

**VIRGINIA MUSEUM OF NATURAL HISTORY**  
**Board of Trustees Research and Collections Committee**

Saturday, Nov. 12, 2022

9:00-9:45 a.m.

## **A G E N D A**

- Call to order
- Roll Call: Dr. Art Evans, Dr. Tom Benzing, Dr. Carole Nash, Melany Stowe, Mark Buss.
- May 2022 Research and Collections Committee meeting minutes (action item)
- April-September 2022 acquisitions (action item)
- Review of museum collections and live animals policies
- Other business
  - Dr. Arianna Kuhn, the new VMNH Assistant Curator of Herpetology, began working at VMNH on Oct. 6. Coming to VMNH from the University of Lethbridge in southwest Alberta, Dr. Kuhn specializes in using population genomics, speciation, and community ecology to understand species- and community-level resilience to the changing world.
  - Question to curators regarding status of their internet connections.
- Adjourn

***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**  
May 20, 2022

Present at the meeting were Dr. Art Evans, Dr. Tom Benzing, Mark Buss, Lisa Carter, Melany Stowe, Dr. Carole Nash, Dr. Hayden Bassett, and Mary Zell Galen.

Committee Chairman Dr. Art Evans called the meeting to order. The minutes were unanimously approved. The full committee signed off on the museum's recent acquisitions.

Dr. Art Evans asked Dr. Hayden Bassett if he could discuss recent activities in his department. Dr. Bassett said that due to the ongoing war in Ukraine, much of his department's focus has revolved around the Cultural Heritage Monitoring Lab (CHML). Dr. Bassett said that the CHML has grown significantly in the last several months and it is now working directly with several stakeholders and partners to monitor damage to Ukraine in real-time. These stakeholders include the Department of State, which the CHML will be working with to document human rights violations abroad. Another stakeholder is the Ukrainian Ministry of Culture, and over the past few weeks, Dr. Bassett said the CHML has been meeting virtually with Ukraine's Minister of Culture as well as his staff. Dr. Bassett said that even if the war in Ukraine were to end next month, the work his team is doing with the CHML in Ukraine will continue for years to come.

Melany Stowe asked Dr. Bassett if anyone else was doing the sort of work that the CHML is doing. Dr. Bassett said other entities were doing parallel activities, but the types of work CHML is doing by working directly with Ukraine and other government agencies is unique.

Lisa Carter asked if it was possible that Russia was monitoring the work that the CHML is doing in Ukraine. Dr. Bassett said he has no evidence that they are but feels as though it's extremely likely. Dr. Bassett added that the CHML strives to be completely objective, simply reporting on impacts rather than attributing those impacts to anyone. Dr. Bassett added that the CHML has attracted the attention of such news agencies as New York Times, Washington Post, Washington Journal, PBS Newshour, BBC, The Guardian, The Telegraph, and others.

Dr. Carole Nash said she appreciated the fact that the CHML's efforts are expanding the concept of what a museum is and what it does. Dr. Bassett said that in the future, it may be possible to use the groundwork of the CHML to establish a biological equivalent that would monitor habitat loss.

The committee supported the nominations of Dr. Derek Hennen and Dr. Julian J. Lewis as Research Associates. The committee also supported the renewals of the following

Research Associates: Dr. Robert Bodnar, Dr. Art Evans, Dr. Carole Nash, Dr. Tom Benzing, William Henika, Dr. Cynthia Liutkus-Pierce, Dr. Sterling Nesbitt, Dr. John Pagels, Dr. DB Poli, and Dr. William Schmachtenberg.

Dr. Tom Benzing mentioned that a herpetologist named Michael Hayslett had expressed interest in becoming a Research Associate. Dr. Art Evans suggested that Hayslett reach out to Dr. Arianna Kuhn once she starts her new position as VMNH Assistant Curator of Herpetology in the fall.

Dr. Hayden Bassett said that he's excited about the VMNHcast, the new podcast hosted by Administrator of Science Ben Williams, and encouraged the board to listen to it.

Dr. Carole Nash said that several archaeologists, some of them quite significant, have asked to donate their collections to VMNH. This is not always possible due to space limitations. Dr. Nash said that until more collections space is available at the museum, she has offered to take these donations to Mountain Valley Archaeology. Dr. Hayden Bassett said that he's on board with the plan, although he would like direction from the board as to how many of these requests the museum should take on, adding that we're probably 3-5 years from the Douglas Avenue collections storage being ready. Bassett also added that the collection of Guatemalan artifacts the museum possesses will soon be returned to Guatemala.

Dr. Art Evans adjourned the meeting.

**APRIL-SEPTEMBER 2022 VMNH ACQUISITIONS FOR APPROVAL BY BOARD OF TRUSTEES RESEARCH AND COLLECTIONS COMMITTEE**

<b>RIM* No.</b>	<b>Collector/Donor</b>	<b>Date at VMNH</b>	<b>VMNH Dept.</b>	<b>Quantity</b>	<b>Description</b>	<b>Method</b>	<b>To Be Accessioned (Y/N)</b>
RIM 11-2022	Dr. Kal Ivanov	3/31/2022	MAMMALOGY	1	hairy-tailed Mole ( <i>Parascalops breweri</i> )	SALVAGE	Y
RIM 12-2022	Dr. Julian J. Lewis	3/4/2022	RECENT INVERTEBRATES	58 vials	95% EtOH preserved invertebrates, Isopoda	Gift	Y
RIM 13-2022	Curt W. Harden	6/13/2022	RECENT INVERTEBRATES	172	39 vials w/unknown # of unidentified invertebrates and 133 dry, pinned specimens	Gift	Y
RIM 14-2022	Derek Hennen	7/12/2022	RECENT INVERTEBRATES	39	39 vials alcohol preserved specimens, 36 w/arthropods, 3 <i>Nannaria</i>	Gift	Y
RIM 15-2022	Liberty Hightower	7/11/2022	MAMMALOGY	1	Fox Squirrel ( <i>Sciurus niger</i> ), female	SALVAGE	Y
RIM 16-2022	Laura Steele (Infinity Acres Ranch)	7/14/2022	MAMMALOGY	1	Kangaroo ( <i>Macropus</i> sp.), juvenile male	Gift	Y
RIM 17-2022	Nancy D. Moncrief	9/10/2022	MAMMALOGY	2	Eastern Mole ( <i>Scalopus aquaticus</i> ) and Virginia Opossum ( <i>Didelphis virginiana</i> )	SALVAGE	Y

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

**VMNH Collections Committee and Executive Director have Approved Recent Acquisitions: RIM 11-2022 through RIM 17-2022**

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**APRIL-SEPTEMBER 2022 VMNH ACQUISITIONS FOR APPROVAL BY BOARD OF TRUSTEES RESEARCH AND COLLECTIONS COMMITTEE**

**VMNH Board of Trustees Research & Collections Committee Review of Acquisitions: RIM 11-2022 through RIM 17-2022**

Arthur V. Evans, Chair

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(signature) Arthur V. Evans, Chair

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Date

Thomas R. Benzing

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(signature) Thomas R. Benzing

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Date

Mark J. Buss

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Date

Lisa Carter

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Date

Carole L. Nash

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(signature) Carole L. Nash

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Date

Melany Stowe

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(signature) Melany Stowe

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Date

**VIRGINIA MUSEUM OF NATURAL HISTORY  
RESEARCH AND COLLECTIONS ACTIVITIES**

**Report to the Board of Trustees  
April-June 2022**

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

- Drs. Ivanov and Means and colleagues from Brazil have a manuscript accepted at *Zoologia*.
- Drs. Ivanov and Keiper have a manuscript in review at *Journal of Forensic Sciences*.
- Dr. Ivanov provided training in insect collecting, identification, and natural history to members of the Blue Ridge Foothills and Lakes Chapter of the Virginia Master Naturalist.
- Drs. Ivanov and Means, L. Hightower, and R. George presented a workshop on arthropod diversity and collecting techniques to students from ONE Forest School.
- Dr. Ivanov participated in VMNH's first-ever Wildlife Festival and interacted with 750+ visitors.
- Drs. Ivanov and Means are serving as co-editors for a manuscript submitted to *VMNH Memoirs*.

**Research & Collections**

Drs. Ivanov and Means (VMNH), R. Bouzan, Drs. A. D. Brescovit and L. F. M. Iniesta (Instituto Butantan, Brazil) and T. M. Almeida (Instituto Nacional de Pesquisas da Amazônia, Brazil) have a paper accepted at *Zoologia*. The paper focuses on the Amazonian millipede genus *Leptherpum* (Polydesmida: Chelodesmidae) and includes the description of three new species.

Drs. Ivanov and Keiper have a Case Report in review at the *Journal of Forensic Sciences*. The manuscript focuses on recently completed forensic case regarding the death of a captive exotic animal and a litigation under the Endangered Species Act.

VMNH Research Associate and Clemson University graduate student C. Harden, VMNH Biology Technician L Hightower, and Dr. Ivanov are drafting a manuscript (to be submitted to *Subterranean Biology*) on the efficiency of two subterranean trap designs for targeting endogaeic invertebrate taxa in the Appalachian Highlands of the eastern US.

Dr. Ivanov and Virginia Tech colleagues (former graduate student M. Malone, Drs. Schurch and Taylor) are completing work on a manuscript focusing on the range expansion of the invasive Red Imported Fire Ant, *Solenopsis invicta* Buren, in Virginia. The manuscript (to be submitted to *Biological Invasions*) also explores the potential spread of this notorious invasive species across the United States using predictive distribution modelling.

Drs. Ivanov and Means (VMNH), R. Bouzan, Drs. A. D. Brescovit and L. F. M. Iniesta (Instituto Butantan, Brazil) are completing a manuscript on the worldwide distribution of the cavernicolous millipedes of the family Chelodesmidae (Diplopoda: Polydesmida). The manuscript (to be submitted to *International Journal of Speleology*), is the first account of the cave-dwelling members of the family and includes a list of all Chelodesmidae taxa reported from caves, maps their worldwide distribution, and offers a discussion of the troglomorphic features of the group.

Drs. Means and Ivanov (VMNH), R. Bouzan, Drs. L. F. M. Iniesta and A. D. Brescovit (Instituto Butantan, Brazil), D. Martinez-Torres (Universidad Nacional de Colombia, Bogota, Colombia), and L. F. Vasquez-Valverde (Virginia Tech, Blacksburg, Virginia) are working on a manuscript (to be submitted to *European Journal of Taxonomy*) focusing on the Andean-endemic millipede genus *Dibolostethus* (Polydesmida: Chelodesmidae). The manuscript includes the description of two new species (one of which from VMNH's invertebrate collections), and a summary of the tribes (with a key) and genera known from the Andean region of South America.

Drs. Means and Ivanov continued work on their ongoing "*Nannaria incertae sedis*" project which (as of now) has resulted in the discovery of 13 as of yet undescribed species in the *minor* clade of the xystodesmid genus *Nannaria* in the eastern US. Recent work included DNA extraction and quantification of all 13 taxa. The samples will be sent for genome sequencing by Dr. P. Marek and subsequently analyzed at Virginia Tech.

This quarter, Dr. Ivanov and colleagues (primarily Dr. Means) conducted fieldwork at Caldwell Co., NC, Pike Co., KY, and 10 Virginia counties (Alleghany, Dickenson, Craig, Grayson, Henry, Patrick, Roanoke, Russell, Smyth, and Washington) in support of ongoing research projects.

Drs. Ivanov and Means, and L. Hightower initiated a project focused on the leaf-litter and soil arthropod fauna of a private property located at the foothills of the Blue Ridge Mountains in Stuart, VA. The work, which is partly funded by the property's owner and longtime museum supporter L. Reagan, was largely motivated by the discovery of an unusual species of terrestrial isopod (possibly undescribed) and an apparently dense population of the state-listed threatened millipede *Apheloria whiteaheadi* (Shelley). The study, which employs a variety of arthropod collecting techniques including pitfall traps, subterranean traps, litter sifting, Malaise traps, and hand collecting, will allow for a rigorous comparison of the local arthropod above ground and below ground diversity as well as for testing hypotheses regarding the efficiency of these techniques for targeting specific components of the local ecosystem. The first two rounds of sampling were completed in early April and June.

VMNH Collections Manager H. Cartmell and Registrar J. Harris, with help from L. Hightower and Dr. Ivanov, completed work on reorganizing VMNH's "Wet" Biology storage. All taxa are now arranged systematically reflecting current knowledge.

H. Cartmell, with help from Dr. Ivanov, is working on inventorying and cataloging VMNH's Mollusca (mollusks) holdings.

Dr. Ivanov oversaw the acquisition of Dr. B. Steinly dipteran (primarily Ephydriidae) collection from Miami U, Ohio. The collection is currently temporarily stored at VMNH's disinfestation chamber awaiting processing.

Visiting researcher Dr. J. J. Lewis used VMNH's invertebrate holdings to study aquatic isopods (Isopoda: Asellidae) from the eastern US. (April 23)

Dr. Ivanov satisfied loan requests regarding VMNH's invertebrate holdings: Cynipidae (gall wasps) (Dr. A. Deans; Penn State University); *Lirceus* spp. (aquatic isopods) (Dr. J.J. Lewis; Lewis & Associates); Platyrrhacidae, including type material (millipedes) (Dr. E. Florez; Universidad Nacional de Colombia).

Dr. Ivanov oversaw the acquisition of 24 lots of ethanol-preserved identified aquatic isopods (Isopoda: Asellidae), including types of 3 newly described taxa, 32 lots of identified terrestrial isopods (Isopoda: Oniscidea), and 2 lots of identified amphipods (Amphipoda: Crangonyctidae) donated to VMNH by Dr. J.J. Lewis (Lewis & Associates; RIM2022-012); 39 lots of ethanol-preserved unidentified invertebrates, and 109 pinned/pointed identified beetles, and 24 pinned/pointed unidentified insects donated to VMNH by C. Harden (Clemson U; RIM2022-13); 36 lots of ethanol-preserved bulk invertebrates from litter samples, and 3 *Nannaria* spp. (Polydesmida: Xystodesmidae) donated to VMNH by Dr. D. Hennen (VDACS; RIM2022-14).

## **Education & Outreach**

Drs. Ivanov and Means, and L. Hightower presented displays during the 2022 Martinsville and Henry County Historic Garden Week. The Virginia Museum of Natural History was one of the host sites during the event and offered local garden clubs floral displays and pollinator displays featuring numerous specimens from the museum's invertebrate collections, which are not usually available for public viewing. The materials were widely appreciated by the public and encouraged participants to discuss features of their anatomy, morphology, and biology with the VMNH team. (April 27)

Dr. Ivanov provided training in insect collecting, identification, and natural history to members of the Blue Ridge Foothills and Lakes Chapter of the Virginia Master Naturalists, and along with VMNH Curator of Mammals Dr. Nancy Moncrief and Assistant Curator of Paleontology Dr. Adam Pritchard provided a guided tour of the museum's collections. The Virginia Museum of Natural History is one of the seven sponsoring agencies of the Virginia Master Naturalist Program, which is designed to develop a group of well-trained volunteers to provide education, outreach, and services dedicated to the management of natural resources and natural areas for the Commonwealth of Virginia. (May 14)

Dr. Ivanov and museum staff participated in VMNH's first-ever Wildlife Festival, which offered a variety of one-day-only displays and activities that ranged from invertebrate and vertebrate materials from the museum's collections to live snakes and birds of prey, special presentations by wildlife experts, and wildlife-themed children activities and crafts. The event, which brought a generally new audience to the museum, attracted over 750 children and adults from Virginia, North Carolina, and 7 additional states (Alabama, Maryland, Michigan, South Carolina, Tennessee, Vermont, and West Virginia). (June 18)

Drs. Ivanov and Means, L. Hightower, and Collections intern R. George traveled to Smith Mountain Lake and presented a workshop on arthropod diversity and collecting techniques to students from ONE Forest School. (June 29)

Collections intern Rosie George (College of William & Mary) began work in the Department of Recent Invertebrates in early June. Rosie will assist in the curation, maintenance, and management of the museum's invertebrate collection. Duties will include fieldwork; processing of samples; specimen preparation, labeling, rehousing, and cataloging; capturing data from specimens in the collections; and assisting with outreach.

Dr. Ivanov responded to arthropod identification and information requests to individuals from Bassett, Danville, Fredericksburg, and Richmond, VA.

## **Media**

"VMNHcast #4: The Tiger King and forensic entomology". VMNHcast hosted by Ben Williams, Virginia Museum of Natural History, Martinsville, Virginia. (May 18) (with Dr. J. Keiper)

## **Professional Service**

Dr. Ivanov joined Virginia Tech's graduate student G. Harrison Advisory Committee and participated in Garrett's first (virtual) committee meeting (April 6) and virtual thesis proposal (May 13). Garrett's work will focus on the subterranean arthropod diversity in southwestern Virginia utilizing subterranean traps and voucher-based DNA barcoding.

As part of Virginia Tech's graduate student D. Wilczek Advisory Committee, Dr. Ivanov traveled to Blacksburg and participated in Daniel's successful thesis defense held in the Department of Entomology on May 3.

Dr. Ivanov copy edited an article for the Virginia Natural History Society's periodical *Banisteria* (Volume 56, 2022) (completed June 30).

Dr. Ivanov served as a peer reviewer for manuscripts submitted to *Banisteria* and *VMNH Memoirs* (completed May 19 and 20).

Drs. Ivanov and Means are serving as co-editors of VMNH's *Memoirs* series for a recently submitted manuscript titled "The groundwater isopods of Virginia (Isopoda: Asellidae and Cirolanidae)" by Dr. J. J. Lewis and colleagues. The manuscript is currently in review.

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

- Dr. Moncrief and her collaborators submitted a manuscript about Lyme disease emergence in Virginia to the peer-reviewed journal *Ticks and Tick-borne Diseases*.
- Dr. Moncrief and her collaborators presented a poster about their Lyme disease study at the annual conference of the American Society of Mammalogists
- Dr. Moncrief was interviewed about her work on armadillos for an article that was published online by National Geographic.

### **Research and Collections**

In April, Dr. Moncrief and her collaborators Dr. R. Jory Brinkerhoff and Ms. Meghan Leber (University of Richmond) and Ms. Lisa Gatens (North Carolina Museum of Natural Sciences, NCMNS) submitted a manuscript to the peer-reviewed journal *Ticks and Tick-borne Diseases*. They used museum specimens to study the recent pattern of Lyme disease emergence in Virginia and North Carolina. Specifically, they screened ear clips from study skins of white-footed deermice (housed at VMNH and NCMNS) for DNA from the Lyme disease pathogen.

In June, Dr. Moncrief and her collaborators presented a poster about their Lyme disease study at the annual conference of the American Society of Mammalogists, which was attended by more than 300 researchers (faculty members, university students, and employees of state and federal agencies) from throughout North America.

Also in June, *Journal of Mammalogy* published Dr. Moncrief's manuscript about healed skeletal fractures in eastern fox squirrels and eastern gray squirrels. Most of the specimens for this study are housed in the VMNH mammal collection. Her co-authors are 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 and State University. The complete citation is: Moncrief, N. D., Hightower, L., Mead, A. J., & Ivanov, K. (2022). Prevalence and location of survivable skeletal injuries in two North American tree squirrels (*Sciurus*). *Journal of Mammalogy* 103:663–671.

Dr. Moncrief continued working with Mss. Hightower, Cartmell, and Harris to prepare, install, document, and organize traditional specimens and frozen tissues of mammals and birds and their accompanying museum documents (electronic and hardcopies).

Dr. Moncrief continued working with other members of the VMNH Collections Committee to review and revise the VMNH Collections Policy and to draft VMNH Policies for Live Animals.

### **Professional Service and Other Duties**

Dr. Moncrief serves on the Awards Committee of the Virginia Chapter of The Wildlife Society. In April, she and other committee members reviewed applications for a student scholarship to attend a training course. She also met virtually with other committee members several times to discuss application procedures for a new scholarship that will be awarded by the Chapter.

Dr. Moncrief continued serving on the Council of the Virginia Natural History Society (VNHS). She also continued serving (with Dr. Ivanov) as Co-Treasurer. As part of her duties as Co-Treasurer, she recorded dues payments for new and renewing VNHS members.

### **Scientific Programs, Exhibits, and Other Activities**

Dr. Moncrief conducted tours of the mammal and bird collections for the Martinsville Garden Club in April and the Blue Ridge Foothills and Lakes Chapter of the Virginia Master Naturalists in May.

In early May, Dr. Moncrief was interviewed about her work on armadillos by Carrie Arnold, a reporter for National Geographic. Ms. Arnold's article ([Armadillos are expanding further into the U.S.—and why is still a mystery](#)) was published online in June.

For the VMNH Wildlife Festival in June, Dr. Moncrief arranged for Ms. Katie Martin, Wildlife Biologist in the Virginia Department of Wildlife Resources, to present a lecture on bobcats, bears, and coyotes in Virginia. Dr. Moncrief also facilitated participation in the festival by Dr. Karen Powers, Professor of Biology at Radford University, and several of her students, who are members of The Wildlife Society.

**Hayden Bassett, Ph.D.**  
**Assistant Curator of Archaeology**

VMNH Assistant Curator of Archaeology Dr. Hayden Bassett focused much of his efforts on the VMNH Cultural Heritage Monitoring Lab's response to the war in Ukraine, beginning archaeological fieldwork for the Smith River Survey, and continuing fieldwork for the Patrick Henry Leatherwood project.

### **Research and Collections**

Dr. Bassett continued fieldwork on the Patrick Henry Leatherwood project, a funded effort to locate the Henry County home of Patrick Henry, and other Revolutionary War sites in the area. While the driver of this fieldwork is to identify sites for interpretation for the upcoming Revolutionary War anniversary, the VMNH archaeology team is taking this opportunity to use archaeology to learn more life on what was Virginia's western frontier in the 18<sup>th</sup> century. In July, the VMNH Archaeology team identified several local Revolutionary War related sites, including a possible local fort site.

In May and June, the VMNH Archaeology Department officially began fieldwork for the Smith River Survey – a two-year archaeological survey of sites associated with Virginia's First Peoples along the Smith River in Henry County, VA. Bassett and his team visited and sampled three sites on the lower Smith River, which their modeling determined to be highly vulnerable to flooding events. They determined that two of the three sites had been impacted by flooding. The VMNH Archaeology team hosted a cultural heritage rescue professional from Guatemala, and used this initial fieldwork as training opportunity for methods that he could apply to Mayan sites vulnerable to flooding in Guatemala. The VMNH Archaeology team will continue to sample and assess sites along the Smith River in the coming months.

In collaboration with the Smithsonian Institution, the VMNH's Cultural Heritage Monitoring Lab (CHML), under the direction of Dr. Bassett, made significant progress this quarter on projects in Virginia, Afghanistan, Guatemala, and Ukraine. Through the CHML at VMNH, Dr. Bassett continues to lead a team of 6 cultural heritage professionals and 2 virtual interns in data production and satellite imagery analysis. This included a rapid emergency response to identify cultural heritage impacted by the June 2022 earthquake in Afghanistan, in close collaboration with NASA JPL. As the producer and curatorial repository of these new digital collections, the VMNH Archaeology Department has expanded its digital collections holdings by nearly 16,400 "objects" since May 2022, and anticipates further growth in digital collections with each new quarter (a current total of A total of 108,400). A total of 80,400 digital objects in the VMNH's CHML collections were requested/accessed by outside researchers between early May and later July 2022. Approximately 48,000 of these digital objects concerned Virginia archaeology sites.

Most of Dr. Bassett's research efforts this quarter were dedicated to the leading role played by the VMNH's Cultural Heritage Monitoring Lab (CHML) in the US response to the destruction of museums, archaeological sites, and other cultural heritage sites in Ukraine. Dr. Bassett and his team developed an approach to monitoring cultural heritage using remote sensing, and other satellite-based technologies. Since late

February, the CHML team at VMNH has been monitoring over 28,000 cultural heritage sites in Ukraine every 48 hours using satellite sensors and imagery. Impacts to cultural heritage are reported to a wide spectrum of stakeholders in academia and research, government, on the ground in Ukraine, and the general public. The lab's capabilities have grown significantly since February in response to this emergency need, and through a number of new public and public-private partnerships. His collaborators in this effort include the Smithsonian Institution and the University of Maryland. Since May 10, Dr. Bassett has served as the Co-PI on the US Department of State's efforts to identify damages to cultural heritage from the conflict in Ukraine.

Between early May and late July, Dr. Bassett gave 18 presentations on the findings of the VMNH's Cultural Heritage Monitoring Lab (CHML). These presentations were given virtually to the Smithsonian Institution, UNESCO, the US Department of State, Ukrainian heritage professionals, the Cultural Rescue Center of Guatemala, and Virginia students (college-aged). Additionally, Dr. Bassett and his team authored and delivered reports of findings to key stakeholders for situational awareness, media, ground responses for protective measures, and research-driven questions on destruction of cultural property. This includes a presentation to the US Assistant Secretary of State, the Ukrainian Ambassador to the US, and other Ukrainian officials. Since early May, the work of Dr. Bassett and the CHML team at VMNH has been featured in *The Guardian*, the *Art Newspaper*, *Wilson Quarterly*, CBC Radio, and *La Croix*.

Dr. Bassett and his team also published several peer-reviewed publications this quarter. In early July, he and his collaborators published "Analysis of Damage to Ukrainian Cultural Heritage Sites: A Case Study as of 08 June 2022" in *Conflict Observatory*. In mid-July, Bassett and his team published "Impacts to Cultural Heritage in Ukraine" in *Tearline*. Additionally, he and his team's manuscript to the *Journal of Preservation Education and Research* (PER), submitted the previous quarter, has been accepted for publication. A fourth invited manuscript, for *Text & Image* (published by the University of Kiev), is currently under review. Last, Bassett and his staff are finishing a fifth (non-peer reviewed) manuscript, which they were invited to submit to *The SAA Archaeological Record*.

## **Education and Outreach**

In June, Dr. Bassett served on an expert panel for UNESCO called "Heritage from Space for Peace." Bassett was one of five global experts on the matter, and the only US expert invited to the Paris-based event. The panel was attended by 175 professionals from around the world. Also in June, Dr. Bassett gave a presentation to the entire staff of the Smithsonian Institution on the CHML at VMNH. It was attended by over 200 professionals from across the Smithsonian museums.

The VMNH Archaeology department worked with several colleges and universities this quarter. Dr. Bassett and VMNH Staff Archaeologist Madeleine Gunter Bassett continued to work 2 paid virtual interns at the undergraduate and graduate level. In June, the U.S. Department of State confirmed that they will provide the VMNH Archaeology Department an additional 4 virtual intern positions through the Virtual Student Federal Service (VSFS) program. This year-long internship will begin in September. Between early May and late July 2022, the interns and associated virtual volunteers contributed a combined 400 hours to the CHML at VMNH.

Bassett was interviewed for two podcasts this quarter: the VMNHCast and the Smithsonian's SideDoor podcast. In the VMNHCast, he discussed the VMNH Archaeology Department's Smith River Survey. In the Smithsonian's SideDoor podcast, he discussed cultural rescue initiatives and the VMNH's use of satellite technology to monitor impacts to cultural heritage. SideDoor has consistently remained in the Top 10 charts of Apple Podcasts, is in the top 1% of all podcasts in terms of listenership per episode, and has over 3.5 million listens to date.

Dr. Bassett responded to three public requests for identification of artifacts, both of them from Virginia. Two artifact identifications were made in-person (masked and distanced) either at the museum, and one on-site.

### **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. He also continued his appointment as a Research Associate at the Smithsonian Institution to support international efforts and contributions made through VMNH's new Cultural Heritage Monitoring Lab. He also continued his duties to the Legislative Affairs Committee of the Council for Virginia Archaeologists (CoVA).

From May to July, Dr. Bassett co-organized 8 meetings of the Culture Conflict Resource Network (CCRN), an NSF-funded group of collaborative researchers working on research surrounding the impacts of armed conflict on cultural heritage. The VMNH, through the Cultural Heritage Monitoring Lab (CHML), is a collaborative partner of the CCRN, along with the University of Pennsylvania, the Smithsonian, and several other institutions. Dr. Bassett presents the findings of his lab at these meetings.

This quarter, Dr. Bassett and VMNH staff archaeologist Madeleine Gunter Bassett continued to fulfill their duties in the Archaeological Society of Virginia (ASV). In these roles, VMNH Archaeology staff provide direction, technical review, grant approvals, among other tasks for state-wide archaeological research for the foreseeable future. From May to July, Dr. Bassett was consulted on 9 occasions by VA state and US federal agencies, and international institutions to implement his technical methods for using satellite imaging and remote sensing to document ground disturbance, and/or destruction of cultural heritage in conflict zones and after natural disasters. The consultations included contributions of expertise and virtual delivery of training.

**Adam Pritchard, Ph.D.**  
**Assistant Curator of Paleontology**

- **Dr. Pritchard was on medical leave from the museum from March 23 to May 9 due to a long-running illness. He underwent a transition period of ½ time work from May 9 to May 16, before returning to work full time.**
- Dr. Pritchard oversaw expansions to the VMNH collections via donations from Virginia natives in northern VA and the Richmond area. These include 100s of fossils of both vertebrate and invertebrate animals.
- Dr. Pritchard presented educational programs for the VMNH Wildlife Festival and the OLLI program at UVA.
- Dr. Pritchard contributed to the NSF GeoPaths grant in his role as prospective co-PI. The grant, led by Dr. Brooke Haiar of the University of Virginia, would provide field and museum-based education opportunities for students of underrepresented groups in the geosciences field.
- Dr. Pritchard provided fossils and contributed to displays for a column case exhibit, "The Oldest Fossils of Virginia."

### **Research & Collections**

- Dr. Pritchard oversaw the intake of several hundred new specimens for the paleontology collections:
  - Triassic (225 million year old) fish, shark teeth, and reptile teeth from Ashland, VA.
  - Jurassic (200 million year old) fishes.
  - Cenozoic (50 million year old) snakes.
  - Early (370-300 million year old) fishes.
- Dr. Pritchard oversaw research visits from scientists from the Paleobiological Institute of Poland (Warsaw, Poland), the USGS (Herndon, VA), and George Washington University (Washington, DC).
- Dr. Pritchard completed a manuscript review on Triassic reptile anatomy for the *Bulletin of the New Mexico Museum of Natural History*.
- Dr. Pritchard contributed content and edits to the grant documents for the GeoPaths NSF grant in his role as co-PI.
- Dr. Pritchard worked on two manuscripts on vertebrate paleontology. One details the hindlimb anatomy of drepanosaurs, a group of chameleon analogues from the Triassic Period (250-200 million years old). The other details new discoveries of lizards and snakes from northern Virginia (50 million years old).

### **Education & Outreach**

- Dr. Pritchard oversaw collections tours for several groups during this quarter:
  - 2 Richmond natives, one a donor of fossil specimens.
  - 15 master naturalists from the South Piedmont Chapter.
- Dr. Pritchard oversaw a job shadow program for a student from the Virginia School for the Deaf.
- Dr. Pritchard presented a program on small vertebrate fossils for the VMNH Wildlife Festival.

- Dr. Pritchard presented a lecture on the fossil record of Virginia for the OLLI program at the University of Virginia (Charlottesville, VA).

### **Exhibits**

- Dr. Pritchard coordinated with Research Associate William Schmactenberg and Exhibits Director Jessica Davenport on the column case exhibit “Oldest Fossils of Virginia.” This display is mostly made up of VMNH invertebrate fossils.

## **Research and Collections**

### **Jill K. Harris, Registrar**

Four (4) collections acquisitions were recorded for 212 specimens and 58 vials of specimens. These specimens were added to the invertebrate zoology and mammal collections.

Five (5) outgoing loans were recorded this quarter from the paleontology and invertebrate zoology collections. Loans were made to: The American Museum of Natural History, Penn State University, Virginia Tech, University of Lynchburg, and Lewis & Associates.

In efforts to standardize electronic data in the collections management database, Ms. Harris modified one or more fields in approximately 37,100 electronic records.

### **Haley Cartmell, Collections Manager**

Curators and staff modified/updated 38,063 existing records and added 122 new records to the VMNH collections databases Proficio (all museum collections) and EGEMS (paleontological collections only).

**VIRGINIA MUSEUM OF NATURAL HISTORY  
RESEARCH AND COLLECTIONS ACTIVITIES**

**Report to the Board of Trustees  
July-September 2022**

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

- Drs Ivanov and Means, and colleagues from Brazil have a manuscript accepted at *Zoologia*.
- Drs Ivanov and Means, and colleagues from Brazil submitted a manuscript to the *International Journal of Speleology*.
- Dr. Ivanov, Curator of Mammals Dr. Nancy Moncrief, Deputy Director Ryan Babrber, and Education Manager Christy Deatherage received funding from the Institute of Museum and Library Services for their *Scope It Out!* proposal.
- Dr. Ivanov participated in VMNH's Dino Festival and interacted with 2,000+ visitors.
- Dr. Ivanov gave an interview for the Bulgarian National Radio regarding his work at VMNH.

**Research and Collections**

Drs Ivanov and Means (VMNH), R. Bouzan, Drs A. D. Brescovit and L. F. M. Iniesta (Instituto Butantan, Brazil) and T. M. Almeida (Instituto Nacional de Pesquisas da Amazônia, Brazil) have a paper accepted at *Zoologia*. The paper focuses on the Amazonian millipede genus *Leptherpum* (Polydesmida: Chelodesmidae) and includes the description of three new species.

Drs Ivanov and Means, R. Bouzan, Drs A. D. Brescovit and L. F. M. Iniesta, and Dr. R. L. Ferreira (Universidade Federal de Lavras, Brazil) submitted a manuscript to the *International Journal of Speleology* focusing on the worldwide distribution of the cavernicolous millipedes of the family Chelodesmidae (Diplopoda: Polydesmida). The paper is the first account of the cave-dwelling members of the family and includes a summary of all Chelodesmidae taxa reported from caves, maps their worldwide distribution, and offers a discussion of the troglomorphic features of the group.

VMNH Research Associate and Clemson University graduate student C. Harden, VMNH Biology Technician L Hightower, and Dr. Ivanov are completing a manuscript (to be submitted to *Subterranean Biology*) on the efficiency of two subterranean trap designs for targeting endogaeic invertebrate taxa in the Appalachian Highlands of the eastern US.

Dr. Ivanov and Virginia Tech colleagues (former graduate student M. Malone, Drs R. Schurch and S. Taylor) are completing work on a manuscript focusing on the range expansion of the invasive Red Imported Fire Ant, *Solenopsis invicta* Buren, in Virginia. The manuscript (to be submitted to *PlosOne*) also explores the potential spread of this notorious invasive species across the United States using predictive distribution modelling.

Drs Means and Ivanov, R. Bouzan, Drs L. F. M. Iniesta and A. D. Brescovit, D. Martinez-Torres (Universidad Nacional de Colombia, Colombia), and L. F. Vasquez-Valverde (Virginia Tech, Virginia) are completing work on a manuscript (to be submitted to *European Journal of Taxonomy*) focusing on the South American millipede genus *Dibolostethus* (Polydesmida: Chelodesmidae). The manuscript includes the description of two new species (one of which from VMNH's invertebrate collections), and a summary of the Chelodesmidae taxa known from the Tropical Andes Biodiversity Hotspot.

Drs Ivanov and Means, R. Bouzan, Drs A. D. Brescovit and L. F. M. Iniesta are drafting a manuscript on the biogeography, endemism, and conservation of Brazilian Spirostreptida. The work (to be submitted to *Journal of Biogeography*) is the first study focusing on the biogeography of Neotropical Spirostreptida employing a multi-approach analysis to detect areas of endemism and patterns of distribution of the members of the order in Brazil.

In late September, Drs Ivanov and Means received the first DNA sequences based on extractions at VMNH's molecular lab. The data, which covers a variety of invertebrate taxa (e.g., terrestrial isopods, millipedes, ants), is in support of a number of new and ongoing projects.

Dr. Ivanov conducted fieldwork at multiple locations in four Bulgarian provinces (Blagoevgrad, Plovdiv, Ruse, and Veliko Tarnovo), one Romanian county (Giurgiu), and one Greek region (East Macedonia and Thrace) in support of ongoing research projects.

Drs Ivanov and Means, L. Hightower, and Collections intern R. George completed fieldwork and sample processing for a project focused on the leaf-litter and soil arthropod fauna of a private property located at the foothills of the Blue Ridge Mountains in Stuart, VA. The work, which is partly funded by the property's owner and longtime museum supporter L. Reagan, has resulted in the collection of an unusual species of terrestrial isopod (possibly undescribed *Ligidium*), a new species of millipede (*Nannaria*), two undescribed beetle species (*Anilinus* and *Arianops*), and a rare ant species (*Proceratium creek* De Andrade). The collected materials are temporarily stored in the Recent Invertebrates lab awaiting processing.

Dr. Ivanov oversaw the acquisition of Diptera expert Dr. B. Steinly insect collection (Miami U, Ohio). L. Hightower and Dr. Ivanov processed and inventoried the materials which comprise 23,525 pinned/pointed insects (primarily Ephydriidae and Formicidae). The collection is currently temporarily stored in VMNH's Dry Biology awaiting curation and incorporation into the museum's holdings.

L. Hightower and R. George, with help from Dr. Ivanov, completed the inventory and transfer of 1,809 backlogged bee specimens, donated by K. LeCroy (UVA), to VMNH's invertebrate holdings.

VMNH Collections Manager H. Cartmell, with help from Dr. Ivanov, completed the organization and rehousing of returned loans of 134 *Ummidia* (Araneae: Halonoproctidae) spiders (including the holotypes of *U. gingoteague* Godwin & Bond,

and *U. neilgaimani* Godwin & Bond), and 2,361 ethanol-preserved Ephemeroptera identified by Dr. J. Bond (UC Davis), and Dr. M. Meyer (Christopher Newport U), respectively.

H. Cartmell, with help from Dr. Ivanov, is continuing work on inventorying and cataloging VMNH's Mollusca (mollusks) holdings.

Dr. Ivanov reviewed and updated Recent Invertebrates annual acquisition plans. (completed September 19)

Dr. Ivanov, Curator of Mammals Dr. Nancy Moncrief, Deputy Director Ryan Babrber, and Education Manager Christy Deatherage were awarded \$37,780 from the Institute of Museum and Library Services for their *Scope It Out!* proposal. The available funds will be used to convert an existing, underutilized VMNH space into a modern multidisciplinary research and education microscopy laboratory. Eighteen stereomicroscopes were purchased in September 2022.

## **Education & Outreach**

Dr. Ivanov and museum staff participated in VMNH's Dino Festival, which offered a variety of displays and activities that ranged from invertebrate and vertebrate fossils from the museum's collections to dino-themed children activities and crafts. The two-day event, was VMNH's most successful festival to date attracting 4,604 children and adults from Virginia, North Carolina, and 12 additional states. (July 22-23)

Collections intern Rosie George (College of William & Mary) completed her internship in the Department of Recent Invertebrates in mid-August. During her work at VMNH, Rosie assisted with the curation, maintenance, and management of the museum's invertebrate collection; fieldwork; processing of samples; specimen preparation, labeling, rehousing, and cataloging; and outreach.

Dr. Ivanov responded to arthropod identification and information requests to individuals from Columbus, OH, and South Boston, VA.

## **Media**

"Single-minded stinger." *Virginia Living* magazine article by C. Kettlewell, Virginia. (August 1)

VMNHcast #7: "The Ants of Virginia". VMNHcast hosted by Ben Williams, Virginia Museum of Natural History, Martinsville, Virginia. (August 8)

"Early on Sunday". Bulgarian National Radio Horizont interview with A. Pencheva, Ecomuseum & Aquarium, Ruse, Bulgaria. (August 17)

## **Professional Service**

Dr. Ivanov and members of VMNH Biology Research Technician Search Committee began review of applications in late September.

Dr. Ivanov copy edited four articles for the Virginia Natural History Society's periodical *Banisteria* (Volume 56, 2022). (completed July 13, 14, and September 20)

Drs Ivanov and Means are serving as co-editors of VMNH's *Memoirs* series for a manuscript titled "The groundwater isopods of Virginia (Isopoda: Asellidae and Cirolanidae)" by Dr. J. J. Lewis and colleagues. Manuscript reviews were completed in late September.

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

- A manuscript about Lyme disease emergence in Virginia co-authored by Dr. Moncrief was accepted for publication by the peer-reviewed journal *Ticks and Tick-borne Diseases*.
- Dr. Moncrief was interviewed about her work on armadillos for a story that aired on WVTF and is also available as a podcast on the National Public Radio website

### **Research and Collections**

In July, Dr. Moncrief resumed a collaboration with Dr. John Scheibe (Professor Emeritus of Biology at Southeast Missouri State University). They previously published an article describing geometric morphometric comparisons of the jaws of several tree squirrel species. For the current work, they are using the extensive collection of squirrel specimens in the VMNH Mammal Collection to expand their previous work. Ms. Liberty Hightower is photographing all the squirrel jaws for Drs. Moncrief and Scheibe, and she will participate in the analyses.

In August Dr. Moncrief and her collaborators Dr. R. Jory Brinkerhoff and Ms. Meghan Leber (University of Richmond) and Ms. Lisa Gatens (North Carolina Museum of Natural Sciences, NCMNS) learned that their manuscript has been accepted for publication in the peer-reviewed journal *Ticks and Tick-borne Diseases*. They used museum specimens to study the recent pattern of Lyme disease emergence in Virginia and North Carolina. Specifically, they screened ear clips from study skins of white-footed deermice (housed at VMNH and NCMNS) for DNA from the Lyme disease pathogen.

Throughout the quarter, Dr. Moncrief continued working with Mss. Hightower, Cartmell, and Harris to prepare, install, document, and organize traditional specimens and frozen tissues of mammals and birds and their accompanying museum documents (electronic and hardcopies).

### **Professional Service and Other Duties**

In July Dr. Moncrief shepherded the process of transferring VMNH's federal permit for housing a live colony of leafcutter ants from former VMNH Exhibits Manager Ms. Jessica Davenport to VMNH Registrar Ms. Jill Harris before Ms. Davenport left VMNH.

In August Dr. Moncrief met with several members of the Virginia Chapter of The Wildlife Society to begin planning the Chapter's annual conference for 2023. Tentative plans are for the conference to take place in Martinsville in February 2023. Workshops and technical presentations will occur at New College Institute, and the annual dinner will be held at VMNH. Attendance averages 125 members and included professionals from multiple state and federal agencies as well as faculty members and students from several Virginia colleges and universities (including Radford, George Mason, Virginia Tech, Bridgewater, Randolph Macon, and Richmond).

In August, Institute of Museum and Library Services (IMLS) notified VMNH that IMLS will fund a grant proposal (for about \$35,000) to purchase equipment for a microscope lab that will serve as a resource for VMNH science education programs and outreach activities. Dr. Moncrief worked with Associate Curator of Recent Invertebrates Dr. Kal Ivanov, Education Manager Christy Deatherage, and Deputy Director Ryan Barber to prepare and submit this proposal. Dr. Moncrief also met with Ms. Deatherage and WDBJ reporter Makayla Shelton for a report about the new lab that aired on WDBJ.

Dr. Moncrief recently served on a panel for the National Science Foundation. She will provide more details during the committee meeting.

### **Scientific Programs, Exhibits, and Other Activities**

In July, Dr. Moncrief participated in VMNH's Dinosaur Festival. She worked at the admissions table for VMNH and ASTC members with Ms. Charlotte Harter.

In late August Dr. Moncrief taught a session about mammals of Virginia and techniques used to study mammals for the Piedmont Master Naturalists' basic training course.

In August, Dr. Moncrief recorded a VMNH podcast about armadillos in Virginia with VMNH Science Administrator Mr. Ben Williams. She also recorded an interview about Virginia armadillos with West Virginia Public Radio reporter Mason Adams; this segment aired in late September on WVTF's Radio IQ and is also available as a podcast on the National Public Radio website:

<https://www.npr.org/podcasts/381443598/inside-appalachia>

**Hayden Bassett, Ph.D.**  
**Assistant Curator of Archaeology**

Through additional grants awarded, the VMNH Archaeology Department has grown to 18 personnel as of October 2022. This includes the Department Head VMNH Assistant Curator of Archaeology Dr. Hayden Bassett, VMNH Senior Staff Archaeologist Madeleine Gunter-Bassett, the three core staff of the Cultural Heritage Monitoring Lab (William Welsh, Dr Kate Harrell, and Damian Koropecyj), two part-time analysts, and 11 virtual interns.

*VMNH Archaeology Department: AUG-OCT 2022*

- Full-time:
  - Hayden Bassett, PhD. (Dept. Head: Assistant Curator of Archaeology & CHML Director)
  - Madeline Gunter-Bassett, M.A. (Senior Staff Archaeologist & CHML Senior Analyst)
  - William Welsh, M.M.A. (CHML Director of Operations)
  - Katherine Harrell, Ph.D. (CHML Director of Education)
  - Damian Koropecyj, M.A. (CHML Senior Analyst)
- Part-Time:
  - Kaitlyn Fitzgerald, M.A. (CHML Analyst)
  - Abigail Maher (CHML Analyst)
- Current Interns:
  - Sydney Lynch, *University of Mississippi*
  - Audrey Crouch, *College of William & Mary*
  - Katherine Rogers, *Georgetown University*
  - Samuel Meade, *Yale University*
  - Eli Tsung, *Yale University*
  - Nicholas Cromwell, *UC Santa Barbara*
  - Sophia Rodriguez-Bell, *University of Chicago*
  - Stefany Carty, *Saint Louis University*
  - Daphne Moss, *McGill University*
  - Christina Grossen, *Seton Hall University*
  - Henry McDaniel, *University of Pennsylvania*

This quarter, Dr. Bassett focused his teams' efforts on new terrestrial and underwater initiatives with archaeology in Virginia, VMNH Cultural Heritage Monitoring Lab's response to the war in Ukraine, continuing archaeological fieldwork for the Smith River Survey, continued focus on VMNH's digital and physical collections, and continuing fieldwork for the Patrick Henry Leatherwood project.

### **Research and Collections**

This quarter, the VMNH Archaeology Department took on the additional responsibility of managing collections for the VMNH Geology Department. This effort is led by VMNH Senior Staff Archaeologist Madeleine Gunter-Bassett because of her combined training in Archaeology and Geology. In October, Madeleine organized the geology collections room to bring it up to VMNH standards for curation and researcher access. Madeleine will facilitate future management and researcher access for these specimens.

From August to October, the VMNH Archaeology Department continued work on the Smith River Survey – a two-year archaeological survey of sites associated with Virginia’s First Peoples along the Smith River in Henry County, VA. Bassett and his team refined their geospatial model of the Smith River, and created new ways to predict impacts to archaeological sites in the region. They also developed a new method to rapidly assess the impacts of future flooding events using satellite radar detection of flood waters on/near archaeological sites.

VMNH Archaeologist Madeleine Gunter-Bassett continued her research on sourcing copper found on archaeological sites associated with Virginia’s First Peoples. She and her co-authors from VCU and the Field Museum used elemental sourcing methods to identify the likely sources of copper used to make copper artifacts. Contrary to long held beliefs, Gunter-Bassett and her colleagues identified that much of the copper found on contact-period sites in Virginia is likely a combination of native copper and European trade copper. Native copper was traded through longstanding North American trade networks that extended as far as the Great Lakes region.

Madeleine also began a NAGPRA (Native American Graves Protection and Repatriation Act) inventory of the VMNH Archaeology collections. A NAGPRA inventory is conducted by an institution to determine if any objects in the collections could be associated with Native American burials (to include human remains and/or associated burial objects). Dr. Hayden Bassett continued fieldwork on the Patrick Henry Leatherwood project, a funded effort to locate the Henry County home of Patrick Henry, and other Revolutionary War sites in the area. While the driver of this fieldwork is to identify sites for interpretation for the upcoming 250<sup>th</sup> Revolutionary War anniversary, the VMNH archaeology team is taking this opportunity to use archaeology to learn more on life in what was Virginia’s western frontier in the 18<sup>th</sup> century. This quarter, the VMNH Archaeology spent time locating and digitizing early 19<sup>th</sup> century maps of Henry County held in the collections of the Library of Virginia and testing several potential field sites. The team discovered one map that Dr. Bassett believes to be the earliest depiction on Martinsville/court-house square.

In collaboration with the Smithsonian Institution, the VMNH’s Cultural Heritage Monitoring Lab (CHML) under the direction of Dr. Bassett made significant progress this quarter on projects in Virginia, Guatemala, and Ukraine. Through the CHML at VMNH, Dr. Bassett continues to lead a team of 6 cultural heritage professionals and 11 virtual interns in data production and satellite imagery analysis. In October, the CHML team began developing a predictive model of prehistoric underwater archaeological sites in Virginia. They are working in close collaboration with the State Underwater Archaeologist to further develop and test this model for future implementation to inform Virginia cultural resource management, planning/development, and policy. While the VMNH Archaeology Lab and CHML currently have trained personnel to perform underwater archaeology, they will continue to build capacity in equipment and capabilities to better support the Virginia Department of Historic Resources and other state agencies in locating and protecting the Commonwealth’s underwater cultural heritage.

As the producer and curatorial repository of digital collections, the VMNH Archaeology Department has expanded its digital collections holdings by nearly 46,200 “objects”

since August 2022, and anticipates further growth in digital collections with each new quarter. The new objects include cultural heritage site locations in Virginia, Ukraine, and Guatemala. A total of 32,100 digital objects in the VMNH's digital collections were requested/accessed by outside researchers between August and October 2022. With the current physical storage space limitations at the VMNH, the Archaeology Dept will continue to focus on development and growth of its digital collections for public benefit. A part Dr. Bassett's research efforts this quarter were dedicated to the leading role played by the VMNH's Cultural Heritage Monitoring Lab (CHML) in the US response to the destruction of museums, archaeological sites, and other cultural heritage sites in Ukraine. Dr. Bassett, Dr. Harrell, Damian Koropecykj, Madeline Gunter-Bassett, Bill Welsh, and the extended team developed an approach to monitoring cultural heritage using remote sensing, and other satellite-based technologies. Since late February, the VMNH-CHML team at VMNH has been monitoring over 28,000 cultural heritage sites in Ukraine every 48 hours using satellite sensors and imagery. Dr. Bassett serves as the Co-PI on a \$15 million grant through the US Department of State, in which the VMNH plays an important role. This work has resulted in four publications this quarter and international recognition of the VMNH as a leading research institution at the nexus of archaeology and international affairs. The research output of the CHML at VMNH is hosted by the *Conflict Observatory* and *Tearline*.

This quarter, Dr. Bassett and the VMNH-CHML team were also awarded \$109,000 Rockefeller Grant through the Smithsonian to further expand and sustain this applied international research. Additionally, through the work for Bill Welsh, the VMNH signed an MOU to partner with Premise, who has agreed to provide an in-kind donation to the VMNH in the form of credits to be used on its data collection platform.

## Publications

Dr. Bassett and his team published four peer-reviewed, open-access publications this quarter:

Bassett, Hayden F., Harrell, K., Koropecykj, D., Gunter-Bassett, M., & Welsh, W. (2022). "Cultural Heritage and the Problem of Prioritization." *Text and Image: Essential Problems in Art History*, 1(13), 43–50. Available at: <https://txim.history.knu.ua/article/view/161>

Bassett, H. F., Aronson, J., Cil, D., Hanson, K., Meharry, J. E., Narimanova, N., Averyt, K., Carroll, C., Koropecykj, D. V., Harrell, K., Welsh, W., Wegener, C., and Daniels, B. I. (2022). "Potential Damage to Ukrainian Cultural Heritage Sites, 24 February 2022 and 30 September 2022." In *Conflict Observatory*. Virginia Museum of Natural History, Cultural Heritage Monitoring Lab; University of Maryland, Center for International Development and Conflict Management; and Smithsonian Institution, Smithsonian Cultural Rescue Initiative. Available at: <https://hub.conflictobservatory.org/portal/sharing/rest/content/items/8e66ddb9d46442a2af3656bc01c4752b/data>

Bassett, H. F., Aronson, J., Cil, D., Hanson, K., Meharry, J. E., Narimanova, N., Averyt, K., Carroll, C., Koropecykj, D. V., Harrell, K., Welsh, W., Wegener, C., and Daniels, B. I. (2022). "Potential Damage to Ukrainian Cultural Heritage Sites, 24 February 2022 to 31 August 2022." In *Conflict Observatory*. Virginia Museum of

Natural History, Cultural Heritage Monitoring Lab; University of Maryland, Center for International Development and Conflict Management; and Smithsonian Institution, Smithsonian Cultural Rescue Initiative. Available at: <https://hub.conflictobservatory.org/portal/sharing/rest/content/items/81d7ff95814c4f828041e879cde777c1/data>

Koropecyk, D., Bassett, H., Harrell, K., Welsh, W., and Gunter-Bassett, M. (2022). "Impacts to Cultural Heritage in Ukraine: July 01 to August 31, 2022" in *Tearline*. Available at: [https://www.tearline.mil/public\\_page/impacts-to-cultural-heritage-in-ukraine-july-through-august-2022/](https://www.tearline.mil/public_page/impacts-to-cultural-heritage-in-ukraine-july-through-august-2022/)

## Education and Outreach

In October, Dr. Bassett served on an expert panel (virtually) in The Hague, Netherlands for the Cultural Property Protection Leadership Meeting. Bassett was one of a handful of global leaders teaching cultural professionals from around the world new methods in Cultural Property Protection. The event was co-sponsored by the Smithsonian Institution and Cultural Emergency Response (CER).

The VMNH Archaeology department worked with several colleges and universities this quarter. The VMNH Archaeology Department brought on 11 virtual interns under CHML Director of Education Dr. Kate Harrell through the Virtual Student Federal Service (VSFS) program. Current student interns in the department represent 10 different universities. This year-long internship began September and will run through May 2023. The virtual volunteers each contribute 10 hrs/week to the CHML at VMNH for the entire academic school year for credit through their respective colleges and universities. Additionally, Dr. Joe Kieper and Dr. Bassett met with Fishburne Military Academy in Waynesboro, VA and the Virginia Military Institute (VMI) to identify opportunities for partnership and student engagement.

In September, Dr. Bassett was featured twice in national media: [an interview on National Public Radio \(NPR\)'s program 1A](#), and a [television appearance on PBS Newshour](#).

Between September and October, Dr. Bassett and CHML archaeologist Bill Welsh were invited to Guatemala to teach 20 local professionals how to identify underwater archaeological sites and map threats and impacts to the country's Mayan archaeological sites. Over the course of 9 days, Bassett and Welsh provided field and classroom instruction, led underwater archaeological surveys in Lake Peten (identifying both Mayan and Spanish colonial artifacts), and conducted field assessments on regional Mayan cities. This partnership will continue in 2023 to lend technical specialty unique to the VMNH to those who request assistance and to build relationships for upcoming VMNH repatriation efforts.

Dr. Bassett responded to two public requests for identification of artifacts, both from Virginia. One artifact identification was made in-person, and one was made virtually. Additionally, Dr. Bassett and Madeleine Gunter-Bassett conducted a site identification in Bassett, VA.

## **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. He also continued his appointment as a Research Associate at the Smithsonian Institution to support international efforts and contributions made through VMNH's new Cultural Heritage Monitoring Lab.

From August through October, Dr. Bassett co-organized 10 meetings of the Culture Conflict Resource Network (CCRN), an NSF-funded group of collaborative researchers working on research surrounding the impacts of armed conflict on cultural heritage. The VMNH, through the Cultural Heritage Monitoring Lab (CHML), is a collaborative partner of the CCRN, along with the University of Pennsylvania, the Smithsonian, and several other institutions. Dr. Bassett presents the findings of his lab at these meetings.

This quarter, Dr. Bassett and VMNH staff archaeologist Madeleine Gunter Bassett continued to fulfill their duties in the Archaeological Society of Virginia (ASV) and Council for Virginia Archaeologists (CoVA). In their roles on committees in these organizations, VMNH Archaeology staff provide direction, technical review, grant approvals, among other tasks for state-wide archaeological research for the foreseeable future. In October, they attended the quarterly meeting of the CoVA, representing the VMNH in Virginia Archaeology.

From August to October, Dr. Bassett was consulted on 6 occasions by VA state agencies, US federal agencies and law enforcement entities, and international institutions to implement his technical methods for using satellite imaging and remote sensing to document ground disturbance, and/or destruction of cultural heritage in conflict zones and after natural disasters. The consultations included contributions of technical and policy-related expertise, as well as virtual delivery of training.

**Adam Pritchard, Ph.D.**  
**Assistant Curator of Paleontology**

- Dr. Pritchard organized and executed a large multi-institutional field trip to his field site in the Triassic of Ashland, Virginia, seeking to strengthen collaborations and receive advice on best practices moving forward. Participants involved came from the Smithsonian Institution, Virginia Tech, Columbia University, and the North Carolina Museum of Natural Sciences.
- Dr. Pritchard (as a co-PI) submitted a grant to the National Science Foundation Excellence in Research program with a collaborative team from Howard University. Led by VMNH research associate Ray Bernor, the grant would fund collections expansion, exhibit development, and educational programs related to horse evolution.
- Dr. Pritchard developed a display for the 2022 Dinosaur Festival featuring a complete leg of a long-necked sauropod dinosaur. The festival attracted over 4,000 participants over a two-day period.
- Dr. Pritchard traveled to Virginia Tech multiple times for collaborative trips to complete his manuscript on Triassic vertebrate anatomy, discuss new 3D modeling techniques and projects, and initiate new collaborative efforts.

### **Research and Collections**

- Dr. Pritchard oversaw two field trips to the Ashland Triassic Site: one with a student from GWU in July and a large, multi-institutional collaboration in September.
- Dr. Pritchard oversaw three in-person paleontology collections visits from researchers from Virginia and California.
- Dr. Pritchard continued work on a Triassic vertebrate descriptive manuscript for the journal *Anatomical Record*. Submission will occur in Q4 2022.
- Dr. Pritchard developed three-dimensional reconstructions of flying reptile bones in collaboration with a team from VT and Yale University.
- In collaboration with technician Lucy Treado, Dr. Pritchard developed the ongoing Petra cave cat project:
  - New preparation techniques to better protect the specimen.
  - Purchase of a C14 analysis of the specimen (expected in Q4 2022).

### **Education and Outreach**

- Dr. Pritchard presented on the basics of paleontology for the South Piedmont chapter of the Virginia Master Naturalists.
- Dr. Pritchard provided information on paleontology careers for two Virginia undergraduate students.
- Dr. Pritchard provided curation advice to the Middlesex Museum on the best ways to safely maintain a whale skull.
- Dr. Pritchard provided specimen identifications for a private resident from Greenville, North Carolina.

### **Grants and Funding**

- In collaboration with Research Associate Dr. Ray Bernor and a team from Howard University, Dr. Pritchard submitted a grant to the EiR program of the National Science Foundation focused on research of and education about the evolution of horses. The program would provide over \$70,000 for specimen printing, educational programs, and exhibit development.
- Dr. Pritchard began negotiating the sale of casts of VMNH specimens to the York County Museum, re-initiating the income stream from paleontology cast sales.

### **Professional Service**

- Dr. Pritchard reviewed four manuscripts on reptile paleontology for the *Journal of Vertebrate Paleontology*, *Annals of the Carnegie Museum*, and *PloS One*.
- Dr. Pritchard wrote, edited, and reviewed content for the Ranger Rick *ZooDinos* magazine series.

## **Research and Collections**

### **Jill K. Harris, Registrar**

Seven (7) collections acquisitions were recorded for 216 specimens and 58 vials of specimens. These specimens were added to the invertebrate zoology and mammal collections.

Six (6) outgoing loans were recorded this quarter from the paleontology and invertebrate zoology collections. Loans were made to: The American Museum of Natural History, Penn State University, Virginia Tech, University of Lynchburg, and Lewis & Associates.

In efforts to standardize electronic data within the collections management database, Ms. Harris modified one or more fields in approximately 30,250 electronic records.

### **Haley Cartmell, Collections Manager**

Curators and staff modified/updated 20,026 existing records and added 152 new records to the VMNH collections databases Proficio (all museum collections) and EGEMS (paleontological collections only).

PEOPLE SERVED DATABASE printed 7/28/2022  
Summary

# of Activities	TYPE OF ACTIVITY	PROFESSIONALS AND 13+ STUDENTS	K-12 STUDENTS	K-12 TEACHERS	PUBLIC			TOTAL #	
2	Conference presentations (A)	312	0	0	0			312	
6	Meetings chaired (B)	71	0	0	6			77	
8	Review documents/manuscripts (B)	8	0	0	0			8	
0	Requests for information about collections (C)	0	0	0	0			0	
4	Visiting researcher (C)	4	0	0	0			4	
7	Collections tours (D)	2	0	0	88			90	
1	Lab Tours (D)	6	0	0	0			6	
0	Receptions	0	0	0	0			0	
12	Responses to requests for information about specimens at VMNH (D)	6	0	0	6			12	
4	Lectures and presentations at VMNH (D)	2	0	0	153			155	
0	Technical consultations (B, D, & E)	0	0	0	0			0	
8	Display table with specimens	0	0	0	819			819	
2	Off-site education programs	0	11	4	0			15	
4	Lectures Not at VMNH (E)	39	0	0	13			52	
3	Off-site presentations (E)	0	22	8	15			45	
1	Field trips/Field Work	0	0	0	5			5	
62	<b>TOTALS</b>							1600	

TOTAL # INDIVIDUALS SERVED

1600

# of Activities	TYPE OF ACTIVITY	PROFESSIONALS AND 13+ STUDENTS	K-12 STUDENTS	K-12 TEACHERS	PUBLIC			TOTAL #	
1	Conference presentations (A)	0	0	0	84			84	
14	Meetings chaired (B)	183	0	0	0			183	
9	Review documents/manuscripts (B)	29	0	0	0			29	
2	Requests for information about collections (C)	2	0	0	0			2	
3	Visiting researcher (C)	3	0	0	0			3	
1	Collections tours (D)	0	0	0	2			2	
0	Lab Tours (D)	0	0	0	0			0	
0	Receptions	0	0	0	0			0	
11	Responses to requests for information about specimens at VMNH (D)	10	0	0	1			11	
6	Lectures and presentations at VMNH (D)	12	0	0	70			82	
0	Technical consultations (B, D, & E)	0	0	0	0			0	
8	Display table with specimens	0	0	0	4604			4604	
0	Off-site education programs	0	0	0	0			0	
3	Lectures Not at VMNH (E)	9	14	2	105			130	
5	Off-site presentations (E)	0	0	0	25			25	
6	Field trips/Field Work	7	16	4	32			59	
69	<b>TOTALS</b>							5214	

TOTAL # INDIVIDUALS SERVED

5214

## **Research & Collections Facebook & Instagram Statistics (July 1 - September 30, 2022)**

### **Total Research & Collections Post Reach**

38,247

### **Total Research & Collections Post Engagement (Likes, Shares, Comments, Link Clicks)**

1,398

### **Top 5 Performing Research & Collections Posts By Total Engagement**

1. #BenInNature - The northern ring-necked snake (August 22) - 416 Engagements
2. #BenInNature - The pleasing picture-winged antlion (July 18) - 144 Engagements
3. #BenInNature - Juvenile woodland box turtle (August 10) - 110 Engagements
4. CHML Training Participation: PBS News Hour (September 8) - 105 Engagements
5. #BenInNature - VMNHCast with Dr. Kal Ivanov (August 15) - 100 Engagements

### **For Reference**

- Current number of VMNH Facebook Page Followers as of November 3, 2022 = 16,541