HISTORICAL PERSPECTIVES

Copeia 107, No. 2, 2019, 358–364

Victor Hobbs Hutchison

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SOME people seem to be born leaders and Vic Hutchison is one of them. He has served in such a capacity in numerous and varied organizations throughout his life. Early on, he showed leadership in high school and the Boy Scouts. Even in late retirement he is the Manager of the Oklahoma Evolution List Serve where he alerts teachers around the state of pending anti-evolution and anti-science legislation in the state legislature. Vic's legacy is his leadership. Behind this commanding presence was always kindness, dedication, motivation, and support (W. I. Lutterschmidt, pers. comm.).

Vic's father, Joseph V. Hutchison (1895–1984), was supervisor of the local telephone company, owner of an electrical and plumbing company in Blakely, Georgia, Superintendent of Maintenance at Fort Benning during World War II, and owned a sporting goods store in Columbus. He was also a taxidermist. His mother, Veva H. Hutchison (1904–1962), was a hospital admissions officer. Vic's father was unable to make a living as a biologist as he would have liked but supported his son's interest in reptiles. Victor Hutchison was born in Blakely on 15 June 1931. At twelve years of age he and friends started keeping snakes and other animals in his backyard zoo. His family visited St. Vincent Island off the Florida panhandle several times where they stayed in a hunting lodge and took field excursions to see the island's wildlife. He remembers seeing the highest concentrations of Florida Cottonmouths (*Agkistrodon conanti*) than in any other place in the South. His interest in science and herpetology was derived from his father's influence, friends in secondary school, and his Boy Scout experience (he made Eagle Scout in 1946). His heroes during high school were Ross Allen in Florida and Roger Conant in Philadelphia. As a senior in high school, he wrote Allen asking for a job. Allen replied he had none but referred him to an exclusive summer camp in Atlanta. Vic had to go to Silver Springs for special training, all expenses paid, where he caught his first alligator. Allen gave Vic homework in his library and had him work with employees to learn how to build cages and preserve specimens. Allen shipped live animals to the camp each summer. He spent two weeks at Vic's summer camp in 1948 helping him teach young people about reptiles and inspiring him to be a herpetologist (Fig. 1). He was also Vic's first mentor. Vic entered North Georgia (military) College in 1948 and graduated in 1952. He became Battalion Executive Officer of his ROTC unit and President of the Science Club. During each year of college he served as a nature study counselor at the Fritz Orr Summer Camp in Atlanta.

Fig. 1. Eighteen-year-old Victor Hutchison (center) holding a Boa Constrictor (*Boa constrictor*) for a class at the Fritz Orr Nature Camp, Atlanta, Georgia, in 1948 with Fritz Orr (left) and Ross Allen (right). Courtesy of V. H. Hutchison.

After graduation, he was on active duty in the U.S. Army for two years. During that time he graduated from officer infantry school at Fort Benning, Georgia, as a Second Lieutenant and subsequently trained infantry soldiers at Camp Atterbury, Indiana. He later served in the Medical Service Corps until he was shipped to Korea. During his eight months in-country (November 1953–May 1954), he was Commander of the Ambulance Company in the Third Infantry Division. His unit worked behind the front lines ferrying injured soldiers to hospitals. The closest he got to combat was a visit to the Demilitarized Zone in December 1953 (Fig. 2). After his discharge from active duty, he stayed in the active Army Reserves for 30 years and retired as a Colonel in September 1982. While in the reserves, he graduated from the U.S. Army Command and General Staff College in 1976 and became Detachment Commander of the local reserve unit when he was at the University of Rhode Island and a Division Leader in the 95th Maneuver Command while he was at the University of Oklahoma.

He married Theresa Dokos, his wife of 66 years, in December of 1952 while on active duty. Their daughter, Victoria (b. 1955), was a teacher and administrator and served two terms in the Oklahoma state legislature. Their son John (b. 1957) is a civil and environmental engineer. Two

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 DOI: 10.1643/OT-19-225 Published online: 25 June 2019

Fig. 2. Lieutenant Victor Hutchison at the United States artillery outpost at the Demilitarized Zone in Korea, December 1953. Courtesy of V. H. Hutchison.

other sons, David (b. 1957) and Kenneth (b. 1963), tragically died in early adulthood.

Following discharge from active duty in 1954, Vic started graduate school at Duke University. Joseph Bailey introduced him to Mountain Lake Biological Station in Giles County, Virginia, and taught him salamander ecology. Herndon Dowling was the instructor of Vic's herpetology class during his first year at Mountain Lake (Stewart and Mitchell, 2013). He introduced Vic to speleology and the numerous caves in the area where he encountered a variety of salamanders. Like most herpetologists, Vic spent a lot of time in the field while he was at Mountain Lake and caught as many species of amphibians and reptiles as he could. He summarized his observations in his first two papers (Hutchison, 1956a, 1956b). His master's thesis was on the ecology of Cave Salamanders (*Eurycea lucifuga*) that lived in the caves in Giles County. He published it in 1958 (Hutchison, 1958).

Vic remained at Duke University for his Ph.D. which he completed in 1959 (Fig. 3; Hutchison, 1959). Two professors there became Vic's mentors, Joseph Bailey and Knut Schmidt-Nielsen. Bailey served as his major professor and Schmidt-Nielsen was a major influence. Vic regarded Bailey as a truly

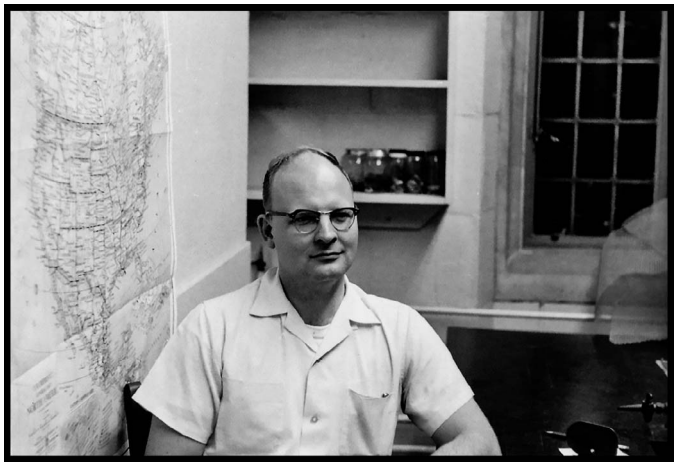

Fig. 3. Vic Hutchison in his first year of graduate school at Duke University in 1954. Courtesy of V. H. Hutchison.

Table 1. Graduate students of Victor H. Hutchison.

Year	M.S.	Ph.D.
1962	Judith Dady	
1964		Walter Whitford
1967	Joseph Mahoney	
	George Rose	
	Richard Kosh	
1968	Lynne Kour	
	Judith Rebach	Allen Vinegar
1969	Margaret Kohl	Orlando deLuque
1970		Richard Kosh
		Judith Rebach
1971		Paul McIlvaine
		John Songdahl
1972		Robert Guimond
		Terry Graham
1973	Douglas Turney	
1975		Gustav Engbretson
1976		Ronald Gratz
1977	A.J. Pelsar, III	
	Star Hazard	
1978	Marion Cothran	Kirk Miller
1979	Karen Martin	Joseph Maness
1981		Star Hazard
		Dale Erskine
1984		Beth Braun
1985	James Ritchart	
1986		Brian Paulson
1988	David Kurjiaka	Lynette Sievert
1993		Robert Rawding
		Ming-Chung Tu
1994		Andrea Tilden
1995		Robert St. Clair
1996		Peggy Hill
		Glenn Marvin
1997		William Lutterschmidt
1999	Cari Deen	
2000	Debora Lutterschmidt	
2001		Pedro do Amaral
2006		Cari Deen

complete vertebrate zoologist with broad knowledge of fishes, amphibians, and reptiles (Velhagen and Stewart, 2000). Schmidt-Nielsen, known as the father of comparative physiology and integrative biology, taught him comparative physiology. Vic followed this path for his career.

Following graduation from Duke, Vic was hired as an assistant professor at the University of Rhode Island in the fall of 1959; he made full professor in four years. His leadership skills allowed him to become the Program Director of the National Institutes of Health Training Grant in Environmental Physiology during 1967–1970 and Director of the Institute of Environmental Biology from 1966 to 1970. While at Rhode Island, he taught courses in introductory biology, human physiology, physiological ecology, vertebrate biology, muscle physiology, and several graduate seminars. He was the major professor for seven master's students and 11 Ph.D. students (Table 1).

In 1970, Vic was offered the chairman position in biology departments at several universities around the country. He chose the one at the University of Oklahoma (OU) where he remained as chairman until 1980. In addition to being department chairman, he was the Program Director of the

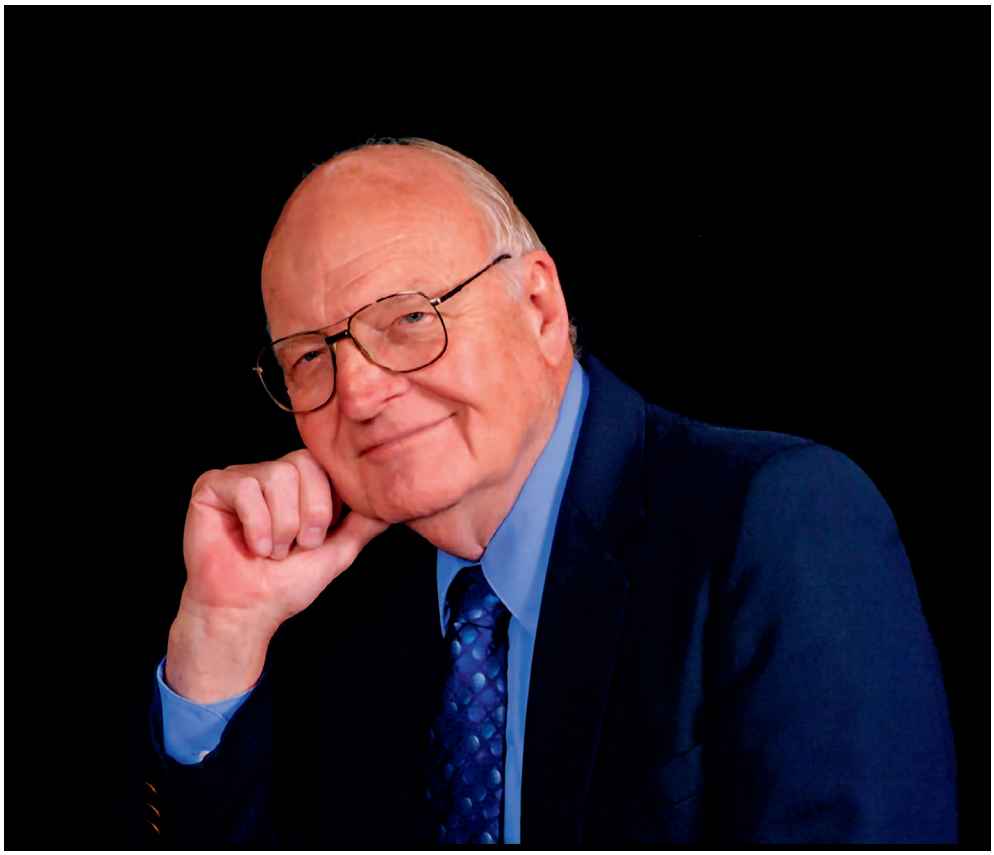

Fig. 4. Vic Hutchison formal portrait at the University of Oklahoma. Courtesy of V. H. Hutchison.

National Science Foundation Comprehensive Assistance to Undergraduate Science Education Grant (CAUSE) during 1976–1979. He taught graduate courses at OU in physiological ecology, professional aspects of biology, and several graduate seminars. He served as major professor for nine master's students and 18 Ph.D. students (Table 1). Vic was also the advisor for 23 undergraduate honors student research theses. Nearly all of his Ph.D. students landed jobs at universities, and his master's students obtained Ph.D. or medical degrees. Vic stayed at OU until retirement as the George Lynn Cross Research Professor Emeritus in 2001 (Fig. 4).

One of his former Ph.D. students, Bill Lutterschmidt, noted that Vic always inspired in his students the value of knowledge, scholarship, and being prepared to be challenged. "You had to be ready for when you pitched that great idea to Vic and received the reply, 'It has already been done'. After being stumped the first or even second time with the reply, the next time you had your complete literature review in hand. Vic knew what he was doing and made sure we convinced ourselves that our idea was worth the investment of time and further investigation. Along these lines, Vic always encouraged a diversity of research interests and supported pursuits of pure scholarship for the sake of knowing." Bill also remembers hearing, on occasion, Vic shouting (and you know how excited and loud Vic can be), "'NOT AGAIN, THERESA IS GOING TO KILL ME.' Vic always wore those nice Guayabera style dress shirts with the embroidered stitching. From time to time he would forget that the cap was still on the back side of his felt pen as he put it back in his pocket to later find that a huge ink stain had diffused through the fabric of his neatly pressed shirt. Everyone in his lab, once we heard the 'NOT AGAIN', knew Theresa was going to kill him."

Another Ph.D. student, Lynnette Sievert, said, "Within minutes of becoming a member of the Hutchison lab (August of 1983) I learned that the University of Oklahoma was hosting a joint meeting of ASIH, HL, and SSAR the following summer. At that time JMIH didn't exist and meetings were held on campuses with dorm space available for anyone who wanted to stay on campus. ASIH met separately from SSAR and HL in those days, so this was a big meeting. Because I was a newbie without any meeting tasks, I soon was in charge of making yellow signs with red letters to ensure that no one had problems finding anything associated with the meeting. For the next year Vic coordinated an amazing number of different projects that were all necessary for having a smooth meeting on our campus. Vic had dozens of OU zoology faculty, staff, and graduate students pitching in to prepare for the meeting, as well as a number of off-campus groups. Vic's years of military experience made him the perfect leader for his army of volunteers."

Much of Vic's research has been on respiratory physiology and thermal tolerances in ectotherms, particularly amphibians and reptiles. His dissertation focused on critical thermal maxima in salamanders (Hutchison, 1961). A major contribution from his thesis was a way to standardize measurements of critical thermal maximum (CTM). Cowles and Bogert (1944) originally defined CTM as the temperature at which locomotor activity becomes disorganized to prevent the animal from escaping. It often resulted in the death of the subjects. Vic defined the CTM endpoint as an abrupt onset of muscular spasms (OS) which is sublethal (Hutchison, 1961). Lutterschmidt and Hutchison (1997) reviewed

Fig. 5. Vic Hutchison with Don Miguel Navarro at the Rio Vaupes, Colombia, in 1965. Courtesy of V. H. Hutchison.

the history of CTM techniques and showed that OS is the preferred endpoint for ectotherms. Critical thermal limits (CTL) are considered ecologically relevant because they indicate the activity range for a population under acute exposure conditions. Critical thermal maximum (and CTL) using OS continues to be used in studies of thermal tolerances in a wide range of animals (e.g., Terblanche et al., 2007; Hamblin et al., 2017).

A trip to Colombia from November 1965 to June 1966 funded by a Guggenheim Fellowship and a National Geographic Society Research Grant allowed him to collect high-elevation frogs on the eastern slope of the Andes for studies on temperature tolerance (Fig. 5; Mahoney and Hutchison, 1969; Hutchison, 1971). On one of the field trips to northeastern llanos of Colombia, he and companions were able to make anthropological observations of the reclusive and primitive Cuiva tribe. Their results were included in a government report. Vic relayed his scariest experience on that trip. "It was on a collecting trip to Gachela in the Department of Cundinamarca in the center of the emerald-mining area where there was often armed conflict among the miners. We were warned of that. In small towns, it was customary to check with the local priest for information, etc., rather than a town official. When we went to the church to talk with the priest, he refused to talk with us. That and the way people in the town stared at us and even followed us around was disconcerting. We were seeking a locality where a new species of frog had been collected years before. We did not want to waste a trip and went out that night to collect. We found a nice stream outside the town where frogs were calling. While along the stream catching a few frogs, we heard a noise on the bank above us. Looking up we saw three men armed with guns and bandoliers of ammunition across their chests. They just stared at us and said nothing. I went up and told them, in my halting Spanish, that we were biologists from the Universidad de los Andes and were making scientific studies. After a few long minutes, one of them said, 'Take us to town.' Given the situation, we had no choice. They piled into our jeep and said nothing more as we drove toward town. Suddenly, the apparent leader of the group shouted, 'Alto! Alto! No mas!' (stop! stop! no more! [meaning no further]). At that point I thought this may be the end. To our surprise as the men jumped off the jeep, the leader said, 'Hay muchas ranas aqui' (there are many frogs here), as he waved his arms around the area. What a relief, we were not shot and our vehicle was not stolen! We carried them to town and went to a small bar that was still open and bought them beer."

From December 1973 to January 1974 he collected Titicaca Frogs (*Telmatobius culues*) and other anurans in Lake Titicaca at 3,812 m elevation in Bolivia. Through the help of the U.S. Navy Attaché, the Bolivian Navy provided a patrol boat and crew that allowed the team to snorkel and catch these completely aquatic frogs that rarely surface. Laboratory studies confirmed that oxygen uptake in 10–15°C water was through the highly vascularized folds of skin until the water becomes anoxic when they would then float at the surface and expose their nares to air to fill their small lungs (Hutchison et al., 1976; Hutchison, 1982, 1998a).

Fieldwork in western Cameroon in 1981 in cooperation with the Bronx Zoo's Reptile Curator, Head Reptile Keeper, and Ted Pappenfus allowed the capture of Goliath Frogs (*Conraua goliath*), the largest frog in the world, for physiological studies. The expedition is chronicled in Peter Brazaitis' book, *You Belong in a Zoo* (2003). The combination of reduced metabolic rate, small heart and lungs, high breathing rate, and low tidal volume are likely correlated with the frog's high-frequency vocalizations needed to overcome the white noise in waterfalls, their preferred habitat (Hutchison, 1998b).

His research on thermoregulation in pythons was a career highlight. Herndon Dowling was the Reptile Curator at the Bronx Zoo at the time and showed Vic his data on variation in body temperatures of female pythons while they were brooding eggs. In experiments comparing metabolic rates in female *Python reticulatus* (Reticulated Python) and *Python molurus* (Burmese Python) over a range of temperatures, they determined that the latter species produced additional heat above ambient by muscular contraction (Fig. 6). Female *P. molurus* brooding eggs were able to increase metabolic rates when ambient temperatures were below 33°C by muscular contraction up to a temperature differential of 5°C (Hutchison et al., 1966; Vinegar et al., 1970). The cover of the 1966 *Science* issue featured a hatchling *P. molurus* emerging from the egg with its mouth open. The story was covered in numerous newspapers and TV shows, and resulted in an invitation to an international symposium in comparative respiratory physiology in Germany (Guimond and Hutchison, 1976). His first Ph.D. student, Walter Whitford, said, "Vic enlisted me to help set up some new studies on shivering heat production in pythons for which he had just received funding. The pythons were at the Bronx Zoo in New York and we collaborated with Dr. Herndon Dowling, the curator of reptiles at the zoo. The zoo had constructed a temperature-controlled facility on the second story of the reptile house. In order to get the pythons from the display area to the laboratory on the second story, we had to physically transport the snakes up a narrow, winding stair case. Six strapping young men had to carry a python to the second floor. Dr. Dowling had the python's head, I was third in line behind my mentor, Vic Hutchison, and a keeper and two other grad students made up the rest of the porters. The snake weighed over one hundred and twenty pounds, but it was not the weight that was a problem. As soon as we picked the snake up, she began to contract her muscles and tried to dislodge us. Going up the stairs, the snake successfully slammed all of us into the railings on both sides. We were slammed into the

Fig. 6. Vic Hutchison in the lab at the New York Zoological Society with the *Python molurus* (Burmese Python) used in the maternal thermoregulation study, circa 1966. Courtesy of V. H. Hutchison.

railings not once but many times while climbing the stairs with the snake. There was no way to control the python and we were all relieved to release her in the temperature-controlled room."

Vic and his students have addressed a wide variety of topics in physiological ecology. There were numerous papers on gas exchange in frogs and salamanders, including, for example, *Ambystoma maculatum* (Spotted Salamander; Whitford and Hutchison, 1963), *Rana clamitans* (Green Frog; Vinegar and Hutchison, 1965), and *Necturus maculosus* (Mudpuppy; Guimond and Hutchison, 1972). Hutchison et al. (1968) evaluated 20 species of frogs in eight families and concluded that the most important factor in respiratory exchanges in anurans is ventilation of the lungs and that oxygen was the primary factor regulating metabolism. Guimond and Hutchison (1973) showed that Hellbenders (*Cryptobranchus alleganiensis*) acquire 90% of their oxygen via the highly vascularized lateral folds of skin. He and his students published numerous papers on thermoregulation in frogs (Mahoney and Hutchison, 1969; Hutchison and Hill, 1978), salamanders (Hutchison and Hill, 1976; Hutchison, 1981), lizards (Kour and Hutchison, 1970; Kosh and Hutchison, 1972), snakes (Tu and Hutchison, 1995; Lutterschmidt et al., 1998, 2002), and turtles (Hutchison, 1979; Graham and Hutchison, 1979; do Amaral et al., 2002). Other papers were on the effects of melatonin on thermoregulation of snakes and turtles (Erskine and Hutchison, 1980; Tilden and Hutchison, 1993), snake energetics (Gratz and Hutchison, 1977), and reflectivity of lizard scales correlated with habitat (Hutchison and Larimer, 1960). Early in his career he determined that the mutualistic alga (*Oophila ambystomatis*) is often symbiotic in green eggs of *A. maculatum* but may not fix enough carbon dioxide through photosynthesis to be used by the embryo (Hutchison and Hammen, 1958; Hammen and Hutchison, 1962). Later, Kerney et al. (2011) showed that the algae penetrate individual egg capsules and invade embryonic salamander tissues and cells where they provide oxygen. Vic and his students also authored physiology papers on birds (Edwards et al., 1992), mammals (Erskine and Hutchison, 1982), fishes (Pettit et al., 1985), and dragonflies (Tilden et al., 1994). Vic said that he was most proud of his work on amphibian respiratory gas exchange, python incubation, the Titicaca frog, and the critical thermal maximum concept.

In 1993, Vic created the book series on Animal Natural History for the University of Oklahoma Press. Herpetological topics include ecology of garter snakes (Rossman et al., 1996), amphibians and reptiles of parts of Central America (Campbell, 1998), natural history of North American box turtles (Dodd, 2001), ecology of North American watersnakes (Gibbons and Dorcas, 2004), ecology and conservation of map turtles (Lindeman, 2013), and natural history of the Texas Tortoise (Rose and Judd, 2014). He remains the editor and currently has three new contracts for books.

Vic's awards have been in three areas, teaching, research, and public service. His dedication to graduate students was recognized by the Zoological Association of Graduate Students at the University of Oklahoma with two awards: Award for Outstanding Dedication and Excellence in Graduate Education, 1988, and a Lifetime Service Award for Support and Mentoring of Graduate Students, 1997. He has also received the Oklahoma Academy of Science Award of Merit, 2012, and the Albert Nelson Marquis Lifetime Achievement Award, 2018. He became a Fellow of the American Association for the Advancement of Science in 1971. Fenolio et al. (2007) described a new arboreal, microhylid frog from Madagascar (*Anodonthyla hutchisoni*) in honor of Vic for his lifetime of dedication to excellence in herpetology.

Vic has served professional societies in many capacities since 1967. For the American Society of Ichthyologists and Herpetologists (ASIH), he was on the Board of Governors, 1967–1970, 1971–1974, 1983–1986; Meeting Chairman, 1984; Gaige Award Committee, 1985–1987; Time and Place Committee, 1985; member of the Executive Committee, 1987–1989; President-elect, 1987; President, 1988; Editorial Board for *Copeia*; and Chair of the Long-range Planning and Finance Committee, 1993–1995. For the Herpetologists' League, he was Executive Committee Fellow, 1968–1971; Chairman of the Joint Committee on Cooperation with the Society for the Study of Amphibians and Reptiles (SSAR), 1969–1972, and Meeting Chairman in 1972 and 1984. For SSAR, he was on the Board of Directors, 1986–1988; President-elect, 1998; President, 1999; Immediate Past President, 2000; and served on the finance and other committees. The Victor H. Hutchison Student Poster Award was established for the best graduate student poster presented at the annual SSAR meeting. He was a member of the Development Committee, 1996–1998, Task Force on Organization and Governance, 1998–1999, and nominee for President, 1998, for the Society for Integrative and Comparative Biology (formerly American Society of Zoologists), Divisions of Comparative Physiology and Ecology.

Vic is a vocal opponent of anti-science efforts in Oklahoma. He received two awards for his leadership in countering legislation to add creationism to science classes in the state: Americans United for Separation of Church and State, Oklahoma Chapter, Constitutional Heritage Award, 2000, and Tulsa Interfaith Alliance Award for Science Education and Anti-creationism Efforts in 2000. The National Center for Science Education bestowed their Friend of Darwin Award

Fig. 7. Vic Hutchison in retirement feeding the fox squirrels on the University of Oklahoma campus. Courtesy of V. H. Hutchison.

in 2008 for defending the integrity of science education in Oklahoma. The Oklahoma Science Teachers Association honored Vic by giving him the Jack Renner Distinguished Service to Oklahoma Science Education Award in 2011 for being a tireless advocate for quality science education in the state's public schools and representing their cause to the state legislature. He is a co-founder of the Oklahomans for Excellence in Science Education (https://oklascience.org/), a non-profit educational organization that promotes public education about the methods and values of science, and advocates excellence in the science curriculum. In addition to his public service, he is well known on the OU campus for feeding shelled pecans to the fox squirrels nearly every day (Fig. 7).

ACKNOWLEDGMENTS

I thank Lynnette Sievert, Bill Lutterschmidt, and Walter Whitford for permission to use their quotes. Bill, Lynnette, and David Smith reviewed the manuscript. Interviewed during the July 2014 JMIH meeting in Chattanooga, Tennessee.

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