

## THE COMPLEXITIES OF DETERMINING THE STATUS OF CACKLING GOOSE IN COLORADO

Robert Righter  
2358 S. Fillmore Street  
Denver, CO 80210

and

Lawrence S. Semo  
Colorado Bird Records Committee Chair  
9054 Dover Street  
Westminster, CO 80021  
[lsemo@swca.com](mailto:lsemo@swca.com)

### Introduction

With the publication of the 45th Supplement to the *Check-list of North American Birds* (Banks et al. 2004), the American Ornithologists' Union's Committee on Classification and Nomenclature split "Canada" Goose into two species, Canada Goose (*Branta canadensis*) and Cackling Goose (*Branta hutchinsii*).

In Colorado, as well as many other parts of North America, the decision to split Canada Goose created a dilemma for birders trying to identify the newly recognized Cackling Goose in the field. On average, Cackling Goose is smaller than Canada Goose, but the identification is not nearly as straight forward as simply assuming that a much smaller white-cheeked goose is therefore a Cackling Goose (see Semo and Righter 2006 this issue). (For the purposes of this paper, we use the term "white-cheeked goose" generically to refer to both species in combination where applicable. In doing so, we hope to eliminate possible confusion in using the common name "Canada Goose" in reference to both pre-split Canada Goose and post-split Canada Goose.)

The white-cheeked goose complex is currently recognized as comprising eleven subspecies. In making their decision, the AOU *Check-list* Committee assigned the four smaller, tundra breeding subspecies to Cackling Goose, and the seven larger, interior, and more southerly breeding subspecies to Canada Goose.

The question of how many species are actually involved within the white-cheeked goose complex isn't completely settled, as there is ongoing debate

among systematists concerning additional future splits. Sibley (2004) clearly states the current dilemma of the white-cheeked goose complex as "rather arbitrarily divided here into six subspecies groups that differ in size, plumage, and voice; but all are connected by intermediate populations and identification can be difficult, even though the extremes seem like different species."

### Common Names

To add to the confusion, some common names have been associated with both subspecies and, now, species. For example, before Cackling Goose was elevated to species status, the name "Cackling" was associated with the small, northwest, arctic breeding subspecies *Branta canadensis minima*. With the elevation to species, the vernacular name "Cackling" shifted and became the common name of the newly recognized species Cackling Goose (*Branta hutchinsii*). Furthermore, the nominate race for Cackling Goose (*Branta h. hutchinsii*) is recognized as having two common names, Hutchin's Goose and Richardson's Goose (throughout this paper, however, we use only Richardson's as that is the most commonly accepted name).

In 2005, the British Ornithologists' Union agreed with the white-cheeked goose split designated by the AOU, but confusingly named the new smaller goose Lesser Canada Goose and the larger species Greater Canada Goose (Sangster et al. 2005). "Lesser" Canada Goose for a long while, at least in North America, has been the designated common name for the smallest race of the post-split Canada Goose!

To understand the complexities involved in determining the status of Cackling Goose in Colorado it is helpful to have an understanding of where all 11 subspecies generally breed and overwinter. While different authors have, or have had, varying opinions on how many subspecies are involved with each species, we have relied on information from the latest peer-reviewed paper on the white-cheeked goose complex (Mowbray et al. 2002).

### **CANADA GOOSE (*Branta canadensis*)**

*B. c. canadensis* (Atlantic Canada Goose)

- |           |   |
|-----------|---|
| Breeds:   | Baffin Island south through extreme Quebec, Labrador, and Newfoundland.                                     |
| Winters:  | Along Atlantic seaboard from Newfoundland, Nova Scotia, south to Georgia.                                   |
| Comments: | Gradually intergrades with Interior Canada Goose.   |
| Colorado: | Not known to occur in the state. If it did it would appear similar to the Giant and Moffitt's Canada Geese. |

*B. c. interior* (Hudson Bay, Interior, or Todd's Canada Goose)

- Breeds: Ontario, west to Manitoba and north at about 97 degrees west of Caribou River and east to Hudson Bay, Baffin Island, and Quebec, and perhaps south to extreme northern Minnesota and Michigan.
- Winters: Inland south to Georgia and Florida with the largest concentrations found on Delmarva Peninsula and west along Gulf Coast to Central Texas.
- Comments: Intergrades with Giant, Moffitt's, and Atlantic.
- Colorado: Known in the state by two specimens: one male in Adams County, 6 February 1947 (DMNS 25406), and one male in Adams County, 20 December 1963 (DMNS 33805).

*B. c. maxima* (Giant Canada Goose)

- Former status: Bred from Manitoba, North Dakota, Minnesota south to eastern Kansas, and wintered in southerly portions of breeding range. This race was nearly extirpated with the advancing early settlers (Bailey and Niedrach 1965).
- Colorado: From a small stock of captive Giant Canada Geese, this subspecies was slowly restored, with extensive restoration beginning in 1957 (Bailey and Niedrach 1965, Colorado Division of Wildlife [CDOW] 1989). The restoration was so successful that Giant rapidly captured its former range east of the Continental Divide where it then came in contact with Moffitt's Canada Goose, which was also being restored in western Colorado. This contact resulted in extensive interbreeding between the two subspecies such that both their gene pools became diluted to such a degree that many who study the white-cheeked goose complex consider the two races indistinguishable in the field and believe that the two subspecies now represent a combined subspecies, *maximalmoffitti* (Palmer 1976, CDOW 1989).

In addition to the introgression witnessed in wild populations, successful restoration attempts during the 1930s along the Fort Collins/Denver corridor released geese from captive decoy flocks which were comprised of an assortment of large-bodied white-cheeked goose subspecies, which over successive generations of living in pens had merged into one composite form of unknown specificity (Rutherford 1967).

Historically, Colorado was part of the extreme southwestern part of the Giant Canada Goose's range. Currently, Colorado populations of Giant Canada Geese are considered to be largely resident, but experiencing local, seasonal shifts in population. Therefore, it is interesting to note that sometime during the winter of 1975-76 there were banding recoveries of two Giant Canada Geese somewhere on the northeastern plains of Colorado originally banded in Manitoba sometime between 1968 and 1970 (Raveling 1982). These banding recoveries are of interest as it suggests that at least during the mid-1970s some individuals from northern populations of Giant Canada Goose may have regularly moved as far south as Colorado's eastern plains.

*B. c. moffitti* (Moffitt's, Great Basin, or Western Canada Goose)

- Breeds: From British Columbia, Alberta, Saskatchewan, Manitoba and south and west of the Continental Divide into Colorado, Utah, Nevada; also introduced into Oklahoma and Texas.
- Winters: Over a large portion of its breeding range.
- Colorado: An amalgamation of Giant/Moffitt's Canada Goose now breeds extensively in the state (CDOW 1989). As with Giant (see above), there is no evidence that pure forms of either subspecies breed in the state.

*B. c. occidentalis* (Dusky Canada Goose)

- Breeds: In the Copper River Delta of Alaska, and on several of its associated islands.
- Winters: In Willamette River Valley of western Oregon and the lower Columbia River Valley.
- Colorado: Not known to occur in the state. Sightings should be documented to the Colorado Bird Records Committee.

*B. c. fulva* (Vancouver Canada Goose)

- Breeds: From Glacier Bay south along coast and islands of southeast Alaska and northwest British Columbia, including Queen Charlotte Islands to Vancouver Island.
- Winters: Essentially non-migratory, wintering in southeast Alaska southward throughout coastal British Columbia.
- Colorado: Not known for the state and its sedentary nature makes it unlikely to occur.
- Comments: Considered inseparable in the field from the Dusky Canada Goose (Palmer 1976).

*B. c. parvipes* (Lesser Canada Goose)

- Breeds: Throughout the boreal regions from Alaska, east to Nunavut, south to British Columbia, east to northwestern Hudson Bay.
- Winters: Washington, Oregon, south to northern California, east of the Continental Divide in Colorado, New Mexico, Texas, and Oklahoma.
- Colorado: The most common of the migrating white-cheeked goose subspecies on the eastern plains in late fall, winter, and early spring (CDOW 1989).

Although we suspect it occurs regularly in western Colorado in late fall, winter, and early spring, we are unsure of its status in that region. Dexter (pers. comm.) encounters small, mallard-sized white-cheeked geese on the western slope, which may pertain to this subspecies or to Richardson's Cackling Goose. Photographic evidence may eventually help clear up this confusion.

- Comments: Because of the potential for appearing significantly smaller than some of the larger Canada Goose subspecies, as well as its variable plumage coloration, a small Lesser can therefore give an illusion of appearing like a Richardson's or Taverner's Cackling Goose (see Semo and Righter 2006 this issue). According to Mowbray et al. (2004), the Lesser Canada Goose represents a taxon that is phylogenetically most closely related to large-bodied forms from lower latitudes but has converged morphologically with smaller-bodied forms that nest at higher latitudes.

**CACKLING GOOSE (*Branta hutchinsii*)**

*B. h. hutchinsii* (Richardson's or Hutchin's Cackling Goose)

- Breeds: From Mackenzie River Delta in Alaska east across Canada to Baffin Island, and south along the west coast of Hudson Bay where it intergrades with Lesser Canada Goose.
- Winters: In Texas, New Mexico, in the central highlands of Mexico from Chihuahua south to Jalisco, and along the gulf coast from Louisiana west through Texas to northeast Mexico, occasionally north to central Wyoming, regularly to eastern Colorado and western Oklahoma.
- Colorado: A substantial portion of the arctic nesting, prairie population migrates through eastern Colorado going to Texas,



Oklahoma, and New Mexico (CDOW 1989). The wintering populations of small white-cheeked geese according to CDOW (1989) "are mostly 'Lesser' [Canada Goose] with a few Richardson's [Cackling Goose]". However, in the Panhandle of Texas, Richardson's is believed to be a common wintering subspecies (Lockwood 2004). We are reasonably convinced that Richardson's winters in eastern Colorado with presumably higher concentration in the southeastern plains.

In the northern half of Colorado's eastern plains there are frequent sightings of small-bodied white-cheeked geese showing heads with flattish crowns, steep foreheads and small, petite bills for us to presume Richardson's also occurs in the region in late fall, winter, and early spring. Photographic evidence during the winter of 2005-2006 suggests that hundreds of small-bodied white-cheeked geese along the northern Front Range were Richardson's. Photographic evidence and flock counts further suggests that "Lesser" Canada Goose is more common in eastern Colorado than Richardson's Cackling Goose.

*B. h. minima* ("Cackling" Cackling Goose)

- Breeds: From the Yukon-Kuskokwim Delta, Yukon River Delta west and south along coast of Bering Sea to Kuskokwim Bay.
- Winters: Primarily in Willamette Valley of Oregon and lower Columbia River Valley in Oregon and Washington; small numbers also winter in the central valleys of California.
- Colorado: One was collected by Robert M. Stabler three miles north-east of Colorado Springs, El Paso County, on 15 April 1949 and currently resides in the Denver Museum of Nature and Science (DMNS 26118). One was documented during the early winter of 1999 to February 2000, and was accepted by the Colorado Birds Record Committee. The record has recently been submitted to goose experts, who suggest the record may represent a degree of introgression with other Cackling Goose subspecies. One was photographed at Standley Lake, Jefferson County, on 11 December 2005. The record was circulated among several goose identification experts and all agreed on the validity of this record. One was photographed on 13 January 2002 in Glendale, Arapahoe County. This record was circulated among several goose

identification experts and all agreed on the validity of this record.

Comments: Because this subspecies is favored by captive waterfowl enthusiasts, its natural origin in the state, at least at this time, is questionable. Apparently there are only a few accepted records east of the Sierra-Cascade Mountains (Sibley 2004). As the accepted records for Cackling Goose in this and neighboring states increases, and when a pattern of vagrancy emerges, the question of origin should diminish.

Reports of this subspecies should be documented to the Colorado Bird Records Committee.

*B. h. taverneri* (Taverner's or Alaska Cackling Goose)

Breeds: In Yukon-Kuskokwim Delta, Alaska.

Winters: Primarily in the Willamette River Valley of western Oregon, lower Columbia River Valley of northern, central Oregon and south-central Washington, and northern California.

Colorado: Status is uncertain (see Cackling Goose Specimens at the Denver Museum of Nature and Science section). Reports of this subspecies should be documented to the Colorado Bird Records Committee pending further taxonomic clarification (see Comments).

Comments: This subspecies represents an enigma within the white-cheeked goose complex. The AOU *Check-list* (1957) does not even list Taverner's as a viable subspecies stating that "This bird has been confused with *B. c. leucopareia* [Aleutian Cackling Goose] so that many of the references in literature refer to the latter form." Paler individuals intergrade with Lesser Canada Goose and are thought by some authors as inseparable from Lesser Canada Goose (Palmer 1976). Because of Taverner's dubious standing as a viable subspecies, one could speculate that it may only represent a color morph or may only be a clinal representation of a subspecies or grouping of subspecies.

Consequently, a small dark goose, morphologically suggestive of a Taverner's may actually represent a goose comprised of various intergrades of darker and lighter Cackling Geese subspecies and conceivable include intergrades from one of the other smaller or darker Canada Geese subspecies, particularly with Lesser Canada Goose.

*B. h. leucopareia* (Aleutian Cackling Goose)

- Breeds: In the Aleutians and Semidi Islands.
- Winters: In Sacramento and San Joaquin Valleys of central California and possible in lower Columbia River Valley of Oregon.
- Comments: Is the least abundant of all the Cackling Goose subspecies. In 1977, its population dwindled to roughly 2000 individuals (Johnsgard 1978). Although it was near extinction, its population has recently increased to about 30,000 (Mowbray et al. 2002).
- Colorado: This race, on its winter quarters, specializes in feeding on halophytic plants (salty plants usually found near the ocean). Therefore it is unlikely this subspecies will cross the Rocky Mountains to make its appearance in the state.

Reports of this subspecies should be documented to the Colorado Bird Records Committee.

**Cackling Goose Specimens at the Denver Museum of Nature and Science**

In the Zoological Collections at DMNS there are fifteen white-cheeked goose specimens identified as Cackling Goose that were collected from 1898 through 1969. These specimens are of interest, as most were collected before substantial goose re-introduction practices were established in North America; therefore, the specimen's morphological appearance may not have been as influenced from potential cross-breeding from introduced stock and, thus, could be more distinguishable.

Colorado specimens of white-cheeked geese at the Denver Museum of Nature and Science were identified to the subspecific level by the late Dr. Allan A. Phillips, a noted avian taxonomist who employed the use of morphometrics and plumage characteristics for use in identification. As the AOU decision to separate white-cheeked geese into two species stemmed primarily through genetic separation using mtDNA hybridization studies, we cannot assume that the criteria utilized by Dr. Phillips for use in specimen subspecific placement is consistent and in concordance with genetic findings. However, as DNA analysis of the DMNS specimens has not been conducted, or was the intent of this investigation, we, for the most case, use the findings of Dr. Phillips as factual; in specimens of which we found converse specimen characteristics to that of known populations of a given subspecies, we present those inconsistencies with the caveat that the specimen identification may be putative.



DMNS#	Subspecies	Collection location	Date
113787	<i>taverneri</i>	Masters, Weld Co.	10 Nov 1925
26148	<i>taverneri</i>	Two Buttes, Baca Co.	4 Jan 1938
19626	<i>taverneri</i>	Jackson Res., Morgan Co.	8 Nov 1938
33804	<i>taverneri</i>	Baca Co.	9 Dec 1958
26152	<i>taverneri</i>	Two Buttes	4 Jan 1951
26149	<i>taverneri</i>	Two Buttes	4 Jan 1951
14708	<i>hutchinsii</i>	Loveland, Larimer Co.	10 Apr 1898
14709	<i>hutchinsii</i>	Loveland	10 Apr 1898
26974	<i>hutchinsii</i>	Two Buttes	29 Dec 1954
33782	<i>hutchinsii</i>	Two Buttes	17 Dec 1958
36062	<i>hutchinsii</i>	Two Buttes	22 Nov 1969
26158	<i>taverneri/hutchinsii</i>	Two Buttes	30 Dec 1950
19625	<i>taverneri/hutchinsii</i>	Jackson Res.	6 Nov 1938
26146	<i>hutchinsii/taverneri</i>	Two Buttes	31 Dec 1950
26118	<i>minima</i>	Co. Sprgs., El Paso Co.	15 Apr 1949

#### Taverner's Cackling Goose specimens

Dr. Phillips classified the subspecies utilizing morphometrics (plumage and measurements), as phylogenetic study (the application of DNA) was in its infancy and not readily available. When the AOU's Committee on Classification and Nomenclature separated the "Canada" Goose into two separate species, they did so mainly utilizing phylogenics. The separation into two species followed from a previous supposition that the seven larger bodied subspecies (now Canada Goose) were distinct from the four smaller bodied subspecies (now Cackling Goose).

At the current state of knowledge, there is no convincing way of separating Taverner's Cackling Goose morphometrically from Lesser Canada Goose; although, phylogenetically they appear to be separate. For the purposes of this paper, we have decided to minimize the role of Taverner's specimens until the taxon as a whole, and Taverner's specimens in the DMNS specifically, have been subjected to a phylogenetic study where the subspecific classification can be further clarified.

#### References

- American Ornithologists' Union [AOU]. 1957. *Check-list of North American Birds*, 5th ed. Baltimore, MD.
- Banks, R. C., C. Cicero, J. L. Dunn, A. W. Kratter, P. C. Rasmussen, J. V. Remsen, J. D. Rising, D. F. Stotz. 2004. Forty-fifth supplement to the American Ornithologists' Union Check-list of North American Birds. *Auk* 121:985-995.

- Bailey, A. M. and R. J. Niedrach. 1965. *Birds of Colorado*, Vol. I. Denver Mus. Nat. Hist., Denver.
- Colorado Division of Wildlife [CDOW]. 1989. *Colorado Statewide Wildlife Management Plan 1989-2003*. Colorado Division of Wildlife, Fort Collins.
- Johnsgard, P. A. 1978. *Duck, Geese, and Swans of the World*. University of Nebraska Press, Lincoln.
- Leafloor, J. O., C. D. Ankney, and D. H. Rusch. 1998. Environmental effects of body size of Canada Geese. *Auk* 115:26-33.
- Mowbray, T. B., C. R. Ely, J. S. Sedinger, and R. E. Trost. 2002. Canada Goose (*Branta canadensis*). *The Birds of North America*, No. 682 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- Owen, M. 1980. *Wild Geese of the World*. B. T. Batsford Ltd., London.
- Palmer, R. S. (ed.) 1976. *Handbook of North American Birds*, Vol. 2. Yale University Press, New Haven, CT.
- Raveling, D. G. 1982. *Dynamics of Distribution of Canada Geese in Winter. Waterfowl Ecology and Management Selected Readings*. The Wildlife Society. Allen Press, Lawrence, KS.
- Rouge River Bird Observatory. 2005. Canada Goose races in Dearborn. [http://www.umd.umich.edu/dept/rouge\\_river/goose.html](http://www.umd.umich.edu/dept/rouge_river/goose.html).
- Rutherford, W. H. 1967. Experimental manipulation of Canada Goose populations in Colorado. *Colo. Field Ornith.* No. 2:1-5.
- Sangster, G., J. M. Collinson, A. J. Helbig, A. G. Knox, and D. T. Parkin. 2005. Taxonomic recommendations for British birds: third report. *Ibis* 147: 821-826.
- Scribner, K. T, Talbot, S. L., Pearce, J. M., Pierson, B. J., Bollinger, K. S., and D. V. Derksen. 2003. Phylogeography of Canada Geese (*Branta canadensis*) in western North America. *Auk* 120:889-907.
- Sibley, D. A. 2004. Identification of Canada and Cackling Goose. [http://www.sibleyguides.com/canada\\_cackling.htm](http://www.sibleyguides.com/canada_cackling.htm).
- Lockwood, M. 2004. The split of Canada Goose - a statement from the TBRC secretary. <http://www.texasbirds.org/tbrc/Canadagooset.html>
- Wilson, A. 2005. Identification and range of subspecies within the (Greater) Canada and (Lesser Canada) Cackling Goose Complex (*Branta canadensis* & *B. hutchinsii*). <http://www.oceanwanderers.com/CAGO.Subspecies.html>.