

## A POSSIBLE HYBRID BETWEEN THE CANADA GOOSE AND THE PINK-FOOTED GOOSE

CHARLES F. LECK

During the winters of 1964-65 and 1965-66, I observed a hybrid between the Canada Goose (*Branta canadensis*) and another species of goose at Lake Muhlenberg, in Allentown, Lehigh County, Pennsylvania. John E. Trainer (personal communication) reported it also to have been present there during the winter of 1966-67. The determination of the identity of the second parental species proved to be a difficult task which has now been fairly well resolved.

After studying my field-notes and consulting the literature, I believed it to be a Canada × Pink-footed Goose (*Anser fabalis*) hybrid. Since then I have sent color photographs of the hybrid to several ornithologists and have asked their opinions regarding the parentage of the bird. As the Canada Goose has been reported by Johnsgard (1965: 7) to have hybridized with sixteen species, it is not surprising that several species were suggested as the possible second parent of the hybrid. This led me to re-examine the literature and subsequently to prepare this article.

The bird's appearance resembles that of a Canada Goose with pink legs, pink feet, and a pink and black bill. The pink areas mentioned above suggest a Canada Goose × Snow Goose (*Chen hyperborea*) or Blue Goose (*Chen caerulescens*) hybrid because the colorations of the bird's soft parts are rather similar to those found in these two species, except for the partial black in the bill. While immature Snow and Blue Geese have black bills which develop the adult's pink coloration as the bird matures, this hybrid can not be considered to have had a bill of "intermediate age" (i.e., changing from black to pink and thus having both colors) because no change in bill color was observed during two successive winters. Thus, the black in the bill makes Canada Goose × *Chen* sp. questionable. In addition, the plumage pattern of the bird under consideration showed no similarity to any of the Canada × Snow or Blue Geese hybrids reported to date (Bailey, 1949: 197; Nelson, 1952: 425; Bailey, 1965: 146).

The White-fronted Goose (*Anser albifrons*) was also considered as a possible parent. This species, which is pink-billed, shares one distinctive plumage characteristic with the hybrid in that it has white around the base of the bill. However, this pattern of marking could also be contributed by the domestic Gray Lag-Goose (*Anser anser*) in hybridization. Moreover, I believe the White-fronted Goose can be rejected as a possibility because of the following two observations: (1) leg coloration: pink in the hybrid and orange in the White-fronted, and (2) breast and belly coloration: much lighter in the hybrid than in the White-fronted.

An inspection of photographs of recent British specimens (2) of introduced Canada × wild Grey Lag geese hybrids (Harrison and Harrison, 1966: 547-550) eliminates the latter unlikely species from further consideration.

There are only two other species which reasonably may be considered to have produced a hybrid such as the one described, the domestic goose and the Pink-footed Goose. There is considerable evidence favoring each as the second parental species.

Crosses of Canada Geese with domestic geese have been reported in the literature (Hopkinson, 1935: 80; Blain, 1944: 389-391). The domestic geese involved in such matings are forms such as the Embden and Toulouse geese, which have been derived from the Grey Lag Goose. One piece of evidence which suggests that the hybrid resulted from a Canada  $\times$  domestic goose pair is the similarity between my photographs and an illustration of such a hybrid reported by Bailey (1929: 107). Characteristics shared by both hybrids include white on the forehead and a dusky, yet distinct, cheek patch. Bailey (personal communication) believes that the "heavy-bodied" nature of the present hybrid further indicates a domestic goose parent. It should be mentioned, however, that crosses of the Canada Goose with all-white forms of the domestic goose (such as Embden Geese) do not always yield "Canadian-type" offspring. Blain (1944: 391) reported one instance where sibling hybrids varied from Canadian-like to pure white forms. Thus, the light breast and belly of the hybrid might be contributed by a domestic goose parent, although the hybrid described by Bailey (1929: 107) had a dark breast and belly.

Nevertheless, some features lead one to doubt the Canada  $\times$  domestic goose hypothesis. The distinctly pink legs and feet of the hybrid are unlike the "light yellow legs" reported from such a hybrid (Bailey, 1929: 107). The pink and black bill would also be difficult to explain in terms of the above mating. Also, a photograph (Randall, 1962: 46) shows other Canada  $\times$  domestic geese with a striking pied appearance, quite unlike the present bird.

Lastly, we consider the possibility of a cross between the Canada Goose and a Pink-footed Goose. Since the above two species are essentially allopatric, that is, they do not have over-lapping breeding areas, it would seem unlikely that they would ever pair in the wild. Nevertheless, if a Pink-footed Goose did move into central North America (the species breeds as far west as eastern Greenland), it would not be able to mate with its own species. However, it would probably encounter Canada Geese with which it is capable of breeding (Sibley, 1935: 118). Moreover, inter-specific isolating mechanisms might be more poorly developed than those found between sympatric species. Thus, if such an extralimital Pink-footed Goose did pair and mate, it would probably do so with a Canada Goose.

A number of significant morphological features are shared by the Pink-footed Goose and the hybrid being considered. These include: (1) pink legs and feet, (2) pink and black bill, (3) white at the base of the bill (some Pink-footed Geese — Delacour, 1954: 120), and (4) a dark posterior edge of the flank. In particular, the first two points, as indicated before, are very distinctive, and they make the possibility of a Pink-footed Goose parent deserve serious consideration.

In summary, the observed hybrid goose appears to be the result of either a Canada × domestic goose mating or of a Canada × Pink-footed Goose cross. If the pink legs and feet and the pink and black bill are truly diagnostic, and they appear to be so (Delacour, 1954: 114), then the later pairing is strongly suggested.

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Section of Neurobiology and Behavior  
Division of Biological Sciences  
Cornell University  
Ithaca, New York 14850