

IN MEMORIAM: FRANK C. BELLROSE, 1916–2005

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On 19 February 2005, a great era of waterfowl conservation ended with the passing of Frank C. Bellrose. Frank was born on 20 August 1916 at Ottawa, Illinois, on the Illinois River he loved so much. His experience growing up stimulated an interest in waterfowl and wetlands and was the foundation of his outstanding career with the Illinois Natural History Survey. His interest in ornithology was sparked at age 13 by a Boy Scout merit badge in bird study and by Benjamin T. Gault of Glen Ellyn, Illinois, a professional ornithologist who encouraged Frank through personal visits and letters. Frank attended the University of Illinois and received a B.S. degree in 1938. His B.S. thesis entitled *Abundance and food habits of waterfowl in the Illinois River Valley* was guided by S. Charles Kendeigh.

Frank began his professional work with the Illinois Natural History Survey in 1938. Initially, considerable time was spent at Grafton because the Havana Laboratory was not yet built. During the early years with the Survey, he worked closely with Jess Low (Utah Cooperative Wildlife Research Unit), John "Frosty" Anderson (Winous Point and Audubon), and Art Hawkins (U.S. Fish and Wildlife Service). His Illinois Natural History Survey colleagues, David Thompson and Ralph Yetter, were important mentors and influential in providing early direction for studies at the Havana Lab.

On 2 June 1940, Frank married Esther Jean Smith. He is survived by Esther, their two sons, Ronald and Frank, their wives, and four grandchildren. Frank and Esther traveled extensively, and he especially enjoyed the desert flowers at Anza-Borrego Desert State Park in southern California.

Frank embarked on a remarkable career that included the dynamics of waterfowl populations; life history, ecology, and management of the Wood Duck; ecology of aquatic and marsh plants; and ecology of the Illinois River. Early

on, the name Bellrose became synonymous with the Wood Duck. The results of his nesting studies along the Illinois River culminated with the publication of *Ecology and Management of the Wood Duck*, co-authored with Daniel Holm in 1994. Another early effort was to survey waterfowl in the Illinois River Valley. Ground counts were initiated in 1938, and in 1946 he began using light aircraft that allowed him to develop a more comprehensive inventory, which required far less time. He became a master at aerial inventories. His ability to determine a better direction of flight to see birds in certain habitats and his skill at estimating large flocks were fascinating. On one November flight over Pool 19 on the Mississippi River in the late 1960s, a huge raft of 450,000 Lesser Scaup extended for miles, along with large concentrations of Canvasback, Ring-necked Ducks, and American Goldeneyes. All were enumerated in a matter of minutes. Frank continued these flights until 1970. He often invited other waterfowl enthusiasts to join him, but sitting in the back seat of a low-wing aircraft with Frank counting over the wing was not for the faint of heart. These flights required hundreds of hours at low altitudes and were not without incident. Occasionally, ducks struck the wing. This long-term data set is still of vital importance for many studies on the Illinois and Mississippi rivers.

Frank was also a leader in understanding mortality factors among waterfowl, and this effort was among his most important scientific contributions. His findings were significant factors in the gradual replacement of lead shot with nontoxic shot for waterfowl hunting in the United States and other countries. Frank was fascinated with migration and engaged many waterfowl experts to document movements during the 1950s. He used radar creatively to document major migratory movements and was involved with experimentation on



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orientation as well. Among his many contributions was the revision of Kortwright's *Ducks, Geese, and Swans of North America*. This was a major undertaking, in which he synthesized published and unpublished information for all North American anatids. The revision under the same title was published in 1976, and a second edition in 1980. Frank was awarded the Wildlife Society's Book Publication of the Year Award for this important revision, as well as for his *Ecology and Management of the Wood Duck*. These editions have sold an estimated 350,000 copies. He was completing another revision of *Ducks, Geese, and Swans of North America* at the time of his death.

Frank witnessed the continuing degradation

of habitat conditions within the Illinois River Valley. His aerial surveys documented the tremendous decline in waterfowl use and the redistribution of diving ducks to the Mississippi River. Beginning in the late 1930s, he initiated the first studies of a management technique that came to be known as Moist-Soil Management, widely practiced on wetland management areas throughout the country. This work extended over 40 years and included the documentation of the decline of Illinois River floodplain lakes and the detrimental effects of sedimentation and unnaturally fluctuating water levels associated with changing agricultural practices in the rich farmland of Illinois.

Frank retired in 1982 but he retained Emeritus status. He was often called upon in court cases, on committees, and for his opinions relating to waterfowl and wetland issues. At a baiting case in Mississippi, he was grilled for hours by a defense attorney, but his calm, matter-of-fact approach to the questions greatly impressed the judge, and he "brought the house down" with comments only someone of his stature could make in court. During his career, Bellrose published more than 110 scientific and popular articles. His name is virtually synonymous with "ducks" throughout the world. Although he never received an advanced degree, he was widely recognized for his long and successful scientific endeavors. He was elected a Fellow of the AOU in 1969. He was awarded an honorary Doctor of Science degree in 1974 by Western Illinois University in Macomb, Illinois, and a similar honor was bestowed by McMurray College in Jacksonville, Illinois, in 1995. In 1979, he received the Professional Award of Merit from the Illinois Chapter of the Wildlife Society, and in 1985, the Aldo Leopold Award, the most prestigious award of The Wildlife Society. Governor James Thompson declared 1 February 1998 "Frank Bellrose Day" in Illinois. In 1992, the Illinois Department of Conservation dedicated its Cache River Wetlands Project, which included the Frank Bellrose Waterfowl Reserve. The Waterfowl Research Laboratory of the Illinois Natural History Survey's Forbes Biological Station near Havana, Illinois, was named the Frank C. Bellrose Waterfowl Research Center in 1997.

One of Frank's greatest attributes was his generosity with his time and in sharing his insights. Neither he nor the Havana Lab received any financial benefit from his books. Even though he was not an academic, he was wonderfully skilled at mentoring and supported developing waterfowl and conservation professionals. He guided students with his keen insights as they developed proposals, and he provided great encouragement for studies that filled gaps he had identified in his synthesis of North American waterfowl. He mentored many that passed through the Havana Lab and the list of successful careers he influenced is substantial. Even though he retired in 1982, he continued to be well informed about waterfowl and conservation issues. Just two years ago, a group of young students in a waterfowl class was amazed at his assessments of contemporary conservation issues and his in-depth questions related to their research. For those of us that were fortunate enough to have spent time in the field with him or had the opportunity to work with him, it was a chance of a lifetime. At a meeting, an eminent waterfowl expert was asked to name the three leading waterfowl experts; his answer was "Frank Bellrose and I don't know the other two." Clearly, Frank will be missed. His passing leaves a huge void, but his many contributions not only set high standards but provide critical information for the protection and management of our wetland and waterfowl resources.