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'One of the highest honors': F&M professor elected to National Academy of Sciences



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Jun 11, 2022



Dorothy Merritts shows where a dam would have sat along the West Branch of the Little Conestoga Creek along Walnut Hill Road in Millersville, on Monday, Dec. 13, 2021. Merritts and her Franklin & Marshall colleagues are studying streams once dotted by mill dams that captured tons of sediment over the years, changing the streams' topography and contributing to modern pollution of the Chesapeake Bay.

SUZETTE WENGER | Staff Photographer

Long before she was studying active fault lines in the western U.S. or examining soil erosion in Lancaster County streams, Dorothy Merritts

learned to love science when she was a kid roaming the forested hills of Blair County with her friends.

"I really liked hiking and exploring," she said. "We looked for fossils and minerals and rocks, and we found human artifacts like old bottles, and we just did this all of the time."

Jumping at any opportunity to get her hands on a nature book or an issue of National Geographic magazine, Merritts described a childhood obsessed with the outdoors. Even before she was out of elementary school, she knew she wanted to be a scientist.

Now, decades later, Merritts is a geosciences professor at Franklin & Marshall College and recently was elected to the National Academy of Sciences — an elite society "charged with providing independent, objective advice to the nation on matters related to science and technology."

Merritts, who is now in her 60s, is the first F&M faculty member elected to the academy. She was one of just 120 scientists chosen in the new class last month.

"I was thrilled. I'm still thrilled," she said, explaining she learned of her election after the academy's annual meeting in early May.

Christopher J. Williams, an environmental studies professor and chair of F&M's Earth and Environment Department, celebrated Merritts' academic work.

"Dorothy's research attracts students with different interests and offers them interesting and challenging individualized research opportunities in both the field and the lab," Williams said. "Her teaching is informed by her research so having someone like Dorothy teaching students at all levels of the curriculum really elevates our academic program. This is a well-deserved honor reflecting Dorothy's hard work and dedication to scientific inquiry."

That inquiry began with her childhood years exploring near her home in Blair County's Tyrone Borough, and continued after high school at Indiana

University of Pennsylvania, where she received an undergraduate degree in geology. She went on to receive a master's degree in engineering geology from Stanford University in California and a doctorate in geomorphology from the University of Arizona.

While out west, Merritts said she began studying plate tectonics, traveling up and down the coast and even internationally to visit and research earthquake-prone fault lines. That includes the San Andreas Fault in California, she said, where researchers used backhoes to dig trenches along the fault, then examined sediments to understand landscape changes.

“For me, soil isn’t just like, ‘Is it good for gardening or farming?’ It’s, ‘What’s the history of that soil over centuries, millennia?’” She said. “It has very clear characteristics that we can use to understand the history.”



Dorothy Merritts holds a chunk of sediment from the banks of the west branch of the Little Conestoga Creek along Walnut Hill Road in Millersville on Monday, Dec. 13, 2021. Merritts and her colleagues at Franklin & Marshall College are studying how dams built in the 17th and 18th centuries changed the topology of the area, capturing large amounts of sediment that now easily washed downstream during floods or storms, causing

problems in the Chesapeake Bay's ecology.

SUZETTE WENGER | Staff Photographer

Dream job

Merritts' geosciences research continued after she joined F&M's faculty in the late 1980s — a hiring that fulfilled a childhood aspiration. She said she dreamed of being a professor at the college from a young age, when she first laid eyes on its campus while visiting family in Lancaster County.

"I loved that look of a liberal arts school, the small campus with students walking around," she said, grateful her F&M post allows her ample opportunity to do real-world, on-site research.

"I would never do it if it didn't have fieldwork involved. I love fieldwork that involved traversing many kilometers a day. I don't want to just sit in one spot every day for a week or two," Merritts said, speaking over the phone last month while taking a break at a research site. "Ideally, I would walk along an entire stream and then use what I learned ... to understand the stream's history."

Lancaster County streams have become a major focus of Merritts' work, specifically when it comes to examining how sediments trapped behind colonial-era dams — many since destroyed or removed — have contributed to the impairment of local waterways, as well as those downstream.

It's work helping to inform stream restoration projects needed to meet federal mandates, which require that Lancaster County reduce erosion-related pollution like sediment and nutrients that are harmful to the downstream Chesapeake Bay.

"This work would be exciting to us regardless of if anybody cared about it," Merritts said, "but people do care."

Merritts, a fan of research collaboration, has been able to study those streams alongside her husband, Robert Walter, who also is a geosciences professor at F&M.

Walter is clearly proud of his wife's election to the National Academy of

Sciences.

“This is one of the highest honors that a scientist can achieve . . . Out of the tens of thousands of scientists in the United States, only 120 are selected each year,” Walter said of his wife’s election.

A spokesperson for the National Academy of Sciences could not provide stats on exactly how many elected members are from small undergraduate schools like F&M.

Merritts is now among 2,586 domestic and 515 international members that make up the academy, according to a spokesperson. Prior to election, Merritts had to be nominated by a sitting member. Last month, she said she wasn’t totally sure who nominated her.

“Once members are elected, they are permanent members of the NAS,” a spokesperson said.

As a member of the academy, Merritts may be called as an expert to serve on committees and provide informed opinions on field-specific issues across the country, potentially even influencing public policy.

“It’s just so exciting,” Merritts said.



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