VIRGINIA MUSEUM OF NATURAL HISTORY
Board of Trustees Research and Collections Committee
Saturday, Feb. 10, 2024
9 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.
- November 2023 Research and Collections Committee meeting minutes (action item)
- October-December 2023 acquisitions (action item)
- Other business
- 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
Nov. 18, 2023

Present at the meeting were Dr. Art Evans, Dr. Carole Nash, Dr. Tom Benzing, Mark Buss, Cynthia Marquez, Dr. Joe Keiper, and Ben Williams.

Committee Chairman Dr. Art Evans called the meeting to order. The minutes of the Aug. 11, 2023 were unanimously approved. The recent acquisitions were also unanimously approved.

Dr. Art Evans said that included in the Research and Collections Committee report was an article titled “The Silent Extinction of Species and Taxonomists — An Appeal to Science Policymakers and Legislators.” Evans said that he is always interested in communicating to rest of the board the importance of research and collections, and he wants to have the board come up with a series of talking points to more effectively communicate this message to legislators. Dr. Carole Nash agreed, describing taxonomy as “undervalued and underappreciated.” Evans said that VMNH has done quite well given its size, but it’s difficult to convince legislators that taxonomy and natural history should be supported with tax dollars.

Dr. Tom Benzing said that he recently read a book called “Founding Gardeners” by Andrea Wulf which discusses how the founding fathers had background in agriculture. George Washington insisted on planting an American garden with native plants rather than a European garden, and he wanted it to face west, not east. For the founding fathers, planting native trees was an act of patriotism. Therefore, he said, the board might gain traction with legislators by positing that recognizing our natural history and heritage is an inherently patriotic act. Dr. Carole Nash said that she has been having similar conversations with Grand Caverns; natural history, she said, is what makes the U.S. special, and that while we may not have ruins or cathedrals, we do have bison. Evans said that he would like to eventually develop a glossary of concepts that the board can share with policymakers. Dr. Joe Keiper said that scientists often have difficulty communicating ideas to the public, and that if every staffer and board member had the same 2-3 minute pitch, it would help considerably.

Dr. Carole Nash said that she has had success conveying the importance of natural history and the realities of climate change to legislators who are hunting or fishing enthusiasts. Farmers also innately understand the importance of these concepts, she said.

Dr. Art Evans said that entomologist Quentin Wheeler has made excellent points on his blog regarding how molecular work has begun overshadowing classic taxonomy and morphology, which is another important message to convey.

Dr. Art Evans said that the museum’s next big push will be to keep up with the continued growth of collections and he was glad to hear that the Douglas Avenue site

may be ready sooner than initially anticipated. He asked Dr. Joe Keiper if there were any updates on the possibility of VMNH acquiring the YMCA building next door to the museum. Keiper said that there have not been any updates and the YMCA is still in the stage of fundraising for their new location. If the museum were to acquire the YMCA, the maintenance reserve fund would allow for converting the YMCA back to its condition when first built. Evans said that he was pleased with the progress on Douglas Avenue, and Keiper said that there will be lots of different potential uses of the building for the board to consider in the coming years.

Regarding the talking points discussed earlier, Dr. Carole Nash said that it would be useful to have the curators pick out favorite items from their collections, preferably specimens that have good stories behind them that would engage the public.

During further discussion the book “Founding Gardeners,” Dr. Art Evans said that he read the book “Butterfly People” by William Leach and that he was struck by the fact that people were concerned about the effects of habitat destruction as far back as the late 19th century. Dr. Tom Benzing said he recently read a book about road ecology. In Virginia, he said, VDOT has approved a Wildlife Corridor Action Plan and works with DWR when constructing roads; in some areas where animals are frequently struck by vehicles, fences are constructed to funnel animals toward tunnels that pass beneath the roads.

Dr. Art Evans adjourned the meeting.

SEPTEMBER-DECEMBER 2023 VMNH ACQUISITIONS FOR APPROVAL BY BOARD OF TRUSTEES RESEARCH AND COLLECTIONS COMMITTEE

RIM* #	Collector/Donor	Date at VMNH	VMNH Dept.	QTY	Description	Method	To Be Accessioned (Y/N)
RIM 59-2023	Dr. Julian J. Lewis	10/26/2023	RECENT INVERTEBRATES	239	228 Asellidae isopods preserved in 95% EtOH and 11 amphipods	Gift	Y
RIM 60-2023	Arianna Kuhn	10/30/2023	HERPETOLOGY	1	Black Rat Snake (*Pantherophis alleghaniensis*)	Salvaged	Y
RIM 61-2023	Paul Sattler	9/25/2023	HERPETOLOGY	2	adult Southern Cricket Frog (*Acris gryllus*)	Gift	Y
RIM 62-2023	Arthur V. Evans	10/4/2023	RECENT INVERTEBRATES	817	815 dry, pinned specimens: 764 Coleoptera, 50 Hemiptera, 1 Orthoptera; and, 2 alcohol preserved unidentified Blattodea	Gift	Y
RIM 63-2023	Curt W. Harden	11/13/2023	RECENT INVERTEBRATES	10	3 pinned paratypes of *Horologion hubbardi* Harden & Davidson, and 7 vials of unknown # of unidentified inverts	Gift	Y
RIM 64-2023	Marshall Boyd	10/20/2023	MAMMALOGY	1	White-tailed deer (*Odocoileus virginianus*)	Salvaged	Y
RIM 65-2023	Marshall Boyd	11/16/2023	MAMMALOGY	2	Red Fox (*Vulpes vulpes*) and White-tailed deer (*Odocoileus virginianus*)	Salvaged	Y
RIM 66-2023	Liberty Hightower	11/8/2023	MAMMALOGY	1	Groundhog (*Marmota monax*)	Salvaged	Y
RIM 67-2023	Nancy D. Moncrief	12/14/2023	MAMMALOGY	2	Flying Squirrel (*Glaucomys* sp.) and Chipmunk (*Tamias striatus*)	Salvaged	Y
RIM 68-2023	Nancy D. Moncrief	12/18/2023	ORNITHOLOGY	2	Wood Thrush (*Hylocichla mustelina*) and American Robin (*Turdus migratorius*)	Salvaged	Y
RIM 69-2023	Marshall Boyd	1/28/2023	HERPETOLOGY	1	Green Tree Frog (*Hyla cinerea*)	Salvaged	Y
RIM 70-2023	Pete Kroehler	9/6/2023	PALEONTOLOGY	4 boxes	fossil plant, fish, and trackway samples	Gift	Y
RIM 71-2023	Meghan Stewardson	12/11/2023	PALEONTOLOGY	1	stone with fossils	Gift	Y
RIM 72-2023	David A. Hubbard, Jr.	12/21/2023	PALEONTOLOGY	1	small bag containing vials of cave fossil samples	Gift	Y
RIM 73-2023	US FOREST SERVICE (Starr Chapel Cave)	12/21/2023	PALEONTOLOGY	3 boxes	fossil material from Starr Chapel Cave (US Forest Service property)	Gift	No – US Forest Service Property

* RIM is an acronym for the Record of Incoming Material

SEPTEMBER-DECEMBER 2023 VMNH ACQUISITIONS FOR APPROVAL BY BOARD OF TRUSTEES RESEARCH AND COLLECTIONS COMMITTEE

VMNH Collections Committee and Executive Director have Approved Recent Acquisitions: RIM 59-2023 through RIM 73-2023

VMNH Board of Trustees Research & Collections Committee Review of Acquisitions: RIM 59-2023 through RIM 73-2023

Arthur V. Evans, Chair

_____ _____

(signature) Arthur V. Evans, Chair Date

Thomas R. Benzing

_____ _____

(signature) Thomas R. Benzing Date

Mark J. Buss

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(signature) Mark J. Buss Date

Carole L. Nash

_____ _____

(signature) Carole L. Nash Date

Melany Stowe

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(signature) Melany Stowe Date

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(signature) Date

Virginia Museum of
NATURAL HISTORY

Calendar Year 2023 Acquisition Plans

Research and Collections

Archaeology
Dr. Hayden Bassett

The main impediment to collections care and accessibility in 2022-2023 is storage space. Several large collections were accepted between 2017-2019, putting the Archaeological collections room at capacity (98% filled). This makes accessibility of the collection difficult, as we will increasingly have to rely on opportunistic or off-site storage. In 2022, the archaeology curator and staff archaeologist continued to reorganize collections to maximize limited space. All available general-use storage space outside of designated archaeological storage has now been filled by other curatorial departments. Because of this, acquisition of new archaeological collections is currently on hold. The remaining space will be reserved for VMNH-generated archaeological collections from the Smith River Survey and Leatherwood projects.

Priority 1. Collections from local/regional archaeological sites, generated by VMNH Archaeological fieldwork. The VMNH Archaeology department has received two major grants for fieldwork in Henry County, to be conducted between 2022-2024: 1.) the Smith River Survey, and 2.) the Patrick Henry Leatherwood project. Fieldwork has begun, involving targeted phase I and phase II excavations, which are now generating new collections. Because the Archaeological storage room is at capacity, these new collections will be stored in Room 130 for in-processing, accessioning, active study, reporting, new exhibit creation, and specialized analyses.

Priority 2. Collections related to published research, with high research potential, currently housed elsewhere. A special emphasis will be placed on acquisition of local/regional collections.

Priority 3. Collections currently held by other state agencies, colleges or universities, or companies/organizations participating in cultural resource management projects.

Priority 4. Salvage and opportunistic.
Archaeological specimens recovered through opportunistic site visits or through donations. This includes unsolicited donations that may contain research quality or exhibit/educational quality specimens.

Priority 5. Collections from non-academic or research-based sources, *i.e.*, private collections.
These collections tend to be large and have little to no research value. Few of these collections are accepted and then only if they have exceptional exhibit or education value or include a rare artifact type with some provenience information.

Earth Sciences

There is currently no Earth Sciences curator and no plan to acquire new materials; however, there may be some opportunistic acquisitions. These will be handled on a case by case basis and existing storage space should be sufficient to store them. It is possible that education and/or exhibits material may be added to the collections. If this includes mineral specimens, these may be accessioned.

Paleontology
Dr. Adam C. Pritchard

The following materials are expected to be acquired within the next year and can be accommodated in existing paleontology storage areas. This does not preclude the possibility of acquisition of additional material that becomes available because of orphaned collections or new discoveries.

Priority 1. **Triassic fossils of Virginia.** Multiple one day to one week excavations in Ashland, VA and the circum-Richmond area. Acquisitions will include multiple types of rock containing plants, invertebrates (clam shrimp, insects), and vertebrates. Likely to total two to three double-wide cabinet drawers full of specimens.

Priority 2. **Wyoming dinosaur project, Two Sisters Quarry.** One three-week excavation planned for Summer of 2023, headed by Brooke Haiar (U Lynchburg), Lucy Treado, and myself. Work will recover 10+ plaster jackets and isolated bones of dinosaurs. Likely to total two to three double-wide cabinet drawers full of specimens. Specimens owned by BLM, but managed by VMNH Paleontology.

Priority 3. **Cultivated Relationships with Private Collectors.** After cultivating relationships w/ private collectors, specimens will be through donations. This will concentrate on northern VA fossils. Recent donations have included Atlantic Coastal Plain reptiles and invertebrates, and Triassic vertebrates and invertebrates.

Priority 4. **Atlantic Coastal Plain Vertebrates/Carmel Church Quarry.** One to two two-week excavations in Spring 2023, targeted at excavation of

baleen whale from the St. Marys Formation. Opportunistic discoveries will almost certainly occur as well. Likely to bring in one large plaster jacket and one double-wide cabinet drawer's worth of material.

Invertebrate Zoology
Dr. Kaloyan Ivanov

The following materials are expected to be acquired within the next year. Wet and dry storage space is adequate to accommodate any new specimens acquired.

Terrestrial Invertebrates

Priority 1. Specimens generated by ongoing research activities, with primary focus on material from Virginia and the southeastern USA. Specimens from other areas in the USA and/or other countries may also be included.

a. Hymenoptera (ants, bees, and wasps) as pinned/pointed and alcohol-preserved specimens.
b. Millipedes, especially in the orders Polydesmida and Chordeumatida as alcohol-preserved specimens.
c. Terrestrial isopods (Isopoda: Oniscidea) as alcohol-preserved specimens.
d. Cicadas (Hemiptera: Cicadidae) as pinned specimens.
e. Dragonflies and damselflies, true bugs, earwigs, walkingsticks, mantids, cockroaches, and beetles as pinned specimens.
f. Leaf-litter and soil invertebrates as alcohol-preserved (annelids, peudoscorpions, spiders, myriapods, and non-insect hexapods) and pinned (true bugs and beetles) specimens.

Priority 2. Opportunistic acquisitions of specimens obtained through site visits, salvage, or through donations (prepared to handle if such material becomes available).

a. Alcohol-preserved Embioptera (webspinners) (M. Bertone, NCSU).
b. Pinned Formicidae (ants) and alcohol-preserved Zoraptera (angel insects) (S. Dash, Hampton University).
c. Various pinned and alcohol-preserved arthropods from Virginia and adjacent areas (A. Evans, S. Roble, C. Harden, D. Hennen, others).

Priority 3. Specimens to support exhibits and/or education programs (as needed or become available).

Aquatic Invertebrates

There is currently no plan to acquire new materials. If such materials become available (opportunistic acquisitions), they will be handled on a case-by-case basis.

Forensic Work

There is currently no plan to acquire new materials. If such materials become available (casework and teaching efforts), they will be handled on a case-by-case basis.

Vertebrate Biology (except Reptiles and Amphibians)
Dr. Nancy D. Moncrief

No large quantities of specimens are anticipated in the next year, and existing storage space is sufficient to house any new specimens acquired. Priorities for individual vertebrate biology departments are listed below.

Ichthyology

Priority 1. Research-quality specimens of taxa present in Virginia. These will be obtained through salvage and collaborations with colleagues.

Priority 2. Specimens to support exhibits and education programs. These will be obtained through salvage, purchase, and/or collaborations with colleagues.

Mammalogy

Priority 1. Specimens to support my research projects or generated by my research activities. These would include 1) mammals from eastern North America, especially those from Virginia, and 2) comparative material related to those projects and activities.

Priority 2. Research-quality specimens of taxa present in Virginia. These will be obtained through salvage, opportunistic collecting and collaborations with colleagues most of whom are in Virginia (e.g., VDWR, DCR-VNHP).

Priority 3. Specimens to support exhibits and education programs. These will be obtained through salvage, opportunistic collecting, purchase, and/or collaborations with colleagues.

Ornithology

Priority 1. Research-quality specimens of taxa present in Virginia. These will be obtained through salvage and collaborations with colleagues.

Priority 2. Specimens to support exhibits and education programs. These will be obtained through salvage, purchase, and/or collaborations with colleagues.

Ancillary Collections (Especially Frozen Tissues)

Priority 1. Specimens to support my research projects or generated by my research activities. These would include 1) mammals from eastern North America,

especially those from Virginia, and 2) comparative material related to those projects and activities.

Priority 2. Research-quality specimens of vertebrate taxa present in Virginia. These will be obtained through salvage, opportunistic collecting, and collaborations with colleagues most of whom are in Virginia (e.g., VDWR, DCR-VNHP).

Vertebrate Biology (Reptiles and Amphibians)
Arianna Kuhn

Priority 1. **Opportunistic Acquisitions.** Reptile and amphibian specimens and tissues will be obtained through salvage events and donations when appropriate to augment the herpetology collection. At present, no large donations are anticipated for 2022–2023.

Priority 2. **Research-targeted Acquisitions.** Through focused, research-driven efforts, reptile and amphibian specimens and tissues will be added to the collections as current permitting allows to (1) fill gaps in regional species representation and (2) facilitate regional and international research and collaborations (e.g., Spring 2023 collaboration with University of Florida).

Priority 3. **Educational and Outreach Acquisitions.** Reptile and amphibian specimens (wet, osteological, taxidermy), particularly those with no associated data/captive bred, will be added to the collection to elevate outreach and education events as well as in-house exhibits.

Education and Public Programs
Christy Deatherage

There is currently no plan to acquire new materials in the DEPP. However, we will report materials that would enhance current exhibits or programs if offered to the Department.

VIRGINIA MUSEUM OF NATURAL HISTORY
RESEARCH AND COLLECTIONS ACTIVITIES

Report to the Board of Trustees
July-Sept. 2023

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

- Drs. Ivanov and Means, and colleagues published a paper in *Biota Neotropica*.
- Drs. Ivanov and Means, and colleagues have manuscripts in review at *Annales Zoologici Fennici* and *Zootaxa*.
- Dr. Ivanov and colleagues submitted a grant proposal to the Southern Integrated Pest Management Center regarding their work on the invasive Asian needle ant.
- Dr. Ivanov, Dr. Nancy Moncrief, Ryan Barber, and Christy Deatherage submitted a final report to the Institute of Museum and Library Services regarding their *Scope it Out!* award.
- Dr. Ivanov provided training in insect collecting, identification, and natural history to members of the Southwestern Piedmont Chapter of the Virginia Master Naturalists.
- Dr. Ivanov and Liberty Hightower participated in the 12th annual Hokie Bugfest and interacted with 1,500+ visitors.
- Dr. Ivanov participated in VMNH's Bonez & Booz Halloween and Fall Festival and interacted with over 500 visitors.

Research & Collections

Drs. Ivanov and Means, R. Bouzan, Drs. L. F. M. Iniesta, A. D. Brescovit, and G. B. Pupin (Instituto Butantan, Brazil) published a paper in *Biota Neotropica*. The paper reports the first case of mass occurrence in the millipede family Chelodesmidae and includes the description of the heretofore unknown female of *Sandalodesmus araujoi* (Schubart, 1946), previously known only from the male holotype collected in the state of São Paulo, Brazil in 1943. In addition, the paper discusses the utility of female genitalic characters for species delineation in *Sandalodesmus*.
[Bouzan, R. S., J. C. Means, K. Ivanov, G. B. Pipin, A. D. Brescovit, and L. F. M. Iniesta. 2023. A case of mass occurrence of *Sandalodesmus araujoi* (Schubart, 1946) in a municipality of São Paulo, Brazil, and description of the heretofore unknown female (Polydesmida, Chelodesmidae). Biota Neotropica 23(3): e20231521]
Drs. Ivanov and Means, R. Bouzan, Drs. L. F. M. Iniesta and A. D. Brescovit have a manuscript in review at *Zootaxa*. The paper includes a description of a new troglobitic species of millipede from the Água Clara cave system, Bahia, Brazil and evaluates the potential threats to its habitat.

Drs. Ivanov and Means, R. Bouzan, Drs. L. F. M. Iniesta and A. D. Brescovit have a manuscript in review at *Annales Zoologici Fennici*. The work describes a new genus and species of millipedes from the Amazon rainforest of northern Brazil and provides an updated checklist of the Chelodesmidae of Pará state.

Dr. Ivanov and colleagues (myrmecologists from various Florida and Georgia institutions) continued work on a manuscript focused on the non-native myrmecofauna of Florida for a special issue of *Florida Entomologist*. When completed, the paper will offer a comprehensive account of all non-native ant taxa recorded from Florida, a global hotspot of introduced and invasive ants.

Drs. Ivanov and colleagues from Virginia Tech, G. T. Harrison, H. P. Dunleavy, and Drs. A. I. Del Pozo-Valdivia and P. Marek, are drafting a manuscript to be submitted to *Subterranean Biology*. The work explores the arthropod diversity of shallow subterranean habitats in the southern Appalachian Mountains using COI barcoding and is among the first indiscriminate taxonomic surveys of North American soil-dwelling arthropods.

Drs. Ivanov and Means, R. Bouzan, Drs. L. F. M. Iniesta, A. D. Brescovit, and J. P. P Pena-Barbosa (Instituto Butantan, Brazil), Dr. J. Bueno-Villegas (Universidad Autonoma del Estado de Hidalgo, Mexico), C. Rojas-Buffet (Universidad de la República, Uruguay), and P. Sierwald (FMNH) are working on a worldwide catalog of the millipede family Chelodesmidae to be submitted to *European Journal of Taxonomy*. When completed, the catalog will include detailed data on all 771 valid species along with synonymies, bibliography, and distributional information.

Drs. Ivanov and Means, R. Bouzan, Drs. L. F. M. Iniesta and A. D. Brescovit, and R. A. Castro-Souza (Universidade Federal de Mato Grosso, Brazil) are drafting a manuscript on the worldwide distribution of the millipede suborder Cambalidea (Spirostreptida). To address gaps in our understanding of millipede distributions, the study examines the biogeographic patterns of Cambalidea by providing maps based on ignorance scores to estimate the limitation of current distributional data and, based on these estimates, provide spatial grouping of species using worldwide density of occurrence data.

Drs. Ivanov, S. Yang, A. Jones (Virginia Tech), and D. Shoemaker (U Tennessee) submitted a grant proposal to the Southern Integrated Pest Management Center. regarding their work on the invasive Asian needle ant. The project aims to develop a trapping system that targets the ant's preferred nesting habits and seasonal dispersal dynamics. In addition, the work will offer management professionals extension workshops and continuing education training opportunities regarding the Asian needle ant and the developed trapping system.

Dr. Ivanov, Curator of Mammals Dr. N. Moncrief, Deputy Director R. Barber, and Education Manager C. Deatherage submitted a final report to the Institute of Museum and Library Services regarding their *Scope it Out!* award. (December 18)

Drs. Ivanov, Hennen, Evans, and Means submitted annual reports to the Virginia Department of Conservation and Recreation (incl. Division of Natural Heritage) regarding research activities during the 2023 season.

Drs. Ivanov and Evans submitted a final report to the Georgia Department of Natural Resources (Wildlife Resources Division) regarding their 2023 work at the Ohoopee Dunes Wildlife Management Area, Emanuel Co., GA.

Dr. Ivanov identified 150+ terrestrial isopods, earwigs, crickets, mantids, wasps, and bees from Orange and Volusia Cos., FL, as part of permit reporting to the St. John's River Management District. Permit holders D. Dal Pos and A. Pandolfi (U Central Florida) submitted the final report.

Dr. Ivanov and colleagues (chiefly Dr. Means) conducted fieldwork in Beaufort, Craven, and New Hanover Cos., NC, and Franklin, Northampton, Pittsylvania, and Roanoke Cos., VA in support of ongoing projects.

Dr. Ivanov identified 51 ant specimens from Virginia, West Virginia, and Wyoming caves recently donated to VMNH by T. Malabad (Virginia DCR, Natural Heritage).

Dr. Ivanov identified specimens of the tropical terrestrial isopods *Trichorhina heterophthalma* Lemos de Castro, 1964 and *Caraiboscia christiani* Leistikow, 2001 recently received at VMNH from C. Ziemke (U Southern Mississippi). These interesting taxa, which are new to the fauna of Puerto Rico, were found in association with multiple species of ants (new host association for both). The latter of the two taxa was, until present, only known from Peninsula de Paria, Venezuela. The work will be extended into a manuscript for publication.

As part of a long-term inventory, updating, reorganization, and databasing of VMNH's invertebrate holdings, L. Hightower, with help from Dr. Ivanov, inventoried 23,918 beetle specimens from the museum's collection and new acquisitions. As of the end of December, 63,241 beetle specimens representing 2,352 species have been curated and inventoried. The only remaining groups in need of curation are Chrysomelidae, Elateridae, and Staphylinidae.

Visiting researcher Dr. J. J. Lewis (Lewis & Associates; VMNH Research Associate) worked on curating VMNH's Asellidae. (October 25-26)

Dr. Ivanov oversaw the acquisition of 228 asellid isopods (Isopoda: Asellidae) and 11 amphipods (Amphipoda) donated to VMNH by Dr. J. J. Lewis (Lewis &Associates; RIM2023-059); 815 pinned/pointed insects (chiefly Coleoptera; some Hemiptera and Orthoptera) and 2 ethanol-preserved Blattodea donated to VMNH by Dr. A. Evans (VMNH Research Associate; RIM2023-62); and 3 pinned PARATYPES of *Horologion hubbardi* Harden & Davidson, 2023 and 7 lots unidentified arthropods donated to VMNH by C. Harden (Clemson U; RIM2023-63).

Dr. Ivanov satisfied loan request regarding VMNH's invertebrate holdings: 11 lots of identified Salticidae (jumping spiders), (Dr. B. Haiar; U Lynchburg); 31 specimens of an undescribed *Arianops* (Staphylinidae), (Dr. C. Carlton; LSU).

Education & Outreach

Dr. Ivanov and L. Hightower participated in the 12th annual Hokie Bugfest held on the campus of Virginia Tech in Blacksburg, VA. The single day event was attended by over 6,000 visitors and offered a great opportunity to promote VMNH and the museum's entomology collection. (October 7)

Dr. Ivanov and museum staff participated in VMNH's second annual Bonez & Booz Halloween and Fall Festival, which offered a variety of one-day-only displays and activities that ranged from materials from the museum's collections to live performances, magic shows, and costume contests. The event, which brought a generally new audience to the museum, attracted 2,500+ children and adults including 989 SNAP benefits recipients as part of the *Museums for All* program. (October 30)

Dr. Ivanov provided training in insect collecting, identification, and natural history to members of the Southwestern Piedmont Chapter of the Virginia Master Naturalists. VMNH 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. (October 30)

Drs. Ivanov, Means, and Keiper participated in Simpson College, IA, Entomology Career Day. The online event offered an opportunity to promote VMNH and the museum's entomology program. (December 4)

In December, VMNH intern Paden Garrard (U Lynchburg) and Franklin County High School student Hilary Adams completed their projects on the jumping spiders of Virginia, and the arthropod diversity of Franklin Co, VA, respectively.

Volunteers Lauren Apel and Yluelhaldi Rose began work in the Department of Recent Invertebrates in November and December, respectively.

Dr. Ivanov gave tours of VMNH's labs, collections, and exhibits to members of the Virginia Herpetological Society, VA DCR Carst Program, the Cave Conservancy, and visitors from Richmond, Rocky Mount, and Stuart, VA. (October 17 and 28, November 3 and 4)

Exhibits

Dr. Ivanov and colleagues participated in a VMNH-Waynesboro coordination meeting. (October 13)

Dr. Ivanov and museum staff participated in a meeting regarding early planning stages of exhibits for the upcoming Jean S. Adams Education pavilion. (October 23)

Professional Service

Drs. Ivanov (co-Treasurer and Copy Editor), Moncrief (co-Treasurer), Means (Secretary and Webmaster), and Kuhn (Councilor) participated in the [virtual] Virginia Natural History Society Executive Committee meeting on October 28. Among the discussed topics were the election of new officers, membership incentives, review of the 2023 general meeting, and time and location of the next general meeting of the Society. (October 28)

Dr. Ivanov copy edited three articles for the Virginia Natural History Society's periodical *Banisteria* (Volume 57, 2023). (completed October 11, November 17, and December 4)

Dr. Ivanov reviewed manuscripts for *Insects* and *Forests*. (completed October 3 and December 14).

Drs. Ivanov and Means served as co-editors of VMNH's *Special Publications* series for a manuscript titled "The groundwater isopods of Virginia (Isopoda: Asellidae and Cirolanidae)" by Dr. J. J. Lewis and colleagues. The manuscript was published in December and is available as both a free downloadable PDF and a hard copy for purchase on the museum's website.

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

- Dr. Moncrief and Biology Research Technician Mr. Marshall Boyd conducted field work on the Eastern Shore and taught field methods to a group of Virginia Master Naturalists
- Dr. Moncrief attended in a career fair at Patrick County high school.
- Dr. Moncrief and Mr. Boyd participated in several meetings to discuss the "Masters of the Night" exhibit about bats, which will open at VMNH in February 2024.

Research and Collections

Throughout the quarter Dr. Moncrief worked with VMNH Research Associate Dr. John Pagels to revise the Mammals chapter for the Virginia Master Naturalists basic training program.

Also, throughout the quarter, Dr. Moncrief continued working with Mr. Boyd and 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).

In late November and early December Dr. Moncrief and Biology Research Technician Mr. Marshall Boyd conducted fieldwork with VMNH Research Associates Drs. Ray Dueser and John Porter. They installed digital camera traps ("mousecams") designed by Drs. Porter and Dueser for detecting and documenting species of rodents and shrews. They also live-trapped small mammals at the same locations, so that they can compare the suite of species detected by live trapping with those detected using the mousecams.

Professional Service and Other Duties

Dr. Moncrief continued serving on the Council of the Virginia Natural History Society (VNHS). She also continued serving (with Dr. Ivanov) as Co-Treasurer of VNHS. She also worked with Dr. Ivanov and VMNH Myriapodologist Dr. Jackson Means to revise the Society's website.

In October, Dr. Moncrief participated in VMNH's Bonez and Booz festival. She worked both days at the admissions table for VMNH and ASTC members with Ms. Charlotte Harter. They interacted with a total of 343 visitors.

In November, Dr. Moncrief attended a career fair for high-school seniors at Patrick County High School with Mr. Ben Williams. They provided information about STEM career paths related to science disciplines represented at VMNH.

Scientific Programs, Exhibits, and Other Activities

Throughout the quarter, Dr. Moncrief continued working with Education Manager Ms. Christy Deatherage to develop a new hands-on specimen-based education program. Students will use microscopes in the IMLS-funded microscope lab to examine a variety of skulls from shrews and rodents. These animals can be identified based on difference in the size, shape, and number of their tiny teeth, but these differences can only be seen using microscopes such as the ones now available at VMNH. Ms. Deatherage plans to offer a trial version of this program to VMNH Board members at their meeting in February 2024.

Dr. Moncrief and Mr. Boyd met several times with other VMNH staff in education and exhibits to discuss the “Masters of the Night” exhibit, which is being rented from Evergreen and is scheduled to open at VMNH in February 2024. Dr. Moncrief also met with Ms. Bethany Fisher to discuss display elements that can be produced in-house to augment the displays included in the rental exhibit.

While they conducted fieldwork in late November and early December, Dr. Moncrief and Mr. Boyd provided hands-on education programs to members of the Eastern Shore Chapter of the Virginia Master Naturalists. Each day they taught 2-6 chapter members proper field methods for installing and checking mousecams and livetraps.

Hayden Bassett, Ph.D.
Assistant Curator of Archaeology

Dr. Hayden Bassett is on military leave and is scheduled to return in February.

Adam Pritchard, Ph.D.
Assistant Curator of Paleontology

- Dr. Pritchard submitted an NSF proposal with a team from Howard University on the evolution of horses. The proposaql would support educational programs and exhibits at the VMNH. This is a revised submission from Q4 2022.
- Dr. Pritchard collaborated with a team from Brigham Young University on the anatomy of the limbs of a new species of reptile from the Triassic Period of Utah.
- Dr. Pritchard presented on three separate projects on Triassic and Jurassic fossil sites in Virginia at the Society of Vertebrate Paleontology Annual Meeting in Cincinnati, OH.
- Dr. Pritchard presented on ongoing early reptile research for the Geology Seminar Series at the College of William & Mary in Williamsburg, VA.

Research & Collections

Dr. Pritchard presented on three separate Virginian fossil sites from the early Mesozoic (b/t 230-200 million years old) at the Society of Vertebrate Paleontology Annual Meeting in Cincinnati, OH. He presented discoveries from his ongoing research site in Ashland, VA for the first time at this meeting.

Dr. Pritchard collaborated with Dr. Brooks Britt (Brigham Young University) on 3D modeling of a tiny Triassic reptile from Utah. The reptile bears extreme left-right asymmetry in its front legs; such an anatomy is unprecedented among reptiles, both living and extinct.

Dr. Pritchard analyzed new tooth specimens from the Ashland Triassic Site with team members from the Smithsonian Institution and amateur paleontologists. 7-8 different reptile species are now recognized from the site, the highest number for any Virginian Triassic fossil site.

Dr. Pritchard completed work on a description and analysis of dinosaur skin samples in collaboration with a research intern from the University of Lyncbhurg and Dr. Brooke Haiar. The skin samples are among the best preserved ever found from the Jurassic of the American west and they represent rare specimens of sauropod (long-necked) dinosaur skin ever found.

Dr. Pritchard fielded 5 collections and laboratory information requests about VMNH collections from researchers at UNC Chapel Hill, Virginia Tech, Johns Hopkins University, the Senckenberg Research Institute, and one non-affiliated. The non-affiliated researcher and a postdoc from Virginia Tech visited collections for research.

Education & Outreach

Dr. Pritchard presented on his Triassic reptile research for the Geology Seminar Series at the College of William & Mary.

Dr. Pritchard and paleontology technician Lucy Treado developed and presented a specimen-based table display for the Bonez and Booz VMNH Festival.

Dr. Pritchard oversaw an internship with an undergraduate student from the University of Lynchburg, monitoring her progress and the necessary steps to further the project and her skills. The details of the project's scientific projects are noted above.

Grants & Funding

Dr. Pritchard submitted a collaborative NSF grant with Howard University professor Ray Bernor and his HU team. The grant is a revised submission of their National Science Foundation grant submission about horse evolution. The grant would fund a VMNH special exhibit on the evolution of horses. Dr. Pritchard provided resources and content regarding the integration of molecular data into the phylogeny.

Dr. Pritchard received a stipend for his work as an NSF internship mentor for his work with a University of Lynchburg undergraduate student, which will support laboratory supplies and development of the VMNH fossil lab.

Professional Service

Dr. Pritchard reviewed a manuscript on early reptile relationships for the *Zoological Journal of the Linnean Society*.

Arianna Kuhn, Ph.D.
Assistant Curator of Herpetology

- Dr. Kuhn elected as Vice President of the Virginia Herpetological Society (VHS)
- Dr. Kuhn and M. Boyd co-organized and hosted the VHS 2023 meetings at the VMNH
- Dr Kuhn co-organized “100 Years of the Systematics of Lizards” Symposia at the American Museum of Natural History in New York City.
- Dr. Kuhn and collaborators submitted a Grant to the National Science Foundation for $814,440
- Dr. Kuhn received a grant from the North Carolina Herpetological Society for ongoing salamander systematics work
- Dr. Kuhn and collaborators are preparing a proposal for the National Science Foundation for $652,000 to conduct salamander research in Virginia.
- Dr. Kuhn and M. Boyd gave talks at the Virginia Herpetological Society 2023 Meeting.
- Dr. Kuhn participated in a herpetological survey in northern Madagascar

Research & Collections

Field work

Dr. Kuhn and collaborator S. Ruane (Field Museum of Natural History) participated in a 3 week field survey of Andrafiamena-Andavakoera Protected Area in northern Madagascar this December along with Malagasy non-profit Association Vahatra, 6 graduate students, and several herpetology, mammalogy, ornithology and botany specialists. The results of the survey were presented to the Ministry of the Environment and Forests of Madagascar, and represented the start of a new collaborative research network between VMNH, FMNH and UA.

Drs Kuhn (VMNH) and B. Stuart (NCMNS) and M. Boyd (VMNH) are continuing collections-based work to obtain morphological and molecular vouchers of putatively new species of Plethodontid salamanders in the P. wehrlei complex. An additional 6 specimens from North Carolina and 2 specimens from southwest Virginia have been collected by Dr Kuhn, and grant funds are being used to generate new molecular data for these specimens.

Dr. Kuhn and I. Mali (North Carolina State University) are in the process of applying for funding to compare eDNA and auditory frog surveys to predict presence/absence of rare frog species in the southwest United States.

Professional Presentations/Conferences

Dr. Kuhn gave a talk at the Virginia Herpetological Society Meeting (July 12–16). Her talk, entitled “Establishing best practices for species translocations using genomic data and ecological niche models” discussed her work involving the genomics of salamanders as well as her new programs at the VMNH.

M. Boyd gave a talk at the Virginia Herpetological Society Meeting at the VMNH entitled

“Welcome to VMNH Herpetology”. The talk shared information about the VMNH Herpetology collections, opportunities for collaboration with VHS members, and future growth plans of the Herpetology lab.

Ongoing research

Dr. Kuhn and collaborators S. Ruane (Field Museum of Natural History) and A. Raselimanana (University of Antananarivo) examined 35 snake specimens from the University of Antananarivo Biology Research Collections (Madagascar) in contribution to several new projects investigating and revising snake taxonomy across several charismatic species in Madagascar.

Drs Kuhn and B. Stuart (North Carolina State Museum of Natural Sciences, NCMS) are continuing their collaboration with S. Kuchta at the University of Ohio to investigate the systematics of Wehrlei’s plethodontid salamanders in southwest Virginia using genomics data and morphology. This spring, they will target the Smith Mountain Lake area, Powhatan State Park, and Bent Mountain areas.

Drs Kuhn (VMNH), Burbrink FT (AMNH), Ruane S (FMNH), Raxworthy C (AMNH), Rabibisoa NHC (UAntananarivo, Madagascar), Achille R (UAntananarivo, Madagascar) and Overcast I (California Academy of Sciences) are finalizing a manuscript that uses genomic data to examine the co-demographic history of snake assemblages on Madagascar using newly developed phylogeographic methods. The target journal for this manuscript submission is Molecular Ecology. Significant progress has been made this quarter and submission is expected by Spring 2024.

Drs Kuhn (VMNH), Burbrink FT (AMNH), S. Harrington (UWyoming), Ruane S (FMNH), Raxworthy C (AMNH), Rabibisoa NHC (UAntananarivo, Madagascar), Achille R (UAntananarivo, Madagascar) and Overcast I (California Academy of Sciences) are working on a manuscript that uses Machine Learning approaches and genomic data to examine evolutionary processes driving speciation for snakes on Madagascar. The target journal for this manuscript submission is Molecular Biology and Evolution. The expected submission date is Spring 2024.

Drs Kuhn (VMNH), Lee-Yaw J (UOttawa) and Weisrock D (UKentucky) are analyzing data and preparing a manuscript and provincial report resulting from Dr Kuhn’s postdoctoral research that uses genomic data to provide critical insights in the guidance of successful amphibian reintroductions. This work integrates spatial, ecological, and genomic data with careful study design to provide the best opportunity for successful protected species’ reintroductions. The target journal for this manuscript is Biological Conservation.

Drs Kuhn (VMNH), Lee-Yaw J (UOttawa), and Weisrock D (UKentucky) along with Master’s student Hunter D (ULethbridge) are working data analysis and manuscript are analyzing data and preparing a manuscript and provincial report resulting from Dr Kuhn and D Hunter’s field and laboratory work at the University of Lethbridge and Waterton Lakes National Park in southwest Alberta, Canada. This research uses genomic data and occupancy modeling to investigate the impact of an extreme fire in a national park on genetic diversity over space and time for small terrestrial vertebrates. A new student has been recruited in Dr. Leeway’s lab to lead finalization of the project. The target

journal for this manuscript is Conservation Biology.

Drs Kuhn (VMNH), Parilla, D., Cerico, L, Bauer AM (VillanovaU), Jackman T (VillanovaU), and Brennan I (Natural History Museum in London) are finalizing a manuscript entitled “Two new species of Rhoptropus day geckos from the proNamib regions of southwest Angola and Northwest Namibia”. The target journal for this manuscript is the Zootaxa. Expected submission timeline is February 2024.

Professional Development

Dr. Kuhn attended the Island Systems Integration Consortium Working Group Meeting on Nov 14–17 at the California Academy of Sciences, San Francisco. Here, she gave presentations, led group discussions, and worked with collaborators on applications to NSF funding that will use genomic and ecological approaches to understand biodiversity.

M. Boyd attended a museum collections digitization class offered by the iDigBio initiative through Florida State University. The training shared methodological approaches to specimen photogrammetry, digital databases, all aimed at increasing collections visibility, management, and preservation. He has begun implementing relevant workflows and integrating new ideas to grant proposals in Vertebrate Biology at the VMNH.

Dr Kuhn joined the Squamate Genomics Consortium (SGC), which held its first virtual meeting to discuss advances and share resources associated with squamate genomics. Involvement with this consortium will be valuable to her current research program in Virginia which aims to understand snake diversity and distributions using genomic data.

Collections Growth and Management

The Herpetology Department finished cataloging and rehousing 13 new amphibian and reptiles specimen this month from salvage permit holders at Patrick and Henry Community College (N=8), Liberty University (N=1), James Madison University (N=1) and VMNH museum staff (N=3).

The Herpetology department finished accessioning and housing 25 new taxidermy and dry mount specimens from a donation by the Danville Science Center. Several have already been used in education and outreach programming for training courses, relevant festivals and collections tours.

M. Boyd is nearly finished cataloging previously identified research specimen donation lots from Laurel Ridge College including fluid preserved salamanders and dry rattlesnake skins. Several lots are still being sorted with contemporary taxonomic assignment, and these will be prioritized next quarter. Several have already been used in education and outreach programming for training courses, relevant festivals and collections tours.

M. Boyd and VMNH Research Associate J. Gibson identified and sorted all backlogged anuran (frog) specimens (N=45) from the J. Pagle pitfall trap study in 1991. With help of VMNH Registrar (J. Harris), these specimens have now been completely cataloged in

the VMNH database and have been rehoused in the biology wet collections.

M. Boyd and Dr. Kuhn finalized the preparation of a herpetology loan (22 specimens) to Virginia Commonwealth University for use in teaching Comparative Vertebrate Anatomy for the Spring 2024 semester. The loan was delivered on Jan 22, 2024.

Grants

Dr. Kuhn submitted a proposal to NSF Division of Biological Research call “Organismal Responses to Climate Change (ORCC)”. Dr. Kuhn is a Co-PI of the project along with L. Lawson (University of Cincinnati), R. Lamb (University of Florida). The proposal, entitled “Estimating terrestrial and marine responses to sea level fluctuations in the Galapagos” requested $814,440 for data collection, research, postdoctoral and doctoral student support, and interactive museum exhibits and teaching displays.

Dr. Kuhn was awarded a grant from The North Carolina Herpetological Society for funds to support regional work on the systematics of salamanders. The study, entitled “Integrating molecular and morphological data to investigate the enigmatic “southern lineage” of Wehrlei’s salamander from the North Carolina-Virginia border” awarded $1,000 for support of molecular data collection.

Drs. Kuhn, T. Pettelier (Radford University), and M. DeBiasse (Radford University) are nearly finished with a new NSF DEB Evolutionary Processes proposal that will be submitted February 2024. This project will investigate species boundaries and reproductive isolation in Virginia salamanders using an integrative approach with genomic data, expression of courtship pheromones and skin microbiome profiles.

Dr. Kuhn submitted a proposal for the American Philosophical Society Franklin Grant. The proposal, entitled “Integrating molecular and morphological data to investigate the enigmatic “southern lineage” of Wehrlei’s salamander from the North Carolina-Virginia border” requested $6,000 to complete the project.

Education & Outreach

VMNH-based Activities

Dr. Kuhn and M. Boyd are planning 5 new herpetology focused educational activities and themes in preparation for Reptile Fest 2024 that will take place in Late April.

Dr. Kuhn gave a tour of the herpetology department and research collections to 5 members of the Virginia Master Natural Southern Piedmont Chapter group.

Dr. Kuhn, M. Boyd and VHS committee members are currently preparing a grant submission ($10,000) to the “Go Outdoors” initiative of the Department of Wildlife Resources to engage local high school students in herpetology research and outdoor learning experiences through organized bioblitz activities throughout southwest Virginia. The grant will be submitted by the end of January 2024.

non-VMNH based Activities

Dr. Kuhn and collaborator E. Anthony (VHS) are co-organizing a mole salamander migration event at Maybees Flats near Waynesboro, Virginia to take place Feb. 10, 2024. The event will take several Elementary school children and their parents to salamander breeding ponds for observation and learning.

Dr. Kuhn is serving as a Master's Thesis Committee Member at the University of Ohio. The student will be the genomics lead of her ongoing research of P. wehrlei complex salamanders in southwest Virginia.

Media

Dr. Kuhn and M. Boyd had an article published in the Martinsville Bulletin for an article that will be published on Nov 3rd about the Annual Virginia Herpetological Society Meeting being hosted at the Virginia Museum of Natural History. The article discusses the importance of this meeting being held at the VMNH in Martinsville for the first time in the 50+ year history of the society.

Professional Service

Dr. Kuhn attended and co-organized the meeting "Centennial Celebration of The Systematics of the Lizards" at the American Museum of Natural History in NYC, NY. A total of 40 speakers presented original research from paleontology, molecular biology, and physiology, and plans are in order to produce a published volume that covers these diverse symposium topics. In total, the meeting included 72 international and regional attendees, including speakers.

Dr. Kuhn and M. Boyd co-organized and co-hosted the Annual Virginia Herpetological Society Meeting. For the first time, the meetings took place at the VMNH. In total, 42 individuals attended, 7 scientific talks were presented, and three tours of the scientific collection were presented to attendees. During the Social Event in the Hall of Ancient Life, members (including students, professors, professionals and community members) had the chance to network and discuss future projects.

Dr. Kuhn and M. Boyd are organizing the Spring Herpetological Survey of the newly established Sweet Run Park in Northern Virginia in collaboration with the VHS.

Dr. Kuhn was elected Vice President of the Virginia Herpetological Society. Her term will cover FY 2024–2025.

Dr. Kuhn served as a reviewer again for a revised submission for Scientific Reports (Impact Factor 4.6) for the manuscript "The South East Africa Montane Archipelago (SEAMA) – a biogeographical appraisal of a threatened ecoregion".

Dr. Kuhn served as a reviewer again for a revised submission for Scientific Reports (Impact Factor 4.6) for the manuscript "The South East Africa Montane Archipelago (SEAMA) – a biogeographical appraisal of a threatened ecoregion".

Dr. Kuhn is serving as Associate Editor at Herpetologica in the topic area of Systematics, and handled one publication this quarter.

Dr. Kuhn is serving as an Associate Editor for the Herpetological Journal (the journal of the British Herpetological Society), and has handled two publications this quarter.

Dr. Kuhn is serving as counselor for the Virginia Natural History Society.

Dr. Kuhn is serving on the meeting sponsorship committee for the Hepetologist's League for the 2024 Meetings in Pittsburg, PA.

Teaching

Dr. Kuhn and collaborator N. Claunch are designing a new virtual workshop for the Virginia Master Naturalist Program. The focus of this workshop was identification and natural history of Virginia salamanders, and introduction and training to a new community science initiative that extracts important ecological data from salamander camera trap footage to understand their thermal preferences in southwest Virginia.

Dr. Kuhn gave an online lecture through the "Skype a Scientist!" initiative for MiaPrep Online High School (MOHS). MOHS is a completely online high school with a unique student body in various types of lifestyles and locations, and her talk on careers in herpetology had a lively Q & A session with the students about her work at the museum.

Dr. Kuhn is developing new workshop materials with collaborators S. Ruane, F. Rakotoarimalala and S. Goodman entitled "Emergent Conservation Methodologies for a Global Biodiversity Hotspot". The workshop will provide training in emerging molecular conservation methods and grant writing to 23 Malagasy graduate students and researchers with a focus on developing skills in emerging technologies and bioinformatics, giving priority to women and other disadvantaged groups underrepresented in STEM fields in Madagascar. The workshop will be held at Vahatra Field School in Mantadia National Forest in late March 2024.

Research and Collections

Jill K. Harris, Registrar

Fifteen (15) collections acquisitions were recorded for 1079 specimens, 7 boxes and 1 bag of specimens. These specimens were added to the invertebrate zoology, paleontology, herpetology, and vertebrate zoology collections.

Three (3) outgoing loans were recorded this quarter from education and invertebrate zoology collections. Loans were made to Reynold's Homestead Forest Resources, University of Lynchburg, and Texas A&M University.

Ms. Harris modified/updated ~1,745 existing mammal records within the electronic collections management database.

Haley Cartmell, Collections Manager

Curators and staff modified/updated 3,849 existing records and added 303 new records to the VMNH collections database Proficio for the months of July, August, and September 2023. These numbers are late being reported due to Collections Manager, Ms. Cartmell, being out on short-term disability when report was due.

Curators and staff modified/updated 1,751 existing records and added 7 new records to the VMNH collections database Proficio for the months of October, November, and December 2023.

PEOPLE SERVED DATABASE printed 1/31/2024

Summary

# of Activities	TYPE OF ACTIVITY	PROFESSIONALS AND 13+ STUDENTS	K-12 STUDENTS	K-12 TEACHERS	PUBLIC			TOTAL #
5	Conference presentations (A)	74	5	0	21			100
1	Meetings chaired (B)	4	0	0	4			8
10	Review documents/manuscripts (B)	22	0	0	0			22
6	Requests for information about collections (C)	6	0	0	0			6
1	Visiting researcher (C)	1	0	0	0			1
4	Collections tours (D)	24	5	0	5			34
1	Lab Tours (D)	0	0	0	6			6
0	Receptions	0	0	0	0			0
2	Responses to requests for information about specimens at VMNH (D)	4	0	0	0			4
4	Lectures and presentations at VMNH (D)	42	0	2	0			44
0	Technical consultations (B, D, & E)	0	0	0	0			0
8	Display table with specimens	0	0	0	2595			2595
2	Off-site education programs	12	40	0	3			55
3	Lectures Not at VMNH (E)	95	17	0	21			133
1	Off-site presentations (E)	0	0	0	1500			1500
0	Field trips/Field Work	0	0	0	0			0
48	**TOTALS**							4508

TOTAL # INDIVIDUALS SERVED 4508