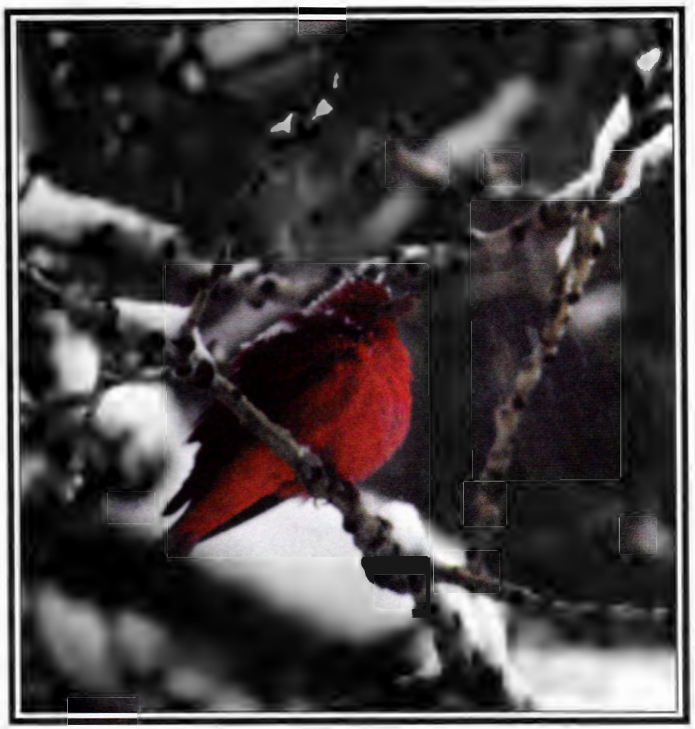
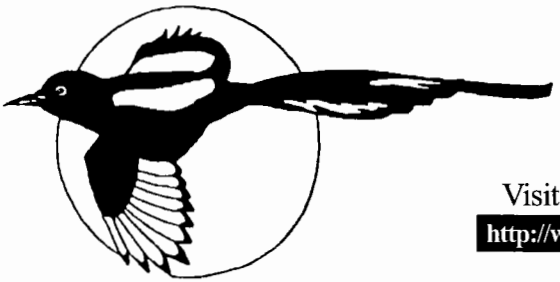
Journal of the

Colorado Field Ornithologists

The Colorado Field Ornithologists' Quarterly





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ANNUAL MEMBERSHIP DUES (renewable quarterly): **General $20; Student $16.00; Institution $30.** Membership dues entitle members to the *Journal of the Colorado Field Ornithologists*, which members receive quarterly. Back issues/extra copies of the *Journal* may be ordered for $6.00. Send membership renewals and changes of address to Raymond Davis, P.O. Box 481, Lyons, CO 80540; send requests for extra copies/back issues of the to the Editor-in-Chief; make checks out to: Colorado Field Ornithologists. Contributions are tax deductible to the extent allowed by law.

TABLE OF CONTENTS

PHOTOGRAPHS AND ILLUSTRATIONS

SUMMER TANAGER IN WINTER: Steve Dinsmore was one of the lucky people to see the Summer Tanager that graced a Fort Collins backyard area 21-22 November 1999. The bird appeared to be foraging among leaf litter. What a holiday surprise to find this gorgeous red bird in the middle of a snowstorm. Steve is a Ph.D. candidate in the Department of Fisheries and Wildlife Biology at Colorado State University.

Steven J. Dinsmore.....Front Cover

COMMON NIGHTHAWK: In summer 1999, Ken Giesen found this Common Nighthawk day-roosting on a burned cactus pad (*Opuntia* sp.) at Comanche National Grassland, several months after a prescription burn. Ken is an avian researcher with the Colorado Division of Wildlife.

Ken Giesen.....23

BLACK SWIFTS: To her many artistic credits, Kim Potter has now added graphic art. She designed the Black Swift graphic that illustrates her article about a Black Swift Colony at No Name Creek. Kim is a biologist with White River National Forest.

Kim Potter.....31

BUFFLEHEAD: Joseph Rigli's pen and ink sketches, including the lovely Bufflehead pictured in this issue, have appeared in many issues of the *Journal of the Colorado Field Ornithologists*. Joe's wonderful talents have produced all sorts of species, ranging from waterfowl to finches.

Joseph C. Rigli.....57

GULL TEST: Steve Dinsmore's photograph of gulls in various plumages is a good test of your gull identification skills. See whether you can determine which species they are, their ages, which plumages they sport, and the time of year.

Steven J. Dinsmore.....59

CEDAR WAXWINGS: Using a blind and a great deal of patience, Ken Giesen captured this shot of and adult Cedar Waxwing feeding its nestlings.

Ken Giesen.....66

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Erratum in Vol. 33, No. 3: On page 165, change the Editor's Note. It should now read: "Because Hugh was unable to attend the CFO convention (his daughter was graduating from college), BB Hahn videotaped his acceptance speech at his home before the convention, and it was replayed at the convention. BB also accepted the Ronald A. Ryder Award plaque in Hugh's stead, and delivered the plaque to Hugh upon his return."

Erratum in Vol. 33, No. 4: This is to clarify a problem in the table on page 210. The table heading farthest to the left is "Site ID;" while the heading was intact, the spacing was off.

A Letter From Your Your Outgoing Editor

Thank Yous, Rantings, and Ravings

As I end my tenure as Editor for the *Journal of the Colorado Field Ornithologists*, I extend my deepest gratitude to the souls whose assistance kept me sane--Beth Dillon and Mona Hill in particular. I thank them for generously editing piles of text, always at the final hour, and handling a myriad of other jobs. I also owe many thanks to Dave Ely, Tony Leukering, and Peter Gent--Editors past and present for the "Notes from the Field" column. Their task is no small feat, and they have worked hard to provide as much information on field sightings as they could. I must insist that all of us--birders, birdwatchers, and field researchers alike--work as hard as they have at getting our seasonal reports in (to Tony and Peter). While a few go birding for no other reason than to be the first to see the most, others care about what their observations may tell us over the long run. The only way in which those observations count, however, is if we all take responsibility for reporting what we see--and that includes the common birds! **I expect to see a big increase in seasonal reports from all of you over the next few years.**

Other people I must thank include the anonymous individuals who agreed to conduct reviews of scientific papers and/or help me edit papers. In addition, I am grateful to all of our contributors, not only for submitting their materials, but for graciously accepting all my heavy-handed editing! It is not easy to have one's work torn apart and rearranged, but I cannot think of one soul who protested (at least not too loudly).

Now, on the dark side of editing opportunities lurk my complaints.... Overall, I continue to feel that the quality of scientific writing (at all levels!) remains far too stuck in the third person and passive voice, often lacks clarity or definition and consistency among terms, suffers from poor style, dodges grammatical rules, and simply leaves one feeling chilly about what science has to share! The more that authors do not work at improving their written products, the greater the risk of giving audiences no message--or worse, the wrong message--and burning out the editors! Think carefully about what you want to say, use an outline if necessary, and avoid irrelevant tangents. It often helps enormously to read your work out loud--it will point out in short order where the awkward areas lie. Another useful trick entails asking yourself how much you take your readers' knowledge or experience for granted--something to avoid. Finally, I recommend setting your first and second drafts aside to let them "ferment" for some time. The chances are good that when you take a second look, you will find problem areas you could not "see" earlier because you were too "close" to

your work. Even the most seasoned writers and editors need to undertake all these steps.

Something particularly lacking within our own CFO realm is citations. Too many otherwise-excellent notes, articles, and papers come in without a single reference, or lacking some of the more relevant references. To a great extent, referring to previously published works is what allows the stream of scientific knowledge to build on itself. Authors using statements of fact arising from previously published works without including the appropriate citations diminish the value of their own work and disrupt the flow of scientific information. I implore contributors to please work a bit harder at using--and citing--references, but only after reading and interpreting them thoughtfully. Any librarian, particularly those at colleges and universities, should be happy to help you with this.

One more little nudge--if I may. To ignore an editor's instructions to contributors is an invitation to rejection! While I never exercised this "editor's right" on the basis of format problems, I cannot recall more than a handful of papers that came to me in the proper format from beginning to end. While I let myself get walked all over where this issue was concerned, not all editors are so lenient. There is simply no reason why contributors cannot look at current instructions and article formats to determine what is required for a given journal. To do otherwise is an insult to the publication you have targeted (and, by default, an insult to the editor). Please think about--and address--these problems as you produce future materials for our *Journal.* The more work you do up front, the less your editor will make your life miserable later!

On the flip side of my complaints shines a very sincere thank you to everyone who let me know that they appreciated my work on the *Journal.* In fact, I was quite astonished by all the kind kudos and thank yous. It would be wrong, however, to take all the credit. Without the help of many people, I would not have accomplished half of what I did. Moreover, I fell short of making some additional improvements I had wanted to make--but such is the limitation of a volunteer job on top of a full-time career and everything else. In any event, the "undone" work leaves plenty of room for future editors to continue improving our publication.

Finally, I want to thank Judy and David Robinson, and their assistant, Margo, at The Village Printer in Boulder. They have perhaps the most thankless job that goes into producing the *Journal.* Nonetheless, they have handled our account for three editors over roughly eight years, and they have dealt patiently with all the strange and mysterious ways in which each editor has produced the

Journal layout. All that while, they have held down our printing costs to something even lower than low! Thank you Judy, David, and Margo for a splendid job!

Introducing Your New Editor!

And now... I am delighted to introduce to you our next Editor of the *Journal of the Colorado Field Ornithologists*, Scott Gillihan. Aside from being a genuinely nice guy, Scott is an excellent field ecologist and has a strong passion for editing and writing. His current work at the Colorado Bird Observatory keeps him busy in the realm of field ornithology and sends him into all sorts of Colorado's avian habitats. In particular, he designs and implements research projects that evaluate the effects of natural and anthropogenic patterns and processes on avian communities in Rocky Mountain forests. Scott also serves as a principal author of the Colorado Partners in Flight Bird Conservation Plan. With his background and experience, I have every confidence that he will be an excellent editor for the *Journal*. Welcome, Scott, and many thank yous in advance!

Please give Scott your utmost cooperation in complying with whatever content, formatting, and deadline requirements he may promulgate (new or old) for the *Journal*. To those of you who have promised to submit the excellent observations you've made in the field, please delay *no* longer--dust them off, write them up, and send them to Scott soon! If you need help or advice, be assured that editors much prefer helping you create a good product from the start. Remember--your editor can be a great friend, as he/she tries to make you look good. Scott can be contacted at: 926 Pear Street, Ft. Collins, CO 80521; 970/ 484-9434; SWGillihan@aol.com.

Now that I have officially handed the "torch" over to Scott, I hope to have more time to see you all out in the field. Meanwhile, take care and enjoy the birds we are lucky enough to see and hear in Colorado--please take care of them, too.

Best wishes,
Cynthia Melcher

An Open Letter to the CFO Membership

Dear CFO Members,

With this issue of the *Journal of the Colorado Field Ornithologists*, Cynthia Melcher ends her tenure as Editor. I'm sure you will join me in expressing our appreciation of her excellent contribution to the qualitative growth of the *Journal.* Under her guidance, we have seen an increase in the number of scholarly articles in the field of ornithology while contributions of general birding interest have continued to be prominent in the list of articles published. Cynthia's increased emphasis on conservation has been supported consistently by the Board of Directors, as it adds to the breadth of scope for our quarterly.

On behalf of the Board, I offer our heartfelt congratulations to Cynthia for her success as Editor. Her selfless dedication has set a standard for those who will follow. We look forward to her continued participation in the future as she assists the new Editor during the transition period.

Cordially,
Leon Bright, President
Colorado Field Ornithologists

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.

UPCOMING CFO FIELD TRIPS

1 April 2000 -- **Owl Prowl... No Fooling** (birding by ear) with Grand Valley Audubon Society (WEATHER PERMITTING). Join one of Colorado's top owl experts, Rich Levad, for an afternoon/evening prowl to find Long-eared, Barn, Western Screech-, and Great Horned owls; with a little luck, Saw-Whet, Flammulated, and Boreal owls may be possible. This trip will be a repeat of the one on 27 March 1999, and Rich will aim to find the same species. Meet at 1:00 p.m. at the Colorado Welcome Center just off I-70 in Fruita. Please call Rich for details: 970/242-3979.

7 May 2000 -- **A Janos Journey around the Lamar Loop** (gotcha birdie). Willow Creek behind Lamar Community College, as well as local State Wildlife Areas and reservoirs, can produce surprising assortments of spring migrants normally considered rare in Colorado (remember the 1998 convention list of amazing birds seen and you'll want to go again). Mark Janos will lead this all-day trip in southeastern Colorado--starting at Lamar Community College, then going on to Two Buttes Reservoir State Wildlife Area, Fort Lyon, and John Martin Reservoir State Wildlife Area. Meet at the parking lot on the north side of Lamar Community College at 7:00 a.m. Please call Mark at least one week in advance for trip details and directions to the college: 719/544-5002.

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NOTICE TO FIELD TRIP PARTICIPANTS

Please contact the field trip leader at least one week ahead if you plan to participate. Trips often go where participant numbers must be limited or where notice of participants numbers is required. Contacting the leader in advance also helps him/her plan the best possible trip, ensures that you know where/when to meet, what to bring, etc. Please arrive no later than the scheduled meeting time; leaders may not be able to delay departure for late arrivals. Carpool drivers should inform passengers of their schedule prior to departure to avoid scheduling conflicts. Leaders will make every effort to keep the group together, and drivers should make every effort to stay with the group.

BEQUESTS FOR CFO'S PROJECT FUND

THE CFO PROJECT FUND COMMITTEE WOULD LIKE TO ENCOURAGE INDIVIDUALS TO REMEBER THE CFO PROJECT FUND IN THEIR WILLS. FOR MORE INFORMATION, CONTACT LINDA VIDAL AT: 970/704-9950; OR E-MAIL LINDA AT: VIDAL@ROF.NET. THANK YOU...

Announcing The Colorado Field Ornithologists' *Convention 2000*

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The Colorado Field Ornithologists' Convention for the year 2000 will be held at the **Holiday Inn in Grand Junction, 25-29 May.**

Pete Dunne, whose credits include ***The Feather Quest, Hawks in Flight, The Wind Masters, Tales of a Low-rent Birder, More Tales of a Low-rent Birder,*** and scores of articles and columns, will be our featured guest. Pete is the premier speaker and writer about the sport of birding in America today. His presentations are always informative and entertaining. He will speak at the convention banquet on Saturday evening, 27 May, and he will be available after the banquet to autograph your copy of any of his books (whether from your shelf or purchased at the convention). The following morning, Pete will lead a field trip that will be open by bid to a limited number of participants.

The convention will feature a variety of field trips focusing on Western Slope specialties such as Chukar, Western Screech-Owl, Willow Flycatcher, Black Phoebe, Gray Vireo, Purple Martin, and Grace's Warbler. A papers session will be held on Saturday afternoon; topics of papers already scheduled include Cattle Egrets, Gray Vireos, and Boreal Owls (see call for papers, next page). Convention T-shirts will be available, and a variety of exhibitors and vendors will be on hand.

MAKE YOUR RESERVATIONS EARLY!! The National Junior College baseball tournament will be in Grand Junction on the same weekend, and every room and campsite in town will be taken. Blocks of rooms are being held at the Holiday Inn ($69.00/double, 888/489-9796), at Day's Inn ($59.00/double,800/329-7466 at Grand Vista ($62/double, 800/800-7796); mention the Colorado Field Ornithologists when making your reservations at the Holiday Inn or Day's Inn and mention Group #331949 at the Grand Vista. Camping is available at Colorado River State Park and Highline Lakes State Park; the State Parks' camping reservation office opens 1 April: 800/678-2267. Other options for housing will be included with a schedule of events and registration form, which will be mailed in February.

The first CFO convention of the 21st Century (or, if you prefer, the last of the 20th) promises to be a memorable one. Join old friends, meet new ones, learn from and be entertained by **Pete Dunne** and the other presenters, and enjoy

the fine birding and spectacular scenery of western Colorado. Further details will be posted on COBIRDS and on the CFO web site as they become available. Questions and suggestions may be directed to Rich Levad or Aileen Roberts. Rich: 970/242-3979 or levadgj@mesa.k12.co.us; Aileeen: 970/243-8854 or redwing@gjct.net.

CFO Convention 2000: CALL FOR PAPERS

If you wish to present a paper at the papers session of the 2000 CFO Convention, contact Rich Levad. He will need the paper title and a short abstract to publish in the July issue of the *Journal*. Papers should cover aspects of field ornithology in Colorado or surrounding regions to the east, such as western Kansas and Oklahoma. Contact Rich at the phone number or e-mail address listed above.

CALL FOR NOMINATIONS:
RONALD A. RYDER AWARD FOR DISTINGUISHED SERVICE TO COLORADO FIELD ORNITHOLOGY

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SELECTION CRITERIA

1. For distinguished service to the Colorado Field Ornithologists and its goals.
2. For scholarly contributions to the Colorado Field Ornithologists and to Colorado field ornithology.
3. For sharing knowledge of Colorado field ornithology with the people of Colorado.

NOMINATION & SELECTION PROCESS

1. The Award will be given every year.
2. Only living persons may be nominated.
3. Nominations may be made by the membership at large.
4. The Board selects and approves an awardee for **announcement at the Annual Colorado Field Ornithologists' Convention.**
5. The Award will be a plaque designed to match the original plaque given to Dr. Ronald A. Ryder.
6. **Nominations should be submitted in writing to the Award Committee Chairperson on or before February 1** to be considered by the Colorado Field Ornithologists' Board of Directors.

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Submit nominations to Award Committee Chair:
Rich Levad, 2924 Ronda Lee Road, Grand Junction, Colorado 81503
970/242-3979; levadgj@mesa.kl2.co.us

Colorado Bird Observatory
Occasional Paper Number 3

Birds at Apishapa State Wildlife Area in North-central Las Animas County

Tony Leukering and Louie Dombroski[1]
Colorado Bird Observatory
13401 Piccadilly Road, Brighton, Colorado 80601
[1] Current address: P.O. Box 169, Paradise, Michigan 49768

Abstract

During the breeding seasons of 1996-1997, we conducted a bird-inventory project at the Apishapa State Wildlife Area (ASWA) in north-central Las Animas County. We recorded 98 species of birds, 68 of which possibly breed locally. Due to the limited amount of ornithological field work previously conducted in and around ASWA, many of our records are of distributional interest.

Introduction

The Apishapa State Wildlife Area (ASWA) is located in north-central Las Animas County, a region of Colorado that has undergone little ornithological exploration. The Colorado Bird Observatory conducted an inventory project of the birds at ASWA, and we (particularly Dombroski) conducted the field work. Despite the short-term nature of the project and the relatively small amount of time spent at ASWA, we recorded an interesting variety of species comprised of local breeders, as well as spring and early-fall migrants. Some of our records represent extensions of the species' known ranges in Colorado.

Methods

ASWA is located in north-central Las Animas County and encompasses 3211 hectares (7935 acres) at an average elevation of 1646 meters (5400 feet). Major habitats at ASWA include shortgrass prairie, cholla grassland, piñon-juniper woodland, and tamarisk-dominated riparian areas along the Apishapa River and some of its tributaries. The river and tributaries flow (intermittently) through canyons in ASWA.

We conducted field work intermittently from 6 May to 16 July 1996 and from 20 to 26 May 1997. We used three methods for obtaining data on the birds of ASWA: 1) point counts, 2) nest searches, and 3) general observations. We conducted 5-minute, fixed-radius point counts during late May in both years (19-22 May 1996 and 20-26 May 1997) and recorded birds both inside and outside of a 50-meter (164-foot) radius (Hutto et al. 1986). Each count consisted of a transect along which we placed 17-27 points (the maximum number we could survey/morning between sunrise and 10:00 a.m.). Because we placed transects in non-randomized locations to parallel watercourses in the canyons (and two-track roads in the uplands), we randomly selected inter-point distances of 300 or 400 meters (984 or 1312 feet). In 1996, we conducted 241 point counts distributed across all habitats, and in 1997, we conducted 100 points in riparian/canyon habitats only.

To document breeding of selected species, we conducted our nest searches from 11 June to 16 July 1996. We found nests by randomly searching all habitat types, although we focused on piñon-juniper woodland; we found nests by following individual birds to their nests. When we found a nest, we noted its contents and monitored the therein through the nesting period. We also used the criteria outlined in the *Colorado Breeding Bird Atlas* (Kingery 1998) for documenting local breeding.

Results

We recorded 97 species at ASWA [Appendix A (includes scientific names of bird species detected at ASWA)], 68 of which possibly breed locally, and confirmed breeding for 20 species. Of the 97 species, 76 were detected during the 1996-1997 point counts (Appendix A). We recorded one additional species, Mountain Plover (*Charadrius montanus*), just outside of ASWA during a scouting trip on 6 May 1996. Most of the species not detected during point counts are either rare (e.g., Swainson's and Ferruginous hawks), nocturnal (Western Screech-Owl, Common Nighthawk, Common Poorwill), or were migrants not present during the period that point counts were conducted (e.g., Greater Yellowlegs, Red Crossbill).

Discussion

The large number of species that we recorded was probably due primarily to the diversity of habitats within ASWA. Comparing our results to species' range maps in Andrews and Righter (1992; hereafter referred to as "A&R"), information we obtained extended to the east and/or north the confirmed breeding ranges of 16 species (some very slightly). It should be noted, however, that the habitat descriptions in A&R suggest that these species may occur in suitable habitat beyond the mapped areas or areas of known distribution (R.

Righter, personal communication). The *Colorado Breeding Bird Atlas* (Kingery 1998; hereafter referred to as "BBA") does not show 11 of the 16 species as occurring in north-central Las Animas County, although many were recorded nearby in other counties. In southeastern Colorado, most of the 16 species primarily inhabit canyon/riparian (e.g., White-throated Swift and Rufous-crowned Sparrow) or piñon-juniper (e.g., Ash-throated Flycatcher, Juniper Titmouse) habitats. One of the three remaining species, Hepatic Tanager, is considered very rare as far north as Colorado. However, most Colorado records of this species have come from the southeastern portion of the state, and A&R predicted that additional field work in southeastern Colorado would result in more records. The two other species (Hairy Woodpecker and Mountain Bluebird) are somewhat widely distributed habitat generalists, thus it was not surprising to find them at ASWA. The results of our work indicate how little avian field work has been conducted in southeastern Colorado. They also reflect the paucity of local public lands that provide access to people interested in the local avifauna.

At ASWA, we recorded six additional species for which we have not been able to find records of occurrence specifically in north-central Las Animas County. Three of these species (Cedar Waxwing, Wilson's Warbler, and Spotted Towhee) are widespread migrants that undoubtedly occur in the general vicinity of ASWA, but may not have been recorded there due to a lack of observer effort. The other three (Red-breasted Nuthatch, Red Crossbill, and Pine Siskin) are irruptive, montane species that we observed in June and July 1996; that same year, both Red-breasted Nuthatches and Red Crossbills had dropped down from the mountains much earlier and in larger numbers than usual (T. Leukering, personal observation).

In the 69 accounts that follow, we provide more detailed information on species we confirmed breeding at ASWA and/or species for which our data alters the known distribution in Colorado. Species coded with a "+" are those we found outside the breeding range mapped for that species in A&R (roughly the north-central region of Las Animas Co.). Species coded with a "*" are those not recorded in the BBA as occurring within the areas of two topographic maps (see Kingery 1998, page 38) that overlap ASWA.

Great Blue Heron+*: Despite the absence of nearby heronries (BBA), we recorded this species twice at ASWA--once on the point counts in May 1996 and once flying over on 14 June 1996.

Canada Goose+*: A flock of six flew over the south parking area on 14 June 1996.

Mallard*: We observed one female flying over the Apishapa River on 14 June 1996 and one pair during a point count in May 1997. Obviously the locally limited availability of open water restricts the occurrence of this and other waterbirds at ASWA.

American Kestrel: At least four pairs were observed in 1996; a recently fledged juvenile was observed on 14 July that same year.

Prairie Falcon: This species was seen occasionally during the course of the project. Three calling birds, one of which was a juvenile, were seen on 15 July 1996; this suggests local breeding.

Greater Yellowlegs: Other than Killdeer, our only shorebird record at ASWA was for a Greater Yellowlegs at the windmill pond north of the North parking area on 11 July 1996.

Yellow-billed Cuckoo+: We have two records that may involve only one individual: one on 12 June 1996 in juniper habitat on steep hillsides of Jones Lake Canyon and another (?) in piñon-juniper habitat above this site on 17 June 1996. This species often migrates very late in spring; this may explain our records at ASWA, which does not provide suitable breeding habitat for this species (A&R).

Greater Roadrunner+: We recorded Greater Roadrunners a few times in piñon-juniper and on steep slopes, and once in grassland habitat. One bird was seen carrying prey up a steep hillside on 20 June 1996, thus confirming breeding at the site.

Western Screech-Owl: Two were heard calling from a piñon-juniper woodland near the north parking area on 18 June 1996. A&R report the habitat for this species in Colorado as riparian forest, but they also mention that the species occurs in piñon-juniper woodlands in Las Animas County.

Great Horned Owl: We recorded this species during point counts four times in the two years, as well as on three occasions in June 1996. This probably indicates that the species is a local resident and breeder.

Common Nighthawk: Although it was not recorded during any point counts, this species was very common at ASWA. In 1996, birds were observed on a daily basis. On 6 July 1996, a female performed a distraction display, thus confirming breeding at the site; birds in juvenal plumage were seen and photographed the same day.

Common Poorwill+: We heard this species on most calm nights in summer 1996, and we flushed birds during the day on two occasions.

White-throated Swift+: We saw this species regularly at ASWA, but never more than three at a time, and always in canyon areas that provide suitable breeding sites.

Black-chinned Hummingbird: One male was recorded during a point count in May 1996. Despite the presence of much piñon-juniper woodland--the species' habitat (A&R)--this was our only record.

Broad-tailed Hummingbird+: One male was detected during a point count in May 1997.

Belted Kingfisher*: We saw this species throughout the summer of 1996 on most trips to the lower canyon. The species probably nests in proximity to semi-permanent pools scattered throughout the various canyons.

Lewis's Woodpecker: We saw this species often in piñon-juniper woodland; there was one probable nesting pair.

Ladder-backed Woodpecker: These woodpeckers were observed regularly in piñon-juniper woodland. A pair frequenting the woodland near the north parking area may have produced the juvenile seen there on 10 July.

Hairy Woodpecker+: A juvenile in piñon-juniper woodland south of the south parking area on 20 and 23 June 1996, and a juvenile with an adult female east of the north parking area on 6 July 1996, confirm breeding at ASWA. All individuals observed belonged to the unspotted Rocky Mountain race.

Western Wood-Pewee: Single birds were seen 12 June and 12 July 1996. It is possible that this species breeds at ASWA in at least some years, but there is very little suitable habitat; more likely, the individuals we found were late spring and early fall migrants, respectively.

Dusky Flycatcher+: One individual, probably a migrant, was detected singing during a point count in May 1996 and provided our only record. A&R do not map the Colorado migration range for individual species of *Empidonax*, nor does their *Empidonax* map include any part of Las Animas County.

"Western" Flycatcher+: A silent individual of the Western Flycatcher complex was seen on 18 June 1996 in one of the side canyons; judging by location, the bird was probably a Cordilleran Flycatcher [there are no records for Pacific-slope Flycatcher in Colorado (A&R)]. *Empidonax* flycatchers are notoriously late-spring migrants (A&R, page 219; T. Leukering, personal observation), which probably explains this record. (Again, the *Empidonax* map in A&R is not species-specific.).

Eastern Phoebe+: A pair, and a pair with a nest, were found in the upper and lower canyons, respectively, while we were conducting point counts on 22 May 1996. We also found a nest containing eggs on 24 June 1996 and nestlings on 11 and 15 July. In May 1997, we recorded one individual during each of four point counts. The BBA does not confirm breeding for this species in the vicinity of ASWA.

Say's Phoebe: Three fledglings were seen with an adult in an old Cliff Swallow colony on 23 June 1996. Additionally, we found a nest with eggs on a large boulder in the Apishapa River in May 1997.

Cassin's Kingbird: This species is very common in piñon-juniper (seventh-most numerous species during 1996 point counts), outnumbering Western Kingbird almost 8:1. We found 10 nests of this species in 1996.

Western Kingbird: In the riparian/canyon habitats, this species was about equal in abundance to Cassin's Kingbird, but Cassin's vastly outnumbered Western kingbirds in the uplands. We found three nests in 1996.

Loggerhead Shrike: We found fledglings from different nests on 18 and 22 June 1996.

Bell's Vireo+: We found one individual during a point count on 26 May 1997. A&R list no previous records for Las Animas County.

Warbling Vireo: Our only record was of a presumed migrant observed during a point count in May 1997. The lack of appropriate habitat excludes this species from breeding at ASWA.

Western Scrub-Jay: Individual birds and pairs were seen occasionally, but this species is not common at ASWA.

Pinyon Jay+: This was a very vocal and obvious species at ASWA (flocks of 60± individuals) during both 1996 and 1997. For the most part, Pinyon Jays had completed their breeding cycle by the time we began our work (both years), but in 1996 we saw a juvenile begging from adults on 23 June and an older juvenile on 7 July.

Black-billed Magpie: Although this species is relatively scarce at ASWA, a pair was seen carrying sticks to a presumed nest on 12 June 1996.

Common and Chihuahuan ravens: Ravens were identified according to their structure (tail shape, bill size), flight behavior (flapping rate and style), and voice. Common Ravens were observed on many occasions and Chihuahuan Ravens were seen only once--in the lower canyon in 1996. However, we observed Chihuahuan Ravens along Hwy. 10 to the north of ASWA almost every time we drove that stretch of highway, leading us to believe that Common Ravens may be dominant over Chihuahuan Ravens (at least numerically) in canyon areas.

Horned Lark: This species was very common in the upland grassland areas; breeding was confirmed when the first juveniles of the year were noted on 26 June 1996.

Cliff Swallow: A few large (>100 nests) colonies were observed in the canyons, both years.

Juniper Titmouse+: This species is widely distributed, but not abundant, in piñon-juniper woodland. Adults were seen carrying food near the north parking area on 25 and 26 June 1996, but we located no nests.

Bushtit: The species is widely distributed through piñon-juniper habitat; a pair was observed copulating on 12 June 1996.

Red-breasted Nuthatch+: One individual was seen on three dates between 13 and 19 June; this bird may have been a precursor to the large 1996 irruption of montane species away from mountains. Another bird was detected during a point count in 1997.

Rock Wren+: Three recently fledged young accompanied by an adult on 24 June 1996 confirmed breeding at ASWA, where the species is common.

Canyon Wren+: Singing males were heard on every visit to canyon areas.

Bewick's Wren: We found a Bewick's Wren nest, with adults feeding young, in a juniper cavity on 24 June 1996.

House Wren+: We recorded this species during four point counts--one in May 1996 and three in May 1997. All of our records probably pertain to migrants. A&R do not map this species as breeding (or even occurring) in northern Las Animas County. For many widespread migrants in eastern Colorado, however, A&R map only the major riparian areas as migration range, yet those species probably occur in relatively suitable habitat throughout the eastern plains of Colorado during migration.

Blue-gray Gnatcatcher+: Individuals were seen in 1996 near the south parking area on 12 June and 14 July (singing male on the latter date), and one occurred on the north side of the main canyon on 25 June. We detected three individuals during one point count in May 1997.

Mountain Bluebird+: We recorded this species three times: a flock of four on 24 June 1996 and three birds during two point counts in May 1997. Although at least marginal breeding habitat is available for Mountain Bluebirds, we did not see anything indicating that the species breeds at ASWA.

Gray Catbird+: We recorded single individuals on 21 and 22 May 1996, both during point counts. A&R indicate no previous records of this species in Las Animas County.

Northern Mockingbird: This species was the most intriguing of all. In 1996, it was the second-most abundant species recorded during point counts (after Cliff Swallow), and, having been recorded at 218 of 241 points, it was the most widespread species. In 1997, however, we counted only 17 individuals on 12 of 100 canyon points. Even though mockingbirds were less abundant in riparian/canyon areas than in upland areas during 1996, they were still much more numerous in riparian/canyon habitats that year than they were in 1997. Why this species would undergo such a large change in population size between years was beyond the scope of our work, but it would provide an interesting study. Also of interest was the repertoire of mockingbird vocalizations. We commonly heard them incorporating calls of species that are rare in, or entirely absent from, ASWA; of particular note was the *whit-wheet* call of Curve-billed Thrasher and the whistled *wurp?* of Phainopepla. D. Svingen (personal communication) reports that in 1998 a mockingbird near Springfield, Baca County, incorporated Cactus Wren (*Campylorhynchus brunneicollis*) vocalizations in its repertoire. We suggest two possible explanations, not necessarily mutually exclusive, for these mockingbird repertoires: 1)

Northern Mockingbirds that nest in southeastern Colorado winter in areas farther south where the mimicked species occur, and/or 2) the mockingbirds had dispersed from their normal, more southerly, breeding ranges in response to the 1996 drought in those regions. The second explanation could account for the huge difference in mockingbird abundance between the two years of our study.

Curve-billed Thrasher: Despite the large areas of seemingly suitable habitat, we recorded this species only once at ASWA--one in cholla grassland west of the north parking area on 7 July 1996.

Cedar Waxwing+: We detected one waxwing during a point count on 22 May 1996.

Yellow Warbler: We recorded only four individuals of this common riparian species, one during each of four point counts in May 1996. Apparently, the riparian habitat at ASWA is marginal for Yellow Warbler, as we recorded none during summer 1996; the BBA does not show this species as occurring in the vicinity of ASWA.

Wilson's Warbler+: One male was seen during a point count in May 1996.

Hepatic Tanager: One singing, yellow-plumaged individual was seen by M. Carter during a point count on 21 May 1996. Dombroski then saw what was presumed to be the same individual three times on 11 June 1996 at the canyon rim near the north parking area. This species is very rare in Colorado, although it may be missed due to its preference for habitats visited infrequently by birders in southeastern Colorado.

Spotted Towhee+: We recorded this species during four point counts--three in May 1996 and one in May 1997; we had no other records.

Rufous-crowned Sparrow+*: We recorded this species on about 20% of the canyon point counts in both years, although we observed no evidence of nesting except continued presence through the summer of 1996. A&R depict the Colorado range of this species as occurring only along the southeastern border, with one extralimital record at Two Buttes Reservoir. In addition, the BBA did not show Rufous-crowned Sparrows as occurring in the western half of Las Animas County. Thus, our records extended the known range of this species to the west. Subsequent to our efforts, the species has been found in numbers in Fremont County, well to the northwest of ASWA (D. Silverman and R. Watts, personal communication). The discrepancies between our findings, A&R, and the BBA, most likely results from the lack of ornithological investigation in Las Animas County and the southeastern Colorado foothills.

Chipping Sparrow: One was detected during a point count in 1996, and an adult was seen on 13 July 1996. The latter record is probably a result of post-breeding dispersal, although, in other parts of Colorado, the Chipping

Sparrow is a common breeder in piñon-juniper (A&R; BBA; T. Leukering, personal observation).

Lark Sparrow: In 1996, we found six Lark Sparrow nests. The species is very common at ASWA, not uncommon as indicated in A&R.

Lark Bunting: We recorded this species only twice in 1996--a flock of six on 9 July and a single bird two days later. These were all probably post-breeding wanderers, as Lark Buntings did not breed at ASWA in 1996 (a year in which the species was far less common than normal in southeastern Colorado) (J. Bradley and C. Preston, personal communication).

Black-headed Grosbeak: We recorded several sightings of single birds and a pair near the south parking lot during the summer of 1996.

Lazuli Bunting+: We detected this species during two point counts (two birds each) in May 1996, but had no other records.

Indigo Bunting+*: One singing male, exhibiting no Lazuli Bunting characteristics, was observed in riparian habitat along Apishapa Creek on 14 June 1996.

Red-winged Blackbird: In summer 1996 several were present near the windmill north of the north parking area, where there were three old Red-winged Blackbird nests.

Western Meadowlark: This was the third-most abundant species during point counts in 1996, when we found one nest.

Common Grackle: This species was observed on most visits to the lower canyon; individuals were noted carrying food during our June visits.

Bullock's Oriole: This species occurred on 20% of the 1997 canyon point counts; in 1996, we found four oriole nests.

Red Crossbill: We recorded this species three times--all during the irruption of montane species in 1996. Single birds flew over (and calling) on 6 and 10 July and a flock of five was seen flying through piñon-juniper woodland on 13 July. The calls of the 6 July bird suggested that it was a Type II form (Groth 1993, 1999), which is usually associated with Ponderosa Pine forests in Colorado.

Lesser Goldfinch*: A pair, noted on 12 June 1996, is our only record of this species.

Directions: To access ASWA, take Rt. 10 northeast from Walsenburg (see Fig. 1) for 16.5 miles to 220 Rd. Follow the main dirt road through numerous turns and name changes (220 Rd., 77 Rd., 90 Rd.) to ASWA's north parking area. The south parking area can be reached by turning south onto 91.1 Rd. near the crossing of Jones Lake Canyon (an odd name for this dry area) and then turning east after going 3.5 miles. There are a few signs providing some direction, but they are not particularly large and

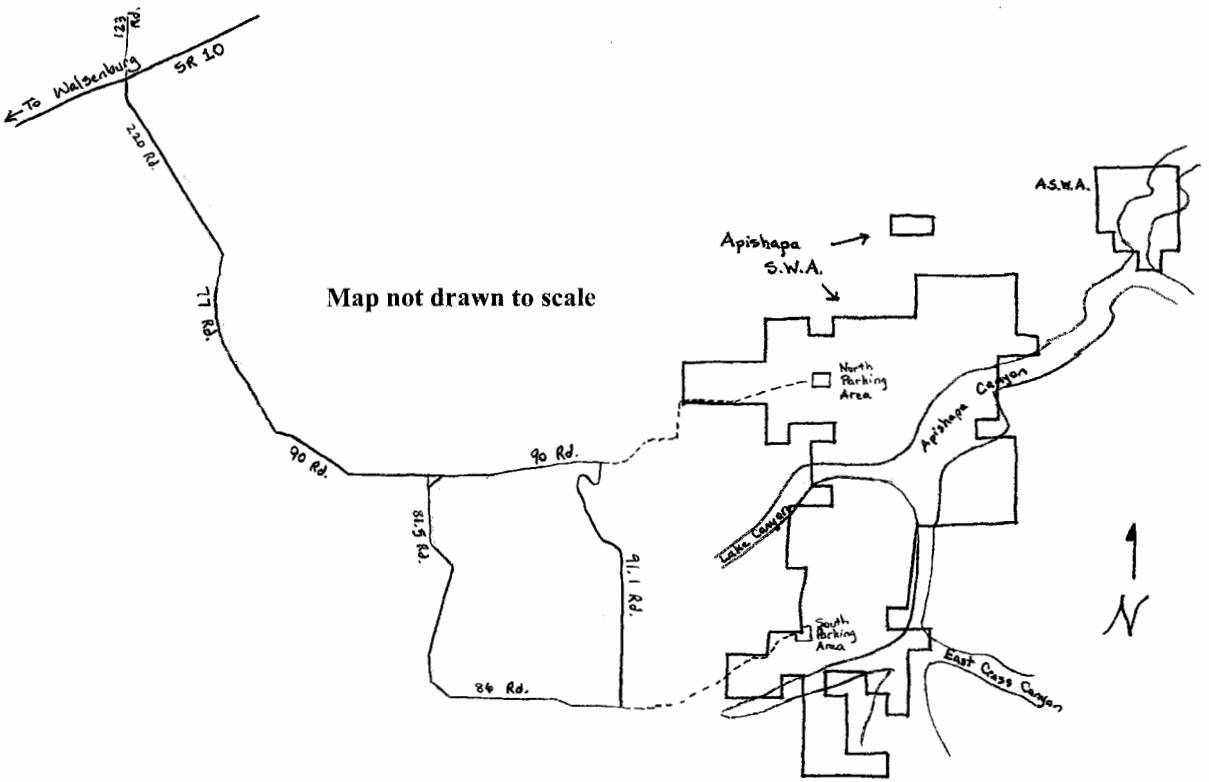

Figure 1. Apishapa State Wildlife Area and access points, north-central Las Aniams County, Colorado.

noticeable. It is possible to explore most of ASWA from the parking areas.

NOTE: During inclement weather, the roads to ASWA can become impassable quickly and we do not suggest driving on them, even with four-wheel drive.

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Appendix A. Species detected during point counts at Apishapa State Wildlife Area, southeastern Colorado, in 1996 and 1997. In 1996, n = 241 points in all habitats; in 1997, n = 100 points only in riparian/canyon habitats. ND = not detected during point counts (recorded during other activities).

Species	Scientific name	1996	1997	N
Great Blue Heron	*Ardea herodias*	2		
Turkey Vulture	*Cathartes aura*	8	12	
Canada Goose	*Branta canadensis*			X
Mallard	*Anas platyrhynchos*		3	
Swainson's Hawk	*Buteo swainsoni*			X
Red-tailed Hawk	*Buteo jamaicensis*	7	7	
Ferruginous Hawk	*Buteo regalis*			X
Golden Eagle	*Aquila chrysaetos*		2	
American Kestrel	*Falco sparverius*	21	14	
Prairie Falcon	*Falco mexicanus*	1	6	
Scaled Quail	*Callipepla squamata*	13	5	
Killdeer	*Charadrius vociferus*	9	8	
Greater Yellowlegs	*Tringa melanoleucus*			X
Mourning Dove	*Zenaida macroura*	240	43	
Yellow-billed Cuckoo	*Coccyzus americanus*			X
Greater Roadrunner	*Geococcyx californianus*		1	
Western Screech-Owl	*Otus kennicottii*			X
Great Horned Owl	*Bubo virginianus*	1	9	
Common Nighthawk	*Chordeiles minor*			X
Common Poorwill	*Phalaenoptilus nuttallii*			X
White-throated Swift	*Aeronautes saxatalis*	9	6	
Black-chinned Hummingbird	*Archilochus alexandri*	1		
Broad-tailed Hummingbird	*Selasphorus platycercus*		1	
Belted Kingfisher	*Ceryle alcyon*	4	9	
Lewis's Woodpecker	*Melanerpes lewis*	8	3	
Ladder-backed Woodpecker	*Picoides scalaris*	5	2	
Hairy Woodpecker	*Picoides villosus*			X
Northern Flicker	*Colaptes auratus*	20	9	
Western Wood-Pewee	*Contopus sordidulus*		6	
Dusky Flycatcher	*Empidonax oberholseri*	1		
"Western" Flycatcher	*Empidonax difficilis/ E. occidentalis*			X
Eastern Phoebe	*Sayornis phoebe*	2	4	
Say's Phoebe	*Sayornis saya*	23	28	
Ash-throated Flycatcher	*Myiarchus cinerascens*	24	19	
Cassin's Kingbird	*Tyrannus vociferans*	142	64	
Western Kingbird	*Tyrannus verticalis*	18	46	
Loggerhead Shrike	*Lanius ludovicianus*	11	1	

Appendix A, continued.

Species	Scientific name	1996	1997	ND
Bell's Vireo	*Vireo bellii*		1	
Warbling Vireo	*Vireo gilvus*		1	
Western Scrub-Jay	*Aphelocoma californica*	9	16	
Pinyon Jay	*Gymnorhinus cyanocephalus*	106	35	
Black-billed Magpie	*Pica pica*	6	2	
Chihuahuan Raven	*Corvus cryptoleucus*	3		
Common Raven	*Corvus corax*	9	19	
Horned Lark	*Eremophila alpestris*	112		
Violet-green Swallow	*Tachycineta thallasina*			X
Cliff Swallow	*Petrochelidon pyrrhonota*	620	826	
Barn Swallow	*Hirundo rustica*			X
Juniper Titmouse	*Baeolophus griseus*	3		
Bushtit	*Psaltriparus minimus*	4		
Red-breasted Nuthatch	*Sitta canadensis*		1	
Rock Wren	*Salpinctes obsoletus*	85	183	
Canyon Wren	*Catherpes mexicanus*	14	25	
Bewick's Wren	*Thryomanes bewickii*	64	4	
House Wren	*Troglodytes aedon*	1	3	
Blue-gray Gnatcatcher	*Polioptila caerulea*		3	
Mountain Bluebird	*Sialia currucoides*		3	
American Robin	*Turdus migratorius*	1	5	
Gray Catbird	*Dumetella carolinensis*	2		
Northern Mockingbird	*Mimus polyglottos*	452	17	
Curve-billed Thrasher	*Toxostoma curvirostre*			X
European Starling	*Sturnus vulgaris*	2		
Cedar Waxwing	*Bombycilla cedrorum*	2		
Orange-crowned Warbler	*Vermivora celata*			X
Yellow Warbler	*Dendroica petechia*	4		
Yellow-rumped Warbler	*Dendroica coronata*	1	1	
MacGillivray's Warbler	*Oporornis tolmiei*			X
Wilson's Warbler	*Wilsonia pusilla*	1		
Hepatic Tanager	*Piranga flava*	1		
Western Tanager	*Piranga ludoviciana*	5		
Green-tailed Towhee	*Pipilo chlorurus*	1		
Spotted Towhee	*Pipilo maculatus*	3	2	
Canyon Towhee	*Pipilo fuscus*	24	28	
Cassin's Sparrow	*Aimophila casssinii*	6	1	
Rufous-crowned Sparrow	*Aimophila ruficeps*	21	37	
Chipping Sparrow	*Spizella passerina*	1		
Brewer's Sparrow	*Spizella breweri*	2		

Appendix A, continued.

Species	Scientific name	1996	1997	N
Lark Bunting	*Calamospiza melanocorys*			X
Song Sparrow	*Melospiza melodia*		1	
Lincoln's Sparrow	*M. lincolnii*			X
Black-headed Grosbeak	*Pheucticus melanocephalus*	3	5	
Blue Grosbeak	*Guiraca caerulea*	22	29	
Lazuli Bunting	*Passerina amoena*	4		
Indigo Bunting	*Passerina cyanea*			X
Red-winged Blackbird	*Agelaius phoeniceus*		6	
Western Meadowlark	*Sturnella neglecta*	329	20	
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*			X
Brewer's Blackbird	*Euphagus cyanocephalus*		4	
Common Grackle	*Quiscalus quiscula*	19	12	
Brown-headed Cowbird	*Molothrus ater*	14	23	
Bullock's Oriole	*Icterus bullockii*	34	37	
House Finch	*Carpodacus mexicanus*	16	17	
Red Crossbill	*Loxia curvirostra*			X
Pine Siskin	*Carduelis pinus*	1		
Lesser Goldfinch	*Carduelis psaltria*			X
American Goldfinch	*Carduelis tristis*		3	
unidentified		12	5	
Totals		2771	1687	

Common Nighthaak
by Ken Giesen

Review of the American Peregrine Falcon's Status: An Endangered Species Success Story

Nichole R. Ramey, L. Zac Cullum, and Nathan E. Kirker
Fort Lewis College
1000 Rim Drive, Durango, Colorado 81301-3999

The Decline of the American Peregrine Falcon

The status of the American Peregrine Falcon (*Falco peregrinus anatum*) has been of major concern since its close brush with extinction in the 1950s and 1960s. The species' decline, as well as that of other migratory raptors (Banasch et al. 1992), began with the widespread use of organochlorine pesticides (DDT in particular) after World War II (Wooton and Bell 1992). Use of DDT in the United States (U.S.) was finally banned in late 1972, but to this day U.S. companies still manufacture and export it to various foreign markets. In fact, DDT remains one of the most inexpensive, accessible, and broad-spectrum pesticides currently available. Mexico and Central and South America, where many of North America's migratory breeding birds spend the nonbreeding season (Banasch et al. 1992), are among the countries that import DDT.

While DDT can kill birds directly, more often it results in reproductive failures, primarily due to eggshell thinning (Line 1996). As top predators, falcons are subjected to significant biomagnification--the process of accumulating toxins by ingesting prey that have been exposed to those toxins. As the use of DDT increased, Peregrine Falcons accumulated higher and higher levels of DDE (a metabolite of DDT). In turn, the birds' metabolic levels of magnesium and phosphate rose and interfered with the precipitation of enough calcite to form normal eggshells (i.e., eggshell thinning) (Cooke 1975). Peregrine eggshells thinned by $\geq$17% often fail to hatch (Steidl et al. 1991) because the thin shells are incapable of supporting incubating adult birds. In addition, thinned shells

may result in abnormal gas:water balances inside the egg, possibly jeopardizing the embryo's survival even if the egg remains intact (Cooke 1975). By 1970, DDT had caused the falcon to undergo significant range-wide declines and extirpation east of the Mississippi River (Millsap et al. 1998), and in the western U.S., only 47 pairs still occupied known nesting sites (G.R. Craig, personal communication).

The Peregrine Falcon's Recovery

The U.S. Fish and Wildlife Service (USFWS) listed the Peregrine Falcon as an endangered species in 1972. Once listed, the species' population trends, and the way in which trends related to the birds' metabolic levels of DDE, were monitored. Soon it was evident that the DDT ban, combined with protection and the initiation of captive-breeding and release programs, was working and allowed the Peregrine Falcon to begin a strong comeback in many areas (Millsap et al. 1998).

By the early 1990s, the USFWS began considering the American Peregrine for de-listing, and in 1995 the agency announced the "preliminary conclusion" that most American Peregrine Falcon populations had recovered and could be removed from the list of threatened and endangered wildlife. Yet, data regarding DDE residues and eggshell thinning among the birds have been difficult to attain, thus the potential for long-term population stability remained somewhat unknown. The only evidence that eggshell thinning was no longer a threat to populations of the American Peregrine Falcon was the fact that populations were increasing in most regions. Furthermore, most releases (99%) of captive-bred falcons had occurred before 1992, thus the increasing trends were likely the result of the falcons' own successful reproductive efforts (Millsap et al. 1998).

In August of 1998, when the USFWS solicited comments from the public regarding the officially proposed de-listing, we decided that is was important to review the falcon's current status. We were specifically interested in the current effects of DDT and DDE and wanted to conclude for ourselves whether or not the proposed de-listing was, in fact, the appropriate measure to take at this time. We focused on Peregrine Falcon populations of the U.S., although we also evaluated their situation in regions south of the U.S., where many Peregrine Falcons spend the nonbreeding season. We were particularly interested in the current status of the species' population in Colorado, where an abundance of suitable habitat exists.

We examined data from pesticide studies as they related to avian reproductive success and eggshell thinning, both in the U.S. and in Latin America. We also

reviewed recovery goals outlined in the species' recovery plan and compared them to the species' current population trends--based on field observations, satellite telemetry (Cohn 1999), recaptures/sightings of banded individuals, number of nesting pairs, reproductive success, and migration patterns. Our review allowed us to assess the effect of federal restrictions on the use of DDT and the effects of management strategies on population trends of Peregrine Falcons in North America.

Review of the Evidence

DDE levels have tended to be considerably lower in raptor prey that inhabit the U.S. compared to prey that inhabit the nonbreeding ranges of many migratory raptors (Banasch et al. 1992). In migratory prey, DDE levels often exceeded 1.00 ppm, levels that can contribute to avian reproductive failure if the prey are consumed during the breeding season (Banasch et al. 1992). Peregrine prey that feed primarily on aquatic insects exhibited higher levels of DDE due to the fact that aquatic insects metabolize DDT rapidly and often accumulate concentrations DDE several times greater than species ingesting terrestrial prey (Banasch et al. 1992).

Raptors that feed on migratory prey (rather than species that reside year-round in the U.S.) also exhibited higher levels of DDE. Although Peregrines migrating through Venezuela and Panama were not exposed to consequential levels of DDE, one-third of migrant prey examined in Mexico contained levels exceeding 1.00 ppm (Banasch et al. 1992). DDE levels discovered in some fall migrants just arriving on the wintering grounds indicated that migratory birds are also coming in contact with DDE in the U.S. (Banasch et al. 1992).

In another study, Peregrine Falcons migrating through the Padre Island area of the southern Texas coast--a migratory midpoint where DDE levels could be evaluated in Peregrines traveling to and from their nonbreeding and breeding grounds--were tested for DDE in 1978-1980, 1984, and 1994 (Henny et al.1996). Although much of this work involved Arctic Peregrine Falcons, researchers were able to conclude that most exposure to DDT and DDE was occurring on the nonbreeding grounds (Henny et al. 1996). The same study also showed that the falcons' DDE levels had begun to decrease after 1978 (Henny et al. 1996); from 1984 to 1994, organochlorine levels declined an average of 25% in older birds and an average of 42% in second-year birds (Henny et al. 1996). Although in 1984 some birds showed increased levels of DDE and DDT (evidence of recent chemical exposure), all falcons tested for organochlorines at Padre Island in 1994 showed no traces of the these persistent chemicals (Henny et al. 1996).

Unfortunately, non-organochlorine pesticides affect raptor populations as well. DDE may be originating from other sources, such as the less persistent, but sometimes more detrimental, carbamate and organophosphorous insecticides (Henny et al. 1996). PCBs, also prevalent in the environment, and can be more embryotoxic than other pesticides (Steidl et al. 1991). The extent to which these chemicals may become a problem for breeding raptors remains to be seen.

By 1995, the majority of recovery goals for the American Peregrine Falcon, including those for numbers of breeding pairs and productivity, had been met in all regions of the U.S. except the east (Millsap et al. 1998). At the time, the USFWS estimated that there were 933 pairs of American Peregrine Falcons, with 150 pairs occurring in the east and 783 pairs occurring in the west (G.R. Craig, personal communication). Despite the poor, inconsistent manner in which some falcon populations have been monitored, the net reproductive rate for many populations seemed stable. The Raptor Research Foundation also determined that, on average, Peregrine populations were no longer as depressed as they were when the use of DDT was widespread in the U.S. However, according to the literature that we reviewed, most regions had not yet attained recovery goals for eggshell thickness (usually $\leq 10\%$ thinning), and we found that some regions had never even set recovery goals for eggshell thickness.

Peregrine Falcon Recovery in Colorado

The USFWS recovery plan for American Peregrine Falcon populations in the Rocky Mountain/Southwest region was approved in 1977 and amended in 1984. Despite subsequent recommendations to modify recovery goals (G.R. Craig, personal communication), however, the recovery plan still had not been revised by 1997. Thus, the original goals remained unchanged. The plan also called for review of the species' status upon achieving primary recovery goals of "183 breeding pairs sustaining a long-term average production of 1.25 young per breeding season by 1995" (G.R. Craig, personal communication). The purpose of the status review was to determine whether additional goals, such as maintaining eggshell thickness within 10% of the pre-DDT average (0.359 mm) and production of 1.25 young/pair/breeding season without population augmentation for five years, should be established (G.R. Craig, personal communication).

For Peregrine Falcons in Colorado, the preliminary USFWS recovery goals of 31 breeding pairs and production of 1.25young/pair/breeding season over a 5-year period were met in 1992, and in 1993 the decision was made to down-list the American Peregrine to threatened. Subsequently, the Colorado Division of Wildlife proceeded to set more conservative goals for de-listing the species:

there must be at least 62 breeding pairs producing an average of 1.4 young with eggshell thickness within 10% of pre-DDT measurements sustained over a five-year period (G.R. Craig, personal communication). Raising the standards for number of breeding pairs and productivity would help to ensure a more robust population and provide a more conservative buffer if reproductive difficulties recurred (G.R. Craig, personal communication).

From 1976 to 1990, 228 young Peregrines were fostered by wild pairs in Colorado, and 275 additional young were reintroduced to vacant sites through a hacking program (G.R. Craig, personal communication). In addition, 850 nestling peregrines were banded and color marked so that their movements could be monitored and mortalities could be detected (G.R. Craig, personal communication). From 1986 to 1995, the USFWS recovery goal for average number of young fledged was exceeded in Colorado by 0.35 (1.6 young/pair/ breeding season), and from 1991 to 1995, eggshell thinning among Colorado's Peregrines had averaged 9.2%, down from the previous average of 16% during 1986 to 1990 (Millsap et al. 1998). In 1994, the number of pairs observed in Colorado was up to 71, exceeding the original USFWS recovery goal by 40 pairs (Millsap et al. 1998). Just three years later in 1997, Colorado was home to 79 breeding pairs, production had averaged 1.49 young for 10 years, and eggshell thinning declined further to an average of 8.6 - 6.1% in the six years since 1991. In fact, Colorado is the only one of 11 states in the Rocky Mountain/ Southwest Recovery Region to have met the goals for eggshell thickness. Thus the process for de-listing the Peregrine from the status of threatened in Colorado was initiated in 1997, and the species was officially removed from the state's list of threatened and endangered species in 1998 (G. R. Craig, personal communication).

In 1997, American Peregrine Falcons occupied 87 of 109 known nest sites--up from 11 of 22 known nesting sites that were occupied in 1972 (G.R. Craig, personal communication). Obviously, the Peregrine Falcon has made a powerful comeback in Colorado. This tremendous increase was possible due to Colorado's excellent captive-propagation, fostering, and hacking programs after the ban on organochlorines. Stabilization, or even growth, of Colorado's Peregrine population is indicated by the "recent occupancy of several sites at the low end of the suitability spectrum, and the close territorial spacing of nests at 2.5- to 3.0-mile intervals along continuous cliff systems" (G.R. Craig, personal communication).

Requirements after de-listing in Colorado--also mandated by the Endangered Species Act--include population monitoring for a five-year period. Monitoring must account for number of breeding pairs, productivity, and exposure to

contaminants. In addition, harvesting Peregrines for falconry or other reasons must remain prohibited during the five-year period (G.R. Craig, personal communication). In Colorado, re-listing criteria include a decline in number of breeding pairs to < 62, a decline in productivity to < 1.4 young/pair, increases in contaminant levels, and/or decreases in average eggshell thickness (G.R. Craig, personal communication). It remains to be seen how the species will fare in Colorado through this period.

Conclusions

Overall, we are satisfied that the American Peregrine Falcon has been reestablished and remains reproductively successful throughout most of its natural range in the U.S., the exception being the eastern region (Millsap et al. 1998). Problems facing eastern falcon populations include increased predation by Great Horned Owls and high levels of DDE associated with the population's chief prey, migratory seabirds (Steidl et al. 1991). However, Peregrines in the east have begun to take advantage of urban environments, which provide numerous building ledges for nest sites and a steady supply of Rock Doves (*Columba livia*) on which they can prey (Line 1996). Furthermore, eastern regions only account for about 25% of the total American Peregrine population, and recent observations suggest that recovery goals for numbers of nesting pairs were probably exceeded in 1996 and 1997 (Millsap et al. 1998). If this proves to be accurate, down-listing accompanied by continued/improved monitoring programs would seem appropriate as the next step for eastern populations of the Peregrine Falcon. Through the restriction of organochlorine pesticides and the release of more than 3400 captive-propagated falcons, the American Peregrine Falcon has been re-established successfully in North America (G.R. Craig, personal communication).

Of great concern at this point is whether or not the previously disorganized and inconsistent monitoring techniques have been improved sufficiently. In addition, the wide variation in eggshell thinning, both within and among clutches, necessitates especially careful monitoring so that any future problems due to contamination can be detected quickly (G.R. Craig, personal communication). In particular, the effects of organophosphorus pesticides should be monitored closely in relation to raptor populations and mortality, especially when species of concern may be impacted.

Today, the Peregrine Fund uses the American Peregrine Falcon's success as a model for raptor conservation, preserving biodiversity, enhancing the local potential for conservation, and answering questions of concern within the scientific community about the structure and function of imperiled ecosystems (Watson 1991). Due to its wide-ranging habits, the falcon has also become an

environmental barometer of pesticide use. The general decrease of pesticide contamination among the species' populations suggests that environmentally safer products and procedures are being implemented, and continued monitoring should provide us with an early warning system if more pesticide problems occur.

Acknowledgments

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A New Colony of Black Swifts along No Name Creek

Kim M. Potter
440 East 7th Street, Rifle, Colorado 81650
kpotter@rof.net

On 16 September 1998, I found three potential Black Swift (*Cypseloides niger*) nests 4.5 kilometers (2.8 miles) up from the Colorado River along No Name Creek in Garfield County. The nests were empty that day, but whitewash underneath them indicated that they had been occupied recently. At this site, No Name Creek plunges 7.6 meters (25 feet) into a damp and misty miniature canyon, and then exits the canyon as a series of short cascades. Beyond the canyon, the terrain opens and provides commanding views of Glenwood Canyon far below, thus allowing the swifts to fly straight out from their nesting colony and gain rapid access to open air space hundreds of feet above the valley floor. The combined features of a vertical, niched wall (9.1 meters high x 15.2 meters wide; 30 feet high x 50 feet wide) on the east side of the stream and boulders on the steep, west wall keep the little canyon well-shaded during most hours of the day.

Two closely spaced, mossy nests were tucked into niches 20.3 centimeters (8 inches) deep on the east wall, 3.0-3.4 meters (10-11 feet) above the water. I discovered a third mossy nest in a high recess four meters (13 feet) above the water level; the nest was distinctly three-tiered and set back five feet from the recess opening between the falls and the canyon's eastern wall. When boosted into the opening, I was amazed to see a 9.1-meter (30-foot) passage ahead of me. I could see some light in all areas of the tunnel, which, according to spelunker standards, disqualifies it from being considered a "true cave." The tunnel inclined upwards from the opening, paralleling the creek. Easily three meters (10 feet) high in three places, the ceiling appeared to be a jumble of large boulders and jammed logs, all damp and slimy. This tunnel probably added greatly to the location's quality and attractiveness for nesting Black Swifts.

On 7 August 1999, I returned to the site and found two of the three nests occupied, including the nest in the tunnel, which was closest to the falls. Both nests contained a single Black Swiftlet. The nest farthest from the falls on the east wall was unoccupied.

The Effects of Urbanization on Raptors Along the Front Range of Colorado

Marcus Swan, Catherine Ortega, Brian Davies, Erika Wicks, and Ava Otway
Department of Biology, Fort Lewis College
Durango, Colorado 81301

Abstract

We used Audubon Christmas Bird Count data from 1970 to 1992 to determine population trends of six raptor species that winter along the Colorado Front Range. Regression analysis of these data revealed that Red-tailed Hawk (*Buteo jamaicensis*) and Ferruginous Hawk (*Buteo regalis*) numbers increased significantly from 1970 to 1992. During the same time, Rough-Legged Hawks (*Buteo lagopus*) experienced a significant decline in numbers. Sharp-shinned Hawk (*Accipiter striatus*) and American Kestrel (*Falco sparverius*) numbers remained relatively unchanged, while Northern Harrier (*Circus cyaneus*) numbers showed a non-significant decline. The increase in Ferruginous Hawk and Red-tailed Hawk numbers suggest that they may be able to cope with some anthropogenic changes, whereas other species, such as Rough-legged Hawks appear to be less tolerant of increasing urbanization.

Introduction

The area of developed land along Colorado's Front Range has increased significantly in recent years. From 1990 - 1996, the Denver Metro area increased by 66% (Sierra Club 1998). Statewide, it has been estimated that Colorado loses close to 3642 hectares (90,000 acres) of farmland and ranchland per year to residential and commercial development (Long 1996, Sierra Club 1998). The urbanization of previously undeveloped areas may have serious ecological effects, therefore it is important to document the effects of these changes on native wildlife.

Urbanization has been known to have negative effects on some bird populations (Berry et al. 1998, Plumpton and Anderson 1998). Species, such as Rough-legged Hawks (*Buteo lagopus*), Prairie Falcons (*Falco mexicanus*), and Ferruginous Hawks (*Buteo regalis*), may be sensitive to human activity (Berry et al. 1998, White and Thurow 1985). However, they also may be influenced by other ecological factors. For example, Ferruginous Hawks may be affected by availability of Black-tailed Prairie Dogs (*Cynomys ludovicianus*), their preferred prey (Plumpton and Anderson 1998, Berry et al. 1998). On the other hand, species such as Red-tailed Hawk (*Buteo jamaicensis*) and American Kestrel (*Falco sparverius*) may be impartial to human activity (Andersen et al.

1989) or even benefit from certain forms of development. For example, many human-made structures, such as power-line towers and buildings, often provide suitable roosts, nest sites, and perches for these species (Knight and Kawashima 1993, Ritchie 1991). However, Gilmer and Stewart (1983) found that ground-nesting Ferruginous Hawks in North Dakota rarely nested in areas where more than 50% of the land was under cultivation; they further point out that grasslands are critical habitat for their prey species.

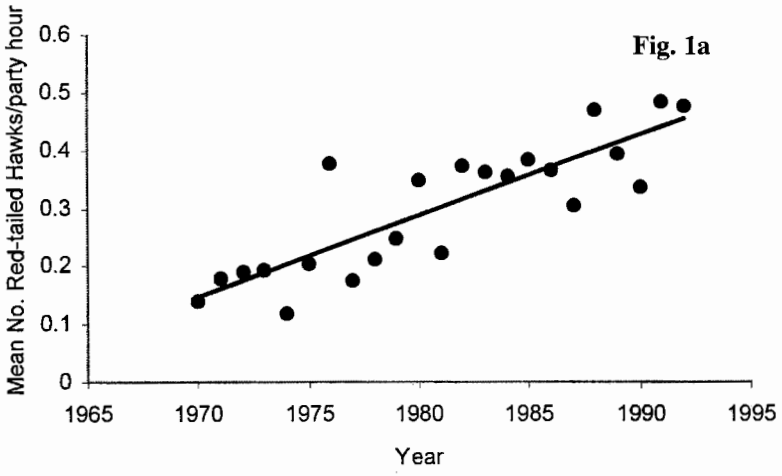
In this study, we examined population trends of several raptor species along the Front Range in Colorado. By using data from the 1971-1993 Audubon Christmas Bird Counts, we determined which species were apparently most susceptible to urbanization.

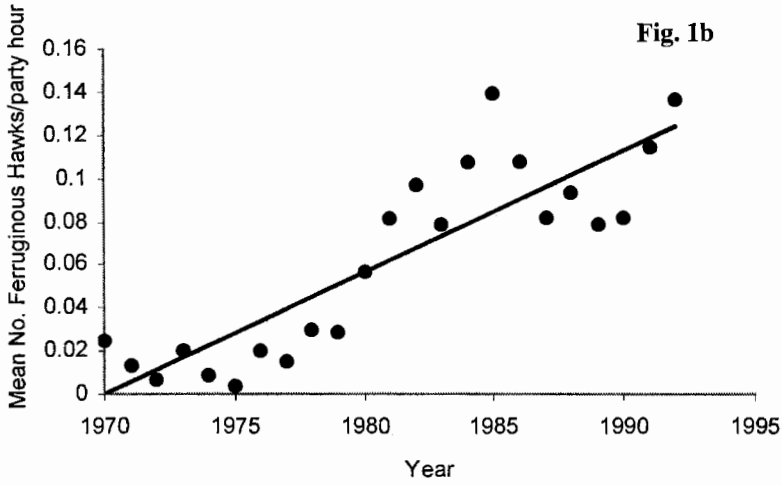
Methods

We obtained data from the 1971-1993 Audubon Christmas Bird Counts (Cruickshank 1971-1972, Julian 1973-1978, Downing 1980-1993). Data used were tabulated from the Fort Collins, Longmont, Denver, Boulder, Colorado Springs, Pueblo, and Pueblo Reservoir counts. We obtained data for the following species: Sharp-shinned Hawk (*Accipiter striatus*), Ferruginous Hawk, Red-tailed Hawk, Northern Harrier (*Circus cyaneus*), American Kestrel, and Rough-legged Hawk. For each species, by count circle [each measuring 24.14 kilometers (15 miles) in diameter], we divided the number of individuals observed by the total number of observer party hours (Bock and Lepthien 1976). For each year, we pooled the number of individuals/party hour for all count circles.

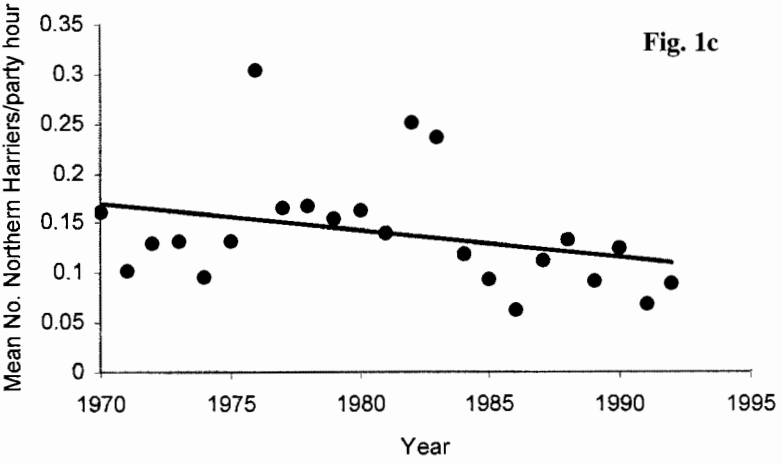
Results

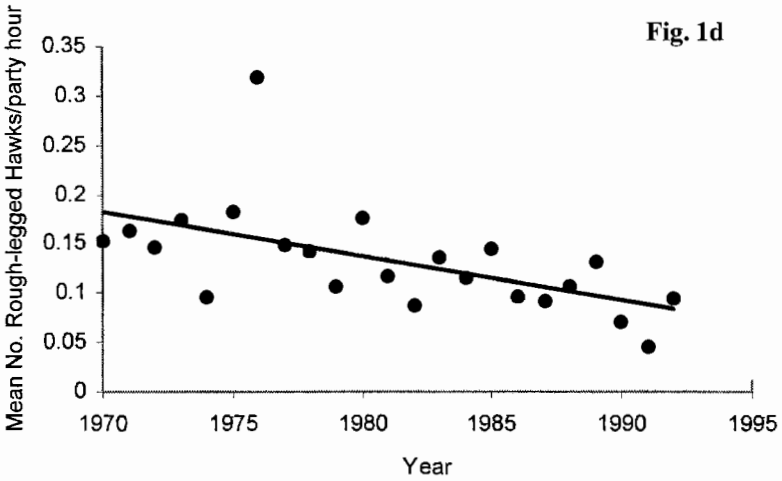
A total of 12,578 individuals of the six species we analyzed were counted during the 1971-1993 counts. In decreasing order of abundance were 4106 American Kestrels (31.6% of total), 4082 Red-tailed Hawks (31.5% of total), 1840 Rough-legged Hawks (14.2% of total), 1665 Northern Harriers (12.8% of total), 873 Ferruginous Hawks (6.7% of total), and 412 Sharp-shinned Hawks (3.2% of total). Regression analysis revealed a significant increase in numbers of Red-tailed Hawks ($P = 0.0001$, $R^2 = 0.146$; Fig. 1a) and Ferruginous Hawks ($P = 0.0001$, $R^2 = 0.181$; Fig. 1b). During the same time, Northern Harriers ($P = 0.144$, $R^2 = 0.014$; Fig. 1c) and Rough-legged Hawks ($P = 0.0023$, $R^2 = 0.059$; Fig. 1d) experienced non-significant and significant declines in numbers, respectively. American Kestrel ($P = 0.5967$, $R^2 = 0.002$; Fig. 1e) and Sharp-shinned Hawk ($P = 0.6407$, $R^2 = 0.001$; Fig. 1f) numbers remained unchanged.





Figures 1a and 1b. Number of Red-tailed and Ferruginous Hawks observed per Christmas Bird Count circle. Numbers were derived by dividing the total number of individuals for each species observed within each count circle by the total observer party hours for that circle (Bock and Lepthien 1976); then, for each year, we pooled the number of individuals/party hour for all count circles.





Figures 1c and 1d. Number of Northern Harriers and Rough-legged Hawks observed per Christmas Bird Count circle. Numbers were derived as described in the figure caption for Figures 1a and 1b opn page 34.

Fig. 1e

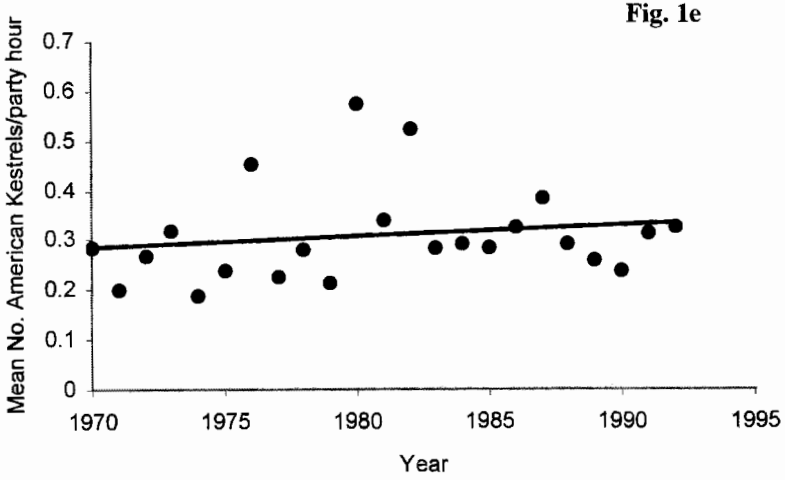
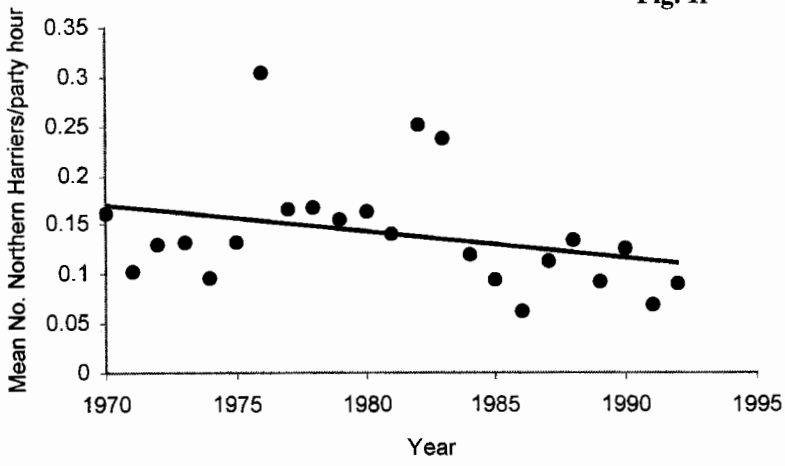


Fig. 1f



Figures 1e and 1f. Number of American Kestrels and Sharp-shinned Hawks observed per Christmas Bird Count circle. Numbers were derived as described in the figure caption for Figures 1a and 1b on page 34.

Discussion

The two most abundant species, American Kestrels and Red-tailed Hawks, were also the most abundant raptors in a previous study conducted in Boulder County (Berry et al. 1998). Berry et al. (1998) suggested that sizable populations of Red-tailed Hawks and American Kestrels may be supported in the heterogeneous habitats created by human activity, as long as prey populations in the area are sufficient. Small rodents often attracted to urban areas may provide a larger prey base for Red-tailed Hawks. Additionally, increased availability of perches, such as telephone poles and trees planted in areas previously devoid of tall perches, are used frequently by all the raptors investigated in this study. Evans and Cruz (1998) found that hunting success of American Kestrels was two times greater when hunting from perches such as telephone poles and fences, than when hunting while hovering. It is not known whether perches were historically a liniting resource for raptors. However, while we found that Red-tailed Hawk numbers increased significantly from 1971 to 1993, American kestrels showed significant declines. In light of the conclusions suggested by Berry et al. (1998), it remains uncertain why kestrels would have declined.

The increase in numbers of Ferruginous hawks, observed in our study, parallel those reported in the Breeding Bird Survey (Sauer et al. 1997). From 1966-1996, on a survey-wide level (all the United States and portions of Canada), there was a significant increase (P = 0.00) of 5.2%/year, and throughout Colorado, there was a non-significant increase (P = 0.60) of 3.5%/year (Sauer et al. 1997). Nevertheless, Ferruginous Hawks have been proposed for listing as an endangered species (Ayers and Anderson 1999), and the National Wildlife Federation recently proposed listing the Black-tailed Prairie Dog, which is one of the hawk's favored prey (Terres 1982), as threatened throughout their range (Graber 1999). During the breeding season, Ferruginous Hawk nests located near human activity fledged significantly fewer young, and a buffer zone of 250 meters (820 feet) from human activity may be required for nest success (White and Thurow 1985).

Habitat requirements for breeding and wintering Ferruginous Hawks may differ, but urbanization may have negative effects on both. Berry et al. (1998) suggested that wintering Ferruginous Hawks may be particularly sensitive to urbanization and generally will not occupy areas (300-meter radius circular plots) that are > 5% urbanized. Fluctuations in prairie dog populations associated with loss of habitat from urbanization appear to have the greatest influence on Ferruginous Hawk populations (Gietzen et al. 1997). However, Plumpton and Andersen (1998) showed how wintering Ferruginous Hawks with sufficient prey present modified their behavior in some fragmented, human-

altered habitats. They found that in some suburban areas with prairie dogs present, Ferruginous Hawks used deciduous trees, fenceposts, and telephone poles for perching and roosting. In light of the widespread concern about Ferruginous Hawk populations, they should be monitored and documented carefully along the Front Range, both in winter and the breeding season.

Numbers of wintering Sharp-shinned Hawks underwent a non-significant increase through the years 1971 to 1993; however, they comprised only 3.1% of all individuals of the six species we evaluated. The Breeding Bird Survey also indicates that from 1966-1996, on a survey-wide level, Sharp-shinned Hawks have increased significantly ($P = 0.01$) by 6.2% per year (Sauer et al. 1997). Areas of suburban growth could attract Sharp-shinned Hawks indirectly through a concomitant increasing number of birdfeeders that concentrate their prey. However, Boal and Mannan (1999) suggested that increased mortality among Cooper's Hawks may be the result of their exposure to disease-carrying prey species at bird feeders. Understanding the extent to which this same problem could affect Sharp-shinned Hawks will require close monitoring.

The Audubon Christmas Bird Count indicated a non-significant decline of Northern Harriers. The Breeding Bird Survey results from 1966 to 1996 also indicated a non-significant decline among breeding populations of harriers, both survey-wide ($P = 0.21$, -0.6% per year) and throughout Colorado ($P = 0.12$, -3.9% per year, Sauer et al. 1997). In Illinois, Northern Harriers appeared to prefer nesting in grasslands that have been undisturbed for at least 12 months (Herkert et al. 1999); however, in Colorado, they also nest in cattail (*Typha latifolia* and *T. angustifolia*) marshes. Thus, urbanization along the Front Range, which has encroached upon both undisturbed grasslands and cattail marshes, and may have affected the numbers of Northern Harriers negatively during the winter as well as in the breeding season.

A significant decline was found in the number of wintering Rough-legged Hawks from 1971 to 1993. This decline parallels those documented for the species in other published literature. Berry et al. (1998) found that Rough-legged Hawks avoided plots that were > 5% urbanized. Wintering Rough-Legged Hawks are known to prefer open terrain (Schnell 1968), and Berry et al. (1998) suggested that wooded urban landscapes, like those in the Boulder Valley, may be unsuitable to this species.

There are many factors associated with the process of "urbanization." Some of these factors include changes in habitat, prey base, pesticides, and pollution, any of which may affect populations negatively or even positively, either by themselves or in combination with other factors. Future studies should focus

on the effects of some of these specific components. Because the scope of our study was restricted to count areas in the corridor from Fort Collins to Pueblo, some of the specific effects of urbanization may not be evident. In the future, it might also be useful to compare the responses of species inhabiting areas undergoing higher levels of urbanization, such as Boulder, to those of species inhabiting areas undergoing less urbanization, such as Pueblo.

More research needs to be conducted on the questions relating to avian responses to various forms of development and other habitat changes caused by human activities. Our study suggests that some raptors may not be affected negatively by cretain forms of development. However, this is probably not the case for all species, or even individuals within species, and we should continue to monitor the responses of birds as residential and commercial development of the Front Range continues.

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Forty Years of Christmas Bird Counts in Colorado: A History of the Activity

William H. Kaempfer[1] and Tug Levy[2]
[1] Academic Affairs, University of Colorado, Boulder, Colorado 80309
[2] EPO Biology, University of Colorado, Boulder, Colorado 80309

The 1999-2000 Christmas Bird Count (CBC) season marks the one hundredth anniversary of this remarkable tradition. In 1900, Frank Chapman organized the first CBCs by convincing 27 of his friends to undertake counting birds at 25 locations. Chapman further proposed that the counts serve as an alternative to the sportsmans' tradition of going out on Christmas afternoon to shoot birds--all in the name of testing new firearms just acquired as Christmas gifts. After publication of those first count results in the journal, *Bird Lore*, the new tradition quickly took hold.

It was not long before Christmas bird counting came to Colorado. By the early 1920s, results had been published for bird counts in Boulder, Clear Creek, Denver, Paonia, and Rocky Ford. Typically, participants conducted these counts while out on a holiday bird walk. Reading the results of those early counts reveals a bewildering array of mysterious and little-known "species," such as Long-crested Jay, Rocky Mountain Creeper, Long-tailed Chickadee, Desert Horned Lark, and Arctic Towhee! Other "unusual" observations reported those years include a 1920 Boulder account of three Plumbeous Vireos that were "identified by the gray upperparts, white throat and orbital ring and wing bars, and olive-gray flanks." Not bad for what might have been the first rare bird ever reported during a Colorado CBC, but I must point out that every Plumbeous Vireo reported to me on recent CBCs has turned out to be a Townsend's Solitaire--a species conspicuously missing from the 1920 Boulder count!

On a sad note, the passing of Virgil C. Rosenbaum emerged from among the pages of published counts for 1951. At the young age of 56, Mr. Rosenbaum, the "energetic president of the Colorado Bird Club, died from over-exertion while he was freeing his car from the snow" during the Denver CBC on 30 December 1951. It was Rosenbaum who had stimulated interest among members of the Colorado Bird Club to report their observations of birds, including CBC results, to the National Audubon Society's *Field Notes*. Consequently, his untimely death also marked the beginning of the era in which our observations have become well-documented and preserved.

The new era of documentation certainly shows up in terms of the number of counts, participants, and individual birds tallied on Colorado counts from the 1946-1947 to the 1998-1999 CBC seasons (Table 1 on pages 44-45). In 1947, Durango was the only Colorado CBC for which results were published; as of the 1949-1950 CBC season, the number of counts had risen, but not by much. By the early 1950s, however, the number of counts had climbed to the low teens, where the number more or less stabilized for the next 13 years. In the late 1960s, the number of counts slowly began to rise again, until it had finally doubled in the 1981-1982 CBC season (the lead author's first year of Christmas bird counting in Colorado). Since that time, the number of Colorado CBCs for which results are published in *Field Notes* (now *American Birds*) has risen to the mid 30s and leveled off. In fact, for the last four years there have been exactly 34 Colorado counts with published results.

The number of individual birds reported has grown fairly steadily over the last half century. The first CBC season in which more that 100,000 birds had been reported was 1957-1958. By 1994-1995, the total topped 500,000, and while the last four years have not matched that high, the total reported has remained within 10% of that level. The period showing the largest increase of species observed occurred in the 1980s, during which time the number of individual birds counted doubled from less than 200,000 to more than 400,000. This increase is rather striking compared to the increases of about 50,000 birds over all the other decades.

The number of CBC participants also grew steadily over the past half century. Until the 1963-1964 CBC season, the number of participants in Colorado had never grown beyond 135. From that point, however, as the number of counts increased by 160%, the numbers of counters increased by 480%. To date, the peak participation occurred in the 1997-1998 season, when Colorado broke through the 1000 mark with 1026 participants. Last season, the number fell back all the way to 912, no doubt due to very unfavorable weather conditions.

Over the years, the Denver CBC has almost always registered the top number of species for Colorado, including the eight years in the late 1950s when the Denver count was called "Jefferson County." In all but seven of the 41 years from the 1950-1951 to the 1991-1992 CBC seasons, Denver had the top species total (including one tie). Colorado Springs took top honors in 1959-1960, and Boulder had the top species count six times from 1974-1975 to 1989-1990. Things changed considerably over the last seven years, during which the Denver, Pueblo Reservoir, Grand Junction, and Penrose counts each produced the highest species tally twice (including a tie one year). This greater species diversity across more counts stems not from the behavior of birds, but from

more participation on Christmas counts beyond the northern Front Range of Colorado. Such broadened coverage certainly helps to develop a better statewide picture of wintering-bird populations.

In 1952, the year following Rosenbaum's death, the Denver CBC yielded 86 species--somewhat of a milestone for species counted. (Please note that we made no attempt to alter numbers resulting from the splitting and lumping of species that has since taken place.) It was 13 years before another count surpassed that milestone--the Denver CBC topped its own record with 90 species in the 1965-1966 CBC season. The Denver CBC tally continued to climb slowly, and finally broke the century mark--a first for Colorado--with 104 species in 1971. Since that year, counts of 100 or more species have been recorded 40 times, including 12 times in the past three years. Denver broke its own record again in 1973 with 107 species, a number surpassed by one the next year on the Boulder CBC. The rapid--and almost annual--expansion in the number of species finally came to an end in 1977, when Denver participants recorded an amazing total of 113 species. This total stood as the record for 21 years until tied on the Penrose last year.

As we move into the next 100 years of Christmas bird counting, several trends that we have already seen are likely to continue. Birding's growing popularity will undoubtedly bring more and more people into the field for counting birds on CBCs, and more birders will probably count more birds. The rate of growth in birds tallied, however, is likely to continue slowing down, as it has since the 1980s. Not only will the law of diminishing returns result in lower rates of increase, habitat loss due to urbanization within many of the older count circles also may affect the tallies. On the flip side, a growing number of Front Range birders with a sense of adventure now participate on counts in more far-flung areas of Colorado, and they will probably bring new high counts in diverse locales. In the tradition encouraged by Virgil Rosenbaum, perhaps even the publication of CBC results from some of Colorado's more exotic locations, such as Bonny Reservoir, Holly, Monte Vista, and Indian Peaks, will resume.

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Table 1. Summary of Christmas Bird Counts in Colorado, 1946-1998.

Count Year	No. Counts	No. Birds Reported	No. Participants	Highest No. Species, Count Location	No. Counts w/ 100+ Spp.
1946-47	1	305	3	21, Durango	0
1947-48	3	12,910	7	35, Lyons	0
1948-49	5	43,440	16	52, Barr Lake	0
1949-50	6	49,222	27	44, Ft. Collins	0
1950-51	9	32,753	59	59, Denver	0
1951-52	9	31,524	68	67, Denver	0
1952-53	12	61,611	94	86, Denver	0
1953-54	12	62,548	116	85, Denver	0
1954-55	12	84,535	109	80, Jefferson County	0
1955-56	13	64,331	100	83, Jefferson County	0
1956-57	13	99,112	94	86, Jefferson County	0
1957-58	12	157,375	96	84, Jefferson County	0
1958-59	15	138,824	108	79, Jefferson County	0
1959-60	13	93,896	135	76, Colorado Springs	0
1960-61	13	170,423	132	74, Jefferson County & Colorado Springs	0
1961-62	13	102,361	130	78, Jefferson County	0
1962-63	9	76,701	117	80, Denver	0
1963-64	13	159,916	157	79, Denver	0
1964-65	13	100,493	181	79, Denver	0
1965-66	14	75,477	218	90, Denver	0
1966-67	17	147,494	264	86, Denver	0
1967-68	17	148,259	209	93, Denver	0
1968-69	18	154,799	267	92, Denver	0
1969-70	17	152,502	283	91, Denver	0

Table 1, continued.

Count Year	No. Counts	No. Birds Reported	No. Participants	Highest No. Species, Count Location	No. Counts w/ 100+ Spp.
1970-71	19	168,572	329	99, Denver	0
1971-72	20	158,914	309	104, Denver	1
1972-73	21	185,884	432	95, Denver	0
1973-74	19	238,220	448	107, Denver	2
1974-75	20	223,374	666	108, Boulder	2
1975-76	21	239,855	582	106, Denver	1
1976-77	24	250,724	681	106, Denver	2
1977-78	25	239,906	627	113, Denver	1
1978-79	27	194,607	641	101, Denver	1
1979-80	26	194,971	650	98, Denver	0
1980-81	29	276,279	734	101, Denver	1
1981-82	30	336,906	719	110, Denver	1
1982-83	29	247,466	680	103, Denver	1
1983-84	30	250,422	769	100, Boulder	1
1984-85	29	296,058	780	99, Denver	0
1985-86	27	203,430	864	97, Boulder	0
1986-87	30	330,125	945	102, Denver	1
1987-88	29	384,523	812	103, Boulder	2
1988-89	30	348,992	946	99, Boulder	0
1989-90	31	414,805	865	102, Boulder	2
1990-91	31	348,983	817	110, Denver	2
1991-92	32	322,191	836	99, Denver	0
1992-93	33	336,568	878	99, Pueblo Reservoir	0
1993-94	34	369,138	915	100, Denver & Grand Junction	2
1994-95	35	503,164	961	105, Pueblo Reservoir	2
1995-96	34	462,175	999	106, Denver	3
1996-97	34	478,740	977	102, Penrose	5
1997-98	34	486,158	1026	108, Grand Junction	3
1998-99	34	481,412	912	113, Penrose	4

Forty Years of Christmas Bird Counts in Colorado What Do They Show About the Birds?

Alan Versaw
403 Maplewood Drive, Colorado Springs, Colorado 80907

Few members of the Colorado Field Ornithologists require a lengthy introduction to the difficulties inherent in summarizing Christmas Bird Count (CBC) data. Indeed, were it not for the sheer volume of data, the irregularities that plague the data collection would demolish its value to ornithology. Problems such as poaching (the practice of counting birds in a territory not your own), conveniently flexible circle boundaries, and varying skill levels of the participants enjoy histories as old as the CBCs themselves. Less salient problems include social incentives to concentrate on finding rare birds—often at the expense of carefully counting more common species—and multiple counts of the same birds. Canada Geese, which habitually embark on noisy and highly visible flights over several sections of a single count circle, are routinely overcounted by factors as high as three or four. Similarly, where count boundaries adjoin at a river (such as along the South Platte River within the Denver count circle) two parties will often produce duplicate reports of ducks, dippers, and other riparian obligates.

Despite these, and other, problems I attempt here to identify some fascinating trends that have emerged from Colorado CBC data over the last 40 years. Few of Colorado's CBCs have been conducted for 40 years or more, thus the data for most of my summaries were limited to those drawn from the Boulder, Colorado Springs, Denver, Durango, Ft. Collins, Grand Junction, and Longmont CBCs. I focused my efforts on 10 species (including four baseline species), and for each species, I indicate which of the seven counts were used in my summaries. The reader should understand that I have made no effort to adjust count numbers according to party hours or any similar measure of observer effort. The numbers I have used are the numbers reported to National Audubon as found on the Christmas Bird Count page at the Cornell website (http://birdsource.cornell.edu). Adjusting the data according to party hours involves a series of assumptions about the data, which are less than completely true—at least for the purposes of my summaries. Certainly, numbers of birds reported have grown as the numbers of party hours on each of the counts have increased (and as optical equipment has improved), but a number of other factors may have contributed to this growth as well. Some possible factors are discussed within the individual species accounts below, but it exceeds the scope of this paper to identify and weigh all factors.

Much to the credit of the compilers, only three counts among the seven CBCs listed above were missed during the 40 years from 1959 to 1998 (i.e., the December 1958 to January 1959 CBC, and the December 1997 to January 1998 CBC, respectively; hereafter, all references to CBC years will name only the year in which a given CBC period ended). According to the CBC website, the 1983 Boulder count was missed—possibly a result of the great Christmas blizzard, and subsequent cold snap, of that winter. The Grand Junction count was missed in 1979, and the Ft. Collins CBC was missed in 1981. I made no attempt to "restore" missing data either through interpolation or speculation. As a result, the data points are slightly low for a period of several counts surrounding count 1981 (see the next paragraph for an explanation of how data points were figured for each count year).

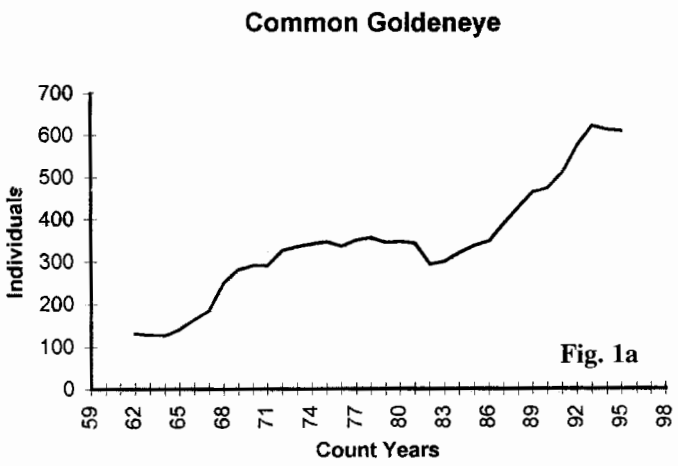
In almost all cases I used seven-year floating averages rather than the actual count numbers from each year. This "smoothing" technique served to dampen the fluctuations inherent in annual wintertime counts, thus making long-term trends easier to see. The implementation of floating averages required the omission of three years of data points at either end of the 40-year interval. The reader may assume that I always used seven-year floating averages except where indicated otherwise in the species accounts.

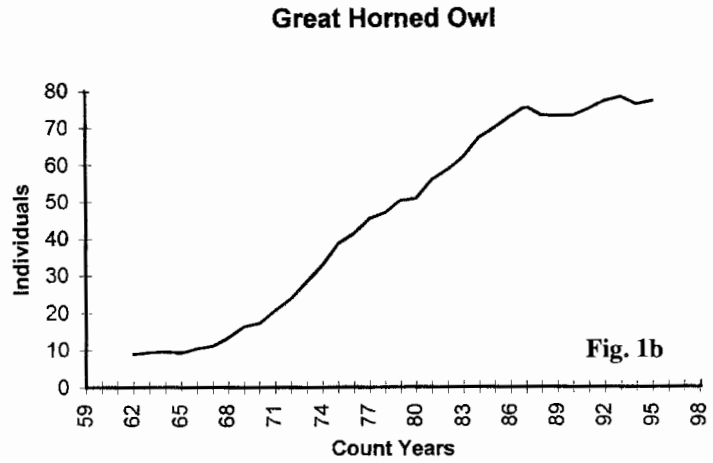
The summaries of baseline species are intended as a gauge of how much "growth" in species' numbers has occurred primarily due to increasing numbers (and, to some extent, the skill levels) of count participants. The baseline species, Common Goldeneye (*Bucephala clangula*), Great Horned Owl (*Bubo virginianus*), Belted Kingfisher (*Ceryle alcyon*), and American Dipper (*Cinclus mexicanus*), were selected according to four criteria. The first criterion was that the species must be easy to identify and its numbers not subject to "spiking" through frequent misidentification of other species. The second criterion was that the species be present in reasonably detectable numbers in most or all count years and count circles. The third criterion stipulated that the species not be a feeder species due to the myriad of confounding factors associated with feeder counts and counters. Finally, I deemed it essential that the species not be undergoing large-scale gains or losses of winter habitat within the count circles used for my summaries.

Baseline Species

Even with a smoothing technique applied to the data, the trend graphs (Figs. 1a-1i) for all species are anything but smooth, although no great surprises emerge. Each of the four baseline species shows a trend more or less consistent with the steady increase in human participation on CBCs. From 1962 to 1995,

(go to bottoms of pages 49-51)





Figures 1a - 1i (pages 48-52). Seven-year floating averages for numbers of Common Goldeneye, Great Horned Owls, Belted Kingfishers, American Dippers, Bald Eagles, Ferruginous Hawks, Ring-necked Ducks, Ring-necked Pheasants, and Cassin's Finches counted from 1962 to 1995 on the Boulder, Colorado Springs (excluding Bald Eagles), Denver, Durango (excluding Ferruginous Hawks and Ring-necked Ducks), Ft. Collins, Grand Junction, and Longmont Christmas Bird Counts. NOTE: The data are not adjusted for observer effort (party hours).

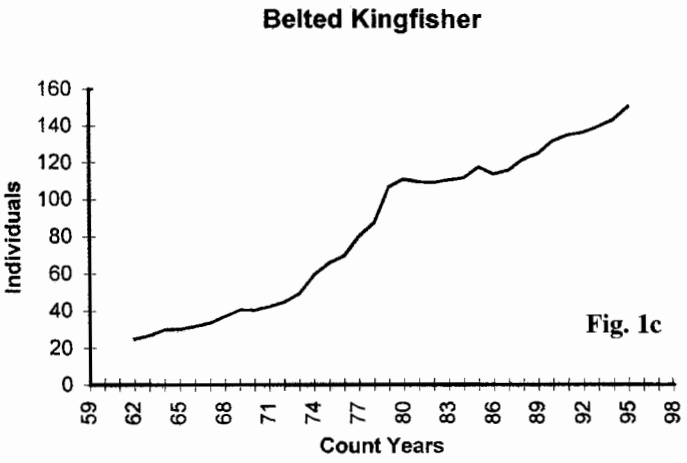


Fig. 1c

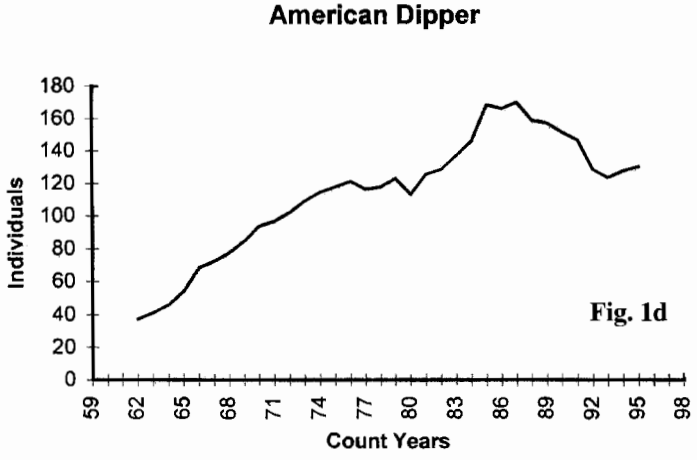


Fig. 1d

the percentage of increase for Common Goldeneye (Fig. 1a), Great Horned Owl (Fig. 1b), Belted Kingfisher (Fig. 1c), and American Dipper (Fig. 1d) was approximately 400%, 750%, 500%, and 250%, respectively. With the exception of the American Dipper, winter populations of the baseline species probably have remained relatively stable throughout the 40 years. The somewhat larger increase in Great Horned Owl numbers could be a reflection of better surveying techniques as well as an overall increase in count participants.

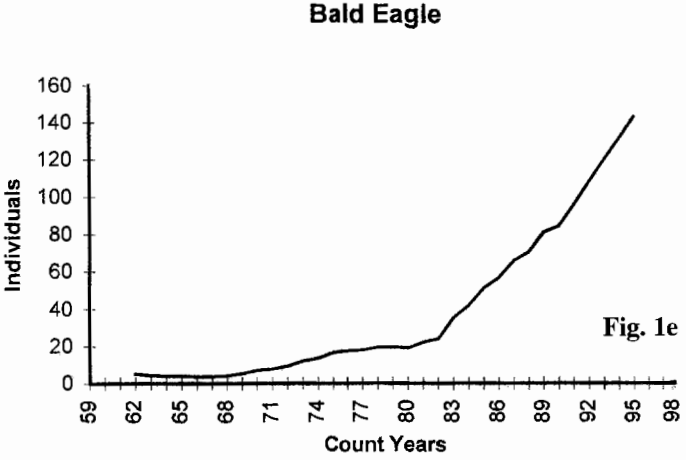


Fig. 1e

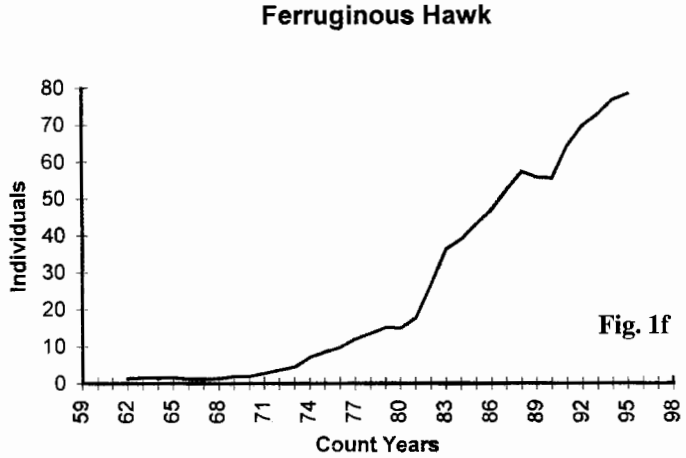


Fig. 1f

The recent declines in numbers of American Dippers, corresponding as they do with increases in observer participation, could indicate real declines within the indicated count circles. If the declines are real, questions worth addressing include whether or not winter populations and/or distributions of dippers are being affected by anthropogenic changes in stream temperatures and/or streamflows (Kingery 1996). Another area of concern is the extent to which siltification of streams--and the resulting effects on invertebrate prey--has affected dipper populations (Kingery 1996). In any case, American Dippers should be monitored carefully to determine whether the declines are real, and if so, the causes of decline.

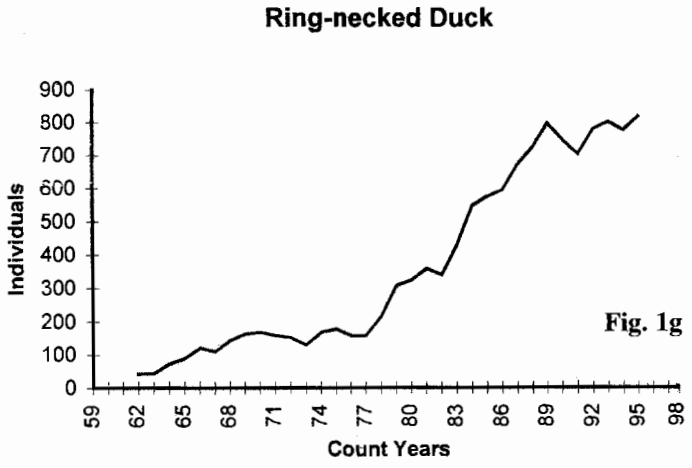


Fig. 1g

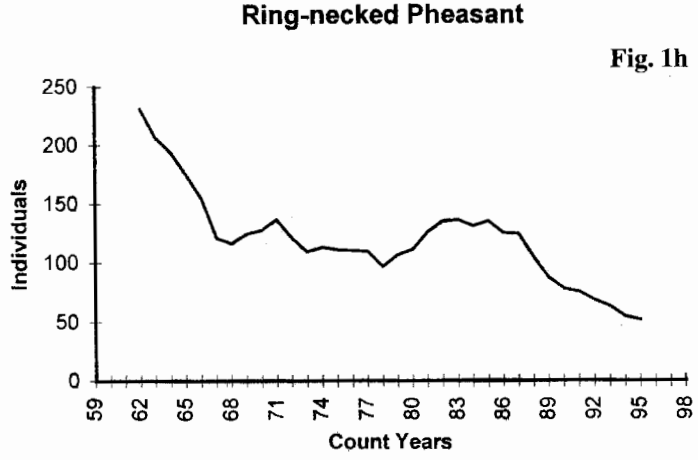
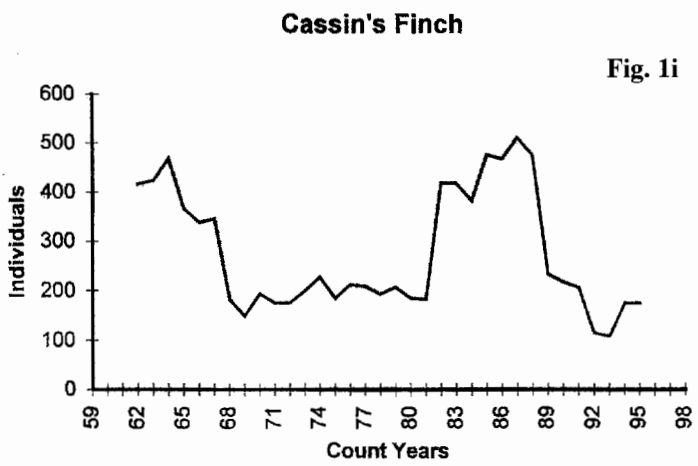


Fig. 1h

It should be noted that the data for each of the four baseline species were drawn from the Boulder, Colorado Springs, Denver, Durango, Ft. Collins, Grand Junction, and Longmont counts. Exceptions to this protocol included omitting the Colorado Springs CBC for Bald Eagle and American Dipper and the Durango CBC for Great Horned Owl. In each of these casescase, the species occurred only in extremely low numbers in the excluded count circles.



Focus Species

Once I had summarized the trends for all baseline species, I tackled the data for six additional species: Bald Eagle (*Haliaeetus leucocepahlus*), Ferruginous Hawk (*Buteo regalis*), Ring-necked Duck (*Aythaya collaris*), Ring-necked Pheasant (*Phasianus colchicus*), Cassin's Finch (*Carpodacus casinii*), and the rosy-finches (*Leucosticte* spp.). Numbers well outside the percentage of change shown for baseline species could mean that we are dealing with real increases or declines. I leave it to statistical professionals compelled to labor with advanced statistical tools to offer rigorous statistical analyses--complete with *P*-values and confidence intervals--of the data.

Bald Eagle (*Haliaeetus leucocephalus*)

The Bald Eagle stands almost alone as a great North American avian-recovery story for our generation. Drawing on data from the Boulder, Denver, Durango, Ft. Collins, Grand Junction, and Longmont CBCs, a similar increasing trend is evident within Colorado (Fig. 1e). Using 7-year floating averages, the total number of eagles increased by nearly 2700% from 1962 to 1995. Between 1959 to 1972, the Boulder, Denver, and Grand Junction counts never yielded more than one Bald Eagle. In contrast, the 1997 counts for Boulder, Denver, and Grand Junction yielded 54, 15, and 25 Bald Eagles, respectively. Although Bald Eagles may rank high among bird species easily double-counted, the change is nonetheless dramatic. It appears almost certain that wintering Bald Eagles are now more abundant than ever before in Colorado history. Most likely, this is due not only to the recent construction of numerous reservoirs in Colorado, but to the species' rebound from the dismal years of the 1960s and 1970s.

Of all the species examined for this article, the growth in numbers of wintering Bald Eagles most closely approximates an exponential curve. Given unlimited resources and a relatively predator-free existence, populations tend toward exponential growth. In the natural world, however, such conditions rarely exist over any but the shortest periods of time. Therefore, the Bald Eagle's exponential population growth over a period of more than 30 years underscores both how far below the natural carrying capacity Bald Eagle numbers had declined and how predator-free this species is when persecution from humans is suppressed. Unless we see a resumption and expansion of such dubious practices as providing salmon for wintering eagles at the Rocky Mountain Arsenal Wildlife Refuge when prairie dog numbers are low, we can expect Bald Eagle numbers to collide with their habitat's carrying capacity--how soon that will happen remains to be seen. Already the eagle's population trend is rapidly slipping below the exponential curve (Fig. 1e).

Ferruginous Hawk (*Buteo regalis*)

Although the slope on the graph depicting Ferruginous Hawk numbers (Fig. 1f) departs from an exponential curve more visibly than that of the Bald Eagle (Fig. 1e), the nearly 6000% increase in reports dwarfs the Bald Eagle's 2700% increase. While Breeding Bird Survey (BBS) data also reveal a healthy increase in Ferruginous Hawk numbers (Sauer et al. 1997), it remains a mystery as to how that increase could translate into anything close to 6000% over 34 years. (Incidentally, Colorado is not alone among plains states witnessing dramatic increases in the numbers of Ferruginous Hawks on Christmas Bird Counts.) We must dig deeper for an explanation than the mere possibility of a rebounding population.

From counts 1962 to 1970, the 7-year floating average of all Ferruginous Hawks reported from the Boulder, Colorado Springs, Denver, Ft. Collins, Grand Junction, and Longmont counts never exceeded two birds per count year. When starting from numbers as small as these, we frequently see extremely large increases (conversely, we also often see extirpation) because there is just about no place to go but up! Thus, while a 6000% increase looks great on paper, it was possible only because the initial numbers were so tiny.

Equally important is the likelihood that field identification of Ferruginous Hawks was a skill not as well-developed in the early 1960s as it was in the late 1990s. Prior to the 1980s, when a couple of raptor-identification guides became available, many of us possessed only the most rudimentary skills in raptor identification. It seems reasonable to suspect that Ferruginous Hawks were misidentified often as Red-tailed Hawks. During the early 1960s, a "loss" of

less than two birds per year per count through misidentification would have cut the overall percentage increase in half!

On the other hand, at least one critical factor--declines in the number of prairie dog colonies--throughout the 40 years (and still occurring today) should have resulted in *decreased* numbers of Ferruginous Hawks in the count circles from which Ferruginous Hawk data were drawn. A number of authors speculate that habitat degradation due to cultivation and other anthropogenic activities that eliminate small mammals have resulted in at least local declines of Ferruginous Hawks (Bechard and Schmutz 1995). Given that prairie dogs are important prey for wintering Ferruginous Hawks in some regions, the apparent increase in Ferruginous Hawk numbers while prairie dog colonies disappear seems paradoxical. With many researchers now focusing their funding and efforts on wintering populations of Ferruginous Hawks and prairie dogs, perhaps explanations will follow.

Ring-necked Duck (*Aythya collaris*)

Once regarded by early ornithologists Cooke (1897), Sclater (1912), and Bergtold (1928) as one of Colorado's rarest duck species, the Ring-necked Duck appears to have undergone a dramatic increase in Colorado (Fig. 1g). At least as early as the 1960s, Bailey and Niedrach (1965) noted that this duck species seemed more common than its reputation led them to believe. They speculated that the species' apparent scarcity might have had more to do with observers confusing Ring-necked Ducks with Lesser Scaup. Although Ring-necked Ducks now appear on most Colorado CBCs, from 1959 to 1967 they were recorded on an average of only two counts (of Boulder, Colorado Springs, Denver, Durango, Ft. Collins, Grand Junction, and Longmont) annually. During recent years, however, the species' auspicious increase in numbers has shown signs of abating.

A 1900% increase in 7-year averages from 1962 to 1995 exceeds the apparent increase in numbers of Common Goldeneyes by a factor of nearly five. One could argue that an increase in reservoir area within the CBC areas has afforded Ring-necked Ducks ample opportunities to increase their numbers, but if that were true, then why haven't Common Goldeneyes increased similarly? Perhaps Colorado's reservoirs provide some advantage to Ring-necked Ducks. On the other hand, Ring-necked Ducks are believed to be quite adaptable to habitat changes and readily seek new habitats (Hohman and Eberhardt 1998). Furthermore, Common Goldeneyes are suspected of experiencing habitat degradation on both the wintering and breeding grounds (Eadie et al. 1995), thus their overall populations may be depressed.

Ring-necked Pheasant (*Phasianus colchicus*)

No species' fortune better illustrates the story of Colorado's urban expansion than that of the Ring-necked Pheasant. Abundant even close to cities as recently as one or two generations ago, the pheasant is now all but absent along the Front Range and throughout much of the state. For example, only one Ring-necked Pheasant has been counted on the Colorado Springs CBC since 1985. For 1995, the 7-year average of pheasants on the Boulder, Colorado Springs, Denver, Ft. Collins, Grand Junction, and Longmont counts measured only 22% of the 7-year average for 1962. Due to captive-rearing and releases in the Grand Junction area, the majority of pheasant observations came from the Grand Junction CBC. By removing Grand Junction birds from the 7-year averages, the number of pheasants counted in 1995 measures a minuscule 8% of those counted in 1962. Despite the releases around Grand Junction, urban growth of the Western Slope's largest city will, in all likelihood, drive even those birds into increasingly marginal habitat. Adding insult to injury, the nearly universal transition from farming between fencerows to farming between county roads leaves the few remaining pheasants short of adequate winter cover. Although the Ring-necked Pheasant is an exotic species, its demise offers one barometer of the recent land-use changes in Colorado, changes that have critical implications for a number of native species.

Cassin's Finch (*Carpodacus cassinii*)

Talk to long-time Colorado field ornithologists at length and eventually you will hear the tale of how much more abundant Cassin's Finches were in previous years. What you may not hear, however, is that these impressions are gathered more from observing winter invasions into residential neighborhoods than from hard data extracted though careful monitoring on the breeding grounds. The graph of 7-year averages from the Boulder, Colorado Springs, Denver, Durango, Ft. Collins, Grand Junction, and Longmont CBCs (Fig. 1i) raises more questions than it answers. Does the bulge from 1980 to 1990 merely represent a a high in long-term cycles of their populations? If so, how long are the cycles? Does the graph reflect a real downward trend in population? Are increasingly large numbers of Cassin's Finches stopping short of traditional winter ranges to take advantage of the now-abundant feeding stations in the foothills and mountains?

When we look at the actual numbers for individual count years, the following counts stand out: 1961 (774 birds), 1964 (1559 birds), 1985 (1753 birds), 1988 (737 birds), and 1997 (846 birds). In no other count years did the total numbers of Cassin's Finches from the seven CBC circles exceed 409 birds! The average number of Cassin's Finches counted per year over the 40-year interval is 274 birds. However, the median (less influenced by the five large irruption years) is only 115 birds.

Rosy-Finches (*Leucosticte* species)

If the Cassin's Finch leaves us with more questions than answers, the trend of the rosy-finches seems more definitive. Unfortunately, the trend appears to be a downward one. I abandoned the approach of using 7-year averages with rosy-finches for a variety of reasons. First, of the seven count areas I used for the other species, only the Denver CBC yields reasonably regular sightings of large numbers of rosy-finches (presumably due to the presence of winter habitat at Red Rocks Park). Second, two Colorado counts that historically yielded very large numbers of rosy-finches—Pikes Peak and Gunnison—do not have long and uninterrupted histories dating back to count 1959. Finally, rosy-finch numbers (especially outside of Gunnison) fluctuate wildly, even more than Cassin's Finch numbers, between count years. Because of these factors, I elected simply to list high and low counts of rosy-finches in the last 40 years on the Gunnison and Pikes Peak counts.

On the Pikes Peak count, large irruptions occurred in 1969 (1679 birds), 1987 (930 birds), and 1988 (740 birds). Low count years included 1965 (0 birds), 1971 (3 birds), 1980 (11 birds), 1981 (0 birds), 1983 (0 birds), 1994 (15 birds), 1995 (0 birds), 1996 (2 birds), 1998 (2 birds). Overall, counts from the 1990s have yielded sharply lower averages than counts from the 1960s to 1980s. Numbers from the Gunnison count are perhaps a bit more telling. Large winter populations were almost the rule from 1977 to 1990. Since that time, however, only the 1993 and 1997 counts have produced totals above the overall median. Counts from these last nine years have substantially reduced both the mean and the median for the entire 30-year count history.

Once again, we must ask whether birds are stopping short of traditional wintering grounds in favor of feeding stations at higher elevations emerges. Even the drop in numbers in Gunnison might be the result of increased numbers of feeders at sites such as Crested Butte and Almont. Unfortunately, this question remains unanswered, but perhaps long-term monitoring at both feeders and in more typical winter haunts will reveal some clues.

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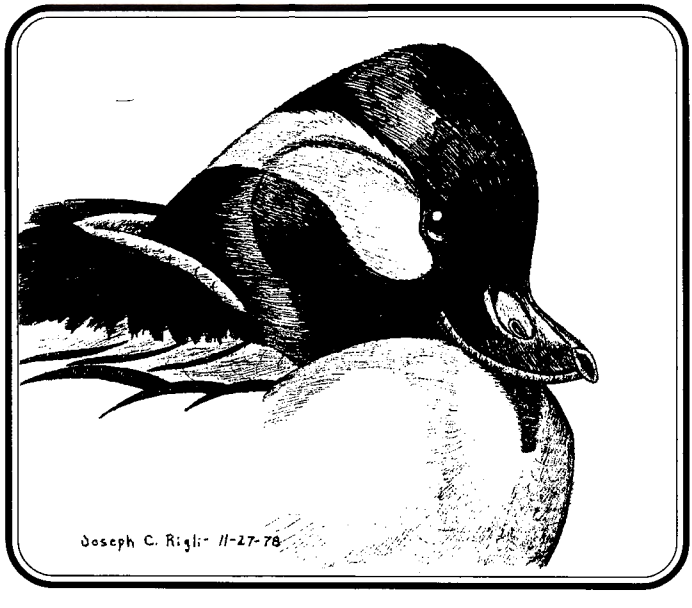


Bufflehead
by Joseph Rigli

Of Legumes and Grackles

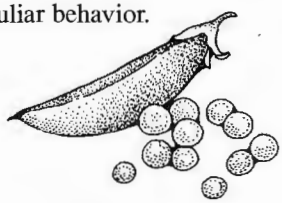
Alan Versaw
403 Maplewood Drive
Colorado Springs, Colorado 80907

On 18 July 1999, a rather unusual, even comical, event took place in my backyard, courtesy of an adult male Common Grackle (*Quiscalus quiscula*). My attention was first summoned by the appearance of a grackle flying into our backyard with a large, bright green item in its bill. At first I thought the bird was carrying a hornworm (*Manduca* sp.)--the cross section of the green object certainly fell within normal tolerances for a hornworm carcass. Delighted that this grackle had stumbled onto an endearing behavior, I scrambled across the kitchen for my binoculars to take a better look. I could see, however, that no such fortuitous event had taken place; instead of bearing a hornworm, the bird was bearing a pea pod--pilfered, no doubt, from a neighbor's garden. Nonetheless, a pea-thieving grackle struck me as a bit unusual, so I sat down to see what would transpire.

Almost immediately, the grackle settled onto the grass and began relieving the pod of its peas. While one might expect a bird as deft-of-bill as a grackle to approach such a task by dismembering the pod, this bird had different designs. He extracted the first couple of peas rather easily by repeatedly squeezing the pod with his bill at a point just behind the pea closest to the open end of the pod until the pea popped out. As each successive pea lay farther from the open end, the bird experienced more and more difficulty extracting them. He even tried, momentarily, shaking the pod, but without the desired results. With grackle as with human, however, necessity quickly became the mother of invention, and when the bird could no longer extract additional peas solely through the use of his bill, he placed a foot on the closed end of the pod and resumed squeezing the pod with his bill to push out the remaining peas. The last peas required as many as 10 or 12 squeezes before they emerged from the pod, but in the end, all the peas had been extracted.

His meal completed, the grackle took wing with pod in bill, but his realization that the pod was empty quickly caught up with him and he promptly let the pod fall to the grass. I ventured outside to inspect the pod and found it much softened by the grackle's work. For a species of bird that routinely severs the necks of smaller birds, it would have been simple work to tear the pod to shreds. So why didn't he?

I returned inside to the comfort of a chair by the kitchen window and tried to piece together a compelling explanation for what I had just witnessed. Finding none, I resolved to keep a better watch over my own garden in hopes that I might see a repetition of the grackle's behavior. By the end of the summer, however, I was left to conclude that the only thing in shorter supply than explanations were repetitions of the grackle's peculiar behavior.



Gull Test

Can you identify all the gulls in the photogrpah above? Ok, now determine the birds' ages, plumages, and what time of year it was...

by Steve Dinsmore

Field Trip in San Luis Valley

John and Lisa Rawinski
0239 Cotten Lane, Monte Vista, Colorado 81144

Sandhill Cranes and coyotes heralded the dawn as our birding trip began at Monte Vista National Wildlife Refuge (NWR) on Saturday, 11 September 1999. Joining us for the day afield were Pearl Sandstrom-Smith and Clif Smith of Pueblo; Joyce Takamine and Martin MacRoberts from Los Alamos, New Mexico; Jim and Irene Thompson from La Junta; and Jerry Poe from Monte Vista.

At Monte Vista NWR, we were delighted to find a Virginia Rail--Pearl had used the "clicking-rocks technique" to draw the bird from the cattails. We had outstanding views of this secretive marsh bird. We then worked on identifying eclipse-plumaged ducks, which all resembled variously sized female mallards. With some scrutiny, we were able to identify most of the ducks--female Blue-winged and Cinnamon teal were the most difficult. We also found a Pectoral Sandpiper, which was unusual for the area.

Along the row of willow trees near Highway 15, we found some interesting migrants, including a female Williamson's Sapsucker, a Western tanager, Wilson's Warblers, and many White-crowned Sparrows and Warbling Vireos. A darting Prairie Falcon zipped quickly over the trees, giving us a brief view of the bird's characteristic, dark armpits, which contrasted with its light undersides.

From Monte Vista NWR we traveled to the Rio Grande National Forest to look for birds of the foothills and mountains. We found MacGillivray's Warbler, Evening Grosbeak, Red-naped Sapsucker, Cordilleran Flycatcher, Lincoln's Sparrow, and Western Wood-Pewee.

In the afternoon, we birded at Blanca Wetlands and San Luis Lake while the clouds thickened overhead. These areas provided us with some excellent views of peeps, including Semi-palmated, Western, Least, and Baird's sandpipers. We braved a bit of lightning as we ambled at San Luis Lake to see a Sanderling, a Semi-palmated Plover, Ring-billed Gulls, and Western Grebes.

Overall, we saw 114 species, which is an excellent total for mid September. Fall birding data are relatively scarce for the San Luis Valley, and we believe that we added some notable species to our records for the Valley.

Recent Ornithological Literature Pertaining to Colorado, No. 7

Thomas G. Shane, Editor
1706 Belmont Garden City, Kansas 67846

If the reader is aware of any paper regarding Colorado birds in journals not reviewed regularly in this section, I would appreciate a reprint or a full citation for the paper so that I may include it in this feature.

Skagen, S.K. 1997. **Stopover ecology of transitory populations: the case of migrant shorebirds**. Pages 244-269 *in* F.L. Knopf and F.B. Samson, (Editors). *Ecology and Conservation of Great Plains Vertebrates.* Ecological Studies, Vol. 125. Springer-Verlag, Inc., New York.

The editors point out that a volume on the distribution and basic ecology of native vertebrates of the Great Plains had been lacking, thus they invited some of the leading biologists of various fields and to accomplish that task. Skagen's contribution (Chapter 10) is the culmination of more than a half decade of research and numerous publications on the stopover ecology of shorebirds.

Thirty-seven species of shorebirds use the interior plains as a migration corridor. Unlike the coastal migrants that exhibit fidelity to specific migratory-stopover sites, midcontinent migrants must take advantage of unpredictable resources and exploit new sites upon each migration. In the interior, shorebirds are more dispersed, occur in smaller flocks, and are more unpredictable than coastal migrants.

Migrant shorebirds on the plains do not completely replenish their fat reserves at any given location and must use a number of stopover sites while traversing the middle of the continent. A higher percentage of intermediate-distance migrant shorebirds (as opposed to long- and short-distant migrants) travel through Colorado than in surrounding states. Loss of wetland habitat is a major concern, and a large, integrated wetland-management scheme is a priority for shorebird conservation.

TWO REVIEWS, TWO PERSPECTIVES

WHAT *IS* THAT BIRD I HEAR SINGING? A REVIEW OF *BIRD SONGS OF THE ROCKY MOUNTAIN STATES AND PROVINCES*

Leon Bright
636 Henry Avenue, Pueblo, Colorado 81005

***Bird Songs of the Rocky Mountain States and Provinces*--a boxed set of three compact discs and an accompanying booklet by Robert Righter and Geoffrey A. Keller, Cornell Laboratory of Ornithology (1999); retails for $30 - $36.**

Those who have volunteered to conduct Breeding Bird Surveys for the U.S. Geological Survey's Patuxent Wildlife Research Center know they must start counting before there is enough daylight to allow the observer to see birds well. Worse, the birds are generally obscured by foliage for the next four hours. What to do? Listening for their songs and calls can be invaluable for making field identifications. Needing to know birds by song or call, however, puts most beginning, many intermediate, and even a few advanced birders at a disadvantage.

The need to be able to identify bird vocalizations has long been recognized, so when it became technically possible to make recordings in the field, the Cornell Laboratory of Ornithology made the first audio contribution to the Peterson Field Guides by issuing bird songs pressed on vinyl "records." These were primitive by today's standards, but they helped the general public realize how much the knowledge of bird vocalizations can enrich the pleasure of birding. Unfortunately the vinyl-record medium made finding specific calls very difficult, and the monotonous announcements of species' names followed by short, scratchy fragments of song, one after another, was a great inducement for sleep. The development of inexpensive audio tape cassettes and new field recordings improved the quality and management of recorded material, but it wasn't until the advent of compact disks (CDs) that the sound quality really improved. CDs also allow the listener to find a particular bird species of interest by simply pressing a button or two.

For these and other reasons, many western birders waited impatiently for the CD publication of *Bird Songs of the Rocky Mountain States and Provinces.* Periodically, Bob Righter alerted Colorado's field ornithologists of the CD sets' pending appearance, and once the set was available, birders and ornithologists eagerly snapped up their copies. Purchasers found a nicely packaged set of three CDs accompanied by a very helpful booklet. Unlike many other bird-song CDS, each species has its own sound track with an assigned number. By looking in the booklet, one can find the track number for a given species and then key that number into the CD player's remote control (not applicable on portable players) to hear that species. The booklet also provides a brief paragraph pertinent to each audio selection. The general sound quality of the recordings is truly excellent. Obviously, the authors and personnel at the Cornell Laboratory of Ornithology spent a great deal of time sifting through seemingly endless amounts of recorded material to find the best selections for each species.

Although it was disappointing to discover that the CDs followed a list-type format that mirrors those used on the vinyl records several decades ago, the format does allow for inclusion of much material--259 species found in the mountain west of Canada and the U.S. The major drawback to this format is its inadequacy for learning new bird vocalizations. The time-proven approach for learning to recognize sounds or images involves repetition, association, and changing perspectives, none of which is provided by this publication. A good example of pedagogically oriented materials for learning bird vocalizations is found in *Western Birding by Ear* by Richard K. Walton and Robert W. Lawson, published in 1994 as part of the Peterson Field Guides series. The three CDs of *Western Birding by Ear*, however, include only 90 species found west of the Great Plains.

Perhaps the beginner would need to study both *Western Birding By Ear* and *Bird Songs of the Rocky Mountain States and Provinces.* However, for the birder who is still learning the songs and calls of relatively common birds--which includes most of us--a series of nine teaching CDs would be much more useful, although three times as expensive. Since learning bird vocalizations well can be a slow process, obtaining three CDs per year would be a reasonable goal. *Bird Songs of the Rocky Mountain States and Provinces* is an excellent reference tool, but falls short of the teaching instrument that beginners need.

Bird Songs of the Rocky Mountain States and Provinces by Robert Righter and Geoffrey A. Keller: A Review

Bill Lisowsky
2919 Silverplume Drive, Fort Collins, Colorado 80526
970/225-6827; ncswpl@aol.com

Before sharing my thoughts regarding Robert Righter and Geoffrey Keller's new set of compact disks on *Bird Songs of the Rocky Mountain States and Provinces*, I felt it only fair to let the reader know I have been birding for over 30 years. Also, I already owned three different tape sets for "birding by ear" in the East, West, and Arizona before writing this review. Thus, I truly doubted that I would ever want or need another set of tapes. In fact, I usually use my tapes only for an occasional "spring refresher," or when I need to research something I've heard in the field. Nonetheless, I went into this review of *Birds Songs of the Rocky Mountain States and Provinces* with "my ears open " and worked hard to be objective (bias disclosed) in sharing my opinions about this new birding tool.

After listening to all three of the digitally recorded CDs, I felt there were many positives to offer. First, the undertaking is extensive, and the effort that went into producing a professional product is very obvious. The species list is well designed--an important indicator of its thoroughness--and the selected call notes and songs are excellent. I did find that a few species were omitted, but in all honesty I kept anticipating which species would come next, and if one was skipped, I felt as though something was missing. When I finished listening to the CDs, however, I looked back over the list and decided that the developers had included the right combination of species.

Second, the authors wisely included variations of songs and calls within species instead of repeating the same song or call over and over again. Regional dialects can throw monkey wrenches into the field chorus, but Righter and Keller handled this superbly. For most species, there are three to five complete song repetitions and several calls or scold notes. The excellent booklet that comes with the CDs indicates where each recording was made and the sequence in which each dialect is presented. The authors carefully describe the vocalizations of each species by using helpful key phrases, such as "most common," "nasal, drawn out,"or "harsh trill," and they explain when a given call might be heard

(e.g., flight call, display flight). For some species, they even provide a little historical information regarding the person for whom the species was named.

Third, each CD is packed with longer recordings of fewer species instead of shorter recordings of more species (as in most other audio field guides). I was very impressed by the extensive amount of time devoted to each species, and I liked the resulting pace of each species account. Rather than squeeze quickly repeated songs and calls into 10-second chunks, this acoustic production seems to mimic actual song intervals. I found myself getting ready for the next call in the same way that I do when outside listening to birds--which can actually help the listener with field identifications. For only a few species, including the rosy-finches, did Righter and Keller's treatment seem skimpy compared to the thoroughness with which other species were treated; in these cases at least the primary vocalizations are provided.

Fourth, it will be much easier to work from this single audio guide than to struggle--as I do now--with searching through all my east/west tapes, and the recordings of many species rarely heard (if ever) in the Rocky Mountain region, before finding the species of interest. Each track on the CDs is coded with a unique number that allows you use today's CD-player technology for going directly to a given track without fast forwarding and hunting around for it.

My few negative comments about the CDs are fairly picky. The recordings for a number of highlighted species were distorted by background noise (wind or other species calling simultaneously), although I know of no recording that does not have this problem to some extent. Moreover, it was fun to pick out the "neighbor" species. In a few cases it was clear that the recordings were not actually made in the West--experienced listeners will know that without looking at the notes. However, the eastern dialects are not distracting; rather, they provide a good test for the listener.

I do believe that the utility of Righter and Keller's collection would be limiting if it is the only set you own and you travel widely. They include 259 species, but naturally the focus is restricted to the Rocky Mountain West. Conversely, if you spend most of your time in the Rocky Mountain region and you are struggling to "keep the singers straight," you will find this an excellent reference. I suspect that less experienced birders may be frustrated somewhat at first by the presentation of different songs for a given species--this can be terribly confusing when you are unfamiliar with even the primary songs where you bird. Once you have command of the basics, though, comparing different vocalizations for a given species can prove highly valuable. Therefore, I recommend these recordings even if you are new to birding or have a limited

library of audio resources. It will probably take some time before you feel justified having spent $30-$36 for the set, but if you remain an active birder, I think the CDs will prove their worth.

If you bird predominately in the mountain west, *Bird Songs of the Rocky Mountain States and Provinces* will help you become a better birder. If you already have a good collection of tapes, you may not find any new species in this package, but I am confident that you will find some marvelous new regional variations. We all occasionally hear birds that just do not sound "quite right" compared to their "usual" songs and calls, but because this CD resource contains many more localized recordings than the other productions I have heard, it should help you identify those odd variations. The provision of recordings from other states/provinces could prove especially helpful if you are dealing with stragglers from, or if you are traveling to, other parts of the west where a given species sings a bit differently.

Bird Songs of the Rocky Mountain States and Provinces CD set is an excellent addition to the Cornell Laboratory of Ornithology's Library of Natural Sounds. Robert Righter and Geoffrey Keller have produced a high quality, well-edited product that field birders and researchers alike will find both enjoyable and useful to their respective interests. The best part is that all this information--really a small audio field guide in itself--fits compactly inside a CD case, which makes it easy to take them in your car, or even into the field.

Cedar Waxwings
by Ken Giesen

News from the Field
Summer 1999 Report (June-July 1999)

Tony Leukering
Colorado Bird Observatory
13401 Picadilly Road, Brighton, Colorado 80601
greatgrayo@aol.com

An incredible summer for loons was highlighted by Colorado's first summer record of Red-throated Loon. This is precisely the kind of record that often draws birders to "under-birded" regions and produces additional, locally important records. If that happened in this case, however, the only records I know of are those in which I was involved, as not a single birder sent me a report about this event. Once again, I received very few reports from observers, thus my report is very short--a testament to what happens when the writer has very little material with which to work. I want to emphasize that reporting your seasonal sightings to the COBIRDS listserver, or to the taped telephone hotlines, does NOT constitute reporting to the "News From the Field" column. The availability of COBIRDS as an outlet for information exchange makes it easy to disseminate information quickly, but observer responsibility does not end there. I want to thank Larry Semo (a very recent arrival in Colorado) for his seven-page summer report and extensive documentation of rarities. Hopefully, others will take his lead in future seasons.

Please, send your seasonal sightings (including those of common birds!) directly to me or Peter Gent--I handle the spring and summer season reports, and Peter handles the fall and winter season reports. My contact information is listed above. Peter Gent can receive reports at: 55 South 35th Street, Boulder, Colorado 80303; 303/494-1750; gent@ra.cgd.ucar.edu. What we need to know is: which bird species you've seen (list in AOU taxonomic order--use your CFO checklist as a guide), the dates of your observations, the numbers of birds seen, and the locations of your observations--in that order. All sightings are encouraged and welcomed! **It is important to know what the common birds are doing, so please do not limit your reports to the rare and unusual!** One or two reports of common birds from one or two people is not enough--it is the composite of many reports that gives us a picture of what birds are doing from season to season and year to year. Take a close look at the information presented in my introduction below to understand why and how your reports of common birds become part of that composite picture.

Intensive and extensive summer field work conducted by the Colorado Bird Observatory (CBO) as part of their *Monitoring Colorado's Birds* program

continues to rack up new information on breeding distributions and even which species breed in Colorado. The first record of Franklin's Gull breeding in Colorado was confirmed when Rich Levad of CBO found a few flightless juveniles at Walden Reservoir in North Park. CBO's "good finds," however, were not restricted to breeding birds. While checking for breeding waterbirds at Stagecoach Reservoir in Routt County, Doug Faulkner found a subadult Pomarine Jaeger that he sketched and photographed. More importantly, he has submitted the record with photos to the Records Committee of the Colorado Field Ornithologists.

In 1999, colonial waterbirds returned to breed at Antero Reservoir after it had been dry for two years (to allow for maintenance work on the dam). Good numbers of juvenile American White Pelicans, Double-crested Cormorants, and California Gulls were counted by CBO staff. Unfortunately, a lack of signage on the colony islands, as well as lax enforcement of the regulations prohibiting boat landings on those islands, may be affecting breeding success among the colonial species. On 5 July, I observed a family of four people with three unleashed dogs on the pelican-nesting island, but I was able to intervene before the dogs reached the colony.

The early-season fall migration of shorebirds seemed sparse and relatively late. The water levels of most reservoirs on the eastern plains remained abnormally high after the very wet spring we had, thus much of the usual shorebird habitat was unavailable during early-fall migration. Anyone searching for shorebirds was limited to scanning ephemeral rainpools for their shorebird fixes, thus numbers of many species were well below normal.

The hummingbird species that breed north of Colorado is another group that undertakes a significant southbound flight through Colorado in July. The first individuals of both Calliope and Rufous hummingbirds usually show up around the Fourth of July. This year, the first migrants showed up on time, but there were very few of them. This on-time arrival was then followed by almost two weeks in which there were very few of either species in Colorado, at a time during which the main flight of adult males takes place. Why these hummers were late and in such small numbers is somewhat mysterious, but it might be related to the very late end to winter on these species' breeding grounds. Many observers in Montana and Alberta claimed that the snowpacks at higher elevations in both areas persisted well into June. This could have delayed the onset of the breeding season for these species, producing a late and meager (if reproduction rates were negatively affected) fall migration. Whether this also affected other migrant species, such as MacGillivray's and Wilson's warblers, might escape us, but numbers of many migrants appeared to be depressed from normal numbers at Barr Lake this fall.

Corrigenda: First, I forgot to include in my Spring 1999 report all the records that Jack Merchant sent to me. So, I have included important records from him in the species accounts below (following the summer reports). Second, Brandon Percival pointed out a couple mistakes in the Spring 1999 report that require correction: 1) Common Loon -- the one in Basic plumage on 5/4 was at Two Buttes Res.; 2) Glossy Ibis -- the bird in *Bent* seen by TJ on 5/16 was at Blue Lake, the sightings in *Bent* from 5/9 and 5/16-21 were at Ft. Lyon, and the report of two from *Weld* should have been credited to BPr not BPe; 3) Northern Goshawk -- the bird on 4/7 was at Two Buttes Res., not Cottonwood Canyon; 4) Great Black-backed Gull -- the Cherry Creek Res. bird was seen on 3/2 not 5/2 and the bird wintering in *Kiowa* was present 3/7 not 5/7; 5) Blue-headed Vireo -- the bird seen on 5/11 was in Colorado City, not Pueblo; 6) Carolina Wren -- the bird in *Prowers* was just east of Willow Creek Park, not at LCC (Lamar Comm. College); and 7) Golden-crowned Sparrow -- the bird at Dolores was seen by Myriam Ackley; 8) Northern Cardinal -- the one on the CFO Trip on 5/1 was seen by BPr, not BPe. Also, in the *News from the Field* column in vol. 33, no. 3 of the JCFO (Winter season, 1998-1999), the late bunch (232) of Eared Grebes was at Cherry Creek Res., *Arapahoe*, not at Barr Lake, *Adams*.

Note: For the most part, the reports listed below are unverified and the author does not vouch for their authenticity. Underlined species are those for which the CFO's Bird Records Committee (CBRC) requests documentation (the reporting form appears on the inside of this journal's mailer or you may download it from CFO's Home Page at: http://www.frii.com/~hopko).

Abbreviations used: Italicized place names are counties. A&R = Andrews and Righter (1992); Alternate = alternate (breeding) plumage; Atlas = Kingery (1998); Basic = basic (winter) plumage; CBO = Colorado Bird Observatory; Chatfield = Chatfield Res., *Jefferson/Douglas* counties; CNG = Comanche National Grassland; CVCG = Crow Valley Campground (in PNG); LCC = Lamar Community College; ph. = photograph submitted; NG = Pawnee National Grassland; NWR = National Wildlife Refuge; RC = CFO Bird Records Committee. The initials of observers (first and last initials--unless otherwise noted) who submitted reports are listed in parentheses, and the names of all observers cited are listed at the end of this article; mob = many observers.

Red-throated Loon: This was the first Red-throated Loon ever reported in summer in Colorado. The bird--in Alternate--occurred at Wolford Mtn. Res., *Grand*. Apparently, it was discovered in late June or early July and was observed well into the fall season by numerous observers. I was not provided with specific dates of occurrence, but the bird was present prior

to 7/21, when R. Levad, B. Benter, and I observed it. Hopefully, with the large number of observers making the trip to see the bird, the CBRC will receive numerous documentations.

Pacific Loon: A Pacific Loon in what was reported as Definitive Basic might have spent the summer at Baseline Res., *Boulder*. It was reportedly present from at least a couple days prior to 7/29, when L. Semo observed it and documented it in four pages of detail--excellent! Although it was not found until the end of the period, the bird possibly could have been present well before then. The bird was reported as an adult, but separating Basic adults and First Alternate immatures can be quite tricky. The molt sequence of young loons is quite variable among individuals and is different in timing from that of adults. Juvenal plumage persists well into winter and often into spring. The First Pre-Alternate molt in loons--aside from being much later than it is in adults--is usually limited, but very variable in extent.

Common Loon: One in Alternate was photographed on Lake Dillon, *Summit*, on 6/12 (BB); this bird was not seen subsequently, thus it was probably a very late migrant. Spring report -- One was at Dotsero, *Eagle*, 4/23-5/2 (JM) for a rare Western Slope spring record.

Horned Grebe: Spring report -- Up to two were at Dotsero, *Eagle*, 5/3-16 (JM)--also a rare spring record for the Western Slope.

Eared Grebe: Two on an unnamed pond east of Elizabeth, *Elbert*, on 6/12 (TL) provided the suggestion of breeding in a location undocumented by the Atlas. CBO's data from 1999 are highlighted by the 987 adults and 300 juveniles at Walden Res. on 7/21 (RL, TL).

Western Grebe: A holdover from the spring season that stayed into the fall season, a Western Grebe spent the summer on a pond just north of Silverthorne, *Summit* (SB).

American White Pelican: On 7/5, 33 juveniles were counted at Antero Res., *Park* (TL, SB).

Brown Pelican: Two or three were present at Blue Lake, *Bent/Kiowa*, and John Martin Res., *Bent*, most of the summer. Specific reports on these birds were almost non-existent, but did include one subadult on 7/2 at Blue Lake (NK).

Snowy Egret: One was at Gypsum Ponds SWA, *Eagle*, in early June.

Double-crested Cormorant: A first-year bird was at an unnamed pond east of Elizabeth, *Elbert*, on 6/12 (TL); A&R reported no specific records for *Elbert*. Spring report -- Four birds were found at Dotsero, *Eagle*, this spring; single adults on 4/11 and 5/4 and two first-year birds 5/8-9 (all JM). The observer reports that 1999 was only the fourth year since 1987 that he has seen this species in *Eagle*.

Trumpeter Swan: One apparently spent the summer in *Boulder*, but specific details were not received, other than it was present at least on 7/10 (LS).

American Wigeon: A female with a brood of six ducklings was on Stagecoach Res. on 7/14 (TL, LZ). Although A&R report this area in the summer range of this species, the Atlas did not confirm the species in *Routt*.

Ring-necked Duck: Three female-plumaged birds at Wolford Mtn. Res., *Grand*, on 7/26 (TL, DF) might have been post-breeding wanderers from higher-elevation breeding sites.

Bufflehead: A female was on a small pond near Old Park, *Grand*, 6/23 (TL). The species is rare in summer away from the only known breeding area in Colorado along the *Routt-Jackson* border.

Hooded Merganser: Three females were reported--one on the pond just south of Jumbo Res. in *Logan* on 6/2 (NK), one at Walden Res., *Jackson*, on 7/21 (TL, RL), and another at Wolford Mtn. Res., *Grand*, 7/26 (TL, DF).

Common Merganser: Two female-plumaged birds at Blue Lake, *Bent/Kiowa*, on 7/25 (LS) were at an odd location for summer.

Osprey: Spring report -- The nesting pair continue at Sweetwater Lake, *Garfield* (JM). The same observer reports that another pair started building a nest at Dotsero, *Eagle*, in spring 1998 and continued in spring 1999.

Mississippi Kite: After having been found breeding in Holyoke, *Phillips*, during field work for the Atlas, three birds were there again this year, 7/9 (SH).

Bald Eagle: A nest with at least one juvenile was found on the Animas Breeding Bird Survey route southeast of Durango, *La Plata*, 6/9 (DF).

Broad-winged Hawk: A juvenile (1998 youngster) was found at Castlewood Canyon State Park, *Douglas*, on 7/4 (LD).

Prairie Falcon: One in southwestern *Cheyenne* on 7/25, was interesting considering that the species is not listed in the Atlas for that county. However, individuals of this species disperse from breeding sites in July and August and have been seen well outside the species' normal range at that time (e.g., above treeline and as far east as Michigan).

Black Rail: As many as seven were heard in marshes in *Bent* during the summer (mob).

Virginia Rail: One was singing around noon on the South Fork Sand Arroyo at the CR 3 crossing, *Baca*, 6/2 (TL). The species is not listed in the Atlas for that county.

Black-necked Stilt: Spring report -- J. Merchant found two at the Eagle sewage ponds, *Eagle*, on 5/10. There are no records for the county reported in A&R and these were the first the observer has "ever seen in or near Eagle County."

Greater Yellowlegs: North Park, *Jackson*, got into the act of early fall shorebird migrations, as two Greater Yellowlegs were found at Walden Res. 7/21 (TL, RL).

Lesser Yellowlegs: Six were at Walden Res. 7/21 (TL, RL).

Solitary Sandpiper: One was southeast of Eagle, *Eagle*, on 5/5 (JM) for one of few county records.

Upland Sandpiper: Three birds lingered well into the summer on a recent prescription burn at CNG, with one pair nesting there (KG). The Atlas did not have either Probable or Confirmed records for this species south of *Washington* and *Yuma*; A&R reported only former breeding records for the CNG area.

Marbled Godwit: One was at MacFarlane Res., *Jackson*, 7/21 (TL, RL).

White-rumped Sandpiper: Three were at Rio Blanco SWA, *Rio Blanco*, on 6/7 for one of exceedingly few Western Slope records (DF, RL).

Red-necked Phalarope: Spring report -- One (gender?) was at Eagle, *Eagle*, on 5/10 (JM). A&R only report two records for that county.

Pomarine Jaeger: Quite the surprise, a light-morph subadult (probably a third-year bird, but possibly an advanced second-year) was at Stagecoach Res., *Routt*, 6/17 (DF ph.). Subadult jaegers do not breed and most stay in their winter range during the breeding season. Thus, this record is doubly interesting.

Laughing x Ring-billed Gull: An exceedingly worn and faded bird in First Alternate that was finally photographed in August at John Martin Res., *Jackson,* (CW) may have been responsible for the summer reports of Laughing Gull at that site.

Franklin's Gull: Rich Levad found a flightless juvenile at Walden Res., *Jackson*, 7/20. This constitutes the first confirmed breeding record for Colorado. The next day, there were four flightless juveniles and eight others that had apparently fledged recently (RL, TL).

Bonaparte's Gull: Spring report -- One in "winter plumage" was at Dotsero, *Eagle*, on 5/4 (JM) for one of very few records in that county.

California Gull: This species bred at all historic locations this summer and seemed to experience good reproductive success at most sites. There were > 21 at Antero Res. (7/5 - TL, SB), 204 at Walden Res. (7/21 - TL, RL), and 74 at MacFarlane Res., *Jackson* (7/21 - TL, RL). I did not hear about counts at the other colonies.

Great Black-backed Gull: Apparently, at least one individual (a bird in Second Alternate?) summered in *Bent* (mob).

Caspian Tern: One was at Blue Lake, *Bent/Kiowa*, 7/24 (LS).

Forster's Tern: Spring report -- Three were at Dotsero, *Eagle*, on two dates, 4/27 and 5/7 (JM). This is yet another species for which there are very few *Eagle* records.

Black Tern: CBO's monitoring-project work this year yielded only one pair of breeding Black Terns--at Walden Res., *Jackson*, 7/21 (RL, TL). I hope that I am wrong, but I suggest that this species may be nearly extirpated as a breeding species in Colorado. If anyone knows of other sites where

Black Terns are nesting, please let CBO know.

Band-tailed Pigeon: Up to four were in Steamboat Springs, 7/14-20 (TL, LZ); A&R did not report this species this far northwest, but the Atlas does list the species as a Possible breeder in two blocks in *Routt*.

Eurasian Collared-Dove: L. Semo documented the continued presence of this species in Rocky Ford, *Otero,* with two live ones and one road-killed bird found there 7/25.

Yellow-billed Cuckoo: One singing 6/12 at Hugo, *Lincoln*, provided one of few specific records for that county (TL).

Eastern Screech-Owl: One was seen and heard 6/2 in Palmer Lake, *El Paso* (LS). Hopefully, the observer will submit this record to the RC, as this would be only the third record for that county and is well outside the range--as it is currently known--of this species.

Burrowing Owl: CBO attempted to conduct a statewide census of breeding colonies of this species in summer 1999. While this is not the place for all the details, I can report that the attempt was quite successful; at least 406 colonies were found in 30 counties containing a bare minimum of 2546 owls (SH, TV, SG, and many others). These numbers actually EXCLUDE birds on federal properties, such as the Rocky Mountain Arsenal NWR, PNG, and CNG (which obviously support large numbers of owls). Good job!

Boreal Owl: A nest of this species was found in one of the owl boxes on the Uncompahgre Plateau, *Montrose*, 6/13 (RL) providing the first local occurrence and nesting record. Eight of the roughly 250 owl boxes on the Grand Mesa (*Mesa/Delta*) were occupied in 1999, producing approximately 13 fledglings (CS, TH, RL).

Common Poorwill: Spring report -- A report of a dead bird found on a road at PNG, *Weld*, 5/11 (BL) was also accidentally omitted from the spring 1999 report. This provides yet another spring record of this species--an under-reported migrant--on the eastern plains.

Calliope Hummingbird: The first of the fall migrant showed up at a *Summit* feeder 7/4 (TL).

Willow Flycatcher: Spring report -- Two in Eagle, *Eagle*, on 5/22 were about 1½ weeks earlier than normal (JM). The date graph in A&R agrees with the observer in pronouncing these birds as early.

Black Phoebe: A total of 22 was counted by C. Dexter on his annual "floating" census of this species on the Dolores River between Naturita and Uravan, *Montrose*, 7/1. The same observer found a nest with nestlings in *Garfield* where he found a nest in 1998.

Cassin's Kingbird: A single bird was found along East Bijou Creek just south of SR 86, *Elbert*, 6/12 (TL); on the same day, another pair was west of there on the Palmer Divide where it crosses SR 86 east of Comanche

Creek, *Elbert* (TL). The Atlas reported what may have been the first record of this species for *Elbert.*

Scissor-tailed Flycatcher: A pair built and attended a nest between Colorado Springs and Black Forest during June (BBH, mob). Unfortunately, the female was found dead on the nest in late June. The male lingered in the area for a while thereafter. There are few actual nest records for this species in Colorado (see the Atlas), particularly outside the regular area of occurrence along the Cimarron River in the extreme southeastern corner of the state.

Gray Vireo: For yet another breeding season, CBO focussed on this species in Colorado National Monument, where 160 singing males, most of which were paired, were detected (GG, AL). Three more were found about 32 km west-northwest of Maybell, *Moffat,* (6/2) during monitoring work conducted there (DF); this location is well east of sites where this species was found during field work for the Atlas.

Red-eyed Vireo: One just northwest of John Martin Res., *Bent,* 7/25 was in an odd place for that date (LS).

Blue Jay: One was found in Georgetown, *Clear Creek,* 6/17 (SB). Spring report -- One in Eagle, *Eagle,* 5/26 (JM) provided a rare mountain record.

Purple Martin: As part of CBO's monitoring efforts, a statewide survey of nesting sites occupied historically by Purple Martins was conducted in 1999. Levad and others counted 174 at 37 sites in seven Western Slope counties (RL, GL, DB, KP, DF, DH, VZ).

Bank Swallow: One was at Wolford Mtn. Res., *Grand,* on 7/26 (TL). The date is right on target for this early-fall migrant, although the location is odd--there are very few records for the mountain parks (other than the San Luis Valley). Spring report -- One individual southeast of Eagle, *Eagle,* was incredibly early on 4/10 (JM). As many as five had returned to colonies west of Gypsum, *Eagle,* by 5/12 (JM).

Bewick's Wren: Two were found on a CBO monitoring transect in piñon-juniper habitat just north of Wolcott, *Eagle,* 6/24 (TL). A&R maps this species as occurring only in the extreme northwestern and southwestern corners of *Eagle* County, and the Atlas does not list a single breeding record in the county.

Eastern Bluebird: One of the more amazing records of the summer involved TWO nesting pairs of Eastern Bluebirds at the Tiara Rado Golf Course in Grand Junction, *Mesa* (MH, fide RL). The observer first found them on 5/8 and there were still numbers of the species present at this location in September. This provides the first nesting record for the Western Slope. Hopefully, the observer(s) will send documentation of this outstanding event to the RC.

Veery: Four singing males were in perfectly suitable habitat along the Williams Fork, just above Williams Fork Res., *Grand*, 6/23 (TL). Although Veerys nest in several areas of *Grand*, the Atlas lists the species for just one sampling block in that county (the random process of selecting sampling blocks simply missed the areas where most Veerys occur). Another singing male was found along Tarryall Creek, north of Como, *Park*, on the Boreas Breeding Bird Survey route, 6/19 (SB) and 7/1 (TL, DF). This species has been dependable at that site in the past few years.

Gray Catbird: One was in reasonably suitable habitat just north of U.S. 160 along the Piedra River in western *Archuleta*, 7/1 (DF, TL). A&R did not map any records in *Archuleta*, and, in that county, the Atlas lists the species as occurring only in the Pagosa Springs area.

Bendire's Thrasher: One was reported from western San Luis Valley in late June, but I received no specific details on the sighting.

Curve-billed Thrasher: One was in Redcliff, *Eagle*, 6/17-18 (JA ph., BB, JM) for a first county record.

Cedar Waxwing: An incubating adult was found on a nest at State Bridge, *Eagle*, 7/14 (TL). The Atlas does not list the species as occurring in the county, and A&R report only a small number of migration records for *Eagle*.

Chestnut-sided Warbler: A singing male was found south of Domes Lake SWA, *Saguache*, 6/25 (HK) in a clearcut regenerating with aspen in a spruce-fir forest.

Grace's Warbler: A singing male was on territory throughout June in eastern-most *Custer* (PG); this area has a history of at least sporadic breeding by this Ponderosa-loving species.

Ovenbird: At least 14 singing males were counted in Colorado this summer, with at least six occurring in the Castlewood Canyon State Park area five in and near Roxborough State Park, *Douglas*, (AB), and a fledgling in eastern-most *Custer* (PG).

Northern Waterthrush: One was at Edwards, *Eagle*, 5/15-20 for one of few mountain records (BB ph.)

Kentucky Warbler: A singing male was present in Colorado City, *Pueblo*, for much of the summer after being found on 6/29 (DS).

Hooded Warbler: A male was present all summer at Gregory Canyon, *Boulder* (mob). This bird was observed "chipping loudly and carrying food" on 7/22, behavior indicative of local nesting (LS). Was this the male that nested at the same location in 1998 and provided the first breeding record for this species in Colorado? Only banding would tell us for sure. Did anyone see a female at that location in 1999?

Green-tailed x Spotted Towhee: An individual towhee, apparently of mixed parentage, was found near Old Park, *Grand*, 6/23 (TL). This is the second

consecutive season that a hybrid individual has been detected in Colorado.

Sage Sparrow: At least two were at the rest area along U.S. 160 northeast of Ft. Garland, *Costilla*, 6/25 (RL) and 6/30 (DF, TL). If these singing birds were nesting locally, the records extend ever-so-slightly their known breeding range to the northeast from of what is depicted in the Atlas.

Fox Sparrow: A singing male was in appropriate habitat along Pass Creek, west of Old Park, *Grand*, 6/23 (TL). Neither A&R nor the Atlas show the species as breeding in the area.

White-crowned Sparrow: A singing male of the mountain race was a surprise at Hugo, *Lincoln*, on 6/12 (TL). That date is incredibly late for the species on the eastern plains of Colorado.

Rose-breasted Grosbeak: Spring report -- One (gender?) visited a feeder south of Wolcott, *Eagle*, 5/18-19 (PH, fide JM).

Painted Bunting: The male at Cottonwood Canyon, *Baca*, returned for the sixth year in a row and was singing on territory 6/2 (TL). An Indigo Bunting and a Lazuli x Indigo hybrid singing a Lazuli song were all audible from the parking/camping area that day.

Bobolink: Though detailed numbers will be reported elsewhere, CBO and numerous cooperators censused this species in Colorado this summer. They found 188 adults (168 males) at 15 sites in four counties, with the largest colony (Carpenter Ranch, *Routt*) comprised of 41 males.

Scott's Oriole: CBO staff tallied a total of 13 adults at 10 sites near the Utah border from northwest of Rangely, *Rio Blanco*, south to McElmo Creek, *Montezuma* (RL, CD, DF, SA).

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Cited Observers

Susan Allerton, John Amoroso, Brad Benter, Sue Bonfield, Ann Bonnell, Dan Bridges, Coen Dexter, Doug Faulkner, Peter Gaede, Scott Gillihan, Glenn Giroir, BB Hahn, Pat Hammon, Mike Henwood, Dona Hilkey, Tom Holland, Scott Hutchings, Harry Kahler, Tina Jones, Nick Komar, Gwen Lee, Andy Leukering, Tony Leukering, Rich Levad, Bruce Lyon, Jack Merchant, Brandon Percival (BPe), Kim Potter, Bill Prather (BPr), Chris Schultz, Larry Semo, Dave Silverman, Tammy VerCauteren, Louise Zemaitis, Vic Zerbi.

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