Hope Flies

Through drones and GIS mapping, Villanova advances Catholic Relief Services’ efforts in Madagascar.
After they arrived in Madagascar, Wag-ner, then an instructor and GIS lab manager at Villanova, and two graduate students laid the foundation for CRS staff to become proficient with drones. During two weeks of classroom presentations and hands-on tutorials, the Villanovans imparted their expertise, teaching staff how to develop and carry out a flight plan and to fly drones through manual controls.

The opportunity to educate others by building on what they had learned at Villanova was exciting for the graduate students. “A significant number of drone applications involve the integration of GIS software,” says Nick Zoccoli ‘17 COE, who will finish his master’s in Civil Engineering in May. “My coursework in the Department of Geography and the Environment provided strong background knowledge in GIS, which aided in my explanation of certain drone concepts to the new users.”

The lessons were a success. Novice operators were soon collecting imagery of projects such as water delivery systems and dune stabilization. “It was definitely rewarding to receive a video from Madagascar showing the successful application of the drones only months after our teaching experience,” Zoccoli says. Because drones can get detailed, real-time imagery superior to that of satellites, increasingly experienced users in Madagascar will be able to make informed decisions and respond quickly—for example, in getting aid to villages devastated by a tropical cyclone. Drones also are more affordable and efficient than helicopters at assessing situations from above.

Wagner, an FAA-certified drone pilot and now a solution engineer at Esri, an international GIS company, had discussed the advantages of drones with CRS when he and a team
of Villanovans visited Madagascar in summer 2017. The staff liked what they heard. But where and how would they get the proper equipment? He was on it, Wagner said.

Back at Villanova, Wagner and the College of Liberal Arts and Sciences Information Technology team customized a computer to do the sophisticated processing required for the data the drones would collect. With CRS funding, Wagner also purchased two aerial survey drones and eight trainer drones. At every step, he got input and feedback from staff in Madagascar.

REACHING NEW HEIGHTS The introduction of drones was not the only reason why 2018 was a remarkable year in the Villanova-CRS partnership. A record 20 Villanova students received two-month, CRS-related internships. The 15 selected to support work in Madagascar came from nursing, engineering, French, geography and the environment, and business. In the three regions of Madagascar where most of the Villanovans interned, the mix was interdisciplinary.

“In summer 2018, we used an integrated approach to place the students,” says Josh Poole, the CRS country representative in Madagascar. “Students from different majors worked in each of three clusters, tackling the challenges of their respective communities from an interdisciplinary perspective.” For example, nursing students in the cluster that worked with the Diocesan Development Council of Toliara gathered data on malnutrition and illnesses, such as diarrhea and malaria. The group of students then used their GIS skills to analyze the findings. “By combining forces, we were able to map which areas had the most problems with which diseases so that local leaders could address these issues and better allocate resources,” Gaby Molina ’19 FCN says.

Beyond the number of students and the interdisciplinary benefits, Villanova’s partnership with CRS “has reached a high-water mark,” says Dan Griffin, who oversees the partnership for the University. First, an unprecedented number of undergraduates participated in 2018. Second, they got to work in the field with professionals and those closest to each situation. Students didn’t simply tag along. They applied their skills to the real problems of people whose lives they felt privileged to enter.

“The best part of my job,” says Griffin, who served with CRS for 14 years, “is when students discover the compassion and genuine solidarity that motivate the best humanitarian service.”

Being “in the field”—the agricultural kind—was, to the surprise of Zainis Bob-Grey ’19 VSB, the best part of her experience. Zainis was involved with the Saving and Internal Lending Communities, a microfinance program. One of her tasks was learning about farmers’ production processes. She met with local growers and toured the often-swampy farmland. “I think of myself as a tech person,” she says. 

In the classroom and in the field, Villanovans and CRS work closely with Malagasy communities to develop their own solutions to local needs.
Zainis says. “But I realized how important it was for me to walk around with and talk to the farmers. It gave me a new perspective on agribusiness.”

GOT A MAP FOR THAT? Five undergraduate skilled in GIS interned in Madagascar in 2018. Another three stayed stateside, providing GIS support for countries in Africa via CRS headquarters in Baltimore. The demand for students with this knowledge reflects how, globally, the collection, analysis and visualization of geospatial data has become essential across industries for identifying problems, devising solutions and tracking results.

In Madagascar, which deals with food insecurity, natural catastrophes and environmental degradation, GIS can be a lifesaving tool. Villanovans help CRS and the organizations they work with to understand how to use the data they have and which data they should be amassing.

“The map is the starting point to determine how projects can be run and the people better served,” Wagner says. “By analyzing the data, you can see who takes advantage and natural resource management. Teaming with the agricultural data. Trekking through rain forests and across coast of Madagascar, Julie Greenwald ’19

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