



WILLIAM BREWSTER MEMORIAL AWARD, 1990  
FRED COOKE

The American Ornithologists' Union presents the Brewster Memorial Award for 1990 to Fred Cooke, for his contributions to the study of avian genetics in natural populations, particularly those of the Lesser Snow Goose (*Chen c. caerulescens*). This taxon has two color phases (morphs), a blue and a white. In the 19th century, these two morphs appeared to be almost completely segregated on their breeding and wintering areas, and they were considered different species. Graham Cooch (1961, *Auk* 78: 72-89) correctly identified them as color morphs of the same species.

Beginning in 1968-1969, Cooke and various colleagues commenced a continuous, long-term monitoring program to study Snow Goose behavior and ecology. Cooke et al. undertook a genetic analysis of populations that breed in the Hudson's Bay region and winter primarily in the Louisiana and Texas coastal marshes. In brief, these studies have shown that (1) the plumage color differences are controlled by dif-

ferences in a single gene—a blue allele that is partly dominant to a white allele; (2) no difference exists in fitness between blue and white morphs, which are recognizable at hatching; (3) pair formation occurs on the wintering grounds, where birds from different breeding populations are mingled; (4) females are highly philopatric and return to their place of hatching to breed, and their mates accompany them; (5) mating is nonrandom: offspring of white parents usually choose white mates, blue offspring choose blue mates, and those of mixed parentage choose a mate of either color, with 10-15% "mistakes" regardless of parentage; and (6) using a components of fitness model, several phenotypic and life history traits have shown either directional or stabilizing selection, and this has led to an understanding of the evolutionary processes operating on the species. Cooke et al. conclude that two formerly almost entirely allopatric populations have within the past century merged to

a considerable extent in a continuing process. The Snow Goose study provides a remarkably thorough example of the integration of field and laboratory data that incorporates genetics, behavior, and ecology. Cooke has been ably supported by an outstanding team of students and colleagues, in particular R. F. Rockwell, who has shared the responsibilities of the project in recent years.

Cooke has made important contributions to studies of other birds of the Hudson's Bay region. He is also co-editor of the 1987 book, "Avian Genetics: a population and ecological approach" (Academic Press), which includes significant contributions by him.