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IN MEMORIAM

## Allan Baker, 1943–2014

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Allan J. Baker passed away on November 20, 2014, in Toronto at the age of 71. He was senior curator of ornithology at the Royal Ontario Museum and had only recently stepped down from the position of vice president and head of the Department of Natural History. He was a Fellow of the American Ornithologists' Union since 1988, a member of the Committee of 1000 of the International Ornithological Congress, an Associate Editor of *Systematic Biology* and *The Auk*, and a member of the Editorial Board of *BMC Evolutionary Biology*. He also co-chaired the steering committee of All Birds Barcoding Initiative (ABBI), and, with Theunis Piersma, co-founded the Global Flyway Network, a collaboration of international researchers focusing on identification of migratory shorebirds at risk, the reasons behind their population declines, and the implementation of conservation initiatives.

Allan was born in Westport, New Zealand, on July 9, 1943. He grew up on a small farm on the South Island not far from Farewell Spit, a rich feeding ground for shorebirds. The birds he would see there and on the family farm while growing up (such as Kiwi), no doubt helped to kindle his interest in nature, and these species would later factor prominently in his life's work. He received a teaching diploma in 1965, but continued his studies and earned a B.S. in vertebrate ecology and evolution in 1966. He taught high school for a year, but then returned to the University of Canterbury to earn his M.S. on the ecology and behavior of shorebirds in 1969 and his Ph.D. on the systematics and evolution of Oystercatchers in 1972. It was during these years that he met his wife Susan, to whom he was married for 44 years. Just after receiving his doctorate he received a job offer from the other side of the world, to become an assistant curator of ornithology at the Royal Ontario Museum in Canada. He, Susan and their young son, Daniel, packed up and moved to Toronto.

His early publications in the 1970s continued to focus on Oystercatchers, but he soon branched out to study a wide diversity of bird species. A recurring theme in his early research was the examination of the evolution and

adaptation of introduced populations to novel environments in birds such as Mynas, Starlings, Chaffinches, House Sparrows, and House Finches around the world. Allan's career was marked by an enthusiastic adoption in his research of innovations in molecular techniques. While trained as a morphologist, he and his students embraced new methods helping to pioneer the application of population genetics to the transmission of song memes in birds, including a study of cultural evolution in populations of Chaffinches. Increasingly throughout the 1980s and early 1990s his attention began to expand from species- and population-level questions to include deeper



Allan Baker with Moa. Photo credit: Oliver Haddrath

questions in the avian tree of life, with an emphasis on the phylogenetics of shorebirds and the large flightless birds, the ratites. He used more and more refined molecular tools to shift the emphasis of his work to DNA studies. He was an early adopter of these new techniques, being among the first to characterize mitochondrial sequences in birds and mammals. His mtDNA study of the Dunlin was a landmark paper in avian phylogeography. His lab was sequencing complete mitochondrial genomes for an entire clade to investigate how plate tectonics may have shaped palaeognath biogeography at a time when only a few avian mitochondrial genomes were available. He used the large number of sequences accumulated to enter the debates on the tempo, mode, and timing of avian evolution from some of the deepest nodes in the avian tree to population level questions. Owing to his use of mitochondrial genomes, his systematic studies were at the forefront of the field at the time. Another major research theme was using reconstructed avian relationships to map other biological characteristics such as life history, behavior, geographic distribution, and ecology on the tree to understand their evolution. He embraced challenging projects such as recovering ancient DNA and using it effectively to address once thought unanswerable questions, and his studies of ancient DNA from Moas provided a fascinating insight into an extinct part of the avian evolutionary tree, as well as an understanding of the tempo and mode of Moa evolution. He took this further by being among the first to sequence the nuclear genome of an extinct bird, the Moa, to further explore the phylogenetic relationships between the Tinamous and the flightless ratites.

Allan was also heavily involved in the conservation of birds, in particular the shorebirds, which are declining around the world, and the Kiwi of New Zealand. His and his graduate students' papers clarified that Kiwis comprise five species, rather than the three that were recognized at the time, a conclusion that had an impact on species recovery plans. In another landmark paper, he demonstrated that the rapid population decline in Red Knots was due to overfishing of horseshoe crabs and their eggs in Delaware Bay, thereby preventing most birds from refueling adequately during migration, resulting in lower survival on their Arctic breeding grounds. Beginning in 1995, he partnered with colleagues to build ties and share scientific knowledge among the people living at the main sites used by the Red Knot throughout the Western Atlantic Flyway to promote local conservation measures for both academics and a public grass roots engagement.

Over the course of his career, he published more than 180 articles, many in prestigious journals. He also produced and edited a book entitled *Molecular Methods in Ecology* in 2000 (Wiley-Blackwell), and was a regular referee for 19 national and international journals and a member of 13 societies. For his outstanding lifetime contributions to Canadian ornithology he received the Doris Huestis Speirs Award in 2006, the most prestigious award of the Society of Canadian Ornithologists. The American Ornithologists' Union presented Allan with the William Brewster Memorial Award in 2007 for his outstanding and influential work in avian molecular evolution.

Along with being a curator at the museum, Allan was cross-appointed to the University of Toronto, as Associate Professor of Zoology in 1984 and Professor in 1989. Through his affiliation with the University of Toronto, he helped to mentor new generations of scientists, teaching both graduate and undergraduate courses. He supervised 32 graduate students and 14 postdoctoral fellows, all of whom benefitted from the high standards he expected of them and himself. Many of his former students have gone on to hold faculty positions in universities throughout Canada and abroad. His contribution to public education included lectures to local organizations, radio programs discussing his research and conservation activities, and documentaries in which he described the plight of the endangered Red Knot.

Throughout his career, Allan's first love remained the research and the fieldwork. As his administrative responsibilities increased over time, these trips became especially important as short respites from managerial duties. The species he studied took him to many destinations around the world, and it was on these trips that his colleagues and students saw the true extent of his mischievous sense of humor and his admiration and compassion for nature. His legacy includes his many contributions to the body of scientific knowledge, his inspiration of generations of students to become scientists, conservationists, and field naturalists, and his many efforts to raise public awareness of the plight of endangered species. Allan is survived by his wife Susan, their sons Daniel and Benjamin, their daughters-in-law Jenny and Jean-Marie, and grandson Jordan. Some of Allan's ashes were returned to New Zealand, to the colonies of shorebirds where his life's work began.

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