenbelt, *Jefferson* between 31 Dec and 4 Feb (IS, TE, KS), and one was at Rocky Ford, *Otero* on 15 Feb (SO) and 25 Feb (MJ, BKP).

Bohemian Waxwing: This species occurred in reasonably sized flocks in the northern part of the state. However, there were a number of reports of one or two in flocks of Cedar Waxwings, which is quite unusual. For example, one was seen at Colorado City, *Pueblo* between 1 and 30 Dec (BH, m.ob.), and one was at Valco Ponds, *Pueblo* on 16 Dec (CLW, BKP).

Cape May Warbler: One was seen at the Denver Zoo, *Denver* on 25 Feb (M&KR).

Common Yellowthroat: A female was east of Fort Lyon, *Bent* on 3 Dec (BKP, MJ, DN), one was at Valco Ponds, *Pueblo* on 16 Dec (CLW), and one

was at the Wheatridge Greenbelt, *Jefferson* on 4 Feb (KS).

Green-tailed Towhee: One was seen at Boulder, *Boulder* between 25 Dec and 22 Jan (RBy, RF).

Rufous-crowned Sparrow: At least four were seen at Fort Carson, *Pueblo* throughout the season (BM); the first record for Pueblo County. A total of six were seen near Canon City, *Fremont* between 17 Dec and 18 Feb (DP, DF, m.ob.), although they are now resident at this site.

Savannah Sparrow: One was seen at John Martin Res, *Bent* between 15 Jan and 4 Feb (DAL, m.ob.) in the same location as last winter.

Le Conte's Sparrow: Three were seen at John Martin Res, *Bent* on 15 Jan (DAL), also in the same location as the small flock last winter.

Fox Sparrow: A bird of the Rocky Mountain race "*schistacea*" was seen at Colorado City, *Pueblo* on 9 Dec (DSi), and another of the same race was at Waterton Canyon, *Jefferson* between 23 and 29 Dec (RKor, JK, CLW).

Swamp Sparrow: A fairly good season for this species, with ten reports from the Front Range and Eastern Plains.

White-throated Sparrow: A poor season for this species, with only a few reports.

Harris's Sparrow: A fairly good season for this species, with more than ten reports from the Front Range and Eastern Plains. There were also two West Slope reports, with one seen in Craig, *Moffat* on 2 Jan (FL), and one seen in Kremmling, *Grand* on 18 Jan (FL).

Golden-crowned Sparrow: One was seen at Cherry Creek Res, *Arapahoe* between 26 Dec and 9 Jan (BB, m.ob.), and an immature bird was seen at Barr Lake, *Adams* on 26 Jan (DF).

Chestnut-collared Longspur: Four were seen at Chico Basin Ranch, *El Paso* on 15 Dec (TL).

Snow Bunting: This northern species also had an unusual distribution this season. One was seen near Elk Springs, *Moffat* on 2 Dec (FL), six were near Silt, *Garfield* on 10 Dec (VZ), and five were seen east of Arapahoe, *Cheyenne* on 14 Dec (CLW).

Lazuli Bunting: Very unusual for winter was a male seen at the Garden of the Gods in Colorado Springs, *El Paso* on 17 Jan (DSn).

Yellow-headed Blackbird: One was seen at Barr Lake, *Adams* on 30 Dec (TL, CLW), one was at Grand Junction, *Mesa* on 14 Feb (RL), one was seen at Greeley, *Weld* on 16 Feb (DM), and one was at Lake Meredith, *Crowley* on 25 Feb (MJ, BKP).

Rusty Blackbird: Two were seen at the Pueblo Nature Center, *Pueblo* on 16 Dec (BKP, MK), one was in Pueblo, *Pueblo* on 16 Dec (DSi), one was at Pueblo Res, *Pueblo* on 16 Dec (TL, MJ), and three were seen north of Barr Lake, *Adams* on 1 Jan (TL, CLW). A male was seen in Fort

Collins, *Larimer* on 21 Jan (DAL), two were at Chatfield Res, *Jefferson* on 4 Feb (AS), a female was at the Lake Meredith feedlot, *Crowley* on 19 Feb (MJ, BKP), and a pair was seen at a feedlot east of Boulder, *Boulder* between 23 and 26 Feb (BK, m.ob.).

Common Grackle: One spent the entire season at Canon City, *Fremont* (SMo), one was seen at Eagle, *Eagle* on 2 Dec (JMe), one was at Fowler, *Otero* on 3 Dec (BKP, MJ), one was at Las Animas, *Bent* on 3 Dec (DN, BKP, MJ), and one was seen at Valco Ponds, *Pueblo* on 16 Dec (CLW).

Brown-headed Cowbird: One was seen at Fort Collins, *Larimer* on 19 Feb (DAL), although it was first seen in late Jan (JMm).

Bullock's Oriole: Another very unusual winter sighting was of a male at Brighton, *Adams* between 1 and 3 Jan (TL, DF).

Gray-crowned Rosy-Finch: A good season for this species in Colorado. 21 were seen at Silver Plume, *Clear Creek* on 24 Dec (GG), 400–500 were in Kremmling, *Grand* on 18 Jan (FL), and 240 were seen five miles east of Cimarron on Highway 50, *Gunnison* on 3 Feb (LS).

Black Rosy-Finch: An excellent season for this species in Colorado, with more seen than I can ever remember. 40–50 were seen at Kremmling, *Grand* on 18 Jan (FL), one was at Allenspark, *Boulder* on 3 Feb (BK), 60 were seen five miles east of Cimarron, *Gunnison* on 3 Feb (LS), and 150 were at Rye, *Pueblo* on 27 Feb (SC). A large flock was also at the Royal Gorge Visitor's Center for much of the season.

Brown-capped Rosy-Finch: 220 were in the same flock as the Gray-crowned and Black Rosy-Finches five miles east of Cimarron, *Gunnison* on 3 Feb (LS). This flock of over 500 Rosy-Finches must have been a great sight.

Purple Finch: A female was seen at Las Animas, *Bent* between 30 Jan and 8 Feb (DN), and a female was seen at Eagle, *Eagle* on 28 Jan (JMe).

Common Redpoll: The only report all season was of five seen at Cheraw, *Otero* on 14 Dec (CLW).

Lesser Goldfinch: One was seen at Colorado City, *Pueblo* on 9 Dec (DSi), a female was at Valco Ponds, *Pueblo* on 15 and 16 Dec (BKP, CLW), a male was at Canon City, *Fremont* on 17 Dec (BM, PAG), and seven were seen in Grand Junction, *Mesa* on 3 Feb (LS).

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<http://www.cfo-link.org>