PROJECT REPORT

Awakening Indigenuity at George Mason University

THOMAS WOOD
George Mason University

DANA ADKINS
Chickahominy Indian Tribe

SHIMA MOHEBBI
George Mason University

JEREMY CAMPBELL
Field Museum of National History

Twenty-five years ago, the aspirational vision of a newly formed national SENCER initiative led one of our authors (Wood) to initiate a long-term relationship between the Smithsonian Institution and George Mason University, involving a residential, immersive approach to education focused on biodiversity conservation. Science education reform was in full swing, fueled by reports from the National Academies of Sciences (National Academies of Sciences et al., 2000, 2007) and the Carnegie Foundation on the Scholarship of Teaching (Boyer, 1990) that identified an alarming decline in education in the United States. Active, experiential learning was rightly recognized as a better learning method (Arslantaş & Bavli, 2022), since—unsurprisingly—people develop cognitive and affective learning domains better under the natural conditions in which the brain evolved. This is something people closely connected to the Earth have always known (Wildcat, 2023). As a result, exposure to the natural world has been reclaimed as healthy; exposure to nature improves mental health and academic success. In the Smithsonian-Mason Semesters, we made progress by transforming the curriculum and incorporating active learning around real-world problems with an interdisciplinary focus. We were aware of the urgency of climate change and the biodiversity crisis then, as we are now. Mason students began discovering ways to become knowledgeable about societies and, consequently, the Earth's capacious problems, through immersion in the complex realities of living in the Anthropocene. However, we now face the reality that the modern approach of extraction-focused resource management

that is promoted by most societies is not likely soon to stem the tide of climate change, biodiversity loss, or deterioration of ecosystems. Today, we are quickly reaching a catastrophic tipping point that will detrimentally impact all life on Earth unless quickly mitigated (Fletcher et al., 2024). Again, revising how we function as a university and society has become necessary.

Considering the magnitude of our global problems, understanding, respecting, and adopting the values and actions of knowledgeable societies with long-standing respect for the living Earth is long overdue. Indigenous people closely connected to the living Earth are keenly aware of the injuries inflicted upon fellow species and the land, water, and air by extractive resource management approaches used by most societies (Wildcat, 2023). Recognition of the wisdom of the Indigenous mind opens opportunities to understand how Traditional Ecological Knowledge can help us all understand, respect, and restore the Earth as informed through thousands of years of close interdependence with our diverse eco-relatives (Alfred, 2015; Cajete, 2000). Indigenous keepers continue to be important stewards of terrestrial land, exercising traditional rights over one-quarter of the earth's surface and stewarding approximately 38% of all protected lands (Sze et al., 2022). They have generally done a much better job of living in concert with other life, terrestrial systems, forests, grasslands, and deserts, and taking care of the air, water, oceans, and soils as part of the living fabric of Earth than modern societies (Taiaiake, 2015). Indigenous communities worldwide exemplify the concept of Natural Law, where living respectfully with other life and natural systems is a cultural foundation (Wildcat, 2023). Respectfully, considering the magnitude of the current global crisis, societies should work to better understand and incorporate Natural Law into our education systems to help promote respect and healing. Our actions at Mason now incorporate these values, starting with recognition, collaboration, and planning with local Indigenous people in the Chesapeake region.

At Mason, we have grown wiser about incorporating TEK (Traditional Ecological Knowledge) and Indigenous thinking and values into education for all students. Using a holistic approach, we have hired Indigenous faculty, built an interactive community with students and local tribes, and collaboratively developed research and education opportunities. These efforts parallel the improving relationship between tribes and the federal government with the passage of the Thomasina E. Jordan Indian Tribes of Virginia Federal Recognition Act of 2017. This act provided federal recognition for the Chickahominy, the Chickahominy Eastern Division, the Upper Mattaponi, the Rappahannock, the Monacan, and the Nansemond Nations, who joined the Pamunkey Tribe for federal recognition. Virginia's state-recognized tribes and nations include the Nottoway, Chickahominy, Chickahominy Eastern Division, Mattaponi, Upper Mattaponi, Nansemond, Nottoway, Pamunkey, Patawomeck, Rappahannock, and Monacan. The Piscataway, the Piscataway Conoy Tribe, and the Accohannock Indian Tribe have state recognition in Maryland. These recognitions are opening awareness of the 13,000 years of human occupation that existed in harmony with the natural ecology of the Chesapeake Bay region and are leveling the playing field for collaboration. Through respectful collaboration, we are now engaging in education and research reforms with an Indigenous perspective in several programs across the University.

In addition to new federal recognition, state- and University-level changes provide a strong foundation for this transformation. Most recently, in 2024, Virginia House Bill 1157, "Federally recognized Tribal Nations in the Commonwealth; agencies to consult on permits and reviews," was signed into law following many years of hard work by tribal leaders and elected representatives. This law establishes an ombudsman to facilitate communication between the federally recognized Tribal Nations and relevant state and local governments regarding environmental, cultural, and historic permits and programs. George Mason University also has a newly created "President's Taskforce on Indigenous Inclusion and Collaboration," which is actively initiating collaborative programs that include Indigenous faculty, staff, and students. We are also primary participants in the newly developed (2023) Annual Virginia Indigenous Nations in Higher Education Summit, sponsored by the State Council on Higher Education in Virginia, our accreditation agency. Through these actions, Mason has become a leading Virginia educational institution engaging with Tribal Nations, respecting and incorporating their traditions, values, and land rights across research and education programs in the University. Together, we have tribes' participation in the

mutual identification, development, and implementation of new ideas and programs seeking to co-create opportunities for knowledge and value growth for all people. These activities promote responsibility through an understanding of cultural perspectives, Traditional Ecological Knowledge, and Native science concepts among all learners. George Mason is also a member of the 'IKE Alliance, the SENCER-derived collaboration between universities and tribal communities ranging from Hawai'i to Virginia. Focused on STEM education, we seek to know, understand, experience, and recognize Indigenous knowledge that is infused into our institutions and find strengths working together to reform our approach to research and education. Collectively, through these initiatives, Mason is actively pursuing the following general goals (George Mason University Virginia Indigenous Nations in Higher Education Collective, 2023):

- Increasing enrollment, graduation and life success of Indigenous students at George Mason University.
- Creating a campus culture that empowers Indigenous students.
- Supporting collaborative research on environmental, health, and community dynamics.
- Supporting tribal decision-making and tribal priorities throughout the development of new research and education initiatives.
- Decolonizing and indigenizing our curriculum in key areas.
- Listening to the Tribes to learn how to be a trusted and relevant institution that can contribute to the thriving of Virginia's Indigenous communities.

In pursuit of these goals, one exemplary ongoing collaboration is The Indigenous Environmental Mapping & Resilience Planning Project, started in 2022 together with the Chickahominy Tribe. This project exemplifies collaboration as the Chickahominy Tribe re-acquires traditional land and seeks to recover from over 400 years of colonial oppression. The project functions with Data Sovereignty for the Tribe and will collect, organize, and analyze socio-environmental data and environmental decision-making guided by Natural Law and traditional tribal values. Our initial research focuses on wildlife diversity assessments, food sovereignty, and community health. The project utilizes various data collection techniques ranging from site surveys for biodiversity to GIS and remote sensing modeling for spatial analysis on terrestrial and estuarian sites. It is important to note that the Tribe is prioritizing an understanding of the potential impacts of climate change and rising sea levels on the environment and collective impacts on citizens. An additional ongoing goal of this project is to continue the engaged research methodologies that produce mutually beneficial, just outcomes for all. Indigenous students enrolled at Mason, as well as Chickahominy youth, are active participants in this research.

To date, nine deliverables have been produced and presented to the Chickahominy Tribal Council. These include biodiversity surveys, GIS maps important for planning related to food insecurity and environmental contamination, and cultural information useful for repairing eco-kinship relationships to promote universal healing. Tribal citizens' participation in GIS training was well received, and collaborative education is a hallmark of this relationship. Baseline surveys on the biodiversity of breeding birds and plants have been completed and will continue temporally over the years to come. Environmental Indicator species, including prothonotary warblers (*Prothonotaria citrea*) among others, will be continually observed and monitored for temporal success, exemplifying mutual concern for native animals and people during climate change in this estuarian landscape. Such information will be used by the Tribal Council when considering the conversion of land use reform from modern agriculture to more traditional uses envisioned by the Tribe.

Initiatives between George Mason University and Tribal nation partners represent mutual respect and observance of moral principles grounded in reverence for the Earth and traditional knowledge. We are establishing positive relationships and active engagement throughout our region. Faculty facilitate interactions among Indigenous students, community members, and locally residing elders from many Indigenous communities, promoting mutual respect through knowledge and wisdom transfer unparalleled in previous University activities. This multiplicity of events is a new and responsible approach, and by establishing trusting relationships, it represents a necessary, positive shift away from less respectful research practices undertaken by universities in the past.

References

Alfred, T. (2015). Cultural strength: Restoring the place of Indigenous knowledge in practice and policy. *Australian Aboriginal Studies, 2015*, 3–11.

Arslantaş, Ç. N., & Bavlı, B. (2022). School-based outdoor education: A neglected practice at the secondary level. *Journal of Adventure Education and Outdoor Learning*, *24*(2), 270–286. https://doi.org/10.1080/14729679.2022.2143385

Boyer, E. L. 1990. *Scholarship reconsidered: Priorities of the professoriate*. Carnegie Foundation for the Advancement of Teaching.

Cajete, G. (Ed.). (2000). *Native science: Natural laws of interdependence*. Clear Light Publishers.

Fletcher, C., Ripple, W. J., Newsome, T., Barnard, P., Beamer, K., Behl, A., Bowen, J., Cooney, M., Crist, E., Field, C., Hiser, K., Karl, D. M., King, D. A., Mann, M. E., McGregor, D.P., Mora, C., Oreskes, N., & Wilson, M. (2024). Earth at risk: An urgent call to end the age of destruction and forge a just and sustainable future. *PNAS Nexus*, *3*(4), 106. https://doi.org/10.1093/pnasnexus/pgae106

Garnett, S. T., Burgess, N. D., Fa, J. E., Fernández-Llamazares, A., Molnár, Z., Robinson, C. J., Watson, J. E. M., Zander, K. K., Austin, B., Brondizio, E. S., Collier, N. F., Duncan, T., Ellis, E., Geyle, H., Jackson, M. V., Jonas, H., Malmer, P., McGowan, B., Sivongxay, A., & Leiper, I. (2018). A spatial overview of the global importance of Indigenous lands for conservation. *Nature Sustainability*, *1*, 369–374. https://doi.org/10.1038/s41893-018-0100-6

George Mason University Virginia Indigenous Nations in Higher Education Collective. (2023). *George Mason University: Leadership and Tribal contacts*. https://www.schev.edu/home/showpublisheddocument/3757/638526548148830000

National Academies of Sciences, National Academy of Engineering, and Institute of Medicine. (2000). *How people learn: Brain, mind, experience, and school* (expanded edition). National Academies Press. ProQuest Ebook Central, https://ebookcentral-proquest-com.mutex.gmu.edu/lib/GMU/detail.action?docID=3375510.

National Academies of Sciences, National Academy of Engineering, and Institute of Medicine. (2007). *Rising above the gathering storm: Energizing and Employing America for a brighter economic future*. The National Academies Press. https://doi.org/10.17226/11463

Sze J. S., Childs, D. Z., Carrasco, L. R., & Edwards, D. P. (2022). Indigenous lands in protected areas have high forest integrity across the tropics. *Current Biology*, *32*(22), 4949–4956.

Taiaiake, A. (2015). Cultural strength: Restoring the place of indigenous knowledge in practice and policy. *Australian Aboriginal Studies*. 3-11.

Wildcat, Daniel R. 2023. On indigenuity: Learning the lessons of Mother Earth. Fulcrum Publishing. Wheat Ridge Colorado. ISBN 9781682754573.

About the Authors

Dr. Thomas Wood is a tenured Associate Professor of Conservation Studies in the School of Integrative Studies at George Mason University. He created the resident Smithsonian Mason Semester program, where students reside at the Smithsonian Conservation Biology Institute, and was the founding director of the Smithsonian Mason School of Conservation. Wood has extensive experience in funded science education reform efforts, including the NSF-sponsored project SENCER (Science Education for New Civic Engagements and Responsibilities), where he serves as a Senior Leadership Fellow. He helps advise the Native American Indigenous Alliance (NAIA) and American Indian Science and Engineering Society (AISES) student organizations at Mason. He has studied traditional ecological knowledge from his youth and walked with a Mescalero Apache elder for over 20 years.

Dr. Jeremy M. Campbell is a cultural anthropologist who specializes in the relationships between communities and their environments, especially in the context of Indigenous stewardship of landscapes. Campbell has worked with traditional knowledge holders in North and South America to forge reciprocal relationships that support Indigenous environmental management. Dr. Campbell is Director of the Andes-Amazon Research Program at the Field Museum of Natural History in Chicago.

Shima Mohebbi is an assistant professor in the Department of Systems Engineering and Operations Research, and affiliate faculty of computer science at George Mason University. Her research interests include game theory, network optimization, simulation, and interpretable machine learning, with applications in resilient infrastructure systems, sustainable water systems, and smart and connected communities.

Dana Adkins, a citizen of the Chickahominy Indian Tribe, has served as the Tribe's Environmental Director since the establishment of the Environmental Office in October 2019. Since its inception in 2020, Dana has chaired EPA Region 3's Regional Tribal Operations Committee and also represents Region 3 on the EPA's National Tribal Science Council.