

# BANISTERIA

A JOURNAL DEVOTED TO THE NATURAL HISTORY OF VIRGINIA



Joseph C. Mitchell  
(1948-2019)

An obituary of the founder and longtime coeditor of *Banisteria*, who was also the leading expert on Virginia's amphibians and reptiles, appears on pages 52–73 of this issue.

*Banisteria*, Number 52, pages 52–73  
 © 2019 Virginia Natural History Society

### Obituary

#### Joseph C. Mitchell (1948–2019)



Dr. Joseph (“Joe”) Calvin Mitchell, age 70, was tragically killed in a pedestrian-motor vehicle accident on the morning of July 2, 2019, near his residence outside of Gainesville, Florida. He was widely regarded as the leading expert on the herpetofauna of his native state of Virginia and can also be considered the founding father of the Virginia Natural History Society. A longtime resident of Richmond, Joe was born on August 16, 1948, in Lynchburg, Virginia, but his family moved from Bedford to Richmond when he was still young. His father was a blue collar worker in the maintenance section of a local bank chain and his mother was a stay at home mom. Joe was the oldest of four children (two brothers and one sister), a proud father of four (two daughters and two sons), grandfather of two, and had been married three times (Virginia “Ginny” [1973–1978] and Wendy [1979–2003] were fellow biology students at Virginia Commonwealth University). Joe and his widow, Dr. Susan Walls, a US Geological Survey amphibian biologist based in Gainesville, were married in February 2006. Ironically, Joe published a brief autobiography and his complete bibliography (through mid-2018) earlier this year through the Division of Amphibians and Reptiles at the Smithsonian Institution’s National Museum of Natural History (Mitchell, 2019a).

Joe became interested in snakes at an early age and often credited his uncle Costello (“Cos”) Craig, an amateur herpetologist, for fostering his interest in herpetology and natural history (Mitchell, 1998). Cos

and his sons Mark, Brian, and Jerry maintained a collection of captive snakes, which they used to conduct educational programs for the Boy Scouts and other groups in the Bedford area. Joe’s parents tolerated his desire to keep captive snakes, a practice he continued for the rest of his life, including having copperheads up until his death. When he was a senior at Hermitage High School, the *Richmond Times Dispatch* newspaper published a feature article about Joe’s woodworking skills (he had won several local awards) and his interest in herpetology. Late in his life, Joe rekindled his interest in woodworking.

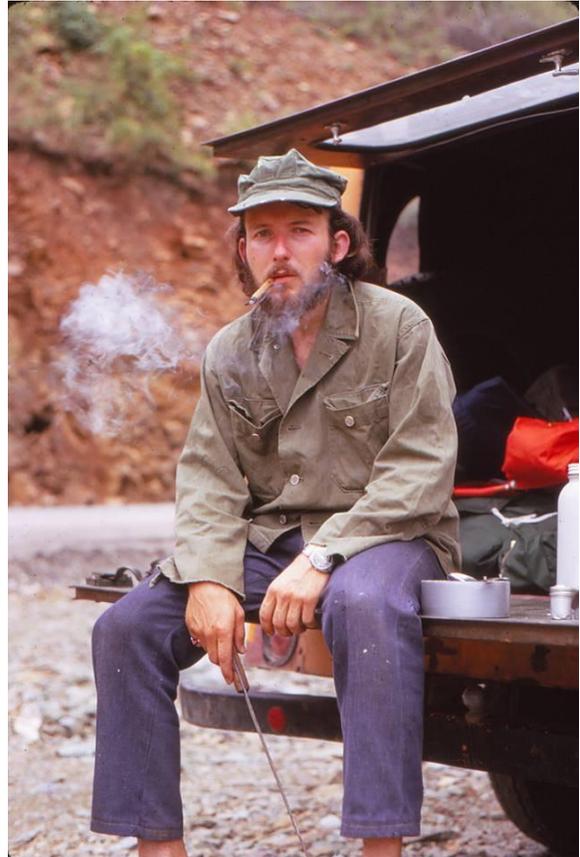
Joe graduated from high school in 1966 and spent that summer as an apprentice to a master furniture maker. Joe thought that he was destined to become a master craftsman but instead enlisted in the US Marine Corps on his 18<sup>th</sup> birthday, which was during the Vietnam War era. Uncle Cos was a Marine and his positive experience with that branch of the military contributed to Joe’s decision. Joe served in the Marines from 1966–1970, during which time he was stationed at military bases in six states, some of which he returned to decades later to conduct herpetological surveys and research as a consulting biologist.

Upon completion of his military service, Joe returned to Richmond and enrolled at Virginia Commonwealth University (VCU), where he earned a BS in Biology in 1974. For his senior research project, Joe studied corn snake morphometrics, which resulted in his first substantial paper, published in *Copeia* three years later. Joe then pursued graduate studies at Arizona State University under John (“Jack”) Fouquette, Jr., where he earned a M.S. in Biology in 1976. For his Master’s thesis research, Joe conducted a 1-year study of niche overlap and reproduction in four species of whiptail lizards in the deserts of southeastern Arizona. Subsequently, Joe enrolled in the Ph.D. ecology program (one of the first of its kind in the nation) at the University of Tennessee. He earned his Ph.D. in 1982 under Arthur (“Sandy”) Echternacht, who had also been a Fouquette student. For his dissertation research, Joe trapped turtles nearly every day for three years at a series of former golf course ponds near Richmond, resulting in >6,000 captures of about 1,950 individual turtles. He published five papers based on this study, including one on the population ecology and life histories of the two most common species, Painted Turtle (*Chrysemys picta*) and Musk Turtle (*Sternotherus odoratus*), and four other papers on their reproductive cycles.

Joe was deeply passionate about herpetology but he never had a regular, full-time academic or government job. He was proud of the fact that he was able to be a successful, self-employed herpetologist and conservation biologist throughout his career, and liked



Teenage Joe Mitchell with captive Timber Rattlesnake (*Crotalus horridus*) at residence of his uncle Costello Craig in Bedford County, Virginia, ca. 1966. Joe often credited “Cos” with fostering his love of reptiles and ultimately his desire to become a professional herpetologist (photo courtesy of Mitchell family).



Joe Mitchell taking a break from herpetological field surveys, San Luis Potosí, Mexico, June 1971 (Rick Sanderson photo).



Joe Mitchell was proud to have served in the Marines from 1966–1970, calling his decision to enlist on his 18<sup>th</sup> birthday “the best decision of my life” (photo courtesy of Mitchell family).



Attendees of the Virginia Herpetological Society meeting at the University of Richmond, October 9, 1982; front row, left to right: Joe and Wendy Mitchell (with son Joshua), Richard Hoffman, Frank Tobey (primary VHS co-founder), and Costello Craig (Joe’s uncle) (photo courtesy of Joseph C. Mitchell).

being his own boss. Over the years, he had temporary teaching positions at VCU, the University of Richmond (UR), J. Sargeant Reynolds Community College, Randolph-Macon College, and the College of William and Mary. His longest affiliation was with UR, where Joe taught in the 1980s and 1990s and the biology department provided him with research space and grant administrative support for several decades (ending in 2006). Joe taught a night course on Conservation Biology in the UR School of Continuing Studies that was one of the first of its kind in the country. He received a Distinguished Faculty Award from UR for the 1993–1994 academic year.

George Zug, (now retired) curator of amphibians and reptiles at the National Museum of Natural History (NMNH), Smithsonian Institution, was an important mentor to Joe. George introduced Joe to scientific research and museum collections when the latter was still an undergraduate at VCU. Later, George appointed Joe as a NMNH research associate, an affiliation that was maintained from 1983–2007 (final year corresponded with George's retirement). Joe and George traveled separately to Nepal and later coauthored several papers on that country's herpetofauna. Joe also made trips to Mexico, Costa Rica, Nicaragua, and Peru to observe or collect amphibians and reptiles.

Joe was a member of the Virginia Herpetological Society (VHS) for more than 50 years. As a young teenager, he attended his first VHS meeting in 1963 with his uncle "Cos." There he met Frank Tobey (1919–2010), the society's founder, with whom Joe maintained ties for nearly 50 years until Tobey's death (Mitchell, 2011). The VHS focused solely on Virginia herpetology and had the goal of publishing a set of distribution maps for all of the species in the state. In 1985, Tobey produced the first distributional atlas of Virginia's herpetofauna (Tobey, 1985; see review and corrections by Mitchell & Pague, 1986, 1987). Joe (often with his wife Wendy and one or more of their children) attended numerous VHS meetings over many years. At least one meeting per year consisted of formal talks and live animals, and often field trips. Joe credited the VHS with introducing him to research and science (Mitchell, 2019a). He served as VHS President from 1989–1993 and was the second editor (1982–1984) of the society's journal *Catesbeiana*. Through Joe's influence, the VHS became even more scientifically-based. He received a Lifetime Achievement Award from the VHS in 2007 for his many contributions to Virginia herpetology.

With nearly a decade (1983–1989) of financial support from the Virginia Department of Game and Inland Fisheries (VDGIF), Joe and his collaborator Chris Pague embarked on an intensive, statewide survey of Virginia's amphibian and reptile fauna with the goal of

producing a book on the subject. They were assisted by a number of very capable, aspiring young biologists and naturalists, primarily Kurt Buhlmann and David Young, but also including Scott Stahl and Chris Hobson. This effort eventually resulted in the publication of Joe's book on the reptiles of Virginia (Mitchell, 1994), but a companion volume to the state's amphibian fauna was never produced, at least in part, because Chris Pague moved to Colorado in 1992 to work for The Nature Conservancy.

In 1989, Joe applied for the newly created position of Curator of Herpetology at the fledging Virginia Museum of Natural History (VMNH) in Martinsville, a job for which he was highly qualified. From 1985–1988, he had served on the museum's Scientific Advisory Board. Joe was devastated when he was not hired for the position, and was bitter about that result for many years. However, he eventually moved past that unfortunate situation and later in life considered it a positive outcome for his family and toward his subsequent career growth. Ironically, the chosen candidate left the state after 2–3 years and the museum has not had a herpetologist on its staff ever since. Despite his unpleasant experience with VMNH, Joe was a Research Associate of the museum for many years (1993–2019) and donated thousands of specimens of amphibians, reptiles, mammals, insects, and other invertebrates to the museum. He also wrote two popular articles on amphibians and reptiles for *Virginia Explorer*, the museum's now-defunct magazine. In May 2008, Joe received the Thomas Jefferson Medal for Outstanding Contributions to Natural Science from the VMNH Foundation in recognition of his many contributions to the study of herpetology and natural history in Virginia.

Following his failure to secure the VMNH position, Joe formed his own consulting business (Mitchell Ecological Services) in 1989, which thrived for several decades and was still in existence at the time of his death. His clients included various federal agencies (e.g., US Forest Service, US National Park Service, US Department of Defense, US Fish and Wildlife Service, Natural Resource Conservation Service), state agencies (Virginia Department of Game and Inland Fisheries, Virginia Department of Conservation and Recreation), private conservation organizations (e.g., The Nature Conservancy), and other private consulting firms. Many of his consulting jobs involved field work in Virginia, but some were as far away as California. His study sites in Virginia included such places as the Blue Ridge Parkway, Shenandoah National Park, Colonial National Historical Park, Prince William Forest Park, George Washington and Jefferson National Forests, Fort A.P. Hill, Fort Belvoir, Fort Story, Quantico Marine Corps Base, and Eastern Shore of Virginia National Wildlife



Joe Mitchell, 1980s (photo courtesy of Mitchell family).



Joe Mitchell searching for turtles in a partially drained reservoir, Newport News, Virginia, mid-1980s (Lynda Richardson photo).



Joe Mitchell with Snapping Turtle (*Chelydra serpentina*), mid-1980s (photo from *Richmond Times Dispatch* article).



Joe Mitchell shaking hands with Roger Conant, author of the *Peterson Field Guide to Reptiles and Amphibians of Eastern and Central North America*, at the joint annual meeting of the Society for the Study of Amphibians and Reptiles (25<sup>th</sup> anniversary meeting) and The Herpetologists' League, Raleigh, North Carolina, August 1982. Joe and Roger became good friends starting in 1989 at the First World Congress of Herpetology held in Canterbury, England (David Grim photo; courtesy of Joseph C. Mitchell).

Refuge. By his own account, Joe wrote 150 reports for clients containing >5,300 pages (Mitchell, 2019a). Some of these reports and data later formed the basis for papers and notes in scientific journals.

Joe was an excellent field herpetologist and a traditional natural historian. He worked on all groups of amphibians and reptiles, but he was especially fond of snakes and turtles. He conducted field work in the majority of Virginia's counties, perhaps even all of them. Among his many discoveries were several new state records, including Mabee's Salamander (*Ambystoma mabeei*) and Eastern Glass Lizard (*Ophisaurus ventralis*). Joe wanted to know about everything herpetological concerning Virginia, including who else was studying which species where. Gathering natural history data was the primary goal of his field work, as he generally disdained the development and testing of new theories or mathematical modelling exercises. Long before VDGIF created the position of "state herpetologist", Joe was the *de facto* state herpetologist. He could even be somewhat territorial in that regard, not always warmly welcoming out of state herpetologists into Virginia. However, he was very helpful and encouraging to many students and other young herpetologists, generously sharing information and ideas with them. Joe served on the graduate thesis committees of students at several universities (e.g., Virginia Tech, Christopher Newport University), but was a mentor to many other aspiring herpetologists and field biologists. He continued to mentor students and even some younger colleagues in Florida after he moved there in late 2007. Joe was an inspiration to many budding field biologists.

Beginning in 1974, Joe meticulously maintained a bibliography of publications pertaining to Virginia herpetology. He published his first compilation containing 875 references in 1981, which covered the period from English colonization of Virginia (early 1600s) to 1980. With funding from the Virginia Herpetological Society, Joe produced an updated, greatly expanded version (nearly 3,000 references) of the bibliography in 2017, thus culminating a 43-year project. This new bibliography is available on the VHS website and will be updated annually by members of the society.

Joe Mitchell's scientific publications span 46 years (1973–2019), with more to appear posthumously (e.g., Jacobsen et al., 2020). In his lifetime, Joe published >500 papers and eight books (see partial list below and Mitchell [2019a] for a more complete bibliography). These totals include 31 book reviews, 12 obituaries, and 38 published abstracts, the latter mostly based on presentations made at the annual meeting of the Virginia Academy of Science as well as several talks given at meetings of the Association of Southeastern Biologists.

Between 1974 and 1997, Joe wrote 33 popular articles for *Virginia Wildlife* magazine pertaining to amphibians and reptiles, beginning when he was still an undergraduate student at VCU and at a time when these animal groups were less popular than they are today. He believed it was important to communicate to both the general public and other scientists about these taxa. As noted in Mitchell (2019a), he was informed years later by VDGIF that his first two popular articles (Mitchell, 1974a, b), which concerned the snakes of Virginia, were reprinted as a single article and distributed to >200,000 people over several decades, thus undoubtedly qualifying as his most widely read piece of literature.

Joe published or edited eight books, including *Reptiles of Virginia* (1994), *Amphibians and Reptiles of Assateague and Chincoteague Islands* (lead coauthor, 1994), *Atlas of Virginia Amphibians and Reptiles* (lead coauthor, 1999), *Urban Herpetology* (lead coeditor, 2008), *Salamanders of the Southeast* (lead coauthor, 2010), and the revised second edition of *Amphibians and Reptiles of the Carolinas and Virginia* (coauthor, 2010). In 1995, he received the Professional Award from the Virginia Chapter of The Wildlife Society in recognition of his book on Virginia reptiles. His salamander book, coauthored with Whit Gibbons, was named 2011 winner of the Outstanding Technical Title award by *Choice* magazine. At the time of his death, Joe was nearing completion of a coedited book (with Andy Holycross) on the snakes of Arizona, a project that had consumed much of his time during the preceding seven years. He enjoyed the chance to become involved in another project concerning the herpetofauna of Arizona, which was his second favorite state after Virginia and where he conducted his Master's thesis research in the desert. Joe also coauthored three popular guidebooks to Virginia's amphibians and reptiles, one of which (salamanders) will be published in 2020.

Joe published dozens of field notes on amphibians and reptiles covering a wide variety of topics, including maximum body and clutch sizes, reproduction, diet, predators, color abnormalities, deformities (limbs, shells, missing eyes, etc.), phenology, habitat, parasites, diseases, male combat in snakes, unusual behaviors, and noteworthy geographic distribution records. His philosophy was that each new bit of information published about a species contributed to the overall knowledge of it, and could lead to new questions or hypotheses. Joe also published several review papers, including those on cannibalism in reptiles, interspecific oophagy in reptiles, and keratophagy in reptiles (eating of shed skins). He published important papers on several rare or uncommon species of amphibians and reptiles based on extensive field work conducted in Virginia, including the Bog Turtle (*Glyptemys mühlenbergii*),

Smooth Greensnake (*Ophedrys vernalis*), Tiger Salamander (*Ambystoma tigrinum*), Cow Knob Salamander (*Plethodon punctatus*), and Peaks of Otter Salamander (*Plethodon hubrichti*). In recent decades, he collaborated with various other scientists on several studies examining the prevalence of chytrid fungus in North American amphibians. He also published several papers on the herpetofauna of Virginia's Eastern Shore, including the barrier islands. Joe once admitted that he was driven to continually publish more papers, not only to increase our knowledge of the various species, but also to secure his own legacy. I believe he succeeded on both accounts. No one in the history of Virginia herpetology has made more important contributions than Joe Mitchell, and it is unlikely that they will ever be matched.

Joe became good friends with herpetologist Roger Conant (1909–2003) of Peterson Field Guide fame late (September 1989) in the latter's life (Mitchell, 2004). In 1991, Joe served as co-host of a symposium honoring Roger entitled "Conservation and Captive Husbandry of Amphibians and Reptiles" that was held at a national herpetological meeting. Joe reportedly promised Conant in 1993 that he would write a book on the herpetofauna of the Delmarva Peninsula based on Conant's field notes and data, and Joe's own observations from Virginia's Eastern Shore, but he was never able to do so. As noted in his brief autobiography (Mitchell, 2019a) written more than 25 years later and only a few months before his death, Joe said the Delmarva book had risen to the top of his "to do" list.

Most of Joe's papers concerned amphibians and reptiles, but he also coauthored more than a dozen papers that entirely or partially concerned Virginia mammals. Most of these papers were coauthored with John Pagels and Scott Bellows of VCU. Joe also coauthored two papers on beetles, one on vernal pool insects, and another on fish. During the 1970s, he published several papers encouraging biologists and naturalists to record and publish phenological observations and data, such as the first calling date of each year for local frogs and toads. I believe his pleas went largely unheeded, but such data would be valuable today in relation to studying the impacts of global climate warming on animal behavior and phenology.

In addition to his unrivaled contributions to Virginia herpetology, Joe Mitchell can also be considered the founding father of the Virginia Natural History Society (VNHS). In the late 1980s, he conceived of the idea of a new journal devoted to the natural history of Virginia at a time when he felt that few natural history papers were being published in the *Virginia Journal of Science* and other scientific journals (Mitchell, 1993). He shared his idea with longtime friend and colleague Richard

Hoffman (1927–2012), Curator of Recent Invertebrates at the fledgling Virginia Museum of Natural History, who enthusiastically supported the idea and suggested the journal's name to honor John Banister, the first university-trained naturalist in Virginia. Joe and Richard were the founding coeditors of *Banisteria*, and, after much planning and discussions with similar-minded biologists/naturalists, including Barry Knisley, Michael Kosztarab, and Tom Wieboldt, they produced the first issue of *Banisteria* in November 1992 to coincide with the 300<sup>th</sup> anniversary of Banister's accidental death. Besides his own initial contributions, Joe helped write several articles for others that appeared in the inaugural issue of *Banisteria*. He contributed papers to most of the *Banisteria* issues published during the next quarter century, and remained a coeditor through 2007. The following year Joe was recognized as an Honorary Councilor of VNHS, a status he retained until his death.

Through 2019, Joe Mitchell and various coauthors published 62 papers in *Banisteria*, including 30 regular contributions, 30 shorter contributions (notes), and two historical papers. He had many more potential *Banisteria* manuscripts in mind or rough draft. Only Richard Hoffman's total contributions (83) exceed those of Joe for the most by any author. Joe also wrote five obituaries and seven book reviews for *Banisteria*. He also contributed to the Virginia Natural History Society in other significant ways. He played major roles in helping to plan and organize all three symposia sponsored or cosponsored by VNHS to date, including the Big Levels: Shenandoah Valley Sinkhole Ponds and St. Mary's River Symposium in October 1998 (lead organizer and coeditor of the proceedings published in *Banisteria* 13; see Mitchell et al., 1999), Richard Hoffman's 80<sup>th</sup> birthday symposium in September 2007 (cosponsored by VMNH and VNHS; Joe and I coedited Dr. Hoffman's Festschrift volume, which was published two years later by VMNH [Roble & Mitchell, 2009]), and the September 2009 VNHS symposium entitled "Historical Explorations into Virginia's Natural History" (several presentations were published in *Banisteria* 41; see McAvoy, 2013). The VNHS owes its existence to Joe's vision and his dedication over many years.

Joe had a strong interest in the history of natural history, especially as it related to herpetology or Virginia. He published papers concerning the contributions of Emmett Reid (E. R.) Dunn, Richard Hoffman, James Organ, and Frank Tobey, among others, to Virginia herpetology, and discussed the efforts of Leslie Burger in his *Reptiles of Virginia* book. In recent years, Joe coauthored several papers concerning the history of the journal *Copeia* and its namesake Edward Drinker (E. D.) Cope. He had plans to prepare several more historical papers. As of 2018, Joe was the editor



Joe and Wendy Mitchell at the Virginia Museum of Natural History, 1988 (photo courtesy of Mitchell family).



Joe Mitchell holding a neonate Corn Snake (*Pantherophis guttatus*), New Jersey Pine Barrens, September 28, 1999 (Robert Zappalorti photo).



Joe Mitchell and Kurt Buhlmann photographing a Many-lined Salamander (*Stereochilus marginatus*) during a Virginia Herpetological Society field survey, Cypress Swamp, Surry County, April 28, 1991 (Mike Hayslett photo).



Joe Mitchell with Copperhead (*Agkistrodon contortrix*), early 2000s (photo courtesy of Mitchell family).



Original members of the Executive Committee of the Virginia Natural History Society at their December 1993 board meeting at Hampden-Sydney College: left to right: Barry Knisley, Tom Rawinski, Joe Mitchell, Richard Hoffman, Anne Lund, Dick Neves, Michael Kosztarab (photo courtesy of Michael Kosztarab).



*Banisteria* coeditors Richard Hoffman (1992-1999), Joe Mitchell (1992-2007), and Steve Roble (2000-2019) at Dr. Hoffman's 80<sup>th</sup> birthday symposium, Virginia Museum of Natural History, September 22, 2007 (Arthur V. Evans photo).

of *Bibliotheca Herpetologica*, a publication of the International Society for the History and Bibliography of Herpetology.

Joe constantly encouraged others to publish their natural history observations, including student theses that were “gathering dust on bookshelves”, in journals such as *Banisteria*, but was disappointed that so few heeded his pleas. He uttered the phrase “If it ain’t published, it didn’t happen” on multiple occasions. Joe was a strong advocate for classical natural history and was not impressed by high-powered statistics or modelling. The emphasis of the early part of his career was directed toward gathering observations and data pertaining to the natural history of amphibians and reptiles, particularly the fauna of Virginia, but in the latter half he increasingly devoted more of his efforts toward the conservation of these organisms that he cared for and so deeply loved. However, learning more about their natural history always remained very important to him because he believed it was critical to species and habitat management and conservation.

Joe was a strong supporter of natural history museums and their collections. He believed in the value and importance of preserved voucher specimens as the best form of documentation for a variety of purposes, including geographic distribution records, studying reproductive cycles, food habits, morphological variation, and taxonomy and systematics. He often stressed the need to collect series of specimens, not just one individual per locality. Joe and his field crews conducted extensive pitfall trapping in Virginia, which yielded thousands of specimens of amphibians, reptiles, mammals, and invertebrates, and resulted in many papers by Joe and various coauthors. Other researchers have cited his insect specimens, especially beetles, in their papers (e.g., various papers by Richard Hoffman; also Harden, 2018). Joe’s donations of amphibians and reptiles include about 26,000 specimens to the National Museum of Natural History (Smithsonian Institution, Washington, D.C.), 6,000 to the Carnegie Museum of Natural History (Pittsburgh, PA), 2,700 to the Virginia Museum of Natural History (Martinsville, VA), and 1,475 to the North Carolina Museum of Natural Sciences (Raleigh, NC). He also rescued about a dozen orphaned collections from institutions that would have otherwise disposed of their specimens. Joe’s natural history collections will be used by researchers for many years to come. Some recent studies, such as that of Hughes et al. (2017) which concerned reproduction and growth of Southern Leopard Frogs in Virginia, relied in large part on specimens obtained during pitfall trapping by Joe and his colleagues, especially Kurt Buhlmann and Chris Pague. Joe was not especially thrilled to learn that some out of state researchers were studying “his” specimens in

the Carnegie collection, but he was resigned to the fact that he had too many unfinished projects of his own and would need another lifetime to gather all the natural history data he desired from his collections. Therefore, he accepted the reality that other herpetologists could learn and publish from their examination of those specimens.

Seemingly, Joe never met an amphibian or reptile that he didn’t want to measure, weigh, determine its reproductive status, examine for parasites and abnormalities, etc. He also collected many roadkills to obtain information on their diets, etc. Joe recorded voluminous amounts of data on Virginia’s amphibians and reptiles, perhaps never to be surpassed by anyone. Much of the data he obtained on reptiles through the early 1990s were summarized in his 1994 book on the state’s reptile fauna. During the past decade, Joe began to publish some of the amphibian data collected many years ago with Chris Pague, acknowledging that there was an ever decreasing chance that he would someday have the time and energy to prepare a book on Virginia’s amphibians. These papers include a detailed study of the comparative geographic distributions of the sibling species pair of gray treefrogs (*Hyla chrysoscelis* and *H. versicolor*) in the state, as well as the collective data gathered by Joe and Chris on clutch size for 21 species of Virginia frogs and toads.

Joe Mitchell was an early, longtime, and influential leader in the effort to conserve amphibians and reptiles in Virginia. In 1987, he and Chris Pague coauthored two papers on the conservation status of amphibians and reptiles in the *Virginia Journal of Science* (separate papers for each Class). They were written at a time when herpetological conservation was still a rather novel concept and much less embraced than it is today. Joe was chair of the VDGIF herpetology advisory committee for many years and edited the book chapter and wrote or coauthored most of the amphibian and reptile species accounts resulting from the 1989 symposium on endangered and threatened species in Virginia (Terwilliger, 1991). In collaboration with VDGIF “non-game” staff, Joe played a key role in developing state recovery plans for several endangered or threatened amphibians and reptiles, typically drafting the plan and serving as the lead author. He received an award certificate from VDGIF in 1993 for his efforts related to amphibian and reptile conservation in Virginia. Joe and colleague Kurt Buhlmann worked with the US Forest Service (George Washington National Forest [GWNF]) on the biology and conservation of a disjunct population of the state endangered Tiger Salamander in the Shenandoah Valley following its discovery in 1987 by Kurt and Richard Hoffman (Buhlmann & Hoffman, 1990). About a decade later, Don Church conducted an

intensive study of this population for his dissertation research at the University of Virginia (Church, 2004). Joe, Kurt, and Chris Pague conducted extensive surveys for the Cow Knob Salamander on GWNF lands in northwestern Virginia, as well as for the Peaks of Otter Salamander on the Jefferson National Forest and adjacent Blue Ridge Parkway lands. Joe and Kurt also worked with the National Park Service to survey for Bog Turtle populations along the Blue Ridge Parkway.

In the early 1990s, Joe took the lead on developing conservation agreements for the Cow Knob Salamander and Peaks of Otter Salamander between the US Fish and Wildlife Service, US Forest Service, and the National Park Service. These documents, which were signed in 1994 and 1996, respectively, were developed as an alternative to having both species added to the federal list of endangered and threatened species by the US Fish and Wildlife Service. Joe received an award from the US Forest Service in recognition of his efforts to prepare the Cow Knob Salamander agreement. Subsequently, Billy Flint of James Madison University has conducted numerous additional surveys for the Cow Knob Salamander, which have helped to better define its range. Likewise, Paul Sattler, Norm Reichenbach, and Jill Wicknick have studied the Peaks of Otter Salamander, especially its response to various timber harvesting practices. Joe collaborated with Jill and Carl Anthony on some of their research on this species.

Joe was the lead author (with seven others, including me) of a 1999 paper on the conservation status of the Appalachian herpetofauna. He also authored or coauthored papers concerning the impact of feral cats on wildlife, especially amphibians and reptiles, snake entanglement in mesh landscape netting, the value of restored wetlands to amphibians and reptiles, and the role of burrows as thermal refugia. He also compared the amphibian and reptile communities of burned versus unburned habitats, as well as changes in amphibian and small mammal communities following defoliation of their forest habitat by the larvae of exotic gypsy moths (*Lymantria dispar*). Joe contributed species accounts or chapters to a number of books edited by others, including 11 species accounts for Lannoo's (2005) book on the conservation status of all North American amphibians. The topics of his other book chapters included herpetological sampling methods, habitat fragmentation, ecology and management of riparian habitats for amphibians and reptiles, the importance of vernal pools to reptiles, birds, and mammals, the effect of sprawl on amphibians, reptiles, and other taxa with limited dispersal abilities, and frog and toad life histories.

During the past two decades, Joe was heavily involved with Partners in Amphibian and Reptile Conservation (PARC), a group formed in 1999 and

modeled after the successful Partners in Flight program for bird conservation. Joe coauthored habitat management guidelines for two of the five PARC regions in the US (Northeast, Southeast) and served as coeditor for similar publications for the other three regions (last one was published in 2016). These documents were written for managers of public and private land, private landowners, and other interested parties and were essentially "How to" manuals for providing and managing good habitat for amphibians and reptiles. Joe considered the PARC habitat management guidelines to be among his most important contributions to herpetology (Mitchell, 2019a). Joe and his coauthors of the Southeast guide were honored in 2007 by the Florida Chapter of The Wildlife Society. Joe regarded PARC as "the Marines of herp conservation." He was also involved with several turtle conservation groups, including the Turtle Survival Alliance, Gopher Tortoise Council and, since 1987, was a member of the International Union for Conservation of Nature's (IUCN) Tortoise and Freshwater Turtle Specialist Group. In August 2019, Joe posthumously received the Turtle Conservation Appreciation Award from the latter organization for his many contributions to turtle biology and conservation. He was also a member of two other IUCN specialist groups: Declining Amphibian Populations (since 1998) and Amphibians (since 2006). From 1994–2001, Joe was co-chair of the Appalachian Working Group of the Species Survival Commission's Declining Amphibian Populations Task Force.

Perhaps to a fault, Joe was overly ambitious at times, taking on new projects, whether in terms of field work or writing (e.g., books), that prevented him from finishing some other current task or project in a timely manner, if at all. This sometimes created undue stress on his health. Besides the Delmarva herpetology book with coauthor Roger Conant mentioned previously, Joe did not complete at least two other books to which he had devoted considerable time and energy. After his collaborator Chris Pague moved to Colorado in 1992, responsibility for their proposed "Amphibians and Reptiles of Virginia" book fell entirely upon Joe. To his credit, Joe succeeded in completing and publishing the reptile portion in 1994 as an excellent, stand-alone book, but he was never able to find the time and energy to produce a comparable manuscript on the amphibians. I have little doubt that Joe would have written that book, or perhaps a single book covering all amphibians and reptiles of Virginia, if he had been hired by VMNH in 1989. Also, perhaps unbeknownst to many, Joe and the late Andrew "Andy" Price (1951–2012; Mitchell & Hodges, 2012), a biologist for the Texas Parks and Wildlife Department, had a contract with Cornell University Press to produce the definitive "Natural

History of North America Snakes” book (not exact potential title) early in the 21<sup>st</sup> century. They researched and worked on the manuscript for at least five years but missed various deadlines for its submission. Ultimately, the press hired a new science editor who informed Joe that they were no longer interested in publishing the book. Joe and Andy had compiled between 1,000 and 2,000 references pertaining to the biology and natural history of North American snakes, including numerous obscure papers unearthed by Andy, but they made no further progress on its completion due to the lack of a publisher and Andy’s declining health and eventual death. A few years ago, Joe suggested that he might place the bibliography on-line (in searchable format) to make the fruits of their labor available to others, but to my knowledge that has not happened and I am not aware of any current plans to do so.

Joe was a lifetime member of several national/international herpetological societies, including The Herpetologists’ League (HL), American Society of Ichthyologists and Herpetologists (ASIH), and the Society for the Study of Amphibians and Reptiles (SSAR). He was proud of his long-term service to these and other professional herpetological societies and greatly valued the friendships he forged with numerous herpetologists over many decades. He considered the collective community of herpetologists as “my tribe” (Mitchell, 2019a). Joe made many friends through his attendance at their annual meetings and collaboration on research and book projects with others.

Joe attended dozens of national herpetology meetings and several World Congresses of Herpetology spanning more than four decades. He served on the board of The Herpetologists’ League for 20 years including as Secretary from 1986–1995 and President in 1998–1999. His service to SSAR included Geographic Distribution section editor for *Herpetological Review* (1975–1979). Since 2007, Joe had been the editor of the SSAR publication series *Herpetological Conservation* and was nearing completion of the next volume at the time of his death. He served on the Board of Governors for ASIH from 1996–2001. For the past 15 years, he thoroughly enjoyed being the society’s Herpetology Historian. In this role, he interviewed distinguished senior herpetologists about their lives and careers and prepared biographies for the “Historical Perspectives” section of *Copeia*. Perhaps the last publication during his lifetime was the sixth such biography that he authored or coauthored (Mitchell, 2019b). I suspect that he had interviewed several other senior herpetologists but had not yet finished or written their biographies. Joe also served on the editorial boards of the journals *Amphibian and Reptile Conservation*, *Herpetologica*, and *Herpetological Natural History*.

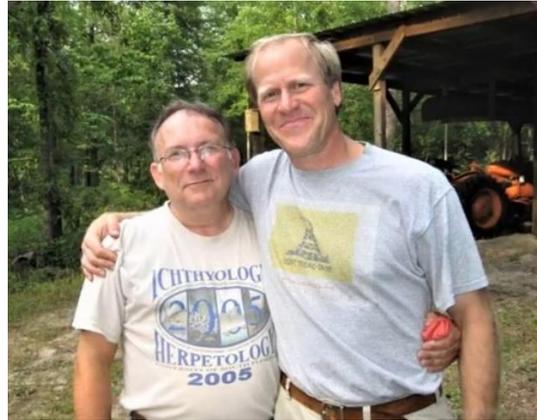
Joe Mitchell was a longtime friend and colleague that I had known for at least 35 years. I don’t recall when we first met, perhaps at the joint meeting of the Society for the Study of Amphibians and Reptiles (25<sup>th</sup> anniversary meeting) and The Herpetologists’ League in Raleigh, North Carolina, in August of 1982, but certainly no later than when Joe and Chris Pague visited the Section of Amphibians and Reptiles at the Carnegie Museum of Natural History (where I worked at the time) in Pittsburgh in late 1983 or early 1984. Joe was excited to learn via the late Jack McCoy (Carnegie herpetology curator) that I was moving to Richmond in June 1992 to succeed Chris as the Staff Zoologist for the Virginia Department of Conservation and Recreation’s Division of Natural Heritage.

Joe and I both had strong interests in traditional natural history and organismal biology and a close mutual friendship with Richard Hoffman (Joe much longer than me) of the Virginia Museum of Natural History, who was an inspiration to both of us because of his vast knowledge, high productivity, humility, and strong passion for Virginia natural history. From 2000–2007, Joe and I served as coeditors of *Banisteria* after I succeeded Richard in that role. We got off to a bit of a rocky start when Joe felt that my review of one of his papers was unduly harsh, but we got past that issue and enjoyed a good working relationship thereafter. When Joe moved to Florida in the fall of 2007, I became the sole editor of *Banisteria*. I very much appreciated the compliments that I received from both Joe and Richard on each new issue of *Banisteria* that I produced. Joe and I also coedited a Festschrift volume (2009) in honor of Dr. Hoffman. I became a better writer and editor through my interactions with Joe. Both he and Richard repeatedly encouraged others to publish their natural history data rather than let it gather dust in notebooks or theses, but too often to no avail. Joe was quite persistent and usually successful in getting authors to contribute manuscripts to the multi-authored books that he edited, including a volume entitled *Urban Herpetology* and the still to be published book on Arizona snakes.

Joe and I also shared a strong belief in the importance of voucher specimens and the value of natural history collections. Although we did not spend much time in the field together, I have fond memories of several late winter nocturnal surveys with Joe and others to observe and study breeding activity in the disjunct population of Tiger Salamanders in the Shenandoah Valley. Besides preparing Richard Hoffman’s obituary (different versions for *Banisteria* and *Catesbeiana*) in 2012, Joe and I only coauthored two papers together, but had recently discussed finally preparing a paper on the herpetofauna of a state natural area preserve that has languished for more than 20 years.



Joe Mitchell family, September 24, 2006: front row, left to right: Tanya Shewmake and daughter Allison; Joe Mitchell, Lisa Mitchell; back row: Stephen Shewmake, Justin Mitchell, Joshua Mitchell (photo courtesy of Mitchell family).



Joe Mitchell with longtime friend, colleague, and fellow herpetologist Kurt Buhlmann, whom Joe mentored early in his career, May 7, 2009 (photo courtesy of Kurt Buhlmann).



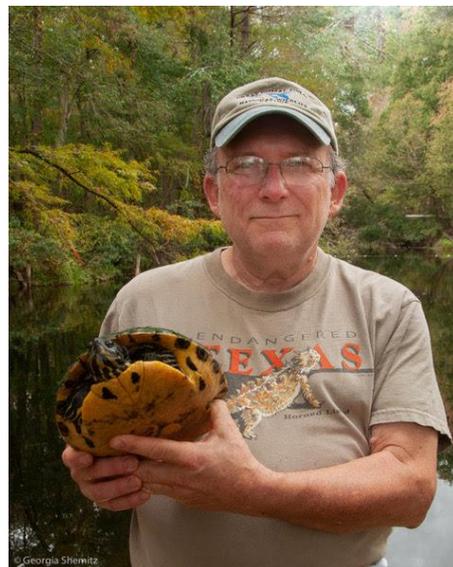
Mark Bailey, Kurt Buhlmann, Jeff Holmes, and Joe Mitchell, recipients of the Paul Moler (second from right) Herpetological Conservation Award, Florida Chapter, The Wildlife Society, April 2007 (photo courtesy of Susan Walls).



Joe Mitchell and wife Susan Walls at the Joint Meeting of Ichthyologists and Herpetologists, New Orleans, July 2006 (Ken Dodd photo).



Joe Mitchell and Whit Gibbons, longtime colleagues and coauthors of *Salamanders of the Southeast* (Kurt Buhlmann photo).



Joe Mitchell with Slider (*Trachemys scripta*), Santa Fe River, Florida, 2013 (Georgia Shemitz photo).

Since my arrival to Virginia more than 27 years ago, Joe and I had many discussions about herpetology and natural history in general, the status and future of *Banisteria* and the Virginia Natural History Society as well as the Virginia Herpetological Society and its journal *Catesbeiana* (for which I served as editor from 1998–2007), our mutual admiration of and friendship with Richard Hoffman, the ups and downs of Joe’s personal and professional life, etc. As noted by Dodd (2019), Joe could become quite animated when speaking about certain topics of great interest to him, but he was also very opinionated about other issues or ideas, strongly disagreeing with some colleagues or other researchers on occasion. This did not always endear him to some. From my perspective, Joe certainly “mellowed” during the last 15 or so years of his life, seemingly becoming more relaxed, friendly, and humble, and leading a less stressful life. I recall that he took some banjo lessons and was involved with a choral singing group, but I never asked if he continued with either for very long. He also took up his hobby of woodworking again, at which he was quite accomplished.

Joe lived in Richmond for most of his life, but moved to Florida in the fall of 2007 where his wife Susan Walls had recently relocated from Louisiana. Despite the move, Joe always felt that he was a Virginian/Richmonder. With each passing year, Joe had a less intimate knowledge of all things herpetological in Virginia, particularly new research projects conducted by others, and he rarely attended VHS meetings during the past decade. After his relocation, Joe soon learned that there were no empty niches for consulting herpetologists in Florida. As he freely admitted to friends and colleagues (and mentioned in his autobiography), he didn’t realize how much his identity was tied to Virginia. It was difficult for Joe to obtain contract jobs in some years during the past dozen or so, and in other years some of his field work was conducted far from his Florida residence, including North Carolina, Virginia, and more distant states. He drove cross country (as far as California) three times during the 2009 field season as part of a widespread survey of chytrid fungus prevalence in amphibians on various military bases. This resulted in considerable stress to Joe and he suffered a heart attack late that year, soon followed by triple bypass surgery. Somehow, Joe managed to get permission from his doctor to bring his personal camera into the operating room, where a member of the surgical team took two photos of his heart. He intended to post them on social media and his wall “... to prove that I sometimes have a heart,” but reconsidered because the images reminded him too much of the pain associated with the surgery (Mitchell, 2019a).

Joe eventually became affiliated with the Florida

Museum of Natural History in Gainesville, first as a volunteer, but then was later (2016) appointed a Research Associate of the museum. He edited one herpetologically-themed issue of the *Bulletin of Florida Museum of Natural History* in 2016. During his residency in Florida, Joe collaborated on turtle research projects with Jerry Johnston of Santa Fe College in Gainesville, resulting in more than 20 scientific papers and notes (see partial list in the bibliography below).

Since his move to Florida, Joe rarely visited Richmond except to visit family at least once a year. On several of those occasions, I had lunch with Joe and Barry Knisley, the latter also a longtime, strong supporter of the Virginia Natural History Society, including serving two terms as President more than a decade apart. Their relationship dates back to the early 1980s when Joe mentored Barry’s undergraduate student at Randolph-Macon College with lizard feeding experiments in Arizona and Virginia (McGovern et al., 1984, 1986). Once again, the current status and future of natural history and field biology were central themes of our discussions.

In his last few years, Joe enjoyed a semi-retired life on the six-acre property that he shared with his wife Susan and their dogs in rural North Florida. He was still actively writing scientific papers and editing. In 2019, he had also been subcontracted by a Jacksonville consulting firm to conduct herpetological surveys at several naval bases on the East Coast, including Fort Story in Virginia Beach, where his last field days in Virginia were spent.

At the time of his death, Joe had many more papers on Virginia herpetology planned but not finished or even started, of which I am aware of only a few. He had voluminous amounts of unpublished data, which will hopefully be archived for use by other researchers in the future. Despite his short stature (5’3”), Joe Mitchell was a giant in Virginia natural history. He held the torch for Virginia herpetology for many decades during a period when the study and appreciation of amphibians and reptiles were less popular than they are today; he was the “go to” person on all matters related to that subject. His contributions to Virginia herpetology will never be matched: publications, mentorship, field skills, getting the word “conservation” in the same sentence as “amphibians and reptiles,” etc. His vision and leadership in creating *Banisteria* and the Virginia Natural History Society were also significant feats.

Like many others, my immediate reaction to the news of Joe’s sudden death was one of shock and disbelief. His passing was difficult to accept and represents a great personal loss. He was an accomplished scientist, naturalist, conservationist, teacher, mentor, editor, colleague, and friend to many, including me. He left

many lasting contributions to the fields of herpetology and conservation in Virginia and beyond and firmly secured his place in the annals of Virginia natural history. He will be sorely missed by his family and his many friends inside of and beyond the herpetological community.

Joe is survived by his wife, Dr. Susan Walls of Fort White, Florida; four children, Tanya Shewmake with first wife, Ginny Meeks; Joshua, Justin, and Lisa Mitchell with second wife, Wendy Robertson; two grandchildren, Allison and James Shewmake; two brothers, Ron (Karen), Allen (Patti); sister, Susan Johnson; and numerous cousins, nieces, and nephews. He was preceded in death by his parents, Kathleen and Calvin Mitchell, and brother-in-law, Billy Johnson. A memorial service for Dr. Mitchell was held on August 3, 2019, in Richmond (Mechanicsville), and an outdoor celebration of his life and career followed on August 18, 2019, beside a spring-fed tributary to the Santa Fe River near High Springs, Florida. Charitable donations in Joe's memory may be made to the American Heart Association, Alzheimer's Foundation, the Amphibian and Reptile Conservancy or The Center for Biological Diversity. Dodd (2019) recently published another obituary for Dr. Mitchell that includes additional information about his life and career, as well as personal reflections from several colleagues.

#### Acknowledgments

I thank Kurt Buhlmann, Ken Dodd, Art Evans, Mike Hayslett, Michael Kosztarab, Lynda Richardson, Wendy Robertson, Rick Sanderson, Georgia Shemitz, Tanya Shewmake, Susan Walls, and Bob Zappalorti (and Joe Mitchell, years ago for other purposes) for contributing the photos included with this obituary. Steve Gotte (National Museum of Natural History), Stevie Kennedy-Gold (Carnegie Museum of Natural History), Jeff Beane (North Carolina Museum of Natural Sciences), and Haley Cartmell (Virginia Museum of Natural History) provided information on Joe Mitchell's herpetological collections and donations in their respective institutions. Kurt Buhlmann, Barry Knisley, Tom Pauley, and Susan Walls read an earlier draft of this obituary and provided helpful comments.

#### Literature Cited

- Buhlmann, K. A., & R. L. Hoffman. 1990. Geographic Distribution: *Ambystoma tigrinum tigrinum* (Eastern Tiger Salamander). *Herpetological Review* 21(2): 36.
- Church, D. R. 2004. Population ecology of *Ambystoma tigrinum* (Caudata, Ambystomatidae) and occupancy dynamics in an Appalachian pond-breeding amphibian assemblage. Ph. D. dissertation, University of Virginia, Charlottesville, VA.
- Dodd, C. K., Jr. 2019. Obituary: Joseph Calvin Mitchell (1948–2019): Natural historian, turtle enthusiast, Marine, Virginian. *Herpetological Review* 50(4): 889–893.
- Harden, C. W. 2018. Eight ground beetles (Coleoptera: Carabidae) new to Virginia, with additional records for West Virginia and Maryland. *Banisteria* 50: 15–20.
- Hughes, D. F., W. Meshaka, Jr., & P. R. Delis. 2017. Reproduction and growth of the Southern Leopard Frog, *Lithobates sphenoccephalus* (Cope, 1886), in Virginia: implications for seasonal shifts in response to global climate change. *Basic and Applied Herpetology* 31: 17–31.
- Lannoo, M. (ed.). 2005. *Amphibian Declines: The Conservation Status of United States Species*. University of California Press, Berkeley, CA. 1094 pp.
- McAvoy, T. 2013. Symposium summary. *Banisteria* 41: 4.
- McGovern, G. M., C. B. Knisley, & J. C. Mitchell. 1986. Prey selection experiments and predator-prey size relationships in eastern fence lizards, *Sceloporus undulatus*, from Virginia. *Virginia Journal of Science* 37: 9–15.
- McGovern, G. M., J. C. Mitchell, & C. B. Knisley. 1984. Field experiments on prey selection by the whiptail lizard, *Cnemidophorus inornatus*, in Arizona. *Journal of Herpetology* 18: 347–349.
- Mitchell, J. C. 1974a. The snakes of Virginia, Part I: Poisonous snakes and their look-alikes. *Virginia Wildlife* 35(2): 16–18, 28.
- Mitchell, J. C. 1974b. The snakes of Virginia, Part II: Harmless snakes that benefit man. *Virginia Wildlife* 35(4): 12–15.
- Mitchell, J. C. 1993. The origin of *Banisteria* and the Virginia Natural History Society. *Banisteria* 2: 26–27.
- Mitchell, J. C. 1994. *The Reptiles of Virginia*. Smithsonian Institution Press, Washington, DC. 352 pp.
- Mitchell, J. C. 1998. Obituary: Costello M. Craig. *Catesbeiana* 18(1): 12–14.

Mitchell, J. C. 2011. Obituary: Franklin J. Tobey (1919–2010). *Catesbeiana* 31(1): 32–39.

Mitchell, J. C. 2019a. Biographical sketch and bibliography of Joseph C. Mitchell. Smithsonian Herpetological Information Service No. 155. 39 pp. (Available at <https://repository.si.edu/bitstream/handle/10088/95348/2019.SHIS155.JosephC.Mitchell.pdf>)

Mitchell, J. C. 2019b. Historical perspectives: Victor Hobbs Hutchison. *Copeia* 107(2): 358–364.

Mitchell, J. C., & W. L. Hodges. 2012. In Memoriam: Andrew Hoyt Price (1951–2012) with reflections from colleagues and friends. *Herpetological Review* 43(3): 370–375.

Mitchell, J. C., D. Kirk, & D. M. Downey. 1999. Introduction to the symposium on the natural history of the Big Levels area: Shenandoah Valley sinkhole ponds and St. Mary's River. *Banisteria* 13: 5–9.

Mitchell, J. C., & C. A. Pague. 1986. Virginia's Amphibians and Reptiles: A Distributional Survey. *Herpetological Review* 17: 92. (book review)

Mitchell, J. C., & C. A. Pague. 1987. "Virginia's amphibians and reptiles": comments and corrections. *Herpetological Review* 18: 57, 59.

Roble, S. M., & J. C. Mitchell (eds.). 2009. A Lifetime of Contributions to Myriapodology and the Natural History of Virginia: A Festschrift in Honor of Richard L. Hoffman's 80<sup>th</sup> Birthday. Virginia Museum of Natural History Special Publication 16, Martinsville, VA. 458 pp.

Terwilliger, K. (coordinator). 1991. Virginia's Endangered Species: Proceedings of a Symposium. McDonald and Woodward Publishing Company, Blacksburg, VA. 672 pp.

Tobey, F. J. 1985. Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Survey, Purcellville, VA. 114 pp.

Steven M. Roble  
Editor, *Banisteria*

Staff Zoologist  
Virginia Department of Conservation and Recreation  
Division of Natural Heritage  
600 East Main Street  
Richmond, Virginia 23219

Partial List of Publications  
by Joseph C. Mitchell

Books and Similar Volumes

Mitchell, J. C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, DC. 352 pp.

Mitchell, J. C., & J. M. Anderson. 1994. Amphibians and Reptiles of Assateague and Chincoteague Islands. Special Publication No. 2, Virginia Museum of Natural History, Martinsville, VA. 120 pp.

Mitchell, J. C., & K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond, VA. 122 pp.

Mitchell, J. C. 2000. Amphibian Monitoring Methods & Field Guide. Smithsonian National Zoological Park, Conservation Research Center, Front Royal, VA. 56 pp.

Mitchell, J. C., R. E. Jung Brown, & B. Bartholomew (eds.). 2008. Urban Herpetology. Society for the Study of Amphibians and Reptiles, Herpetological Conservation, Volume 3. Salt Lake City, UT. 586 pp.

Roble, S. M., & J. C. Mitchell (eds.). 2009. A Lifetime of Contributions to Myriapodology and the Natural History of Virginia: A Festschrift in Honor of Richard L. Hoffman's 80<sup>th</sup> Birthday. Virginia Museum of Natural History Special Publication 16, Martinsville, VA. 458 pp.

Beane, J. C., A. L. Braswell, J. C. Mitchell, W. M. Palmer, & J. R. Harrison, III. 2010. Amphibians and Reptiles of the Carolinas and Virginia. 2<sup>nd</sup> Edition. University of North Carolina Press, Chapel Hill, NC. 274 pp.

Mitchell, J., & W. Gibbons. 2010. Salamanders of the Southeast. University of Georgia Press, Athens, GA. 324 pp.

Mitchell, J. C. (ed.). 2016-2017. Contributions from the Herpetology Conference including the All Florida Herpetological Event, Volume 2. Bulletin of the Florida Museum of Natural History 54(5). 164 pp.

Holycross, A. T., & J. C. Mitchell (eds.). 2020 (*in press*). Snakes of Arizona. Eco Press, Rodeo, NM.

## Popular Guides

Pinder, M. J., & J. C. Mitchell. 2001. A Guide to the Snakes of Virginia. Special Publication Number 2, Virginia Department of Game and Inland Fisheries, Richmond, VA. 32 pp.

Kleopfer, J. D., J. C. Mitchell, M. J. Pinder, & S. H. Watson. 2017. A Guide to the Snakes and Lizards of Virginia. Special Publication Number 6, Virginia, Department of Game and Inland Fisheries, Richmond, VA. 72 pp.

Kleopfer, J. D., J. C. Mitchell, P. W. Sattler, & S. H. Watson. 2020 (*in press*). A Guide to the Salamanders of Virginia. Special Publication, Virginia Department of Game and Inland Fisheries, Richmond, VA. 76 pp.

## Bibliographies

Mitchell, J. C. 1981. A bibliography of Virginia amphibians and reptiles. Smithsonian Herpetological Information Service 50: 1–51.

Mitchell, J. C. 2017. Bibliography of Virginia Herpetology. Virginia Herpetological Society. 305 pp. Available at <http://www.virginiaherpetologicalsociety.com/vhs2/bovh/index.html>

## Selected Papers

Mitchell, J. C. 1976. Notes on reproduction in *Storeria dekayi* and *Virginia striatula* from Virginia and North Carolina. Bulletin of the Maryland Herpetological Society 12(4): 133–135.

Mitchell, J. C. 1977. An instance of cannibalism in *Agkistrodon contortrix* (Serpentes: Viperidae). Bulletin of the Maryland Herpetological Society 13(2): 119–120.

Mitchell, J. C. 1977. Geographic variation of *Elaphe guttata* (Reptilia: Serpentes) in the Atlantic Coastal Plain. Copeia 1977(1): 33–41.

Mitchell, J. C. 1979. Ecology of southeastern Arizona whiptail lizards (*Cnemidophorus*: Teiidae): population densities, resource partitioning and niche overlap. Canadian Journal of Zoology 57: 1487–1499.

Mitchell, J. C. 1980. Notes on *Lampropeltis triangulum* (Serpentes) from northern Jalisco, Mexico. Southwestern Naturalist 25(2): 269.

Mitchell, J. C., & S. B. Hedges. 1980. *Ambystoma mabeei* Bishop (Caudata: Ambystomatidae): an addition to the salamander fauna of Virginia. Brimleyana 3: 119–121.

Mitchell, J. C. 1981. Notes on male combat in two Virginia snakes, *Agkistrodon contortrix* and *Elaphe obsoleta*. Catesbeiana 1(1): 7–9.

Mitchell, J. C. 1982. *Farancia erythrogramma*. Catalogue of American Amphibians and Reptiles 293: 1–2.

Mitchell, J. C. 1982. A checklist of amphibians and reptiles of Back Bay National Wildlife Refuge and False Cape State Park, Virginia Beach, Virginia. Catesbeiana 2(2): 13–15.

White, D. R., J. C. Mitchell, & W. S. Woolcott. 1982. Reproductive cycle and embryonic development of *Nerodia taxispilota* (Colubridae) at the northeastern edge of its range. Copeia 1982(3): 646–652.

Pague, C. A., J. C., Mitchell, & D. A. Merkle. 1983. *Ophisaurus ventralis* (Linnaeus): an addition to the lizard fauna of Virginia. Herpetological Review 14(2): 53.

Mitchell, J. C. 1984 Observations on the ecology and reproduction of the leopard lizard, (*Gambelia wislizenii*) in southeastern Arizona. Southwestern Naturalist 29(4): 509–511.

Mitchell, J. C., & W. H. Mitchell. 1984. Herpetological place names in Virginia. Catesbeiana 4(1): 7–11.

Mitchell, J. C., & G. R. Zug. 1984. Spermatogenic cycle of *Nerodia taxispilota* (Serpentes: Colubridae) in southcentral Virginia. Herpetologica 40(2): 200–204.

Mitchell, J. C. 1984 Observations on the ecology and reproduction of the leopard lizard, (*Gambelia wislizenii*) in southeastern Arizona. Southwestern Naturalist 29(4): 509–511.

Mitchell, J. C., & C. A. Pague. 1984. Reptiles and amphibians of far southwestern Virginia: Report on a biogeographical and ecological survey. Catesbeiana 4(2): 12–17.

Mitchell, J. C. 1985. Variation in the male reproductive cycle in a population of painted turtles, *Chrysemys picta*, in Virginia. Herpetologica 41(1): 45–51.

Mitchell, J. C. 1985. Variation in the male reproductive

- cycle in a population of stinkpot turtles, *Sternotherus odoratus*, in Virginia. *Copeia* 1985(1): 50–56.
- Mitchell, J. C. 1985. Female reproductive cycle and life history attributes in a Virginia population of painted turtles, *Chrysemys picta*. *Journal of Herpetology* 19(2): 218–226.
- Mitchell, J. C., & W. S. Woolcott. 1985. Observations on the microdistribution, diet and predator-prey size relationship in the salamander *Plethodon cinereus* from the Virginia Piedmont. *Virginia Journal of Science* 36(4): 281–288.
- Mitchell, J. C. 1986. Cannibalism in reptiles: A worldwide review. *Society for the Study of Amphibians and Reptiles, Herpetological Circulars* 15: 1–37.
- Mitchell, J. C. 1986. Life history patterns in a central Virginia anuran community. *Virginia Journal of Science* 37(4): 262–271.
- Mitchell, J. C., & J. A. Taylor 1986. Predator-prey size relationships in a North Carolina population of *Plethodon jordani* (Caudata: Plethodontidae). *Journal of Herpetology* 120(4): 562–566.
- Pague, C. A., & J. C. Mitchell. 1987. The status of amphibians in Virginia. *Virginia Journal of Science* 38(4): 304–318.
- Mitchell, J. C., & C. A. Pague. 1987. A review of reptiles of special concern in Virginia. *Virginia Journal of Science* 38(4): 319–328.
- Buhlmann, K. A., C. A. Pague, J. C. Mitchell, & R. B. Glasgow. 1988. Forestry operations and terrestrial salamanders: techniques in a study of the Cow Knob Salamander, *Plethodon punctatus*. Pp. 38–44 *In* R. C. Szaro, K. E. Severson, & D. R. Patton (eds.), *Proceedings of the Symposium, Management of Amphibians, Reptiles, and Small Mammals in North America*. USDA Forest Service, General Technical Report RM-166. 458 pp.
- Mitchell, J. C. 1988. Population ecology and life histories of the freshwater turtles *Chrysemys picta* and *Sternotherus odoratus* in an urban lake. *Herpetological Monographs* 2: 40–61.
- Conant, R., J. C. Mitchell, & C. A. Pague. 1990. Herpetofauna of the Virginia Barrier Islands. *Virginia Journal of Science* 41(4): 364–380.
- Mitchell, J. C., & C. A. Pague. 1990. Body size, reproductive variation, and growth in the slider turtle at the northeastern edge of its range. Pp. 146–151 *In* J. W. Gibbons (ed.), *Life History and Ecology of the Slider Turtle*. Smithsonian Institution Press, Washington, DC. 368 pp.
- Mitchell, J. C. 1991. Amphibians and reptiles. Pp. 411–476. *In* K. Terwilliger (coordinator), *Virginia's Endangered Species: Proceedings of a Symposium*. McDonald and Woodward Publishing Company, Blacksburg, VA. 672 pp.
- Mitchell, J. C., & C. A. Pague. 1991. Ecology of freshwater turtles in Back Bay, Virginia. Pp. 183–187 *In* H. G. Marshall & M. D. Norman (eds.), *Proceedings of the Back Bay Ecological Symposium*. Old Dominion University, Norfolk, VA. 305 pp.
- Mitchell, J. C., & R. A. Beck. 1992. Free-ranging domestic cat predation on native vertebrates in rural and urban Virginia. *Virginia Journal of Science* 43(1B): 197–207.
- Mitchell, J. C., S. Y. Erdle, & J. F. Pagels. 1993. Evaluation of capture techniques for amphibian, reptile, and small mammal communities in saturated forested wetlands. *Wetlands* 13(2): 130–136.
- Mitchell, J. C., & J. D. Groves. 1993. Intraspecific oophagy in reptiles. *Herpetological Review* 24(4): 126–130.
- Buhlmann, K. A., J. C. Mitchell, & C. A. Pague. 1994. Amphibian and small mammal abundance and diversity in saturated forested wetlands and adjacent uplands of southeastern Virginia. Pp. 1–7 *In* S. D. Eckles, A. Jennings, A. Spingarn, & C. Wienhold (eds.), *Proceedings of a Workshop on Saturated Forested Wetlands in the Mid-Atlantic Region: The State of the Science*. U.S. Fish and Wildlife Service, Annapolis, MD. 44 pp.
- Mitchell, J. C., S. Y. Erdle, & J. F. Pagels. 1994. The effect of short-term sampling on descriptions of terrestrial vertebrate communities in saturated forested wetlands, and comments on estimating wetland value. Pp. 24–28 *In* S. D. Eckles, A. Jennings, A. Spingarn, & C. Wienhold (eds.), *Proceedings of a Workshop on Saturated Forested Wetlands in the Mid-Atlantic Region: The State of the Science*. U.S. Fish and Wildlife Service, Annapolis, MD. 44 pp.
- Shively, S. H., & J. C. Mitchell. 1994. Male combat in

- copperheads (*Agkistrodon contortrix*) from northern Virginia. *Banisteria* 3: 29–30.
- Mitchell, J. C. 1995. Amphibians and reptiles. Pp. 137–143 *In* K. Terwilliger & J. R. Tate (coordinators), *A Guide to Endangered and Threatened Species in Virginia*. McDonald & Woodward Publishing Co., Blacksburg, VA. 230 pp. (Abridged version of Mitchell, 1991).
- Mitchell, J. C., & M. C. Odom. 1995. Record clutch size for *Chelydra serpentina* (Testudines: Chelydridae) in Virginia. *Brimleyana* 6: 73–75.
- Mitchell, J. C., J. A. Wicknick, & C. D. Anthony. 1996. Effects of timber harvesting practices on Peaks of Otter Salamander (*Plethodon hubrichti*) populations. *Amphibian and Reptile Conservation* 1(1): 15–19.
- Hoffman, R. L., & J. C. Mitchell. 1996. Records of anurans from Greensville County, Virginia. *Banisteria* 8: 29–36.
- Mitchell, J. C., K. A. Buhlmann, & R. L. Hoffman. 1996. Predation of Marbled Salamander (*Ambystoma opacum* [Gravenhorst]) eggs by the milliped *Uroblaniulus jerseyi* (Causey). *Banisteria* 8: 55–56.
- Mitchell, J. C., & M. Fies. 1996. *Agkistrodon contortrix mokasen* (Northern Copperhead). Bicephalism. *Herpetological Review* 27(4): 202–203.
- Mitchell, J. C., & C. T. W. Georgel. 1996. Injury of a Northern Watersnake (*Nerodia sipedon sipedon*) in a mountain stream during severe flooding. *Banisteria* 7: 51–52.
- Buhlmann, K. A., J. C. Mitchell, & M. G. Rollins. 1997. New approaches for the conservation of bog turtles (*Clemmys muhlenbergii*) in Virginia. Pp. 359–363 *In* J. Van Abbaba & M. W. Klemens (eds.), *Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles - An International Conference*. New York Turtle and Tortoise Society, NY. 493 pp.
- Mitchell, J. C., S. C. Rinehart, J. F. Pagels, K. A. Buhlmann, & C. A. Pague. 1997. Factors influencing amphibian and small mammal assemblages in central Appalachian forests. *Forest Ecology and Management* 96(1–2): 65–76.
- Mitchell, J. C. 1997. Amphibians and reptiles of Virginia. Pp. 257–260 *In* D. W. Johnston (compiler), *A Birder's Guide to Virginia*. American Birding Association, Colorado Springs, CO. 280 pp.
- Mitchell, J. C., & S. M. Roble. 1998. Annotated checklist of the amphibians and reptiles of Fort A.P. Hill, Virginia. *Banisteria* 11: 19–32.
- Mitchell, J. C., S. Y. Erdle, & J. F. Pagels. 1998. Notes on the ecology and distribution of some amphibians and reptiles in southeastern Virginia. *Banisteria* 11: 41–46.
- Mitchell, J. C. 1999. Checklist and keys to the amphibians and reptiles of the Eastern Shore of Virginia. *Catesbeiana* 19(1): 3–18.
- Mitchell, J. C., T. K. Pauley, D. I. Withers, P. V. Cupp, A. L. Braswell, B. Miller, S. M. Roble, & C. S. Hobson. 1999. Conservation status of the southern Appalachian herpetofauna. *Virginia Journal of Science* 50(1): 13–36.
- Buhlmann, K. A., J. C. Mitchell, & L. Smith. 1999. Descriptive ecology of the Shenandoah Valley sinkhole pond system in Virginia. *Banisteria* 13: 23–51.
- Mitchell, J. C., & K. A. Buhlmann. 1999. Amphibians and reptiles of the Shenandoah Valley sinkhole pond system in Virginia. *Banisteria* 13: 129–142.
- Kirk, D., & J. C. Mitchell. 1999. Streamside salamanders in an acidic Blue Ridge Mountain stream: historical comparisons and relative abundance. *Banisteria* 13: 201–207.
- Carter, S. L., C. A. Haas, & J. C. Mitchell. 1999. Home range and habitat selection of bog turtles in southwestern Virginia. *Journal of Wildlife Management* 63(3): 853–860.
- Carter, S. L., C. A. Haas, & J. C. Mitchell. 2000. Movements and activity of bog turtles (*Clemmys muhlenbergii*) in southwestern Virginia. *Journal of Herpetology* 34(1): 75–80.
- Buhlmann, K. A., & J. C. Mitchell. 2000. Age of adult eastern tiger salamanders (*Ambystoma tigrinum tigrinum*) in a Virginia sinkhole pond complex: implications for conservation. *Journal of the Elisha Mitchell Scientific Society* 116(3): 239–244.
- Mitchell, J. C. 2000. Observations on amphibians and reptiles in burned and unburned forests on the upper Coastal Plain of Virginia. *Virginia Journal of Science* 51(3): 199–203.
- Mitchell, J. C. 2000. Mass mortality of red-spotted newts

- (*Notophthalmus viridescens viridescens* Rafinesque) on a central Virginia road. *Banisteria* 15: 44–46.
- McDiarmid, R. W., & J. C. Mitchell. 2000. Diversity and distribution of amphibians and reptiles. Pp. 15–69 *In* D. W. Sparling, G. Linder, & C. A. Bishop (eds.), *Ecotoxicology of Amphibians and Reptiles*. Society of Environmental Toxicology and Chemistry, SETAC Press, Pensacola, FL. 877 pp.
- Mitchell, J. C., A. S. Bellows, & C. T. W. Geogel. 2000. Notes on amphibian assemblages in riparian and upland habitats on Fort A.P. Hill, Virginia. *Banisteria* 16: 22–25.
- Mitchell, J. C. 2000. Amphibian and reptile diversity of a threatened natural area in central Virginia. *Banisteria* 16: 25–28.
- Mitchell, J. C., C. A. Pague, & D. J. Schwab. 2000. Herpetofauna of the Great Dismal Swamp. Pp. 155–174 *In* R. K. Rose (ed.), *Natural History of the Great Dismal Swamp: Proceedings of the Third Dismal Swamp Symposium*. Old Dominion University, Norfolk, VA. 301 pp.
- Pauley, T. K., J. C. Mitchell, R. R. Buech, & J. J. Moriarty. 2000. Ecology and management of riparian habitats for amphibians and reptiles. Pp. 169–192 *In* E. S. Verry, J. W. Hornbeck, & C. A. Dolloff (eds.), *Riparian Management in Forests of the Continental Eastern United States*. Lewis Publishers, Boca Raton, FL. 402 pp.
- Mitchell, J. C. 2002. An overview of amphibian and reptile assemblages on Virginia's Eastern Shore, with comments on conservation. *Banisteria* 20: 31–45.
- Church, S. A., J. M. Kraus, J. C. Mitchell, D. R. Church, & D. R. Taylor. 2003. Evidence for multiple Pleistocene refugia in the postglacial expansion of the eastern tiger salamander, *Ambystoma tigrinum tigrinum*. *Evolution* 57(2): 372–383.
- Glesenkamp, L. L., G. R. Zug, & J. C. Mitchell. 2003. Reproductive cycle of male snapping turtles (*Chelydra serpentina*) in southeastern Virginia. *Chelonian Conservation and Biology* 4(3): 697–700.
- Byers, D. L., & J. C. Mitchell. 2005. Sprawl and species with limited dispersal abilities. Pp. 157–180 *In* L. A. Johnson & M. W. Klemens (eds.), *Nature in Fragments: The Legacy of Sprawl*. Columbia University Press, New York. 386 pp.
- Carter, S. L., B. D. Horne, D. W. Herman, D. K. Nichols, C. A. Haas, & J. C. Mitchell. 2005. Bacterial pneumonia in free-ranging bog turtles, *Glyptemys muhlenbergii*, in North Carolina and Virginia. *Journal of the North Carolina Academy of Science* 121(4): 170–173.
- Mitchell, J. C. 2006. Distributional status of the Smooth Greensnake (*Opheodrys vernalis*) in the southern Appalachians. *Banisteria* 28: 37–43.
- Mitchell, J. C., J. D. Gibson, D. Yeatts, & C. R. Yeatts. 2006. Observations on snake entanglement and mortality in plastic and horticultural netting in Virginia. *Catesbeiana* 26(2): 64–69.
- Mitchell, J. C., J. D. Groves, & S. C. Walls. 2006. Keratophagy in reptiles: review, hypotheses, and recommendations. *South American Journal of Herpetology* 1(1): 42–53.
- Gaul, R. W., Jr., & J. C. Mitchell. 2007. The herpetofauna of Dare County, North Carolina: history, natural history, and biogeography. *Journal of the North Carolina Academy of Science* 123(2): 65–109.
- Mitchell, J. C., C. Raitel, & P. Paton. 2007. The importance of vernal pools to reptiles, birds, and mammals. Pp. 169–190 *In* A. J. K. Calhoun & P. G. DeMaynadier (eds.), *Science and Conservation of Vernal Pools in Northeastern North America*. CRC Press, Boca Raton, FL. 363 pp.
- Otto, C. R., J. W. Snodgrass, D. C. Forester, J. C. Mitchell, & R. W. Miller. 2007. Climatic variation and the distribution of an amphibian polyploid complex. *Journal of Animal Ecology* 76: 1053–1061.
- Rothermel, B. B., S. C. Walls, J. C. Mitchell, C. K. Dodd, Jr., L. Irwin, D. E. Green, V. Vazquez, J. W. Petranka, & D. J. Stevenson. 2008. Widespread occurrence of the amphibian chytrid fungus (*Batrachochytrium dendrobatidis*) in the southeastern United States. *Journal of Aquatic Diseases* 82: 3–18.
- Zappalorti, R. T., & J. C. Mitchell. 2008. Snake use of urban habitats in the New Jersey Pine Barrens. Pp. 355–359 *In* J. C. Mitchell, R. E. Jung Brown, & B. Bartholomew (eds.), *Urban Herpetology*. Society for the Study of Amphibians and Reptiles, Herpetological Conservation Vol. 3, Salt Lake City, UT. 586 pp.
- Vonesh, J. R., J. C. Mitchell, K. Howell, & A. Crawford. 2010. Rapid assessments of amphibian diversity.

- Pp. 263–280 In C. K. Dodd (*ed.*), *Amphibian Ecology and Conservation: A Handbook of Techniques*. Oxford University Press, London. 556 pp.
- Lannoo, M. J., C. Peterson, R. E. Lovich, P. Nanjappa, C. Phillips, J. C. Mitchell, & I. Macallister. 2011. Do frogs get their kicks on Route 66? Continental U.S. transect reveals spatial and temporal patterns of *Batrachochytrium dendrobatidis* infection. Public Library of Science, *Biology* 6(7), 9 pp. [www.plosone.org/e22211](http://www.plosone.org/e22211).
- Mitchell, J. C. 2012. Amphibians and reptiles of the Eastern Shore of Virginia National Wildlife Refuge and Fisherman Island National Wildlife Refuge. *Banisteria* 39: 21–33.
- Mitchell, J. C. 2013. Body size and diet of *Amphiuma means* (Caudata: Amphiumidae) from southeastern Virginia. *Journal of the North Carolina Academy of Science* 129(2): 66–68.
- Mitchell, J. C., & S. C. Walls. 2013. Nest site selection by Diamond-backed Terrapins (*Malaclemys terrapin*) on Fisherman Island, Virginia. *Chelonian Conservation and Biology* 12(2): 305–308.
- Mitchell, J. C., & C. A. Pague. 2011 [2013]. Advertisement call and distribution of the treefrogs *Hyla chrysoscelis* and *Hyla versicolor* in Virginia. *Virginia Journal of Science* 62(4): 139–148.
- Pike, D. A., & J. C. Mitchell. 2013. Burrow-dwelling ecosystem engineers provide thermal refugia throughout the landscape. *Animal Conservation* 16(6): 694–703.
- Mitchell, J. C. 2014. Natural history of an introduced population of Squirrel Treefrogs (*Hyla squirella*) on the Delmarva Peninsula. *Journal of the North Carolina Academy of Science* 130(1): 6–10.
- Norman, M. D. & J. C. Mitchell. 2014. Freshwater turtles in the Blackwater River drainage in southeastern Virginia. *Banisteria* 43: 70–78.
- Mitchell, J. C. 2014. Amphibian and reptile diversity in hardwood forest and old field habitats in the central Virginia Piedmont. *Banisteria* 43: 79–88.
- Mitchell, J. C., & C. A. Pague. 2014. Filling gaps in life history data: clutch size for 21 species of North American anurans. *Herpetological Conservation and Biology* 9(3): 495–501.
- Wimsatt, J., S. H. Feldman, M. Heffron, M. Hammond, M. P. Roth Ruehling, K. L. Grayson, & J. C. Mitchell. 2014. Detection of pathogenic *Batrachochytrium dendrobatidis* using water filtration, animal and bait testing. *Zoo Biology* 33(6): 577–585.
- Mitchell, J. C. 2015. Amphibian and small mammal assemblages in a northern Virginia forest before and after defoliation by gypsy moths (*Lymantria dispar*). *Virginia Journal of Science* 66(3–4): 1–9.
- Mitchell, J. C. 2016. Restored wetlands in mid-Atlantic agricultural landscapes enhance species richness of amphibian assemblages. *Journal of Fish and Wildlife Management* 7(2): 790–798.
- Mitchell, J. C., & C. A. Pague. 2016. Herpetofaunal and small mammal assemblages along a terrestrial moisture gradient in northern Virginia. *Banisteria* 46: 3–11.
- Nickerson, M. A., A. L. Pitt, J. J. Tavano, K. A. Hecht, & J. C. Mitchell. 2017. Forest removal: a major factor in the decline of hellbender populations. *Bulletin of the Florida Museum of Natural History* 54(10): 147–164.
- Mitchell, J. C. 2018. *Masticophis taeniatus* (Striped Whipsnake). Entrapment and mortality. *Herpetological Review* 49(2): 346–347.
- Mitchell, J. C. 2018. Salientia life histories. *Encyclopedia of Animal Cognition and Behavior*. Pp. 1–7 in J. Vonk & T. K. Shackelford (eds.), *Encyclopedia of Animal Cognition and Behavior*. Springer International Publishing, New York.
- Jacobsen, C. D., D. J. Brown, W. D. Flint, T. K. Pauley, K. A. Buhlmann, & J. C. Mitchell. 2020. Vulnerability of high-elevation endemic salamanders to climate change: A case study with the Cow Knob Salamander (*Plethodon punctatus*). *Global Ecology and Conservation* 21 (2020) e00883.

#### Florida Turtles

Johnston, G. R., E. Suarez, J. C. Mitchell, G. A. Shemitz, P. L. Butt, & M. W. Kaunert. 2012. Population ecology of the snapping turtle (*Chelydra serpentina osceola*) in a northern Florida river. *Bulletin of the Florida Museum of Natural History* 51(4): 243–256.

Johnston, G. R., E. Suarez, & J. C. Mitchell. 2015. Seed dispersal by freshwater turtles in a northern Florida river. *Florida Scientist* 78(1): 57–62.

Johnston, G. R., T. M. Thomas, E. Suarez, A. Lau, & J. C. Mitchell. 2015. Population structure and body size in a Suwannee Alligator Snapping Turtle (*Macrochelys suwanniensis*) population in northern Florida. *Chelonian Conservation and Biology* 14(1): 73–81.

Johnston, G. R., J. C. Mitchell, E. Suarez, P. L. Butt, G. A. Shemitz, T. Morris, & R. L. Knight. 2016. The Santa Fe River in northern Florida: effect of spatial heterogeneity of habitats on turtle populations. *Bulletin of the Florida Museum of Natural History* 54(5): 69–103.

Johnston, G. R., J. C. Mitchell, E. Suarez, & T. Thomas. 2017. *Pseudemys suwanniensis* (Suwannee Cooter). Long distance movement and homing. *Herpetological Review* 48(3): 623–624.

Johnston, G. R., J. C. Mitchell, & E. Muncher. 2018. *Pseudemys nelsoni* (Florida Red-bellied Turtle). Long distance movement. *Herpetological Review* 49(4): 732–734.

Johnston, G. R., J. C. Mitchell, G. A. Shemitz, P. L. Butt, & J. M. Adler. 2018. Origin and structure of a large aggregation of Suwannee Cooters (*Pseudemys concinna suwanniensis*) in a Florida spring. *Chelonian Conservation and Biology* 17(1): 54–62.

#### PARC Habitat Management Guidelines

Bailey M., J. Hughes, K. A. Buhlmann, & J. C. Mitchell. 2006. Habitat Management Guidelines for Amphibians and Reptiles in the Southeastern United States. *Partners in Amphibian and Reptile Conservation*, Technical Publication HMG-2, Montgomery, AL. 84 pp.

Mitchell, J. C., A. Breisch, & K. A. Buhlmann. 2006. Habitat Management Guidelines for Amphibians and Reptiles in the Northeastern United States. *Partners in Amphibian and Reptile Conservation*, Technical Publication HMG-3, Montgomery, AL. 106 pp.

#### Insects

Anderson, J. M., J. C. Mitchell, A. A. Hall, & R. L. Hoffman. 1995. Carabid beetles (Coleoptera: Carabidae) of Quantico Marine Corps Base, Virginia. *Banisteria* 6: 3–16.

Stine, K. J., J. C. Mitchell, E. P. Smith, & J. L. Waldon. 2003. Trophic level distribution of ephemeral pool

insects: uniformity among pools. *Journal of Freshwater Ecology* 18(4): 549–556.

Hoffman, R. L., J. C. Mitchell, & S. C. Kirby. 2012. Geographic distribution, habitat preference, and seasonal activity patterns of two species of carrion beetles (Silphidae) in central Virginia. *Banisteria* 40: 60–64.

#### Fish

Mitchell, J. C., K. A. Buhlmann, & M. D. Norman. 1997. Freshwater fishes of an isolated, interdunal freshwater ecosystem in northern Virginia Beach, Virginia. *Banisteria* 9: 57–60.

#### Mammals

Pagels, J. F., S. Y. Erdle, K. L. Uthus, & J. C. Mitchell. 1992. Small mammal diversity in hardwood forest and clearcut habitats in the Virginia Piedmont. *Virginia Journal of Science* 43(1B): 171–176.

Bellows, A. S., J. F. Pagels, & J. C. Mitchell. 1999. First record for the Least Weasel, *Mustela nivalis* (Carnivora: Mustelidae), from the Coastal Plain of Virginia. *Northeastern Naturalist* 6(3): 238–240.

Bellows, A. S., J. F. Pagels, & J. C. Mitchell. 1999. Small mammal assemblages on Fort A.P. Hill, Virginia: habitat associations and patterns of capture success. *Banisteria* 14: 3–15.

Bellows, A. S., & J. C. Mitchell. 2000. Small mammal assemblages in riparian and upland habitats on the upper Coastal Plain of Virginia. *Virginia Journal of Science* 51(3): 171–186.

Bellows, A. S., J. F. Pagels, & J. C. Mitchell. 2001. Plant community composition and small mammal communities in old fields on Virginia's Coastal Plain. *Journal of the Elisha Mitchell Scientific Society* 117(2): 101–112.

Bellows, A. S., J. F. Pagels, & J. C. Mitchell. 2001. Macrohabitat and microhabitat affinities of small mammals in a fragmented landscape. *American Midland Naturalist* 142(2): 345–360.

Bellows, A. S., J. C. Mitchell, J. F. Pagels, & H. N. Mansfield. 2001. Mammals of Fort A.P. Hill, Virginia and vicinity. *Virginia Journal of Science* 52(3): 163–226.

Bellows, A. S., & J. C. Mitchell. 2002. Summer records of the Hoary Bat, *Lasiurus cinereus* (Chiroptera: Vespertilionidae), in the Coastal Plain of Virginia. *Journal of the North Carolina Academy of Science* 188(1): 54–56.

Bellows, A. S., & J. C. Mitchell. 2002. A baseline assessment of furbearers on the upper Coastal Plain of Virginia. *Virginia Journal of Science* 53(4): 181–189.

Pagels, J. F., A. S. Bellows, & J. C. Mitchell. 2003. Keys to the mammals and mammal skulls of the northern Coastal Plain of Virginia. *Virginia Journal of Science* 54(1): 3–26.

Bellows, A. S., & J. C. Mitchell. 2018. Habitat use by bats on the upper Coastal Plain of Virginia. *Virginia Journal of Science* 68(3–4). doi: 10.25778/ZYS5-H398

#### Phenology

Mitchell, J. C. 1976. VaHS Phenology Project, I: A plea. *Virginia Herpetological Society Bulletin* 81: 4–6.

Mitchell, J. C. 1978. VaHS phenology project II: Concepts and uses. *Virginia Herpetological Society Bulletin* 87: 1–3.

Mitchell, J. C. 1979. The concept of phenology and its application to the study of reptile and amphibian life histories. *Herpetological Review* 10(2): 51–54.

Pague, C. A., & J. C. Mitchell. 1983. Phenology and its applications in captive reptile propagation and management. Pp.12–40 *In* D. L. Marcellini (ed.), *Proceedings of the 6th Reptile Symposium on Captive Propagation and Husbandry*. Zoological Consortium Inc., Thurmont, MD.

Mitchell, J. C. 2012. Climate data and seasonality. Pp. 52–53 *In* R. W. McDiarmid, M. S. Foster, C. Guyer, J. W. Gibbons, & N. Chernoff (eds.), *Reptile Biodiversity: Standard Methods for Inventory and Monitoring*. University of California Press, Berkeley, CA. 412 pp.

#### Popular Articles (earliest)

Mitchell, J. C. 1974. The snakes of Virginia, Part I: Poisonous snakes and their look-alikes. *Virginia Wildlife* 35(2): 16–18, 28.

Mitchell, J. C. 1974. The snakes of Virginia, Part II: Harmless snakes that benefit man. *Virginia Wildlife* 35(4): 12–15.

Mitchell, J. C. 1975. The frogs and toads of Virginia. *Virginia Wildlife* 36(4): 13–15, 24, 27.

Mitchell, J. C. 1976. The turtles of Virginia. *Virginia Wildlife* 37(6): 17–21.

Mitchell, J. C. 1977. Salamanders in Virginia. *Virginia Wildlife* 38(6): 16–19.

Mitchell, J. C. 1977. The lizards of Virginia. *Virginia Wildlife* 38(8): 15–16, 40.

Mitchell, J. C. 1980. Viper's brood, a guide to identifying some of Virginia's juvenile snakes. *Virginia Wildlife* 41(9): 8–10.

Mitchell, J. C., & W. H. Martin, III. 1981. Where the snakes are. *Virginia Wildlife* 42(6): 8–9.

#### Nepal

Dinerstein, E., G. R. Zug, & J. C. Mitchell. 1988. Notes on the biology of *Melanochelys* (Reptilia, Testudinata, Emydidae) in Nepal. *Journal of the Bombay Natural History Society* (1987) 84(3): 687–688.

Mitchell, J. C., & G. R. Zug. 1995. Keys to the known amphibians and reptiles of the Royal Chitwan National Park, Nepal. *Smithsonian Herpetological Information Service* 106: 1–15.

Zug, G. R., & J. C. Mitchell. 1995. Amphibians and reptiles of the Royal Chitwan National Park, Nepal. *Asiatic Herpetological Research* 6: 172–180.

Mitchell, J. C., & A. G. J. Rhodin. 1996. Observations on the natural history and exploitation of the turtles of Nepal, with life history notes on *Melanochelys trijuga*. *Chelonian Conservation and Biology* 2(1): 66–72.

#### Historical/Biographical Papers

Mitchell, J. C. 1990. Contributions to the history of Virginia herpetology I: John B. Lewis' "List of amphibians observed in Amelia, Brunswick, and Norfolk Counties." *Catesbeiana* 10(1): 3–9.

- Mitchell, J. C. 1990. Contributions to the history of Virginia herpetology II: John B. Lewis' "List of reptiles observed in Amelia, Brunswick, and Norfolk Counties." *Catesbeiana* 10(2): 36–42.
- Mitchell, J. C. 1991. Contributions to the history of Virginia herpetology III. John B. Lewis' "Amphibia of the Seward Forest and Vicinity." *Catesbeiana* 11(1): 3–9.
- Hoffman, R. L., & J. C. Mitchell. 1994. Paul R. Burch's herpetological collection at Radford College, Virginia: A valuable resource lost. *Catesbeiana* 14(1): 3–12.
- Mitchell, J. C., & M. Kosztarab. 1998. Ellison M. Smyth, Jr. (1863–1941), founder of the Department of Biology at Virginia Tech. *Banisteria* 11: 52–56.
- Mitchell, J. C. 2006. Historical perspectives: Ernest Anthony Liner. *Copeia* 2006(2): 316–320.
- Mitchell, J. C. 2010. Richard L. Hoffman's contributions to herpetology. Pp. 45–54 *In* S. M. Roble & J. C. Mitchell (eds.), *A Lifetime of Contributions to Myriapodology and the Natural History of Virginia: A Festschrift in Honor of Richard L. Hoffman's 80<sup>th</sup> Birthday*. Virginia Museum of Natural History Special Publication 16, Martinsville, VA. 458 pp.
- Mitchell, J. C. 2013. Emmett Reid Dunn and the early history of herpetology in Virginia. *Banisteria* 41: 7–39.
- Mitchell, J. C., & D. S. Smith. 2013. *Copeia* 1913, Number 1: Origin and authors. *Copeia* 2013(2): 189–193.
- Mitchell, J. C., & D. S. Smith. 2013. The history of *Copeia*: metamorphosis and the academic coup. *Copeia* 2013(3): 361–365.
- Stewart, M. M., & J. C. Mitchell. 2013. Historical perspectives: Herndon Glenn Dowling. *Copeia* 2013(1): 165–171.
- Hilton, E. J., J. C. Mitchell, & D. G. Smith. 2014. Edward Drinker Cope (1840–1897): Naturalist, namesake, icon. *Copeia* 2014(4): 747–761.
- Walls, S. C., K. Hamed, & J. C. Mitchell. 2014. Historical perspectives: James and Della Organ. *Copeia* 2014(2): 248–250.
- Mitchell, J. C., J. R. Mendelson III, & M. M. Stewart. 2015. Historical Perspectives: George Bernard Rabb. *Copeia* 2015: 1086–1092.
- Mitchell, J. C. 2018. Historical perspectives: George Robert Zug. *Copeia* 106(2): 388–395.
- Mitchell, J. C. 2019. Historical perspectives: Victor Hobbs Hutchison. *Copeia* 107(2): 358–364.

## Obituaries

Mitchell, J. C. 1993. Obituary: Robert N. Bader (1947–1992). *Catesbeiana* 13(1): 16.

Mitchell, J. C. 1993. Obituary: John Thornton Wood (1919–1990). *Catesbeiana* 13(2): 51.

Mitchell, J. C. 1998. Obituary: Costello M. Craig. *Catesbeiana* 18(1): 12–14.

Mitchell, J. C. 1998. Obituary: William S. Woolcott. *Banisteria* 11: 58–59.

Mitchell, J. C. 2004. Obituary: Roger Conant (1909–2003). *Catesbeiana* 24(1): 28–34.

Mitchell, J. C. 2004. [Personal reflection]. P. 105 *In* K. Adler. *In memoriam: Roger Conant (1909–2003) with reflections by some of Roger's many friends and colleagues*. *Herpetological Review* 35(2): 101–107.

Mitchell, J. C., & D. Liebman. 2007. Obituary: Roger Henry de Rageot. *Catesbeiana* 27(1): 47–53. (republished in *Banisteria* 29: 39–42)

Mitchell, J. C. 2011. Obituary: Franklin J. Tobey (1919–2010). *Catesbeiana* 31(1): 32–39.

Mitchell, J. C., & S. M. Roble. 2012. Richard L. Hoffman (1927–2012). *Catesbeiana* 32(2): 72–82.

Roble, S. M., & J. C. Mitchell. 2012. Obituary: Richard Lawrence Hoffman (1927–2012). *Banisteria* 40: 5–14.

Hamed, M. K., S. C. Walls, & J. C. Mitchell. 2015. James A. Organ (1931–2015). *Catesbeiana* 35(1): 27–30.

Hamed, M. K., & J. C. Mitchell. 2015. James Albert Organ (1931–2015). *Herpetological Review* 46(3): 39–41.

Mitchell, J. C. 2015. Herpetological contributions of Donald A. Merkle. *Catesbeiana* 35(1): 24–26.