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ROSS' GEESE INCREASING IN CENTRAL NORTH AMERICA

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Prevett and MacInnes (Condor 74:431–438, 1972) proposed that a real increase in the number of Ross' Geese (*Chen rossii*) in central North America was in progress. They recorded the number of Ross' Geese observed in systematic ground counts of Snow Geese (*Chen c. caerulescens*) and calculated the ratio of Ross' to Snow geese. Prevett and MacInnes estimated that 441–1,135 Ross' Geese, or 1–6% of the then current world population, wintered along the U.S. Gulf Coast and in the midcontinental states, and they predicted further increases. Their data indicate that, in 1968 and 1969, 0.083 and 0.086%, respectively, of the fall-migrating geese at DeSoto National Wildlife Refuge (DNWR), at Missouri Valley, Iowa, were Ross' Geese. In this paper, we present results of a study conducted to determine if the fall population of Ross' Geese at DNWR has increased since 1969.

In October and November 1981, we observed flocks on DNWR with spotting scopes from a vehicle or blind within 200 m of the birds. Blocks of 100 geese were systematically selected from different parts of the flock in such a way that no two blocks in a flock overlapped. The number of Ross' Geese in each block was recorded. If a flock under observation was disturbed and its members mixed, a new flock was chosen to reduce the possibility of counting the same individuals twice. The percentage of Ross' Geese in each block was calculated. The mean percentage (±SE) of Ross' Geese and the size of the total refuge goose population (all species; Frederick, unpubl. data) were used to obtain an estimate of the 95% confidence interval of the total DNWR Ross' Goose population.

Ross' Geese were first observed during the 31 October–1 November sampling period (Table 1). We estimated that 19 Ross' were present at DNWR at this time (0.11%). On 14–15 November, 555 Ross' Geese were among the refuge flock of 146,000 birds (0.38%). An additional 11 Ross' (4 adults, 7 juveniles) were seen outside sampling blocks from 31 October–9 December. During the fall of 1981, geese began to increase at DNWR on or shortly before 7 October. These early arrivals were predominantly blue-phase birds, but by 25 November, the refuge flock had reached its maximum size of 180,000 birds and was composed chiefly of white-phase geese (Fig. 1). The significant increase in Ross' Geese throughout October and early November and the associated shift from predominantly blue- to predominantly white-phase Snow Geese are consistent with the observation that, on the wintering grounds, Ross' Geese are most commonly found in flocks of predominantly white-phase birds (Prevett and MacInnes 1972) and that most of the Ross' Geese are associated with the more western and predominantly white-phase Snow Goose colonies, which evidently arrive at DNWR later.

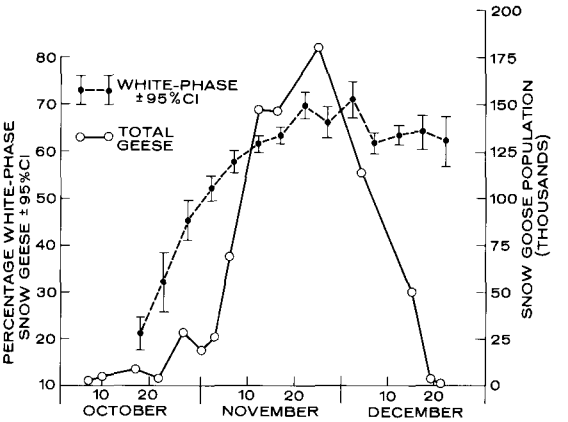

FIGURE 1. Total number of Snow Geese and percentage of white-phase Snow Geese at DeSoto National Wildlife Refuge, Iowa, 1981.

Our estimates of the size of the DNWR fall Ross' Goose population exceed those of Prevett and MacInnes (1972), but the difference may not be significant. Seasonal changes in abundance of Ross' Geese on the refuge (Table 1) and annual variation in the chronology of migration make statistical comparison of our data with their single annual estimates inappropriate.

Ross' Geese probably now breed in all Snow Goose colonies in the Hudson Bay drainage. Prevett and Johnson (Condor 79:121–123, 1977) believed that a probable mechanism for this expansion of the breeding range from colonies in the Perry River and Queen Maud Gulf region was the formation of hybrid pairs with Snow Geese on the wintering grounds. But pure Ross' Goose pairs have successfully nested in Snow Goose colonies as far east as La Perouse Bay (Ryder and Cooke, Auk 90:691–693, 1973). The formation of hybrid pairs could not account for the presence of pure Ross' pairs. Prevett and Johnson (1977) predicted that continued hybridization could have serious implications for the species. Hybridization with Snow Geese may pose a threat to the species integrity of Ross' Geese if distinct breeding colonies of Ross' Geese do not exist, but a few Snow-Ross' hybrids would be genetically insignificant to Snow Goose integrity. Further study is required to determine the rate at which Ross' Geese are increasing in central North America and the mechanism for this increase. Careful and adequate sampling with use of a block-sampling method will assure statistically valid comparisons.

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TABLE 1. Numbers of Ross' Geese observed and estimates of total goose population at DeSoto National Wildlife Refuge, Iowa, 1981.

Date	Blocks sampled	Ross' Ad.	Ross' Juv.	% Ross' Geese ± SE	Total geese using DNWR	Total Ross' Geese (95% CI)
10–11 Oct.	16	0	0	0.00	5,000	0
17–18 Oct.	7	0	0	0.00	8,500	0
31 Oct.–1 Nov.	38	3	1	0.11 ± 0.08	18,500	19 (4–52)
14–15 Nov.	34	11	2	0.38 ± 0.12	146,000	555 (204–905)

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OCCURRENCE OF WILLOW WARBLER (*PHYLLOSCOPUS TROCHILUS*) IN NORTH AMERICA REFUTED

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On 15 June 1952, Keith L. Dixon (Utah State University) picked up a dead *Phylloscopus* near Point Barrow, Alaska. It was identified as an Arctic Warbler (*P. borealis*) and accessioned into the Museum of Vertebrate Zoology (MVZ), Berkeley. In the late 1950's the specimen was sent to George E. Hudson (Washington State University) on an exchange. Noting the lead gray color of the bird, Hudson suggested that it might not be an Arctic Warbler, and the specimen was forwarded to Alexander Wetmore (Smithsonian Institution) who identified it as belonging to the Siberian race of Willow Warbler (*P. trochilus yakutensis*). Hudson generously returned the bird to MVZ (no. 163410), where it has remained. The record was published by Pitelka (1974) as the first occurrence of the Willow Warbler for continental North America.

In June 1979 we re-examined the specimen. Roberson, while researching identification problems in this genus, noted the anomalous presence of wingbars on the specimen, so we compared the wing formula against readily available keys (Ticehurst 1938, Dement'ev and Gladkov 1954, Williamson 1976). A short wing chord and a short first primary corresponded well with the original impression that the bird might represent *borealis* rather than *trochilus*. We sent the specimen, with our comments, to George E. Watson (National Museum of Natural History [NMNH], Washington, D.C.). He, along with Martha B. Hays and Richard C. Banks, compared the bird against other specimens and informed us (pers. comm.) that our analysis was correct: the specimen is indeed *P. borealis*. Our short-billed, short-winged individual (wing 61 mm, culmen from skull 13 mm) is the grayest example of a series of mainland *P. b. kennicotti* (MVZ 163410 is unsexed; other similar specimens include NMNH 591958, a male from north of Umiat, 21 June 1950; NMNH 591959, a female from Killik River, 23 June 1950; and NMNH 437767, a female from Kanngomarik [=Kongumavik] Creek, 23 July 1952). Identification of these taxa can be difficult. Note that NMNH 591958, identified here by Watson et al. as a gray example of *P. b. kennicotti,* was previously identified, by M. R. Browning of NMNH, as Siberian *P. b. borealis* and has been published as such (Gibson 1981).

The re-identification of the MVZ specimen was briefly noted in Roberson (1980:481). The correction of this record leaves no valid report from North America, the nearest occurrence being a bird taken 18 September 1937 at Myggbukta, E. Greenland (labelled *P. t. acredula,* British Museum; AOU 1957, Williamson 1976).

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