VIRGINIA MUSEUM OF NATURAL HISTORY
Board of Trustees Research and Collections Committee
Saturday, Feb. 13, 2021
9:00-9:45 a.m. via Zoom meeting

A G E N D A

- Call to order: **Dr. Art Evans**
- Roll Call: Dr. Arthur Evans, Dr. Tom Benzing, Dr. Carole Nash, Lisa Moerner, Melany Stowe
- November 2020 Research and Collections Committee meeting minutes (action item)
- October-December 2020 acquisitions (action item)
- Consideration of Dr. Katherine Harrell as VMNH Research Associate (action item)
- Consideration of renewal of Dr. Michael F. Johnson as VMNH Research Associate (action item)
- Consideration of renewal of Paul E. Olsen as VMNH Research Associate (action item)
- Update on repatriation of Guatemalan artifacts: **Dr. Hayden Bassett**
- Other business: **Dr. Art Evans**
- Adjourn: **Dr. Art Evans**

The mission of the Virginia Museum of Natural History:

To interpret Virginia's natural heritage within a global context in ways that are relevant to all citizens of the Commonwealth.

VIRGINIA MUSEUM OF NATURAL HISTORY BOARD OF TRUSTEES
MINUTES OF THE RESEARCH AND COLLECTIONS COMMITTEE MEETING
Nov. 21. 2020

Present at the online meeting were Dr. Art Evans, Dr. Tom Benzing, Dr. Carole Nash, Lisa Moerner, Melany Stowe, Dr. Joe Keiper, Dr. Hayden Bassett, Dr. Adam Pritchard, Dr. Kal Ivanov, Dr. Nancy Moncrief, Zach Ryder, and Ben Williams.

- Committee Chairman Dr. Art Evans called the meeting to order.

- The minutes were unanimously approved by the committee.

- Due to the meeting taking place online, the new acquisitions sign-off sheet was distributed to committee members electronically. Ben Williams will submit the sheet to VMNH Registrar Jill Harris once all signatures have been collected.

- The committee moved to recommend to the Board of Trustees that retired Curator of Geology Dr. Jim Beard be made Curator Emeritus.

- The committee moved to recommend to the Board of Trustees that Dr. Jackson Means be made a Research Associate.

- Dr. Tom Benzing said that he has prepared some guidelines for committee meetings held via Zoom. He added that he is open to suggestions for Research and Collections Committee members, and the next appointments will open in May 2021. The role of the Research and Collections Committee, he said, is to make recommendations to the board based on the activities of the museum's Research and Collections division. Dr. Carole Nash asked Dr. Benzing if there were guidelines for appointing individuals to the committee, and Dr. Benzing said that the positions are open to any board members who wish to serve on the committee.

- Dr. Adam Pritchard offered a brief overview of how the ongoing coronavirus pandemic has affected Research and Collections. Dr. Pritchard said that in mid-March, many museum employees began working off-site, although by early June, safety guidelines had been put in place to allow employees to return to the building if needed. During the spring and summer, Dr. Pritchard said, Research and Collections received many inquiries from both professionals and the general public. These inquiries tapered off by the fall, he said, but that is normal in his experience. He added that a small number of researchers have visited the museum, though not as many as would during normal circumstances. He also said that field work has largely been limited to areas within driving distance. Dr. Kal Ivanov added that specimen ID requests from the public have greatly increased, especially during the summer, partly due to the open invitation on "#BenInNature" social media posts and partly due to

people having more time in the summer and wanting to get out of the house. Dr. Art Evans echoed the increase in specimen ID requests, adding that he hopes the level of interest in the natural world shown by the public is sustained once the pandemic comes to an end.

- Dr. Joe Keiper discussed the museum's acquisition of a Guatemalan street art collection. Roughly three years ago, he said, he was approached by the executor of an estate who wanted to pass along a collection of Guatemalan street art their late client obtained while living in Guatemala in the 1950s. The materials were accepted as a deed of gift and constitute six banker's boxes worth of material. Several of the pieces, Keiper said, appear to be actual Mayan antiquities rather than street art. He consulted with a firm in Richmond called Cultural Heritage Partners that serves to identify such pieces and repatriate them to their country of origin. However, he said, the process is expensive and he wanted the board's guidance. Dr. Hayden Bassett said that several of the pieces appear to be legitimate Mayan antiquities dating from 200-900 A.D. These stone figurines were likely based around a Mayan culture of mushroom worship, also known as mycolatry, and were likely used in ritual ceremonies involving hallucinogenic mushrooms. The remaining pieces are largely ceramic, Dr. Bassett said, and are of a type with others sold in Guatemalan street markets in the 1950s and 1960s.

- Dr. Bassett outlined three potential courses of action for dealing with the items: A., repatriate the items to Guatemala's national museum using the aid of a specialist firm like Cultural Heritage Partners; B., attempt to return the items to the Guatemala national museum by handing them off to museum representatives at the country's border (although this runs the risk of having some items claimed by customs), and C. transferring the items to a U.S. museum with an existing Mayan collection, such as Norfolk, Va.'s Chrysler Museum of Art. Dr. Carole Nash proposed a fourth option of reaching out to colleagues at the Smithsonian to see if they could assist in repatriating the artifacts, and Dr. Kal Ivanov suggested reaching out to Guatemala's national museum directly. The committee ultimately decided to reach out to both the Smithsonian and Guatemala's National Museum and choose a path forward at a later date based on the content of the responses.

- Dr. Art Evans mentioned that he had included in the committee packet an article discussing the importance of natural history collections. The article, he said, would help committee members formulate important talking points when speaking with the public and legislators.

- Dr. Kal Ivanov mentioned to the committee that items are currently being purchased to construct a functional molecular lab at VMNH, which will not only assist the curators in their research but also attract students and researchers from outside of the museum.

- Dr. Tom Benzing moves to adjourn the meeting and the vote was seconded by Lisa Moerner. All present members approved the motion to adjourn.

OCTOBER-DECEMBER 2021 VMNH ACQUISITIONS FOR APPROVAL BY BOARD OF TRUSTEES RESEARCH AND COLLECTIONS COMMITTEE

RIM* No.	Collector/Donor	Date at VMNH	VMNH Dept.	Quantity	Description	Method	To Be Accessioned (Y/N)
RIM 31-2020	VA Dept of Wildlife Resources (Rick Reynolds)	09/22/2020	MAMMALOGY	3	Gray Bat (*Myotis grisescens*)	TRANSFER	Yes
RIM 32-2020	Liberty Hightower	09/29/2020	MAMMALOGY	1	Groundhog (*Marmota monax*)	SALVAGE	Yes
RIM 33-2020	Liberty Hightower	11/04/2020	MAMMALOGY	1	Virginia Opossum, female (*Didelphis virginiana*)	SALVAGE	Yes
RIM 34-2020	Hampton University (Shawn Dash)	11/09/2020	RECENT INVERTEBRATES	258	257 pinned specimens and 1 bulk sample	GIFT	Yes
RIM 35-2020	Arthur V. Evans	11/09/2020	RECENT INVERTEBRATES	3946	2934 pinned/3 ethanol preserved specimens/79 bulk samples; 7 bulk litter samples; 923 dry, unpinned enveloped Lepidoptera	GIFT	Yes
RIM 36-2020	VA Dept of Wildlife Resources (Mike Fies)	11/18/2020	MAMMALOGY	1	North American Porcupine (*Erethizon dorsatum*)	TRANSFER	Yes
RIM 37-2020	Chincoteague National Wildlife Refuge (Holcomb)	11/19/2020	MAMMALOGY	25	Delmarva Fox Squirrels (*Sciurus niger cinereus*)	GIFT	Yes
RIM 38-2020	Chincoteague National Wildlife Refuge (Holcomb)	11/19/2020	ORNITHOLOGY	25	Greater Shearwater (12), Red-tailed Hawk, Am. Woodcock, Sharp-shinned Hawk, Merlin, Mourning Dove (4), Bufflehead male (3), Am. Black Duck female, Eastern Screech Owl	GIFT	Yes
RIM 39-2020	Liberty Hightower	11/30/2020	MAMMALOGY	1	Northern Short-tailed Shrew (*Blarina brevicauda*)	SALVAGE	Yes

* RIM is an acronym for the Record of Incoming Material form

OCTOBER-DECEMBER 2021 VMNH ACQUISITIONS FOR APPROVAL BY BOARD OF TRUSTEES RESEARCH AND COLLECTIONS COMMITTEE

RIM* No.	Collector/Donor	Date at VMNH	VMNH Dept.	Quantity	Description	Method	To Be Accessioned (Y/N)
R I M 40-2020	Liberty Hightower	11/30/2020	ORNITHOLOGY	6	Dark-eyed Junco, White-throated Sparrow (2), Red-bellied Woodpecker, Am. Robin, Black-throated Blue Warbler	SALVAGE	Yes
R I M 41-2020	Jill K. Harris	12/21/2020	MAMMALOGY	5	*Peromyscus* sp.	SALVAGE	Yes
R I M 42-2020	Curt W. Harden	12/28/2020	RECENT INVERTEBRATES	337 lots	237 pinned, det. beetles; 58 pinned, undet. beetles; 2 pinned, undet. wasps and bees; 19 vials ethanol undet. ants; 12 vials ethanol bulk inverts; 9 vials ethanol undet. millipedes	GIFT	Yes
R I M 43-2020	Ms. Celia Culver Rutt	12/06/2020	ANTHROPOLOGY	41	projectile points, pestle, and other misc. lithics	GIFT	Not to be accessioned.
R I M 44-2020	Robert Simon	12/08/2020	PALEONTOLOGY	1	*Ichthyodectes* sp. skeleton in shale	GIFT	Yes
R I M 45-2020	Adam Pritchard	12/08/2020	PALEONTOLOGY	13	fossil plants in sandstone and shale	FIELD	Not to be accessioned, Federal Property.
R I M 46-2020	Trevor Clarke	12/08/2020	PALEONTOLOGY	4	whale specimens: skulls, lumbar vertebra, ulna, and unidentified bone, coprolite	GIFT	Yes

* RIM is an acronym for the Record of Incoming Material form

OCTOBER-DECEMBER 2021 VMNH ACQUISITIONS FOR APPROVAL BY BOARD OF TRUSTEES RESEARCH AND COLLECTIONS COMMITTEE

VMNH Collections Committee and Executive Director have Approved Recent Acquisitions: RIM 31-2020 through RIM 46-2020

VMNH Board of Trustees Research & Collections Committee Review of Acquisitions: RIM 31-2020 through RIM 46-2020

Arthur V. Evans, Chair _____ _____
(signature) Arthur V. Evans, Chair Date

Thomas R. Benzing _____ _____
(signature) Thomas R. Benzing Date

Lisa C. Moerner _____ _____
(signature) Lisa C. Moerner Date

Carole L. Nash _____ _____
(signature) Carole L. Nash Date

Melany Stowe _____ _____
(signature) Melany Stowe Date

_____ _____
(signature) Date

VIRGINIA MUSEUM OF NATURAL HISTORY
RESEARCH AND COLLECTIONS EXECUTIVE SUMMARY

October-November 2020

For VMNH Research and Collections, the end of 2020 was largely defined by an emphasis on outreach – much of it virtual – and publications.

The curators collectively participated in 17 lectures and off-site presentations, many of them virtual, serving about 270 people. In addition, museum staff traveled to Waynesboro on Oct. 10 to hold "Drive-Thru Dino Festival," a five-hour event that attracted 235 adults and children despite a rainy day.

In terms of publications, VMNH curators worked on seven different publications; two of these were published between October and December 2020, two are under review, and three are nearing completion.

Research and Collections also added two new staff members during the last quarter of 2020; Dr. Jackson Means, who is organizing and identifying the museum's vast millipede collection in his new position as VMNH Myriapodologist, and Madeleine Gunter Bassett, who is serving as VMNH Archaeology Assistant.

Dr. Nancy Moncrief

- Dr. Moncrief continued working with several colleagues on three manuscripts. The topics are as follows: 1) armadillos in Virginia, 2) skeletal injuries in two sympatric species of tree squirrels, and 3) mammals that occur on the Virginia barrier islands.
- Dr. Moncrief worked with other VMNH staff to prepare and submit a grant proposal (for about $34,000) to the Institute for Museum and Library Services.
- Dr. Moncrief presented a digital lecture about squirrel genetics to a Roanoke College class and an in-person lecture, which was also live-streamed, about biodiversity in the Appalachians at the Wayne Theatre. Both lectures were also recorded for the VMNH Education Dept.'s online K-12 Teacher professional development offerings.

Dr. Kal Ivanov

- Drs. Keiper and Ivanov manuscript "Field observations of scorpionflies (Mecoptera: Panorpidae) and signal flies (Diptera: Platystomatidae) at animal carcasses" was recently published at Entomological News.
- Dr. Ivanov and VMNH Research Associate J. Gibson field notes on the diet of the Oak Toad and the Eastern Narrow-mouthed Toad were recently published at the Virginia Herpetological Society's periodical Catesbeiana.
- Dr. Ivanov presented research findings at the [virtual] annual meeting of the Entomological Society of America with graduate students Curt Harden (Clemson University) and Morgan Malone (Virginia Tech).

Dr. Adam Pritchard

- Dr. Pritchard received positive reviews for his monographic description of the gliding *Weigeltisaurus* from the journal *PeerJ*. He reworked the submission and figures based on reviews with a resubmission occurring in Q1 2021.

- At the online Society of Vertebrate Paleontology Annual Meeting, Dr. Pritchard presented his research on *Weigeltisaurus*. He also served as an author on a poster presentation on claw anatomy in Triassic reptiles spearheaded by Virginia Tech researchers. He also contributed answers to public questions for the annual Reddit 'Ask Me Anything' post associated with the meeting.

- In collaboration with Research Associate Ray Bernor and VMNH curator Nancy Moncrief, Dr. Pritchard developed the VMNH component of a National Science Foundation proposal for the Biological Infrastructure directorate. Called 'FuTRES 2,' the proposal is a multi-institution collaboration focused on developing a database focused on animal functional traits. The VMNH component of the proposal would fund paid student internships in paleontology at the museum for three years.

Dr. Hayden Bassett

- In late December, Dr. Bassett completed a major milestone for the Smith River Survey (a 2-year archaeological survey of the Smith River in Henry County, VA). Dr. Bassett and the VMNH may now proceed with new fieldwork and excavations (and associated purchasing, hiring, etc.) for the 2021-2023 Smith River Survey. New fieldwork is scheduled to begin as soon as the ground thaws in early Spring 2021.

- In November, Dr. Bassett conducted two days of fieldwork at the Smith Mountain Gap site – one of the oldest archeological sites in Virginia. He worked alongside project coordinators, and reaffirmed VMNH's long-term commitment to the project.

- As a member of the US Army's/Smithsonian's new wave of Monuments Men, Dr. Bassett spoke at two virtual workshops for US active duty soldiers, US reserve soldiers, and allied partners (UK Army, French Army). The first workshop took place in December, the second in January.

VIRGINIA MUSEUM OF NATURAL HISTORY
RESEARCH AND COLLECTIONS ACTIVITIES

Report to the Board of Trustees
October-November 2020

Kaloyan Ivanov, Ph.D.
Associate Curator of Invertebrate Zoology

- Drs. Keiper and Ivanov manuscript "Field observations of scorpionflies (Mecoptera: Panorpidae) and signal flies (Diptera: Platystomatidae) at animal carcasses" was recently published at Entomological News.
- Dr. Ivanov and VMNH Research Associate J. Gibson field notes on the diet of the Oak Toad and the Eastern Narrow-mouthed Toad were recently published at the Virginia Herpetological Society's periodical Catesbeiana.
- Dr. Ivanov and colleagues have a manuscript in review at the Virginia Natural History Society's periodical Banisteria.
- Dr. Ivanov presented research findings at the [virtual] annual meeting of the Entomological Society of America with graduate students Curt Harden (Clemson University) and Morgan Malone (Virginia Tech).
- Dr. Ivanov, VMNH Curator of Mammals Dr. N. Moncrief, Deputy Director R. Barber, and Education Manager C. Deatherage resubmitted a grant proposal to the IMLS Inspire! Program.
- Drs. Dash (Hampton U), Zhuang (UTEP), and Ivanov completed an online course for biology majors at Hampton University.
- Dr. Ivanov presented a lecture to students from Roanoke College's BIOL 180 (Exploring Diversity in Biology).
- Dr. Ivanov presented [virtual] public talks at the monthly meetings of the Burlington Bird Club and Swift Creek Nature Club.
- Dr. Ivanov participated in VMNH's "Drive-thru Dino Experience" in Waynesboro, Virginia, the planned location for the museum's first satellite campus, and interacted with more than 200 visitors.
- Dr. Ivanov began serving his term as the President of the Virginia Natural History Society.

Research & Collections

Drs. Keiper and Ivanov manuscript "Field observations of scorpionflies (Mecoptera: Panorpidae) and signal flies (Diptera: Platystomatidae) at animal carcasses" was recently published at Entomological News.
[Keiper, J. B. and K. Ivanov. 2020. Field observations of scorpionflies (Mecoptera: Panorpidae) and signal flies (Diptera: Platystomatidae) at animal carcasses. Entomological News 129(3): 301-306]

Dr. Ivanov and VMNH Research Associate J. Gibson's field notes on the diet of two uncommon Virginia toad species, the Eastern Narrow-mouthed Toad, *Gastrophryne carolinensis*, and the Oak Toad, *Anxyrus quercicus*, were recently published at

Catesbeiana. The papers provide additional information on the diet of these unusual species and the data suggest that ants play an important role in their diet in Virginia as they do elsewhere. The diet of these species in Virginia has not been previously studied.
[Ivanov, K. and J. D. Gibson. Field notes: *Anxyrus quercicus* (Oak Toad) Diet. Catesbeiana 40(2): 126-127
Ivanov, K. and J. D. Gibson. Field notes: *Gastrophryne carolinensis* (Eastern Narrow-mouthed Toad) Diet. Catesbeiana 40(2): 128-130]

VMNH Collections Assistant Dr. J. Means, VMNH Administrator of Science B. Williams, and Dr. Ivanov's manuscript on the recent discovery of a second population of the rare Laurel Creek millipede, *Apheloria whiteheadi*, is currently in review at Banisteria.

VMNH Research Associate and Clemson University graduate student Curt Harden, VMNH Biology Technician Liberty Hightower, and Dr. Ivanov presented research findings at the [virtual] annual meeting of the Entomological Society of America regarding their ongoing project on the efficiency of two subterranean trap types for collecting hypogaeic invertebrate taxa in Eastern US. Preliminary findings indicate that these techniques are effective at sampling hypogaeic ants and beetles, including rare species not captured by traditional methods. This research currently is being extended into a manuscript for publication pending the processing of the last set of samples from Monroe Co, KY, and Patrick Co, VA.

Virginia Tech graduate student Morgan Malone and Advisory Committee members Drs. Taylor, Ivanov, and Schürch presented research findings at the [virtual] annual meeting of the Entomological Society of America regarding their work on the distribution of the invasive red imported fire ant, *Solenopsis invicta*, in Virginia. Preliminary results indicate that this species is far more widespread in the state than previously assumed, and has spread as far west as the City of Danville and as far north as the City of Richmond, areas that were not predicted to be occupied by fire ants until 2080-2089.

VMNH Curator of Mammals Dr. Moncrief, Biology Technician L. Hightower, Georgia College and State University faculty Dr. A. Mead, and Dr. Ivanov are completing the draft of a manuscript focused on examining skeletal injuries in tree squirrels of the genus *Sciurus*. The large dataset analyzed for this project, allowed to test hypotheses regarding the prevalence of breaks in the axial and appendicular skeletons of two North American species of *Sciurus* based on their locomotor mode, age, sex, and habitat (urban vs. rural).

Drs. Dash, Zhuang, and Ivanov are drafting a manuscript focused on the ant diversity of the Chihuahuan Desert based on literature and museum data generated by Hampton University and University of Texas at El Paso students involved in Hampton University's BIO 408. Although numerous myrmecological studies have focused on the deserts of the American Southwest, to date, limited coverage has been offered to the ant fauna of the Chihuahuan Desert. Once completed, this work will represent the first comprehensive account of the ant fauna of North America's largest warm desert.

Dr. Ivanov and L. Hightower processed 4,074 ant specimens from various Delaware, Maryland, and Virginia localities as part of an ongoing project with Dr. S. Dash and colleagues on the ant diversity of the Delmarva Peninsula. A substantial fraction of the

specimens, which are currently being identified and curated, will be retained and incorporated into the museum's collection at the completion of the project.

In late December, VMNH Collections Assistant Dr. Means completed work on updating, curating and inventorying the museum's extensive millipede collection. The collection comprises over 3,100 lots and an estimated 25,000 specimens, including 369 types and many undescribed taxa. A substantial amount of additional work remains to be completed including curation and reorganization of the entire collection, preparation and shipping of loans to host institutions, and processing and incorporation of a large backlogged donation by Dr. W. Shear into the museum's collection.

Dr. Ivanov completed the identification and curation of over 400 ant, bee, and wasp specimens as part of final reporting for the "James River Park System Insect Inventory" project conducted by VMNH Research Associate and Board of Trustees Member Dr. A. Evans. The goal of this study is to provide a comprehensive list of the insect fauna of the area using a wide variety of collecting approaches. A large fraction of the insect materials generated by this work (~ 3,000 specimens) was donated to VMNH in early November.

In early December, Dr. Ivanov processed, identified, and curated 92 ant specimens from the City of Radford and Roanoke Co. collected in 2020 by Radford University faculty Dr. K. Powers and students. Upon identification, 20 specimens were retained for VMNH's collection and the rest of the materials will be deposited in the insect collection at Radford University.

VMNH Collections Manager H. Cartmell, with help from Dr. Ivanov, completed the organization and rehousing of a backlogged loan of 422 opilionid lots (mostly *Leiobunum*) identified and returned to VMNH by Dr. J. Schultz (U of Maryland). Among the returned materials are the holotype and a paratype of *Leiobunum euserratipalpe,* and a paratype of *L. hoffmani*.

Drs. Means, Moncrief, and Ivanov continued work on establishing a functional genetics lab at VMNH to be shared by R&C personnel and also used by visiting students and researchers. Following approval of final budget during a meeting with VMNH Director Dr. J. Keiper and Chief Financial Officer J. Martin, the purchasing of equipment and supplies began in early December 2020. Pending unforeseen circumstances, the Lab is expected to become operational in Spring 2021.

Dr. Ivanov responded to an information request regarding VMNH holdings: *Gazoryctra sciophanes* (Lepidoptera: Hepialidae) (John Grehan, McGuire Center for Lepidoptera and Biodiversity).

Dr. Ivanov satisfied a loan request concerning VMNH's invertebrate holdings: Spirobolida: Trigoniulidae (5 male and 1 female *Thrinciulus laevicollis* from Nigeria) to Dr. Didier Van den Spiegel (Musée Roayl De L'Afrique Centrale, Belgium)

Dr. Ivanov oversaw the acquisition of 257 pinned (mostly determined) insects from various worldwide locations and 1 bulk UV light sample from Virginia donated by Dr. S. Dash; 2934 pinned and 3 ethanol-preserved (mostly identified) insects and 86 bulk Malaise, Lindgren Funnel, and Winkler samples from Virginia and 923 enveloped

Lepidoptera from various worldwide locations donated by Dr. A. Evans; 237 pinned determined beetles, 58 pinned undetermined beetles, 2 pinned undetermined wasps and bees; 19 vials of ethanol-preserved undetermined ants, and 21 vials of bulk ethanol-preserved undetermined invertebrates from the Eastern US donated by C. Harden (RIM 2020-34, -35, -42).

Education & Outreach

Drs. Dash (Hampton University), Zhuang (UTEP), and Ivanov completed an online course (BIO 408: Research Problems) for biology majors at Hampton University. The main focus of the course was to hone students' skills in research, critical thinking, and scientific writing by focusing on a project aimed at examining the ant diversity of the Chihuahuan Desert. The large data set generated by this project is currently being extended into a manuscript for publication.

Dr. Ivanov presented a lecture "Biodiversity: an entomologist's perspective" to students from Roanoke College's BIOL 180 (Exploring Diversity in Biology). (October 8)

Dr. Ivanov and museum staff participated in the museum's "Drive-thru Dino Experience" in Waynesboro, VA. The 5-hour event was attended by 235 children and adults from Waynesboro and the surrounding areas and offered a great opportunity to promote VMNH and the museum's research and education programs. Waynesboro is the planned future location for the museum's first satellite campus. (October 10)

Dr. Ivanov presented [virtual] public talks at the monthly meetings of the Burlington Bird Club and Swift Creek Nature Club. (November 4 and December 16)

Following reviewers' comments, Dr. Ivanov, VMNH Curator of Mammals Dr. N. Moncrief, Deputy Director R. Barber, and Education Manager C. Deatherage resubmitted a grant proposal to the IMLS Inspire! program to acquire research-grade dissecting microscopes for outreach (and research) activities. If funded, the proposal will allow VMNH to convert and existing, underutilized laboratory space into a modern multidisciplinary research and education facility. (November 13)

This quarter, Dr. Ivanov responded to insect and plant identification and information requests to individuals from Martinsville, Stuart, and elsewhere (not specified) in Virginia. Many of the requests were submitted to VMNH's FB page by museum patrons.

Exhibits

Dr. Ivanov and museum staff completed the installation of specimens and text panels for the museum's newest permanent exhibit "Lepidoptera". The exhibit which offers a close look at the world's moth and butterfly diversity includes a vast assortment of specimens from the museum's invertebrate collections. The exhibit will familiarize visitors with over 500 different moth and butterfly species from North America, South America, Europe, Africa, Asia, and Australia. In addition, the exhibit will feature an interactive pictorial key allowing guests to identify various Lepidoptera species and learn

more about one of the world's largest and most charismatic insect groups. The exhibit is expected to open to the public in early Spring 2021.

Dr. Ivanov completed drafting text for the invertebrate portion of the museum's planned "Flight" exhibit and is currently working on specimen and media selection.

Media

Dr. Ivanov's post on the recent donation of nearly 3,000 pinned insect specimens by VMNH Research Associate and Board of Trustees member Dr. Art Evans collected during his work at the James River Park System in Richmond, Virginia in 2020 was featured on the museum's FB page. The materials represent 13 different insect orders and include the museum's first specimens of the Asian Jumping Mantis, *Statilia maculata*, and the rarely collected, recently described, hover fly *Microdon scauros*.

Professional Service

Dr. Ivanov completed and submitted necessary paperwork regarding the museum's new full-time (temporary) Myriapodologist position. Dr. Ivanov served as the Chair of the Search Committee, which also included VMNH Curator of Mammals Dr. N. Moncrief, Administrator of Science B. Williams, and Human Resources Manager R. Casey. Review of applicants and online interviews were completed on November 20 2020. Dr. J. Means accepted the offered position and began work at VMNH on January 4 2021. The purpose of the position is to complement the Associate Curator of Recent Invertebrates in conducting research, inventorying and databasing specimens, writing reports and scholarly articles, and performing field and laboratory work with a strong focus on millipedes.

Drs. Ivanov (Vice President) and Moncrief (President) participated in the [virtual] Virginia Natural History Society Executive Committee meeting on October 31. Among the discussed topics was the recent transition of VNHS's periodical Banisteria to "online-only" format, the new format of the journal, and the date of the next general meeting of the Society, which is likely to be entirely hosted online. (October 31)

On January 1 2021, Dr. Ivanov began serving his two-year term as the new President of the Virginia Natural History Society.

As part of Virginia Tech's graduate student D. Wilczek Advisory Committee, Dr. Ivanov participated in Daniel's [virtual] thesis proposal presentation. (December 3)

Dr. Ivanov participated in a [virtual] meeting with Drs. Keiper, Means (VMNH), and Marek (Virginia Tech) regarding the deposition and hosting of Dr. Richard Hoffman's recently digitized research notes via the VTechData repository. (December 16)

Dr. Ivanov served as a peer reviewer for a manuscript submitted to Sustainability (completed December 7).

Nancy D. Moncrief, Ph.D.
Curator of Mammalogy

- Dr. Moncrief continued working with several colleagues on three manuscripts. The topics are as follows: 1) armadillos in Virginia, 2) skeletal injuries in two sympatric species of tree squirrels, and 3) mammals that occur on the Virginia barrier islands.
- Dr. Moncrief worked with other VMNH staff to prepare and submit a grant proposal (for about $34,000) to the Institute for Museum and Library Services.
- Dr. Moncrief presented a digital lecture about squirrel genetics to a Roanoke College class and an in-person lecture, which was also live-streamed, about biodiversity in the Appalachians at the Wayne Theatre. Both lectures were also recorded for the VMNH Education Dept.'s online K-12 Teacher professional development offerings.

Research and Collections

Dr. Moncrief continued preparing three manuscripts as follows:
1) "armadillos in Virginia" with Mr. Michael Fies, who is a Wildlife Biologist in the Virginia Department of Wildlife Resources, to be submitted to the peer-reviewed journal *Southeastern Naturalist,* and will report details of the first specimens of nine-banded armadillos from Virginia, which are housed in the VMNH Mammal Collection;
2) "skeletal injuries in two tree squirrels" with VMNH Associate Curator of Recent Invertebrates Dr. Kal Ivanov, VMNH Biology Research Technician Ms. Liberty Hightower and Dr. Alfred Mead, who is on the faculty of Georgia College, will provide details about skeletal injuries in eastern fox squirrels and eastern gray squirrels and will be submitted to *Journal of Mammalogy;* and 3) "mammals of the Virginia barrier islands" with VMNH Research Associates Dr. Raymond Dueser and Dr. John Porter, both whom are at the University of Virginia, will be submitted to the peer-reviewed journal *Northeastern Naturalist,* and is an annotated checklist of mammals that live on Virginia's barrier islands and adjacent Eastern Shore mainland.

Dr. Moncrief is working with VMNH Administrator of Science Mr. Ben Williams to test a wildlife camera system being developed by VMNH Research Associates and University of Virginia faculty members Drs. Ray Dueser and John Porter. This system will be useful for monitoring populations of small mammals such as rodents and shrews without trapping the animals.

Dr. Moncrief continued working with Biology Research Technician Ms. Liberty Hightower, VMNH Collections Manager Ms. Haley Cartmell and VMNH Registrar Ms. Jill Harris to conduct and coordinate VMNH review activities prior to installation of a new collections management software system (Proficio) and migration of the VMNH collections databases to that software.

Dr. Moncrief responded to several inquiries for information about the vertebrate zoology collections, and she hosted a visit by VMNH Research Associate Jason Gibson.

Professional Service and Other Duties

Dr. Moncrief concluded her two-year term as President of the Virginia Natural History Society (VNHS). She began serving on the VNHS Council on 1 January 2021, and she will continue serving (with Dr. Ivanov) a four-year term (ends December 2022) as Co-Treasurer of that organization. As part of her duties as Co-Treasurer, she recorded dues payments for new and renewing members, and she processed requests and payments for back issues of the VNHS journal *Banisteria*. She chaired the annual council meeting of VNHS on 31 October 2020.

Scientific Programs, Exhibits, and Other Activities

Dr. Nancy Moncrief worked with Associate Curator of Recent Invertebrates Dr. Kal Ivanov, Education Manager Christy Deatherage, and Deputy Director Ryan Barber to prepare and submit a grant proposal (for about $34,000) to the Institute for Museum and Library Services to fund a microscope lab to serve as a resource for VMNH science education programs, outreach activities, and visiting researchers.

In early October VMNH Curator of Mammalogy Dr. Nancy Moncrief presented a digital lecture about her research on squirrel genetics to two biology classes at Roanoke College (taught by VMNH Foundation Board Member Dr. DorothyBelle Poli).

Dr. Moncrief's presentation to Dr. Poli's class was recorded for the VMNH Education Department's on-line K-12 Teacher Professional Development series.

Dr.Moncrief participated with other VMNH scientists and educators in VMNH's Drive Thru Dinosaur Experience, which was held in Waynesboro in mid-October.

Dr. Moncrief presented a lecture on biodiversity in the southern Appalachians (using endemic salamanders as examples) as part of the Wayne Theatre Science Series in mid-November.

Also in mid-November Dr. Moncrief recorded her presentation about biodiversity in the southern Appalachians for the VMNH Education Department's on-line K-12 Teacher Professional Development series.

Dr. Moncrief continued working with VMNH Paleontology Research Technician Ms. Lucy Treado to create interactive elements for a permanent exhibit about watersheds and the Dan River basin.

Dr. Moncrief also continued work on a special exhibit about flight. She worked with Ms. Hightower to select and to begin preparing bird wings that demonstrate different types of powered flight.

Adam Pritchard, Ph.D.
Assistant Curator of Paleontology

- Dr. Pritchard received positive reviews for his monographic description of the gliding *Weigeltisaurus* from the journal *PeerJ*. He reworked the submission and figures based on reviews with a resubmission occurring in Q1 2021.
- At the online Society of Vertebrate Paleontology Annual Meeting, Dr. Pritchard presented his research on *Weigeltisaurus*. He also served as an author on a poster presentation on claw anatomy in Triassic reptiles spearheaded by Virginia Tech researchers. He also contributed answers to public questions for the annual Reddit 'Ask Me Anything' post associated with the meeting.
- In collaboration with Research Associate Ray Bernor and VMNH curator Nancy Moncrief, Dr. Pritchard developed the VMNH component of a National Science Foundation proposal for the Biological Infrastructure directorate. Called 'FuTRES 2,' the proposal is a multi-institution collaboration focused on developing a database focused on animal functional traits. The VMNH component of the proposal would fund paid student internships in paleontology at the museum for three years.
- Dr. Pritchard also provided input for a National Science Foundation proposal by University of Lynchburg professor Brooke Haiar. This proposal would provide funding for underrepresented students to join the Wyoming Dinosaur Dig expedition.
- On a fieldwork front, Dr. Pritchard also received a permit from the United States Forest Service to work in the Pennsylvanian rocks of the Lee Formation in Scott County, Virginia. He and paleontology technician traveled to the site and prospected for fossils on October 28–29, 2020.
- Dr. Pritchard presented lectures for both technical and non-technical audiences throughout Q4 2020. All were either live-streamed or presented virtually:
    - Science Talk Series presentation for the general public at the Wayne Theater (Waynesboro, VA). 10/13/2020
    - Lizard evolution lecture for Virginia Tech undergraduate course (Blacksburg, VA). 10/20/2020
    - Paleontology collections presentation for University of Lynchburg undergraduate course (Lynchburg, VA). 11/6/2020
    - Fieldwork presentation for Leonard and Dickinson Families (Ashland, VA). 11/28/2020
    - Fieldwork presentation for Tuckahoe Kiwanis Club (Tuckahoe, VA). 12/1/2020
    - Paleontology collections presentation for Virginia Tech Natural History Collections Club (Blacksburg, VA). 12/7/2020
- Dr. Pritchard produced a weekly educational video series on paleontology and the Virginian fossil record for VMNH social media outlets. The series is entitled "Tales of Ancient Life." He produced 3 videos during Q4 2020.

- Dr. Pritchard collaborated with the museum staff to prepare and present specimens and information for the Dinosaur Drive-Thru Experiences in Waynesboro, Virginia (October 10, 2020).

Research & Collections

Dr. Pritchard submitted his monograph description of the anatomy of *Weigeltisaurus jaekeli* to the journal *PeerJ* in Q3 2020. The paper has been reviewed and will require only minor revisions for publication, which he will address in the first weeks of Q4. The monograph will be the first detailed account of the anatomy of Weigeltisauridae, the oldest-known vertebrate lineage with gliding adaptations.

Dr. Pritchard presented research projects to the Annual Meeting of the Society of Vertebrate Paleontology between October 11-17, 2020. The meeting was held online. Dr. Pritchard presented an oral presentation on the weigeltisaurid skeleton that was the focus of his recently submitted manuscript. He also participated in a presentation on the claws of drepanosaurs (a group of extinct arboreal reptiles) led by graduate student Megan Sodano of Virginia Tech.

Dr. Pritchard secured a permit from the United States Forest Service to prospect for fossils in the Washington and Jefferson National Forest in Scott County, Virginia. The site was brought to his attention by VMNH director Dr. Joe Keiper, who noticed a small vertebrate jaw at the site several years earlier. Dr. Pritchard and technician Lucy Treado visited the site on October 28 and 29. They did not find the original jaw element, but they found productive rock layers containing a large variety of fossil plants. Subsequent visits to the area are planned.

Funding

Dr. Pritchard worked with Research Associate Ray Bernor and VMNH curator Nancy Moncrief on developing a VMNH role in a National Science Foundation proposal for the Advancing Biological Infrastructure directorate. The FuTRES 2 proposal is a multi-institutional collaboration with ecologists and morphologists from the University of Oregon, University of Florida, Texas A&M, and the University of Arizona. It is focused on building an online functional trait database for vertebrates. If funded, the VMNH will receive money for internship support, a research assistant for the three VMNH participants, and travel funds. Submission is anticipated in Q1 2021.

In collaboration with University of Lynchburg professor Brooke Haiar, Dr. Pritchard helped write a UL proposal for the National Science Foundation. The proposal, entitled ‘Geopaths,’ is focused on field and research opportunities for underrepresented students in Geosciences. The proposal would include research projects using Jurassic VMNH paleontology collections. Submission occurred in Winter 2021.

Education and Outreach

Dr. Pritchard produced three additional educational videos for VMNH social media outlets in Q4 2020.

Dr. Pritchard developed table content for and participated in the Dinosaur Drive-Thru experiences for the VMNH in Waynesboro, Virginia (October 10, 2020). These events served a mix of adults and children totaling 217 and 235 participants respectively.

Dr. Pritchard presented a socially distanced 'Science Talks' lecture at the Wayne Theater in Waynesboro, Virginia on October 13, 2020. The lecture focused on the fossil record of the Shenandoah Valley and the unique possibilities offered by the VMNH-Waynesboro project.

Dr. Pritchard participated in a Reddit Ask Me Anything event for the Society of Vertebrate Paleontology on October 14, 2020 (https://www.reddit.com/r/askscience/comments/jayj2c/we_are_scientists_from_the_society_of_vertebrate/). The event was viewed over 4,900 times and received over 400 questions.

Dr. Pritchard presented a Zoom lecture on the evolution of lizards during the Age of Dinosaurs for an undergraduate course at Virginia Tech on October 20, 2020.

Dr. Pritchard presented a Zoom lecture on the VMNH collections for an undergraduate course at the University of Lynchburg on November 6, 2020.

Dr. Pritchard presented a Zoom lectures on VMNH Triassic field projects for the Dickinson Family (supporters of our fieldwork) and for the Tuckahoe Kiwanis Club on November 28, 2020 and December 2, 2020 respectively.

Dr. Pritchard presented a Zoom lecture on the VMNH collections for the Virginia Tech Natural History Collections Club on December 7, 2020.

Dr. Pritchard assessed three inquiries from the Virginia public regarding fossil identifications.

Professional Service

Dr. Pritchard completed a review for the *Journal of Systematic Palaeontology*.

Hayden Bassett, Ph.D.
Assistant Curator of Archaeology

In his second quarter with the museum, VMNH Assistant Curator of Archaeology Dr. Hayden Bassett focused his efforts on completing the first phase of VMNH's Smith River Survey (SRS), conference presentations, and setting up VMNH's new Cultural Heritage Monitoring Lab (CHML).

Research & Collections

In late December, Dr. Bassett completed a major milestone for the Smith River Survey (a 2-year archaeological survey of the Smith River in Henry County, VA). This milestone was the completion of the pre-fieldwork data synthesis and analysis in advance of new survey and excavations for the Smith River Survey. This included completion of a 60-year data synthesis, a regional GIS analysis, and creation of two new predictive models for the locations of archaeological sites in SW Virginia. With this milestone complete, Dr. Bassett and the VMNH may now proceed with new fieldwork and excavations (and associated purchasing, hiring, etc.) for the 2021-2023 Smith River Survey. New fieldwork is scheduled to begin as soon as the ground thaws in early Spring 2021.

In early January, Dr. Bassett and VMNH staff archaeologist Madeleine Gunter Bassett presented their recent findings from Phase I of the Smith River Survey in a paper titled, *Settlement Patterns and Probabilities for the Southern Virginia Piedmont: An Archaeological Synthesis and Geospatial Model of 18th- and 19th-Century Sites*, at the Society for Historical Archaeology's 2021 conference (held virtually Jan 6-9). The international conference was attended by over 2,000 participants. Their paper presented the results on their development of a "historical" geospatial model (using data from ca. 1740-1850). Their earlier paper, presented in October, reported on the results on their development of a "prehistoric" geospatial model (using data from 11,000 BC – AD 1670). Video presentations of both papers are being made available on the VMNH YouTube page. These presentations are the foundation for two manuscripts, which the Archaeology Department intends to submit for publication next quarter.

In November, Dr. Bassett conducted two days of fieldwork at the Smith Mountain Gap site – one of the oldest archeological sites in Virginia. He worked alongside project coordinators, and reaffirmed VMNH's long-term commitment to the project.

In late-November, Dr. Bassett acquired, curated, and made available the first and only publicly available Lithic Reference Collection in Virginia. This important reference collection will be used to identify the human activities that generate certain types of stone flakes and use-wear on stone tools commonly found at archaeological sites.

In late-December, Dr. Bassett and VMNH staff Archaeologist Madeleine Gunter Bassett identified and registered two new archaeological sites in the in the north Bassett area of Henry County, VA. The two discovered the sites on the upper section of the Lauren Mountain hiking trail. One site is a rock shelter occupied in the Late Woodland period (ca. AD 1250-1450). The second site is a large, mountain-top quartz quarry dating to

the same period. The sites are now registered with the Commonwealth of Virginia as a VMNH discoveries.

In collaboration with the Smithsonian Institute, the VMNH's new Cultural Heritage Monitoring Lab (CHML) made significant progress in its institutionalization and initial projects between December and January. The CHML, housed in the VMNH Archaeology Department, provides advanced global monitoring capability for cultural heritage threatened by armed conflict and natural disaster. Among other technologies, the lab utilizes high-resolution satellite imagery provided by industry partners to rapidly identify destructive events and active threats to monuments, museums, archives, historic buildings, archaeological sites, and landscapes in real time. One of the primary stakeholders of the new lab is the US Army's Monument's Men Unit. Administratively, Dr. Bassett, Dr. Keiper, the Commonwealth of Virginia's Attorney General Office, and the Smithsonian Institute's General Counsel finalized the VMNH-Smithsonian Memorandum of Understanding (MOU) in late January. Signing of this MOU formalized the partnership between the VMNH and the Smithsonian, and permitted the lab to officially open this quarter.

Through the CHML, Dr. Bassett and VMNH staff Archaeologist Madeleine Gunter Bassett, at the request of the Smithsonian and US Government stakeholders, completed a comprehensive review of satellite imagery for the Nagorno-Karabakh region (Armenia), with respect to ground reports of deliberate and collateral destruction of significant cultural heritage by Azerbaijan. Dr. Bassett identified five major incidents in violation of the 1954 Hague Convention (amounting to war crimes). Dr. Bassett reported these findings to the Smithsonian, UNESCO, a coalition of universities, and the US Army in January 2021. Parallel to these efforts, Dr. Bassett and VMNH staff archaeologist Madeleine Gunter Bassett have begun monitoring the conflict in northern Ethiopia via satellite imagery, for similar acts. Through these efforts, VMNH is increasingly being recognized across universities and the US Government as a playing a significant role in global efforts to protect and preserve cultural heritage during and after armed conflict and natural disasters. This has attracted three PhD.-level scholars, who will soon be volunteering their time to the Cultural Heritage Monitoring Lab at VMNH.

Education and Outreach

As a member of the US Army's/Smithsonian's new wave of Monuments Men, Dr. Bassett spoke at two virtual workshops for US active duty soldiers, US reserve soldiers, and allied partners (UK Army, French Army). The first workshop took place in December, the second in January.

Dr. Bassett continued working with a Ph.D. student from William & Mary. This grad student is shadowing him throughout portions of the Smith River Survey, with the goal of educating the student on how to run a large-scale archaeological project form beginning to end.

In November, Dr. Bassett presented a public lecture titled, *The Prehistoric Settlements along the Smith River*, to the Martinsville-Henry County Historic Society. The 1-hr lecture was well received and covered by both the *Martinsville Bulletin* and the *Henry*

County Enterprise newspapers. A video of the lecture will be made available as an online-video on the MHCHS YouTube page.

In December, Dr. Bassett presented a combined scholarly and public lecture in Jamaica (virtually) on his recent publication (Nov 2020) in the *Journal of African Diaspora Archaeology*. The 3-hr lecture and Q&A covered Dr. Bassett's six seasons of archaeological fieldwork on the island between 2010-2016. The discussion included archaeological findings, post-colonial and racially-conscious archaeological fieldwork, and the contemporary social implications of archaeology in Jamaica. A video of the lecture/Q&A is available online through the Archaeological Society of Jamaica's Facebook page.

Dr. Bassett responded to six public requests for identification of artifacts, all of them from Virginia. Artifact identifications were made in-person (in the museum lobby), masked and distanced. In January, he also responded to one request for a field inspection and identification of old foundations on a local landowner's property.

In December, Dr. Bassett secured an institutional ArcGIS license for VMNH of 2,000 user accounts. This will allow the VMNH to provide Geographic Information Systems (GIS) programs/educations to any high school student in Martinsville/Henry County, and permit students to provide supporting research for the Cultural Heritage Monitoring Lab. Dr. Bassett is currently building the digital infrastructure for remote student participation in the lab, and anticipate advertising this opportunity next quarter.

In mid-December, Dr. Bassett visited Patrick Henry's Red Hill in Brookneal, VA with VMNH Board Member Gene Smith. Mr. Smith gave Dr. Bassett a tour of the facility, and discussed opportunities for collaboration with VMNH.

Between November and January, Dr. Bassett responded to four requests for Information on VMNH collection holdings: 1.) the Claremont collection from Surry County; 2.) a collection of Late Woodland (AD 1200-1450) tobacco pipes from Henry County; and 3.) the Cactus Hill site collection; and 4.) the Smith Mountain Gap collection. The VMNH Archaeology Department safely hosted Dr. Michael Johnson in-person, who used the latter two collection for an ongoing study.

Professional Service

Dr. Bassett continued his duties as Vice President of the Board of Trustees for Falmouth Heritage Renewal, an international historic preservation non-profit, based in The Plains, VA.

In November, Dr. Bassett joined the Conflict Cultural Resource Network (CCRN), an NSF-funded group of professors and practitioners protecting cultural heritage around the globe from armed conflict. The objective of the group is to collaborate and synthesize our collective findings, and disseminate through high-impact publications. The VMNH is now an institutional partner in research alongside the University of Pennsylvania and the Smithsonian Institute. In December and January, Dr. Bassett met hosted four meetings to discuss VMNH's recent analyses and findings.

In December, Dr. Bassett was appointed as a Research Associate at the Smithsonian Institute. Dr. Bassett's appointment was made in the Smithsonian's Office of International Relations (OIR) for a renewable tenure of three years. This appointment was made due to Dr. Bassett's international efforts and contributions made through VMNH's new Cultural Heritage Monitoring Lab.

In December and January, Dr. Bassett was consulted on three separate occasions by members of the Archaeological Society of Virginia for his expertise in Geospatial Analysis. He provided his technical services to professionals seeking to map and generate geostatistics on the state-wide distributions of certain types of archaeological sites, and he advised on predictive analysis methods.

Research and Collections

Jill K. Harris, Registrar

Sixteen (16) collections acquisitions were recorded for 4,333 individual and 338 lots/bulk specimens. The majority of these specimens were added to the invertebrate zoology collection, with the remaining specimens added to the vertebrate zoology (mammal and bird), paleontology, and anthropology/archaeology collections.
No outgoing loans were recorded for this quarter.

Haley Cartmell, Collections Manager

Curators and staff modified/updated 123 existing records and added 70 new records to the VMNH collections databases, Rediscovery (for biological and archaeological collections) and EGEMS (for physical geological and paleontological collections).

Ms. Cartmell worked with purchasing and other staff to get the CO2 bubble's machinery repaired after several months out of operation. Since its repair, Ms. Cartmell has processed one (1) load of collections materials through the CO2 bubble. Materials processed included 110 taxidermied birds received in March 2020, some of which are intended to be used in the upcoming flight exhibit.

Ms. Cartmell, with the help from K. Ivanov, L. Hightower and J. Means, has organized, rehoused and entered data for 2,173 Riker mounts of Lepidoptera specimens. This has helped to make the collection easier to access and use, and it has consolidated space to make room for future acquisitions.

PEOPLE SERVED DATABASE printed 2/1/2021
Summary

# of Activities	TYPE OF ACTIVITY	PROFESSIONALS AND 13+ STUDENTS	K-12 STUDENTS	K-12 TEACHERS	PUBLIC			TOTAL #	
3	Conference presentations (A)	0	0	0	77			77	
6	Meetings chaired (B)	56	0	0	4			60	
3	Review documents/manuscripts (B)	7	0	0	0			7	
10	Requests for information about collections (C)	10	0	0	0			10	
4	Visiting researcher (C)	2	0	0	1			3	
1	Collections tours (D)	0	0	0	0			0	
0	Lab Tours (D)	0	0	0	6			6	
0	Receptions	0	0	0	0			0	
9	Responses to requests for information about specimens at VMNH (D)	40	0	0	0			40	
0	Lectures and presentations at VMNH (D)	0	0	0	0			0	
14	Technical consultations (B, D, & E)	17	0	0	8			25	
4	Display table with specimens	179	291	0	0			470	
0	Off-site education programs	0	0	0	0			0	
7	Lectures Not at VMNH (E)	109	0	0	25			134	
10	Off-site presentations (E)	115	0	0	148			263	
2	Field trips/Field Work	0	0	0	7			7	
0	**TOTALS**	0	0	0	0			1102	

TOTAL # INDIVIDUALS SERVED 1102

Virginia Museum of
NATURAL HISTORY
IN ASSOCIATION WITH THE SMITHSONIAN INSTITUTION

NEW APPLICATION
AS RESEARCH ASSOCIATE

Katherine Harrell

I have reviewed the information submitted for Katherine Harrell (Hayden Bassett, Sponsor) and have indicated his/her recommendation as a Research Associate for the Virginia Museum of Natural History.

Curator	Date	Recommend	Do Not Recommend
Nancy D. Moncrief, Ph.D. *Mammalogy*	29 Jan 2021	✓	
Kal Ivanov, Ph.D. *Recent Invertebrates*	JAN 29, 2021	✓	
Adam Pritchard, Ph.D. *Paleontology*	Feb 1, 2021	✓	
Hayden Bassett, Ph.D. *Archaeology*	28 Jan 2021	✓	

21 Starling Avenue, Martinsville, VA 24112 T. 276 634 4141 F. 276 634 4199 E. information@vmnh.virginia.gov W. www.vmnh.net

Virginia Museum of
NATURAL HISTORY
IN ASSOCIATION WITH THE SMITHSONIAN INSTITUTION

Renewal

~~NEW APPLICATION~~
AS RESEARCH ASSOCIATE

Michael F. Johnson

I have reviewed the information submitted for Michael F. Johnson (Hayden Bassett, Sponsor) and have indicated his/her recommendation as a Research Associate for the Virginia Museum of Natural History.

Curator	Date	Recommend	Do Not Recommend
Nancy D. Moncrief, Ph.D. *Mammalogy*	29 Jan 2021	✓	
Kal Ivanov, Ph.D. *Recent Invertebrates*	JAN 29, 2021	✓	
Adam Pritchard, Ph.D. *Paleontology*	Feb 1, 2021	✓	
Hayden Bassett, Ph.D. *Archaeology*	28 Jan 2021	✓	

Virginia Museum of
NATURAL HISTORY
IN ASSOCIATION WITH THE SMITHSONIAN INSTITUTION

RENEWAL
AS RESEARCH ASSOCIATE

Paul E. Olsen

Curator	Date	Recommend	Do Not Recommend
Nancy D. Moncrief, Ph.D. *Mammalogy*	29 Jan 2021	✓	
Kal Ivanov, Ph.D. *Recent Invertebrates*	JAN 29, 2021	✓	
Adam Pritchard, Ph.D. *Paleontology*	Feb 1, 2021.	✓	
Hayden Bassett, Ph.D. *Archaeology*	28 Jan 2021	✓	

21 Starling Avenue, Martinsville, VA 24112 T. 276 634 4141 F. 276 634 4199 E. information@vmnh.virginia.gov W. www.vmnh.net

Virginia Museum of
NATURAL HISTORY
IN ASSOCIATION WITH THE SMITHSONIAN INSTITUTION

Hayden Bassett, Ph.D.
Virginia Museum of Natural History
21 Starling Avenue
Martinsville, VA 24112
hayden.bassett@vmnh.virginia.gov

21 January 2021

Virginia Museum of Natural History
21 Starling Avenue
Martinsville, VA 24112

To Whom It May Concern,

I write to nominate Dr. Kate Harrell as a Research Associate for the Virginia Museum of Natural History (VMNH). Dr. Harrell is a professional archaeologist based in Charlottesville, VA, with a combined academic and US Military background. As her enclosed CV demonstrates, she is uniquely qualified to contribute to the research objectives of one of VMNH's newest labs, the Cultural Heritage Monitoring Lab (CHML).

The Cultural Heritage Monitoring Lab (CHML) is a collaborative effort with the Smithsonian Institute, housed in and directed by the VMNH Archaeology Department. This innovative lab provides advanced global monitoring capability for cultural heritage threatened by armed conflict and natural disaster. Among other technologies, the lab utilizes high-resolution satellite imagery provided by industry partners to rapidly identify destructive events and active threats to monuments, museums, archives, historic buildings, archaeological sites, and landscapes. Through its partnership with the Smithsonian Institute, the lab serves key stakeholders, including the US Army Reserve's recently reactivated Monuments Men unit (Civil Affairs 38G/6V), the US Department of State, the US Committee of the Blue Shield, and the International Council on Monuments and Sites.

Dr. Kate Harrell's combined experience in archaeology and satellite imagery analysis for US Government stakeholders underscores her uniquely authoritative subject matter expertise with respect to the research goals, methodology, and data-users of the CHML. As a VMNH Research Associate, Dr. Harrell would join the CHML as a team member and key collaborator, contributing to ongoing monitoring and analysis, enhancing our methodological capabilities, engaging in our parallel research objectives (as a collaborator/co-author), and connecting our work to new scholarship in this arena.

As a colleague, I first met Dr. Harrell while training in the U.S. Army Reserves Monuments Officer program. She was one of a handful of Ph.D. archaeologists I trained alongside, who excelled beyond mere participation by providing a significant intellectual and methodological contribution. While I have seen this first-hand in working with Kate for the past year, this is also evidenced by her CV. In her time as an active-duty strategic analyst officer, she has demonstrated her simultaneous commitment to

archaeology and cultural heritage protection through a sustained record of research and publications. As of writing this letter, I am confident in saying that with these unique qualifications, she is currently one of the top 5 experts in the field of Cultural Property Protection (CPP) in armed conflict (the focus of this lab).

Dr. Harrell's participation in the CHML, as a VMNH Research Associate, will not only provide her with an institutional outlet for her research, it will also significantly elevate the capabilities, output, and professional status of one of VMNH's newest labs. As such, this nomination for this mutually-beneficial appointment is not made as a point of recognition, but rather, is being utilized as a vehicle for a leading scholar to devote her time and intellectual energy to VMNH research and output. I invite you to refer to Dr. Harrell's enclosed CV and a letter expressing her interest and commitment.

Sincerely,

Hayden Bassett, Ph.D.
Assistant Curator of Archaeology
Virginia Museum of Natural History

Katherine Harrell
1601 Green Street
Charlottesville, VA 22902
katherinemharrell@googlemail.com

21 January 2021

Board of Trustees
% Dr. Hayden Bassett
Cultural Heritage Monitoring Laboratory
Virginia Museum of Natural History
21 Starling Avenue
Martinsville, VA 24112

Dear Trustees,

I am writing to request a Research Associate position with the Cultural Heritage Monitoring Laboratory at the Virginia Museum of Natural History. My research interests and prior experience support the CHML's mission and as an Associate I am hoping to collaborate with like minded individuals who value both cultural heritage and public service. My aim in this short missive is to introduce myself rather than exhaustively document my expertise.

In 2010 I received my Ph.D. in archaeology from the University of Sheffield in the United Kingdom, with a focus on Aegean prehistory. I have extensive fieldwork and inorganic materials laboratory research experience in Greece, the United Kingdom, and Belgium. I held two postdoctoral research positions, one at the American School of Classical Studies at Athens, and the second at the Université catholique de Louvain in Belgium. The second postdoc resulted in the publication of a volume edited by Prof. Jan Driessen, Director of the Belgian School at Athens, and myself, on the intentional destruction of objects in the ancient eastern Mediterranean, titled *ΘΡΑΥΣΜΑ: Contextualising the Intentional Destruction of Objects in the Bronze Age Aegean and Cyprus* (*ΘΡΑΥΣΜΑ* means *fragment* in Greek). Even as a young researcher I was interested in the intentional destruction of artefacts.

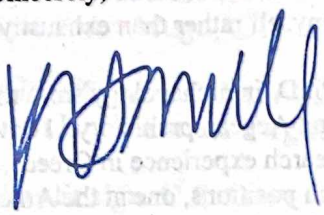
After returning from Belgium in 2014 I was unready to look for a tenure track position, and instead I joined the United States Navy as an active duty Intelligence Officer. I was the Air Intelligence Officer for Carrier Airborne Early Warning Squadron 116 (VAW-116), with whom I deployed aboard the USS THEODORE ROOSEVELT to the Persian Gulf in 2017-2018, in support of OPERATION INHERENT RESOLVE. On a daily basis I analyzed various forms of intelligence, particularly overhead imagery, to maintain situational awareness of enemy forces to support Coalition air operations in Syria and Afghanistan. In 2018 I was subsequently stationed to the Defense Intelligence Agency Rivanna Station in Charlottesville, Virginia, as a strategic analyst in the Middle East and Africa Regional Center. Concurrently with my military service I have continued archaeological research, resulting in book chapters and journal contributions. Because of my archaeology background and military experience, in 2020 I began working with the U.S. Army Reserves Monuments Officer program while continuing to serve in the U.S. Navy. I am the team lead for *Line of Effort 4: Support to Joint Intelligence Preparation of the*

Environment and have co-written a white paper with LTC Michael Delacruz on how cultural heritage protection can support Intelligence products for the warfighter, which is currently under review with the Department of Defense Office of Strategic Development.

As of January 2021, I am on terminal leave from active duty; my active duty service ends in February, at which point I will transfer into the select reserves. My home is in Charlottesville, Virginia. Since moving here, I have been working collaboratively with the University of Virginia Interdisciplinary Archaeology Program, particularly with Dr. Natasha Dakouri-Hild (a fellow Aegean prehistorian). Now in this transition period, I am looking for new initiatives with which to engage that fits with my experience and research interests.

My references are available upon request; writing samples are available at https://independent.academia.edu/KateHarrell. Thank you for considering my request for the Research Associate position. I look forward to many future conversations and productive collaborations with fellow researchers at the Virginia Museum of Natural History.

Sincerely,



Kate Harrell
Lieutenant, U.S. Navy

KATHERINE M. HARRELL MILITARY RÉSUMÉ

Lieutenant, U.S. Navy
Intelligence Officer

COMMISSIONING AND DUTY STATIONS

February 2021	Active Duty end of service/transition to Reserves.
2018-2021	Intelligence Analyst, Defense Intelligence Agency. Middle East and Africa Regional Center Defense Intelligence Agency Rivanna Station, Charlottesville, VA
2017-2018	Deployed with CVW-17 onboard the USS THEODORE ROOSEVELT in support of OPERATION INHERENT RESOLVE.
2017	Qualified for Information Warfare PQS.
2015-2018	Aviation Intelligence Officer, VAW-116. NAS Point Mugu, Point Mugu, CA
2015	Attended Navy Intelligence Officer Basic Course. NAS Oceana Dam Neck Annex, Virginia Beach, VA
2014	Commissioned as Ensign, U.S. Navy. Naval Station Newport, Newport, RI

AWARDS

Joint Meritorious Unit Award
Navy "E" Ribbon
National Defense Service Medal
Global War on Terrorism Expeditionary Medal
Navy Pistol Expert Medal

KATHERINE M. HARRELL CURRICULUM VITAE

1601 Green Street
Charlottesville, VA 22902
(386) 338-2949
https://independent.academia.edu/KateHarrell
katherinemharrell@googlemail.com

EDUCATION

2010	University of Sheffield	Ph.D. with Integrated Studies in Archaeology and Archaeological Science
2006	University of Sheffield	M.S. in Archaeological Science
2004	Florida State University	M.A. in Classical Archaeology
2004	Florida State University	Graduate Certificate in Museum Studies
2002	Florida International University	B.A. *magna cum laude* in Sociology/Anthropology

ACADEMIC EMPLOYMENT

2012-2014 Belgian American Education Foundation Postdoctoral Fellow.
Université catholique de Louvain

2010-2011 Jacob Hirsch Postdoctoral Research Fellow.
American School of Classical Studies at Athens

2008-2013 Adjunct Professor of Humanities.
South Florida State College
Courses taught: *Humanities Survey I*; *Humanities Survey II*.

2011 Professor of Greek Archaeology.
College Year at Athens

2005-2010 Teaching Assistant.
University of Sheffield
Courses assisted: *Athens, Empire and the Classical Greek World*; *Archaeology of the Greco-Roman World*; *European Classical Civilizations*; *World Civilizations*; *Archaeology in the Laboratory*; *Archaeology in the Field.*

2006-2007 European Union Teaching Outreach Program Professor of Archaeology.

University of Sheffield

2003-2004 Graduate Instructor and Teaching Assistant.
Florida State University
Courses taught/assisted: *Greek and Latin Elements in English Vocabulary*; *World Mythology, East and West.*

PUBLICATIONS

EDITED VOLUMES

Harrell, K.M., and J. Driessen, eds.

2015 *ΘΡΑΥΣΜΑ: Contextualising the Intentional Destruction of Objects in the Bronze Age Aegean and Cyprus.* Louvain-la-Neuve: Presses universitaires de Louvain.

JOURNAL ARTICLES

Harrell, K.M.

Under review "Violence and Political Emergence: A New Framework for Archaeology." *Journal of Archaeological Method and Theory.*

Forthcoming "Catalogue and Chemical Analysis of the Bronzes Held at the Museum of the British School at Athens." *Annual of the British School at Athens.*

2014 "The Fallen and Their Swords: A New Explanation for the Rise of the Shaft Graves." *American Journal of Archaeology* 118(1): 3-17.

Doonan, R.C.P., K.M. Harrell, and D. Haggis.

Under review "The 2005-2006 Metalworking Debris from Azoria, Crete." *Hesperia.*

BOOK CHAPTERS

Harrell, K.M.

In press "Enemy at the Gates: Social Space and Violence in Mycenaean Greece." In K. Grigoropoulos and A. Papadopoulos (eds.), *Archaeological Developments in Aegean Bronze Age Warfare: POLEMOS Ten Years Later.* Philadelphia, PA: INSTAP Academic Press.

2021 "Resurrections: The Depiction of Martial Culture at LH IIIB Mycenae." In J. Bennet and M. Peters (eds.), *Technologies of Representation* (Sheffield Studies in Aegean Archaeology 9). Oxford: Oxbow Books.

2016 "The Practice of Funerary Destruction in the Southwest Peloponnese." In A. Dakouri-Hild and M. Boyd (eds.), *Staging Death: Funerary Performance, Architecture and*

Landscape in the Aegean: 139-154. Cambridge: Cambridge University Press.

2015 "Piece Out: Comparing the Intentional Destruction of Swords in the Early Iron Age and the Mycenae Shaft Graves." In K. Harrell (ed.), *ΘΡΑΥΣΜΑ: Contextualising the Intentional Destruction of Objects in the Bronze Age Aegean and Cyprus.* Louvain-la-Neuve: Presses universitaires de Louvain.

2014 "Man/Woman, Warrior/Maiden: The Lefkandi Toumba Female Burial Reconsidered." In Y. Galanakis, T. Wilkinson, and D.J. Bennet (eds.) *ΑΘΥΡΜΑΤΑ: Critical Essays on the Archaeology of the Eastern Mediterranean in Honour of E. Susan Sherratt*: 99-104. Oxford: Archaeopress.

2012 "The Weapon's Beauty: A Reconsideration of the Ornamentation of the Shaft Grave Swords." In M.-L. Nosch and R. Laffineur (eds.). *KOSMOS: Jewellery, Adornment and Textiles in the Aegean Bronze Age*: 799-806. Liège: Université de Liège.

2011 "A War of Words: Comparing the Performative Cross-craft Interaction of Physical Violence and Oral Expression in the Mycenaean World." In A. Brysbaert (ed.), *Tracing Social Networks Through Studying Technologies: A Diachronical Perspective from the Aegean*: 72-88. London: Routledge.

Fox, R. and K.M. Harrell.

2008 "An Invitation to War: Constructing Alliances and Allegiances through Mycenaean Palatial Feasts." In N. Sykes (ed.), *Food and Drink in Archaeology*, 28-37. Devon: Prospect Books.

BOOK REVIEWS

Harrell, K.M.

2020 "*Archaeologies of Gender and Violence*, edited by U. Matić and B. Jensen." *American Journal of Archaeology* (124.4).

2016 "*The Archaeology of Kinship: Advancing Interpretations and Contributions to Theory*, by B.E. Ensor." *American Journal of Archaeology* (120.4).

2013 "*Early Mining and Metallurgy on the Western Central Iranian Plateau: The First Five Years of Work*, edited by A. Vatandoust, H. Parzinger, and B. Helwing." *American Journal of Archaeology* 117(3).

2010 "*Lines: A Brief History*, by T. Ingold." *Assemblage* 11.

2010 "*Violence in Late Antiquity: Perceptions and Practice*, edited by H.A. Drake." *Assemblage* 11.

2009 "*Myth, Ritual, and Metallurgy in Ancient Greece and Recent Africa*, by S. Blakely." *Assemblage* 10: 34-5.

2009 "*Handbook of Material Culture*, edited by C. Tilley, W. Keane, S. Küchler, M. Rowlands, and P. Spyer." *Assemblage* 10: 38-9.

2008 "*The Archaeology of Warfare: Prehistories of Raiding and Conquest*, edited by E.N. Arkush, and M.W. Allen." *Journal of Military History* 72.2: 546-7.

RESEARCH GRANTS AND AWARDS

2012-2014 Fonds de la Recherche Scientifique-FNRS Grant.
2012-2014 Wallonie-Bruxelles International Grant.
2012-2014 Université catholique de Louvain-l'Institut des Civilisations, Arts et Lettres (UCL-INCAL) Grant.
2012-2014 Université catholique de Louvain-Centre d'Étude des Mondes Antiques (UCL-CEMA) Grant.
2008-2009 Funds for Women Graduates PhD Thesis Grant.
2008-2009 USA Funds Access to Education Scholarship.
2006-2009 University of Sheffield Overseas Research Studentship.
2006-2009 University of Sheffield PhD Fee Bursary.
2005-2009 University of Sheffield New Route PhD Fee Bursary.
2005-2006 University of Sheffield Centenary Scholar.
2002-2004 Florida State University Department of Classics Fellowship.

November 17, 2020

Ben Williams
Administrator of Science
Virginia Museum of Natural History
21 Starling Avenue
Martinsville, VA 24112

Subj: VMNH Research Associate renewal application

Dear Mr. Williams:

Hayden Bassett and I discussed how I may be able to assist the Museum's Archeology Department with prehistoric lithic analysis. In that regard I bring 55 years of experience in experimental archeology.

I also bring a particular expertise on how recent discoveries in the Middle Atlantic Region and particularly Virginia relate to the initial peopling of the Americas. In that regard, I directed 19 years of research in the Nottoway River Valley of Virginia with particular focus on the Cactus Hill project. All my Cactus Hill related research documentation and the collection have been donated to the Museum. I continue to be a co-director of Paleoamerican research at nearby Smith Mountain Gap.

Please renew my position as a Research Associate (archeology) with the VMNH. I have attached an updated resume in support of this application.

Please let me know if you have any questions or need additional information.

Sincerely,

M. F. Johnson

Michael F. Johnson, Ph.D.
1411 N. Hartford St.
Arlington, Va. 222201
(703) 798-6662
Mj44fx1@verizon.net

Ps: Please note my change of address.

RESUME (Nov. 2020)

Michael F. Johnson
1411 N. Hartford St.
Alexandria, Va. 22201
mj44fx1@verizon.net
(c) 703-798-6662

EMPLOYMENT

2012-2019: Field Director, Thoroughfare Gap Archeological (TGA) research project
2012-2018: Co-Director, Smith Mountain Gap Archeological (SMGA) research project
2013-2016: Fairfax County contract to write up various excavation projects
2013-2015: Adjunct Archeologist, Rinker Design Associates, P.C.
1993-2012 Project Director, Nottoway River Paleoindian Research Project.
1996 –2011: Sr. Archeologist (Heritage Resource Specialist III), Fairfax County Govt., Resource Management Division, Fairfax. Co. Park Auth.
1978 – 1996: County Archeologist, Fairfax. Co. Govt., Office of Comprehensive Planning, Fx. Co. Archeological Survey (FCAS).
1976 - 1995: Independent archeological consultant.
1974 - 1978: Planning Specialist (GS-12) with the General War Preparedness Division of the current Federal Emergency Management Administration.
1973 - 1974: Management Intern (GS-9) with the General Services Administration (federal).
1968 - 1973: United States Navy, Lieutenant (O-3) (Vietnam veteran).

EDUCATION

2012: Ph.D. in Archeology - University of Exeter, U.K.
2002-3: 8 credit hours in Geology at NVCC incl. 4 credits of Honors Phys. Geology.
1983-2011: Var. Fx. Co. Gov't management courses and workshops (incl. MBO, Myers-Briggs, Word Perfect, MS word, Paradox, PowerPoint, and GIS).
1982-1983: 16 hours of Ph.D. work at Catholic University, Washington, D.C. (Program deferred due to family illness)
1980: MA in Anthropology - American University, Washington, D.C.
1975: Graduate course, Study & Writing History, Geo. Mason Univ., Fairfax, VA. (3.0 GPA)
1968: Graduate of US Navy Officer Candidate School, Newport, R.I.
1968: BA in History - George Mason College of the University of Virginia, Fairfax, Virginia.

COURSES TAUGHT

1988-2013: Va. Avocational Archeologist Certification Program lecture series on artifact analysis, methods, theory, cultural context, and site management/leadership.
2000-2001: Two American University field schools at Cactus Hill site.
1986, 1987, 2000, & 2001: Archeological Society of Virginia Field Schools in Fairfax County.
1981 - 1986: Co-sponsor of the Middle Atlantic Lithic Workshops.
1979 - 1981: Continuing ed. courses at No. Va. Community Col. in Experimental Archeology, Prehistoric Artifact Analysis, Lab Techniques, Site Excavation, and Site Survey.

PROFESSIONAL ORGANIZATIONS

Virginia Museum of Natural History (Research Associate: 2012-2018)
Gault School of Archeological Research (Research Associate: 2010-present)
SAA (Anti-Looting Com. 1988-1991; Pub. Ed. Com. 1989-1992)
Center for the Study of the First Americans (CSFA)
Eastern States Archeological Federation (ESAF)
Southeastern Archeological Conference (SEAC)
Middle Atlantic Archeological Conference (MAAC)
Council of Virginia Archeologists (Vice Chairman 1984-1987) (COVA)
Archeological Society of Virginia (ASV)
Archeological Society of Maryland (ASM)
Society of Primitive Technology (SPT)
Register of Professional Archeologists (RPA)

SPECIAL ACHIEVEMENTS

2012 Ben Brenman Outstanding Professional Archeologist Award from the City of Alexandria (Va.)
2011 Lifetime Achievement Award from the 7th Annual Fairfax. Co. History Conf.
2004 Joseph Harsh Award from the Northern Virginia Association for History
2001 Stewardship Award, FCPA Resource Management Division.
1992 Co-winner of Governor's Environmental Excellence Award presented to the Fx. Co. HRB
1992 A. Heath Onthank Award (highest award to Fx. County merit system employees)
1990 Professional Archeologist of the Year - Archeological Society of Virginia
1990 Winner of the competitive TRW Foundation, Manager of Volunteer Grant ($60,000)
1988 Co-winner of Outstanding Achievement Award from the Washington Metropolitan Area Chap. of the Am. Planning Assoc. for Fx. Co. Heritage Resource Management Plan.
1973 Competitive Federal Management Internship (MA equivalent in Management)
1968 Appointment to U.S. Navy Officer Candidate School
1964 National Merit Scholarship Finalist

SELECTED REPORTS/ARTICLES

2019 Thoroughfare Gap II (Site 44FQ271) – Testing the Smith Mountain Gap Paleoamerican Coalescence Model, Prince William County, Virginia. Quarterly Bulleting of the Archeological Society of Virginia 74: 154-176.

2016 Turtle Hill (44FX2636: Auditing CRM Methods on an Early Archaic through Late Woodland Site in Fairfax County, Virginia, U.S.A. (Research report prepared for the Fairfax County Park Authority, Falls Church, Va.)

2012 One Is an Accident; Two Is a Coincidence; Three Is a Pattern – Predicting "Old Dirt" in the Nottoway River Valley of Southeastern Virginia, U.S.A. (Ph.D. Thesis, Exeter University, U.K.)

2010 Early Archaic through Woodland Occupations at the Gateway Site (44FX1994). Quarterly Bulletin of the Archeological Society of Virginia 65:105-138.

2009 Paleoamerican Research in the Lower Nottoway River Valley of Southeastern Virginia: One Is an Accident; Two Is a Coincidence; Three Is a Pattern. (Unpublished technical report, Virginia Department of Conservation and Recreation, Richmond)

2006 Lee Road #2 (44FX2553): A Multi-Component Paleoindian through Potomac Creek, Hornfels Quarry Base Camp. Quarterly Bulletin of the Archeological Society of Virginia 61:1-38.

2005 The Effects of Shore Line Erosion on Archeological Sites at the Mason Neck National Wildlife Refuge. (Unpublished technical report, Fairfax County Park Authority, Falls Church, Virginia.)

2002 Preliminary Reconnaissance and Testing in the Hunter/Hacor Acquisition Property, Fairfax County, Virginia. Quarterly Bulletin of the Archeological Society of Virginia 57:117-160.

2002 (with Nancy H. Anthony) Archeological Investigation: Lorton Town Center (LTC-2) (44FX2077). (Unpublished technical report, County Archeological Services, Fairfax County Park Authority, Fairfax, Virginia)

2001 Gulf Branch: Prehistoric Interaction at the Potomac River Fall Line. Quarterly Bulletin of the Archeological Society of Virginia 56:77-114.

2000 Centreville Civil War Burials, Centreville, Virginia: Site Number 44FX1791. (Unpublished technical report, County Archeological Services, Fairfax County Park Authority, Falls Church, Virginia.

2000 The Prehistory of Fairfax County: Preliminary Testing of the Jarrett Site (44FX2296). (Unpublished technical report, County Archeological Services, Fairfax County Park Authority, Falls Church, Virginia)

1997 Cactus Hill 93/95 (44SX202): Preliminary Description of Northern Virginia Chapter ASV's 1993 and 1995 Excavations. In Archeological Investigations at 44SX202, Cactus Hill, Sussex County, Virginia. Edited by Joseph M. and Lynn D. McAvoy, Appendix F. Survey and Planning Series No. 8. Virginia Department of Historic Resources, Richmond.

1996 (with Joyce E. Pearsall) The Dr. Ben C. McCary Virginia Fluted Point Survey, Nos. 942-951. Quarterly Bulletin of the Archeological Society of Virginia 51:178-185.

1996 Paleoindians Near the Edge: A Virginia Perspective. In The Paleoindian and Early Archaic Southeast. Edited by David G. Anderson and Kenneth E. Sassaman. University of Alabama, Tuscaloosa.

1995 Dissecting Clovis Point No. 325 from 45DO432 in east Wenatchee, Washington: Face #2. Quarterly Bulletin of the Archeological Society of Virginia 50:32-40.

1995 (with Joyce E. Pearsall) The Dr. Ben C. McCary Virginia Fluted Point Survey, Nos. 921-941. Quarterly Bulletin of the Archeological Society of Virginia 50.

1994 Phase I Archeological Survey - Lorton Town Center - Potomac Bend, Fairfax County, Virginia. (Unpublished technical report, Fairfax County Heritage Resources Branch, Falls Church)

1994 Artifact Analysis of Material from Two Burials Excavated at the Fisher Site (44LD4) in Loudoun County, Virginia. Addendum to Rescue Archeology at the Fisher Site 44LD4 by Douglas W. Owsly and Malcolm L. Richardson, Smithsonian Institution, Washington.

1993 Dissecting Clovis Point No. 325 from 45DO432 in East Wenatchee, Washington. Quarterly Bulletin of the Archeological Society of Virginia 48:64-72.

1993 (with Joyce E. Pearsall) The Dr. Ben C. McCary Virginia Fluted Point Survey, Nos. 880-885 and 891-920. Quarterly Bulletin of the Archeological Society of Virginia 48:45-63.

1993 Rediscovering Tauxenent: Northern Virginia's First Historical Capital. Fairfax Chronicles 15:6-8.

1992 An Analogy between Eastern Paleoindian and Historic Caribou Hunters: a Broad Perspective from Virginia. In Paleoindian and Early Archaic Period Research in the Lower Southeast: A South Carolina Perspective, edited by David G. Anderson, Kenneth E. Sassaman, and Christopher Judge, pp. 182-202. Council of South Carolina Professional Archeologists, Columbia.

1992 The State of the State: Where Is Our Volunteer Policy? Quarterly Bulletin of the Archeological Society of Virginia 47:57-60.

1991 Middle and Late Woodland Settlement Systems in the Interior Fall Zone of the Potomac Valley: Not a Live Oyster in Site. North American Archeologist 12(1):29-60.

1991 (with Joyce E. Pearsall) The Dr. Ben C. McCary Virginia Fluted Point Survey, Nos. 846-867. Quarterly Bulletin of the Archeological Society of Virginia 46:55-69.

1991 (with Joyce E. Pearsall) The Dr. Ben C. McCary Virginia Fluted Point Survey, Nos. 868-890. Quarterly Bulletin of the Archeological Society of Virginia 46:145-162.

1991 Book review of "Native American Sites in a Fall Line Transition Study Area" by Keith T. Egloff. Journal of Middle Atlantic Archeology 7:192-193.

1989 The Lithic Technology and Material Culture of the First Virginians: an Eastern Clovis Perspective. In Paleoindian Research in Virginia: A Synthesis. Edited by J. Mark Wittkofski and Theodore R. Reinhart, pp. 95-138. Archeological Society of Virginia Special Publication No. 19.

1988 (With David P. Platte) The Upper Cub Run Complex: Part II: Lithic Analysis of the First and Second Controlled Surface Collections from the Platte Site (44FX55). (Unpublished technical report, Heritage Resources Branch, Office of Comprehensive Planning, Fairfax, Virginia.

1988 A Preliminary Archeological Reconnaissance of the Fort Belvoir Shoreline, Fairfax County, Virginia. (Unpublished consultant report for the U.S. Army Corps of Engineers)

1988 Fairfax County 9,000 Years Ago. Yearbook: The Historical Society of Fairfax County, Virginia. 21:75-84.

1988 (with others) Fairfax County Heritage Resource Management Plan. Fairfax County, Fairfax. (1988 Outstanding Achievement Award from the Washington Metropolitan Area Chapter of the American Planning Association)

1987 Searching for the Seventeenth Century on Ft. Belvoir: a Preliminary Reconnaissance of the Barnes/Owsley Plantation Site (44FX1326). (Unpublished consultant report for the U.S. Army Corps of Engineers, Fort Belvoir, Virginia)

1986 The Prehistory of Fairfax County: An Overview. (Unpublished research/planning report, Fairfax County Archeological Survey, Falls Church, Virginia.)

1985 Paleo-Indians: The First Virginians of Fairfax County. In Yearbook: The Historical Society of Fairfax County, Virginia. Vol. 20 (1984-1985).

1985 Prehistory of Fairfax County - The Piscataway Point Type in Hunters Branch: Site 44FX266 and Others. (Unpublished technical report, Fairfax County Heritage Resources, Falls Church, Virginia).

1984 (with Bettie M. Fretz) Transect Interval Sample of the Roundtree Park Site (44FX118): A Lithic Analysis of Discrete Prehistoric Cultural Manifestations in the Interior Piedmont of Fairfax County, Virginia. Fairfax County Archeological Survey, Fairfax.

1983 The Upper Cub Run Complex - Part I: Site 44FX143 - A Research Report. (Unpublished technical report, Fairfax County Archeological Survey, Fairfax, Virginia)

1983 The Evolution of the Bifurcate Hunting System in the Interior Piedmont of Fairfax County, Virginia. In Piedmont Archeology. Edited by J. Mark Wittkofski and Lyle E. Browning, pp. 55-73. Archeological Society of Virginia Special Publication No. 10.

1982 Site Density in the Upland-Interior Fall Zone of Neabsco Creek. (Unpublished consultant report for the Prince William County, Virginia, Historical Commission)

1981 A Preliminary Cultural Resource Assessment of Fairfax County Virginia Prehistory. (Unpublished research report, Fairfax County Archeological Survey, Fairfax)

1980 Proto-Algonquian Plants: A Case For the Use of Linguistic Paleontology in Archeological Research Designs. (Masters Thesis, American University, Washington)

1979 A Prehistoric Archeological Survey of Mount Vernon Plantation. (Unpublished technical report prepared for the Mount Vernon Ladies Association of the Union)

1978 Map Survey of Possible Prehistoric Sites in Fairfax County, Virginia. (Unpublished predictive prehistoric settlement model for the Fairfax County History Commission)

SELECTED PROFESSIONAL PAPERS

2018 A Multi-disciplinary Approach to Locating Capt. John Smith's Tauxenent. (Paper presented at the Archeological Society of Virginia Annual Meeting, Winchester, Virginia)

2015 Turtle Hill (44FX2636): Putting one's Methodological Money Where one's Methodological Mouth Is. (Paper presented at the 45th Middle Atlantic Archeological Conference, Ocean City, Maryland)

2013 (with William A. Childress) Beyond Cactus Hill. (Poster session presented at the Paleoamerican Odyssey Conference, Santa Fe, New Mexico)

2012 Modeling Cactus Hill (44SX202). (Paper presented at the Smithsonian Pre-Clovis Symposium, National Museum of Natural History, Washington, D.C.)

2009 Gateway '93 (44FX1994). (Paper presented at the Middle Atlantic Archeological Conference, Ocean City, Maryland)

2008 Cactus Hill, Blueberry Hill to Rubis-Pearsall: One Is an Accident; Two Is a Coincidence; Three Is a Pattern. (Paper presented at the Paleoamericans Origins Conference, Austin, Texas)

2008 The Gardner Approach Revisited: "Finding Old Dirt" in the Nottoway River Valley of Southeastern Virginia. (Paper presented at A Symposium to Honor the Work of William M. Gardner, Shepherdstown, West Virginia)

2008 In a Land Called Moyomps. (Paper presented at the Middle Atlantic Archeological Conference, Ocean City, Maryland)

2008 One Is an Accident; Two Is a Coincidence; Three Is a Pattern. (Paper presented in the Symposium, It came from Outer Space? Or Maybe Not: Is There Archeological Evidence for an Extraterrestrial Impact in North America at 13,000 Cal BP? 73rd Annual Meeting of the Society for America Archeology, Vancouver, B.C.)

2007 The Lithic Analysis Two Step: Dissecting Point #325 from the E. Wenatchee Clovis Site (45DO432). (Paper presented at the Middle Atlantic Archeological Conference, Ocean City, Maryland)

2007 Adapting to the Stone: A Cognitive Concept. (Paper presented at the Archeological Society of Virginia Annual Meeting, Williamsburg)

2006 Watlington and Koestline Sites: a Middle Archaic Settlement Pattern Shift in the Nottoway River Valley of Southeastern Virginia. (Paper presented at the Middle Atlantic Archeological Conference, Virginia Beach)

2005 Lee Road 2 (44FX2553): a Possible Clovis/Hornfels Association. (Paper presented at the Middle Atlantic Archeological Conference, Ocean City, Maryland)

2005 (with Bernard Tops) Land Bay A: Features under Features in an Upland Context. (Paper presented at the Middle Atlantic Archeological Conference, Rehoboth Beach, Delaware)

2004 Cactus Hill through Blueberry Hill to Chub Sandhill: A Search for Buried Covis/Preclovis Occupation Levels in the Atlantic Coastal Plain of Virginia. (Paper presented at the Archeological Sciences of the Americas Conference, Tucson, Arizona.)

2004 (with Daniel Hayes) Context and Method in Upland Archeology: Geoarcheological and Methodological Considerations or Where Have All the Plowers Gone. (Paper presented at the Middle Atlantic Archeological Conference, Rehoboth Beach, Delaware)

2003 Cactus Hill to Blueberry Hill: "To Find Old Sites You have to Find Old Dirt." (Paper presented at the Middle Atlantic Archeological Conference, Virginia Beach, Virginia.)

1997 Cactus Hill '96: Preliminary Block 'A" Results Support McAvoy's Paleoindian and Pre-Fluted Point Sequence. (Paper presented at the Middle Atlantic Archeological Conference, Ocean City, Maryland)

1991 Fifteen Years of Volunteerism in Fairfax County, Virginia: Only a Prelude. (Paper presented at the Society for American Archeology Annual Meeting, New Orleans).

1987 Implementing the Fairfax County Heritage Resource Management Plan: One Approach to Conflicting Preservation Goals. (Paper presented at the Society for Historical Archeology Annual Meeting, Savannah, Georgia).

Curriculum Vitae of Paul E. Olsen (April, 2017-March, 2018)
[http://www.ldeo.columbia.edu/~polsen/nbcp/peo.cv1.html]

Lamont-Doherty Earth Observatory of Columbia University
61 Rt. 9W Palisades, New York 10964-1000
polsen@ldeo.columbia.edu
(845) 365-8491 (office)

Born: August 4, 1953, New York City. U.S. Citizen

Education:
B.A., Geology Yale University, (with honors), 1978; M. Phil., Ph.D., Biology, Yale University, 1984

Interests:
Ecosystem evolution, especially aspects of external forcing and intrinsic biological innovations; Triassic and Jurassic continental ecosystems, their paleobiology, climate, tectonics, and stratigraphy; “lower" vertebrate systematics and paleobiology, especially tetrapod footprints; evolution of the Solar System.

Positions Held:
Jan., 1999 to 2001: Paleontological Society Distinguished Lecturer.
Jan., 1997 to 2007: Vice President, Board of Directors, Black Rock Forest Consortium
Jan., 1995 to present: Storke Memorial Professor of Earth and Environmental Sciences, Department of Earth and Environmental Sciences, LDEO-Columbia University.
Jan., 1991 to 1994: Associate Professor of Geological Sciences, Department of Geological Sciences, Lamont Doherty Earth Observatory of Columbia University.
July, 1985 to present: Research Associate American Museum of Natural History.
Nov., 1985 to present: Research Associate Virginia Natural History Museum.
Sept., 1984 to Dec. 1990: Assistant Professor of Geological Sciences, Department of Geological Sciences, Lamont Doherty Earth Observatory of Columbia University.
March, 1987 to March, 1990: Associate Editor, Journal of Vertebrate Paleontology.
Sept., 1983 to August, 1984: Postdoctoral Fellow, Miller Institute of Basic Research in Science, University of California, Berkeley.

Awards and Honors
2015: Thomas Jefferson Medal for Outstanding Contributions to Natural Science
2015-2016: Chinese Academy of Science: President’s International Fellowship
2011-2013: Lenfest Distinguished Columbia Faculty Award ($75,000).
2008-present: National Academy of Sciences
1997-1998: Mobil Foundation Award..
1986-1988: Alfred P. Sloan Research Fellow.
1985-1986: Arco Petroleum Research Fellowship.
1976: Golden Hammer Award, Department of Geology & Geophysics, Yale University.
1970: Presidential Commendation, Richard Milhouse Nixon.

Service to Scientific Community:
2018-2019: NASEM "Catalyzing Opportunities for Research in the Earth Sciences" (CORES) - A Decadal Survey for NSF's Division of Earth Science; 2008-present: Associate Editor PNAS; 2017: Organizer and Leader IGCP 632, Symposium and Field Trip; 2011-2013, NSERC review panel, Ottawa; 2010-present, Rutgers University Core Repository Committee; 2010-2011, National Research Council Committee Member, Committee on New Research Opportunities in the Earth Science (commissioned by NSF); 2009-present: Advisory Board for TriCarb, DOE-funded basin assessment for carbon sequestration; 2010-2011, National Research Council Committee Member (Committee for the Review of the Scientific Accomplishments and Assessment of the Potential for Future Transformative Discoveries with U.S.-Supported Scientific Ocean

Drilling) (commissioned by NSF); 2007-present, Board of Directors, DOSECC: 2003-2013, Lamont representative to DOSECC; 2008-present, editor PNAS; 2004-2007, NSF panel; 2005, Geosystems (NSF); 2003: DOSECC, Best Practices Workshop and Annual Meeting Participant; 1999: NSF Science and Technology Center, site review team; 1995-1997: Member Science Advisory Committee, International Scientific Drilling Program(Potsdam, Germany); 1994-1996: Member, Steering Committee, Earth Systems History, NSF; Columbia Representative to Black Rock Forest Consortium; Participant in Continental Scientific Drilling Forum Meetings; Leader of Field trips for Scientific Drilling Organizations; Principle Leader of International Geological Congress Field Trip T351 (NC. to Nova Scotia); Organizer and co-chair of ICDP sponsored Understanding Lacustrine Environmental History Through Continental Drilling (1997); Organizer and co-chair of NSF and ICDP sponsored International Workshop for a Climatic, Biotic, and Tectonic Coring Transect of Triassic-Jurassic Pangea (1999)

Public Education in the Media:

1984-present: Interviewed on numerous television and radio shows including National Public Radio, Science Friday, The Nature of Things, BBC, The History Channel. Good Morning America (TV), RAI's Italia Sera (Rome, TV), CBC - As it Happens, Morningside, NBC News, CBC - Maritimes (TV), New Jersey Network (TV), MSNBC, Discovery Channel, etc. Interviewed for numerous magazines and newspapers including Nature, Smithsonian, American Scientist, TIME, New York Times, Wall Street Journal, Washington Post, National Geographic, Science Times, Science News, Discover, Boston Herald, Philadelphia Inquirer, Readers Digest, Science Digest, New Scientist, Washington Times, Los Angeles Times, etc.

Service to Industry:

2009-2017: Consultant to SHORE Exploration & Production Corporation; 2008-2017: Course M111a: Lacustrine Source Rocks and Rift Tectonics Course, Nautilus Corporation; 2008: Recruitment Field Course for Exxon/Mobil (with Michael Braun, David Reynolds, Martha Withjack, Roy Schlische); 1984-1998: Mobil Oil, Rift Basin Tectonics Course (with Martha Withjack, Roy Schlische, Robert Clarke, John Wagener, John Armentrout, Martin Link); Marathon Oil, Lacustrine Exploration Course (with William Bosworth, Joseph Lambiase); Consultant to Eastern Exploration Inc.; Consultant to Exxon, Texaco, Mobil Oil, Citco, Arco Petroleum, Shore Exploration, North Central Oil, Cornell Oil.

Teaching:

2011-2017: Frontiers of Science (freshmen undergraduates)
2007-present: Paleobiology and Earth System History (advanced undergraduate and graduate Students)
2006-present: Seminar in Vertebrate Paleontology and Evolution (graduate students)
2003-2004: Seminar in Vertebrate Paleontology and Evolution (graduate students)
2003-present: Seminar in Sedimentology (graduate students)
2002-present: Seminar in Vert. Paleo.: Mass Extinctions (graduate students)
2000-present: Rift Basin Field Seminar in Paleontology and Stratigraphy (graduate students)
1997-present: The Earth System: Life System (undergraduates) (DDES & E3B)
1997-present: Seminar in Paleontology (graduate students)
1996-1998: Earth Systems Field School at, Biosphere 2 Center
1993: Seminar in Global Ecosystems and the Carbon Cycle (graduate students)
1993-present: Seminar in Structural Geology (graduate students)
1989-present: Seminar in Stratigraphy (graduate students)
1989-present: Dinosaurs and the History of Life (non-major undergraduates)
1985-1986: Advanced General Geology (undergraduates, incoming graduate students)
1984-1994: Concepts and Methods in Biostratigraphy (undergraduates, graduate students)
1984-1992: Time in the Earth Sciences (undergraduates)

Professional Affiliations:

American Geophysical Union, Society for Economic Mineralogists and Paleontologists, Society of Vertebrate Paleontology, New York Geological Association, Geological Society of America, New York Paleontological Society, Connecticut Geological Society

Grants, Contracts, and Awards:

2018-2019: Acquisition of hand held laser induced breakdown spectroscopy analyzer for elemental analysis (Olsen lead PI; fall 2018) (Arts and Sciences Research Facilities Support Program $30,000).

2018-2019: EarthRates Workshop on an Early Mesozoic, low- to high-latitude Coring Transect (EMCT) for Environmental, Climatic, Biotic, and Solar System Evolution (P. E. Olsen, LDEO, C. J. Lepre, C. Rasmussen, M. F. Schaller, M. Steinthorsdottir, C. A. Suarez, J. H. Whiteside) (EarthRates – NSF, $5,000).

2018-2019: ICDP Workshop on the Colorado Coring Project II and the Junggar Basin: Early Jurassic Low to High Latitude Transect of Environmental, Climatic, and Biotic Evolution. (P. E. Olsen, Y. Fang, J. W. Geissman, M. Ikeda, D. V. Kent, W. W. Krijgsman, R. Mundil, M. F. Schaller, J. Sha, M. Steinthorsdottir, V. Vajda , J. H. Whiteside) (ICDP, $ 37,820.00 – one year).

2016-2021: IGCP Project 632: Continental Crises of the Jurassic: Major Extinction events and Environmental Changes within Lacustrine Ecosystems (J. Sha, V. Vajda, P.E. Olsen, E.S. Msaky, M. Et-Touhami, O. Shevchuk, H.J. Campbell) (IUGS-IGCP, $8000.00 per year for 5 years, all funds stay in China, except travel)

2016-2018: Acquisition of geochemical data for Newark Basin Coring Project via XRF core scanning: Astrochronological, Paleoclimatic, and Environmental Applications (P.E. Olsen, S. Kinney & S. N. Chillrud) (LDEO Climate Center, 10,297.00 over 2 years).

2016-2017: Collaborative Research-Supplement: Filling the Triassic geochronologic gap: A continuous cored record of continental environmental change in western North America (P. E. Olsen [Lead and Lamont Component] NSF-SGP, $62,626)

2012-2016: LDEO Research Translation Core (Chillrud, S., PI; Olsen, P., Zheng, Y., van Geen, A., Graziano, J., Braman, S., Ross, J.) ($292,589)

2016-2018: Assessing the Influence of True Polar Wander on Mesozoic Paleoclimate (R. Fu & Paul Olsen) (LDEO Climate Center, $9,636).

2015-2017: Getting the Big Picture From Tiny Grains: A Quasi-detrital Zircon Provenance Approach to Understanding the Links Between CAMP Volcanism and the End Triassic Extinction. (P.E. Olsen & S. Kinney) (LDEO Climate Center $7,040).

2014-2016: CO_2 and Amplification of Orbitally Forced Changes in the Hydrological Cycle (P.E. Olsen, D.V. Kent) (LDEO Climate Center, $9,150).

2013-2017: Collaborative Research: Filling the Triassic geochronologic gap: A continuous cored record of continental environmental change in western North America (P.E. Olsen, D.V. Kent, R. Mundil, G. Gehrels, R.B. Irmis) (NSF ~$700,000; P.E. Olsen component $384,123).

2013-2015: Filling the Triassic geochronologic gap: A continuous cored record of continental environmental change in western North America (J.W. Geissman, P.E. Olsen, J. Sha, R. Molina-Garza, W.M. Kürschner, G.H. Bachmann) (ICDP, $325,000).

2011-2014: Coring and Logging Through Newark Basin Formations at Lamont-Doherty (D. Goldberg, D.V. Kent. P.E. Olsen) (Sandia Technologies, LLC, ARRA, $862,819).

2011-2015: Mesozoic lake systems in northeast China and Inner Mongolia and destruction of North China Craton. (J. Sha, P. Olsen, et al.). Chinese National Science Foundation (~$1,200,000, 24 mo, ~$600,000/yr [all funds stays in China])

2011-2012: Millennial-Scale Dynamics of the CO_2 Super-Greenhouse at the End-Triassic Extinction (P.E. Olsen, S. Hemming, E. Rasbury, S. L. Goldstein, D.V. Kent) (LDEO Climate Center, $8,000).

2008-2010: SGER: Triassic-Jurassic Mass Extinction Caused by Volcanism? Bio- and Magnetostratigraphic Tests in Eastern North America and Morocco (Geology, Sedimentology & Paleobiology) (04/08-05/09) P.E. Olsen & D. Kent (NSF $75,846).

2008-2010: ICDP Workshop on the Colorado Plateau Coring Project: 100 Million Years of Climatic, Tectonic, and Biotic Evolution in Continental Cores. (Geissman, J.W., Bachmann, G.H.,Blakey, R.C., Kent, D.V., Kürschner, W.M., Olsen, P.E., Sha, J.)(ICDP, $32,550)

2007-2010: Workshop on Integrated Scientific Coring on the Colorado Plateau: Early Mesozoic History of west Pangea. (P.E. Olsen) (NSF, $29,265).
2007-2010: Bollide, Flood Basalt, or Artifact, Ir and Nd-Sm clues to the Climatic Catastrophe at the Triassic Jurassic Boundary. (P. Olsen and S. Hemming) (LDEO Climate Center, $6,000).
2006-2008: Workshop on Integrated Scientific Coring on the Colorado Plateau: Early Mesozoic History of west Pangea. (P.E. Olsen, D.V. Kent, J. Geissman) (DOSECC, $36,000).
2005-2007: Coll. Research: Calibration of the Late Triassic-Early Jurassic timescale using U-Pb dating of the high-resolution magnetostratigraphy of the Newark Supergroup (D.V Kent and P.E. Olsen) (NSF, $86,210).
2003-2005: Extension of the Newark geomagnetic polarity reference sequence to address problems of the Carnian and the Middle Triassic. (D.V. Kent and P.E. Olsen) (NSF, $166,760).
2001-2003: Upgrading of the Scanning Electron Microscope/X-Ray Microanalysis Facility at LDEO (P. Olsen, M. Anders, E. Bonatti, R. Fairbanks, R. Sambrotto, D. Breger, S-W. Chan, N. Landman) (NSF $277,865).
2001-2003: High-resolution Cyclostratigraphic and Paleomagnetic Constraints on the Age and Biogeography of New, Diverse Tetrapod Assemblages from Paleoequatorial Rift Basins of Southeastern North America (P. Olsen, D. Kent) (NSF $130,000).
2000-2002: Orbital Forcing of Continental Eocene Climate: The Green River Formation of Wyoming (P. Olsen, N. Christie-Blick, S. Hemming) (NSF $35,107).
2000-2001: Climate Model – Data Comparisons and Discrepancies for the Pangean World (Carboniferous-Jurassic) (P. Olsen, D. Kent) (LDEO Climate Center., $5,000).
2000-2002: Search for the J1 Cusp in Mesozoic Rift Basins of Eastern North America. (D. Kent and P. Olsen) (NSF $100,000).1999-2001: Filling the Norian (Late Triassic) Gap in Tropical Tetrapod Diversity, eastern North America. (P. Olsen and H.-D. Sues) (NSF $100,000).
1998-1999: International Workshop for a Climatic, Biotic, and Tectonic Coring Transect of Triassic-Jurassic Pangea (1999). (P. Olsen and D. Kent) (NSF $40,000).
1998-1999: International Workshop for a Climatic, Biotic, and Tectonic Coring Transect of Triassic-Jurassic Pangea (1999). (P. Olsen and D. Kent) (ICDP $26,000).
1998-2000: Search for the J1 Cusp in Mesozoic Rift Basins of Eastern North America. (D. Kent and P. Olsen) (NSF $157,630).
1998-2000: Orbital Forcing of Lacustrine Sequences - Argana Basin, Morocco. (P. Olsen) (LDEO Climate Center., $6,000).
1997: Workshop: Understanding Lacustrine Environmental History Through Continental Drilling (1997). (P. Olsen) (ICDP - $50,000).
1997-1998: Mobil Foundation Award. ($10,000).
1996-1997: Configuration of Pangea During the Late Triassic. (D. Kent and P. Olsen) (NSF $25,000).
1995-1997: The Effects of Milankovitch Climate Cycles and Paleolatitude on Triassic Floral Diversity. (S. Fowell and P. Olsen) (NSF $165,000).
1994-1995: Acquisition of a Mass Spectrometer System for K/Ar dating by the $^{40}Ar/^{39}Ar$ Method. (W. Broecker, M. Anders, D. Kent, C. Langmuir, and P. Olsen) (NSF $185,000).
1993-1996: Milankovitch Forcing of Continental Monsoons Across the Equator of Pangea. (P. Olsen and D. Kent) (NSF $380,000).
1990-1993: 30 Million Year Record of the Evolution of a Continental Rift: the Newark basin. (P.Olsen and D. Kent) (NSF $2,100,000). The Newark Basin Coring Project (NBCP).
1990-1991: Anatomy of a Continental Rift.. (M. Steckler, J. Diebold, P. Olsen) (NSF $50,000).
1990-1992: A Triassic Synapsid-Dominated Tetrapod Assemblage of Gondwanan Aspect from the Richmond Basin of Virginia. (H. D. Sues and P. Olsen) (NSF $99,876).
1990-1991: A Triassic Synapsid-Dominated Tetrapod Assemblage of Gondwanan Aspect from the Richmond Basin of Virginia (H-D. Sues and P. Olsen) (Nat. Geographic. Soc. $14,000).
1989-1990: Hudson River Seismic Experiment (J. B. Diebold, G. Bond, P. Buhl, R. C. Raleigh, L.Seeber, and P. Olsen) (NSF $180,000).
1989-1990: A Late Triassic South American Vertebrate Assemblage from Virginia. (H-D. Sues and P.Olsen) (Nat. Geographic. Soc. $11,000).
1988-1990: Early Mesozoic Continental Tetrapod Diversification and Extinction in Eastern North America. (NSF $135,000).

1988-1989: Distribution of Extension with Depth in the Newark Basin. (G. Karner, M. Steckler, P.Olsen) (NSF $65,000).
1988-1990: Comparison of Growth Structures Along Border Faults. (American Chemical Society $18,000).
1988-1990: Paleomagnetism of the Newark Supergroup... (D. Kent and P. Olsen) (NSF $150,000).
1987: Paleomagnetism of the Newark Supergroup: A Test of the Paleomagnetic Euler Pole Model. (D.Kent and P. Olsen) (NSF $20,000).
1987: Faunal Change Across the Triassic-Jurassic Boundary in Nova Scotia. (N. Shubin, and P. Olsen, M. H. Anders) (Nat. Geographic. Soc. $14,050).
1986: Diverse Early Jurassic Tetrapod Assemblage from Nova Scotia. (P. Olsen and N. Shubin) (Nat. Geographic. Soc. $13,700).
1986-1988: Alfred P. Sloan Research Fellow. ($25,000).
1985: First Diverse Early Jurassic Tetrapod Assemblage. (P. Olsen and N. Shubin) (Nat. Geog. Soc. $10,400).
1985-1986: Arco Petroleum Research Fellowship. ($12,000).
1984-1988: N. E. U.S. Neotectonic Research. (L. Seeber and P. Olsen) (N.R.C. $200,000).

Theses Sponsored:

1. Schlische, R.W., 1990, Aspects of the Structural and Stratigraphic Development of Early Mesozoic Rift Basins of Eastern North America. [Ph.D. thesis]: New York, New York, Columbia University, Department of Earth and Environmental Sciences, 479 p.
2. Fowell, S. J. 1993, Palynology of Triassic/Jurassic boundary sections from the Newark Supergroup of Eastern North America: Implications for catastrophic extinction scenarios. [Ph.D. Thesis]: New York, New York, Columbia University, Department of Earth and Environmental Sciences, 133 p.
3. Reynolds, D. J., 1993, Sedimentary basin evolution: tectonic and climatic interaction. [Ph.D. thesis]: New York, New York, Columbia University, Department of Earth and Environmental Sciences, 215 p.
4. LeTourneau, P. M., 1999, Depositional History and Tectonic Evolution of Late Triassic Age Rifts of the U. S. Central Atlantic Margin: Results of an Integrated Stratigraphic, Structural, and Paleomagnetic Analysis of the Taylorsville and Richmond Basins. [Ph.D. thesis]: New York, New York, Columbia University, Department of Earth and Environmental Sciences, 294 p.
5. Malinconico, MA. L., 2002, Lacustrine organic sedimentation, organic metamorphism and thermal history of selected Early Mesozoic Newark Supergroup basins, Eastern U. S. A.,[Ph.D. thesis]: New York, New York, Columbia University, Department of Earth and Environmental Sciences, 419 p.
6. Rainforth, E. R., 2005, Ichnotaxonomy of the fossil footprints of the Connecticut Valley (Early Jurassic, Newark Supergroup, Connecticut and Massachusetts). [Ph.D. thesis]: New York, New York, Columbia University, Department of Earth and Environmental Sciences, 1302 p.
7. Machlus, M., 2004, Orbital forcing of continental Eocene climate: Detailed stratigraphy and $^{40}Ar/^{39}Ar$ dating of the Green River Formation in Wyoming. [Ph.D. thesis]: New York, NY, Columbia University, 123 p.
8. Whiteside, J. H., 2006, Catastrophic, Climatic, and Biotic Modulation of Ecosystem Evolution.[Ph.D. thesis]: New York, New York, Columbia University, Department of Earth and Environmental Sciences, 220 p.
9. Liu, J., 2007, New Traversodontid Materials from the North Carolina, USA and the Taxonomy, Phylogeny of Traversodontidae (Synapsida: Cynodontia). [Ph.D. thesis]: New York, New York, Columbia University, Department of Earth and Environmental Sciences, 195 p.
10. Nesbitt, S., 2008, The relationships and rise of the archosaurs. [Ph.D. thesis]: New York, New York, Columbia University, Department of Earth and Environmental Sciences, 250 p.

Publications

BOOKS

In Preparation:

Olsen, P.E., Dinosaur Tracks and Other Traces from Eastern North America: (under contract with CU Press, to be completed in 2021).

2003:

LeTourneau, P.M. and Olsen, P.E. (eds.), 2003, The Great Rift Valleys of Pangea in Eastern North America, vol. 1-2, Columbia University Press. Volume 1: Tectonics, Structure, and Volcanism, 214 p. (ISBN 0-231-11162-2); Volume 2: Sedimentology, Stratigraphy, and Paleontology, 384 p. (ISBN 0-231-12676-X).

ARTICLES

In Advanced Manuscript:

205. Et-Touhami, M., Olsen, P.E., Kent, D.V., Schlische, R.W., Witte, W., Fowell, S.J., Letourneau, P.M., Whiteside, J.H., 2019, Synchronized tectonic and climatic forcing of non-marine sedimentation across the conjugate margins of Northwest Africa and North America. for PNAS.
204. Fang, Y., Olsen, P. E., Xue, N., Wang, B., Zhang, H., Wu, C., Sha, J., 2020, Long-period obliquity pacing of lake levels in the Early Jurassic high-latitude Junggar Basin, NW China.
203. LeTourneau, P.M., and Olsen, P.E., 2019, Fraught with Strange Meanings: Connecticut Valley Fossil Footprints and the Invention of the Dinosaurs. In Farlow, J.O. and Hyatt, J.A. (eds.), Connecticut Dragons: The Dinosaurs of Dinosaur State Park and Their World, Indiana University Press.
202. McDonald, N.G., LeTourneau, P.M., Olsen, P.E., Huber, P., Lake and near-shore fossils of the Hartford Basin: Aquatic food chains and implications for the paleogeographic distribution of dinosaur tracks and track-makers. In Farlow, J.O. and Hyatt, J.A. (eds.), Connecticut Dragons: The Dinosaurs of Dinosaur State Park and Their World, Indiana University Press.
201. Olsen, P.E., An Overview of the Stratigraphy and Paleontology of the Newark Supergroup in its Global Context. In Farlow, J.O. and Hyatt, J.A. (eds.), Connecticut Dragons: The Dinosaurs of Dinosaur State Park and Their World, Indiana University Press.
200. Olsen, P.E., Kent, D.V., Sues, H-D., Whiteside, J.H., Huber, P., Reid, J.C., Taylor, K., 2019, The equatorial prelude to the dinosaurs. for Palaeogeography, Palaeoclimatology, Palaeoecology.
199. Olsen, P.E., Whiteside, J.H., Smoot, J.P., Lacustrine cyclicity and the Triassic-Jurassic transition. Fieldtrip 407, Annual Meeting Geological Society of America, Philadelphia, PA. The Mosasaur.
198. Olsen, P. E., Whiteside, J. H., Kinney, S. T., Milner, A. R. C., Suarez, C. A., and Marsh, A. D., 2021, Fieldtrip for the for the ICDP-EarthRates CPCP2/EMCT Workshop, St. George Utah, May 15-16, 2019: Scientific Drilling, v. to be submitted.
197. Whiteside, J.H., Olsen, P.E., McRoberts, C., Thompson, J.R., Et-Touhami, M., Marine strata interbedded with CAMP in the cyclical marine-nonmarine gradient in Morocco around the end-Triassic extinction. In Interrelated climatic, oceanic, and biotic events during the Triassic-Jurassic transition: a global perspective, Earth Science Reviews Special Issue.
196. Zhang, X., Sha, J., Zhang, G., Olsen, P.E., Shen, Y., Charcoal from the Early Cretaceous Jehol Biota in northern China indicates high pO_2 and yields insights into feathered dinosaur preservation. Geology, in revision.

2021:

195. Lepre, C. J. and Olsen, P. E., 2021, Hematite reconstruction of Late Triassic hydroclimate over the Colorado Plateau. PNAS, in press.
194. Kent, D. V., Olsen, P. E., Muttoni, G., Et-Touhami, M., 2021, A Late Permian paleopole from the Ikakern Formation (Argana basin, Morocco) and the configuration of Pangea. Gondwana Research, in press.
193. McDonald, N.G., LeTourneau, P.M., Olsen, P.E., Huber, P., 2021, Lake and near-shore fossils of the Hartford Basin: Aquatic food chains and implications for the paleogeographic distribution of dinosaur tracks

and track-makers. In Farlow, J.O. and Hyatt, J.A. (eds.), Connecticut Dragons: The Dinosaurs of Dinosaur State Park and Their World, Indiana University Press, in press. Lepre, C. J. and Olsen, P. E., 2021, Hematite reconstruction of Late Triassic hydroclimate over the Colorado Plateau. PNAS, in press.

192. Olsen, P.E., Et Touhami, M., Whiteside, J.H., 2019, *Cynodontipus* Ellenberger, is a vertebrate burrow, not a hairy synapsid track. Journal of Vertebrate Paleontology.
191. Whiteside, J. H., Olsen, P. E., and Et-Touhami, M., 2020, Platinum group element traces of CAMP volcanism associated with low latitude environmental and biological disruptions, In Ernst, R.E., Dickson, A.J., Bekker, A. (eds). Large Igneous Provinces: A Driver of Global Environmental and Biotic Changes. AGU Geophysical Monograph 255, p. 263-304.

2020:

190. Fox, C. P., Cui, X., Whiteside, J. H., Olsen, P. E., Summons, R. E., Grice, K., 2020, Molecular and isotopic evidence reveals the end-Triassic carbon isotope excursion is not from massive exogenous light carbon. PNAS, v. 117(48), p. 30171-30178.
189. Gehrels, G., Giesler, D., Olsen, P., Kent, D., Marsh, A., Parker, W., Rasmussen, C., Mundil, R., Irmis, R., Geissman, R., Lepre, C., 2019, LA-ICPMS U-Pb geochronology of detrital zircon grains from the Coconino, Moenkopi, and Chinle Formations in the Petrified Forest National Park (Arizona). Geochronology, v. 2(2), p. 257-282.
188. Rasmussen, C., Mundil, R., Irmis, R. B., Geisler, D., Gehrels, G. E., Olsen, P. E., Kent, D. V., Lepre, C., Kinney, S. T., Geissman, J. W., and Parker, W. G., 2020, U-Pb zircon geochronology and depositional age models for the Upper Triassic Chinle Formation (Petrified Forest National Park, Arizona, USA): Implications for Late Triassic paleoecological and paleoenvironmental change: Geological Society of America Bulletin, p. 1-20.

2019:

187. Kent, D.V., Olsen, P.E., Lepre, C., Rasmussen, C., Mundil, R., Gehrels, G.E., Giesler, D., Irmis, R.B., Geissman, J.W. and Parker, W.G., 2019, Magnetochronology of the entire Chinle Formation (Norian age) in a scientific drill core from Petrified Forest National Park (Arizona, USA) and implications for regional and global correlations in the Late Triassic. Geochemistry, Geophysics, Geosystems. https://doi.org/10.1029/2019GC008474
186. Olsen, P.E., Laskar, J., Kent, D.V., Kinney, S.T., Reynolds, D.J., Sha, J., Whiteside, J.H., 2019, Mapping Solar System chaos with the Geological Orrery. PNAS www.pnas.org/cgi/doi/10.1073/pnas.1813901116.
185. Stueeken, E., Martinez, A., Gordon Love, G., Olsen, P.E., Bates, S., Lyons, T., 2019, Effects of *p*H on redox proxies in a Jurassic rift lake: Implications for interpreting environmental records in Deep Time, Geochimica et Cosmochimica Acta, in press.
184. Whiteside, J.H., Olsen, P.E., Kinney, S.T., Et-Touhami, M., 2019, Low latitude environmental and biological disruptions at platinum group element traces of CAMP volcanism. Ernst, R.E.. Al Suwaidi, A.A., Bekker, A., Dickson, A., (eds.) Environmental Change and Large Igneous Provinces: The Deadly Kiss of LIPs, AGU Book Series, in review.

2018:

183. Kent, D.V., Olsen, P.E., Rasmussen, C., Lepre, C, Mundil, R., Irmis, R.B., Gehrels, G., Giesler, D., Geissman, J.W., and Parker, W.G., 2018, Empirical evidence for stability of the 405-kiloyear Jupiter–Venus eccentricity cycle over hundreds of millions of years. PNAS, v. 115(24), p. 6153–6158.
182. Olsen, , P.E., Geissman, J.W., Kent, D.V., Gehrels, G.E., Mundil, R., Irmis, R.B., Lepre, C., Rasmussen, C., Giesler, D., Parker, W.G. , Zakharova, N., Kürschner, W.M., Miller, C., Baranyi, V., Schaller, M.F., Whiteside, J.H., Schnurrenberger, D., Noren, A., Brady Shannon, K., O'Grady, R., Colbert, M.W., Maisano, J., Edey, D., Kinney, S.T., 2018, Colorado Plateau Coring Project, Phase I (CPCP-I): A continuously cored, globally exportable chronology of Triassic continental environmental change from Western North America. Scientific Drilling, v. 24, p. 15-40, https://www.sci-dril.net/24/15/2018/.
181. Olsen, P., Withjack, M., Schlishe, R., Pazzaglia, F., 2018, Temporal, tectonic, climatic, and environmental context of the Triassic-Jurassic rift system of Eastern North America: Emerging concepts from the Newark Rift Basin. Field Trip Guidebook, 83rd Annual Field Conference of Pennsylvania Geologists, Center Valley,

Pennsylvania, October 5-6, 2018, 87 p.

2017:

180. Baranyi, V., Reichgelt, T., Olsen, P.E., William G. Parker, W.G., Kuerschner, W.M., 2017, Norian vegetation history and related environmental changes: new data from the Chinle Formation, Petrified Forest National Park (Arizona, SW USA). GSA Bull., GSA Bull. https://doi.org/10.1130 /B31673.1..
179. Getty, P.R., Olsen, P.E., Peter M. LeTourneau, P.M., Gatesy, S.M., Hyatt, J.A., James O. Farlow, J.O., Galton, P.M., and Falkingham, P., 2017, Exploring a real Jurassic Park from the dawn of the Age of Dinosaurs in the Connecticut Valley. Geological Society of Connecticut Guidebook, No. 9, 82 p. ISBN 978-0-942081-30-5.
178. Kent, D.V., Olsen, P.E., Muttoni, G., 2017, Astrochronostratigraphic polarity time scale (APTS) for the Late Triassicnand Early Jurassic from continental sediments and correlation with standard marine stages. Earth-Science Reviews v. 166, p. 153–180.
177. Liu, J., Schneider, V.P., Olsen, P.E., 2017, The postcranial skeleton of *Boreogomphodon* (Cynodontia: Traversodontidae) from the Upper Triassic of North Carolina, USA and the comparison with other traversodontids. PeerJ 5:e3521 https://doi.org/10.7717/peerj.3521.
176. Olsen, P.E., 2017, Origins of Dinosaur Dominance in the Connecticut Valley Rift Basin. A Field Trip Sponsored by the Keck Foundation & Hosted by Wesleyan University, Keck Geological Cornsortium, p. 2-46.
175. Olsen, P.E., Milner, R.C., Kinney, S.T., 2017, Field Trip for the 5th Symposium of IGCP-632, Flagstaff AZ, September 28-30, 2017, 41 p.

2016:

174. Olsen, P.E., Kinney, S.T., Zakharova, N.V., Schlische, R.W, Withjack, M.O., Kent, D.V., Goldberg, D.S., Slater, B.E., 2016, New insights of rift basin development and the geological carbon cycle, mass extinction, and carbon from outcrops and new core, drill holes, and seismic lines from the northern Newark Basin (New York and New Jersey). In Gates, A.E. (ed.), 88th Annual, New York State Geological Field Conference, Guidebook, Geologic Diversity in the New York Metropolitan Area, pp. 190-274.
173. Wang, Y., Olsen, P.E., Sha, J., Yao, X., Liao, H., Pan, Y., Kinney, S., Zhang, X., Rao, X., 2016, Stratigraphy, correlation, depositional environments, and cyclicity of the Early Cretaceous Yixian and ?Jurassic-Cretaceous Tuchengzi formations in the Sihetun area (NE China) based on three continuous cores. Palaeogeography, Palaeoclimatology, Palaeoecology, Special Issue 4. Mesozoic Climate and Biota, v. 464, p. 110–133.
172. Zakharova, N.V., Goldberg, D.S. , Olsen, P.E., Kent, D.V., Morgan, S., Yang, Q., Stute, M., Matter, J., 2016, New insights into lithology and hydrogeology of the northern Newark Rift Basin. Geochemistry, Geophysics, Geosystems, 17, DOI 10.1002/2015GC006240.

2015:

171. Fedak, T., Sues, H-D., Olsen, P.E.., 2015, First record of the tritylodontid cynodont Oligokyphus and cynodont postcranial bones from the McCoy Brook Formation of Nova Scotia, Canada. Canadian Journal of Earth Science, v. 52, p. 244–249.
170. LeTourneau, P.M., McDonald, N.G., Olsen, P.E., Timothy C., Ku, T.C., Getty, P.R., 2015, Fossils and facies of the Connecticut Valley Lowland: Ecosystem structure and sedimentary dynamics along the footwall margin of an active rift. 97th New England Intercollegiate Geological Conference, Department of Earth and Environmental Sciences, Wesleyan University, Middletown, Connecticut, p. 107-151.
169. Olsen, P.E., Reid, J.C., Taylor, K., Kent, D., Whiteside, J.H., 2015, Revised stratigraphy of Late Triassic age strata of the Dan River Basin (Virginia and North Carolina, USA) based on drill core and outcrop data. Southeastern Geology. v. 51, p. 1-31.
168. Sha, J., Olsen, P.E., Xu, D., Yao, X., Pan, Y., Wang, Y., Zhang, X., Vajda, V., 2015, Early Mesozoic, high-latitude continental Triassic–Jurassic climate in high-latitude Asia was dominated by obliquity-paced variations (Junggar Basin, Urumqi, China). PNAS, v. 112(12), p. 3624-3629.

167. Sues, H-D. and Olsen, P.E., 2015, Stratigraphic and temporal context and faunal diversity of Permian-Jurassic continental tetrapod assemblages from the Fundy rift basin, eastern Canada. Atlantic Geology v. 51, p. 139-205.

2014:

166. Kirkland, J.I., Milner, A.R.C., Olsen, P.E., Hargrave, J.E., 2014, The Whitmore Point Member of the Moenave Formation in its type area in northern Arizona, Age and correlation with the section in St. George, Utah: Evidence for two major lacustrine sequences, In MacLean, J.S., Biek, R.F., and Huntoon, J.E., editors. Geology of Utah's far south: Utah Geological Association Publication 4, 321-355; A1-A5; B1-B5. (download a .pdf of this paper: 49.5 MB).
165. Monger, J., Blakey, R., Eberth, D.A., Harrison, C., Colpron, M., Cordey, F., Dehler, S., Evenchick, C., Fensome, R., MacRae, A., Nelson, J., Nowlan, G., Olsen, P., Poulton, T., Price, R., Sweet, A., Therrien, F., Wielens, H., Williams, G., Yorath, C., Zelenitsky, D.K., Zonneveld, J.-P., 2014, Pangea Breaks Up and Mountains Rise: Canada 251 to 65.5 Million Years Ago, in Four Billion Years and Counting: Canada's Geological Heritage, Editors: R. Fensome, G. Williams, A. Achab, J. Clague, D. Corrigan, J. Monger, G. Nowlan, Nimbus Publishing : Canadian Federation of Earth Sciences, ISBN 9781551099965, 1551099969, p.160-188.

2013:

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