

restoration

A MAJOR IN SCIENCE AND ART

Defiance College students and faculty look towards the future in damaged or destroyed ecosystems

By Dawn Comer

To fall in love with Restoration Ecology at Defiance College is to walk through the Thoreau Wildlife Sanctuary on an early May morning. In this beginning of a long-ago place, a mulched path winds through a new-growth forest of hickory, oak, and maple indigenous to the Great Black Swamp. Spring rains replaced by sudden sunshine make even the air smell green. A rustle in the undergrowth, and a wild turkey streaks across its verdant home. Out into open prairie, the path ends. Grass ripples as a garter snake weaves by, red tongue flicking. Even in tire tracks, plump American toads rest in puddles.

The Thoreau Wildlife Sanctuary is an essential part of Defiance College's

Restoration Ecology program. In fact, "the historical trajectory of the program," says Assistant Professor of Biology Dr. Doug Kane, "has been intimately tied to Thoreau." Beginning with a partnership forged in the 1980's between Kane's predecessor David Reed and philanthropist Bill Diehl of the Diehl Family Foundation, 200-plus acres of farmland have since been converted into prairie, meadow, wetland, deciduous forest, and white pine forest habitats. Reed's early work at Thoreau, which included as part of the initial five-year master plan planting 35,000 trees, establishing a 12-acre prairie, and building wetlands, led to

the creation of the Restoration Ecology program, a relative rarity with "about 30 programs nationwide and in Canada, and only five or fewer in small schools," says Kane. "Defiance College is the only small private school in the Midwest that has this program."

Defined in the program's literature as "the art and science of restoring and repairing damaged or destroyed ecosystems," Restoration Ecology attracts students who

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Junior at Defiance College



Students clear a path at the Thoreau Wildlife Sanctuary.

are keen observers, creative thinkers, and scientific problem-solvers. Phoenix Golnick, a freshman from Oak Harbor, Ohio, who plans to work with Lake Erie restoration says, "Restoration ecology takes both compassion and understanding of the area in need of help. You have to be creative in finding solutions."

Ambrose Krouse, a junior from Defiance, interested in wildlife management and preserves, says that restoration ecology is "a science and an art like farming is a science and an art. ... Restoration ecologists are just farmers of a different sort. We grow natural areas that work with the environment and people to make the world a better place. Like farmers," says Krouse, "we must use a lot of science to make sure what we are doing will work, and that we are following nature's blueprint for how things should look. But we also have to use our artistic abilities [to decide] what kind of restored place would be



best for the environment and the people in the area. Some people might enjoy a woods being restored near their home but might not appreciate a sulfur bog next door.”

For Stacy (Sattler) Schimmoeller, a graduate employed by EMH&T in Columbus as an environmental scientist, the art and science of Restoration Ecology has a distinct reparative component, involving “fixing ecosystems that humans have impaired.” Restoration ecologists “learn from natural places and then use that knowledge to help restore other areas in an ecological way without using full scale engineering,” says Schimmoeller. In her work with wetlands and streams, she says, “there is usually no cut and dry, right and wrong solution.” The science is knowing how it should be restored, the art is knowing to what extent it needs to be restored. “Take an entrenched stream in a cattle pasture (one of my current projects),” says Schimmoeller. “The science includes knowing how to recognize that it is entrenched and that the cattle need to be excluded. The art comes into play in realizing that you don’t need to engineer a totally new stream by giving it a new pattern – just reconnect it with the floodplain, exclude the cattle, and plant a native buffer. Remove the damage humans have caused and leave it alone.”

At Defiance College, students have a unique opportunity to practice both the art and the science of their major. Students and graduates affirm what Krouse describes as the program’s emphasis “on both understanding and application” and its real dedication to restoration. Because of this, “a degree from Defiance College will go much further in getting me into jobs that I want later on.” For Krouse, those jobs mean working at all the “big parks” in the National Park Service, and then “working all over the world, especially in India and other at-risk areas.”

Kane gets excited when he sees students put into practice skills they have learned in the classroom, “using things we are teaching them,” from water quality testing to the making of GIS (Graphic Information Systems) maps. Amanda (Zimmerman) Hartman, a program graduate employed as a (GIS) tech with TechniGraphics in Wooster, credits Kane’s course in GIS for giving her the experience she needed to “get the job.”

Schimmoeller likewise credits Defiance for giving her “a huge knowledge base,” and says, “In my professional experience, there are VERY few people I have ever talked to that can say they have the experience I have. Prairie burns, mark-recapture studies, radio



THE DIEHL FAMILY'S LONG-TERM COMMITMENT TO DEFIANCE COLLEGE

The 200-plus acre Thoreau Wildlife Sanctuary was originally composed of the personal property of William and Helen Diehl. Since the 1980s, the Diehl family has worked with Defiance College's natural science department to provide the center as a classroom for DC students to get hands-on experience at restoring damaged ecosystems.

The Diehl family of Defiance has had a long association with Defiance College. Businessman and philanthropist William Diehl attended DC and served on the College's Board of Trustees for several years. As head of Diehl Inc., he pioneered the production of commercial non-dairy creamers, and his company was the only independent producer of evaporated milk in the U.S. Well-known for his philanthropic and civic activities, Diehl was a recipient of the Defiance College Alumni Achievement Award, Pilgrim Medal, and an honorary Doctor of Humane Letters.

Since the deaths of William and Helen Diehl, the Thoreau Wildlife Sanctuary property is owned by the Diehl Family Foundation with the children of William and Helen acting as directors. The directors are Peter Diehl, treasurer; Thomas Diehl; David Diehl, chairman; Mrs. Sarah Tardio of Cincinnati, Mrs. Mary Deucher of Vermilion, and Mrs. Christine Nadler, Dayton. The members of the Diehl family continue to work with Defiance College to enhance the Restoration Ecology program as well as the College's broader environmental efforts.

telemetry, wetland plantings, invasive species removal, the list goes on and on. It not only looks great on a resume, but also gives me experience and knowledge that I'm constantly using." A current project involving "the engineering and permitting for a new sanitary sewer system in a rural southern Ohio community," highlights the relevance of restoration ecology as Schimmoeller strives to "ensure that the construction will occur with the least amount of harm" to streams and wetlands.

Asked what Restoration Ecology students think of Thoreau, the place where all field courses are taught and experience happens, Kane says, "they love it." Andy Kibler, a sophomore Biology major from Elgin, Ohio, who would like to work in wildlife management as a wildlife officer, has already "collected plant and animal specimens in the restored grasslands and wooded area," and has "measured the density and distribution of tree growth." Kibler says Thoreau, "makes it possible to study differences and similarities of ecosystems and gives you a hands-on approach to biology," the sort of experience Kane describes as "critical" to the success of students in the program.

But what does being hands-on at Thoreau actually look like? Schimmoeller remembers. "Sure you can try to explain how to perform a prescribed prairie burn in class, watch videos, read all the information you can find, but you will never be able to replicate the feeling you get when you watch a 20-foot high wall of fire rushing past you. The whole time thinking, hoping, praying that the fire you started doesn't run out of control. Have you studied the weather enough? Will the wind suddenly pick up or change direction? Have we mowed a wide enough fire break? Do we have enough water and people on hand? Have we back burnt it far enough? Can it turn into a wildfire and burn the whole area or take out structures? Those are the things you learn during field work at Thoreau. You can read it and talk about it all you want, but to really learn, it takes hands-on experience, and that's what we have at Thoreau."

Self-described "hands-on person" Hartman says, "we did just about every study at Thoreau" says she and other Restoration Ecology majors are "lucky to have this place." Though Hartman now works in Wooster, she remains invested in Thoreau and wants some day to return and see how the studies she was a part of have "paid off. After all," she says, "that is what us restoration ecologists like to see."

While Thoreau is integral to the program, Restoration Ecology at Defiance cannot be contained in these 250 acres. Says Kane, "The Thoreau Sanctuary offers a good example of restoration ecology on a small scale, whereas Lake Erie restoration is a large scale example." Golnick, in her work with Kane on Lake Erie research, her summer research at Ohio State's Stone Laboratory, is already learning how her program offers "many opportunities outside of the classroom." Golnick also plans to travel as a Scholar in the McMaster School for Advancing Humanity to New Orleans where Kane is involved in projects with Southeastern Louisiana State



Student Dalton Gordon and Dr. Doug Kane conduct stream quality monitoring studies on the Maumee River.

University's Turtle Cove Environmental Research Station and the University of New Orleans' Pontchartrain Institute for Environmental Sciences.

More than 20 years into the partnership between Defiance College and the Diehl Family Foundation, the Restoration Ecology program continues to grow. An environmental science concentration was recently added to the natural science division, one more way of broadening and deepening the experience of students. "The environmental studies concentration," says Kane, "will give students a chance to take courses in a specific area of study that is timely. It should also allow students who cannot major in Restoration Ecology a chance to take Restoration Ecology and related sustainable development coursework." In addition, a Field Biology minor has also been added to Biology.

At Thoreau Wildlife Sanctuary, as in all of nature, change is a constant. Yet for Kane, as for all restoration ecologists, there is an artful balance to be struck between humans and their environment. "We are not going to put all the Great Black Swamp back," says Kane. At the edge of the mulched path, his sandaled feet sink into black muck. "As you see, this still wants to be swamp." ♦

Donna Polce, immediate past president of the Defiance College Women's Commission, and her husband, Vince Polce, director of the Defiance College Community Band, have given a one-of-a-kind theme to their garden. Vince collected a number of musical instruments that were no longer playable, and the couple painted them for display in their flower beds at their Defiance home. Vince reports that Donna has the green thumb, selecting and planting a wide variety of plants and flowers, and that he helps with watering.

