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Source: The Auk, 129(4) : 782-784

Published By: American Ornithological Society

URL: https://doi.org/10.1525/auk.2012.129.4.782

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The Auk 129(4):782–784, 2012
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Printed in USA.

IN MEMORIAM: ALFRED M. DUFTY, JR., 1950–2012

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Al Dufty, 1950–2012
With an American Kestrel, Ada County, Idaho, June 2002.
Photograph by Irene Dufty.

Alfred Dufty, Jr., a member (1977), Elective Member (1993), and Fellow (2005) of the AOU, passed away suddenly and unexpectedly on 16 April 2012 from an undiagnosed heart condition during an early morning workout at the Boise State University campus recreation center in Boise, Idaho.

Al grew up on Grippen Hill in Vestal, New York, where he was president and valedictorian of his graduating class at Vestal High School. He attended Princeton University and earned an undergraduate degree in biology (1972). At Princeton he played basketball for four years and was captain in his senior year, which included a National Invitation Tournament appearance at Madison Square Garden. Al played professional basketball in France before returning to the states to earn an M.S. (1976) and Ph.D. (1981) working with John Christian at the State University of New York, Binghamton. He held National Institute of Mental Health postdoctoral fellowships at Rockefeller University Field Research Center, where he worked with professors Peter Marler and John Wingfield, and he was a visiting or adjunct assistant professor at Hampden-Sydney College in Virginia and at the State University of New York, Purchase, before joining the biology faculty at Boise State University in 1988. In 1993, Al was promoted to associate professor with tenure, and he became professor in 1996. He was director of graduate studies in biology (1998–2003) and associate department chair (2003–2005), and he had served as associate dean of the Graduate College since 2005.

The Auk, Vol. 129, Number 4, pages 782–791. ISSN 0004-8038, electronic ISSN 1938-4254. © 2012 by The American Ornithologists' Union. All rights reserved. Please direct all requests for permission to photocopy or reproduce article content through the University of California Press's Rights and Permissions website, http://www.ucpressjournals.com/reprintInfo.asp. DOI: 10.1525/auk.2012.129.4.782

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Al was committed to research, teaching, and service to the university and to the AOU. Boise State University President Bob Kustra wrote that "part of the fabric of Boise State University was lost with the sudden passing of Dr. Alfred Dufty, as for nearly 25 years, Al was a fixture on our campus as a highly respected professor in the Department of Biological Sciences and as associate dean of the Graduate College." Among Al's academic honors was Distinguished Researcher Award (1997) from the College of Arts at Sciences at Boise State University. In 2000, he was named a Boise State University Foundation Scholar for Research, the highest faculty award on campus. Al served as co-chair of the local organizing committee for the 1996 AOU meeting in Boise, as a member of the AOU Student Awards Committee at the 2005–2007 annual conferences, as chair of the AOU Bylaws Committee (2011–2012), and as an associate editor of *The Auk* since 2004.

Al was a consummate storyteller, which made him an outstanding teacher. Within the Department of Biological Sciences, he taught graduate courses in avian physiology as well as behavioral endocrinology, and he taught large sections of Human Anatomy and Physiology for undergraduate pre-professional students. Out of respect and admiration, students in his Anatomy and Physiology courses were known to give him an ovation at the end of the yearlong course. Beyond the classroom, Al was also highly sought after as an advisor, and he mentored countless graduate students during their master's programs in biology or raptor biology. His graduate students, many of whom are now professors, doctoral students, postdocs, professional ornithologists, or wildlife agency officials, recall his patient and supportive guidance that allowed them to grow as young scientists. His knowledge about avian physiology and behavioral endocrinology truly enriched the raptor biology program at Boise State University.

Al's ornithological research, funded by the National Science Foundation and numerous other agencies, produced more than 60 articles and book chapters on a diversity of avian taxa, including cowbirds and other blackbirds, chickens, finches, sparrows, owls, falcons, hawks, accipiters, and eagles. Pursued in both field and laboratory, his earliest ornithological research focused on the behavior and ecology of Brown-headed Cowbirds. He used radiotelemetry to understand that species' ranging behavior, social structure, mating systems, and dominance interactions. He published comprehensive studies of the reproductive endocrinology of cowbirds, which do not build nests, incubate eggs, or provide parental care, which enables them to continue to lay up to 25–40 eggs throughout an extended breeding season. Al reported that, in addition to their different breeding behavior, they are hormonally distinct. In male cowbirds, plasma luteinizing hormone and the androgens it regulates remain high throughout the breeding season, in contrast to many species in which these hormones decline once females initiate incubation. Also in contrast to many species, luteinizing hormone remains high for an extended period in female cowbirds. Al and his colleagues found that levels of circulating prolactin, the hormone most associated with parental care in birds, increases and remains elevated in male and female cowbirds in spite of the fact that they are brood parasites and both sexes completely lack parental behavior. They speculated that a higher activation threshold for this "parental hormone," or perhaps the total elimination of target tissue sensitivity to prolactin, likely was an important factor in the evolution of brood parasitism in cowbirds. Al's 1988 *Hormones and Behavior* paper was perhaps the first to show a survival cost to male birds that had sustained elevated plasma testosterone levels. He found that sham-implanted cowbirds and those with no implants had greater annual survival than those that received testosterone implants. Al posited that the pattern was maintained through greater intrasexual aggression resulting in more frequent injury in testosterone-implanted cowbirds, which further elucidated how selection results in tradeoffs in behavioral endocrine systems. From 1982 to 2000, Al published more than 20 papers on the biology of cowbirds.

Al's earliest research interests also included study of avian vocalizations and communication. He co-authored papers with Peter Marler and colleagues that examined the dynamics of sender–receiver signals in domestic chickens. He co-authored a *Nature* paper with Peter Marler and others that revealed that song learning and early phases of development of bird song take place even in castrated males with little testosterone in their blood plasma, but testosterone is ultimately required for song crystallization. Finally, in an array of articles, Al examined the functions and nature of flight whistles, alarm calls, and song sharing in cowbirds, and he was instrumental in unpublished studies of the effects of hormones on vocal behavior of owls conducted with raptor biology students at Boise State.

Despite his diverse interests, it was Al's work in avian endocrinology that was the major thrust of his research career. He was among the distinguished authors of articles that explored testosterone and aggression in birds and that ultimately formed the basis for the "challenge hypothesis." Their paper in *The American Naturalist* on this topic is among the most cited research articles in the field of avian endocrinology. In the mid-1990s, Al shifted more intense focus to the role of the adrenal hormone corticosterone and the "stress response" in birds. He examined effects of body condition and captivity on the avian stress response, whether and how corticosterone functioned in natal dispersal and migration, how investigator handling affects development of the hypothalamic-pituitary-adrenal axis in birds, corticosterone secretion in response to adult alarm calls, and effects of corticosterone on immune function, morphology, and feather development. Al's expertise in behavioral endocrinology ultimately led to a yearlong sabbatical with Professor Jean Clobert's group at Université Pierre et Marie Curie in Paris, where Al helped with physiological and dispersal research on common lizards, completed a review paper for *Trends in Ecology & Evolution* entitled "Hormones, developmental plasticity and adaptation," and began a textbook chapter (originally in French) on hormones and behavior for Étienne Danchin et al.'s (2008) edited volume *Behavioural Ecology: An Evolutionary Perspective on Behaviour* (Oxford University Press).

Although Al's forte was radioimmunoassay of hormones, he and students also adopted the multitude of developing technologies to address questions about bird biology. They used stable isotope analysis to understand the origins of migrating birds and to examine whether and how deuterium content of raptor feathers varied within individual feathers and among feathers from an individual bird; molecular analyses of DNA for sex identification in hawks and owls; fecal steroid analysis of captive eagles and falcons; and application of phytohemagglutinin or injection of keyhole limpet hemocyanin to examine aspects of immunocompetence in

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growing falcons. At the time of his passing, Al had six graduate students working on a variety of ornithological research projects.

Al was a tall man with an unforgettable, deep voice and a genuine smile. He was a true academic and as collegial as they come. He frequently had former graduate students or traveling colleagues staying at his home. He never uttered disparaging comments, and he had a unique ability to uplift others and form the warmest of friendships. Al's interests outside of ornithology included athletics, travel, and the ocean, and he enjoyed the Beatles and "the Boss." He had a particular fondness for Paris, which he was able to visit in different capacities throughout his life. Al was always in great physical shape and strong enough to lift the entire rack on each of the weight machines in the campus recreation center. Many will remember pick-up basketball games with him at annual AOU meetings. Although Al was a gentle and friendly man off of the court, he was a relentless and tenacious basketball player. His son Brian, who as he grew was able to play with Al on city basketball teams, described how it was not only important for Al to beat the other team, but to always challenge himself to play a game he could be proud of.

Al left us far too soon and in the prime of his career. He is deeply missed by students and colleagues. More than 500 colleagues, students, and friends attended his memorial service at a local Boise Park and Nature Reserve; the reach of his professional network and his influence on others were clear. He is survived by his wife Bonnie of 37 years, his son Brian, his daughter Cameron, and three grandchildren, all of whom reside in Boise.

Al's outstanding contributions to ornithology and to university students are commemorated by the Dr. Alfred M. Dufty, Jr. Memorial Fund at Boise State University. Donations are welcome.

I thank Mark Fuller, Julie Heath, Becky Holberton, and John Wingfield for sharing thoughts and suggestions on this memorial.

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