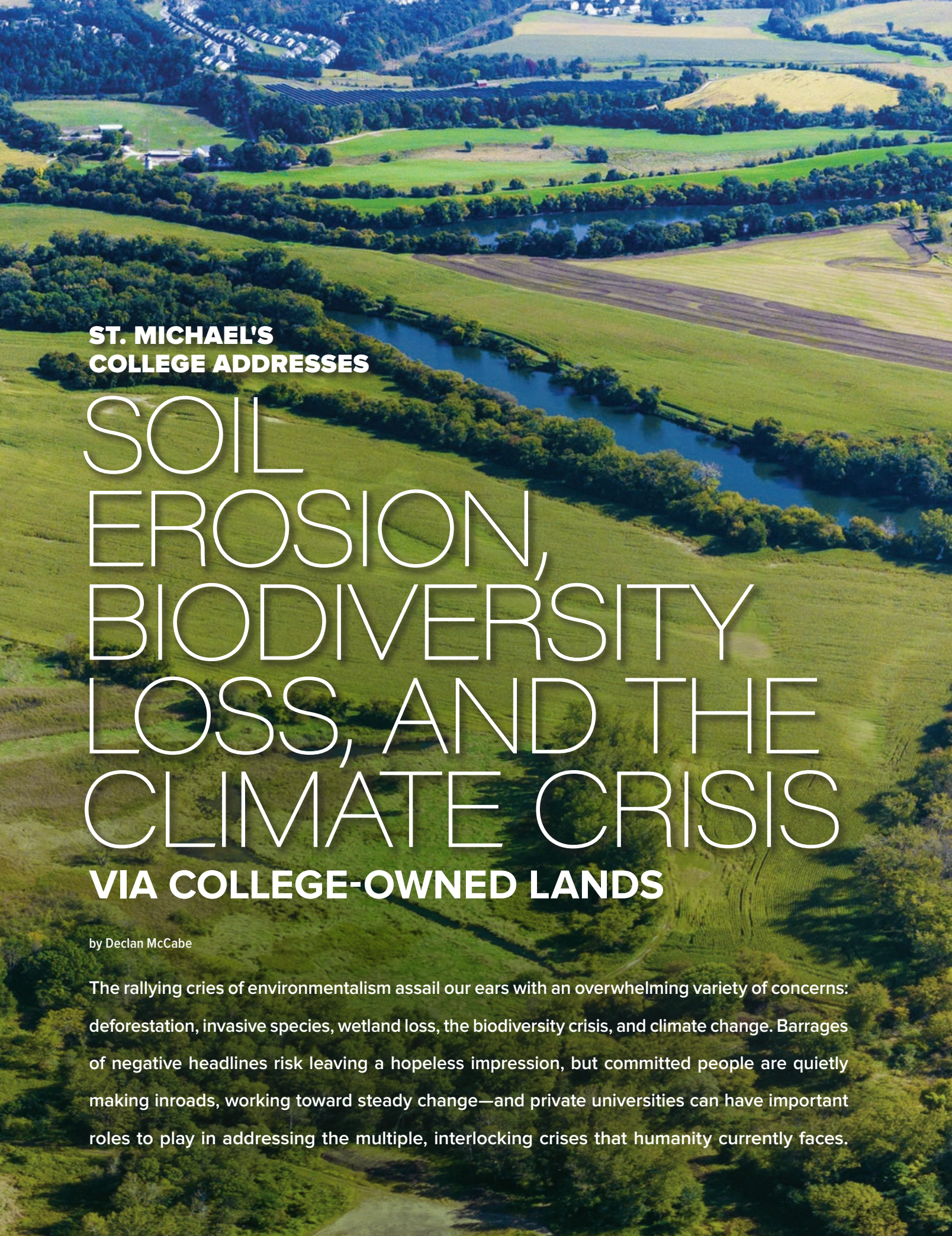

ST. MICHAEL'S COLLEGE ADDRESSES

SOIL EROSION, BIODIVERSITY LOSS, AND THE CLIMATE CRISIS

VIA COLLEGE-OWNED LANDS

by Declan McCabe

The rallying cries of environmentalism assail our ears with an overwhelming variety of concerns: deforestation, invasive species, wetland loss, the biodiversity crisis, and climate change. Barrages of negative headlines risk leaving a hopeless impression, but committed people are quietly making inroads, working toward steady change—and private universities can have important roles to play in addressing the multiple, interlocking crises that humanity currently faces.

We use sheep instead of a lawn mower around our solar field.

In fall 2016, after the corn harvest, I crossed a field leased to a Vermont farmer by Saint Michael's College in Colchester, Vermont. My interest was in the woods beyond, where students had set trail cameras for research. With my lecture on soil erosion, eutrophication, and algal blooms fresh in my mind, I recognized the need to shift my focus to the ground beneath my feet, owned by my college, as I realized that my institution was, in fact, part of the problem.

Bare soil caked my boots. As the soil ran off the landscape in grey/brown rivulets, it graphically illustrated points just made in my course. With the corn harvested, nothing broke the pummeling impacts of rainfall; phosphorous-enriched soil continually washed towards the Winooski River before contributing to future beach closings downstream in Lake Champlain.

I found my mind reeling with multiple questions: What message was my academic institution conveying—one lesson for the classroom, another on the ground? Something needed to be done, but what? Our small college, governed by trustees with fiduciary responsibilities—in a time of shrinking student demographics region-wide—was likely making the best economic use of the land.

I had—literally—stumbled onto the intersection of environmental idealism and the bottom line. The unstated other side of every not-for-profit organization's coin is "not for loss." Whatever solution I might propose would have to be revenue neutral. Terminating farming leases would forgo annual revenue, and site restoration would be costly. But many institutions use their lands for research and education, so I thought—why not us?

I contacted colleagues for creative solutions to my dilemma. Before long, I found my way to Jim Eikenberry, a representative of the Natural Resource Conservation Service. Jim forwarded documents describing Wetland Reserve Easements, a component of the U.S. Department of Agriculture's Agricultural Conservation Easement Program.

For qualifying land areas, the federal government would purchase development rights, come onsite, restore lost wetlands, and work to manage invasive species. The research and educational opportunities provided by environmental restoration right on campus would be phenomenal. To qualify for the program, land must be agricultural and must include historical wetland. Aerial photographs dating back decades confirmed what was made obvious by the corn stalks: the property had been agricultural land for many decades. Soil conservation maps indicated wetland conditions, but a site visit was necessary for confirmation of that requirement.

In spring 2017, I met with representatives of federal and state agencies to walk the site. We were joined by Karen Talentino, then the college's VP for Academic Affairs, who is also a biologist by training. Soil cores were taken and inspected, and notes were made regarding site hydrology and trees characteristic of wetlands. We covered several miles that day, but we saw from the first steps that our farmed land included wetland, floodplain, and riparian zones worthy of protection. Moreover, because of our floodplain location, little of the land could be developed to begin with; loss of development rights would have negligible impact.

When we learned that an easement payment could financially replace one hundred and fifty years of agricultural leases, we had a strong case to make. Rob Robinson, our college's chief financial officer, did his due diligence, weighing the legal fees and property value loss that a perpetual easement would incur, and agreed that an easement made financial sense. We brought a proposal before our board of trustees, and they approved. In 2018, the Saint Michael's College Natural Area was created on 350 acres of campus land to support the educational, research, recreational, and athletic missions of the college.

We informed our tenant farmer that the lease on 65 farmed acres would not be renewed. He requested a year to plan for loss of acreage, and we agreed. In return, he planted cover crop to reduce soil erosion and increase organic content of the soil depleted by decades of extractive agriculture. After the last corn harvest in 2018, he planted winter rye, using a seed drill to better preserve self-seeded silver maples, willows, and box elders already coming up between the corn rows.

The Natural Area site is traversed by a right of way that is brush hogged annually by the Champlain Water District at no cost to the college. We decided that this right of way would be our first trail, extending 1.3 miles. The college carpenters installed trailhead kiosks, and Professor Richard Kujawa, our geographer, mapped what has since grown to be a four-mile trail network used by nature lovers, cross-country


Planting sycamores, Spring 2019

skiers, athletic teams, and students—some enrolled in one of the fifteen different courses interacting with the area, and some simply out for a stroll between classes.

The signs attracted birders who promptly declared the area a "birding hot spot." As of August 2021, they have logged 810 complete checklists on the site, documenting 171 bird species. Our students use the bird data in our Community Ecology course. Other naturalists document plants, insects, and mammals on the iNaturalist site, totaling 557 species reported to date. Jim Andrews, a herpetologist, visited in March 2021 to begin documenting amphibians and reptiles. Student researchers installed trail cameras and have photographed ninteen mammal species ranging from flying squirrels to fishers; students in Environmental Science measure organic content of the soil, comparing the site to the college's nearby farm.

In a breathtakingly short period of time, this site has been converted from a neglected pollution source to a valuable campus resource. In 2019, we hosted Nancy Winship Milliken's art installation consisting of clay bricks molded to convey snippets of "Dispatch from Gaia" by (then) Vermont Poet Laureate Chard deNiord. Community members walked a mile of trail to take in the entire exhibit; I can't think of a better embodiment of the liberal arts.

Nancy's bricks, crafted from local clay, were designed to dissolve into the landscape, emulating the Leave No Trace ethic. Vermont's weather has certainly made the bricks one with the earth, and the pandemic has provided ample time for Saint Michael's College student artists to create their own outdoor exhibits following the same ethical principles. In fact, the pandemic has greatly increased artistic and other uses of the open-air site.

Conversion of the Saint Michael's College land for new uses is a textbook example of win-win environmentalism. We have reduced soil erosion, improved habitat for native species, and increased tree density—and therefore carbon capture. The second win is the creation of a facility that serves the college mission and broader community in diverse ways. One of those ways was a valuable learning experience when our Green Up student organization joined Professor Trevien Stanger to plant 100 trees and 200 shrubs in the easement, which in turn will feed back into the environmental mission of the site.

The tree planting was made possible by a small grant from Green Mountain Audubon. This organization recognized the work that the college was doing in the Natural Area and encouraged us to apply for funds. One of our Saint Michael's College alumni works with a different organization called Branch Out Burlington, and they have donated a significant number of sycamore and other trees which have also been planted.

Vermont is just at the northern edge of the natural range for sycamores, but with a changing climate, these trees will thrive here during a lifespan that is counted in hundreds of years. Planting trees just a little farther north than they would typically grow is sometimes called "assisted migration." The simple idea is to plan for a warmer climate by planting trees that might not manage to cast their seeds so far north; this practice is another important lesson for college students.

Clearly, the Saint Michael's College Natural Area is one of a great number of private university properties that, if appropriately stewarded, would collectively make significant contributions to increasing biological diversity, controlling soil erosion, and capturing carbon. While St. Michael's has been able to build on the

opportunity afforded by the easement by pursuing other grants and partnerships, easements are not the solution for every property. Private universities can, however, improve habitats and lower our collective environmental impacts in other ways. Perhaps the lowest cost "action" one can take is to simply stop doing something. Many institutions invest significant time and energy in lawns that are, in many cases, unused. At Saint Michael's College, we designated some of these lawns as "no-mow zones." Because of slope and rough ground, the designated areas were difficult to mow to begin with.

This initiative was spearheaded by a colleague in our Fine Art Department. Professor Brian Collier, an artist and curator at the college, describes his "Unlawning America" project as "a call to inaction." According to Collier, people in the United States devote about four times as much space to mowed lawn as we do to corn: approximately 40 million acres. A quick glance around your campus may well reveal some of that acreage maintained at a substantial cost to your institution. Collier suggests reducing this ecological desert by simply stopping the mowing on land not actively used for recreational purposes.


Sycamores, Summer 2021

Even without replanting, biological diversity builds rapidly in former lawns. Chicory, milkweed, and goldenrod are among the many plants that grow and feed pollinators in the no-mow zones at Saint Michael's. When our students collected leaf litter insects, the diversity was quite high compared to lawn.

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Eliminating mowing has the added benefits of reducing the cost, carbon output, and noise pollution of mowing. In 2019, the average household spent $503 on lawn care and maintenance; by extrapolation, many organizations and institutions spend far more on their larger lawns. At my own home, I have replaced a substantial patch of lawn with a vegetable garden, and I have been gradually expanding flower beds to replace other parts of it. I have added native shrub species, including elderberry, viburnum, and beach plum, that produce both flowers for pollinators and fruit for consumption—or for the birds I enjoy watching. Native species offer the advantage of pest resistance and require less upkeep. Natural areas—whether "no mow" parcels or larger expanses set aside through easements—can revert to their native diversity and lushness with remarkable ease. This year, when I crossed the former corn field with my new collaborator Jim Eikenberry, we found ourselves looking up at self-seeded cottonwood saplings fully twelve feet tall. The site now accumulates soil as the stems slow flood water velocity and promote settling of sediments eroded from upstream. We discussed the best locations for college students to plant trees, and we identified other, more remote, locations where his agency will plant. Still other areas of former corn field will never be planted because trees are growing naturally at densities higher than either NRCS or Saint Michael's College could afford to plant. As our Natural Area reverts from cornfield to floodplain forest, we sincerely hope that this site can inspire all private colleges and universities to restore and protect their local environments in perpetuity. ■

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