



# On The Wing

Volume 38, Number 5

Boulder County Audubon Society Newsletter

Nov-Dec 2008

## Boulder's Three Bird Organizations

Boulder is possibly unique in having three organizations that are nominally focused on birds and conservation—Boulder County Audubon Society (BCAS), Boulder County Nature Association (BCNA), and the Boulder Bird Club (BBC). In many areas, the functions of these three are subsumed into a single organization, usually the local Audubon chapter. A dozen people from the three organizations met over a picnic potluck at Green Mt. Lodge on Sept 28 to discuss the relationships among the three groups and their respective roles.

The three organizations have to:

Fill three Boards with about 28 total people

Produce and mail three newsletters

Fill numerous committees, some of which have overlapping functions

While this seems terribly inefficient, we do manage to find people to take most of these jobs. If there were just one organization, there likely would be fewer people taking responsible positions and generating good ideas for ways to enhance both recreation and conservation coverage in the Boulder area. Should we make any changes to the status quo?

We agreed that coordination and mutual promotion of field trips would benefit all three organizations. This should allow us to reduce the overall organizational effort and assure a greater variety of trip offerings. We have already included some BBS field trips and BCNA class offerings in *On the Wing* (OTW). Expect this to be more comprehensive in the future. The combined calendars will also be presented on Web sites.

We discussed the possibility of merging the BBC newsletter with OTW. It seems worth discussing if OTW is going to include most or all of the BBC events calendar. However, there are a number of logistical and financial difficulties with this idea. For example, BBC charges \$8 for an annual membership, while the BCAS local membership is \$20. Tracking the various memberships would be a challenge. Merging the two might require the typical OTW to expand to 12 pages. However, the added cost for the larger editions probably would be less than the current printing and postage costs for the BBC news.

## BCAS 4th Tuesday Program Series November 25, 7:30 p.m.

### Preserving Boulder's Grassland Treasures

Boulder's more than 10,000-acre mosaic of native tallgrass and mixed-grass prairie shelters badgers, Preble's meadow jumping mice, burrowing owls, ferruginous hawks, rare black spleenwort ferns, and Ute lady's-tresses orchids. Remnant prairies and unique plant associations thrive within the White Rocks Natural Area, Six-Mile Fold geologic site, and the Colorado Tallgrass Prairie State Natural Area. Mark, Steve, and Lynn will profile the wonders of Boulder's unique prairie communities and discuss efforts to preserve them through development of a new Boulder Open Space and Mountain Parks grassland management plan.



*Making It Possible.*

Mark Gershman is an environmental planner with the city of Boulder Open Space and Mountain Parks (OSMP). Steve Jones is author of *The Last Prairie*, a *Sandhills Journal* and co-author of *The Shortgrass Prairie* and the *Peterson Field Guide to the North American Prairie*. Lynn Riedel has spent her career in natural areas management in Colorado - initially with the National Park Service, and since the mid-1990's she has worked as a plant ecologist with OSMP.



Milkweed Beetle – Steve Jones

### Refreshments and Socializing at 7 PM

#### Program at 7:30

Meetings are held at the Unitarian Universalist Church of Boulder, 5001 Pennsylvania Ave. (west off 55th St. between Arapahoe and Baseline)

## Food, Fuel, and Global Warming

—G. Oetzel

[Based on Michael Pollan's open letter to the "Farmer in Chief" (next president), *New York Times Magazine*, October 12, 2008.]

Food policy is not something American presidents have had to give much thought to for many years. Federal policies to promote maximum production of the commodity crops (corn, soybeans, wheat and rice) from which most of our supermarket foods are derived have succeeded impressively in keeping prices low and food off the national political agenda. But with a suddenness that has taken us by surprise, the era of cheap and abundant food appears to be drawing to a close. It has been easy to overlook the fact that the health of a nation's food system is a critical issue of national security.

The way we currently grow, process and eat food in America is at the heart of three major problems—health care, energy independence, and climate change—and will have to change if we hope to solve them. After cars, the food system uses more fossil fuel than any other sector of the economy—19%. And while the experts disagree about the exact amount, the way we feed ourselves contributes more greenhouse gases to the atmosphere than anything else we do—as much as 37%, according to one study.

The 20th-century industrialization of agriculture has increased vastly the amount of greenhouse gases emitted by the food system. Chemical fertilizers (made from natural gas), pesticides (made from petroleum), farm machinery, modern food processing, packaging and transportation have transformed a system that in 1940 produced 2.3 calories of food energy for every calorie of fossil-fuel energy it used into one that now takes 10 calories of fossil-fuel energy to produce a single calorie of modern supermarket food. This seems quite absurd when you recall that every calorie we eat is ultimately the product of photosynthesis—making food energy from sunshine.

It is no coincidence that in the years national spending on health care went from 5% to 16% of national income, spending on food has fallen by a comparable amount—from 18% of household income to less than 10%. Cheap calories have taken food prices off the political agenda; this has come at a steep cost to public health.

Pollan's central point is that we need to "resolarize" the American farm: wean the American food system off its heavy 20th-century diet of fossil fuel and put it back on a diet of contemporary sunshine. Taking animals from farms and putting them into feed lots, transforms their waste products from fertilizer into pollution, while fossil fuels are used to produce fertilizer and greenhouse gasses. To put the food system back on sunlight will require policies to change how things work at every link in the food chain: in the farm field, in the way food is processed and sold and prepared in the American kitchen.

Pollan illustrates in his book, *The Omnivore's Dilemma*, farms that produce both animals and crops profitably with far less fossil fuel input than currently standard agriculture. However, farming with minimal fossil fuels is labor intensive and takes more skill than merely "driving and spraying," which is how corn-belt farmers describe what they do for a living.

Achieving the transformation he describes will be resisted at every level and take years, but the long-term benefits offered are substantial. It appears that the financial collapse will offer some temporary relief to the food and fuel price issues, but the inexorable increase of population and worldwide desire for higher living standards guarantees its return.

### Boulder County Audubon Society

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##### Web Site

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##### Audubon of Colorado Liaison

Bob Turner (303)499-2669

##### Christmas Bird Count Coordinator

Bill Schmoker (303)702-9589

##### Wildlife Inventory

Alex and Gillian Brown (303)494-3042

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*On the Wing* — five issues annually: Jan, March, May, Sept,

and Nov. To contact the editor, use the link in

[www.boulderaudubon.org/newsletter.htm](http://www.boulderaudubon.org/newsletter.htm)

**Next issue deadline: (Jan 2009 issue) Mon., Dec 15.**

## Field Trips

**Saturday, November 8, 2008:** Fall bird tour with Ted Floyd and Boulder Bird Club. Meet at Cottonwood Marsh parking lot at 7:30 a.m. If conditions warrant we will car-pool to nearby lakes and reservoirs. Bring binoculars, scope and water. We should wrap up around lunchtime. Please contact Ted with any questions by e-mail only at [tfloyd@aba.org](mailto:tfloyd@aba.org).

**Sunday, December 14, 2008, dawn to sunset:** Christmas Bird Count. Take part in one of the oldest counts in the nation. Join one of the teams of 2 to 5 birders to count all or part of the day or at your backyard feeder. Please contact count coordinator Bill Schmoker at 303-702-9589 or [bill@schmoker.org](mailto:bill@schmoker.org). Birders of all experience levels are welcome; the more pairs of eyes the better.

**Sunday, December 21, 7-10:30 a.m.:** 21st annual Winter Solstice sunrise hike on East Boulder (White Rocks) Trail. Meet at the Teller Farms North parking area on Valmont Road a half-mile west of 95th St, at 7. Dress warmly and expect frosty scenes populated by ducks and hawks. Bring a thought, poem, or quotation to share at a brief sunrise ceremony at the Boulder Creek bridge. Optional breakfast afterward (around 9) at the Garden Gate Café in Niwot. RSVP for breakfast to Steve Jones ([stephen.jones@earthlink.net](mailto:stephen.jones@earthlink.net); 303-494-2468).



Male Lark Bunting – Bill Schmoker ([www.schmoker.org](http://www.schmoker.org))

The Lark Bunting (*Calamospiza melanocorys*) was approved as the official state bird of Colorado by the General Assembly of the State of Colorado on April 29, 1931. They are birds of the prairie regions in central Canada and the mid-western United States, including eastern Boulder County.

They forage and nest on the ground, mainly eating insects in summer and seeds in winter. Their numbers are decreasing with the loss of natural prairie habitat. They migrate in flocks to Mexico and southern Texas.

## Boulder Christmas Bird Count December 14, 2008

Come out and enjoy the annual Christmas Bird Count this year. Call leader Bill Schmoker, 303-702-9589 ([bill@schmoker.org](mailto:bill@schmoker.org)) to volunteer for this all-day event.

From December 14, 2008 through January 5, 2009, tens of thousands of volunteers throughout the Americas will take part in an adventure that has become a family tradition among generations. Grandmothers and students, soccer moms and scientists, armed with binoculars, bird guides and checklists will head out on an annual mission – often before dawn. For over one hundred years, the desire to both make a difference and to experience the beauty of nature has driven dedicated people to leave the comfort of a warm house in the middle of winter.

These Citizen Scientists are taking action for conservation. By participating in Audubon's Christmas Bird Count, they help scientists understand how birds are faring amid unprecedented environmental challenges. The data they collect informs the world about the State of Birds, and provides the information we need to shape their future and ours.

"Each of the citizen scientists who brave snow, wind, or rain, to take part in the Christmas Bird Count make an enormous contribution to conservation," said Geoff LeBaron, Audubon's Christmas Bird Count Director.

Last year, thousands of volunteers counted nearly 60 million birds across the Americas and beyond. Each count occurs in a designated circle, 15 miles in diameter, and is led by an experienced birder, or designated "compiler".

Boulder has long had strong participation in the CBC. Participation in Boulder has often been among the top 50 in the country. In the 2006 count, there were 98 participants. We logged 107 species, a record for the Boulder count circle. It would be terrific if the number of participants in 2008 could equal or surpass the number of species reported.

**Wild Bird Center** 303-442-1322



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[www.wildbird.com/boulder](http://www.wildbird.com/boulder)

On 28th south of Canyon  
In Boulder since 1989  
M-F 10-6, Sat 9-6, Sun 11-5

## Bluebird Battles

### Aggression pays on the bluebird frontier, but not in family life

To human observers, bluebirds might seem like the least pugnacious of birds, but in reality they lead strife-ridden lives. This is especially true during the breeding season, when they must defend their nest sites from rivals attempting to evict them, such as other bluebirds, Tree Swallows or House Sparrows.

Male bluebirds respond in different ways to such threats. In anthropomorphic terms, some are bullies and some are wimps. For example, if researchers place a model of a Tree Swallow on a series of bluebird nest boxes, some male bluebirds will attack the model, whereas others are less aggressive.

A new study by Montana-based researchers Renee Duckworth and Alexander Badyaev shows how these "personality" differences have allowed Western Bluebirds to expand their range at the expense of Mountain Bluebirds (*Proceedings of the National Academy of Sciences* 104: 15017-15022).

Both species originally occurred in western Montana, but over much of the 20th century they became rare in the valleys as the number of appropriate nest sites decreased. During that period, Mountain Bluebirds persisted at higher elevations where nest cavities were more common, while Western Bluebirds essentially vanished from the state.

Over the past several decades, however, the valleys of Montana have become prime bluebird habitat as forestry practices have become more bluebird-friendly and more people have set up artificial nest boxes for the birds. Mountain Bluebirds were the first to take advantage of these new opportunities by expanding back into the valleys from the adjacent mountain slopes. They have since been joined by Western Bluebirds, which have steadily moved back into the region from the south and west.

Although the Western Bluebirds are the more recent arrivals, Duckworth and Badyaev showed that they are generally dominant over the Mountain Bluebirds, and over time tend to exclude them from prime valley real estate.

How does this all relate to the fact that some Western Bluebirds are more aggressive than others? By studying pedigrees of bluebirds monitored over many generations, the researchers have discovered that bluebird aggressiveness is largely inherited: aggressive males have aggressive sons. The more aggressive birds are also the better dispersers. This means that the most aggressive birds have led the way during the species' range expansion back into Montana, and into territorial conflict with Mountain Bluebirds living in the valleys. For Western Bluebirds existing on the frontier, aggressiveness has a distinct advantage.

But in a fascinating twist, the story changes entirely when the bluebird frontier becomes well settled. The aggressiveness that confers a competitive advantage at the edge of the range expansion is actually a detriment in areas occupied by a stable Western Bluebird population. Once Western Bluebirds become well established, offspring tend to settle near their close relatives, and some even engage in cooperative breeding. In a high-density Western Bluebird population, the more aggressive males continue to battle and therefore spend less time caring for their nestlings. In this context, they are poor fathers, and therefore have fewer surviving offspring than their less aggressive neighbors.

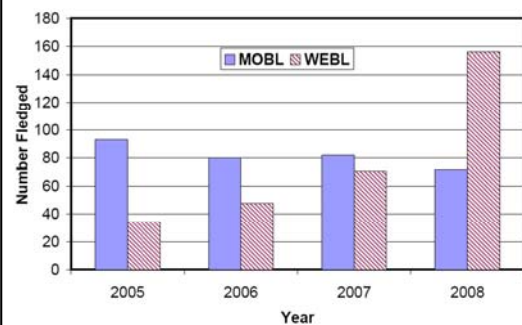
This difference is readily apparent across the regions of Montana that Duckworth and Badyaev study. Natural selection favors aggression at the leading edge of the species' expanding range, but it favors lower aggression once populations become well established, and neighbors are friends and family.

—*Irby Lovette, director of the Cornell Ornithology Lab's Fuller Evolutionary Biology Program*

Reproduced with permission from *Birdscope*, magazine of the Cornell Lab of Ornithology

### Bluebirds at Walker Ranch

The BCAS experience at Walker Ranch over the past four seasons mirrors the Montana observations described in the accompanying article. Western Bluebirds (WEBL) have increased annually compared with Mountain Bluebirds (MOBL).



The huge increase of WEBL in 2008 is the result of a large number of double clutches this year—two successive broods in the same box. Apparently the supply of insect food was unusually good this year, because we saw only a few double clutches in the earlier years.

— George Oetzel



## Boulder County Bluebirds, 2008

The bluebird monitors had an interesting, even exciting, and bountiful year in 2008. We added 19 new boxes on two trails, bringing to 80 the total number monitored. We believe that 125 Mountain Bluebirds (MOBL) and an astonishing 233 Western Bluebirds (WEBL) fledged from the boxes this year. Other species nesting in the boxes in much smaller numbers included: Violet-green Swallow, Tree Swallow, White-breasted Nuthatch, Pygmy Nuthatch, Mountain Chickadee, and House Wren.

Monitoring consists of checking each box approximately weekly during the nesting season. As the chicks near time to fledge, there is generally one visit when the box isn't opened, lest the chicks leave the box before they are really ready to fledge. Thus, we see a box with healthy chicks one week and an empty nest two weeks later. If there is no evidence to suggest predation or other serious problems, we assume that all the chicks fledged. Hence, "we believe" we know how many fledged.

The huge increase in the number fledging this year is due to an unprecedented number of double clutches—successive clutches of eggs in the same box, presumably by the same adults. Here's the number of second clutches started in the two years:

	MOBL	WEBL
2008	5	20
2007	2	2

In 2008, two of the MOBL second broods failed to produce fledged chicks, and in 2007 one failed.

The number of clutches of eggs laid in the two years is listed below.

	MOBL	WEBL
2008-all boxes	28	54
2007 boxes in 2008	18	46
2007 boxes in 2007	22	21

Looking only at boxes that were available for nests in 2007, we see that there was an actual decrease in the number of MOBL clutches in 2008. The huge increase of WEBL clutches this year was largely the result of second broods.



Bluebird chicks wanting food.

## Western Bluebirds vs. Violet-green Swallows

Although Sibley says that Violet-green Swallows (VGSW) have been observed aiding Western Bluebirds (WEBL) in raising chicks, our observations this year strongly indicate competition, rather than cooperation. Observations at Betasso illustrate the point.

When we checked Box 11 late in May, we found a WEBL hen sitting on eggs. We were surprised a few minutes later to see a VGSW enter the box. We thought that indicated competition for nesting space, so we returned in a few days and added another box nearby. That ended the contention. We had a VGSW nest under construction in the new box before long. However, it was three weeks later that we finally saw VGSW eggs in the box.

**Violet-green Swallow chick peering from box where Western Bluebird chicks were previously seen in nest.**



Later, we expected that WEBL chicks observed previously were ready to fledge from Box 6. We were amazed to approach the box and find a VGSW chick peering out of the box. We don't know where the chick came from, as we hadn't seen VGSW eggs or chicks in the box on earlier visits. We didn't know of VGSW nests nearby, and this was much earlier than typical VGSW fledging.

The next little drama at that box was a mix of 5 WEBL eggs and one VGSW egg at the start of a second brood. The VGSW egg didn't hatch, and the WEBL chicks fledged successfully.



Five WEBL eggs surround one VGSW egg.

Photos and text this page by G. Oetzel

## BOULDER COUNTY WILDLIFE INVENTORY, MAY 2008

Gillian and Alex Brown, 4560 Darley Avenue, Boulder, CO 80305.

May 2008 was an exciting birding month with many rarities spotted. The rarest bird of the month was probably a **Ruff** seen during a snowstorm at Boulder Reservoir on the first day of the month. Fortunately, even though it only stayed one day, many observers were able to view this bird which was a new species for the wildlife inventory. Shorebird migration was still going strong at the beginning of the month with less usual species including **Black-bellied Plover**, **Black-necked Stilt**, **Whimbrel**, **Long-billed Curlew**, **Sanderling**, **Pectoral Sandpiper**, **Stilt Sandpiper**, **Short-billed Dowitcher** and **Red-necked Phalarope**. At least one **Glossy Ibis** was positively identified among a flock of **White-faced Ibis**. We also had some other reports of possible **Glossy Ibis** but this bird is notoriously difficult to identify.

Warbler migration was also strong with many unusual species. A **Yellow-throated Warbler** was the first reported since 1994, and only a third report for the wildlife inventory. A possible **Swainson's Warbler** was unfortunately never confirmed as this would have been only the second report for the wildlife inventory, the first having been seen in 1988. Other unusual warblers which have not been seen for at least a year are (with the year last seen in parentheses): **Black-throated Gray Warbler** (2006), **Prairie Warbler** (2004) and **Hooded Warbler** (2004). This last bird is one that used to be seen (or heard) in small numbers yearly and was known to breed for multiple years in the Mountain Parks. A **Tennessee Warbler**, three **Northern Parulas**, a **Magnolia Warbler**, two **Blackpoll Warblers**, four **American Redstarts**, a **Worm-eating Warbler**, an **Ovenbird** and a **Mourning Warbler** rounded out the list of unusual warblers. Vireos were also well reported with seven different species. **White-eyed Vireo**, **Yellow-throated Vireo** and **Philadelphia Vireo** were all last seen in 2005.

A male **Vermilion Flycatcher** was seen on the Boulder Creek path to the east of Boulder. This is only the third report of this species to the wildlife inventory, the last report having been in 1987. All our normal flycatchers were reported as well as two **Gray Flycatchers** and an **Ash-throated Flycatcher**. **Black-chinned** and **Calliope Hummingbirds** were less usual May sightings although they have become commonplace during fall migration in July and August. **Field Sparrow** (last seen in 2005) and **Black-throated Sparrow** (last seen in 2006) were two of our less usual sparrow sightings. A **Veery** was the first reported since 2005. Two **Yellow-billed Cuckoos** were reported, the first seen since 2005. This is another species that historically bred in the county but has become increasingly rare.

The 236 bird species seen in May was the second highest ever recorded in a single month – only May 2002 surpassed this total with 243 species. Every year different locations seem to act as “hot spots”. This year Sale Lake in Boulder and Waneka Lake in Lafayette seemed particularly productive. However, for a record month, coverage of all types of habitat throughout the month is essential, and the lack of an organized bird count apart from the Indian Peaks Spring Bird Count (IP) did not help with numbers of common species. It is possible to list several species that may well have been present in the county but were not reported. None of these could be called rarities. Into this category fall: **Hooded Merganser**, **Common Merganser**, **Northern Goshawk**, **Peregrine Falcon**, **Sora**, **California Gull**, **Northern Pygmy Owl** and **Loggerhead Shrike**.

For a complete list of sightings please go to the Boulder Audubon County website at [www.audubon.org/inventory.htm](http://www.audubon.org/inventory.htm)

Here you will be able to discover such details as to who spotted the first returning migrants of the year, and where various species were seen.

### CONTRIBUTORS TO THE MAY INVENTORY

Linda Andes-Georges, Mary Balzer, Alan Bell, Mike and Mary Blatchley, John Breitsch, Josh Bruening, Alex & Gillian Brown, Lauren Burke, John Cobb, Mark Chavez, Bob and Elaine Coley, Cathy Comstock, Todd Deininger, Wyatt Earl, Norma Erthal, Ted Floyd, Lonny Frye, Steve Frye, Peter Gent, Maddy Goldhawk, Bryan Guarente, Paula Hansley, Jack Harlan, Thomas Heinrich, Chuck Hundertmark, Steve Jones, Bill Kaempfer, Chishen Kwong, Steve Larson, Tim Linder, Tony Lechleitner, Tony Leukering, Carolyn Mahakian, Lynn Merrill, Kathy Mihm-Dunning, Mark Miller, Gene and Lynn Monroe, Christian Nunes, George and Marti Oetzel, Sue A. Olmsted, Laura Osborn, Chris Pague, Nathan Pieplow, Peter Plage, Bill and Inez Prather, Sue Riffe, Bill Schmoker, Bob Shade, Randy Siebert, Tim Smart, Susan Spaulding, Cara Stiles, Walter Szeliga, Ann Tagawa, Pamela Tarrall, Neal Thielen, Oakleigh Thorne, John Tuma-sonis, John Vanderpoel, Knut Waagan, David J. Waltman, Wild Bird Center, Tom Wilberding, Curtis Williams.

**BIRD TRIVIA**

BY JOHN RIUTTA

Did you know that the reason birds' necks are so flexible is because they have more bones there than you or I do? The number of bones in the neck that hold up the skull and protect the spinal cord, called *vertebra* (plural: *vertebrae*), as well as how they move in relation to one another, determine how much flexibility any vertebrate—animal with a backbone—has in its neck.

Most mammals, including humans, have seven vertebrae in their necks horizontal axis but slightly sideways to this axis as well. The shape of each vertebra, as well as the higher total number of them, results in a neck that can flex and twist to a considerable degree. In fact, most birds can turn their heads a full 180° in either direction.

This extreme flexibility has an important use to birds. Although the vertebrae in their necks are numerous and flexible, the vertebrae in their backs are variously fused and immobile in order to facilitate flight. Thus the flexibility of the neck compensates for the lack of mobility in the back. Preening feathers to ensure their optimal condition at all times is essential to the very survival of birds, and having a highly flexible neck provides the ability for a bird to reach around and use its bill to preen feathers that would otherwise be inaccessible to it.

Of course, a quick observation of some bird species would not lead one to assume-or even believe-this higher number of cervical vertebrae. Some bird species, such as chickadees, seem barely to have any necks at all. Once again, the flexibility of the neck is the secret. Rather than being held continuously more-or-less straight, as in mammals, the cervical column of birds is often held folded down into an "S" shape. Because the feathers hide the true shape of the neck, it can sometimes appear as if their heads sit directly on their shoulders. However, spending a little time watching a bird preen will quickly reveal the truth. (Many thanks to *The Backyard Birds Newsletter*, -October 2008)

**GROCERY COUPONS SUPPORT BCAS**

Every time you buy food (or wine or beer), you could be supporting this chapter and its goals of backyard habitat creation, school-room programs for kids, and protection of important bird areas in our own county.

Cards and certificates are used exactly like cash. You are whisked through the check-out line as though you were handing over greenbacks. Every \$100 you spend puts \$5 or \$10 into the BCAS piggybank for our local chapter needs at no cost to you.

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Coupons are always available at chapter meetings, the fourth Tues. of each month. Bring your checkbook!

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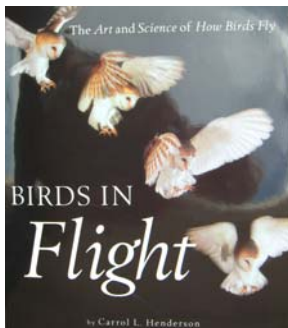
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**Book Review**



**Birds in Flight:  
The Art and Science of How Birds Fly**

Carrol L. Henderson, Voyageur Press, Minneapolis, MN

Filled with pretty and informative photographs, *Birds in Flight* describes in layman's language every aspect of bird flight, from aerodynamics and physiology to takeoff and landing. There is much in the descriptions that you probably already know. You can still appreciate how well the photos illustrate the descriptions.



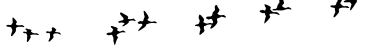
**Canada Goose alula in action during landing**

There may be things you don't know, as well. For example, did you know that the alula is a small bone at the wrist joint on the wing that is analogous to our thumb? Feathers attached to the alula are used to control airflow to reduce stalling speed and aid landing.

*Birds in Flight* will be available for sale at the Oct. and Nov. meetings. Part of each sale will benefit the chapter.

Boulder County Audubon Society

*On The Wing*



P.O. Box 2081

Boulder, CO 80306

[www.boulderaudubon.org](http://www.boulderaudubon.org)

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Grassland Treasures**  
Mark Gershman, Lynn Reidel,  
and Steve Jones  
  
**Program Jan. 27, 2009**  
**Peru's Amazonian Eden**  
Gary Graham

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## Join Your Local Chapter! (or Renew Membership)

Local memberships are an important part of the support that makes this newsletter and our other activities possible. We get very little return from national memberships. (NAS membership is not required for membership in the local chapter.) To use credit card or PayPal, visit [www.boulderaudubon.org/about.htm](http://www.boulderaudubon.org/about.htm)

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**To join or renew both BCAS and NAS, please duplicate the form and send separately.**

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