Students prepare to release an experiment-laden high-altitude balloon into the atmosphere. Read more on page 4.

Photo credit: Micki Burto
Chicago Wildsounds Listens for Ecosystem Health

By Jamie Skokol

There’s a message in a bird song. The chirp of a warbler is telling you that spring has arrived. The hoot of an owl is a sign that the night is deep. But the sounds of the city are often drowned out by the noise of traffic and buildings. How can we listen to the natural world in the midst of urbanization?

Chicago Wildsounds (CWS) is a student-led group of DePaul University students and faculty who are dedicated to recording the sounds of Chicago. They believe that soundscape ecology is a key to understanding the health of an ecosystem. "The recordings reflect that Chicago is an urban center with a lot of biodiversity," said CWS faculty advisor Liam Heneghan, professor and department chair for environmental science and geography.

"The recordings are a treasure trove of information," said CWS member recordist Manpreet Jutte. "The group is dedicated to preserving the sounds of the city for future generations." The group has recorded sounds from Lake Shore Drive, Lincoln Park, and South Pond in Lincoln Park. DePaul students, however, have managed to find unique and interesting sounds in the cityscape.

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On an overcast day last spring, Hannah Ward (LAS ’15) slipped on a pair of latex gloves and carefully held the sides of a giant, deflated balloon as her classmates pumped the loose bag full of helium. Wind whipped the students’ hair into a frenzy, and the piercing crescendo of a tornado siren rose and fell in the distance, but nothing could distract the team from their intense concentration. The balloon had to stay off the ground. If it didn’t, there was a good chance its fragile latex sides would tear, and weeks of preparation would vanish into thin air—much like the balloon itself was about to do.

Ward, who minored in environmental science and studies, wasn’t familiar with high-altitude ballooning before she enrolled in Associate Professor Bernhard Beck-Winchatz’s course, but now she’s a convert. “This class made me curious about topics I had never considered, even though they’re part of my daily life,” she says. For example, like many of her classmates, Ward didn’t realize that the National Weather Service launches hundreds of balloons into the air each day. While high-altitude balloons aren’t a new invention, they’re still relatively rare in university settings.

For the past six years, Beck-Winchatz and his colleague, Associate Professor Mark Potosnak (see page 8), have led the charge in bringing high-altitude ballooning to DePaul students. “The balloon is just the platform,” Beck-Winchatz explains. “It’s a way to get many different types of experiments into an interesting environment.” That interesting environment is 100,000 feet above Earth—or three times higher than the elevation of a commercial airplane.

As the atmospheric pressure drops, the balloon expands until it bursts, at which point it floats gently back to the ground on a parachute. Cody Sabo, an environmental science and studies major, worked on a project last year to trigger an early-release mechanism that would shorten the balloon’s flight time. This idea came to him after partnering with Potosnak on an experiment to measure ozone uptake by plants. Each launch day, the team released a balloon to measure the concentration of ozone in the morning and then again in the afternoon; the difference indicated the amount of ozone inadvertently absorbed by crops during photosynthesis.

“These experiments are effective, but not very efficient,” Sabo explains, noting that all of the necessary data are obtained during the first 6,000 meters of the flight. “The early-release mechanism would reduce flight time and distance traveled, which would allow us to perform more flights and gather additional data on launch day.” As Sabo’s project evolved, he appreciated the opportunity to learn new skills in coding and electronic prototyping. Beck-Winchatz says ballooning’s multidisciplinary approach prepares students for future careers, not to mention life in general. “I like giving students an interesting problem and letting them figure out the science they need to solve it,” he says. “It’s more relevant, realistic and exciting that way.”

Ward experienced this for herself as her team set out to test the effectiveness of solar panels at different altitudes. “First we had to construct the payload [cargo box] from insulation foam,” she recalls. “Then we had to attach the solar panels and thermometers to the different sides of the payload and connect them to a data logger.” The challenges went beyond those of a “typical” science experiment as Ward found herself sawing, drilling and soldering her project together.

She was anxious on launch day, obsessively checking her team’s experiment and crossing her fingers in hopes that nothing would go wrong. Fortunately, the balloon launched successfully, and the students tracked its progress as it rose up and above the sprawling cornfields of central Illinois, collecting data, recording coordinates and inspiring the young scientists on the ground.
Health Care in Fortaleza, Brazil

Earlier this year, Assistant Professor Jessica Jerome received a Fulbright U.S. Scholar Award to study health care councils in Fortaleza, Brazil. The councils are one component of the country’s universal health care system, and they’re intended to give citizens a voice in health care decisions, priorities and resources. Jerome’s travel diary below offers an inside look at the opportunities and challenges facing health care councils and the citizens they serve.

July 9

Arrived in Fortaleza, Brazil. Fortaleza, a city of 2.5 million in the northeastern state of Ceará, is a particularly exciting place to study the health care councils because Ceará was one of the first states in the region to implement the universal health care system. The region’s impoverished rural and urban populations are the system’s target beneficiaries, and the city itself has been the testing ground for several new programs.

July 13

Today I attended a daylong State Health Care Council meeting at the Secretaria de Estado de Saúde ( pictured below) for representatives from across Ceará. Many of the representatives voiced their displeasure about the lack of medications at various health clinics and an absence of funding for doctors’ salaries during the last two months. Tension was also high due to growing fears that Brazil’s president and high-level National Congress members had absconded with billions of dollars of taxpayer money that should have been earmarked for the health care system.

As the day wore on, the tone of the meeting grew angrier, ultimately culminating in cries to take the council members’ concerns to the Secretary of Health himself. After heated discussion, council membersstormed out of the room and headed to the Secretary of Health’s office to confront him. As an American, it was quite striking to see this expression of political passion coupled with direct action!

July 20

This week I began visiting local health posts, which are unlike any clinics I know of in Chicago. The local health posts are federally mandated preventive health care units wherever residents live. The communities here are the system’s target beneficiaries, and the city itself has been the testing ground for several new programs.

July 27

This week I attended a series of local health council meetings in the low-income communities along Fortaleza’s eastern coastline. I first lived and worked in this area in 1999 and 2000, when I was conducting dissertation research on rural urban migration and traditional medicinal plant usage. I have visited many times since then, and the changes have been extraordinary to witness. Well-paved, bustling roads have replaced cobblestone streets and dirt paths. An extensive public bus system now connects residents to the city center, and growing middle class supports commercial and educational ventures in the area.

Changes to the community have not been uniform, however, as this photo (bottom middle) illustrates. On the left is a more traditional, family-owned lancha (small restaurant), with handmade advertising, operating according to the informal rules of its local owners. On the right is a new academia (gym), one of the first of its kind in the neighborhood. As residents have become wealthier and better educated, their health care expectations and needs have grown as well.

July 28

At the local health council meeting I attended today, an older woman expressed her indignation at having to wait a month and a half to secure a dentist appointment for her husband, who had a bad toothache. She asked the health council president, “What are we supposed to do? Make the appointments when we’re healthy, just in case we get sick?”

The president assured her that he would bring everyone’s concerns to the next municipal meeting, where he would attempt to secure funds for an additional dentist at the post. Incidents like this one somewhat tempered the exuberance I had felt upon my initial visits to the local health posts, which seemed extraordinarily well-equipped for being small clinics in impoverished areas of the city. That said, the resident’s indignation can also be understood as an embodied manifestation of the ideal expressed by the Brazilian constitution that citizens are deserving of health care and that it is the responsibility of the state to provide it.

Aug. 9

Already time to leave! I feel lucky to have been able to come back to Brazil. I’m already looking forward to next summer, when I hope to conduct follow-up research to find out whether and how the different councils were able to realize their priorities for the year.
This fall, Associate Professor Mark Potasnak is teaching a course on Pope Francis’ recent encyclical on the environment. The 180-page encyclical, “On Care for Our Common Home,” generated much interest among Catholics and non-Catholics alike when it was released in June. In this interview, Potasnak discusses the importance of this document and shares insights into his course.

What were the main themes of the encyclical?
The encyclical on the environment boils down to a few simple messages. First, the science is settled: the Earth is warming, and humans almost certainly are responsible for climate change. Next, the encyclical explains why this is an important issue for Catholics. The pope emphasizes that caring for God’s creation is a core Catholic value. Of course, this care is not unique to the Catholic faith, and the pope emphasized this as a common point with other religions. Climate change is also a moral issue. Although the poor suffer the effects of climate change most severely, the relatively affluent are the ones primarily responsible for the greenhouse gas emissions causing climate change. A final message is that we need to turn away from our culture of consumption.

Why is Pope Francis’ stance on climate change important? How is it different from previous statements from the Catholic Church?
Since so many people have come to see individuals’ views on climate change as a political litmus test, the pope is creating an opportunity to recast the conversation. Teaching that climate change should be considered within a moral framework puts the conversation on a new level. That said, this is not a new view for the church. The encyclical relies on previous teachings, especially from the two previous popes and from bishops’ groups around the world. What is new is the primacy of the issue: climate change and care for the environment is now thrust forward for Catholics and others interested in the pope’s message.

What are the course objectives?
I want the students to examine the encyclical from a variety of perspectives. There is obviously the religious dimension to consider, but the pope addressed the encyclical to all people and there are ways to approach the document apart from its religious impact. Science is difficult to communicate under the best of circumstances, and climate change is particularly tricky. The climate system is complex, and the media has often struggled to explain scientific consensus and uncertainty. In this course, we’re asking, “How does the encyclical approach these problems of climate change communication?”

During the past 10 years, I’ve had the opportunity to teach students the science of climate change at DePaul and several other institutions. Many students were fascinated by the material, but through formal and informal feedback, I realized students wanted to know more about the issue beyond the science. The idea of this yearning was reinforced when I read some recent studies in communication and cultural cognition. Communication specialists suggest that appealing to morals and religion is one way to persuade climate change skeptics. Like many of the problems my CSH colleagues work on, climate change requires an interdisciplinary approach.

We’re also exploring questions raised by the moral framework specified in the encyclical. Are there any climate change solutions that are particularly in line with the framework? Are there any proposed solutions that would work against the framework? For example, developed countries are responsible for a large quantity of greenhouse gases currently in the atmosphere, so how much burden of reduction should be placed on developing countries like India and China? I’m also making sure there is intellectual space in the class for students to suggest and follow up their own lines of inquiry.

What memories surface when you smell freshly baked cookies? How do your taste buds react to a sour gummy candy? The team at Bell Flavors & Fragrances understands better than most the evocative power of scent and taste. “We make flavors and fragrances from apple to watermelon—basically anything you can imagine,” says Noreen Lally (CSH ’76, MS ’83), who has worked in the industry for nearly 40 years.

All these delicious foods and luxurious fragrances must meet stringent standards. As Bell’s director of regulatory affairs, Lally ensures that the company’s products are aligned with government-dictated policies. “Our industry is highly regulated, especially on the flavors side, where we have to meet natural and synthetic labeling requirements,” she notes. Lally explains that consumers today are more knowledgeable about the food they’re eating and the products they’re using than ever before. “People are educated about GMOs; they know how to read an ingredients label,” Lally says. “They’re very concerned about nutrition.”

When the FDA pulled trans fat from its “generally recognized as safe” category in June, Lally got right to work. “This is a huge issue for us, and it starts with removing trans fat from all of our flavors,” she says. “The big box companies that buy those flavors from us will be reformulating their products as well.” Being flexible to changing regulations and policies is critical in Lally’s profession. In 2013, her team faced a major challenge when the Occupational Safety and Health Administration adopted a new standard for hazard communication. “We had to reformat the safety data sheets for all the chemicals we use,” she explains. “That’s an example of a ruling that isn’t necessarily food- or fragrance-related, but it still falls under our umbrella of responsibility.”

Lally’s chemistry background makes her job easier. Recently, a shipment from Bell’s Northbrook, Ill., facility was held up in China. “Even though we meet all the labeling requirements, sometimes a customs officer will be concerned or confused about something,” Lally says. “In that particular case, I had to write a one-page explanation of how this product was made and what its final use will be.” Prior to entering the regulatory affairs field, Lally spent more than two decades as a chemist for Wrigley and International Flavors and Fragrances. Those experiences helped Lally refine the skills she acquired at DePaul as a physics undergraduate and a chemistry graduate student.

Working “on the bench” and in technical management gave Lally a broader perspective that she relies on to this day. “A client may request a lemon fragrance for a candle, and then depending on the product line, they may also want to apply that same aroma to a lotion,” she says. “But you can’t just pour the fragrance into the lotion. You have to reformulate it.” Overall, it’s the daily variety that keeps Lally engaged and interested in her work. “I confront different issues every day, every even hour, and I rely on my chemistry background to solve those problems,” she notes. “When I was in school, I didn’t know this world existed, but I’m glad this door opened for me.”
Bravo! Bravo!

- Assistant Professor Karl Liechty received the Gábor Szép Prize from the Society for Industrial and Applied Mathematics for his outstanding research contributions in statistical physics.
- La Raza newspaper presented Assistant Professor Elizabeth Florez with the Mujeres Destacadas (Prominent Women) award in the health category for her volunteer work with the American Heart Association.
- The American Psychological Association (APA) honored Professor Leonard Jason with a Distinguished Professional Contribution Award at the APA’s 2015 Annual Convention in August.
- The Albert Schweitzer Fellowship named Master’s Entry to Nursing Practice student Mary Clare Houlihan to its 2015-16 class of Chicago Schweitzer Fellows. Houlihan plans to implement a series of workshops for cancer survivors through the Gilda’s Club Satellite Program at Rush Cancer Center.
- Twenty-two CSH students presented posters at the Chicago Area Undergraduate Research Symposium on April 11. Majors represented included biological sciences, chemistry, environmental science and studies, and psychology.

On Sept. 30, Vincent de Paul Professor of Biological Sciences Dorothy Kozlowski met with alumni and friends in Oak Brook, Ill., to discuss her research on traumatic brain injuries and the rehabilitation process.

CSH welcomed 11 new tenure-track professors this fall:
- Sarah Bockting-Conrad in mathematical sciences
- Desale Habtazghi in mathematical sciences
- Jessica Jerome in health sciences (see page 6)
- Sheila Krogh-Jespersen in psychology
- Hung-Chih Ku (CSH ’05) in mathematical sciences
- Goran Kuljanin in psychology
- Elizabeth Moxley in nursing
- Stefanos Orfanos (MBA ’15) in mathematical sciences
- Ida Salusky in psychology
- Susan Tran in psychology
- Jessica Vogt in environmental science and studies

New Faculty

Paying Tribute

From lab equipment to scholarships to textbooks, CSH students appreciate the myriad ways DePaul alumni and friends support their education. Here are the grateful words of a few of those students.

“I wouldn’t have been able to attend my dream college if it weren’t for your generous scholarships. Thank you!”
–Elizabeth Green, health sciences

“Thank you for supporting DePaul students! You gave me the ability to learn and work toward building a healthy and adaptable society.”
–Kat Heyn, chemistry

“Your generosity helps create strong academic programs. I can’t imagine a better place to be living out my career goals.”
–Jasmine L. Hernandez, biology

“In 2004, I was hit by a car, which resulted in a brain injury. I was referred to Dr. Dorothy Kozlowski by my neurologist for an evaluation of my cognitive functioning. Her research on traumatic brain injuries and the rehabilitation process is helping me work towards recovery and successfully returning to work. I will always be grateful for her help.”

On Sept. 30, Vincent de Paul Professor of Biological Sciences Dorothy Kozlowski met with alumni and friends in Oak Brook, Ill., to discuss her research on traumatic brain injuries and the rehabilitation process.

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