

Richard Highton

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RICHARD Highton, an emeritus professor at the University of Maryland, is celebrated among herpetologists for his career of systematic inquiry into the salamander genus *Plethodon* (family Plethodontidae). He is also renowned for unusually complete geographic sampling. At the fourth Conference on the Biology of Plethodontid Salamanders in Highlands, North Carolina in 1998 (held in honor of Highton the year of his retirement), Steve Tilley gave a presentation on genetic diversity in *Desmognathus* salamanders. He started his talk with a slide of what the population-level sampling would look like if Highton had done it: like someone had blasted the range map with a shotgun. Tilley then presented his more modest sampling, and all the professors had a good laugh. Indeed, during the course of his career, Highton examined patterns of allozyme variation in >70,000 individuals from >1,500 populations throughout *Plethodon*. Moreover, he carried out numerous comprehensive studies of coloration, morphology, ecological genetics, life history, and geographic distribution. This research productivity, which now spans more than six decades, is the product of Highton's single-minded focus and unwavering work ethic. No one has ever known more about *Plethodon*, no one will ever know more about *Plethodon*, than Richard Highton.

EARLY YEARS

Given the large amount of time Richard Highton (hereafter, Dick) spent rooting around under logs in every nook and holler of the Appalachian Mountains, one might suppose that he grew up a country bumpkin, surrounded by salamanders and snakes. In fact, he was born in Chicago, Illinois, on 24 December 1927, 91 years ago at the time of this writing, and lived in urban settings through college. His parents were Albert H. Highton (1876–1958) and Helen Taylor Highton (1894–1970). Albert came to the United States in 1882 at the age of six, riding across the Atlantic from England on a boat that was a combination sailboat and steamboat. Though Albert never attended high school, he was a scholar with a talent for English and worked most of his life as a proofreader and copy editor. He was a contributing author to *Funk and Wagnalls Unabridged Dictionary of the English Language*, and he also wrote two books: *Practical Proofreading*, published in 1928, and *Direct Advertising and the Printer; a Text-book of General Information on a Subject Vitally Essential to the Printer*, published in 1933. The first book was used as a text in university courses, an ironic twist given Albert's lack of formal education. Dick's mother Helen was also highly literary, and was working as a librarian in Holyoke, Massachusetts, when she and Albert met. Later she worked in the library at the University of Chicago. Dick was Helen's only child, but because Albert had been previously married, Dick had a half-brother and a half-sister. They were considerably older than Dick and he never lived

with them, although his half-sister commonly visited on weekends when he was young.

Dick grew up during the Great Depression, when finances were tight, resources were limited, and disease was a terrible risk. When Dick was six years old, he contracted the measles, a mastoid infection, and pneumonia all at the same time. Although penicillin was discovered in 1928, the year after Dick was born, it was not publicly available to treat infections until 1942 (Grossman, 2008). The doctors told his parents to give him aspirin and pray, and gave him less than a 50% chance of survival. In desperation, his parents turned to osteopathy and in Dick's view their novel approaches saved his life.

In 1938, when Dick was in the 5th grade, the Highton family moved to the Washington Heights neighborhood of New York City. After grade school he attended the excellent and rigorous Bronx High School of Science. He was interested in biology, although at the time high school courses in biology aimed only to prepare students for medical school, with no attention paid to ecology and evolution. Nonetheless, he enjoyed his high school education and graduated in 1945 with modest grades.

Despite his urban upbringing, Dick developed a rapt interest in reptiles, especially snakes, as a young man. He was first introduced to them by his father, who had read Raymond L. Ditmars' highly popular books on reptiles. Ditmars was a curator at the Bronx Zoo, and when Dick was 13 years old, he and his father had the pleasure of meeting him while visiting the zoo. They went back to Ditmars' office together, and Ditmars gave Dick his first snakes: a *Thamnophis sirtalis* and a *Nerodia* (then *Natrix*) *sipedon*. In return, they gave him two Eastern Box Turtles (*Terrapene carolina*). This introduction to snakes inspired Dick, and he soon learned every snake in the United States, including Latin names, from Schmidt and Davis (1941). Dick was fortunate in that his parents supported his hobby of keeping pet snakes, lizards, and even an alligator in their small apartment. Dick also formed strong friendships through his love of snakes, a small circle of serpent aficionados. As it turns out, Carl Gans, who was six years older than Dick and a student at New York University when Dick was in high school, lived in the neighborhood. One day a friend of Dick's spotted Gans walking through a drug store with a "Ross Allen" box from the Reptile Institute in Silver Springs, Florida. As this was "where everyone bought their pet snakes," he knew immediately what was in the bag, introduced himself, and soon thereafter introduced Gans to Dick. Gans was earning a degree in engineering at the time and had not yet established his fame as a distinguished herpetologist, but they bonded over their shared interest in herpetology.

COLLEGE AND WAR

In the fall of 1945, Highton began studies at New York University, where he majored in biology with minors in

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mathematics and sociology. From the beginning, he aimed to be a herpetologist. He fondly remembers as a college student walking across the George Washington Bridge to a patch of woods in New Jersey to collect frogs to feed to his snakes. After his first year in college, Dick made friends with another young man who was interested in herpetology and lived only two blocks from Dick's family's apartment in New York City. Upon visiting their home, Dick met his younger sister, Anne Adams. In the future, she would become his wife.

Their romance did not begin immediately, however. This was during WWII when food, gas, and clothes were rationed and everyone sacrificed to support the war effort. Shortly after he met Anne, in September of 1946, Dick enlisted in the Army. Fighting at that time had been over for a year, but Dick saw service as a chance to contribute to his country and qualify for the GI Bill, which would help him to pay for college. Dick spent a relatively uneventful year in Italy in the medical department of the Army's 88th Infantry Division.

After his time in the Army, Dick returned to New York University from 1948 to 1950. He graduated in three years, partly due to summer school and partly due to credits he received for his military service. His grades were a fine (but undistinguished) low B average, but Dick had many interests and a low tolerance for busy work. In addition, he was actively courting Anne. On 23 June 1950, before his last semester of summer school, they got married in New York City. Her interests were not in science or herpetology, but in art and music.

Because Dick did not smoke or drink, he saved money during his army years, and after his discharge in 1948 he bought a used Chevrolet for \$900. Easy transportation facilitated many herpetological field trips. In fact, Dick taught Gans how to drive using this car. After Dick graduated from New York University, he and Gans (who was then working as an engineer for a boiler-making company) took a two-week trip to the Great Smoky Mountain area to search for salamanders. The weather was hot and they weren't as successful as they'd hoped to be, but Dick returned hooked—after this trip, and after reading Nelson G. Hairston's ecological papers, he knew he wanted to work on salamanders in the genus *Plethodon*.

GRADUATE SCHOOL

Highton next looked to graduate school. His top choice was the University of Michigan, which at the time included Norman E. Hartweg and Charles F. Walker. They turned Dick down because of his modest grades, even though he followed up with a personal visit to ask them to reconsider. However, a student there, Herndon G. Dowling, suggested that Dick apply to the University of Florida. At the time, the herpetologists Arnold B. Grobman, Archie Carr, and Coleman J. Goin taught in the Biology Department, and the celebrated ecologist Warder C. Allee was the chair. Highton applied to the Department of Biology, but was again rejected. Undeterred, he and his wife moved to Tampa, Florida to fulfill the requirements for in-state tuition. Dick worked for a year at the Florida Citrus Exchange and read many books in preparation for his education, including a genetics textbook. At the end of the year, he again applied to the University of Florida and this time was accepted to work with Grobman. He and Anne moved into a trailer in the country. He started his master's degree in 1951 (Fig. 1), and she worked at the University of Florida library.

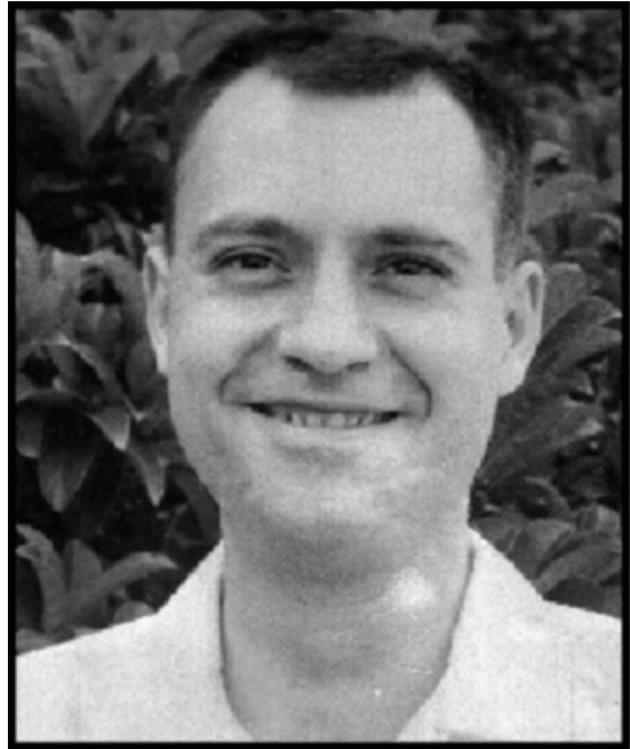


Fig. 1. Richard Highton as a graduate student at the University of Florida. Photo taken in 1951–1952. Photographer unknown.

When Dick started his graduate studies, he wanted to work on the genetics of color variation (especially taxonomically interesting characters) in *Plethodon*, such as the striped/unstriped polymorphism in *P. cinereus* or the leg and cheek color variation in *P. jordani*. For practical reasons, he chose to work on the local species, *P. glutinosus grobmani* (now *P. grobmani*; Highton, 1989), but quickly discovered the necessary understanding of natural history and life history was badly lacking. When and where *P. grobmani* laid eggs was unknown, and Dick was unable to get them to lay eggs in the lab, even though he experimented with transplanting pituitary glands and injections of gonadotropic hormones (to this day, getting *Plethodon* to mate and lay eggs in the lab is often tricky business). Given these difficulties, the genetics of color variation could not be reasonably worked out, but another line of research presented itself: for his masters, he studied the life history of *P. grobmani* (Highton, 1956). He earned his M.S. in 1953, this time with excellent grades.

Grobman thought that academic diversity was important and suggested to Dick that he consider earning a Ph.D. at another institution. Dick spoke with Robert C. Stebbins in the Museum of Vertebrate Zoology (MVZ) at the University of California, Berkeley, and they hatched a plan for Dick to join Stebbins' lab. Unfortunately, the requisite funding never materialized. This unrealized twist in Dick's educational history is fun to ruminate on, however, as Dick would later collaborate with David B. Wake (at the time, director of the MVZ), then go on to develop a professional disagreement with Wake and Stebbins regarding their taxonomy of California salamanders, especially *Ensatina* (e.g., Highton, 1998, 2014; Wake and Schneider, 1998).

After the opportunity with Stebbins fell through, Dick decided to stay at the University of Florida. He and Anne loved the country life and enjoyed the warm climate away from the hubbub of a big city. Moreover, Dick valued

working with Grobman because of his interest in both *Plethodon* and statistics. For his Ph.D., Dick worked on a now-classic revision of the genus *Plethodon* (Highton, 1962). He finished in a quick three years, in 1956.

In those days, postdocs were a rarity, and new Ph.D.s most often found jobs by writing letters to institutions and inquiring about opportunities. Dick and Anne wanted to continue living in a rural setting, and he wrote to a number of appropriately situated institutions, but none of them offered the sort of research opportunities he was looking for. Fortunately, he received the only postdoctoral position in the graduate school at the University of Florida. Two months into this postdoc, however, he was contacted by the University of Maryland, near Washington D.C. Despite the highly urban setting, he flew to Maryland (his first time on a plane) for an interview. They offered him a job at the end of the interview and let him choose whether he wanted to fill an ecology or genetics position. He chose genetics.

UNIVERSITY OF MARYLAND

When Dick was six years old and in the first grade he told his teacher, "I want to be a herpetologist!" In 1956, he started his tenure track position as a herpetologist in the Department of Zoology (now the Department of Biology) at the University of Maryland. He and Anne brought with them three young kids and set up life outside of College Park in Washington, D.C. Initially, he taught an undergraduate course in genetics and graduate courses in systematics and population genetics. Over the years he also taught herpetology, vertebrate zoology, evolution, zoogeography, and general zoology.

Fortunately for Dick's research program, the University of Maryland was close enough to the Appalachian Mountains for field work on *Plethodon*, and he spent many weekends "herping" during a long career that included continuous NSF funding from 1958 to 1988. In the summers he worked at higher elevations, where *Plethodon* remained active. Dick's research quickly expanded along many lines. He first initiated studies of life history variation and microgeographic variation. For stunning examples of microgeographic sampling, see Highton (1972: figs. 11–12, including 1645 populations, most with ≥ 25 individuals) and Highton (1977: fig. 1, including 177 localities on the Del-Mar-Va Peninsula, all with ≥ 25 individuals). He also finally engaged in studies of the genetic basis of phenotypic characters in *P. cinereus*, first on the heritability of the number of trunk vertebrae (Highton, 1960), then on the genetic architecture of the striped/unstriped color polymorphism. For this latter work, he collected females guarding clutches of eggs at Mountain Lake, Virginia, and from the ratio of striped to unstriped offspring inferred that the color polymorphism behaved as if under the control of a single locus with two alleles, with the striped allele dominant (Highton, 1959). Later, in Shenandoah National Park, Virginia, where female *P. cinereus* lay their eggs deep underground, Highton obtained clutches by burying gravid females in jars in the field. He acquired color pattern ratios from 164 broods and inferred that alleles for the unstriped morph were dominant (not recessive, in contrast with the previous study), and that epistatic interactions between two or more loci likely determine the morph (Highton, 1975). This is an early, excellent example of why one cannot study the genetics of a trait in one population and assume the results apply to an entire species.



Fig. 2. Richard Highton at the 1973 ASIH meeting in Vancouver, British Columbia. Photo by Graham Netting. Courtesy of Kraig Adler.

For most herpetologists, Dick is best known as a systematist (Fig. 2), and as early as the late 1960s his lab began using allozyme electrophoresis to document patterns of geographic variation and to delimit species. To date, Dick has described 24 species previously unknown to science, including 23 new species of *Plethodon* and a monotypic genus in the family Plethodontidae (*Phaeognathus hubrichti*; Highton, 1961; Table 1). In addition to the recognition of novel biological diversity, Dick's pioneering taxonomic contributions have greatly benefited biologists working on *Plethodon* by clarifying species boundaries (Vences and Wake, 2007; Camp and Wooten, 2016; Wake, 2017) and by providing the essential scaffolding for comparative analyses (Kozak et al., 2006; Adams et al., 2009; Fisher-Reid and Wiens, 2015).

Related to his work on species delimitation, Dick also maintained an active research program on hybridization and hybrid zone dynamics. He recalls finding his first hybrid zone in 1961 between *P. jordani* and *P. teyahalee* in Great Smoky Mountain National Park. His early studies focused on hybridization among species in the *P. glutinosus* group (Highton and Henry, 1970; Duncan and Highton, 1979); in addition, Addison Wynn (1986) studied hybridization between groups of *P. cinereus* while a graduate student in the Highton lab. Later in his career, Dick's efforts to obtain NSF support for research on hybridization were not successful, and from the late 1980s until the present he funded this research program at his own expense, including studies of the *P. jordani* and *P. glutinosus* species complexes (Highton and Peabody, 2000), *P. richmondi* and *P. electromorphus* (Highton, 1999a), and *P. hoffmani* and *P. virginia* (Highton, 2009). In total, Dick has data on hybrid zones between about 30 pairs of species on which he plans to publish.

Throughout his career Dick associated himself with museums and collected voucher specimens as part of his work (Fig. 3). He is now concerned about the failure of many younger biologists to collect voucher specimens because it

Table 1. New species and subspecies named by Richard Highton during his career.

Subspecies	Reference
<i>Stilosoma extenuatum arenicolor</i>	Highton (1956) ^a
<i>Stilosoma extenuatum mutisticum</i>	Highton (1956) ^a
<i>Plethodon cinereus polycentratus</i>	Highton and Grobman (1956) ^b
<i>Plethodon richmondi popei</i>	Highton and Grobman (1956) ^c
Species	
<i>Phaeognathus hubrichti</i>	Highton (1961)
<i>Plethodon stormi</i>	Highton and Brame (1965)
<i>Plethodon shenandoah</i>	Highton and Worthington (1967)
<i>Plethodon hoffmani</i>	Highton (1972)
<i>Plethodon punctatus</i>	Highton (1972)
<i>Plethodon fourchensis</i>	Duncan and Highton (1979)
<i>Plethodon websteri</i>	Highton (1979)
<i>Plethodon aureolus</i>	Highton (1984)
<i>Plethodon petraeus</i>	Wynn, Highton, and Jacobs (1988)
<i>Plethodon chatahoochee</i>	Highton (1989)
<i>Plethodon kiamichi</i>	Highton (1989)
<i>Plethodon kisatchie</i>	Highton (1989)
<i>Plethodon mississippi</i>	Highton (1989)
<i>Plethodon ocmulgee</i>	Highton (1989)
<i>Plethodon savannah</i>	Highton (1989)
<i>Plethodon sequoyah</i>	Highton (1989)
<i>Plethodon ventralis</i>	Highton (1997)
<i>Plethodon electromorphus</i>	Highton (1999a)
<i>Plethodon virginia</i>	Highton (1999b)
<i>Plethodon amplus</i>	Highton and Peabody (2000)
<i>Plethodon cheoah</i>	Highton and Peabody (2000)
<i>Plethodon meridianus</i>	Highton and Peabody (2000)
<i>Plethodon montanus</i>	Highton and Peabody (2000)
<i>Plethodon sherando</i>	Highton (2004)

^a Now *Lampropeltis extenuata*; subspecies no longer recognized (Woolfenden, 1962; Highton, 1976)

^b Now part of *P. serratus*; subspecies no longer recognized (Highton and Webster, 1976)

^c Subspecies of *P. richmondi* are no longer recognized (Highton, 1962)

compromises the quality of systematic inferences. In the mid-1980s he began to transfer his voucher collection (obtained with the help of colleagues, students, and friends) to the Smithsonian. Today, that collection includes >140,000 specimens, most of them *Plethodon*. This astonishing collection could be viewed as counter to conservation, but Dick sees himself as having contributed important insights for conservation through his collecting, including discoveries of new species, several of which have small ranges (e.g., Highton and Worthington, 1967; Highton, 2004). After all, the first step to “intelligent tinkering” (Leopold, 1949) is save all the parts. Studies by ecologists have bolstered Dick’s perspective on the minimal impact of scientific collecting, as modern estimates of abundance in eastern small *Plethodon* have reported densities up to 12,900 per hectare (Semlitsch et al., 2014). By contrast, Dick often collected ~25 individuals from each collection site, and he did this collecting over the course of more than five decades and thousands of localities. Moreover, he has been exceedingly generous with his genetic samples over the years, loaning out the products of his hard



Fig. 3. Richard Highton with Mark Kielek at Warwoman Dell, Rabun County, Georgia on 3 October 1976. Courtesy of Ken Dodd.

work for the benefit of herpetological research, almost always without asking for co-authorship.

Dick retired in 1998, after 42 years of teaching and service at the University of Maryland. Importantly, he kept both his office and lab space, which he wisely worked into his retirement contract. At 91 years of age, Dick still works for eight hours or more every day, often seven days a week. He has published 88 papers, many of them monographic studies, or detailed, data-rich treatments. He never participated in the practice of publishing in bite-sized installments; rather, he published studies when they were done. During his time at the University of Maryland he mentored 13 Ph.D. students (Appendix 1), eight of which did herpetological work, including Richard D. Worthington, Robert G. Jaeger, Rudolph T. Danstedt, Douglas F. Fraser, Gary Fellers, Robert B. Peabody, S. Blair Hedges, and Carla A. Hass. His other Ph.D. students include Henry W. Hurlbutt, Jr. (acarology), Duane A. Schlitter (mammalogy), Melanie Culver (mammalogy), Gavin J. P. Naylor (ichthyology), and Robb Brumfield (ornithology). Twenty-five students earned M.S. degrees under his mentorship, including Alan Larson, Raymond D. Semlitsch, Jeremy F. Jacobs, and Addison Wynn, among others (Appendix 1). Dick also mentored a short but notable set of postdoctoral scholars: Robert G. Jaeger, Preston T. Webster, Herndon G. Dowling, and Ronald A. Brandon. Together, his Ph.D. and M.S. students published 52 papers, but Highton’s name is not on these papers as he never required his name be added to any manuscript to which he did not make a substantial contribution.

FAMILY

Although they were apprehensive about returning to big city life, Dick and Anne quickly grew to love the Washington, D.C. area. College Park was close enough to the Appalachians and other areas for Dick to pursue his research even while teaching, and it provided Anne with abundant and easy access some of the finest art and music in the world. After moving to Maryland, Dick and Anne had their last child, and all four children grew up to be artists. Their oldest, Barbara, is a musician and teaches flute at a music academy. Kim was a prodigy ballerina who traveled the globe and starred in world-class performances. Scott became a photographer and wrote the first book on virtual reality photography (Highton, 2010). When young, Scott enjoyed joining Dick on field trips

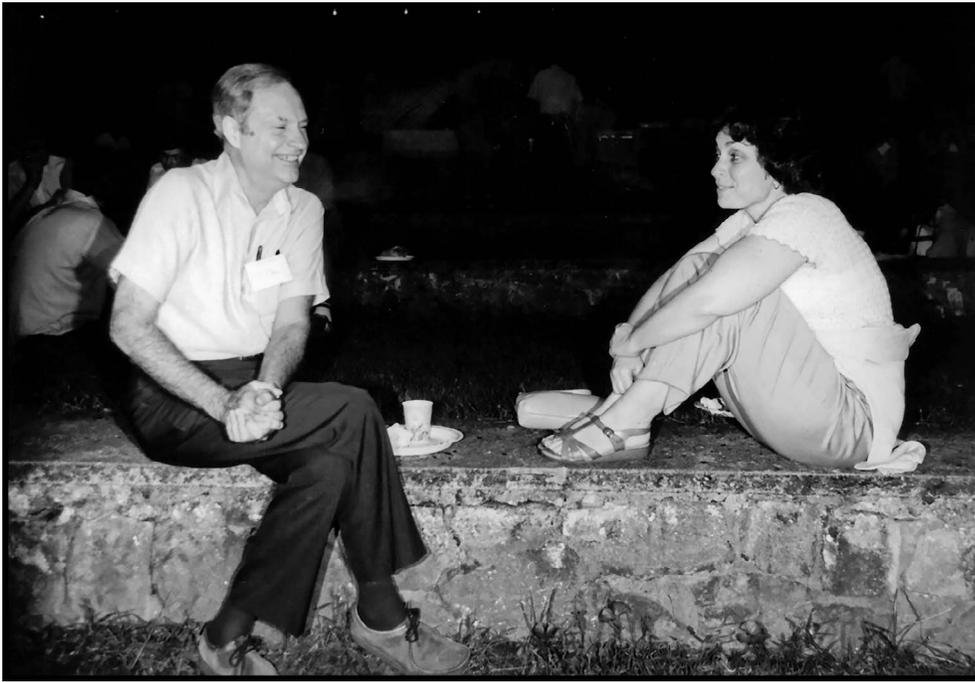


Fig. 4. Richard Highton and Linda R. Maxon at the second conference on the Biology of Plethodontid Salamanders in Highlands, North Carolina in 1982. Courtesy of Stevan J. Arnold.

and has long served as Dick's salamander photographer. Their youngest, Caitlin Ann, pursued dance and today is a dance instructor. While none of Dick's children are scientists, he passed on to them traits every artist needs to succeed in a hard world: intensity, grit, unwavering focus, and fire-hot passion. Anne and Dick now also enjoy six grandchildren and two great-grandchildren.

SERVICE AND AWARDS

In addition to teaching and research, Dick provided distinguished service to the University of Maryland, systematic biology, and the herpetological community. While a graduate student, his advisor Grobman told him that the American Society of Ichthyologists and Herpetologists (ASIH) was *the* society to belong to, and Dick took this advice seriously. Within ASIH, Dick served as Secretary (1967–1973), and was a member of the Finance Committee (1967–1973), Executive Committee (1967–1973, 1975–1977), and Nominating Committee (1977–1978). In 1976, he was elected President of ASIH. He also contributed to the Society for the Study of Amphibians and Reptiles (SSAR) as the editor of salamander accounts for the *Catalogue of American Amphibians and Reptiles* (1978–1992) and is presently the chairman of the salamander section for the Committee on Standard English and Scientific Names (1999–present).

Dick's intellectual contributions have been recognized as well. He won an ASIH Stoye Award in 1953, and early in his career (1965) he was elected a fellow of the American Association for the Advancement of Science. At the University of Maryland, he was granted the Sigma Xi Research Excellence Award (1976). Dick's herpetological colleagues have also recognized the significance of his work (Fig. 4). In 1989, the fourth Conference on the Biology of Plethodontid Salamanders was held in his honor for his "ground-breaking research on molecular systematics and speciation in plethodontids" (Fig. 5; Bruce et al., 2000). More recently, Vieites et al. (2011) designated the western clade of *Plethodon* as the subgenus *Hightonia*: "The name honors Richard Highton, premier student of *Plethodon* for more than 50 years."

ONGOING RESEARCH

Throughout his long career, Dick contributed many important studies of geographic variation in phenotype, species interactions, and genetic variation (e.g., Highton, 1962, 1972, 1975, 1989, 1999b). Not one to let grass grow under his feet, he continues to intensely pursue his research program. For example, under development is a book on life history variation in eastern *Plethodon*, which includes abundant field data on 45 species (including *P. neomexicanus*, which used to be considered a member of eastern *Plethodon*). This work will be a treasure-trove of information for all biologists interested in life history evolution. Dick is also working on completing several studies of allozyme variation and hybridization throughout eastern *Plethodon*, and he even continues to collect new genetic data.

In addition to his massive body of ongoing empirical work, Dick is also aggressively championing his ideas on species delimitation. He is well known for his criticism of the taxonomy of the celebrated ring species *Ensatina eschscholtzii*. In Dick's assessment, the *Ensatina* complex is not a single species with a ring-like distribution, but rather is at least 11 separate species and not a ring species at all (Highton, 1998; but see Wake and Schneider, 1998; Kuchta and Wake, 2016). More recently, he has argued that *Batrachoseps attenuatus* in California may be a complex of roughly 39 species (Highton, 2014). Dick arrived at these taxonomic conclusions by delimiting species using the "Good-Wake" and "histogram" methods (Highton, 1998; Sites and Marshall, 2004; Highton, 2014). He says his favorite paper is the one he is currently writing, a re-analysis of 120 phylogeographic data sets (all herpetological) that he believes demonstrates that most herpetologists are badly underestimating the number of species-level entities supported by their data. This criticism also applies to my recent papers with Dick, which he believes suffer from taxonomic errors as a consequence of my more conservative approach to species delimitation (Kuchta et al., 2016a, 2016b, 2018). If the majority of phylogeographers and herpetologists are failing to recognize clear species in their data, the conservation crisis is negatively impacting

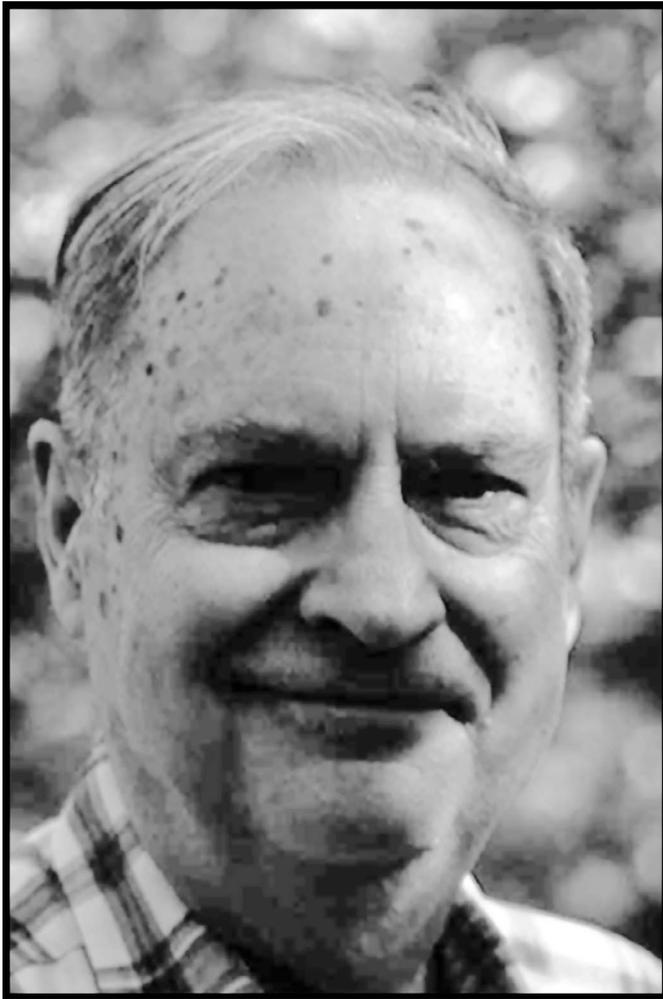


Fig. 5. Richard Highton at the fourth Conference on the Biology of Plethodontid Salamanders in Highlands, North Carolina in 1998, held in Highton's honor for his "ground-breaking research on molecular systematics and speciation in plethodontids" (Bruce et al., 2000). Courtesy of Stevan J. Arnold.

diversity even harder than many believe. For his part, Dick is "depressed" and "pessimistic" about the future of biodiversity. With the loss of species, or even portions of a species' range, the planet loses diversity in morphology, behavior, species interactions, and other biological attributes. To again paraphrase Aldo Leopold, "One of the penalties of an...education [in systematics] is that one lives alone in a world of wounds" (Leopold, 1949).

DICK'S OFFICE

I have visited Dick at the University of Maryland on several occasions, sometimes to borrow blood samples for genetic work, sometimes to go over our ongoing studies, and more recently to interview him for this perspective. He always welcomes me with a smile. His small office is piled high with stacks of papers atop stacks of papers. Classic texts in evolutionary biology, herpetology, and systematics are tightly crammed into wooden bookcases. Photos of salamanders taken by his son adorn the concrete walls and an outdated computer chugs away in the corner. Like so many professors' offices, it looks like a bomb may have detonated in the space—perhaps quite recently!—yet he finds every manila folder readily. Within minutes of my arrival Dick is showing me his

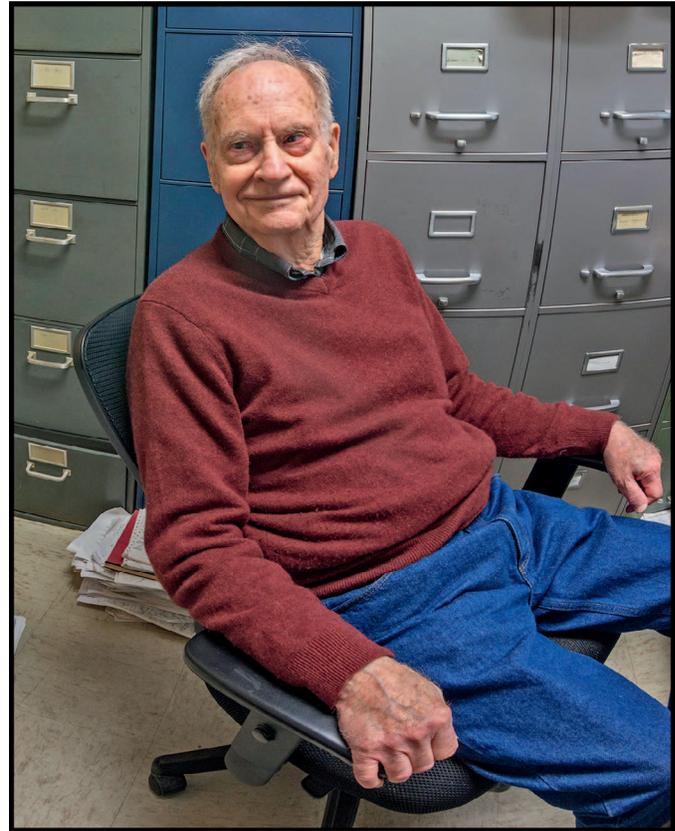


Fig. 6. Recent photo of Richard Highton in his office at the University of Maryland. Photo by Scott Highton.

data, sharing his opinions on systematics, and letting me know where I've gone wrong in my thinking. Then we go out to lunch, where Dick happily tells me stories about his family and the history of herpetology, laughing easily and merrily. Sometimes lunch is followed up with ice cream, and the friendly banter continues. I love the stories and admire his steel-trap mind and the way it holds every detail. When we return to his office, the war of words recommences (Fig. 6). It isn't personal. Dick is a man of passion and conviction, and he has a perspective built up over 68 years of salamander research (Highton, 2017). As David Wake once put it to me, "What can he do? He knows he is right!"

ACKNOWLEDGMENTS

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Appendix 1. Richard Highton's masters and Ph.D. students.

Graduate students

Henry W. Hurlbutt, Jr.	PhD, 1963
Richard D. Worthington	PhD, 1968
Robert C. Jaeger	PhD, 1969
Rudolph T. Danstedt	PhD, 1972
Douglas F. Fraser	PhD, 1974
Duane A. Schlitter	PhD, 1976
Gary Fellers	PhD, 1976
Robert B. Peabody	PhD, 1978
S. Blair Hedges	PhD, 1988
Gavin J. P. Naylor	PhD, 1988
Carla A. Hass	PhD, 1990
Melanie Culver	PhD, 1999
Robb Brumfield	PhD, 1999
Duval A. Jones	MS, 1961
Donald E. Johnston	MS, 1961
Anne Saylor	MS, 1964
Richard Widman	MS, 1965
Sarah M. Mountjoy (Goldblatt)	MS, 1965
Henry C. Merchant	MS, 1966
Richard D. Worthington	MS, 1966
Frank P. Saitta	MS, 1967
Dale M. Madison	MS, 1968
Rudolph Danstedt	MS, 1968
John P. Angle	MS, 1968
Douglas Fraser	MS, 1970
Anne Cohen	MS, 1972
Allan Larson	MS, 1977
Robert Duncan	MS, 1977
Raymond D. Semlitsch	MS, 1979
Addison Wynn	MS, 1982
S. Blair Hedges	MS, 1984
Jeremy F. Jacobs	MS, 1984
Carla A. Hass	MS, 1985
Kristi L. Burnell	MS, 1988
Paul Manzo	MS, 1988