Thomas H. Kunz (1938–2020)

Bat biologist and inspirational mentor who developed the concept of aeroecology.

Tom Kunz died of COVID-19 on Monday 13 April 2020. Tom was an inspiring leader and mentor who was dedicated to the study of bats through his commitment to research, conservation and education at many levels. Over his career, he engaged countless students, collaborators, colleagues and citizens in his diverse menu of projects. He had a true ‘feeling for the organism’, but his worldview was always bigger than the bats he loved. Tom was a scientist and educator, an ecologist, physiologist and conservation biologist. Amid his continuous scholarship and teaching, his natural leadership abilities resulted in fifteen years as the Chair of the Department of Biology at Boston University. He co-established a field research station in Ecuador, and co-edited seven multi-authored books. He was a dedicated husband, father, grandfather and friend.

Tom completed a BS at the University of Central Missouri in 1961, and an MS in Education there in 1962. From 1962 to 1967 he taught biology at Shawnee Mission West High School in Shawnee Mission, Kansas. He completed a MA in Biology at Drake University in 1968 and went on to the PhD programme in Systematics and Ecology at the University of Kansas, receiving his PhD in 1971. His thesis was about the ecology of the cave bat, *Myotis velifer*, and his supervisor was J. Knox Jones, Jr. In 1965, he published his first paper in the *Transactions of the Kansas Academy of Science*. He became a prolific author, with over 300 scientific papers and book chapters to his name.

In 1971, Tom started his formal academic career as an Assistant Professor in the Department of Biology at Boston University. Boston University remained his academic home, but his research on bats led him to travel widely. He conducted field work and established extensive collaborations across the United States, Central and South America, and Southeast Asia. He supervised the research of over 30 PhD students, in addition to 15 MA students. He also worked with over 20 postdoctoral fellows and collaborated with well over 100 co-authors. In addition, he always made time to go to schools and talk to children about bats. He published non-technical contributions for a lay audience — he was an excellent ambassador for science.

Tom’s earliest research described fundamental aspects of the natural

Thomas H. Kunz (1938–2020). Credit: Photo by Vernon Doucette for Boston University Photography.

history of bats, including their behaviour, feeding ecology, and parasites. From here he developed a research program that integrated physiology and ecology. Beginning around 2005, he promoted his vision of aeroecology as a discipline similar to marine or terrestrial ecology, with a focus on the aerosphere, the planetary boundary layer of Earth’s atmosphere. Tom’s concept of aeroecology was highly integrative, linking atmospheric science, ecology, geography, Earth science, computational biology, computer science and engineering. He hoped adopting aeroecology as a unifying framework would improve understanding of biotic interactions and physical conditions as influences on organisms that use aerial environments and increase our ability to assess and maintain ecosystem health, human health, and biodiversity.

I (M.B.F.) always admired his extraordinary patience. To get a picture of this, think of editing or co-editing seven multi-authored books. Anyone who has done even one such book knows that these projects would try the patience of Job. At one point on a joint project I was ready to

lose an author. Tom did not agree, and used his patience and tact to draw the colleague into the fold. In the end, we did not lose the author or the chapter!

Tom was extraordinarily generous with time, expertise and support. When, as a young Assistant Professor, I (S.S.) first contemplated moving to bats as a study system, Tom spent what seemed like countless hours answering questions big and small. He introduced me to experts, invited me to conferences, edited my writing, coached my grantsmanship, and talked with me about juggling science and parenthood. Remarkably, this doesn’t make me special. It only means that I’m a small part of the enormous community of those whose professional and personal lives were changed by Tom.

Indeed, Tom’s greatest impact was on other people — research students, colleagues, undergraduates, pretty much anyone he worked with or met. In the classroom, the lab, or the field, advancing careers or serving the community, Tom had exceptional gifts, and shared them with others unstintingly.

In October 2011, Tom suffered a catastrophic accident while attending a meeting of the North American Society for Bat Research in Toronto, Canada. He never returned to academic work. Yet, almost 10 years later, Tom still appears in the author by-line of publications in scientific journals. One of M.B.F.'s favourites (G. F. McCracken et al., *R. Soc. Open Sci.* **3**, 160398; 2016) documents Brazilian free-tailed bats flying faster than swifts, based on work that Tom made happen in 2009.

Tom Kunz was energetic and engaging, and he led by example. Although well

focused on his research, he demonstrated repeatedly that this was not the only focus in his life. He is a fine example of what an academic can achieve. He lives on in his work and the work of his many students and colleagues.

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Additional information M.B.F. first met Tom in 1971 at the Second North American Symposium on Bat Research (which became the North America Symposium on Bat Research). From there they worked together on a number of projects, including a field course they taught jointly in Puerto Rico in 1973.

S.S. met Tom in 1990, when she joined the faculty at Brown University as an Assistant Professor and began a transition in her research program in biomechanics from primates to bats. Tom served as a critical mentor, helped launch her studies of bat flight, and provided continual support and encouragement to her and her lab members for more than 20 years.