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WILLIAM BREWSTER MEMORIAL AWARD, 1994:

FRANK MCKINNEY

Frank McKinney's contributions to the study of waterfowl social behavior over the last 40 years have made him a world leader in the field of avian ethology. McKinney has established his eminence as an ethologist by his life-long research focus on the evolution and ecology of social displays and mating systems in a single subfamily of ducks, the dabblers. His research shows brilliantly how important general principles can emerge from highly focused intensive studies. McKinney and his students have led the way in our understanding first of the evolutionary sources of social displays, then the behavioral ecology of waterfowl, and, most recently, the evolutionary significance of male secondary mating strategies.

Dr. McKinney's publications now span five decades. His contributions in recent years reflect his continuing focus on the evolution of mating systems in the genus *Anas* and the influence of ecological factors. In collaboration with two of his many students, his detailed study of Mallard behavior was one of the first to document the effectiveness of forced extrapair copulations as a male reproductive strategy in any species (*Auk* 97:875–879, 1980, with J. Burns and K. Cheng). His ensuing work on reproductive strategies examined the evolution of male and female reproductive behavior in terms of sperm competition (*Behaviour* 86:250–294, 1983, with S. Derrickson and P. Mineau).

McKinney has shown an impressive ability to integrate data on diverse species under a variety of ecological pressures and to derive principles that are applicable not only to waterfowl, but to birds in general. This faculty for synthesis is reflected in his popularity as a contributor to reviews. Most recently, he authored chapters on the use of comparative approaches to the study of: social behavior (*Advances in the study of behaviour* 8:1–38, 1978); sperm competition in birds (*Sperm competition and the evolution of animal mating systems*, R. L. Smith, Ed., 1984, pp. 523–545, Academic Press); male reproductive strategies in dabbling ducks (*Avian monogamy*, P. A. Gowaty and D. W. Mock, Eds., *Ornithological Monographs* 37:68–82, 1985); the influence of ecological factors on social systems (*Ecological aspects of social evolution*, D. I. Rub-

enstein and R. W. Wrangham, Eds., 1986, pp. 153–171, Princeton Univ. Press); the incidence of male parental care in Southern Hemisphere dabbling ducks (*Acta XX Congr. Int. Ornithol.*, 1991, pp. 868–875); and courtship, pair formation, and signalling in waterfowl (*Ecology and management of breeding waterfowl*, B. D. J. Batt et al., Eds., 1992, pp. 214–250).

In addition to his achievements as a research scientist, Professor McKinney is an outstanding teacher. Over the past three decades he has been the major advisor for more than two dozen graduate students. While busy with his own research, he has never hesitated to take the time to provide each student with his full, patient, and kind attention. Those requiring guidance and support get it, while those who thrive on independent work are given the freedom they need.

For the outstanding research by this exemplary scientist and teacher, the American Ornithologists' Union takes great pleasure in presenting the William Brewster Memorial Award for 1994 to Frank McKinney.

Award criteria.—The William Brewster Memorial Award is given to the author or coauthors (not previously so honored) of the most meritorious body of work on birds of the Western Hemisphere published during the 10 calendar years preceding a given AOU meeting. The award consists of a medal and honorarium provided through the endowed William Brewster Memorial Fund of the American Ornithologists' Union.

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Elliott Coues Award, 1994:

Wolfgang Wiltschko

Biologists of all bents and ilks have been fascinated for centuries with the amazing abilities of birds to migrate thousands of miles and return unerringly to their place of birth. How do birds accomplish this seemingly extraordinary feat? During the last four decades significant advances have been made in the study of bird orientation and navigation. These studies have revealed a multiplicity of methods available and used by birds to find their way in space and time. The list of possible systems used for orientation and