



“Virginia Scientists” is the official newsletter of the Virginia Academy of Science (VAS). This publication offers information for VAS members such as upcoming events, past events, scholarships/awards information, accomplishments of VAS members and other timely information.

Editors:

Sujan Henkanaththegedara
Deborah Neely-Fisher

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Virginia Scientists

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2019 VAS Annual Meeting at ODU

Preparations are well underway for the 97th Annual Meeting of the Virginia Academy of Science (VAS) on May 22-24, 2019 as well as the 78th Annual Meeting of the Virginia Junior Academy of Science (VJAS). This year's meetings will take place on the campus of Old Dominion University (ODU), a campus of 20,000 undergraduate and 5,000 graduate students spread across 9 distinct schools in Norfolk, Virginia. Founded in 1930 as a branch campus of the College of William and Mary, ODU has evolved into a pivotal independent institution in the Norfolk and Hampton Roads region of Virginia, with 25% of its students affiliated with the United States military. The VAS and VJAS are excited to bring its annual showcase of science in the Commonwealth to this dynamic academic community.

As in previous years, the VAS and VJAS meetings are held together so that the hundreds of middle and high schoolers who travel from across the Commonwealth to present

the results of their scientific projects can interact with the greatest scientific talent that Virginia has to offer from its colleges, universities, and industries. The Meetings will also feature a workshop for K-12 teachers in the Hampton Roads area to learn from VAS members about best strategies for introducing authentic research experiences into their classrooms. Over 500 VJAS and 200 VAS papers will be presented at ODU over the course of the meetings, as well as awards in the form of scholarships for VJAS students and prizes for research and distinguished service for VAS members. The VAS will also formally vote on a new slate of officers for the 2019-20 year.



The VJAS/VAS is always an exciting showcase for current and emerging scientific talent in the Commonwealth and is a reminder of the strength of STEM research and industrial infrastructure in Virginia. Please visit <http://vacadsci.org/vas-meetings/annual-spring-meeting/> to find more detailed information about this year's meetings, including registration information and a detailed schedule of events.

Submitted by **Michael Wolyniak**

Vice-president and The Program Coordinator for the Meeting, Virginia Academy of Science
Associate Professor of Biology,
Hampton-Sydney College



President's Message

In support of science, scientific research, and science education in the Commonwealth, the Virginia Academy of Science (VAS) and Virginia Junior Academy of Science (VJAS) sponsor several events each year. We look forward to returning to Old Dominion University on May 21-23 for the VJAS Annual Meeting and on May 22-24 for the senior academy's Annual Meeting. I appreciate the efforts underway by Chris Osgood and his colleagues at ODU who are handling local arrangements, and by the VJAS and VAS staff, commit-

tees, and officers who planning the meeting schedules, presentations, judging, logistics, and special activities. The Academy depends on its army of volunteers, and on its dedicated staff, to carry out our mission.

Last November, Academy members came to Ferrum College for the first time for our 2018 Fall Undergraduate Research Meeting. We were all charmed by Ferrum's attractive setting in the Blue Ridge Mountains, impressed by the college's modern facilities ...*Contd. P5*



Woodward S. Bousquet
President, VAS

2018 VAS Fall Undergraduate Research Meeting was a Big Success!



This year's Fall Undergraduate Research Meeting was held on Saturday, November 3rd at Ferrum College. Students and faculty from across the state converged for a special day designed to promote scientific inquiry and encourage undergraduate research.

Student participation in the research grant proposal competition was strong and diverse. We had 35 poster presentations representing 12 academic institutions from across the state: Ferrum College, Virginia Union University, James Madison University, University of Mary Washington, Liberty University, Longwood University, Virginia Commonwealth University, Virginia Tech, University of Virginia, Old Dominion University, Virginia Military Institute, and William & Lee University. These numbers are up from the previous undergraduate meeting in 2017 reflecting the growing strength of the academy and increasing support from faculty mentors. This year, based on a financial gift from the VAS Fellows, 10 research grants of \$750 were awarded to student presenters along with 3 "Honorable Mention" certificates.

After all the poster presentations

were given, participants enjoyed a complimentary lunch at Franklin Hall, the Ferrum College Dining Hall. For the afternoon session, we all came together for two special events: an interactive discussion from science professionals and our keynote address. Both of these events were included in last year's meeting and received such rave reviews that they have become a staple for the meeting. We had 5 panel members representing fields in veterinary medicine, industrial chemistry, commercial microbiology, and environmental biology. The panelists fielded questions from the undergraduate students concerning careers in science and provided advice for the young scientists as they prepare for life after college. Following the panel discussion, the President of Ferrum College, David Johns, welcomed all in attendance and provided the introduction of our Invited Keynote Speaker, Dr. Carolyn Thomas.

As the Director of the Smith Mountain Lake Water Quality Monitoring Program, Dr. Thomas provided a wonderful 32-year perspective on community ecology in her talk on "Students, Citizen Scientists and Smith Mountain Lake: A Successful Collaboration". Her work demonstrated the power and benefit to

bringing together undergraduate students, faculty, community volunteers and ecological organizations in the preservation of good water quality in Smith Mountain Lake.

With any task it is understood that "many hands make light work", and the success of the Fall Undergraduate Research Meeting was accomplished due to our volunteer judges and panel members. As the meeting's program coordinator, I would like to extend a special thank you to Tim Durham, Taylor Darnell, and the entire Welcome Committee at Ferrum College. Their partnership with the VAS planning committee resulted in a wonderful time of encouragement and comradery. In addition, Ferrum College provided housing accommodations for VAS officials traveling from far away and food throughout the day for all meeting participants. Their support of the Virginia Academy of Science was a true blessing.

Submitted by **Gary D. Isaacs**

Professor of Genetics, Liberty University
President-elect, Virginia Academy of Science

A few interesting moments of the 2018 VAS Fall Undergraduate Research Meeting at Ferrum College were captured by Woodward S. Bousquet.

Top panel: Undergraduate students from 12 institutes have presented 35 research posters.

Bottom left: Research poster judges worked hard to select the top 10 research grant recipients.

Bottom right: The keynote address was delivered by Dr. Carolyn Thomas on "Students, Citizen Scientists and Smith Mountain Lake: A Successful Collaboration"



Virginia Scientist in the Spotlight

“Virginia Scientist in the Spotlight” series introduces scientists in Virginia covering various scientific disciplines. Our guest scientist for this issue is,

Elsa Q. Falls

I retired from my tenured position at Randolph-Macon College in Ashland, Virginia, in 2004, having taught in the Biology Department there since 1978. After my retirement from full-time teaching, I continued teaching part-time at Randolph-Macon, usually teaching one or two courses a year, until 2015. I was named Professor Emerita in 2005.

Education: After being named to Phi Beta Kappa, I received a Bachelor of Arts degree in biology from Westhampton College, University of Richmond, in 1964, after getting straight A's in all of my courses, save for one B in Introductory Psychology. To the dismay of the Physics Department I made the highest grade in Introductory Physics, edging out all the budding Physics majors.

I was a part-time graduate student at the University of Richmond for five years, earning a Master of Arts Degree in biology in 1972, with all A's in my course work. My daughter was born in 1966, I began graduate study in 1967, and in 1968 my son was born. My two young children accompanied me to rivers and streams all over the Richmond area as I completed surveys of freshwater annelid worms for my Master's thesis. I am much indebted to my adviser Dr. Nolan Rice for getting me interested in invertebrate biology.

Teaching/Classes: I began my teaching career at Douglas Freeman High School in Henrico County in 1964, where I taught five sections of tenth grade biology. It was quite a challenge as I never had had any practice teaching and some of my students were as old as I was. After earning a Master's degree, I taught introductory biology part-time at both the University of Richmond and J. Sargeant Reynolds while my children were young.

I came to Randolph-Macon as instructor and laboratory coordinator in biology in 1978 and stayed until I retired from teaching in 2015. My tenure was effective in 1989. I was honored to receive the Thomas Branch Teaching Award from my peers at the College as well as the Samuel Nelson Gray Distinguished Professor Award. I received a number of College grants to support research, study, and travel.

Spending most of my career at Randolph-Macon, a small liberal arts college, allowed me to teach a wide variety of courses. In addition to teaching introductory biology for majors, genetics, invertebrate zoology, protozoology, and marine biology, I have taught a number of courses in evolutionary biology over the years. My marine biology course involved field work in Jamaica over spring break, where we examined mangrove swamps, coral reefs, rocky shores, and sea grass beds. Among my favorite courses to teach have been human evolution, creationism and evolution, the human genome, and women in science. I enjoyed teaching several honors courses as well as lab courses for non-science majors. I have supervised internships and senior major research courses. The most unusual course I ever taught was probably Social and Ethical Impact of Computers in Society, which R-MC offered at the dawn of the computer age.

Research Interests: My research interests have been multi-disciplinary and student centered. During my years at R-MC, all biology majors were required to do research; this requirement was both a blessing and a curse, and I found myself supervising projects in areas where I and the students had little expertise. I learned as much as the students I was supervising did, and I found that to be challenging and rewarding.

I have explored the shifting roles of women in biology and investigated bias against women in the sciences. Yes, prejudice against women has been pervasive in the sciences through the years and continues to be present.



Elsa at Alzheimer's Walk, Richmond, VA

“Plan to become life-long learners. After one's college days are over, continue to go to seminars, lectures, and museums. Use leisure time to travel and to read.”

-Elsa Q. Falls

Creationism (or intelligent design) and evolution are very different ways of explaining the history of life on earth. I have had a long-standing interest in the history of evolutionary thought and how creationism has affected what is taught in science classes in our nation.

Notable Work/Presentations: I am especially proud of works in the Virginia Journal of Science published jointly with my students. Examples would be “Shell Competition among *Coenobita clypeatus* Individuals with Emphasis on Growth Rate and Behavior”, “Habituation of Aggressive Behavior in *Betta splendens*”, and “The Effects of Diluted Diets and a Shortened Photoperiod on Resource Allocation in the Freshwater Snail *Physa fontinalis*”. Research for my Master's Degree was also published in the Virginia Journal of Science: “A Taxonomic Survey of Freshwater Oligochaetes from the Richmond, Virginia Area with Reference to Commensal Ciliates.”

I have developed presentations on evolution and creationism, human evolution, and women in the biological sciences.

Interests/Activities: While on the Faculty at Randolph-Macon, I served on a number of faculty committees, including Committee on the Faculty (Chair), numerous search committees, Faculty Representative to the Administrative cabinet, and Resources and Plans Committee (Chair). I was faculty advisor to biology majors and freshmen. I was active in the RMC chapter of Phi Beta Kappa serving as President.

I have been proud to have served on the Board of Trustees of the Science Museum of Virginia (as representative from Virginia Academy of Science) and on the Board of Trustees of the University of Richmond (as alumnae representative).

I have been very active as an elder within the Presbyterian Church (PCUSA) and have been on mission trips to Central America, South America, and Africa. I have served for a number of years through my church as a first grade reading tutor at Chimborazo Elementary School within the City of Richmond. At the Presbytery level, I have served on the Committee on Preparation for Ministry and was named a Commissioner to PCUSA General Assembly in 2014.

...contd. P.5

Replacing a Gray Funnel with a Green Filter

We're already seeing these impacts in Richmond; 2018 was the second-rainiest year on record. With this increase in extreme rainfall occurrences comes record levels of pollution reaching the Chesapeake Bay.

As the world has warmed up, precipitation events have also become more intense. We're already seeing these impacts in Richmond; 2018 was the second-rainiest year on record. With this increase in extreme rainfall occurrences comes record levels of pollution reaching the Chesapeake Bay.

Why does this happen? One reason is due to human landscapes acting like a "gray funnel."

Imagine a plastic funnel. Rainwater picks up nitrogen and phosphorus as it runs off parking lots, roads, buildings and other impermeable surfaces (the large opening of the funnel). As it rushes into stormwater drains (the funnel's small side), it can overwhelm the sewer and water treatment systems, prohibiting them from filtering the water. Those pollutants make their way into the James River and Chesapeake Bay, putting plant and animal species at risk by disrupting the ecosystem.

How can we change this? We need to make our urban and suburban areas "green filters."

Now imagine a coffee can with a small hole in the bottom that drips into a paper towel roll filled with balled up coffee filters. Precipitation is captured (in the coffee can), absorbed (by the paper towel roll) or filtered (by the coffee filters), and slowly returned into the groundwater system (once it makes it to the end of the roll). When this happens, it greatly reduces the impact of pollutants carried by stormwater on waterways.

For nearly a decade, the Science Museum of Virginia has been working to change its urban campus from a gray funnel into a green filter through various infrastructure strategies—a green roof, tree-well filter boxes, a rain garden, pervious concrete and rainwater collection cisterns. Over the next three years, the Museum is increasing its commitment to rain and stormwater management best practices. Not only is the Museum installing the next generation of green technology on its campus, but the organization will also work to increase access to resources so the community understands the ecological connection between infrastructure and its impacts on waterways.

Thanks to a grant from the National Fish and Wildlife Foundation, the Museum is expanding its green infrastructure efforts by converting nearly three acres of paved parking lot into green space and installing an advanced bioretention system to clean and retain rainwater that falls onto a parking deck being built beside the Museum.

The Museum sees opportunities to make a positive impact through responsible and environmentally aware land-use design decisions. It's about looking at urban development, including its own, differently by asking, "how can this be done greener?"

After these major projects are completed, the Museum hopes seeing the green infrastructure in action will encourage others—individuals, businesses, schools, developers, county governments and more—to seek out ways to make green ideas a reality.

Better understanding the connection between new or renovated infrastructure and the health of our waterways is the first step in turning our sprawling gray funnels into lush green filters.

Submitted by **Jeremy Hoffman**

Climate and Earth Scientist
Virginia Museum of Science



Train shed rainwater collection cistern - Science Museum of Virginia



Aerial view of Science Museum of Virginia



Green Roof at Science Museum of Virginia

Virginia Scientist in the Spotlight *Contd from P 3.*

Two of my greatest pleasures are reading (currently I am in two book clubs) and travel. In addition to extensive travel within the United States and Europe, I have traveled to over 50 foreign countries, including Australia, New Zealand, China, Tibet, Egypt, Tanzania, Ecuador, Guatemala, and Peru. One of the most significant places I have been as a biologist were the Galapagos Islands; I was a member of a group that went with Dr. Norlyn Bodkin, who was a botanist at James Madison University. Many of the most memorable trips my husband Don and I have taken have been through a group called Road Scholar; they emphasize travel as a student rather than a tourist.

Advice for Students: I suggest that students plan to become life-long learners. After one's college days are over, continue to go to seminars, lectures, and museums. Use leisure time to travel and to read. Remember to thank those who provide assistance along the way by sending them notes or letters.

Advice for Peers: My advice for students applies to my peers as well.

Secondly, do not neglect your family and friends. We are a social species, and it is important to maintain personal relationships. Other people are important even to introverts, and there are many of us introverts in the sciences.

Virginia Academy of Science: I joined VAS sometime in the mid-1960's, but I do not remember the exact date. I have been active in the Biology Section and served the Academy as Treasurer, Secretary, Vice-President, and President. I was a second woman to be elected President. I currently serve as Trust Commit-

tee Chair, a position I have held for a number of years. I have been honored to be elected as a Fellow of the Academy and to have an endowment from a donor for a Falls Scholarship available for a deserving student on an annual basis.

Something "Cool" about Me: The coolest thing about me is my super family who have been supportive of me as a working-outside-the-home spouse, mother, and grandmother. My husband Don has always encouraged me to pursue an academic career. We were married after my junior year in college, which is fifty-five years ago. We both have had very demand-

ing careers and have participated in a host of extra-curricular activities. We have two grown children: our daughter is a graduate of Randolph-Macon Woman's College, and our son graduated from Hampden-Sydney College. Three of our five grandchildren are in college, at UNC, UVA, and H-SC. The youngest two currently attend high school.

Submitted by **Elsa Q. Falls**

Committee Chair
VAS Trust Committee



Elsa at Trinity College, Dublin, Ireland

President's Message *Contd from P 1.*

for science teaching and research, and welcomed by the comfortable spaces provided for our activities. Details of the meeting appear elsewhere in this newsletter.

I would like to take this opportunity to thank Ferrum College President David Johns, Provost Aime Sposato, Honors Program Director Lana Whited, and Ferrum Dining Services for supporting this event. Our faculty host Timothy Durham and his colleagues set a high standard for local arrangements. Thanks, too, to hardworking Program Chair Gary Isaacs, and to Carolyn and Art Conway - VAS Associate Executive Officer and Executive Officer Emeritus, respectively, for their often unseen work to make the fall conference a success. Next year's fall conference will take

place at Christopher Newport University on Saturday, November 2, 2019.

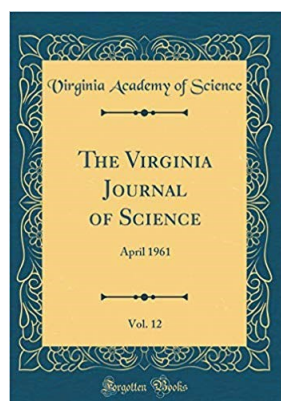
Several new initiatives are underway. VAS and VJAS members and staff attended a fundraising workshop last October led by professional fundraiser Patti Jackson. Staff job descriptions are being updated and developed. You will read elsewhere in this newsletter about the resolutions on alternative energy and coal ash prepared by the Environment Committee and approved by the Academy Council in March. We continue to admire the achievements of the Science Museum of Virginia (see the article in this newsletter), and I personally encourage you to visit the Museum and check out their informative website.

The VAS's Centennial Year 2022-2023 is approaching. Take the time to read the detailed discussion of the Academy's history on our website - it's a historical analysis, not merely a chronology. Decide how you will become involved in the VJAS and VAS, claiming and shaping our future as we enter our second century of service to the Commonwealth.

Submitted by **Woodward S. Bousquet**

Professor of Environmental Studies and Biology, Shenandoah University
President, Virginia Academy of Science

**Published since
1950, the Virginia
Journal of Science
is an academic,
peer-reviewed
publication
focused on all
areas of science
affecting the
state of Virginia.**



VIRGINIA JOURNAL OF SCIENCE

Status Report: June 2016-February 2019

In collaboration with Dr. Christopher Osgood, editor of the Virginia Journal of Science (VJS), the Digital Initiatives Unit of the Old Dominion University Libraries established the electronic version of VJS in June 2016. All issues back to 1998 are available. As of March 1, 2019 there are 412 works posted. These works were downloaded a total of 9,808 times, with highest use in September and October 2017. In the past year, downloads have been steady averaging 288/month.

Items were downloaded in 143 countries, including United States (6,184), France (391), India (271), China (204), United Kingdom (180), Germany (170), and so on. Drilling down within each area will indicate the exact location and the exact item downloaded. Users coming from institutional IP addresses show downloads by 615 educational (68%), 378 commercial (19%), 80 government (8%), and 56 organizational (2%) institutions. Users found materials primarily through Google and Google Scholar (the platform is search-engine-optimized).

ACCOMPLISHMENTS:

- All issues from 1999 to the present are included in ODU Digital Commons.
- Since July 2018, we have been creating DOIs (Digital Object Identifiers) for articles, making them uniquely identifiable for more efficient scholarly communication. We added them back to 1999.

- Current online issues of VJS are now indexed in Zoological Record, BIOSIS, and Google Scholar.
- VJS articles were cited 118 times in Web of Science. Since 1999, VJS articles have been cited ~500 times in Google Scholar.
- In April, 2018, the Biodiversity Heritage Library digitized all print volumes of VJS (1942-2015). These are linked from the journal website: <https://www.biodiversitylibrary.org/bibliography/146242#>
- An ISSN for the online version has been requested.
- Accepted articles, post peer-review, are accessible immediately as "Online ahead of print."

FUTURE PLANS:

- Ensure that the print version gets produced regularly (no print since 2015). A solution is to format the online version as a final version, and either drop the print or keep it as a separate version.
- Major databases have not yet picked up the current years of VJS in their indexing (other than Zoo Record and BIOSIS). In 2019, we will request indexing from PubMed, ProQuest databases, and others, including the Directory of Open Access Journals.
- Investigate impact factors for VJS.
- Add issues from 1990-1998 to Digital Commons.

Please contact **Chris Osgood** cosgood@odu.edu for more information about the Virginia Journal of Science.

The following map is a geographic representation of materials downloaded.



The top 10 article downloads are as follows:

Title	Downloads
Virginia's Amphibians: Status, Threats and Conservation	268
Keys to the Mammals and Mammal Skulls of the Northern Coastal Plain of Virginia	261
Prescribed Fire Impacts to Amphibians and Reptiles in Shelterwood-harvested Oak-dominated ...	201
Content Mining Techniques for Detecting Cyberbullying in Social Media	195
A New Long-tailed Weasel County Record in Shenandoah National Park	188
A Comparison of Techniques Measuring Stress in Birds	177
The Dyke Marsh Preserve Ecosystem	173
A Comparative Study on Machine Learning Algorithms for Network Defense	168
Topographic Factors Affecting the Tree Species Composition of Forests in the Upper Piedmont...	168
Conservation Status of the Southern Appalachian Herpetofauna	152

Serving the World Through Science. VJAS prepares to welcome students at ODU

The Virginia Junior Academy of Science (VJAS) committee has been busy, in preparation of the 78th VJAS Annual Meeting and Research Symposium, jointly held with the 97th Virginia Academy of Science (VAS) Annual Meeting. More than 750 papers were submitted to be reviewed and we are in the process of screening to accept approximately 570 projects. The students accepted to the program will come to the campus of Old Dominion University in Norfolk, Virginia for a 3-day conference, from May 21-23, 2019.

This year, we will have 29 concurrent VJAS sessions representing various disciplines of science, from molecular biology and medicine to psychology and human behavior. They will compete for a number of prizes, including scholarships provided by various donors and organizations as well as the chance to win an all-expense paid trip to next year's American Junior Academy of Science (AJAS) conference, concurrently held with the American Association for the Advancement of Science (AAAS) meeting in Seattle, Washington.

Although VJAS has a competitive aspect, the true goal of the Research Symposium is to gather the brightest of minds from all across the Commonwealth of Virginia together, in a single conference, to share ideas and exchange their work. These students from all corners of the state will be exposed to collegiate campus settings and hear from two scientific speakers from the host institution. The theme of the meeting will be "Serving the World Through Science". Please join us (as a student and/or

school participant, a judge, a volunteer, or an observer) at Old Dominion University this May to witness hundreds of future scientists and leaders share their research and findings to peers and experts in their respective fields. There are many ways to be involved with us, please reach out to anyone below or visit www.vjas.org.

Se Jeong, VJAS Committee Chair, swj3af@virginia.edu
Susan Booth, VJAS Director, susan.science@gmail.com

Submitted by: **Se W. Jeong**
Chairman of VJAS Committee



At the AAAS/AJAS Annual Meeting in Washington, D.C.
Last year's winners, from L-R: Katharine Davis (teacher sponsor of Unmesha Vullikanti), Unmesha Vullikanti (12th grade, Blacksburg High School), Sabrina Ye (11th grade, Mills E. Godwin High School), and Dana DeLano (teacher sponsor of Sabrina Ye).

Flora of Virginia Project Update: THE FLORA APP

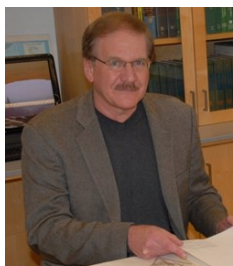
THE FLORA APP (\$19.99) was released on September 30, 2017, culminating a project that began in 2010. The App, for Android and iOS devices, contains everything you love from the print Flora of Virginia, with a lot more. It features an easy-to-use Graphic Key, in addition to the traditional dichotomous keys. Most species descriptions contain 1-5 photographs, and many include a botanical illustration. Treatments of rare or threatened species include conservation ranks, and invasives are scored as to level of invasiveness. And county-by-county range maps are now color-coded as to native or nonnative.

No Internet connection is required once it has been downloaded to your device. The app will revolutionize the way Virginians* learn about plants, and kids as young as sixth grade will carry this mobile Flora with them.

The Flora of Virginia (book and App) covers the floras of West Virginia and Maryland more than 95%, those of surrounding regions 90-95%, and nearly every other region east of the Mississippi 75-90% (other than the northeast of Maine and the warmer reaches of the Southeast). So our Flora is your flora!

The Flora of Virginia Mobile App puts all the contents of the print Flora of Virginia in your pocket. You can buy THE FLORA APP at <https://floraofvirginia.org/>





Congratulations to Conley McMullen, John Hayden, and Deborah Neely-Fisher for being elected Virginia Academy of Science Fellows

Conley McMullen (left top), a Professor of Biology, James Madison University (JMU), John Hayden (left middle), Professor, Biology, University of Richmond (UR), and Deborah Neely-Fisher (left bottom), Assistant Professor, Biology, Reynolds Community College (JSRCC), were named Fellows of the Virginia Academy of Science (VAS). Fellows are nominated by VAS members and elected by Council, to recognize their contribution to science in one or more of the following ways: outstanding scientific research, inspirational teaching of science, and significant leadership in the Academy.

In addition to his teaching and research responsibilities, Dr. McMullen is Director and Curator of the Herbarium at JMU, a governing member of the Charles Darwin Foundation, and a member of the Science Advisory Board for the Galapagos Conservancy. He has served in numerous leadership positions in the VAS including President, in 2015. He is the current Chair of Archives, Flora of Virginia, and the Nominations and Elections Committee. One of his favorite research projects involves the investigation of the angiosperms and pollinators of the Galápagos Islands and most recently has included the study of nocturnal pollinators.

Dr. John Hayden, Professor of Biology at UR, investigates botanical biodiversity with two general aims, to improve our understanding of plant relationships and to document plant diversity that exists within particular

geographic locations. Dr. Hayden's research includes plant species such as *Physalis* and *Jaltomata* (Solanaceae), *Flueggea* (Phyllanthaceae) and *Acalypha* (Euphorbiaceae). Inventory projects have been carried out in central Virginia and the Yucatan Peninsula of Mexico. Dr. Hayden is the Curator for the UR Herbarium and is a member of the Botany section and the Flora of Virginia Committee.

Deborah Neely-Fisher, Assistant Professor, Biology, JSRCC, has been PI for a Bridges to the Baccalaureate grant funded through NIH, partnering with VCU. She Co-Chaired the Coordinating Committee for "The Integral Role of the Two-Year College in the Science and Mathematics Preparation of Prospective Teachers" supported by NSF. She enjoys participating in STEM education outreach projects that include K-12 teachers and students and currently is the VCU Howard Hughes Medical Institute's Faculty Fellow for the Institute on Inclusive Teaching in STEM. She has held several positions with the VAS including President, 2016-2017 and is serving as the Secretary of the Education Section and Chair of the Fundraising Committee. In 2017 she was awarded the VJAS Distinguished Service Award.

Submitted by **Deborah Neely-Fisher**

Past president, Committee Chair- Fund Raising
Editor- Virginia Scientists
Virginia Academy of Science

2018-19 VAS Council Representatives and Committee Chairs

Section Council Representatives

Agriculture, Forestry & Aquaculture- David Crosby
Astronomy, Math & Physics- Donald Day
Biology- Michael Price
Biomedical & General Engineering- Thomas Haas
Botany- Woodward Bousquet
Chemistry- George Grant
Data Science, Computing & Statistics- Yen-Hung (Frank) Yu
Education- Se Jeong
Entomology- Hameeda Sultana & James Wilson
Environmental & Conservation Sciences- Richard Groover
Medical Sciences- (vacant)
Natural History & Biodiversity- Alan Griffith
Psychology- (vacant)
Structural Biology, Biochemistry & Biophysics- (vacant)

Standing Committee Chairs:

Archives- Conley McMullen
Awards- Darcy Mays
Constitution & ByLaws- David Crosby
Environment- Richard Groover
Finance & Endowment- Rosemary Barra
Fund Raising- Deborah Neely-Fisher
Junior Academy of Science- Se Jeong
Long Range Planning- David Crosby
Membership- Chris Osgood
Nominations and Elections- Conley McMullen
Research- Chris Labosier

Publications- Christopher Osgood & Sujana Henkanaththegedara
Science Advisory- Iona Black
Science Education- Mike Wolyniak
Trust- Elsa Falls
Virginia Flora- Conley McMullen
SMV History Committee- Arthur Conway & Conley McMullen

Directors:

Director, VJAS- Susan Booth
Associate Director, VJAS (non-voting)- (vacant)
Director, Visiting Scientists Program/VRSN- (vacant)

Editors:

Editor, VA Journal of Science—Chris Osgood
Co-Editors, VA Scientists—Deborah Neely-Fisher & Sujana Henkanaththegedara

Representatives:

AAAS/NAAS Representative- David Torain
SMV Trustee Representative (Ex-officio)- Elsa Falls
VAS Representative to Jeffress & Gwathmey Allocations Committee - Rosemary Barra
SMV Representative to VAS Council (non-voting)- Eugene Maurakis
Representative(s) from Annual Meeting Local Arrangements Committee- Chris Osgood

NOTE: This list was provided by the VAS Office.

Know your VAS logo



1. What is the flower depicted in the inner circle of the VAS Logo?

2. Who are the four famous Virginia Scientists listed in the middle ring of the Seal or Logo?

3. What is the Academy's Maxim?

Answers: 1. The flower is the Dogwood. It is in full bloom at the top of the seal and as a bud at the bottom of the seal. 2. The four famous scientists are Walter Reed, a physician, Matthew Fontaine Maury, an explorer and cartographer, John Clayton, a botanist, and Thomas Jefferson, an agriculturist and educator. 3. Of course everyone should get the last question correct, the maxim is "Ignorantia Supremus Tyrannus" Ignorance is the greatest tyrant.

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VAS Office Hours:

Tuesday & Thursday ~11 am to ~1 pm

Virginia Academy of Science Passes Resolution on Coal Ash Ponds

The Virginia Academy of Science, the fifth largest academy in the United States, has passed a resolution condemning coal ash ponds and encouraging their speedy removal and cleanup. Coal ash is waste from burning coal, primarily for generating electricity.

Six coal ash ponds exist in Virginia. The coal ash material may contain arsenic and other dangerous chemicals that are harmful to humans, according to Richard Groover, PhD, chairperson of the Academy's Environment Committee, which developed the resolution. The Academy's position is supported by information provided by Physicians for Social Responsibility in their 2010 report on the issue.

Academy president Woodward Bousquet, PhD, states "the Academy has educated Virginia students and the general public on science matters in the Commonwealth for nearly 100 years. Coal ash ponds can contaminate groundwater beneath and adjacent to these ponds. The removal of these structures and their dangerous contents will better protect some of Virginia's water resources."

The Virginia Academy of Science passed a resolution titled "Eliminating Coal Ash Ponds More Quickly," at its March 30 Council meeting in Richmond. The text is as follows:

Whereas coal ash ponds have been used by various energy production companies to store the solid by-products of burning coal for energy production,

And whereas coal ash in such storage ponds contains chemicals - such as arsenic, mercury, chromium, selenium, boron, and lead - that are harmful to human health and environmental quality,

And whereas the Virginia Academy of Science acknowledges the report on coal ash from the Physicians for Social Responsibility,

And whereas six of the coal ash ponds in Virginia have been found to contain pollutants that exceed safe levels for humans,

And whereas many of these ponds may have leaked coal ash pollutants into adjacent Virginia streams, groundwater, and water sources,

The Virginia Academy of Science hereby recommends that the Commonwealth of Virginia increase its regulatory actions to force quicker removal of these coal ash ponds, and proper remediation of the toxic materials found in existing coal ash ponds.

For more information, contact the Virginia Academy of Science Environment Committee chairperson, **Dr. Richard Groover**, at 804-523-5594.



Where coal ash is kept

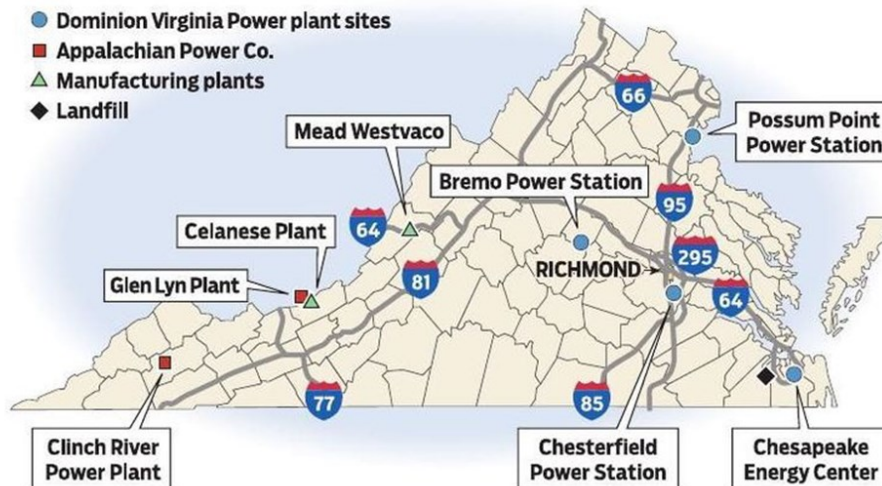
According to the Virginia Department of Health, there are 465 public or private drinking water well intakes within a mile of the state's existing coal ash facilities.

● Dominion Virginia Power plant sites

■ Appalachian Power Co.

▲ Manufacturing plants

◆ Landfill



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