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# Colorado Birds

The Colorado Field Ornithologists' Quarterly



Remembering Abby Modesitt  
Chipping Sparrow Migration  
Sage-Grouse Spermatozoa



Colorado Field Ornithologists  
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**Chair:** Larry Semo, Westminster; [cbrc@cfo-link.org](mailto:cbrc@cfo-link.org)

**Secretary:** Doug Faulkner, Arvada (non-voting)

**Committee Members:** John Drummond, Monument, 2013\*; Peter Gent, Boulder, 2012; Bill Maynard, Colorado Springs, 2013; Bill Schmoker, Longmont, 2013\*; David Silverman, Rye, 2011\*; Glenn Walbek, Castle Rock, 2012\*

### **Colorado Birds Quarterly:**

**Editor:** Nathan Pieplow, [editor@cfo-link.org](mailto:editor@cfo-link.org)

**Staff:** Glenn Walbek (Photo Editor), [gwalbek@comcast.net](mailto:gwalbek@comcast.net); Hugh Kingery (Field Notes Editor), [ouzels8@aol.com](mailto:ouzels8@aol.com); Tony Leukering (In the Scope Editor), [GreatGrayOwl@aol.com](mailto:GreatGrayOwl@aol.com); Jim Beatty (Across the Board Editor), [jdbeatty@bresnan.net](mailto:jdbeatty@bresnan.net); Joel Such and Marcel Such (News from the Field Editors), [jbsuch@gmail.com](mailto:jbsuch@gmail.com), [mpsuch@gmail.com](mailto:mpsuch@gmail.com); Molly Malone (Copy Editing), [mkmmalone@gmail.com](mailto:mkmmalone@gmail.com); Rachel Hopper (Production Assistant), [r-hopper@comcast.net](mailto:r-hopper@comcast.net)

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# Colorado Birds

The Colorado Field Ornithologists' Quarterly Vol. 45 No. 3 July 2011

**PRESIDENT'S MESSAGE..... 164**

Jim Beatty

**CFO BOARD MEETING MINUTES ..... 167**

Larry Modesitt

**RON RYDER AWARD RECIPIENT: LARRY SEMO .... 169**

Jim Beatty

**REMEMBERING ABBY MODESITT..... 170**

Larry Modesitt

**THE 59<sup>TH</sup> REPORT OF THE CBRC..... 174**

Doug Faulkner and Lawrence S. Semo

**MID-SUMMER DISPERSAL, NOCTURNAL  
MOVEMENTS, AND MOLT MIGRATION  
OF CHIPPING SPARROWS IN COLORADO ..... 181**

Ted Floyd

**COLLECTION AND COMPARISON OF SPERM  
OF GREATER AND GUNNISON SAGE-GROUSE ..... 197**

Tyler Hicks and Patrick Magee

**THE HUNGRY BIRD:  
DRAGONFLIES AND DAMSELFIES..... 211**

Dave Leatherman

**THE HUNGRY BIRDER: LA VETA..... 216**

Beverly Jensen

**NEWS FROM THE FIELD: WINTER 2010-2011 .... 220**

Marcel Such

**IN THE SCOPE: CAVE SWALLOW..... 236**

Tony Leukering



Pine Warbler,  
Fountain  
Creek Regional  
Park, El Paso  
County, 14  
Dec 2010.  
Photo by Mark  
Chavez

# The 2011 Convention and Other News

Jim Beatty

## 2011 Convention

Our 2011 Convention in Grand Junction was a wonderful success by all measures. We had record-matching attendance at 193, and the list of species seen, which is still being finalized, is close to 200. Our field trips, painstakingly engineered by Coen Dexter with local Grand Valley Audubon leaders and CFO leaders, scoured the area, even ranging as far as Moab, Utah. Owling trips to Divide Road and the Grand Mesa recorded eight species. The hotel facilities and staff were great with a 5:00 A.M. breakfast, and Jeff Gordon's keynote address at the banquet was very entertaining. Jeff's presentation, titled "Ten Birds that Changed Birding," began with the 1975 Newburyport Ross's Gull and concluded with the Ivory-billed Woodpecker chase in Arkansas in 2004, with Jeff as part of the search team. I'm still not sure how that Georgetown Rufous-collared Sparrow popped up on the screen—will it be the eleventh "bird that changed birding?"



*Birders search for Black-chinned Sparrows at the Colorado National Monument during the 2011 CFO Convention. Photo by Thomas Wilberding*

At the convention, three CFO awards were presented to deserving and worthy recipients. Larry Semo, current chair of the Colorado Bird Records Committee, received the Ron Ryder Award (see p. 169 of this journal). Suzi Plooster received the CFO Lifetime Achievement Award for her long service to the Colorado birding community, especially the Boulder Bird Club. And Dave Madonna of Xcel Energy received the 2011 CFO Appreciation Award for his remarkable work in opening the Valmont power plant grounds to birders each year for what has become the best-attended annual field trip in Colorado.

Two other convention events deserve special mention: the

Team ID Challenge and the paper session. Both were capably orchestrated by maestro Nathan Pieplow.

The CFO board had decided that the traditional Friday night “Stump the Chumps” event might benefit from a complete make-over, and Nathan stepped forward with the idea that a “pub-style” quiz game competition might be a good substitute. It was!

The room was set with tables of ten for teams, which were randomly formed with “experts” seated at each table to even the playing field. Quizmaster Nathan, assisted by his fiancée and scorekeeper Molly Malone, proceeded to tantalize the teams with rounds of visual and audio questions that all had a common theme. Points were awarded for each bird identification and for guessing the connecting theme. The buzz at each table as the teams formulated their answers was intense. The team scores were amazingly tight entering the last round—which was, of course, a bonus round! It was a very entertaining way for everyone to dry out after a soggy Friday birding.

Saturday afternoon’s paper session was well attended and exceptionally informative. Nathan moderated the session and presented the first paper, in which he outlined his unique method for categorizing bird sounds into seven categories, which will be the foundation for a ground-breaking and innovative field guide for bird sounds. Chuck Hundertmark and Jason Beason presented their work tracking changes in water-related breeding bird populations in North Park, where there has been substantial variation over the past few years. Christian Nunes gave two talks, the first on the avian monitoring programs run by the city of Boulder’s Open Space and Mountain Parks, and the second on the identification and distribution of junco subspecies. Last, but certainly not least, Lynn Wickersham, director of the Colorado Breeding Bird Atlas II Project, presented an update



*Intrepid birders (L to R) Marcel Such, Mike Freiberg, Christian Nunes, Nick Moore, Ali Iyoob, Matt Daw, and Joel Such prepare for a successful owling trip to the Grand Mesa. Photo by David Such*

on that important work as it enters the fifth and final year. Her overview stressed the need for more volunteers in several parts of the state and included several interesting breeding population changes since the conclusion of the original Colorado Breeding Bird Atlas.

### **Annual CFO Business Meeting**

The annual CFO business meeting was conducted at the convention banquet. I reported that membership and finances were in good shape. The attending membership re-elected the current slate of officers—President Jim Beatty, Vice President Bill Kaempfer, Treasurer Maggie Boswell, and Secretary Larry Modesitt—for a second two-year term.

### **Personnel Changes**

The board has added two new directors in 2011. We welcome back Lisa Edwards, who is assuming the duties of membership chair. Lisa previously served on the board in several positions, including secretary.



*Two of the many Pinyon Jays spotted during the CFO Convention. Photo by Thomas Wilberding*

Also joining the board is Christian Nunes. Christian has agreed to help CFO move into the brave new world of social networking. Perhaps in the near future, you'll be able to see "tweets" and other content stream through the CFO website. Christian has also agreed to become the new photo editor for *Colorado Birds*, replacing Glenn Walbek, who has moved on to other challenges after serving ably as our photo editor for more than four years.

CFO sincerely thanks Glenn as well



as Debra Sparn and Brad Steger, directors, for their service. CFO deeply appreciates their voluntary commitment of time and resources for the benefit of Colorado birding.

If you have any comments, thoughts, or ideas for CFO, please contact me or any director. I hope to see you in the field.

*Jim Beatty, 165 Twelve Point Buck Trail, Durango, CO, 81301, [jdbeatty@bresnan.net](mailto:jdbeatty@bresnan.net)*

## **CFO BOARD MEETING MINUTES**

9 April 2011

Fountain Valley School

Colorado Springs, Colorado

The regular quarterly meeting was called to order at 11:26 A.M. by President Jim Beatty. Officers and directors present were President Jim Beatty, Vice President Bill Kaempfer, and Secretary Larry Modesitt. Directors Lisa Edwards, Ted Floyd, Brenda Linfield, Nathan Pieplow, and Joe Roller were present. Treasurer Maggie Boswell and directors Bob Righter and Larry Semo sent their regrets.

### **Board Changes**

President Beatty welcomed Lisa Edwards back to the board after an absence of three years. She will be membership chair, replacing Debra Sparn. Brad Steger accepted a job out of state and resigned from the board, and the board regretfully accepted his resignation.

### **Secretary's Report**

Minutes of the 29 January board meeting were approved.

### **Treasurer's Report**

Reception to convention publicity has been excellent. Registration is proceeding at a rate equivalent to last year's record attendance, and the

break-even point has been surpassed. Rooms are sold out at the special convention rate.

### **Convention Details**

Ted is drafting leader instruction sheets. They will be sent to trip leaders, who will be given email addresses of participants. Each leader will be asked to send out instructions to participants. Ted also will send general instructions on COBirds for participants to be prepared for the best trips possible.

We agreed that Bill K. would select a CFO leader on each trip along with the official trip leader. We will make adjustments to trips this week to cancel those with insufficient attendance

and, where possible, increase trips in which there is great interest.

Finding where lunches were being distributed has been problematic in past years, as hotels do not allow us to bring food inside. We will have improved signage regarding sack lunch pickups this year.

Ted will issue news releases for local papers, with the intention of hooking local people.

Nathan thoroughly revised Stump the Chumps to morph it into the Team Identification Challenge. Our goals are to increase involvement, learning, and enjoyment.

We will have at least four paper presentations.

Book signings will be held by local authors interested in autographing and selling their books.

We also agreed upon the awards to be given at the convention.

### **CFO Photo Quiz**

The official title is CFO Photo Quiz. Participation is increasing. We still want to bolster participation, as it is a great learning experience for all participants. The board will create more references from other locations that will direct people to the quiz.

### **Committee Reports**

A. Colorado Bird Records Committee—We want to motivate the Colorado birding community to get serious about documenting rare birds. News from the Field continues to report which of the reports have not been documented. Brenda will link the CFO website to the CBRC website to facilitate more reports. Ted will

draft ideas for challenging birders on the need to submit documentation and the methods for doing so.

B. CFO Website—Brenda Linfield. Online membership registration is nearly ready, and will be released after the convention. The website continues to be revised. Field trip assignments will be posted the week before the convention.

C. *Colorado Birds*—Nathan Pieplow. Glenn Walbek has resigned as photo editor, and we are looking for a new editor to begin with the July issue. We discussed the possibility of scanning old issues of *Colorado Birds*.

D. Publicity—Ted Floyd. Ted will continue convention publicity. He will work with Tom Wilberding regarding a convention photo gallery after the convention. We wish CFO to become a bigger player in social media, and Ted agreed to make recommendations.

E. Membership—Lisa Edwards. CFO has 375 current members, and there are many who had not renewed who will be sent renewal notices.

F. Project and Youth Funds—Bill Kaempfer. The Board considered project proposals and agreed to fund one proposal. The board also approved requests from two requestors for youth scholarships.

G. Field trips—Bill Kaempfer will be leading a CFO overnight trip to north-east Colorado on 27 and 28 August.

H. Nominations—Joe Roller. All four officers were eligible and agreed to serve additional two-year terms. We discussed our need for an additional board member and for a new photo editor.



## New Business

The board considered the possibility of selecting Trinidad as the site of the 2012 convention.

Our next meeting will be 13 August 2011. The location will be an-

nounced later.

President Beatty adjourned the meeting at 3:24 P.M.

Respectfully submitted,  
*Larry Modesitt, Secretary*

## CFO AWARDS

# Ron Ryder Award Recipient: Larry Semo

*Jim Beatty*

The Ronald A. Ryder Award for Distinguished Service to Colorado Field Ornithology is bestowed upon individuals who have

- performed distinguished service to the Colorado Field Ornithologists and its goals;
- made scholarly contributions to CFO and Colorado ornithology; and
- shared knowledge of Colorado field ornithology with the people of Colorado.

This award is not granted every year. Past winners are well known to the Colorado birding community: Ron Ryder (1995), for whom the award was subsequently named, Harold Holt (1998), Hugh Kingery (1999), Bob Righter (2000), Stephen Martin (2003), Richard Beidleman (2004), Rich Levad (2005), Tony Leukering (2008), David Leatherman (2009), and Alexander Cruz (2010). All have met each of the listed criteria at a high level, and all have truly excelled in at least one of the criteria. Some are professors of ornithology with significant impact on students through instruction and mentoring. Others had a vision and spent countless hours producing important Colorado birding references, including *A Birder's Guide to Colorado*, *Colorado Birds*, the *Colorado Breeding Bird Atlas*, and *Birds of Western Colorado Plateau and Mesa Country*.

The eleventh recipient of the Ron Ryder Award is Lawrence S. Semo, a strong contributor to Colorado birding. He has provided distinguished service to CFO by chairing the Colorado Bird Records Committee for many years, and has made important advances to the

review of submitted documentation through the development and installation of an advanced electronic, paperless review system. This system has greatly reduced the review period for most decisions. He has published frequently in *Colorado Birds* with timely and comprehensive CBRC reports. He has published in *North American Birds* with seasonal co-authored reports for the Colorado-Wyoming Region. He has also served as the listing editor for the American Birding Association, as regional coordinator for eBird, and as an avian distribution and identification consultant for the *Peterson Field Guide to Birds*, the *National Geographic Society Guide to Birds*, the *Sibley Guide to Birds*, and the *National Wildlife Federation Guide to Birds*. He is a senior ornithologist with SWCA, a national environmental consulting firm. He is also an instructor in the Denver Audubon Master Birder program, where he has led many field trips, enthusiastically sharing his knowledge and joy of birding.

Larry's sustained performance over many years has been truly impressive. In light of all of his contributions, Colorado Field Ornithologists was proud to recognize Larry with the 2011 Ron Ryder Award at the annual convention in Grand Junction. Although Larry was unable to be in attendance, the award was accepted on his behalf by Doug Faulkner. Many thanks to Larry for everything he does.

*Jim Beatty*, 165 Twelve Point Buck Trail, Durango, CO, 81301, [jdbbeatty@bresnan.net](mailto:jdbbeatty@bresnan.net)

## IN MEMORIAM

# Remembering Abby Modesitt

*Larry Modesitt*

"You won't see a Harpy Eagle," declared our seven-year-old grandson Sam. But after jitney, boat, and motorcycle rides, and a hike through the Peruvian jungle led by a machete-wielding guide, Abby was hesitating before a swinging rope ladder. One hundred feet up was a platform from which one could see a Harpy Eagle nest, inhabited by a full-grown juvenile Harpy. No friend of heights, Abby let her "camera courage" take over, and she charged up the ladder.

Sometimes, I felt that being behind a lens brought her altogether too much courage. At Abby's urging, we once went to Katmai Is-

land to photograph Alaska's brown bears. She delightedly followed Timothy Treadwell around a bend to view bears salmon fishing from 50 feet away, trying to get in front of me, as she feared I would get a better picture. Treadwell gave advice on staying safe (this was before he was eaten by a bear in that same location). "Don't run!" was one admonition, but running would not be a consideration, as Abby felt "protected by" her camera.

After marrying in 1965, we moved to a suburb of Detroit, Michigan, where Abby taught math and was a docent at the Cranbrook Institute of Science. A caring person, Abby would later switch from teaching

math to helping homeless youth as the chief financial officer for Colorado's Urban Peak for 13 years. But she also loved animals. At one time she had a dog, a cat, a parrot, a box turtle, and an iguana.

While we were living in Michigan, Abby heard there were great birds in nearby Point Pelee in Canada, and decided to go birdwatching for the first time. Seeing a Rose-breasted Grosbeak, Abby started paging through her field guide to find it, beginning with the loons, and finally arriving at the identification on page 293.

That persistence and patience were to pay off in her photography. Joe Roller remembered Abby "carrying her camera with its long lens and monopod every waking hour of every day. She had learned the photographer's secret of 'F8 and be there!' That is, it's more important to be in the field, camera close at hand, open to what might come along, than miss a shot while fiddling around to get the perfect camera settings. When I occasionally offered to carry the heavy load, she politely declined. It might be hot, humid, and boring, but I never carried that camera one yard for her. At first I thought she was stubborn; then I realized the better word was determined! That determination served her well when she was poised, patient and ready to snap the best photograph taken on our Kenyan trip."



*Abby Modesitt birding at El Santuario de los Cactus, Mexico, on 5 April 2009. Photo by Larry Modesitt*

Sandra Barnett recalls the story of that photo: “Abby’s enthusiasm to see the whole preserve and its animals led to an amazing experience. We heard a leopard had been spotted. Thankfully we had a good van and driver because it had rained a lot and the tracks were slick mud. Off we went on ‘Mr. Toad’s Wild Ride’ to the spot, passing several vans mired in the mud. Abby stood with her camera so still and quiet for 20 minutes, ready for the perfect picture of that reclusive leopard.”

Our first long-distance birding trip was to the Lower Rio Grande Valley, a famous birding hot spot. We figured summer would bring rare birds from Mexico, but the only rarities there in July were people. Like most rarities, we shouldn’t have been there. This was the wrong definition of “hot spot.” A lonely and bored ranger asked, “What bird would you like to see?”

“Great Kiskadee,” Abby said.

“Most people want *not* to see that one,” the ranger replied. We realized what he meant when we saw it and heard it, all day, every day.

Abby was always goal-oriented and persistent. She did pelagic trips because she loved albatrosses more than she hated seasickness. Of the 27 Colorado fourteeners she summited, she threw up on 26. She hated Anzalduas, the Texas park on the Rio Grande crawling with border police seeking illegal aliens, but Gregg Goodrich and I were determined to find a life bird, a Tropical Parula. After we had abandoned the likely spot, patient Abby, who stayed put, found the bird. “If you guys come back and see this bird,” she yelled, “we can go!”

A great storyteller, she once answered the question “Where did you go this summer?” with the declaration “I went with Gregg and Larry to Death Valley for lunch at the sewage pond.” She also enjoyed telling stories with her photographs. One example was a photo essay published in this journal of a Mountain Plover defending its nest against an entire herd of cattle (Modesitt 2008). Another photograph of hers shows a Kenyan girl delightedly playing jacks—with rocks and a lime.

After Gregg and Larry enticed Glenn Walbek into birding, Glenn recalled, “On many a trip, Abby taught us to appreciate things us listers may not appreciate otherwise. Things like a Great Egret struggling to devour a large snake, a spider web sparkling with morning dew, or the interesting way in which the Tamaulipas Crow would half-flap its wings each time it would call (croak, she said). Or the freakish, even frightening courtship display of the Bronzed Cowbird. Her patience in observing bird behavior was remarkable. Her encounters with birds and wildlife and the happiness they brought

her made us listers say to ourselves 'Hey, we're doing it wrong.' Abby taught us the importance of hot coffee in the morning and good food in the evening, things we birders often neglect in our pursuit of another tick." She loved the beauty of the surroundings. She frequently reminded us to take in the *whole* scene.

She may have had a knack for finding interesting things about "dull" birds, but she had her limits. Gregg recalls how he and I wanted her to join us on a Grand Junction area trip for Gray Flycatcher, Gray Vireo, and Black-throated Gray Warbler. Deciding she wouldn't jump at seeing gray birds in the desert, we renamed them. Gray Vireo became "Splendiferous Vireo," Gray Flycatcher became "Resplendent Flycatcher," and the warbler became "Bandanaed Warbler." (Abby had complained that she was always photographed with a bandana, because she always wore one on climbing trips.) She excitedly joined the expedition. The ruse fell apart, however, when we kept confusing the flycatcher and vireo names, and Abby demanded to see the bird guide.

On one trip, Glenn recalled that his wife Laurie "was dismayed at the accommodations in a minus-star motel. At breakfast, Laurie suggested to Abby that the hotel room was not inhabitable, to which Abby replied, 'It's really not that bad.' I asked myself, 'Where in the hell has Larry taken this poor woman?'" Glenn had not heard when somebody incredulously asked Abby, who was known for her high style, "*You* went to Attu?" "Because of the accommodations," she quipped. (That was the Alaska Aleutians trip on which we and our roommates Bob and Lea Ann Brown trapped two rats in our room.)

Every January, Gregg and Tamar, Glenn and Laurie, and Abby and I would get together for a birding recap. Glenn remembers that "Gregg and I showed stunning bird pictures. Abby showed those too, but she also had touching pictures of people and emotions that made me realize what a truly great photographer she was." Abby, who died on 19 April 2011, will be missed greatly, but her teachings will live on.

## ACKNOWLEDGMENTS

I wish to thank Abby's fellow travelers on various bird trips, Sandra Barnett, Gregg Goodrich, Joe Roller, and Glenn Walbek, for the many fond recollections they shared for this article.

## LITERATURE CITED

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Larry Modesitt, 5707 South Galena Street, Greenwood Village, CO 80111, LM1Crow@aol.com

# The 59<sup>th</sup> Report of the Colorado Bird Records Committee

*Doug Faulkner*

Secretary, Colorado Bird Records Committee

*Lawrence S. Semo*

Chair, Colorado Bird Records Committee

## Introduction

This 59<sup>th</sup> report presents the results of deliberations of the Colorado Bird Records Committee (hereafter CBRC or Committee) on partial results of circulations held in 2010 and 2011. This article provides results of the circulation of 60 reports submitted by 22 observers documenting 46 occurrences of 20 species (or recognizable forms) from the period 2007 through 2010. Per CBRC bylaws, all accepted records received a final 7-0 or 6-1 vote to accept. Each report that was not accepted received five or fewer votes to accept.

Highlights of this report include fifteen records of Mew Gull for 2007-2010, nine records of Great Black-backed Gull for 2007-2009, and first county records for *Adams, Bent, Boulder, Clear Creek, Crowley, El Paso, La Plata, Larimer, Park, Phillips, Pueblo, Montrose, and Sedgwick*.

Committee members voting on these reports were Coen Dexter, John Drummond, Doug Faulkner, Peter Gent, Rachel Hopper, Joey Kellner, Bill Maynard, Ric Olson, Bill Schmoker, Larry Semo, David Silverman, and Glenn Walbek.

## Committee Functions

All reports received by the CBRC (written documentation, photographs, videos, and/or sound recordings) are archived at the Denver Museum of Nature and Science (DMNS), 2001 Colorado Boulevard, Denver, Colorado, 80205, where they remain available for public review. The Committee solicits documentation of reports in Colorado for all species published in its review list, including both the main and supplementary lists (Semo et al. 2002), and for reports of species with no prior accepted record in Colorado. Those lists can be found at <http://www.cfo-link.org/birding/lists.php>. Documentary materials should be submitted online at the CBRC website (<http://www.cfo-link.org/CBRC/login.php5>).

## Report Format

The organization and style of this report follow those of Leukering and Semo (2003), with some alterations. If present, the numbers in

parentheses following a species' name represent the total number of accepted records for Colorado, followed by the number of accepted records during the most recent 10-year time period (2001-2010) that includes the most recent circulation year (2010). The latter number is of importance, as it is one of the criteria for a species' continuance on or removal from the statewide Main Review List (Semo et al. 2002).

The records in this report are arranged taxonomically following the American Ornithologists' Union (AOU) Checklist of North American Birds (AOU 1998) through the 51<sup>st</sup> Supplement (Chesser et al. 2010). Each record presents as much of the following information as we have available: number of birds, age, sex, locality, county, and date or date span. In parentheses, we present the initials of the contributing observer(s), the official record number, and the vote tally in the first round and, if relevant, the second and third rounds (with the number of "accept" votes on the left side of the dash).

The initials of the finder(s) of the bird(s) are underlined, if known, and are presented first if that person (or people) contributed documentation; additional contributors' initials follow in alphabetical order by last name. If the finder(s) is (are) known with certainty, but did not submit documentation, those initials are underlined and presented last. Observers submitting a photograph or video capture have a dagger (†) following their initials; initials of those who submitted video are indicated by a lower-case, italicized "v" (v); and those who submitted audio spectrograms or recordings are indicated by a lower-case, italicized "s" (s). Thus, the parenthetical expression "(JD v, RA †, TL, JV, CW; 2001-36; 4-3, 6-1)" means: JD found the bird(s) and submitted documentation (including video) and, as the finder, is first in the list of those who submitted details, with initials underlined; RA, though alphabetically first of the five submitting observers, was not the finder, so is listed second; RA submitted, at least, photographic documentation; the record number assigned to the occurrence was 2001-36; and in the two rounds of voting, the first-round vote was four "accept" and three "do not accept" votes, while the second-round vote was 6-1 in favor of accepting the report. The decision on most reports is completed in the first round.

In this report, county names are italicized in keeping with the style established for the "News from the Field" column in this journal. We have attempted to provide the full date span for individual records, with the seasonal reports in *North American Birds* and this journal being the primary sources of those dates. The Committee has not dealt with the question of full date spans as compared to submitted date spans when documentations do not provide such. The CBRC encourages observers to document the final date on which a





*Long-tailed Jaeger, Cherry Creek SP, Arapahoe County, 11 Sept 2008. Photo by Glenn Walbek*



*Cape May Warbler, Chico Basin Ranch, El Paso County, 13 Sept 2010. Photo by Bill Maynard*

rare species was seen, as that provides historical evidence of the true extent of its stay.

For this report, abbreviations are used for Reservoir (Res.) and State Park (SP).

RECORDS ACCEPTED

**Tundra Swan** – *Cygnus columbianus*. An adult at Zink’s Pond, *La Plata*, on 1 January 2008 (SA, HM; 2008-69; 7-0) provided a rare southwestern Colorado record and the second for *La Plata*.

**Eurasian Wigeon** – *Anas penelope* (37/15). The second for *Larimer* in two years, an adult male Eurasian Wigeon reported to be present for several days at Fossil Creek Res. was documented for only 5 November 2010 (CW†, JB; 2010-139; 7-0).

**Least Bittern** – *Ixobrychus exilis* (25/10). An adult female was observed at the Running Deer Natural Area in

Fort Collins, *Larimer*, on 7 June 2010 (CW; 2010-111; 6-1). This represents the fifth record for *Larimer* and its third since 2008.

**Gyr Falcon** – *Falco rusticolus* (11/3). A juvenile photographed near Como, *Park*, on 28 November 2010 (JK†; 2010-156; 7-0) established a first record for that county.

**Black-legged Kittiwake** – *Rissa tri-dactyla* (40/16). An adult in basic plumage was documented for 15-16 November 2010 at Pueblo SP, *Pueblo*, although it was reported through the 21<sup>st</sup> of that month (BKP†, BM†; 2010-147; 7-0). Shortly afterwards, a juvenile was dis-

Table 1. Records of Mew Gull accepted in this report.

Accession #	# of Birds	Plumage(s)	Location	Date(s)	Observers	Vote
2007-5	1	Adult basic	Pueblo Res., <i>Pueblo</i>	1/19/2007	<u>BKP</u> †	7-0
2008-136	1	Adult basic	Cherry Creek SP, <i>Arapahoe</i>	11/29/2008	<u>AS</u> †	7-0
2008-141	1	Formative	John Martin Res., <i>Bent</i>	12/16/2008	TL, <u>MP</u>	7-0
2008-142	1	Formative	Near Ordway, <i>Crowley</i>	12/17/2008	TL, <u>BKP</u> , <u>MP</u>	7-0
2008-145	1	Adult basic	Pueblo Res., <i>Pueblo</i>	12/18/2008	<u>TL</u>	7-0
2008-146	1	Formative	Pueblo Res., <i>Pueblo</i>	12/18/2008	TL†	7-0
2008-154	1	Adult basic	Prospect Lake, <i>El Paso</i>	12/26/2008	<u>BM</u> †, <u>LS</u> †, <u>MP</u>	7-0
2008-19	1	Formative	Pueblo Res., <i>Pueblo</i>	2/29/2008	<u>BKP</u> †	6-1
2008-25	1	Adult basic	Horseshoe Lake, <i>Larimer</i>	3/20/2008	<u>NK</u> †	7-0
2008-3	1	Adult basic	Pueblo Res., <i>Pueblo</i>	1/2/2008	<u>BM</u> †	7-0
2009-110	1	Adult basic	Pueblo Res., <i>Pueblo</i>	12/4/2009 – 1/19/2010	<u>BKP</u> †	7-0
2009-4	1	Adult basic	Valmont Res., <i>Boulder</i>	1/17/2009	<u>TE</u>	7-0
2009-9	1	Formative	Jumbo Res., <i>Sedgwick</i>	2/25/2009	<u>CW</u> †	7-0
2009-99	2	Adult basic, formative	Valmont Res., <i>Boulder</i>	12/20-25/2009	<u>TE</u> , <u>BS</u> †	6-1
2010-12	1	Adult basic	Pueblo Res., <i>Pueblo</i>	1/4/2010 - 2/27/2010	<u>BM</u> †, <u>BKP</u> †, <u>RM</u>	7-0

covered at Lathrop SP, *Huerfano*, where it was reported for only 28 November 2010 (PN†, 2010-154; 6-1). Farther north in the state, a juvenile was documented from Windsor Res., *Weld*, for 4 December 2010 (CW; 2010-158; 6-1).

**Laughing Gull** – *Larus atricilla* (41/17). A second-cycle individual was at Prewitt Res., *Washington*, on 14 December 2010 (TW†; 2010-163; 7-0). Interestingly, a first-cycle bird was at this same location in September 2009 (2009-65), but we can only speculate as to whether it was the same individual.

**Mew Gull** – *Larus canus* (54/34). The Committee reviewed 15 separate reports of Mew Gull in the state since 2007. We have been reluctant to publish these occurrences, as we intended to assess the number of individuals involved with these reports. That is, if multiple reports are determined to pertain to the same individual bird at different locations and/or times, those reports should constitute a single record. However, it is nearly impossible to know for certain how many individuals were involved, and we have decided to publish these records at this time (Table 1). The list

includes first county records for *Bent*, *Crowley*, *El Paso*, and *Sedgwick*.

**Great Black-backed Gull** – *Larus marinus* (41/21). As with the Mew Gull reports, the Committee also withheld publication of its decisions on Great Black-backed Gull reports due to the potential single gull/multiple reports issue. There is no immediate action on this issue and we herein publish results for nine occurrences dating back to 2007 (Table 2).

**Parasitic Jaeger** – *Stercorarius parasiticus* (9/2). A juvenile in intermediate plumage tarried a few days at Chatfield SP, *Douglas/Jefferson*, 7-9 November 2009 (first reported on the 6<sup>th</sup>), before apparently heading to Pueblo Res., *Pueblo*, where it was observed on 14 November (BM†, NP, BS†, JK; 2009-101; 7-0). The *Pueblo* sighting represents the first for that county.

**Long-tailed Jaeger** – *Stercorarius longicaudus* (16/9). A juvenile in intermediate plumage resided at Cherry Creek SP, *Arapahoe*, 7-11 September 2008 (AS, NK†, GW†, SS; 2008-103; 7-0). Another juvenile, this one exhibiting dark plumage, was a one-day wonder at

Table 2. Records of Great Black-backed Gull accepted in this report.

Accession #	# of Birds	Plumage(s)	Location	Date(s)	Observers	Vote
2007-94	1	Adult basic	Pueblo Res., <i>Pueblo</i>	11/10-12/12/2007	BKP†	7-0
2008-10	1	Adult basic	Pueblo Res., <i>Pueblo</i>	1/30-2/26/2008	BKP†	7-0
2008-140	1	Adult basic	John Martin Res., <i>Bent</i>	12/16/2008	TL†	7-0
2008-143	1	Adult basic	Pueblo Res., <i>Pueblo</i>	12/18-22/2008	PH†, TL†, BKP	7-0
2008-21	1	Adult basic	Boyd Lake, <i>Larimer</i>	3/3/2008	AS†	7-0
2009-109	1	Adult basic	Pueblo Res., <i>Pueblo</i>	12/4/2009-2/6/2010	BKP†	7-0
2009-114	1	First-cycle	Valmont Res., <i>Boulder</i>	12/25/2009-1/9/2010	IE, BS†	7-0
2009-6	1	Adult basic	McIntosh Lake, <i>Boulder</i>	2/2-3/2009	RZ†	7-0
2009-8	1	Adult basic	Jumbo Res., <i>Logan</i>	2/17/2009	RH	7-0

Chatfield SP, *Douglas/Jefferson*, on 11 October 2008 (AS; 2008-120; 7-0).

**Inca Dove** – *Columbina inca* (21/9). Individual Inca Doves continue to show up in scattered locations around the state. Two new county records were provided by single singing males in Haxtun, *Phillips*, on 31 July 2010 (CW; 2010-119; 6-1) and Nucla, *Montrose*, on 28 October 2010 (CD, BW †; 2010-134; 7-0).

**Magnificent Hummingbird** – *Eugenes fulgens* (16/10). An adult female at Tunnel Campground, *Larimer*, on 6 August 2010 (CK†; 2010-91; 7-0) provided *Larimer* with its second record. The first county record, of an adult male on 9 July 2002 (2002-113), was also from Tunnel Campground.

**Acorn Woodpecker** – *Melanerpes formicivorus* (11/5). A female was at a private residence in Colorado Springs, *El Paso*, in mid-July 2010 (BM†, BaS; 2010-90; 7-0). The bird was first seen on 15 July 2010, but the Committee received documentation for only 20 July.

**Eastern Wood-Pewee** – *Contopus virens* (23/7). A singing individual observed daily at Grandview Cemetery and City Park Nine Golf Course from 22 May through 27 June 2010 (DL†, BKP†; 2010-89; 7-0) provided *Larimer* with its first county record.

**Bell's Vireo** – *Vireo bellii*. The first



*Magnificent Hummingbird*, Tunnel CG, *Larimer County*, 6 Aug 2010. Photo by Connie Kogler

record for *Adams* was captured at the Rocky Mountain Bird Observatory's bird banding station at Barr Lake SP on 26 August 2010 (BC†; 2010-93; 7-0).

**Eastern Bluebird** – *Sialia sialis*. A female along County Road 306 north of Georgetown, *Clear Creek*, on 23 October 2010 (TD; 2010-133; 6-1) established that county's first record.

**Cape May Warbler** – *Dendroica tigrina* (28/8). A juvenile male was caught at the Rocky Mountain Bird Observatory's bird banding station at Chico Basin Ranch, *El Paso*, on 13 September 2010 (BM†; 2010-97; 7-0). This is the fourth record for *El Paso* and the second for Chico Basin Ranch.

**Connecticut Warbler** – *Oporornis agilis* (11/4). The first for heavily-birded *Boulder*, a male proved elusive for many birders at Walden Ponds, 22-23 May 2010 (WS, JO; 2010-39; 6-1).

**McCown's Longspur** – *Calcarius mccownii*. A first-winter female at Vallecito Res., *La Plata*, on 25 September 2010

(PD, SA; 2010-100; 6-1) may be the first individual of this rather common eastern plains species documented on the West Slope (Righter et al. 2004).

**Baltimore Oriole** – *Icterus galbula*.  
An adult male visited nectar feeders at a La Veta, *Huerfano*, residence, 21-23 May 2010 (PN†, 2010-108; 7-0).

## REPORTERS AND CITED OBSERVERS

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Doug Faulkner, SWCA Inc., 6035 Parfet St., Arvada, CO 80004, dwfaulkner@swca.com

Lawrence S. Semo, SWCA Inc., 9054 Dover St., Westminster, CO 80021, lsemo@swca.com

# Mid-summer Dispersal, Nocturnal Movements, and Molt Migration of Chipping Sparrows in Colorado: Taxonomic Implications and Conservation Applications

Ted Floyd

## Abstract

The Chipping Sparrow (*Spizella passerina*) has been widely reported to migrate south through the middle latitudes of the U.S. from mid-September to mid-October. In a four-year field study from Colorado, however, I documented sustained passage of Chipping Sparrows beginning in July, building slowly through August, peaking in late August and early September, and declining quickly after early September. I quantitatively documented the magnitude of this movement by listening to the flight calls of Chipping Sparrows on nocturnal migration on 176 dates between mid-July and early November, 2007–2010. My study site was in Lafayette, Colorado, where the species does not breed. I further documented that these early-season migrant Chipping Sparrows disperse broadly to the Central Shortgrass Prairie Eco-Region, where they initiate their prebasic molt. Thus, these Chipping Sparrows are molt migrants. Chipping Sparrows in the eastern and northern portions of the breeding range do not appear to undergo the sustained mid-summer flights exhibited by Chipping Sparrows in Colorado, a result that may clarify taxonomic relationships within the species. Although molt migration has been widely noted in recent years in passerines dispersing to the “Mexican Monsoon” region of the Desert Southwest, the phenomenon has been largely undocumented for the central Great Plains. The results of this study, documenting the presence of molt migrants in the Great Plains, introduce a new management challenge for avian conservation biologists at work in the region. This study also highlights the importance of linking seemingly disparate methods of investigation—in the present study, analysis of molt and monitoring of nocturnal flight calls—for attaining insights into taxonomy and conservation planning.

## Introduction

*Nocturnal Migration: East vs. West*

The study of nocturnal bird migration in North America has long

had an eastern bias (e.g., Lowery 1951, Ball 1952). The only comprehensive reference for identifying birds by their nocturnal flight calls (Evans and O'Brien 2002) was designed for use in the eastern half of North America, and the bulk of the published research on nocturnal migration (reviewed by Farnsworth 2005) has been conducted in the East. The flight calls of several common western migrants have been described only recently (e.g., Lanzone et al. 2009), and the flight calls of other common western migrants (e.g., Brewer's Sparrow, *Spizella breweri*) apparently have not yet been formally described.

One possible reason for the dearth of nocturnal migration studies in the West is that nocturnal migrants are relatively hard to detect and/or scarce overall west of the central Great Plains. For example, Withgott (2002) has speculated that nocturnal migrants fly higher in the West than in the East, making them harder to detect. The Western Tanager (*Piranga ludoviciana*), a common nocturnal migrant throughout the West, appears to migrate so high that its flight calls are inaudible to ground-based field ornithologists (Hudon 1999). Another explanation is that smaller numbers of birds are aloft at night in the West. The Rose-breasted Grosbeak (*Pheucticus ludovicianus*) of eastern North America migrates mainly at night (Wyatt and Francis 2002), but the closely related Black-headed Grosbeak

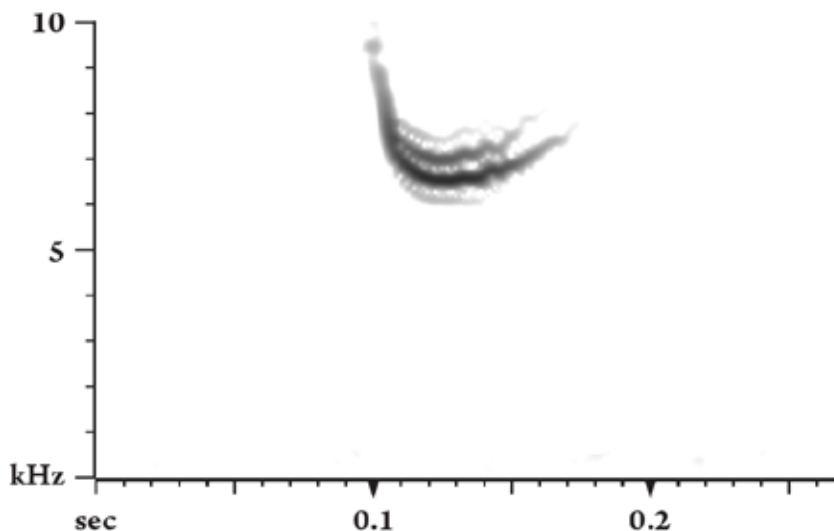


Fig. 1. The piercing flight call of the Chipping Sparrow is distinctive, both spectrographically, as here, and to the human ear. This is a sound spectrogram ("sonogram") of the flight call of an adult visually identified on the breeding grounds near Estes Park, Larimer County, Colorado, 19 June 2008. Figure courtesy of © Nathan Pieplow



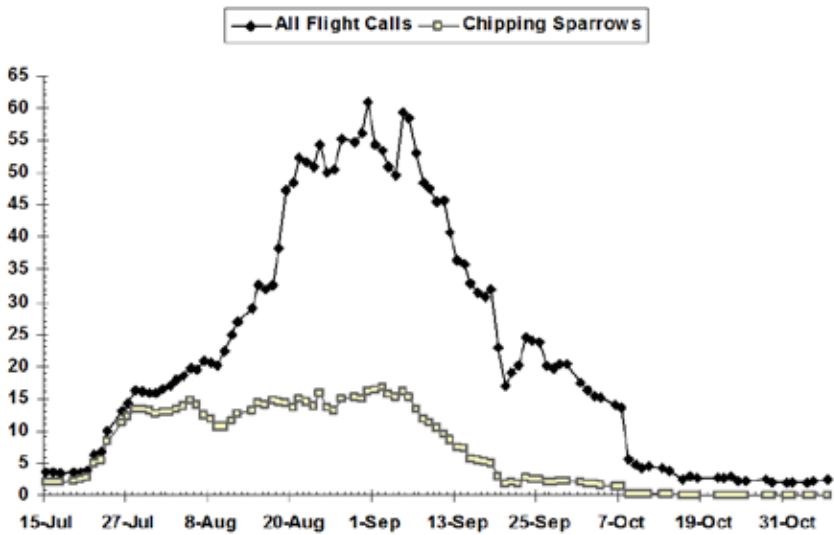


Fig. 2a. Seasonal variation in fall (July–November) nocturnal migration over Lafayette, Boulder County, Colorado, is summarized here as a 25-day floating average of nocturnal flight calls plotted against survey date. Results are shown both for flight calls of all passerines presumed to be on nocturnal migration (solid diamonds) and for flight calls of Chipping Sparrows (hollow squares).

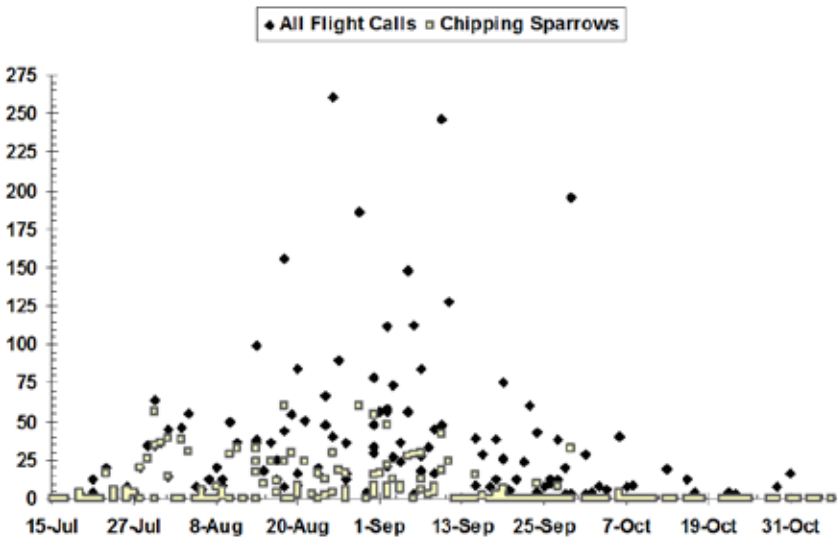


Fig. 2b. Shown here are the raw data used to generate Fig. 2a.



Fig. 3. This adult Chipping Sparrow shows mainly worn alternate plumage with a few incoming basic feathers on the crown. This individual was one of 12 observed on 28 July 2009 in a mosaic of grasslands, marshes, and broadleaf groves well east of the breeding grounds. Figure courtesy of © Chris Pague



Fig. 4. This Chipping Sparrow, an adult collected on 8 August 1910, is from Adams County, Colorado, east of the breeding range. The bird shows a mix of retained alternate and incoming basic feathers, indicating that it has begun its prebasic molt. Specimen from collection in the Denver Museum of Nature and Science, Department of Zoology, museum catalog no. ZB.1884; figure courtesy of © Bill Schmoker

(*P. melanocephalus*) of western North America may be more of a diurnal migrant (Hill 1995). The preceding examples are anecdotal, however; little if any evidence exists to suggest that the biology of nocturnal migration in the West differs fundamentally from what has been documented in eastern North America.

An alternative scenario is that field ornithologists in western North America have been thwarted by a “self-fulfilling prophesy” (Floyd 2007). According to this view, observers in the West have assumed that nocturnal flight calls are a primarily eastern phenomenon (see Withgott 2002) and thus have not attempted to document nocturnal migration in western North America. In other words, why bother to study something that you assume doesn’t occur?

Recent work in Colorado has shown that key aspects of nocturnal migration differ appreciably from the “standard model” from the late 20th century for eastern North America. The peak of the detectable fall migration of nocturnal migrants occurs earlier in the fall in Colorado than in the East (Floyd 2007, 2008), and a markedly different mix of species is heard in the night skies above Colorado (Floyd 2007, 2009). Whereas observers in the East have been conditioned to expect to hear heavy flights of *Catharus* thrushes on cool evenings in late September, observers in Colorado and elsewhere in the West should listen for heavy flights of sparrows on hot nights in early August. Observers unaware of these recent studies from Colorado could be excused for assuming that there are few if any songbird migrants to be heard in the night skies above western North America.

#### *Molt Migration: Desert Southwest vs. Great Plains*

In the past decade or so, ornithologists have come to realize that the phenomenon of molt migration is much more prevalent among the migratory passerines of western North America than among their eastern counterparts. For example, a review by Rohwer et al. (2005) reported molt migration in only five out of 55 species of Neotropical migrant species in eastern North America; in contrast, molt migration was documented in at least 13 out of 26 Neotropical migrant passerines breeding in the West. The numbers have been updated a bit since the time of that review, but the basic pattern remains the same: in the West, relatively large numbers of migratory passerines molt away from the breeding grounds.

The primary reason for the pervasiveness of molt migration in western North America is thought to be the “push” and “pull” of the region’s climate (Rohwer et al. 2005). Following breeding, birds are “pushed” away from their breeding grounds, which by early summer are hot, dry, and relatively unproductive; at the same time, birds

are “pulled” toward the relatively productive “Mexican Monsoon” region of the southwestern U.S. and northwestern Mexico. A recent study by Pyle et al. (2009) strongly supported this model and substantially expanded the number of species known to migrate to molt in the Mexican Monsoon region. Several papers documenting molt migration in the Mexican Monsoon region have argued for the conservation value of the region to molt migrants (e.g., Barry et al. 2009).

Although recent studies of molt migration in western passerines have emphasized the Mexican Monsoon region, it is prudent to consider the possibility of other destinations for molt migrants that breed in western North America. For example, Rohwer et al. (2008) have shown that Cassin’s Vireos (*Vireo cassinii*) breeding in relatively dry, low-elevation conifer forests migrate upslope to wetter mountain meadows to molt. Another option for migratory passerines in the arid western interior might be wetlands in the southern and central Great Plains.

Such wetlands have garnered much attention over the years for their value to “traditional” aquatic species like shorebirds (Haukos and Smith 1994). However, very few if any studies have highlighted their potential importance to molt migrant passerines breeding on the arid, lower-elevation slopes of the eastern Rocky Mountains. If wetlands in the southern and central plains prove to harbor large numbers of molt migrants, then a new array of conservation and management challenges will be presented to biologists charged with protecting these wetlands. Consequently, the lessons learned from studies of molt migrants in the Mexican Monsoon region may or may not apply in the Great Plains.

#### *Chipping Sparrows: West vs. East...vs. North?*

The Chipping Sparrow (*Spizella passerina*) is a widespread and familiar migratory species across much of North America. Not surprisingly, given the extensive breeding range of the species, the timing of fall migration is variable. In general, though, the bulk of the fall migration through the middle latitudes of the U.S. has been reported to occur from mid-September to mid-October (Middleton 1998).

Boundaries and relationships among subspecies of the Chipping Sparrow are unclear. The American Ornithologists’ Union (1957) recognized three subspecies in North America north of Mexico: nominate *passerina* of the eastern U.S. and southeastern Canada, *arizonae* of the western U.S., and *boreophila* of western Canada and the north-central U.S. In contrast, Pyle (1997) recognized eastern *passerina*, interior western *arizonae* (including *boreophila*), and Pacific coastal *stridula*. Middleton (1998) recognized only two subspecies in North America north of Mexico: eastern *passerina* and western *arizonae* (includ-

ing both *boreophila* and *stridula*). Bent (1968) followed the American Ornithologists' Union (1957), but he treated *passerina* and *boreophila* in the same account, with *arizonae* receiving separate treatment. Of particular relevance to the present study is the comprehensive treatment of the birds of Colorado by Bailey and Niedrach (1965), who considered the *arizonae*–*boreophila* divide to be relatively well defined.

The crux of the problem is northern *boreophila*. Recent authorities (Pyle 1997, Middleton 1998) have not recognized the subspecies, but that does not solve the problem of the taxonomic affinities of birds breeding across the huge geographic expanse of western Canada and the north-central U.S. If *boreophila* is not valid, should these birds be placed with eastern *passerina* or with western *arizonae*?

In his original description of *boreophila*, Oberholser (1955) discussed only morphological differences with *passerina* and *arizonae*. Could there be behavioral and ecological points of distinction? In particular, could differences in migratory and molting strategies help clarify taxonomic relationships among populations of the Chipping Sparrow? And what might be the consequences for conservation?

## Methods

### Nocturnal Migration

I listened to nocturnal migrants flying over Lafayette, Colorado, USA, July–November, 2007–2010. In 2007, I listened from 39.997724° N, 105.116689° W. In 2008–2010, I listened from 39.9970564° N, 105.1141754° W, 225 meters to the east-southeast. Site characteristics, sampling methods, and various assumptions of and motivations for the study are laid out in detail in Floyd (2007, 2008).

Applying the method of convenience sampling (McCormack and Hill 1997), I counted all flight calls heard during listening sessions beginning no earlier than 24:00 (local midnight) and ending no later than the beginning of nautical dawn. See Floyd (2008) for a justification of the technique of convenience sampling as it applies to the present study. I conducted one listening session per night of observation. In 2008–2010, all listening sessions were at least 15 minutes in duration; in 2007, a few listening sessions were shorter than 15 minutes. Sessions varied in length, with a few as long as 60 minutes; most were  $\leq 30$  minutes.

Because of substantial night-to-night variation in the calling intensity of nocturnal migrants over Lafayette, I report my results in the form of a 25-day floating average of flight calls per hour plotted against survey date (Fig. 2a). I also report the “raw” nightly data, so as to illustrate the intrinsic variation in calling intensity (Fig. 2b).

The use of floating averages prevents formal statistical hypothesis-testing, but it is ideal for documenting basic trends in a previously undocumented phenomenon—for example, seasonal variation in the calling intensity of nocturnal migrants in Colorado. An overview of the method of floating averages is provided by Janert (2006).

In the analysis that follows, I report only passerines presumed to be on nocturnal migration. Examples of passerines excluded from analysis include American Robins (*Turdus migratorius*) flushing from nighttime roosts and night-singing summer-resident Barn Swallows (*Hirundo rustica*) flying overhead. For the present study, the only flight call that I report to species is that of the Chipping Sparrow, a distinctive, clipped, piercing, interrogative “seen?” that is underslurred (i.e., falling in pitch then rising, *sensu* Pieplow 2007); see Fig. 1.

#### *Follow-up Documentation of Molt Migration*

I documented molt migration in Colorado Chipping Sparrows through fieldwork and museum studies. This phase of the study was anecdotal, intended only to document the occurrence of molt in Chipping Sparrows away from their breeding grounds; no quantitative assessment of the extent of the phenomenon is implied. To determine the potential molting grounds of the species, I searched for Chipping Sparrows in the field and solicited data from other observers in Colorado. To show that molt occurs at these sites, I analyzed specimens of Chipping Sparrows in care of the Denver Museum of Nature and Science. The importance of field studies and museum studies for establishing the occurrence of molt migration in bird populations has recently been affirmed by Pyle et al. (2009) and Barry et al. (2009), respectively.

## **Results**

### *Nocturnal Migration*

I listened to nocturnal migrants flying over Lafayette, Colorado, on 36 nights from 21 July to 3 November 2007, on 46 nights from 15 July to 23 October 2008, on 48 nights from 20 July to 4 November 2009, and on 46 nights from 17 July to 6 November 2010. Flight calls per hour (25-day floating average) for all passerines and for Chipping Sparrows are shown in Fig. 2a. The floating average was created from all survey dates ( $n=176$  for the four-year study) weighted identically. Not surprisingly, there were many instances in which the same date was represented more than once; for example, I conducted listening sessions on 7 September in 2007, 2008, and 2010. Each session had the same weight ( $n=1$ ) relative to the floating average for the entire sample of 176 listening sessions. For ease of interpretation, however,

Fig. 2a shows only one value per survey date; that one value is the arithmetic mean of the value of the floating averages for that survey date. By way of example, the survey dates of 7 September 2007, 7 September 2008, and 7 September 2010 contributed equally to the 25-day floating average for the four-year analysis; however, the 25-day floating average shown for 7 September in Fig. 2a is the arithmetic mean of the three 25-day floating averages for that date.

During the first 12 and final 12 periods of observation, when there were fewer than 25 observations from which to construct floating averages, I calculated a 13-day floating average for the first observation, a 14-day floating average for the second observation, a 15-day floating average for the third observation, and so forth up to a 25-day floating average for the 13th observation. See Janert 2006 for further discussion of this method.

Modest nocturnal flights were underway by the end of July. By 28 July, there was a 25-day floating average of 16.32 flight calls per hour for all passerines and a 25-day floating average of 13.36 flight calls per hour for Chipping Sparrows. The overall nocturnal flight intensified steadily throughout August, peaking at a 25-day floating average of 60.82 flight calls per hour for all passerines on 31 August. The Chipping Sparrow flight, however, remained fairly constant during this period, slowly and steadily increasing to a maximum of 16.67 flight calls per hour (25-day floating average) on 2 September.

After the first few days of September, the nocturnal flight dropped off steadily. By 2 October, the composite passerine flight was 16.20 flight calls per hour, essentially the same intensity as for 28 July. The Chipping Sparrow flight had dropped to a trickle by 2 October, with a 25-day floating average of 1.76 flight calls per hour. By 16 October, the nocturnal flight was down to 2.52 flight calls per hour for all passerines, and the Chipping Sparrow flight had declined to 0.00 flight calls per hour by that date.

#### *Daytime Occurrence in July*

During the period of this study, I became aware of the widespread occurrence of Chipping Sparrows throughout July on the eastern plains of Colorado, where Chipping Sparrows do not breed (Kingery 1998). By early July, Chipping Sparrows were widespread away from the mountains and foothills of the Front Range metropolitan area (pers. obs. and pers. comm. from numerous area birders); the species is absent or very rare as a breeder in Colorado on the plains east of the foothills (Kingery 1998). I also received scattered reports of individuals, small flocks (2–10 birds), and medium flocks (10+ birds) throughout July from Cheyenne, Crowley, Kit Carson, Lin-



coln, Logan, Prowers, Washington, and Yuma counties, well out on the eastern plains of Colorado. The age of these birds, if noted by the observer, was adult in all but one instance; the one exception was a juvenile within 10 km of the breeding grounds in El Paso County.

Fieldwork conducted on a private holding in eastern Lincoln County, Colorado, 27–28 July 2009 is illustrative of the summary given above. With C. Pague, I observed two Chipping Sparrows on the afternoon of 27 July and twelve Chipping Sparrows on the morning of 28 July. All birds were adults, and all exhibited some combination of worn alternate plumage and incoming basic plumage. A typical individual from our time afield is shown in Fig. 3. No birds were observed to engage in breeding behavior (e.g., singing). Additionally, the location and habitat (marshes and broadleaf groves amid shortgrass prairie) were unsuitable for breeding (see Kingery 1998).

### *Prebasic Molt*

Seven specimens of Chipping Sparrows in care of the Department of Zoology, Denver Museum of Nature and Science, are from eastern Colorado in mid-summer, defined here as July–August. Of that total, two are skeletons and five are study skins. One of the five study skins is shown in Fig. 4. I selected this specimen because it was in especially good condition; I hope my analysis of evidence for molt on this specimen, presented below, will provide a guide to future researchers working from larger samples.

The bird shown in Fig. 4 was collected on 8 August 1910 in Adams County, eastern Colorado, away from the breeding grounds. The bird is an adult, and it has just begun its prebasic molt. The bird's crown shows a mix of retained alternate feathers (tattered, rufous) and incoming basic feathers (black-streaked). S8 has dropped from both wings, and one to three inner primaries are missing from both wings.

## **Discussion**

### *Mid-summer Dispersal*

In a very general sense, post-breeding dispersal in Chipping Sparrows has previously been documented in Colorado. Bailey and Niedrach (1965) allude to the phenomenon, for example. In general, though, the literature is essentially silent on the occurrence of Chipping Sparrows well away from the Colorado breeding grounds in mid-summer.

It is not surprising that mid-summer dispersal by Chipping Sparrows in Colorado has gone largely unnoticed until recently. The birds are widely scattered across eastern Colorado, which is sparsely populated by humans and which, by early summer, is hot and seemingly unproductive. To the extent that field ornithologists are active in

eastern Colorado in mid-summer, they are largely preoccupied with studies of breeding birds and migratory shorebirds. Unless one knows the flight call of the Chipping Sparrow, one might easily overlook the species altogether. In July and August, I routinely fail to see any Chipping Sparrows during the course of a day's fieldwork, even though I may hear scores of flight calls while in the field (pers. obs.).

By night, the situation is different. In July, the majority of nocturnal flight calls heard are those of the Chipping Sparrow (Fig. 2a), with >80% of all flight call detections in late July being those of Chipping Sparrows. In August, other species enter the fray, but the Chipping Sparrow nonetheless remains the most frequently detected species, accounting for >25% of all detections at the peak of the nocturnal passerine flight, around 31 August (Fig. 2a). That said, interest in nocturnal migration monitoring is in its infancy in Colorado (Floyd 2007); the first quantitative study of nocturnal migration in Colorado was Floyd (2008). Up until the past few years, nocturnal migration of Chipping Sparrows in Colorado was unknown to or unreported by field ornithologists.

### *Molt Migration*

Neltje Blanchan, in her classic *Birds Every Child Should Know* (1907), wrote, "The chippy is wonderfully tame—perhaps the tamest bird that we have." Yet Chipping Sparrows on the plains of eastern Colorado in July and early August are strangely unforthcoming, holed up in dense vegetation much of the time and reluctant to flush (pers. obs.). Such behavior is consistent with molting.

To the extent that mid-summer Chipping Sparrows are visually detected away from the breeding grounds in Colorado, such detections are almost invariably of adults; hatch-year birds are not reported in sizable numbers until the end of August. In a recent summary, Carlisle et al. (2005) reported that the timing of dispersal of adults vs. juveniles serves as a good proxy for molt strategy. The argument is that if adults migrate earlier than hatch-year birds, then molt migration is likely occurring within a population; conversely, if hatch-year birds migrate earlier than adults, then molt migration probably is not occurring within a population (Carlisle et al. 2005). Clearly, the data from Colorado point to molt migration of Chipping Sparrows.

The occurrence of generally furtive adults far from the breeding grounds in mid-summer provides excellent circumstantial evidence that Chipping Sparrows are molt migrants in Colorado, but it is not a "smoking gun." Instead, direct evidence for molt migration is better provided by photographic documentation of live birds in the field (see Fig. 3) and especially analysis of museum specimens collected

away from the breeding grounds (see Fig. 4). Such evidence is anecdotally provided by the present study.

The geographic extent of molt migration of Chipping Sparrows in Colorado is notable. Although some birds appear to migrate to molt no farther than tens of kilometers from the breeding grounds (pers. obs. of birds in the Front Range metropolitan area), many others migrate to far eastern Colorado and at least to western Kansas (T. Shane, pers. comm.), several hundred kilometers from the breeding grounds. The extent of this dispersal is best appreciated by being out in the middle of the night in late July and listening to Chipping Sparrows flying east from the Rocky Mountains. I assume that these are birds on sustained overnight flights many hours in duration. This behavior contrasts with that of Chipping Sparrows in eastern North America, where individuals may engage in short-distance dispersal in midsummer but where birds are not detected on nocturnal migration until early autumn. For example, nocturnal flights of Chipping Sparrows are not noted in New Jersey until late September (M. O'Brien, pers. comm.).

Also notable is the destination for these birds, namely, the high plains of eastern Colorado and western Kansas. In particular, molting Chipping Sparrows are widely distributed within the region that has been recognized by Neely et al. (2006) as the Central Shortgrass Prairie Eco-Region. Most recent work—whether on short-distance dispersal (e.g., Rohwer et al. 2008) or on long-distance dispersal (e.g., Pyle et al. 2009)—emphasizes molt migration within the interior West of North America. The present study, however, calls attention to the western Great Plains as a destination for molt migrant passerines breeding in the Rocky Mountains.

#### *Taxonomic Implications*

Differences in molt strategies may provide a basis for recognizing taxonomic limits in birds. For example, a “split” resulting in the recognition of American Golden-Plover (*Pluvialis dominica*) and Pacific Golden-Plover (*P. fulva*) as separate species was based in part on differences in molt strategy between the two populations (Connors et al. 1993). In the same vein, eastern and western populations of the Warbling Vireo (*Vireo gilvus*) differ in the timing of molt (Voelker and Rohwer 1998), a point that has been raised as a possible basis for splitting the species.

In contrast to the Warbling Vireo, the Chipping Sparrow is not a likely candidate to be split, as genetic differentiation across the species' range is relatively low (Zink and Dittmann 1993). Nevertheless, taxonomic limits within the Chipping Sparrow are unclear,

especially with regard to birds breeding in the extensive northwestern portion of the species' range, extending from east-central Alaska south to the northwestern contiguous U.S. and east to Ontario. Are they more closely affiliated with *arizonae* of the western interior, as per Pyle (1997) and Middleton (1998)? Or are they more closely affiliated with nominate *passerina* of eastern North America, as Bent (1968) implies? Or do they deserve recognition as their own subspecies, *boreophila*, as posited by Oberholser (1955) and reaffirmed by the American Ornithologists' Union (1957) and Bailey and Niedrach (1965)?

Resolution of the matter might be advanced by a comparative study of molt and migration across the range of the Chipping Sparrow. We now know that "Western" Chipping Sparrows (*arizonae* in the strict sense) engage in extensive midsummer nocturnal migration to molting grounds far from the breeding grounds, a result established by this study as well as by recent studies of molt migration to the Mexican Monsoon region (Pyle et al. 2009, Chambers et al. 2011); "Eastern" Chipping Sparrows (nominate *passerina* in the strict sense), however, appear not to. The obvious question, then, is whether "Northern" or "Canadian" Chipping Sparrows ("*boreophila*") are or are not early-season molt migrants. The literature from western and central Canada (e.g., Campbell et al. 2001 for British Columbia and Taylor 2003 for Manitoba) indicates that the main Chipping Sparrow departure does not get underway until August. In particular, I am not aware of any publications or data to suggest that "Northern" ("Canadian") Chipping Sparrows exhibit a molt strategy like that which I have shown to be exhibited by "Western" Chipping Sparrows; in this regard, then, they seem to be closer to "Eastern" Chipping Sparrows. Furthermore, I note that "northern" population groups of many bird species are generally more likely to be affiliated with "eastern" population groups than with "interior western" population groups (Pyle 1997:28).

### *Conservation Implications*

In a fairly recent and thorough examination of conservation issues facing the Central Shortgrass Prairie Eco-Region (Neely et al. 2006), there is no mention of management needs for molt migrants. This is unsurprising, given our current and cursory knowledge about the occurrence of molt migrants within this eco-region. However, the recommendations put forth by Neely et al. (2006) emphasize the importance of "adaptive management," and I note that biologists and project directors with The Nature Conservancy (TNC) are already acting on new knowledge regarding the apparent importance of the central shortgrass prairie for molt migrants. Management of grazing

so as to accommodate habitat use by molt migrants is being studied at a TNC preserve in Yuma County (W. Burnidge, pers. comm.), and a recent grant for a preserve in Cheyenne and Lincoln counties was supported in part by documentation of molt migrants at the site (C. Pague, pers. comm.).

To be sure, additional work remains. Molt is surprisingly complex in the nominate subspecies of the Chipping Sparrow (Willoughby 1989), and future studies of molt in western Chipping Sparrows may present some surprises. More generally, molt migration is a “plastic” life history trait (Pyle et al. 2009, Chambers et al. 2011), susceptible to annual variation in precipitation and food availability; factors responsible for initiating the onset of molt and migration in Chipping Sparrows in Colorado remain to be worked out. There is also the problem of spatial scale. The geographic reach of molt migration may be extensive, as with Chipping Sparrows in Colorado, but other populations and species may disperse over much shorter distances (Rohwer et al. 2008). This, then, raises the question of whether other species migrate to molt in the Central Shortgrass Prairie Eco-Region. Given the pervasiveness of molt migration in the Mexican Monsoon region of the interior West (Pyle et al. 2009), it seems likely that species other than the Chipping Sparrow will soon be added to the roster of known molt migrants in the central shortgrass prairie.

The review by Neely et al. (2006) emphasizes the need to address climate change in ongoing and future planning for the Central Shortgrass Prairie Eco-Region, and it advocates the adaptive management paradigm for moving forward. In this regard, the Chipping Sparrow provides a particularly compelling study system for understanding and anticipating environmental change in the central shortgrass prairie. Present-day migratory strategies of Chipping Sparrows appear to have evolved quickly and recently (Milá et al. 2006), evidently in response to changing climate patterns. Recent studies have affirmed that bird migration is a life history trait which responds quickly to climate change (e.g., Pulido and Berthold 2010), and molt migration appears to be an especially adaptable trait (Pyle et al. 2009). Additional study of molt migration in the central shortgrass prairie will likely provide additional insights and inform management decisions within and beyond the Central Shortgrass Prairie Eco-Region.

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## PEER REVIEW

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Ted Floyd, 2009 South Fork Drive, Lafayette, CO 80026, tedfloyd57@hotmail.com

## CFO-FUNDED RESEARCH

# Collection and Comparison of Natural Ejaculates and Sperm Morphometrics of Greater (*Centrocercus urophasianus*) and Gunnison Sage-Grouse (*C. minimus*)

Tyler L. Hicks<sup>1</sup> and Patrick A. Magee

### Abstract

In spring 2008, we collected four natural ejaculates from strutting male Greater (Galliformes: *Centrocercus urophasianus*) and Gunnison Sage-Grouse (*C. minimus*) in Colorado, USA by placing freeze-dried

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<sup>1</sup>Corresponding author; e-mail: tyler\_hicks@wsu.edu



female Greater Sage-Grouse on leks in the soliciting pre-copulatory position and fitting them with false cloacas. We compared between species the sperm concentrations, the percentage of viable sperm, the types and predominance of normal and abnormal sperm in ejaculate samples, and sperm morphometric traits. In addition, we compared sperm concentration and morphometry of both species with other species of Galliformes. Notwithstanding our small sample size, ejaculate characteristics were similar among individuals and between the two grouse species. Total length did not differ substantially between the two species. However, we found that Greater Sage-Grouse possess sperm heads that averaged 10% longer than those of Gunnison Sage-Grouse and Gunnison Sage-Grouse possess sperm tails that averaged 10% longer than those of Greater Sage-Grouse. Total sperm length in both species is among the smallest known for Galliformes. Compared to other Galliformes, sperm concentration was low for Gunnison Sage-Grouse and average for Greater Sage-Grouse.

## Introduction

Greater Sage-Grouse (*Centrocercus urophasianus*) and Gunnison Sage-Grouse (*C. minimus*) are two closely related species of Galliformes that occur in western North America. The two species occur in similar habitats and have similar life histories, exhibiting polygynous lek mating systems in which multiple males gather at a lek and perform strut displays that attract females (Young et al. 2000). The ranges of the two species do not overlap. Greater Sage-Grouse is more geographically widespread while Gunnison Sage-Grouse is restricted to southwest Colorado and extreme southeast Utah (Schroeder et al. 1999, Young et al. 2000, Oyler-McCance et al. 2001, Schroeder et al. 2004).

The two species differ in plumage, morphology, behavior, voice, and genetics (Young et al. 2000, Oyler-McCance et al. 2005). However, molecular differences between them are among the smallest documented between vertebrate species, suggesting that speciation is recent (Awise and Walker 1999, Young et al. 2000). The gene pool of the Gunnison Sage-Grouse is depauperate due to limited gene flow among the remaining subpopulations (Oyler-McCance et al. 2005). The listing of both species under the Endangered Species Act has been ruled "warranted but precluded" (Western Colorado Ecological Services Field Office 2010, Wyoming, Montana, Idaho, Nevada, and Oregon Ecological Services Offices 2010).

Ejaculate characteristics, including sperm concentration and percentage of viable, motile and normally-shaped sperm, are widely used as indices of fertility (Froman et al. 1991, Guzick et al. 2001, Malo et

al. 2005, Waldoch et al. 2007). Low sperm counts and sperm velocity, as well as large proportions of non-viable and morphologically abnormal sperm, have been implicated as indicators of reduced fertility in red deer (*Cervus elaphus hispanicus*, Malo et al. 2005) and Rockhopper Penguins (*Eudyptes chrysocome chrysocome*, Waldoch et al. 2007). In addition, sperm morphometric traits, including head size, tail (flagellum) length, and total length, have been shown to be related to sperm longevity and the intensity of competition in birds (Briskie and Montgomerie 1992, Johnson and Briskie 1999, Halfen-stein 2008).

Pellat and Birkhead (1994) cite several techniques for collecting ejaculates from birds, but many techniques require specialized training and handling of birds, and can be costly in terms of personnel time and training, as well as stress and potential injury to birds. In addition, these techniques produce ejaculates that are not likely to reflect natural ejaculates in their qualities and characteristics (Pellat and Birkhead 1994). However, natural ejaculates have been obtained from African Ostriches (*Struthio camelus*) and Japanese Quail (*Coturnix japonica*) through the use of live dummy teaser females and from Zebra Finches (*Taeniopygia guttata*), Red-winged Blackbirds (*Agelaius phoeniceus*), and Bank Swallows (*Riparia riparia*) with the use of taxidermically mounted females fitted with a false cloaca (e.g., Pellat and Birkhead 1994, Westneat et al. 1998, Nicholls et al. 2001, Rybnik et al. 2007, Chelmonska 2008). Here we present data on ejaculate characteristics and sperm morphometrics from natural ejaculates collected from Greater Sage-Grouse and Gunnison Sage-Grouse using taxidermically mounted female Greater Sage-Grouse.

## Methods

**Field Sites**—Male Greater Sage-Grouse ejaculates were collected on a lek in Moffat County, Colorado, USA. The lek is located on Bureau of Land Management (BLM) property in the Axial Basin approximately 40 km southwest of Craig, Colorado. Gunnison Sage-Grouse ejaculates were collected on a lek in northern Saguache County, Colorado. The lek is located in the upper Gunnison Basin on BLM lands, approximately 40 km southeast of Gunnison, Colorado. Both lek sites were in relatively open habitats dominated by big sagebrush (*Artemisia tridentata*). Sampling took place in the spring of 2008.

**Ejaculate Collection**—Natural ejaculate samples were collected using freeze-dried dummy Greater Sage-Grouse hens (Kulis Inc., Bedford, OH, USA) taxidermically mounted in the pre-copulatory position (Fig. 1) and placed on the lek. Dummy hens were mounted

with a false cloaca made from 1.9 cm diameter vinyl tubing similar to those used in other studies (Pellat and Birkhead 1994, Fig. 2). False cloacas were filled with 2 ml of Beltsville Turkey Semen Extender II (Beltsville Inc, MD, USA). The use of semen extender significantly prolongs the mobility of avian sperm collected in the field (Sexton 1977, Penfold et al. 2001). In the event that the male ejaculated on the female rather than into the false cloaca during copulation, we pipetted it off the feathers and placed it in 2 ml of semen extender.

The dummy hens were placed on leks by several methods, including a stationary mount, a non-motorized wheeled mount, a motorized wheeled mount, and a sliding track mount. Methods of dummy placement were tested to determine male response to the movements of the dummy hens. We chose dummy placement methods that caused the least amount of disturbance and elicited male mating response. We measured disturbance by dummy avoidance, reduction in strutting, and flushing away from the dummy.

Camouflage blinds (Trekker T-200, Foundton Co. Ltd., Hong Kong, China) were erected on leks during afternoon hours when no strutting males were present. Blinds were placed either within or on the edges of leks. Track systems or rope pulley systems, used to mobilize dummy hens, ran outward from the front of the blinds and were camouflaged. Field researchers entered the blind a minimum of 45



Fig. 1. A female Greater Sage-Grouse (*Centrocercus urophasianus*) dummy hen used to collect natural ejaculates.

minutes before sunrise and did not leave until all birds had departed the lek. Detailed notes on the plumage characteristics (broken rectrices, tail patterns) of birds that mated with the dummy hens were recorded to ensure identification of individual birds. In addition, copulations were video-recorded, if sufficient light was available, to aid in individual identification. All ejaculate samples were collected from males who had not been observed copulating earlier on the morning of collection. Ejaculate samples were collected from mobile dummy hens once the dummy hen was pulled back to the blind via track/pulley system or, when stationary mount dummy hens were used, after birds had vacated the lek.

*Laboratory Methods*—Extended semen samples were transported to laboratories at Western State College in Gunnison, Colorado or a Colorado Division of Wildlife office in Craig, Colorado, approximately 45 minutes from sampling locations. All samples were processed 1-3 hours after collection. First, dilution factors were determined by dividing the volume of ejaculate collected by the volume of the extender. Next, 1  $\mu$ l of a dilute (0.3%) solution of glutaraldehyde was added to a 5- $\mu$ l aliquot of extended semen to immobilize the spermatozoa. The immobilized sperm aliquot was placed in a hemacytometer and counted to estimate sperm concentration, accounting for dilution factors. To test viability, we placed a separate 2- $\mu$ l aliquot of extended semen in 20  $\mu$ l of eosin-nigrosin solution and incubated it at room temperature for two minutes. Afterwards this solution was smeared on a microscope slide and air-dried. Viable sperm with intact plasma membranes stained yellow, whereas non-viable sperm stained purple (Blom 1950). The percentage of viable sperm was calculated by dividing the number of viable sperm by the total number of sperm counted ( $\sim 100$ ). In addition, we calculated the percentage of structurally normal sperm versus the type and percentage of abnormal sperm. The most commonly encountered types of abnormalities in the ejaculate samples included headless sperm, tailless sperm, sperm with distal and proximal droplets, and multi-tailed sperm.

Finally, we compared the morphometry of sperm from each species, including head length, tail length, and total length. Ten normal and viable sperm were randomly selected from each of the four individual males and photographed using an Olympus DP12 digital camera mounted on a light microscope at 300 $\times$  magnification and an image size of 2048  $\times$  1536 pixels. Using the sperm images, we measured the head and tail length ( $\mu$ m) of each sperm using ImageJ 1.4 software (NIH, Bethesda, MD, USA). We included the midpiece in the head measurement due to difficulty in determining where the head ended and midpiece began. Total length of each sperm was de-

terminated by adding head and tail length. Means  $\pm$  SD were calculated for each variable.

## Results

We collected a total of four natural ejaculate samples: one from an adult male Greater Sage-Grouse using the non-motorized wheeled dummy mount; one from an adult male Greater Sage-Grouse using a stationary mount; one from an adult Gunnison Sage-Grouse using a stationary mount; and one from a sub-adult Gunnison Sage-Grouse using a stationary mount. Each sample originated from one copulation and from a unique male identified by plumage characteristics, primarily tail feather breakages and markings.

Both Greater Sage-Grouse and Gunnison Sage-Grouse males avoided the motorized dummy hen. Greater Sage-Grouse males responded positively to the wheeled non-motorized dummy mount. However, Gunnison Sage-Grouse males markedly avoided the wheeled non-motorized mount, keeping 2-3 meters away from it. Males

of both species responded positively to the stationary mounts, especially when the mounts were placed near the center of the lek. The sliding track mount was problematic due to snowfall throughout the sampling period.

The shapes of sperm from both Gunnison Sage-Grouse and Greater Sage-Grouse were typical of Galliformes and similar to that of the domestic chicken (*Gallus gallus domesticus*). Sperm concentrations in Gunnison Sage-Grouse were  $1.33 \times 10^9$  sperm/ml for the adult bird and  $1.66 \times 10^9$  sperm/ml for the sub-adult bird. Sperm concentrations in Greater Sage-Grouse were  $1.33 \times 10^9$  sperm/ml for one adult male and  $5.05 \times$



Fig. 2. A caudal view of the dummy hen showing the artificial cloaca.

10<sup>9</sup> sperm/ml for the other. Percentages of viable sperm were similar among the two species, with values of 84% in the adult Gunnison Sage-Grouse and 88% in the sub-adult, and values of 85% and 88% in the two Greater Sage-Grouse males.

The percentage of structurally normal sperm was 70% and 72% in the sub-adult and adult Gunnison Sage-Grouse, respectively, and 71% and 74% in the two adult Greater Sage-Grouse males. The two most frequently encountered sperm abnormalities in both species were tailless sperm and proximal droplets. The percentage of tailless sperm were 16% and 21% in the two Gunnison Sage-Grouse samples and 13% and 23% in the two Greater Sage-Grouse samples. The percentage of sperm with proximal droplets was 6% in both Gunnison Sage-Grouse samples and 3% and 11% in the two Greater Sage-Grouse samples. Other forms of sperm abnormalities together totaled less than 6% of each sample, including headless sperm, sperm with distal droplets, and two-tailed sperm, in order of increasing rarity.

Greater Sage-Grouse sperm head length, at  $22.69 \pm 1.77 \mu\text{m}$ , was 10% longer than Gunnison Sage-Grouse sperm head length, at  $20.67 \pm 1.65 \mu\text{m}$ . Sperm tail length in Gunnison Sage-Grouse, at  $54.59 \pm 4.40 \mu\text{m}$ , averaged nearly 10% longer than Greater Sage-Grouse sperm tail length, at  $49.76 \pm 4.12 \mu\text{m}$ . The mean total length of Gunnison Sage-Grouse sperm was  $75.26 \pm 5.02 \mu\text{m}$  compared to  $72.45 \pm 4.60 \mu\text{m}$  in the Greater Sage-Grouse.

## Discussion

The difference in behavioral responses of Greater Sage-Grouse and Gunnison Sage-Grouse to varied presentations of the dummy hen was not unexpected. Gunnison Sage-Grouse are known to be more sensitive to disturbance (Jessica Young, pers. comm.). The difference in willingness to mate with the non-motorized dummy hen supports assertions that the two species differ behaviorally and that they likely respond to disturbance in different ways.

Behavioral avoidance of the motorized dummy hen by males of both species was likely an artifact of either the “unnatural” rotational motion of wheels, the noise generated by the electric motor, or both. Placement of the immobile dummy hen on the lek prior to strutting caused the least amount of disturbance to males of both species and elicited positive responses.

The use of dummy hens to collect ejaculate from male *Centrocercus* grouse is feasible and preferable to manual collection methods for several reasons. First, utilizing dummy hens does not require capture of adult males and avoids stress and the potential injuries and deaths associated with handling. Second, it involves fewer disturbances of

lekking birds than capturing males on the lek. Lastly, it provides an efficient and non-invasive means for collecting natural ejaculates that are more likely to resemble ejaculates in natural mating attempts (Pellat and Birkhead 1994).

Ejaculate characteristics were generally similar between individuals and species with the exception of sperm concentration. Sperm concentrations were similar among the two male Gunnison Sage-Grouse. Sperm concentrations varied more substantially between the two Greater Sage-Grouse but overlapped among species. One possible explanation for the observed differences in sperm concentration is related to differences in spatial dynamics on the lek, where reduced distances between lekking male Greater Sage-Grouse resulted in greater defense and guarding behavior of the dummy female by Greater Sage-Grouse than by Gunnison Sage-Grouse. Allocation of ejaculate, in the form of sperm concentration, has been observed in Adelie Penguins (*Pygoscelis adeliae*) and in Bank Swallows (*Riparia riparia*) when males partook in copulations while facing potentially increased sperm competition (Hunter et al. 2000, Nicholls et al. 2001). However, Red Junglefowl (*Gallus gallus*) males allocate ejaculate according to the size of female sexual ornaments, female promiscuity, and familiarity with female (Pizzari 2003). Our sample sizes are small and limit the ability to confirm ejaculate allocation in grouse. However, our results do suggest that further investigation of potential ejaculate allocation in *Centrocercus* grouse is warranted.

Gunnison and Greater Sage-Grouse sperm concentrations are moderate to low compared to other Galliformes, but are similar to the more closely related Black Grouse (*Tetrao tetrix*; Table 1). High sperm concentrations are typically associated with high levels of sperm competition (Møller 1988). It is currently believed that most female sage-grouse copulate only once or twice per clutch, suggesting that sperm competition is low in *Centrocercus* grouse. However, recent molecular work on Greater Sage-Grouse has documented multiple-paternity broods, suggesting that some level of sperm competition risk may exist (Semple et al. 2001). How male sage-grouse allocate sperm on the lek and, potentially, off the lek is worthy of further study.

Other unstudied factors associated with lek mating systems may account for the variation observed, including individual male dominance, health, location within the lek, and age. We found no substantial difference in sperm concentration between sub-adult and adult male Gunnison Sage-Grouse, but our sample size was limited. Eng (1963) found that during late April and early May, sub-adult Greater Sage-Grouse testes volume was slightly more than half that

of adult Greater Sage-Grouse. However, he hypothesized that sub-adult male Greater Sage-Grouse were capable of fathering offspring. Our data suggest that sub-adult males in the closely related Gunnison Sage-Grouse have fertility potential similar to that of adults, supporting Eng's hypothesis and agreeing with previous findings (Eng 1963, Wiley 1973, 1974, Hartzler and Jenni 1988). Due to the low survivorship of male *Centrocercus* grouse, it is likely that fertility of sub-adult males would be adaptive (Zablan 1987).

We found that Gunnison Sage-Grouse had 10% longer sperm tails than Greater Sage-Grouse. However, Greater Sage-Grouse sperm heads were 10% longer than Gunnison Sage-Grouse. In a comparison with 28 other species of Galliformes, *Centrocercus* grouse have large sperm heads (Table 2). However, both species of sage-grouse possess among the shortest sperm tail length and total sperm length of the 30 documented species (Table 2).

A number of factors can contribute to sperm shape and length, including phylogeny, sperm competition risk, shape of female sperm

Table 1. A comparison of Greater Sage-Grouse and Gunnison Sage-Grouse sperm concentration with 23 species of Galliformes (sorted from highest to lowest). Note that Greater Sage-Grouse sperm concentration contrasted sharply between the two sampled individuals.

Common Name	Species <i>Latin Name</i>	Concentration ( $\times 10^9$ sperm/ml) mean $\pm$ S.D.		Reference
Domestic Turkey	<i>Meleagris gallopavo gallopavo</i>	11.1	$\pm$ 0.2	Noirault and Brillard 1999
Mikado Pheasant	<i>Syrnaticus mikado</i>	6.6	$\pm$ 3.0	Jalme et al. 2003
Temminck's Tragopan	<i>Tragopan temminckii</i>	5.4	$\pm$ 3.4	Jalme et al. 2003
Lady Amherst's Pheasant	<i>Chrysolophus amherstiae</i>	4.8	$\pm$ 2.6	Jalme et al. 2003
Cabot's Tragopan	<i>Tragopan cabotii</i>	4.7	$\pm$ 1.6	Jalme et al. 2003
Swinhoe's Pheasant	<i>Lophura swinhoii</i>	4.1	$\pm$ 1.8	Jalme et al. 2003
Berlioz's Silver Pheasant	<i>Lophura nyctemera berliozii</i>	4	$\pm$ 1.8	Jalme et al. 2003
Blyth's Tragopan	<i>Tragopan blythii</i>	3.8	$\pm$ 2.2	Jalme et al. 2003
Himalayan Monal	<i>Lophophorus impeyanus</i>	3.8	$\pm$ 2.2	Jalme et al. 2003
Satyr Tragopan	<i>Tragopan satyra</i>	3.3	$\pm$ 1.8	Jalme et al. 2003
Red Junglefowl	<i>Gallus gallus</i>	3.1	$\pm$ 1.6	Jalme et al. 2003
<b>Greater Sage-Grouse</b>	<b><i>Centrocercus urophasianus</i></b>	<b>3.1</b>	<b><math>\pm</math> 2.0</b>	<b>Present study</b>
Palawan Peacock Pheasant	<i>Polyplectron emphanum</i>	2.7	$\pm$ 1.8	Jalme et al. 2003
Cheer Pheasant	<i>Catreus wallichi</i>	2.5	$\pm$ 1.0	Jalme et al. 2003
Grey Peacock Pheasant	<i>Polyplectron b. bicalcaratum</i>	2.5	$\pm$ 1.0	Jalme et al. 2003
Elliott's Pheasant	<i>Syrnaticus ellioti</i>	2.4	$\pm$ 1.9	Jalme et al. 2003
Edward's Pheasant	<i>Lophura edwardsi</i>	2.4	$\pm$ 2.0	Jalme et al. 2003
Blue-eared Pheasant	<i>Crossoptilon auritum</i>	2.3	$\pm$ 1.5	Jalme et al. 2003
Cabot's Tragopan	<i>Tragopan cabotii</i>	2.3	$\pm$ 0.2	Zhang 2006
Capercaillie	<i>Tetrao urogallus</i>	1.6	$\pm$ -	Ciereszko et al. 2010
<b>Gunnison Sage-Grouse</b>	<b><i>Centrocercus minimus</i></b>	<b>1.5</b>	<b><math>\pm</math> 0.2</b>	<b>Present study</b>
Black Grouse	<i>Tetrao tetrix</i>	1.3	$\pm$ -	Ciereszko et al. 2009
Common Koklass	<i>Pucrasia macrolopha</i>	1.2	$\pm$ 0.8	Jalme et al. 2003
Japanese Quail	<i>Coturnix japonica</i>	0.7	$\pm$ 0.2	Chelmonska et al. 2008
Common Piping Guan	<i>Pipile cumanensis cumanensis</i>	0.4	$\pm$ -	DeMatteo et al. 2004



storage tubules, and female reproductive phenology (Birkhead and Møller 1992, Briskie and Montgomerie 1992, Briskie and Montgomerie 1993, Briskie et al. 1997, Gage 1998, Johnson and Briskie 1999, Immler et al. 2007). Determining what factors best explain the differences in sperm morphometry observed between Greater Sage-Grouse and Gunnison Sage-Grouse is difficult given our limited sample size and lack of understanding of the interspecific range of variation in sperm morphometry within sage-grouse. Length of sperm storage and the relationships between sperm longevity and morphometry are still debated (Cardullo and Baltz 1991, Immler and Birkhead 2007, Immler et al. 2007). Both species possess similar breeding life histories that would suggest that length of sperm storage does not explain the observed differences (Petersen 1980, Young 1994, Schroeder et al. 2004). However, the shape of female sperm storage tubules in *Centrocercus* grouse has yet to be described.

Data describing ejaculate characteristics and sperm morphometry traits of North American Galliformes is lacking. Better documentation of galliform ejaculate and sperm morphometry traits could prove useful in understanding sperm competition theory. In addi-

Table 2. A comparison of Greater Sage-Grouse and Gunnison Sage-Grouse sperm head, tail, and total length ( $\mu\text{m}$ ) with 28 species of Galliformes (sorted by total length from longest to shortest).

Species	Head <sub>a</sub> (μm)	Tail (μm)	Total (μm)	Reference	
Common name	Latin Name				
Japanese Quail	<i>Coturnix japonica</i>	191.40	50.00	240.00	Korn et al. 2000
Germain's Peacock Pheasant	<i>Polyplectron germaini</i>	33.75	108.41	130.03	Immler et al. 2007
Grey Peacock Pheasant	<i>Polyplectron bicalcaratum</i>	22.86	101.16	113.93	Immler et al. 2007
Palawan Peacock Pheasant	<i>Polyplectron emphanum</i>	26.14	97.46	111.32	Immler et al. 2007
Red Junglefowl	<i>Gallus gallus</i>	19.30	90.00	109.30	Lake et al. 1968
Indian Peafowl	<i>Pavo cristatus</i>	25.65	78.62	97.50	Immler et al. 2007
Vietnamese Pheasant	<i>Lophura hatinhensis</i>	26.96	73.50	95.26	Immler et al. 2007
Elliott's Pheasant	<i>Symycterus ellioti</i>	21.76	72.81	90.62	Immler et al. 2007
Red Junglefowl	<i>Gallus gallus</i>	17.28	76.89	89.80	Immler et al. 2007
Temminck's Tragopan	<i>Tragopan temminckii</i>	16.56	75.97	88.68	Immler et al. 2007
Blyth's Tragopan	<i>Tragopan blythii</i>	16.25	76.17	88.41	Immler et al. 2007
Cabot's Tragopan	<i>Tragopan caboti</i>	20.13	71.66	87.67	Immler et al. 2007
Himalayan Monal	<i>Lophophorus impeyanus</i>	15.28	75.47	87.37	Immler et al. 2007
Satyr Tragopan	<i>Tragopan satyra</i>	16.09	75.13	87.15	Immler et al. 2007
Silver Pheasant	<i>Lophura nycthemera</i>	17.50	73.62	85.75	Immler et al. 2007
Brown-eared Pheasant	<i>Crossoptilon mantchuricum</i>	20.58	66.66	83.09	Immler et al. 2007
Black Grouse	<i>Tetrao tetrix</i>	17.44	64.12	81.56	Ciereszko et al. 2009
Mikado Pheasant	<i>Symycterus mikado</i>	15.50	69.14	80.19	Immler et al. 2007
Swinhoe's Pheasant	<i>Lophura swinhoii</i>	17.04	68.45	79.43	Immler et al. 2007
Green Pheasant	<i>Phasianus versicolor</i>	14.75	67.61	78.33	Immler et al. 2007
Hume's Pheasant	<i>Symycterus humiae</i>	22.84	59.67	78.11	Immler et al. 2007
Guinea Fowl	<i>Numida meleagris</i>	18.50	59.00	77.50	Thurston et al. 1982
Cheer Pheasant	<i>Catreus wallichi</i>	14.40	66.95	76.80	Immler et al. 2007
Lady Amherst's Pheasant	<i>Chrysolophus amherstiae</i>	16.31	65.02	76.76	Immler et al. 2007
Domestic Turkey	<i>Meleagris gallopavo gallopavo</i>	15.70	61.00	76.70	Marquez and Ogasawara 1975
Gunnison Sage-grouse	<i>Centrocercus minimus</i>	20.67	54.59	75.26	Present study
Capercaillie	<i>Tetrao urogallus</i>	15.65	57.62	73.27	Ciereszko et al. 2009
Blue-eared Pheasant	<i>Crossoptilon auritum</i>	14.81	62.50	73.20	Immler et al. 2007
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	22.69	49.76	72.46	Present study
Edward's Pheasant	<i>Lophura edwardsi</i>	16.36	59.87	71.39	Immler et al. 2007

Head<sub>a</sub> measurement includes sperm midpiece.

tion, grouse worldwide are experiencing dramatic population declines (Storch 2007). The collection of wild male grouse ejaculates may be important to captive breeding programs using artificial insemination. Through the use of a dummy hen similar to ours and combined with lek observations, biologists could selectively harvest ejaculate from the males with the most copulations with wild females while minimizing disturbance to wild birds. In this way captive females would be fertilized by males preferred by wild females, perhaps producing more fit offspring for captive propagation and/or release into the wild.

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## PEER REVIEW

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Tyler Hicks, Department of Environmental and Natural Resource Sciences, Washington State University - Vancouver, 14204 NE Salmon Cr. Ave, Vancouver, WA 98686

Patrick Magee, Department of Natural and Environmental Sciences, Western State College of Colorado, Gunnison, CO 81231

# Dragonflies and Damselflies

Dave Leatherman

About 100 million years ago, give or take 50 million, the first ancestral relatives of modern birds began capturing and eating the progenitors of our current dragonflies and damselflies. The scene was probably a lake shore, and the bird could well have been flightless. Oh, to have been there! The largest dragonfly currently known from the fossil record had a wingspan of 27 inches, so some of these foraging episodes involving birds and dragonflies must have been spectacular. I tell my little grandson Trey that *Tyrannosaurus rex* is worthy of depiction on his T-shirt, to be sure, but if we knew all about its contemporary creatures and their daily lives, he could have an entire wardrobe of “awesomeness.”

The insect order Odonata (or “odes,” for short) contains the damselflies (suborder Zygoptera) and dragonflies (suborder Anisoptera). Damselflies can normally be distinguished from dragonflies in the field by how they hold their wings when at rest – that is, together up over their abdomen – and by their relatively small size, delicate features, and tendency to stay down in the vegetation. Dragonflies hold their wings out flat, tend to have thicker, more robust bodies, and often fly at heights well above the non-woody vegetation. A third suborder (Anisozygoptera), which combines characters of the other two, contains only two living species from east Asia.

About 6000 species of odes exist worldwide, with 433 or so occurring in North American north of Mexico, and 117 in Colorado. As such, Colorado is not a hotbed of diversity for this group of insects,

## Field Guides to Odonates

If you are interested in identifying dragonflies and damselflies to species in the field, I recommend the following titles:

- *Dragonflies and Damselflies of the West* by Dennis Paulson (Princeton Press)
- *Dragonflies and Damselflies of Texas and the South-Central United States* by John C. Abbott (Princeton Press)
- *Dragonflies Through Binoculars* by Sidney W. Dunkle (Oxford University Press)
- *Dragonflies and Damselflies of the Rocky Mountains* by Robert DuBois (Kollath Stensaaas Publishing)



Fig. 1. Wandering Glider (*Pantala flavescens*), Tamarack Ranch State Wildlife Area, Logan County. Photo by the author

but they are conspicuous, important to our birds, and captivating to many humans. The common names of odes alone gives one an idea of their beauty and habits. Listen to these terms roll off your tongue: “bluet,” “skimmer,” “meadowhawk,” “emerald,” “jewelwing,” “dancer,” “darnier,” “glider,” “pennant,” “amberwing,” and “pondhawk.” Makes you want to go outside with a net or binoculars, does it not?

Some of the less flattering names of dragonflies, such as “devil’s darning needle” and “horse stinger,” speak to a fear of dragonflies in our human history that no doubt stems from misinterpretation of their looks and misunderstanding of their habits. If you’ve ever examined a petite blue damselfly, googly eyes and all, stretched out lengthwise from the side of a sedge blade in

an impossible feat of strength, they indeed seem strange and curious. The large jaws of a big dragonfly can pinch a finger, but pale in comparison to the damage a ferocious lap dog could do. If you’ve ever had a dragonfly mistake your bare leg for a cattail and attempt to insert eggs, the experience can be a bit alarming. But in general, odes are harmless to humans. For small insects, on the other hand...well, to quote Jim Morrison, “this is the end.”

Odes are predaceous, feeding on just about every creature they are big enough to consume. They are associated with water both as immatures and as adults. A typical ode life cycle takes about three months. Some large dragonflies take several years (spiketails, for example), while certain damselflies (forktails and others) might have a few generations per year. Eggs are typically laid in or on aquatic vegetation and hatch in about a week. For female odes, the egg-laying process is a period of particular vulnerability to predators, including birds. Ode larvae, also called nymphs or naiads, develop under fresh water (rarely brackish), shed their skins several times as they grow, and feed as predators. They commonly take worms, mosquito larvae,

other small aquatic insects, tiny crustaceans, and even small fish and amphibians. Developed larvae crawl up on emergent vegetation, emerge from their “skin” as an adult, pump up their wings, and begin their lives as aerial predators. Even as adults, odes usually remain near water their entire lives.

For birds, the attraction of these creatures is not their beauty, names, or habits—it’s their food value. Adult odes, out of the water, constitute the life stage most often eaten by birds. Many odes are crepuscular in their activities, meaning they are most active during dawn and dusk. This corresponds, no doubt on purpose, to the heavy feeding activity times we see in birds.

As has been stated repeatedly in this column, some birds feature particular food items, and many others are more opportunistic in their choice of those same items. Many of the bird species known to rely heavily on odes during the breeding season for adult and nestling nutrition are wetland birds: waders, shorebirds, grebes, swallows, Marsh Wren, Common Yellowthroat, and Red-winged, Yellow-headed, and Rusty Blackbirds. Other charismatic species known to eat odes include Burrowing Owl, Black-whiskered Vireo, Cape May Warbler, Summer Tanager, Northern Cardinal, and (perhaps most surprisingly) Barrow’s Goldeneye. Such diversity probably indicates that most insectivorous birds, given the chance, would take an ode, thank you very much.

Some of the highest-profile predators of odonates are raptors. In southeast Colorado, the presence of Mississippi Kites along the Arkansas River from just east of Pueblo to the Kansas border near Holly is due in large measure to the abundance of large dragonflies and large “dog-day” cicadas (*Tibicen* spp.). Other raptors that regularly pursue odes include Merlin, Red-shouldered Hawk, and Swainson’s Hawk. In fact, many of our Swainson’s Hawks winter in Argentina, where the aerial response of immature birds to swarms of migratory darners, particularly *Rhionaeschna bonariensis* (a close relative of our Blue-eyed Darner), can be spectacular (Rudolph and Fisher 1993).

A similar situation involves the Wandering Glider (*Pantala flavescens*), a medium-sized, yellowish dragonfly at times common in Colorado (Fig. 1). In other parts of the world, this same species conducts the longest known insect migration, even longer than that of the Monarch Butterfly. Triggered by the monsoons, and taking four generations, this migration takes the glider on a seasonal journey from southern India across the Indian Ocean to eastern and southern Africa. It’s no accident that this large dragonfly migration coincides with significant movements of Pied Cuckoo, Amur Falcon, and other birds following the gravy train.





Fig. 2. First-winter female Chestnut-sided Warbler with Variegated Meadowhawk somewhat masticated and ready for consumption. Note wings of prey not removed. Crow Valley Campground, Weld County, 14 Sep 2008. Photo by the author

Whereas many birds remove the scaly wings of a large moth before consuming the body, it appears that most birds eat odes whole, wings and all, despite the apparent difficulty this creates. The Chestnut-sided Warbler in Fig. 2 got the meadowhawk it had captured mostly down its throat in short order, but required several minutes to completely swallow the wingtips protruding from its partially gaping beak. This made me wonder whether the meadow-

hawk was a novel food item to this bird—perhaps a sign of the bird’s inexperience and/or desperation.

I’ll conclude with a personal anecdote. Despite being a lifelong student of insects, I did not become fascinated with odes in a serious way until about the time I could apply for AARP membership. In early summer 2008, there occurred an episode that forever cemented my interest in how birds and odes interact. I was watching a particular big dragonfly make its regular, territorial patrol over a stretch of the Poudre River in Fort Collins.

When I was younger, a standard way to test whether I still “had it” was to attempt dunking a basketball. Things have changed. Now I have a new test: can I still net a darner on the wing? That day on the river, the regularity of the darner’s patrol gave me confidence. Shuffling ever closer to the riverbank edge, I felt a mighty swing of conquest in the offing. Up and back the dragonfly continued. The next pass would be it. Here it comes. Swing! Nothing but air, and what I swear was a minute, electronic chuckle from the big blue bug. Back the dragon came, unshaken, resuming its in-your-face, patterned survey of the world. Somewhat chagrined, I checked to find the hole in the net, but was distracted by a movement off to the right. There,

coming out of the glare in an easy glide, was an Eastern Kingbird. It came up behind the ode, in not more than second gear, and in one easy snap established the dominance of one flying predator over another. My chagrin quickly improved to admiration for both creatures, then morphed into laughter.

The point of this story is not the inconvenience of growing old, but the genius of the kingbird. It, too, noticed its prey's pattern of movement. It knew from experience that the wrap-around eyes of a darner provide a nearly 360-degree view, but that its small "blind spot" is just above and behind the head. It knew to attack when brunch was moving away rather than when it was approaching. It was no accident that the kingbird positioned itself on the east side of the river in the late morning, and that its path of attack put it directly, continually, between the ode and the sun. With such a battle plan, it had no need for more than second gear. By comparison, the swing of my net had a greater element of surprise, and the net was moving much faster than the bird, but the dragonfly was able to see the danger early on, and its marvelous flying skill made escape a mere training exercise.

I learned a lesson, and now marvel all the more at odes and birds both.

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*Dave Leatherman*, 612 Stover Street #7, Fort Collins, CO 80524, daleatherman@msn.com, (970) 416-0193

## La Veta

*Beverly Jensen*

La Veta translates as “the vein”—an appropriate name, given the town’s association with mining claims of old. Often called “Colorado’s best kept secret,” La Veta is just over a single square mile, with a population of something less than 1000 and an altitude of 7,037 feet. The town itself could pass as an artist’s enclave, as several world-class artists live and show their talent here.

From canyons to plains, arid pinyon-juniper woods to riparian cottonwoods and the wetlands of hidden creeks and springs, the area around La Veta could be its own well-kept birding secret. Within the town itself as many as 600 rosy-finches of all three species can be found on a cold, snowy day. Bald Eagles roost, raptors soar, and roadrunners run. In the town park one might find a Yellow-bellied Sapsucker; along the river are American Dippers, and Cherry Street generally holds hundreds of Evening Grosbeaks all year. In the spring both Rose-breasted and Black-headed Grosbeaks join in, with the latter breeding here. Four hummingbird species are thick from spring to fall: Black-chinned, Broad-tailed, Rufous, and Calliope...but recently a Ruby-throated Hummingbird visited too.

But enough about birding in La Veta: is it a good place to eat? Yes, several eateries have been here for years, though not as many as we once had. With the average life of a restaurant being only about a year, ten years makes an old standby!

One old standby is the **Main Street Diner**, located on the south end

of Main Street, just where it jogs east to Oak Street and becomes Hwy 12 again, as it heads out of town. Amy Icaboine, owner and cook, has been offering up classic meals for some twelve years now. The diner is closed Tuesday and Wednesday, but is open for breakfast and lunch the rest of the week. On Sunday, only breakfast is served. But with a menu that includes a secret recipe for huge pancakes, French toast, breakfast burritos, quesadil-



*Main Street Diner. Photo by Beverly Jensen*

las, and scrambled eggs—all served with grilled potatoes, corned-beef hash, biscuits and gravy, pork or turkey sausage, ham, or a six-ounce grilled sirloin steak—who cares?

Lunch is also very popular, with several classic sandwiches, fresh or grilled, including steak, roast beef, French dip, several clubs, and even grilled cheese. The burgers are arguably the best in town, but the home-made corned beef sandwiches are

to die for. The reubens here are the most popular food item on the menu and they offer several: the classic reuben is on grilled rye with sauerkraut, the Lunde reuben is on hearty white with provolone, and the naked reuben comes on grilled rye with Swiss cheese and no kraut. Call for take-out: 719-742-6246.

Right in the center of town, at 220 S. Main Street, is **Ricochet Rock's (Rocky's) Famous Pizza** ("...or is it infamous?" he asks.) The little, no-nonsense place is hidden in a courtyard behind two real estate offices, just around the corner from the intersection of Francisco Street and Main. The pizzas come whole at 19 inches or by the slice, with all the toppings you'd expect, including a vegetarian pizza which he calls "the Garden of Eatin'." A good-sized slice of any flavor is \$3.50, or two for \$6.00. Rocky is open seven days a week from 11:00 A.M. to 3:00 P.M.; call for take-out: 719-742-5553.

**Sammie's Restaurant** at 124 N. Main in La Veta (719-742-5435) is owned and operated by Dave and Sandra Molyneaux, and offers breakfast, lunch, and dinner. There are daily specials and a full bar with a game room featuring pool, darts, and horseshoes outside. In addition to good food, Sammie's offers a 12-unit motel, 23 RV spaces including 8 pull-through sites, and grassy areas for tents at \$10 per spot. I have seen the clean and quaint rooms and personally appreciate paying a reasonable price for just a comfortable place to sleep; what birder spends much time in a room anyway?

But back to the food. Breakfast offers eggs any-way-you-like-'em, *homemade* biscuits and gravy, breakfast burritos, and yummy chili. Remember to save room for your breakfast dessert: a huge, hot, home-made and delicious cinnamon roll. Oh, my goodness, they're good!



*Sammie's Family Dining.* Photo by Beverly Jensen

Lunch comes with sandwiches, salads, soups, and a personal favorite: chicken-fried chicken-steak (also available as the more typical beef-steak) with mashed potatoes and gravy. Dinner is like dinner at your mama's, with fried chicken, roast beef, meatloaf, and turkey, all served with potatoes and vegetables and your choice of soup or salad.

The hamburgers are huge, and served, of course, with your choice of fries or onion rings. Add a beer and I'm in heaven! And don't forget to save room for Sandra's homemade pies. All the classics are offered, but the hardest to keep available are her coconut cream pies, which disappear fast.

Sammie's includes a full bar and closes at 2:00 P.M. on Sunday and re-opens at 7:00 A.M. on Tuesday. They're open from 7:00 A.M. till Dave says "go home" all the rest of the week. To call this place the local hang-out is an understatement.

I mentioned in January's issue that locals and visitors alike bemoaned the loss of Alys' Fireside Café in Walsenburg, but that La Veta got lucky with her return. You will see the bumper stickers everywhere: "Alys is Back." Alys (pronounced Alice) Romer is an institution in herself, and everybody loves her. Her career started in La Veta, so it seems to me we have a right to claim her as our own. At the **La Veta Inn** at 103 W. Ryus Street (888-806-4875 or 719-742-3700), she again serves her delicious, homemade fare with the style that has made her a Southern Colorado legend.

The La Veta Inn offers 18 unique rooms, each decorated by talented local artists, making every stay special. Room rates start at \$125 and go up to \$225 from late spring until early fall. Staying at a place like this, in a town like La Veta, will make even a non-birder happy to tag along!



*La Veta Inn.* Photo by Beverly Jensen

Alys' menu is interesting. Wednesday through Saturday nights she offers fine dining, often accompanied by live music. The rest of the week, as well as each day for lunch, she features a more casual menu including her signature "Alys' fireside sandwich."

Sunday through Tuesday nights feature a more casual and less expensive dining experience—for example, a homemade green-and-white

striped ravioli with grilled red peppers in a light cream sauce, surrounded by a plateful of veggies (\$16). Stunning to look at, better to eat! That's what I had just last week. In addition to a fully equipped bar, the La Veta Inn offers many high-end scotches, tequilas, and bourbons, not to mention a lovely wine list.

Alys might be best known for her handmade desserts. At \$6 each they are a splendid way to finish a meal with a friend. Personal favorites are the tiramisu, chocolate whiskey pudding, and the brownie ice cream sundae with amaretto hot fudge. Oh my!

Any stay or trip through La Veta wouldn't be complete without lunch at the **Ryus Avenue Bakery** (719-742-3830) at 129 W. Ryus Avenue, right across from the town park. Mary Backiel and Adrienne Berkun have been the owners/operators/cooks of this meeting and eating establishment for nearly twenty years. The bakery is open Tuesday, Thursday, and Saturday from 7:00 A.M. to 1:30 P.M., and the owners believe in real food made with real ingredients: no pre-made products, mixes, or chemical additives. In addition to delicious coffee, espresso, and cappuccinos, one can enjoy toasted bagels (while they last), and sandwiches including a melted chevre sandwich with red pepper pesto on French bread, and the muffaletta, a New Orleans-Italian sandwich with olive salad, onions, lettuce, tomato, and melted provolone and fontina cheeses, with genoa salami or vegetarian, with roasted red pepper. For the best of all worlds, order half a sandwich and a bowl of soup. The soups are homemade, but nothin' like your mama made!

These two make a sandwich like no other, but you should also consider trying their various vegetarian quiche specials, which are a slice of heaven served with salad and bread. Speaking of bread, the bakery, of course, makes its own, as well as too many homemade pastries and pies to mention. Go see what's available and fresh today!



*Ryus Avenue Bakery. Photo by Beverly Jensen*

*Beverly Jensen, La Veta, CO, [www.RuralChatter.blogspot.com](http://www.RuralChatter.blogspot.com)*

## Winter 2010–2011 (December–February)

Marcel Such

After the leaves have fallen and the warblers, shorebirds, and other migrants have departed, the icy monster called Winter rears its ugly head. Or is it so ugly? True, most of our colorful summer breeders have left for warmer climates to the south, but in return, the birding community receives a myriad of wintering ducks, geese, gulls, sparrows, and finches. These winter inhabitants of Colorado are just as intriguing as our local breeders and flashy migrants.

The birds of this season were mostly the “regulars,” with no major irruptions of the winter finches, although the presence of Bohemian Waxwings in the Steamboat Springs area in Routt County was of interest. But taking the spotlight as this winter’s best bird of the season was a one-day-wonder Tufted Duck, an immature male or adult female found at Golden Ponds in Longmont, Boulder County, by Larry Semo and Steve Mlodinow. Many people saw it before its host lake froze up during the night and it disappeared to parts unknown, likely into one of the multitude of private and inaccessible lakes surrounding the Longmont area.

Another highlight of the season was provided by the Red Rocks Trading Post feeders in Jefferson County. In addition to a long-staying Curve-billed Thrasher and occasional flocks of rosy-finches, one could see a Harris’s Sparrow, White-crowned Sparrows, a Golden-crowned Sparrow, and a couple of White-throated Sparrows at the feeders. It is rare to have the “*Zonotrichia slam*” (or, in plainer terms, see all of the sparrows in the genus *Zonotrichia*) in one day, much less within one binocular field, but that is precisely what many people accomplished at Red Rocks. (Well, it was the *Zonotrichia slam* until the Rufous-collared Sparrow showed up in Georgetown, but that’s for a later edition of this column.)

We had a rather mild winter this year, with the Denver area experiencing a drier and warmer December than usual. The final month of 2010 finished with an average temperature of 34.3° F, 4° above normal, and only a measly 0.22 inches of moisture collected during the month, which was 0.41 inches below the normal reading of 0.63 inches. January improved slightly in the precipitation department, with a total of 0.61 inches registered, a full 0.1 inches above normal. The average temperature for the month, however, was still high, with an average of 30° F, which was 0.8° above the norm. February



*Tufted Duck, Golden Ponds,  
Boulder County, 17 Jan 2011.  
Photo by Mark Chavez*



*Dunlin, South Platte  
River at 88<sup>th</sup> Ave., Adams  
County, 12 Jan 2011.  
Photo by Mark Chavez*

*Winter Wren, Chatfield SP,  
Douglas County, 18 Dec 2010.  
Photo by Glenn Walbek*





finally broke the cycle of higher-than-normal temperatures set by the previous months, with the mercury reading a 4.1°-below-normal for the month, with an average temp of 29.1° F. The precipitation was also below average, with only 0.42 inches collected, which was 0.07 inches below normal. Another sign of this overly tame winter was that no major storms were reported in the Denver area.

“News from the Field” contains news and reports of birds sighted in Colorado. The news is compiled from online discussion groups and rare bird alerts (RBAs), with valuable contributions from a large network of statewide informants. We would like to thank the many contributors for sharing their sightings, as well as the regional compilers for adding their insight on county and regional rarities and breeding species.

No matter what your level of expertise, you are encouraged to send your bird reports to COBirds, [cobirds@googlegroups.com](mailto:cobirds@googlegroups.com), eBird, <https://ebird.org/ebird/>, and/or West Slope Birding News, [wsbn@yahoogroups.com](mailto:wsbn@yahoogroups.com), where all sightings are compiled and tabulated by your regional compilers and the chair of the Colorado Bird Records Committee (CBRC), who then sends them in taxonomic order, along with comments, to the “News from the Field” editor for summary.

**Note 1** – The reports contained herein are largely unchecked, and the report editor does not necessarily vouch for their authenticity. Underlined species are those for which the CBRC requests documentation. You should submit your sightings through the CFO website at <http://www.cfo-link.org/CBRC/login.php5>. This is the preferred method of submitting rarity records. However, if you are “technologically impaired” and require a hard copy form, use the one on the inside of this journal’s mailing cover. Mailed documentation of rarities should be sent to the chairperson, Larry Semo (address on form).

**Note 2** – The names of counties are *italicized*.

**Abbreviations:** **CBC** – Christmas Bird Count; **doc.** – documentation submitted to CBRC; **no doc.** – no documentation submitted to CBRC; **m.ob.** – many observers; **NWR** – National Wildlife Refuge; **SP** – State Park; **SWA** – State Wildlife Area; **WS** – West Slope

**Snow Goose:** An excellent count for *Pueblo* was the 8,000 white-morph and 150 blue-morph birds seen at Huerfano Res., *Pueblo*, on 30 Dec (VT).

**Ross’s Goose:** In addition to the aforementioned high count of Snow Geese, 2,000 of this smaller white

goose were also seen at Huerfano Res., *Pueblo*, on 30 Dec (VT).

**Trumpeter Swan:** Of interest were ten swans, nine adults and one juvenile, found in Browns Park NWR, *Moffat*, on 25 Dec (DH). Three others were also seen at Twin Lakes, *Lake*, from 29 Jan to 19 Feb (TK).

**Tundra Swan:** Continuing from the fall season, an adult was seen at Valmont Res., *Boulder*, from the beginning of the period until 26 Feb, when it apparently moved to nearby Walden Ponds, *Boulder*, where it stayed through the end of the season (PP). There were six other swans of this species found throughout the state, with reports from *Delta*, *Mesa*, *Moffat*, *Ouray*, and *Pueblo*.

**Swan sp.:** Ah, the notorious “spuh.” Two unidentified swans were seen in Greeley, *Weld*, on 2 Dec (RR), and another mystery swan was found at Lathrop SP, *Huerfano*, on 4 Jan (PPN). Also, a probable adult Trumpeter Swan was found in *Mesa*, *Mesa*, on 27 Feb (NKe).

**Wood Duck:** A rare mountain find in any season, let alone winter, a female was found in Carbondale, *Garfield*, on 7 Dec (DFi).

**Cinnamon Teal:** Typically rare in the winter season, this species was reported several times. The earliest report was of a male found on Pueblo Res., *Pueblo*, on 25 Jan (RM).

**Hybrid dabbling duck:** The exact parentage of this intriguing male dabbler, found on 21 Feb at Walden Ponds, *Boulder*, and continuing through the end of the period (CS), has been up for much debate among the birding community, though the most common opinion is that its parents were a Green-winged Teal and an American Wigeon.

**Tufted Duck:** The highlight of the season, this “one-day wonder” was found at Golden Ponds, Longmont, *Boulder*, on 17 Jan (LS, SM, doc.). The bird’s sex and age were not ex-

actly determined, as adult females and immature males can be nearly impossible to differentiate. However, this bird was well photographed and documented, and it appears to be “pure.” Its halluces were intact and it was unbanded, both positive indicators as to this bird’s wild origin.

**Greater Scaup:** An unusual southwest Colorado find was an adult male at Zink’s Pond, *La Plata*, on 8 Jan (JBy).

**Surf Scoter:** A female-type bird was seen at Chatfield Res., *Jefferson/Douglas*, on 12 Dec (JK); and another female-type was seen at John Martin Res., *Bent*, on 16 Dec (BP, MP). Also, a carry-over individual from the fall season was observed at Ridgway Res., *Ouray*, up until 6 Dec (KN).

**White-winged Scoter:** Only a single bird was reported this winter, at Baseline Res., *Boulder*, 8-12 Dec (SP et al.).

**Black Scoter:** Typically the rarest of Colorado’s scoters, this species was reported twice this winter. A female-type continued from the fall season until 1 Jan at Baseline Res., *Boulder* (PP). Also, a first *Routt* record was provided by two, a juvenile and a female, found at Stagecoach Res. on 7 Dec (TMo, TL, FL).

**Long-tailed Duck:** It was a good season for this typically pelagic diving duck, with a total of 14 reports consisting of 17 individuals. The counties with reports were *Adams*, *Bent*, *Denver* (3 reports), *Garfield*, *Jefferson/Douglas*, *Larimer* (2), and *Pueblo* (5).

**Barrow’s Goldeneye:** It was a stellar season for this species, with 20 reports and a spectacular total of 135

individuals. Among the highlights was a second county record for *Montrose*, furnished by a single female found on a coalmine pond near Nucla on 7 Feb (CD, BW).

**Ruddy Duck:**

Always a good mid-winter find, a single bird was at Pueblo Res., *Pueblo*, on 4 Jan (BP). Also, a supposedly injured bird continuing from the fall season was seen all of the way through 8 Feb in Nucla, *Montrose* (CD, BW).

**Dusky Grouse:** Most chickens are typically quite difficult to locate during the winter, when they are not lekking, displaying, or raising young. But one of these mountain forest-dwelling chickens was found during the Steamboat CBC, *Routt*, on 18 Dec.

**Sharp-tailed Grouse:** In another rare winter find, three of these were also seen during the Steamboat CBC, *Routt*, on 18 Dec.

**Greater Prairie-Chicken:** One was seen during the Sterling CBC, *Logan*, on 15 Dec (GM).

**Pacific Loon:** One of our rarer loons, this species was reported three times this winter. A single bird was reported from John Martin Res., *Bent*, on 16 Dec (BP, MP); and two others were found two days later on 18 Dec, one at Pueblo Res., *Pueblo* (DFa, MP) and the other at Marston Res., *Denver* (fide JK).

**Horned Grebe:** This species is ca-



*Long-tailed Duck, South Platte River, Denver County, 28 Feb 2011. Photo by Bill Eden*

sual after the second week of November on the WS, but a single bird was seen at Highline Res., *Mesa*, on 9 Dec (LA), and a record late WS report included two birds in Grand Junction on 19 Dec (RB). The high count of the season came on 18 Dec, when a total of eleven were counted from a flock of birds present throughout the season on Pueblo Res., *Pueblo*.

**Red-necked Grebe:** A single bird was found at Pueblo Res., *Pueblo*, on 4 Dec (BP); another, a first-year bird, was seen at Union Res., *Weld*, 14-15 Dec (BPr, IP); the third report of the season came from Valmont Res., *Boulder*, during the Boulder CBC on 19 Dec (JV et al.); and the final report was of an immature seen on Chatfield Res., *Jefferson*, from 26 Dec to 1 Jan (JK).

**Eared Grebe:** Casual on the WS after the first week of Dec, four were seen in Delta, *Delta*, on 18 Dec (DG). Even later was a single bird seen on Rifle Gap Res., *Garfield*, 7-31 Dec (DF, TM, AD). A new Colorado winter

high count of 3506 came from Pueblo Res., *Pueblo*, on 18 Dec (DF, MP); most of these birds moved out by 1 Jan, with a cold snap in the weather.

**Clark's Grebe:** A great southwest Colorado find was a single bird at McPhee Res., *Montezuma*, on 6 Dec (JBy).

**American White Pelican:** There were four reports of wintering birds this season. The first report was of three individuals seen on Lake Meredith, *Crowley*, on 15 Dec (BP, MP); the second came from the Barr Lake CBC at Barr Lake SP, *Adams*, on 3 Jan (fide BK). Another bird was found on Lake Henry, *Crowley*, on 18 Feb (VT), and the last report for the season furnished the high count of 15 found on Prewitt Res., *Washington*, on 27 Feb (JK, SL).

**Turkey Vulture:** A record early arrival for the Pueblo area was a single bird at Hatchet Ranch, east of Colorado City, *Pueblo*, on 26 Feb (BBH).

**Osprey:** Always a rare winter find, particularly in the mountains, this species was seen during the Roaring Fork CBC in the Glenwood Springs/Carbondale area, *Garfield*, 15-18 Dec (TMc).

**Harris's Hawk:** One of these communal southwestern hawks was reportedly photographed at Red Rocks Park, *Jefferson*, on 12 Feb (fide TB, no doc.). If documented and accepted by the CBRC, this would represent a fifth state record.

**Red-tailed Hawk:** A rare light-morph Eastern race Red-tail, also known as a "Krider's" Hawk, was seen at the Munson Farm near Boulder, *Boulder*, on 16 Dec (SS).

**Peregrine Falcon:** A rare find in the winter was a single bird seen in Delta, *Delta*, on 16 Dec (JBn); another was found on the Roaring Fork CBC in Carbondale, *Garfield*, on 18 Dec; and a final report came from the CF&I Lakes, south of Pueblo, *Pueblo*, on 30 Dec (MP). The species is now resident in the Grand Valley, where five were seen throughout the season in Grand Junction, *Mesa* (LA, m.ob.).

**Virginia Rail:** Rare in winter, this species was reported twice this season. One bird was photographed at Idalia Park, *Denver*, on 8 Dec (ED); the second report came from Plateau Creek, *Mesa*, on 1 Jan (JC).

**Sandhill Crane:** Several hundred were seen in the Grand Junction and Delta areas, *Mesa* and *Delta*, throughout the season (m.ob.).

**Spotted Sandpiper:** Always a rare winter find, this species was reported from three locations along the Arkansas River in or near Pueblo, meaning a single bird may have been involved. The first was seen in the Runyon Lake area along the Arkansas River, *Pueblo*, from 27 Dec to 17 Jan (BP, VT). The second came from the Arkansas River below Pueblo City Park, *Pueblo*, on 29 Dec (BK, TD); and the final report came from Valco Ponds, *Pueblo*, on 1 Jan (JK). Another individual was reported from Hotchkiss, *Delta*, on 21 Feb (DG).

**Greater Yellowlegs:** As is the case with most shorebirds, this is another good winter find. The only report of the season was of three seen at Elliot SWA, *Morgan*, on 27 Feb (JK, SL).

**Dunlin:** There were two reports this winter, the first of which came

from the west end of John Martin Res., *Bent*, where two birds were found on 16 Dec (BP, MP). The second report came from 88<sup>th</sup> Street and South Platte River, *Adams*, from 7-13 Jan (KMD).

**Red-necked Phalarope:** A record early spring arrival, a breeding-plumaged female was found in Grand Junction, *Mesa*, on 28 Feb (DT). Probably the same bird was seen at the Redlands Parkway Pond, 8-14 Mar (BB, m.ob.). The former record early date for this species was 11 Apr.

**Black-legged Kittiwake:** A great season for this small gull generated three reports. The first was of a juvenile at Lathrop SP, *Huerfano*, 2-5 Dec (RM, m.ob., no doc.). The second was a photographed first-cycle bird at Union Res., *Weld*, 4-18 Dec (TF, m.ob., doc.). The final report was of another first-cycle bird seen at the odd mountain location of Lake Estes, *Larimer*, on 20 Dec (SRd, JN, doc.).

**Bonaparte's Gull:** Generally rare during the winter, this small ear-muffed gull was reported five times between 2 and 24 Dec, from the counties *Boulder*, *Huerfano*, *Jefferson/Douglas* (2 reports), and *Pueblo*.

**Laughing Gull:** An adult of this species was seen on Prewitt Res., *Washington*, on 14 Dec (TW, no doc.).

**Franklin's Gull:** A particularly early report was of an adult found at Walden Ponds, *Boulder*, 26-27 Feb (PP).

**Mew Gull:** There were three reports of this dainty, small-billed gull this winter. The first report was of up to two birds seen at Cherry Creek Res., *Arapahoe*, 2-12 Dec (GW, no

doc.). The second report came from Valmont Res., *Boulder*, from 8 Jan to 6 Feb (BG et al., doc.). The final report was of an adult found at Prewitt Res., *Washington*, on 27 Feb (JK, SL, no doc.).

**"Vega" Herring Gull:** An immature female of this rare Eurasian subspecies of Herring Gull was reported at Lake Loveland, *Larimer*, on 22 Feb (CW, NKr, doc.).

**Thayer's Gull:** With 13 reports of 38 individuals, this season was above average. All of these reports came from the expected East Slope locations, from the counties *Adams*, *Arapahoe*, *Bent*, *Boulder* (2 reports), *Broomfield* (2), *Jefferson/Douglas*, *Larimer* (2), *Pueblo* (2), and *Washington*.

**Iceland Gull:** There were four reports of this pale gull from the north, all of first-cycle birds. The first report came from Windsor Res., *Weld*, on 1 Dec (CW, no doc.). The second was of a photographed bird found in southeast Loveland, *Larimer*, on 5 Dec (CW, NKr, doc.). The third report was of another bird at Cherry Creek SP, *Arapahoe*, 5-14 Dec (GW, doc.). The final report came from the South Platte River and 88<sup>th</sup> Street, *Adams*, on 17 Jan (CW, SM, no doc.).

**Lesser Black-backed Gull:** Becoming ever more common in the state, this species generated an outstanding 19 reports of 42 birds. Reports came mostly from the typical Front Range spots, but a highlight was a first *Huerfano* county record found at Lathrop SP on 9 Jan (PPN).

**Herring x Glaucous-winged Gull:** A first-cycle bird thought to be of this rare parentage was found at Cherry

Creek Res., *Arapahoe*, on 2 Dec (GW, no doc.). Another was found at John Martin Res., *Bent*, on 16 Dec (BP, MP, no doc.).

**Glaucous-winged Gull:** A rare vagrant from the west coast, this species was reported from Jackson Res., *Morgan*, on 1 Dec (CW, no doc.).

**Glaucous Gull:** Continuing its Front Range legacy, all of the reports of this huge, pale gull came from those counties ranging from *Larimer* all the way down to *Pueblo*. The high count was of three, one adult and two sub-adults, on Pueblo Res., *Pueblo*, 28-30 Jan (BP).

**Great Black-backed Gull:** A good season for this nearly eagle-sized gull saw four reports, all of single birds. The first of these singletons came from Pueblo Res., *Pueblo*, from 2 Dec to 18 Feb, where an adult was photographed (BP, m.ob., no doc.). The second report was of a first-cycle bird found at the Valmont Res. complex, *Boulder*, on 4 Jan (CN, no doc.); the third was of an adult seen on Runyon Lake, *Pueblo*, on 16 Jan (MY, no doc.); the fourth, of another adult, was from Cherry Creek Res., *Arapahoe*, on 23 Jan (MK et al., no doc.).

**White-winged Dove:** Of the 175 doves reported this season, an incredible 150 came from the Pueblo Res. CBC alone, on 18 Dec (fide MY). The remaining 25 birds were reported from the counties *Boulder* (3 birds), *Fremont* (13), *Huerfano* (2), *Mesa* (1), and *Pueblo* (6).

**Inca Dove:** At the usual spot for this tiny southwestern dove, two were seen in Rocky Ford, *Otero*, on 15 Dec (BP, MP).

**Greater Roadrunner:** Always a fun find in Colorado, this species was reported twice this winter. The first was found at John Martin Res., *Bent*, on 16 Dec (BP, MP), and the second was seen on the north side of Pueblo Res., *Pueblo*, 19-30 Jan (MJ, m.ob.).

**Barn Owl:** An uncommon and localized summer breeder, this pale ghost is even rarer during the winter months. Even so, four were reported during this period. One bird spent the entire season along the Colorado River at Orchard Mesa, *Mesa* (LA, m.ob.). At a regular location for this species, one was seen at the Pueblo Nature Center, *Pueblo*, from 18 Dec to 21 Feb (DM, m.ob.). A second was found on the Penrose CBC, *Fremont*, on 19 Dec (fide MP). The final bird was found in Pueblo, *Pueblo*, on 30 Dec (VT, BP).

**Western Screech-Owl:** In a rather poor showing this year, compared to last year's higher numbers, a total of five was found this winter. A single bird was seen at Rocky Ford SWA, *Otero*, on 15 Dec (BP, MP); two were seen in Fort Lyon, *Bent*, on 16 Dec (BP, MP); and two others were seen during the Penrose CBC, *Fremont*, on 19 Dec (fide MP). For comparison, last year's Penrose CBC had a total of thirteen.

**Northern Pygmy-Owl:** Typically a reclusive species, this small owl becomes slightly easier to find during the winter months, as shown by a total of five reports of single birds this season. Reports came from *Fremont* (MP, LE, RM), *Huerfano* (JM, m.ob.), *Pueblo* (CS, PSS), and *Routt* (Steamboat CBC).

**Northern Saw-whet Owl:** There were only two reports this winter, continuing the low number trend set last year. Two owls were found during the Penrose CBC, *Fremont*, on 19 Dec (fide MP). The second report was of a single adult found on Wilson Creek, *Moffat*, on 2 Jan (RK).

**Red-headed Woodpecker:** A rare find this far west, a juvenile was photographed in Wetmore, *Custer*, from 22 Dec to 5 Feb (RM, m.ob.).

**Williamson's Sapsucker:** A single female of this species, casual in winter on the WS, was seen in Nucla, *Montrose*, on 3 Jan, and possibly the same bird was seen again on 28 Feb (CD, BW). A remarkable winter high count of 19 came from the Penrose CBC, *Fremont*, on 19 Dec (fide MP).

**Yellow-bellied Sapsucker:** There was an excellent total of nine wintering birds found on the Front Range, with reports from the counties *Arapahoe*, *Denver*, *Fremont*, *Larimer*, and *Pueblo*, in addition to a bird found in *Otero*.

**Red-naped Sapsucker:** A rare winter find on the WS, this bird was reported twice from that area. The first, a male, was seen 3-14 Dec in Nucla, *Montrose* (CD, BW). The second, a female, was seen from 5 Dec to 30 Jan in Grand Junction, *Mesa* (LA). At a more usual wintering location, two males were found wintering in *Fremont*, one at Lion's Park in Florence (MP, BSt, m.ob.), and the other at the Holy Cross Abbey in Cañon City (MJ, m.ob.). Another male was seen at Beulah, *Pueblo*, on 2 Jan (MY).

**Black Phoebe:** Like most flycatchers, this species is rare in winter, but

four wintering birds were found this season. Two were seen in the Cañon City area, *Fremont* (MP, BSt), and the other two were seen in the Valco Ponds/Rock Canyon areas, *Pueblo* (BM, LE, m.ob.).

**Say's Phoebe:** This bird is slightly more common in winter than its southwestern cousin the Black Phoebe. Twelve wintering birds were found up and down the Front Range, along with two reports from *Mesa*. The Front Range counties with reports were *Arapahoe*, *Boulder*, *Fremont*, *Larimer*, and *Pueblo*.

**Pinyon Jay:** Twenty-five were seen at a residential feeder in Steamboat Springs, *Routt*, an unusual winter location, from 5 Dec through the end of the period (TL).

**Chihuahuan Raven:** A rare find away from their usual southern Colorado haunts, the smaller raven was reported three times from the northern Front Range. The first report came from Valmont Res., *Boulder*, on 5 Dec (TF); the second came from northeast Boulder, *Boulder*, on 13 Dec (BG); and the final report came from N. 63<sup>rd</sup> Street between Oxford Road and Plateau Road, *Boulder*, on 12 Feb (EK).

**Tree Swallow:** An extremely early find was a single swallow at Pueblo Res., *Pueblo*, on 18 Feb (BP, MJ).

**Mountain Chickadee:** Rare on the far southeast plains were two found at Rocky Ford SWA, *Otero*, on 15 Dec (BP).

**Juniper Titmouse:** An incredible 32 were seen at Royal Gorge, *Fremont*, on 30 Jan (CW, NKr); the species is unusual in such large numbers anywhere in the state. Also, a rare find in

*Curve-billed Thrasher,*  
*Red Rocks Trading Post,*  
*Jefferson County,*  
*15 Feb 2011. Photo by*  
*Dave Palmer*



*Pine Warbler,*  
*Evergreen, Jefferson*  
*County, 31 Dec*  
*2010. Photo by*  
*Aaron Wald*

*Canyon Towhee, Parker,*  
*Douglas County,*  
*20 Dec 2010. Photo by*  
*Lee Croisant*





the northern Front Range was a single bird found at Horseshoe Lake, *Larimer*, on 22 Feb (CW).

**Pygmy Nuthatch:** Rare on the plains was a flock of four found at Pueblo City Park, *Pueblo*, on 19 Feb (BP).

**Pacific Wren:** This species is more frequently reported since its recent split from the (Eastern) Winter Wren; there was a total of five reported this winter. The first came from the Westcliffe area, *Custer*, on 19 Dec (DS, LL, no doc.); another report came on the same date from Florence River Park, *Fremont* (MP, SRO, no doc.); a third bird was reported in south Boulder, *Boulder*, 9-19 Dec, where it was counted for the Boulder CBC (TF, doc.); the fourth report came from Colorado City, *Pueblo*, from 27 Dec to 2 Jan (DS, m.ob., doc.); and the final report of the season came from Red Rocks Park, *Jefferson*, on 17 Jan (CW, SM, no doc.).

**Winter Wren:** An excellent season for this species saw an incredible 30 reported during the period, with reports coming from all across the East Slope. The excellent high count of seven came from the Penrose CBC, *Fremont*, on 19 Dec (fide MP).

**Blue-gray Gnatcatcher:** A rarity during winter, a single bird was found at Barr Lake SP, *Adams*, on 5 Dec (DFO), and another was found at the Pueblo Nature Center, *Pueblo*, on 18 Dec (DM).

**American Dipper:** Returning for its third consecutive winter at this peculiarly low-elevation location, a single dipper was seen along Clear Creek, *Adams*, 4-15 Jan (RC).

**Eastern Bluebird:** In a good winter

for this species, the reports, adding up to a total of over 70 individuals, came from up and down the Front Range and eastern plains. Among the highlights were two males found in Paonia, *Delta*, on 6 Feb (JBn).

**Mountain Bluebird:** Very rare in the Craig area during the winter months, a single male was seen in Craig, *Moffat*, on 8 Dec (FL), and another at Perch Pond, *Moffat*, on 3 Jan (FL). Also unusual was one found in Steamboat Springs, *Routt*, on 18 Dec.

**Hermit Thrush:** Like most *Catharus* thrushes, this species typically departs Colorado for the warmer reaches to the south, though a few individuals do not. Nine were reported during the period, from a variety of locations, mostly on the Front Range.

**Varied Thrush:** This rare winter visitor to the state from the Pacific Northwest was seen in Longmont, near McIntosh Res., *Boulder*, from 25 Dec to 10 Jan (KK, TD, no doc.). Another bird was also found at a Loveland residence, *Larimer*, on 1 and 2 Jan (CW, no doc.).

**Gray Catbird:** Common summer residents, most of these thrasher-like birds migrate south during the colder months of the year, but a few stragglers are found each winter. One was found in Ouray, *Ouray*, 7-9 Dec (KN); another was seen in Florence, *Fremont*, from 13 Dec to 1 Jan (MP, BSt, m.ob.); possibly two birds were observed at Greenlee Preserve, *Boulder*, from 4 Jan to 28 Feb (TF, HF); and the final report came from Waterton Canyon, *Douglas*, on 6 Jan (BKe).

**Northern Mockingbird:** Like its cousin the catbird, this is a rare win-

ter find, with five reported during the period. One was seen on the west side of I-25 at Exit 123, *El Paso*, on 14 Dec (BP); another was seen at Rocky Ford SWA, *Otero*, on 15 Dec (BP); two were seen in the Pueblo Res. CBC circle, *Pueblo*, on 18 Dec (fide MY); and the final bird was seen in Roxborough Village, *Douglas*, on 15 Jan (EBE).

**Sage Thrasher:** Four individuals were reported this season, the first from Juniper Road at Pueblo Res., *Pueblo*, from 7 Dec to 18 Feb (BP). Four were found within the Pueblo Res. CBC circle, *Pueblo*, on 18 Dec (fide MY); two others were found on the Penrose CBC, *Fremont*, on 19 Dec (fide MP); and the final report was of a single bird on the northwest side of Pueblo Res., *Pueblo*, on 20 Feb (BP).

**Brown Thrasher:** Two were found this winter, one at John Martin Res., *Bent*, on 16 Dec (JD, GK), and the other on County Road 4, *Yuma*, on 18 Dec (CW, DM).

**Curve-billed Thrasher:** An unusually northerly find was a single bird seen throughout the season at the Red Rocks Trading Post, *Jefferson* (m.ob.). Perhaps even stranger was the bird that wintered between Carbondale and Redstone, *Pitkin* (M&PP, m.ob.).

**American Pipit:** A rare winter find for southwestern Colorado was the group of five seen near Zink's Pond, *La Plata*, on 8 Jan (DBC, m.ob.).

**Bohemian Waxwing:** A minor irruption of this northern species occurred in *Routt*, with over 180 seen between 9 Dec and 15 Feb (FD, TMO, LPW, NM). The only other report was of twelve on West Friend Avenue, *Littleton*, *Jefferson*, on 20 Dec (NF).

**Lapland Longspur:** A very rare *Moffat* find was a female-type bird found in Browns Park NWR on 25 Dec (DH).

**Chestnut-collared Longspur:** Three were seen in *Prowers* on 2 Jan (JS).

**McCown's Longspur:** Four were seen in *Prowers* on the same date of 2 Jan (JS).

**Snow Bunting:** An excellent season for this rare Colorado species saw reports of an incredible total of twenty-two individuals. A single bird was found at Reservoir Ridge Natural Area, *Larimer*, on 25 Dec (JBh); three were seen on Moffat County Road 4 on 29 Dec (FL); one was seen at the CF&I Lakes, *Pueblo*, on 30 Dec (MP); another single bird was observed in the Toponas area, *Routt*, 20-23 Feb (TL, FL, NKe); fifteen were reported from the Walmart Parking Lot near Timnath Res., *Larimer*, on 25 Feb (CW); and the final report was of a singleton found on Ohio Creek, east of Gunnison, *Gunnison*, on 27 Feb (JBr).

**Orange-crowned Warbler:** Two were reported this season. One was found at a south Boulder residence, *Boulder*, 5-21 Dec (AB), where it was seen during the Boulder CBC Count Week. The other was in Boulder north of Boulder Creek, *Boulder*, 5-8 Dec (SS).

**Pine Warbler:** This bird is unusual among warblers because it strays to Colorado mostly during the cold winter months. In a good season for this species, a total of six was found during the period. A single male was seen 4-14 Dec at Fountain Creek Regional Park, *El Paso* (BP, no doc.); one, possi-

bly two, adults were seen in south Ft. Collins, *Larimer*, from 12 Dec to 3 Feb (SB, no doc.); two adult males were seen on the east end of the Cañon City Riverwalk, *Fremont*, on 13 Dec (MP, BSt, no doc.); an adult male was found on 31 Dec in Evergreen, *Jefferson* (DW, doc.); and, finally, a female-type bird was photographed on the west end of the Cañon City Riverwalk, *Fremont*, 17-27 Feb (JD, RM, doc.).



*Ovenbird*, Fountain Creek Regional Park, El Paso County, 12 Dec 2010. Photo by Bill Maynard

**Palm Warbler:** A great find was a single bird on the Boulder CBC along Boulder Creek near Walden Ponds, *Boulder*, on 19 Dec (BSc).

**Blackpoll Warbler:** A bird found dead in the snow outside a Gunbarrel residence, *Boulder*, on 30 Dec (NP) was taken to the Denver Museum of Nature and Science, where collections staff tentatively identified it as a Blackpoll Warbler. The specimen will be preserved and accessioned, so a positive identification should be possible in the future.

**Ovenbird:** A good find was one seen at Fountain Creek Regional Park, *El Paso*, 4-12 Dec (BP).

**Green-tailed Towhee:** Two were found during the period. The first was seen on the Goodnight River Trail, *Pueblo*, on 9 Dec (RM), and the second at the CF&I Ponds, *Pueblo*, on 30 Dec (MP).

**Spotted Towhee:** A single bird was seen in the Litteral yard in Steamboat Springs, *Routt*, on 9 Feb (TL), where it is rare at that season.

**Eastern Towhee:** Continuing from the fall season (19 Nov, to be specific), a female was seen near Franktown, *Douglas*, through 4 Dec (HK, UK, no doc.).

**Canyon Towhee:** Unusual so far north, a single bird was photographed in Parker, *Douglas*, on 7 Jan (LC, GW). It had apparently been seen for two months prior to that date as well.

**Rufous-crowned Sparrow:** At a regular wintering location for this species, up to two were seen on Tunnel Drive, Cañon City, *Fremont*, from 19 Dec to 1 Jan (BP, KS, JM, m.ob.).

**Savannah Sparrow:** Unusual in winter was a single bird seen on the west end of John Martin Res., *Bent*, on 16 Dec (BP, MP).

**Fox Sparrow:** A bird of unspecified subspecies was found on the Hotchkiss CBC, *Delta*, on 1 Jan (JBn).

**"Red" Fox Sparrow:** A rather poor season for this eastern subspecies of the Fox Sparrow produced only two reports. A single bird was found at Bonny SP, *Yuma*, on 16 Dec (GW,



*Swamp Sparrow, Fountain Creek Regional Park, El Paso County, 14 Dec 2010. Photo by Mark Chavez*

LK, no doc.), and another was seen on Boulder Creek, near Walden Ponds, *Boulder*, from 19 Dec through the end of the season (JBa, BSc, doc.).

**“Slate-colored” Fox Sparrow:** A single bird was seen at a Glenwood Springs residence, *Garfield*, on 6 Dec (TMc), and another was found at Pleasure Park, *Delta*, on 7 Jan (DG).

**Lincoln’s Sparrow:** Typically unusual to casual in the winter, nine were found during this period in the counties *Delta* (2 reports), *Fremont* (2), *Montrose*, and *Pueblo* (3).

**Swamp Sparrow:** A fairly good season for this species produced twenty individuals from a total of ten reports. These reports came mostly from the usual Front Range locations, but a bird seen on 1 Dec in Norwood, *San Miguel*, was a first county record (GS).

**White-throated Sparrow:** Eight were reported from a total of six locations. A first winter bird was seen in Nucla, *Montrose*, on 11 Dec (CD),

where the species is rare; another bird was found in Paonia, *Delta*, from 30 Jan to 9 Feb (DG); one was observed at Rocky Ford SWA, *Otero*, on 15 Dec (BP); another was observed along the Arkansas River below Pueblo City Park, *Pueblo*, from 18 Dec to 1 Jan (DS, m.ob.); two birds were seen in La Veta, *Huerfano*, on 26 Dec (fide DS); and two other birds were seen throughout the season at Red Rocks Trading Post, *Jefferson* (m.ob.).

**Harris’s Sparrow:** The 21 individuals found this season from a total of eighteen locations comprised a fairly normal total for the winter period. All reports came from east of the divide, as expected. The counties with reports are *Adams* (2 reports), *Boulder*, *Broomfield*, *Douglas* (2), *El Paso*, *Fremont* (3), *Huerfano*, *Jefferson* (3), *Larimer* (2), *Otero*, and *Pueblo*.

**Golden-crowned Sparrow:** Seen by many, an adult was at Red Rocks Trading Post, *Jefferson*, throughout the season (m.ob., doc.). This bird may have returned from last winter, when a first-year bird was reported. Another individual was seen at the Teller Farms Trailhead, *Boulder*, from 19 Dec to the end of the season (SS, no doc.).

**Summer Tanager:** Noteworthy was a first-year male visiting feeders near Holly Street and Arapahoe Road in Centennial, *Arapahoe*, 3-7 Dec (KC).

**Northern Cardinal:** Always a fun find, this species produced three reports totalling nine individuals. The

first group found was of three at Bonny SP, *Yuma*, from 17 Dec to 19 Feb (LK); the second was of two on County Road 4, *Yuma*, on 18 Dec (CW); and a group of four was found in Lamar, *Prowers*, on 26 Feb (TF).

**Rose-breasted Grosbeak:** Unprecedented in winter in *Garfield* was an adult male found during the Roaring Fork CBC in Carbondale on 18 Dec.

**Yellow-headed Blackbird:** Unusual in winter, three were found this season, at Union Res., *Weld*, on 12 Dec (BG), Bonny SP, *Yuma*, on 17 Dec (CW, NKr), and the Stulp residence, *Prowers*, on 20 Jan (JS).

**Rusty Blackbird:** Despite its mysteriously plummeting population numbers, this species was reported three times this winter. Two to three were seen at Clear Springs Ranch, *El Paso*, 8-9 Dec (BP); a single bird was reported from Chatfield SP, *Douglas*, on 18 Dec (fide JK); and the final bird of the season was found on Picadilly Road, *Adams*, on 14 Dec (LK).

**Common Grackle:** An intriguing find was a single bird in Gunnison, *Gunnison*, on 18 Dec (JBr). High-elevation Common Grackle records during winter are rare, but have been known to occur in the past. Elsewhere in the state, 37 were found on the Pueblo Res. CBC, *Pueblo*, on 18 Dec (fide MY); one was found on the Boulder CBC on 19 Dec (fide BSc); two were found on the Pen-

rose CBC, *Fremont*, on 19 Dec (fide MP); and a single bird was found in the Blende area, *Pueblo*, on 30 Dec (MJ et al.).

**Great-tailed Grackle:** Only 239 were found in the state this winter, somewhat down from last winter's total. The high count came from Picadilly Road, *Adams*, where 100 were seen throughout the season (DB). Also noteworthy were 74 found during the Pueblo Res. CBC, *Pueblo*, on 18 Dec (fide MY).

**Brown-headed Cowbird:** Very uncommon during winter, this parasitic breeder was reported from a total of seven locations, with a total of 104 individuals. A single bird was found on the Bonny CBC, *Yuma*, on 17 Dec (LK). A very unusual winter find in the Yampa Valley was one seen in Steamboat Springs, *Routt*, on 18 Dec. At a regular wintering location, two were seen in the feedlots around Grand Junction, *Mesa*, on 1 Jan (fide CD). Two were seen at the Rocky Mountain Arsenal, *Denver*, on 16 Jan



*Golden-crowned Sparrow, Red Rocks Trading Post, Jefferson County, 1 Dec 2010. Photo by Mark Chavez*

(KH). Another two were found on Markscheffel Road, Colorado Springs, El Paso, on 15 Feb (MG). A total of six was seen in Lincoln on 18 Feb (JS). The high count of 90 came from the Stulp residence, Prowers, throughout the season (JS).

**Bullock's Oriole:** As the species is always a very rare find during the winter, the three reports this season were notable. A single bird was found on Fairview Road, Boulder, Boulder, on 6 Dec (MA); the second bird was in for a longer stay, being photographed 9-23 Dec at a Loveland residence, Larimer (CK); and the final report came from Parker, Douglas, on 30 Jan, where it was apparently photographed (AS).

**Purple Finch:** A great find was a single female-type bird seen in Rye, Pueblo, on 12 Feb (DS).

**Cassin's Finch:** Rare in Pueblo, a single bird was found during the Pueblo Res. CBC, Pueblo, on 18 Dec (MY).

**Red Crossbill:** Notably rare on the eastern plains were two birds found at Rocky Ford SWA, Otero, on 15 Dec (BP), and a single male seen

at Bonny SP, Yuma, on 19 Dec (NKr, CW).

**Common Redpoll:** An intriguing report of a single flyover bird came from the Loveland Walmart, Larimer, on 12 Jan (CW).

**Lesser Goldfinch:** Six reports came in of this rare wintering species. Six were seen coming to a thistle feeder throughout the period at a Lakewood residence, Jefferson (JKS); three were seen during the Boulder CBC, Boulder, on 19 Dec (fide BSc); two others were found during the Penrose CBC, Fremont, on 19 Dec (fide MP); a total of twelve was seen at the CF&I Lakes, Pueblo, on 30 Dec (MP); and a single bird was seen on the Bear Canyon Trail, Boulder, on 2 Jan (TF, HF, AF). Three or four wintered at feeders in Grand Junction, Mesa (LA).

**Evening Grosbeak:** Twenty-one were found in Wetmore, Custer, from 5 Dec to 28 Feb (RM). A single bird was seen at Pueblo Res., Pueblo, on 7 Dec (BP). Representing the highest North American CBC count, an astounding 317 were seen on the Steamboat Springs CBC, Routt, on 18 Dec.

## REGIONAL COMPILERS

Without the compilation of sightings from these volunteer regional compilers, "News from the Field" could not be written. Continued appreciation goes to Jim Beatty (southwest), Coen Dexter (west central), Forrest Luke (northwest), Brandon Percival (south central), John Drummond (southeast), Mark Peterson (El Paso County and San Luis Valley), Bill Schmoker (Front Range), Larry Semo (east central and northeast), and Glenn Walbek (north central); and many thanks goes out to all of you who share your sightings with the birding community.

## CONTRIBUTING OBSERVERS

LA: Larry Arnold; MA: Margaret Arp; JBa: John Barr; JBn: Jason Beason; JBy: Jim Beatty; DB: Don Beltz; JBr: Jim Berry; SB: Skyler Bol; BB: Bob Bradley; JBh: Jessica Brauch; AB: Alex Brown; TB: Tom Bush; RC: Robert Canter; DBC: Durango Bird Club; JC: Jacob Cooper; KC: Kevin Corwin; LC: Lee Croisant; AD: Art Dahl; TD: Todd

Deininger; DFO: Denver Field Ornithologists; CD: Coen Dexter; ED: Edward Donnan; JD: John Drummond; FD: Florence Duty; LE: Lisa Edwards; EBE: E.B. Ellis; DF: Dick Filby; AF: Andrew Floyd; HF: Hannah Floyd; TF: Ted Floyd; NF: Nelson Ford; DG: Dennis Garrison; MG: Mel Goff; BG: Bryan Guarente; BBH: BB Hahn; DH: Dona Hilkey; KH: Kathy Horn; MJ: Margie Joy; BK: Bill Kaempfer; TK: Tim Kalbach; MK: Mary Keithler; JK: Joey Kellner; BKE: Ben Kemena; RK: Richard Kendall; LK: Loch Kilpatrick; HK: Hugh Kingery; UK: Urling Kingery; KK: Ken Kinyon; EK: Elena Klaver; GK: Gary Koehn; CK: Connie Kogler; NKr: Nick Komar; NKe: Nic Korte; SL: Steve Larson; LL: Lin Lilly; TL: Tom Litteral; FL: Forrest Luke; BM: Bill Maynard; DM: Dan Maynard; TMc: Tom McConnell; NM: Nancy Merrill; KMD: Kathy Mihm-Dunning; RM: Rich Miller; JM: Jeannie Mitchell; SM: Steve Mlodinow; TMO: Tresa Moulton; PPN: Paul & Polly Neldner; JN: Jim Nelson; KN: Kent Nelson; CN: Christian Nunes; BP: Brandon Percival; MP: Mark Peterson; NP: Nathan Pieplow; M&PP: Mike & Pat Pilburn; PP: Pete Plage; SP: Suzi Plooster; BPr: Bill Prather; IP: Inez Prather; SRd: Scott Rashid; SRO: Saraiya Ruano; RR: Rick Reeser; PSS: Pearle Sandstrom-Smith; BSc: Bill Schmoker; JKS: Jim & Karen Schmoker; LS: Larry Semo; SS: Scott Severs; KS: Kelly Shipe; DS: David Silverman; CS: Clif Smith; AS: Andy Spellman; GS: George Steele; BSt: Brad Steger; CS: Cara Stiles; JS: Jane Stulp; DT: Dave Trappett; VT: Van Truan; JV: John Vanderpoel; GW: Glenn Walbek; DW: David Wald; TW: Tom Wilberding; CW: Cole Wild; LPW: Lisa & Paul Williams; BW: Brenda Wright; MY: Mark Yaeger

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Marcel Such, 1186 Rowell Dr., Lyons, CO 80540, [mpsuch@gmail.com](mailto:mpsuch@gmail.com)

## IN THE SCOPE

# Cave Swallow: Colorado's Stealthiest Vagrant

*Tony Leukering*

The first Colorado Breeding Bird Atlas estimated that the Cliff Swallow (*Petrochelidon pyrrhonota*) was the 17<sup>th</sup> most-numerous breeding species in the state (Kingery 1998). Between April and August, when the species typically occurs in Colorado, it would be hard to imagine not running across it. As such, probably few birders pay particular attention to individual Cliff Swallows, except for that first-of-the-year sighting (and, perhaps, not then). But focusing



Fig. 1. Young Cave Swallows in the nest, in or near Throckmorton County, Texas, 22 May 2005. Note the distinctive cup shape of the nest, quite different from the tube-like nests of Cliff Swallows. Photo by Brian Gibbons

attention on Cliff Swallows might result in more than just an increased familiarity with the species: it might result in a first accepted state record.

Just 45 years ago, Cave Swallow (*Petrochelidon fulva*) was restricted in the U.S. to the area around Carlsbad Caverns, New Mexico, and south-central Texas, where it bred in limestone caves (Robbins et al. 1966). Since then, there have been dramatic changes in the species' status, range, and abundance with its adoption of man-made caves (read "culverts") as suitable colony sites (Martin and Martin 1978). This single adaptation has driven great changes in the species' occurrence and distribution. Cave Swallow is now known to

- breed nearly throughout Texas, except for the panhandle and heavily-forested areas of the far east;
- winter in coastal and south Texas;
- occur regularly in late fall (typically November) nearly throughout the eastern Great Lakes region and along the Atlantic coast; and
- occur north of Texas in the central Great Plains during summer as part of post-breeding dispersal.

### Potential to occur in Colorado

The phenomenon of Cave Swallow dispersal is best known and best documented from the northeastern U.S., where occurrence has been annual in late fall since at least 1988 (see various regional reports in *North American Birds*). While it would certainly behoove Colorado birders to scrutinize any late-fall buff-rumped swallows in the state, Colorado's first state record seems more likely to come from the phenomenon of post-breeding dispersal to the north in late spring and summer.



This summer dispersal has been recognized since at least 1991, when a dispersing juvenile Cave Swallow was caught and banded at a Cliff Swallow colony in the Lake McConaughy area of Nebraska as part of a long-term study (Brown and Brown 1992, McNair and Post 2001). At least two subsequent individuals were captured there by the authors (Grzybowski and Fazio 2004). Kansas and Oklahoma have also hosted dispersing juvenile Cave Swallows (Grzybowski and Fazio 2004). As a whole, these Great Plains records have occurred from 31 May through at least 20 July.

There have been a number of reports of Cave Swallow from Colorado, but all were single-observer sightings, and in only one case were details submitted to the Colorado Bird Records Committee (CBRC):

- 25 May 2003, Cottonwood Canyon, Las Animas Co.;
- 31 May 2003, Avondale, Pueblo Co. (photographed);
- 9 July 2005, Hasty Lake (below John Martin Reservoir dam), Bent Co.;
- 16 Sep 2006, Valco Ponds SWA, Pueblo Co.;
- 25 Sep 2009, Valco Ponds SWA, Pueblo Co.; record, including photograph, submitted to CBRC but not accepted (Semo and Faulkner 2011).

At least two other sightings have been reported, but I was unable

### Back Cover Photo Key

**Birds 1 and 2** are Cave Swallows that were accidentally force fledged from the distinctively shaped Cave Swallow nests in a culvert in or near Throckmorton County, Texas, on 22 May 2005. Those nests are the ones depicted in Fig. 1.; there were no Cliff Swallow nests at the site. Photo by Brian Gibbons.



**Bird 3** is a Cliff Swallow photographed at Port Susan Bay, Snohomish County, Washington, on 18 July 2008 by Steve Mlodinow.

**Bird 4** is a Cliff Swallow photographed at Big Johnson Reservoir, El Paso County, Colorado, on 17 August 2008 by Bill Maynard.

**Bird 5** is a Cave Swallow photographed at Balmorhea, Reeves County, Texas, on 23 August 2007 by Tony Leukering.

**Bird 6** is a Cliff Swallow photographed at Balmorhea, Reeves County, Texas, on 23 August 2007 by Tony Leukering.

**Bird 7** is a Cave Swallow photographed at Balmorhea, Reeves County, Texas, on 23 August 2007 by Tony Leukering.

to obtain the details on date and location from the observers before this issue of *Colorado Birds* went to press.

A single picture is available on the internet of an odd-looking juvenile *Petrochelidon* swallow found at Avondale, Pueblo Co., 31 May 2003 (Truan 2003). The bird seems to show features of both Cave and Cliff Swallows and might be a hybrid. Because Cave Swallow has become of somewhat regular occurrence north of Texas in late spring and summer and because of the fact that all previous reports of the species have been single-observer sightings, most of which have not been submitted to the CBRC, I deem the species Colorado's stealthiest vagrant.

## Identification

The biggest problem in separating these species is that juvenile Cliff Swallows look more like adult Cave Swallows than they look like adult Cliff Swallows. Furthermore, juveniles of both species are extremely variable in appearance, and field guides do not have sufficient space to deal with the variation in these plumages. However, personal experience with the two species in August 2007 in Texas and study of online images lead me to believe that there are a few characters that, particularly in concert, lead to correct identifications.

This essay deals solely with juveniles, so references to plumage aspects are to those of first basic plumage. I also treat only the Mexican race of the Cave Swallow (*P. f. pelodoma*), the only form likely to occur in Colorado.

*Notes on molts and plumages:* Like most passerines, swallows leave the nest in first basic plumage. After fledging, they gradually replace their feathers through a preformative molt; in the case of swallows, that molt takes a particularly long time, being initiated on or near the breeding grounds, suspended, and completed elsewhere, usually on or near the wintering grounds (Pyle 1997). Why? Swallows are different from most migrant passerines because they migrate during the day and feed aerially. This makes it extremely important to replace flight feathers slowly so that they can continue to catch small flying insects. What the protracted molt means for a birder is that there is incredible variation throughout that first year, and individual birds may appear very different from each other.

In addition, since birds fledge earlier in the south and in earlier clutches, you could see two first-year birds side-by-side whose ages could differ by two months. Those two individuals might appear very different from each other due to differences in the extent of the molt that has taken place. Body molt is completed (or nearly completed)

well before wing molt. As body molt progresses, identification becomes much easier.

*Ageing Cliff and Cave Swallows:* Determining the age of an individual is important in determining its identity. The presence of expanded and brightly colored gape flanges (see subject of arrow on bird 1 on back cover) indicates a very young bird, but these flanges can be reduced or absent in older young of the year. The presence of wide buffy or rufous fringes to the tertials and pale fringes to the back feathers and wing coverts are also juvenile characters that are lacking in adults and immatures that have replaced those feathers. In addition, many juveniles of both species seem to exhibit some white feathers on the head (back cover photos 1-4), which is exceedingly rare in adults.

### **Field marks of juvenile *Petrochelidon* swallows**

Below, I treat six characters that help to separate juvenile *Petrochelidon* swallows, presenting them in what I believe to be the order of strongest features to weakest features. Be advised, though, that most of the various head characters require comparison of two or more features.

*Undertail coverts:* While I did not study this feature when I was looking at Cliff and Cave Swallows in Balmorhea, Texas, my extensive set of photographs from there and the few online pictures that I could find of these plumages suggest that this character is an excellent separating feature. In both species, the longest undertail coverts have large dark centers; in fact, those two feathers are mostly dark (birds 6 and 7), though Cliff Swallow still shows larger centers (bird 6) than does Cave Swallow (bird 7). However, in Cave Swallow, the other undertail coverts have much less dark, and there is no dark in the centers of the coverts after the second row of coverts away from the tail (bird 7).

This is in strong contrast to the pattern evident on the Cliff Swallow (bird 6), with the extensively dark centers of the second row of coverts and the small dark centers on the feathers in the next two rows. Note that this difference holds true in birds 3 (Cliff Swallow) and 5 (Cave Swallow), as it did in all of the birds (>30) that I photographed in Balmorhea. I expect that this feature would be difficult, though not impossible, to correctly assess on a bird in flight. Photographs, though, should do the trick.

*Auriculars, chin, and throat:* One of the most useful features separating Cliff and Cave Swallows in most plumages is the contrast between the dark crown and pale auriculars of Cave Swallow. Cliff Swallow has considerably darker auriculars that contrast little with

the dark crown. While this feature works fairly well with juveniles of the two species, some juvenile Cave Swallows have at least some dark on the auriculars, with extremes in this regard being very Cliff Swallow-like.

Typically, the auriculars are concolorous with the throat in both species: dark in Cliff, pale tan in Cave. However, extensive variation in auriculars color in both species and throat color in Cliff Swallow suggests that identification should not rely on either of these features alone. Though Cliff Swallows can show contrastingly pale throats, their auriculars are always (?) dark (birds 4 and 6). In Cave Swallows that exhibit some dark in the auriculars, that darkness is quite restricted (bird 7) and/or separated from the dark of the crown by a paler superciliary (bird 2, which is the darkest-headed Cave Swallow that I've found in pictures; its sibling or neighbor, bird 1, would also have been quite dark without the white feathers scattered through the head). Most Cave Swallows, however, have pale auriculars contrasting strongly with the face and crown (bird 5).

Thus, individuals with pale auriculars are Cave Swallows, but those with dark auriculars require cautious identification. Similarly, birds with dark throats are Cliff Swallows, but those with pale throats require careful examination.

*Superciliary:* For individuals with dark in the auriculars, the presence of a thin, paler superciliary separating the dark crown from the eye and the auriculars is probably definitive for Cave Swallow; Cliff Swallow seems never to show this feature. The color of this superciliary can range from whitish (birds 1 and 7) to rufous (bird 2).

*Chest:* Dark spotting on the chest is typical of Cliff Swallow (birds 2-4), with many individuals of that species also showing a dark chest band of variable width and extent (bird 6) that is usually connected to the auriculars. While Cave Swallow can show dark on the chest, when present, it is usually restricted to a small patch of spots just below the throat (see illustration in Sibley 2000) or a very vague dark band (bird 7).

*Forehead:* Typical juvenile Cave Swallows have pale tan foreheads; typical juvenile Cliff Swallows have dark rufous foreheads. This is the reverse of the typical coloration of adult foreheads. However, variation in Cliff Swallow is extensive, and some individuals of both species have many white feathers in the forehead area. Additionally, this tract of feathers may be among the first to be replaced in the preformative molt, meaning that some young birds may show adult-like forehead colors.

*Back/nape contrast:* While Cave Swallow shows on average a stronger, more abrupt contrast between the medium-gray back and the

pale tan nape, this feature seems quite variable and may not provide anything more than a weak suggestion as to identification. However, a very sharp contrast may be a point in favor of Cave Swallow.

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*Tony Leukering*, 102 Delaware Avenue, Villas, NJ 08251, [greatgrayowl@aol.com](mailto:greatgrayowl@aol.com)

# Colorado Birds

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*Juvenile Cave Swallows (birds 1, 2, 5, and 7) and Cliff Swallows (birds 3, 4, and 6). For detailed photo captions, see p. 238.*

