From the Department Head

Dear Friends:

Welcome to the 4th edition of our department newsletter. First of all, I would like to share with you a few highlights from the past year. We launched a new GIS major last fall, and it is the only undergraduate GIS program in the state. Also, to better reflect the current makeup of the department, we changed our name to the Department of Geography, Urban, Environment and Sustainability Studies. The number of majors in our four programs (Geography, Urban and Regional Studies, Environment and Sustainability, and GIS) increased by 18% last year.

One of the major efforts we have underway is to build connections outside UMD. We have established articulation agreements with Itasca Community College (ICC) in GIS and Geography programs, which will allow students at ICC to continue their studies at UMD. We are also in the process of developing similar agreements with Fond du Lac Tribal and Community College. During the upcoming Spring Break week, Dr. Maher (Dean of CLA), Dr. Stanley (Departmental head of Foreign Languages and Literatures), and I will visit three Chinese universities to explore opportunities for academic collaborations. In May of 2014, Kate Carlson plans to take some of our students to Belize where she will teach a short-term course called Mapping in Belize: Conservation and Cultural Preservation. Nathan Clough is also preparing a course to be taught in Iceland and Ireland next year.

In this edition, we have a collection of articles written by our students. I am sure you will find them informative and interesting, and my special thanks go to all the students who have contributed to this issue. I am also grateful to Linda Klint, whose talent and hard work continues to improve coverage of the department’s activities.

Warm regards,

Tongxin Zhu

Head, Department of Geography, Urban, Environment and Sustainability Studies
My name is Sam Giebner. I am a senior in the geography department, and a student employee in the Geospatial Analysis Center here at UMD. I decided to major in geography after taking a physical geography course as a freshman. Over the past four years, it has become increasingly clear that I made the right decision by choosing to major in geography.

The geography department at UMD helps students realize their passions, giving them the necessary skills and tools for pursuing their interests. In my mind, it is the very knowledgeable and caring faculty that makes this possible. As a geography student, you can expect small class sizes, primarily based on a discussion format. Rather than being an audience, students are engaged as a part of the lecture, providing their own thoughts and experiences.

Many of the classes are project based and students are encouraged to focus on their areas of interests. Many of my class projects have centered on using what I would consider my favorite tool, the Geographic Information System (GIS). Some of the projects I have worked on include studying compost piles at the UMD research farm, building a model that predicts blueberry habitat, and creating an emergency response tool for the BWCAW.

In many cases, a project you work on in a class may be something that opens the door to other opportunities. For instance, one of my class projects turned into an internship with Cook County and the Superior National Forest. I was even able to present the same project in a scholarship competition at the Minnesota GIS/LIS Fall Conference and walk away with a nice scholarship.

Getting the opportunity to work in the Geographic Analysis Center has provided many great experiences that will help me as I begin down my career path. I have gotten the chance to work on a wide variety of projects, whether it is identifying areas of logged forest or researching trail names in Lake County. My favorite part of working in the lab is answering students’ questions. Nothing is more gratifying than helping someone work through a problem that seems to have no solution.

Geography is often described as the discipline that connects all other disciplines. The same description can also be applied to my experience as a geography major here at UMD. The learning experience is one that is connected to many other academic disciplines and deeply rooted in the greater surrounding community. I would challenge anyone who wants to learn more about themselves and the world around them to take a course offered by the geography department.
Last year I did an internship as part of the Urban and Regional Studies program here at UMD. I had the great pleasure of working with Duluth City Council President, Dan Hartman. I felt that this would be a great internship to pursue because of my interest in public policy. With the help of Professor Adam Pine, I was able to connect with Dan and begin a fantastic opportunity that would literally change my life. Dan is someone who cares very much about the City of Duluth and is cognoscente of the issues facing the city moving forward. He was a great mentor throughout the entirety of my internship and his love and determination to make the City of Duluth an even better place to live, work, and visit is unparalleled. He made me want to learn more about this beautiful city and work harder towards discovering common sense solutions to the variety of issues before it.

During this internship, I learned that the city is facing numerous challenges and as Dan put it, “There are some politicians who are looking more for prestige and notoriety with their position and then there are others who are truly trying to make a difference.” We need politicians that are willing to do the heavy lifting to ensure Duluth remains a prosperous and culturally vibrant town that people have come to know and love. Economic development has, and will continue to be, a top priority for the council. Ensuring businesses come to Duluth and stay in Duluth is of the utmost importance. I know so many UMD students that would love to stay in Duluth and find a career here after they graduate. From what I discerned, the Duluth City Councilors are endlessly working towards making that dream a reality.

Notes from an Environment and Sustainability Major
by Ryan Venne

Over the four years I have spent at UMD I have had a wide variety of learning experiences in the different classes I have taken. This is common in the Environment and Sustainability major as it combines the knowledge of various fields of learning to develop an academic discipline that will attempt to create a sustainable future for the world. In the ES major students take classes that combine knowledge from science, health, business and sociology to create a unique cross disciplinary major focused upon the future. The uniqueness of this field allows endless opportunities for graduates as they can choose from any and all career paths.

In my personal educational experience I have learned about issues that I had no prior knowledge or experience regarding, and been able to turn them into future career opportunities. Initially coming into college I wanted to go to school to make money, so naturally I entered a business related major. However, after taking a few introductory classes I quickly realized that I wanted to not only make money, but have a passion for my job as well as have an income. So, I switched my major to what was the environmental studies program at the time. The ES program introduced me to classes/issues regarding local food systems, global issues, ecological economics, social activism, and that was just from the classes I chose to take. These formerly unknown issues have led me to experience a whole new set of possible career paths for my future.

In my academic career I have been lucky enough to get invaluable field experience including volunteering in Australia at an animal rehabilitation and research center, volunteering at the SAP (student agriculture project) at UMD, as well as helping construct and working at a sustainably designed greenhouse (Victus Farms). After graduation I will continue working on supplying healthy local food, will be going to Honduras to install a clean water filtration system, and may be traveling to Costa Rica next September to work in Sea Turtle conservation efforts. Truly, as an Environment and Sustainability major you can go anywhere and do anything while protecting future generations’ ability to do the same.
The Sustainable Agriculture Project at the University of Minnesota, Duluth (SAP@UMD) formed in 2009 to institute education, research, and community engagement around local food and agriculture systems. SAP@UMD is guided by an interdisciplinary faculty collaborative that manages a 15-acre field site at UMD’s Research and Field Studies Center (formerly the Northeast Agricultural Experimental Station). These 15 acres include a 5-acre heritage apple orchard and the 10-acre organic transition ‘SAP Farm’.

The SAP Farm hosts a series of collaborative projects. Most of the space on the farm is used to grow vegetables for use in the UMD Dining Services, with some also marketed to area grocers, restaurants, and at farmers markets. A school garden on site works with the Duluth Community Garden Program and the Duluth Public School system to host teacher training sessions for both practicing and aspiring teachers. An ethnobotany garden features native and medicinal plants. A western honeybee apiary works with the Northeast Beekeepers Association to host six hives. A native pollinator site works in collaboration with the Xerxes Society on research related to fostering vegetation to increase beneficial insects. In addition, the farm hosts a 50 tree heritage apple orchard won with community support, a large scale compost system for creating soil amendments for vegetable production, and a series of bird and bat houses to increase biodiversity that is beneficial to farming.

To carry out these projects, SAP works with a whole host of students as employees, interns, researchers, and volunteers. We asked Caitlin Nielson, who has worked with us for more than a year, to reflect on her experiences.

by Caitlin Nielson

When I tell people I work on a farm, they usually give me a nod confirming they understand what I do. I really get their attention when I start to tell them my assigned duties include taking photos, updating the facebook page, helping out at events, and running our new student group “The SAPatistas.” They become even more enthralled when I explain the mission and values of the Sustainable Agriculture Project.

The outcome of these conversations is always the same: I get to hear exactly why they think my experience is so valuable. I consider value to be something in the eye of the beholder. I’ve got my own list of why I think working for SAP is so great, but that doesn’t mean I don’t like hearing why others think so too. One of my favorite parts of the job is getting excited about what the Sustainable Agriculture Project has to offer. The word “job” seems like the wrong way to describe the work-study position I have held with SAP since the first semester of my sophomore year. I generally think of my timesheets as measuring time spent on unique opportunities and experiences as opposed to working. SAP has connected with people I consider to be some of the most important in our community. These people are professors, faculty members, leaders of projects and organizations, activists, fellow students, and basically anyone interested in working towards changing our food system. My SAP supervisors have given me the skills and support I need to make every single project I work on fulfilling by identifying and utilizing my particular strengths.
I love to take pictures. At the Apple Expo we hosted in September, I got to stroll around with my camera, snapping away. I was so excited about the images that I had them uploaded to our facebook page within a few days. This requires hours of filtering and editing but I love the details that go into the process. I identified myself as the right person for the job and did my best work. This is a simple project that is a perfect example of how SAP gives students an opportunity to align their passions with SAP initiatives. SAP pairs students with projects and positions that give them a chance to pursue their unique interests and better the program as a whole. SAP also strives to connect students with their community.

One of SAP’s current goals is to foster community connections and support our local food system. Connection is another great way to describe my experience. Through SAP, I’ve created and cultivated relationships with people, ideas and myself. Those connections will be with me up until I graduate and beyond. I am an Anthropology student, a tech-geek, a mega-foodie, a chatterbox, action-oriented, a journalist, (glad I’m not a cat because I’m so curious) and someone who wants to help others. SAP gives me a way to connect all those parts of myself, and to the community. Some of these connections are made at the SAP site, like people from the Northeast Beekeepers Association, Xerxes Society, students from different majors, those involved with the Duluth Community Garden Program, customers at our market days, professors, local vendors, and many, many more.

Recently, Abby Devita, another work-study student, and I realized that next year was our last year to work with the Sustainable Agriculture Project. You know what they say, “Time goes so fast it’s alarming...when you’re farming!” We sat down over some organic eats to discuss how we wanted to spend our last few months with the program. Lots of ideas came out of the meeting but there was one common theme: collaboration. Whether we decide to move forward with the creation of a SAP cookbook or trying to get better food on campus, it is going to require collaboration between multiple people and groups. We want to facilitate that by expanding our student group, the SAPatistas, and bringing more students in the program in the form of work-study, UROP, SDROP and volunteer positions. I think I can speak for all the SAP-kids (as I like to call our student workers) when I say this is something we would recommend to any and every student. This program is something I am so thankful to be involved in.

In life, my goal is to save and change lives through food. The SAP perspective is what I think will set me apart in that field. All the knowledge I have picked up through SAP gives me an edge that I believe will make me incredibly successful in achieving my personal goals. In the end, we have planted seeds with deep roots in ourselves, the University and the community.

For more information about the UMD Sustainable Agriculture project, please visit our


Facebook page: http://on.fb.me/10zEeWQ

Sapatista facebook page (send us a message!): http://on.fb.me/VH5wWV
I had never heard of aquaponics before learning about Victus Farms during my junior year. Aquaponics is the integration of aquaculture and hydroponics, a self-sustaining system that grows fish, plants and algae. The idea caught my interest so this last summer I started my internship at Victus Farms. First off we had to set up the 44,000 gallon plant, fish and algae growth system which took a few months. It was a great experience learning how to set up such a complex system of plumbing. There were a few challenges along the way such as building the plant troughs, but we quickly overcame them and by the end of the summer we were able to start growing plants and had gotten our first batch of fish. I had never grown anything hydroponically before so it was fascinating to learn hands-on about how well plants can take up nutrients and their water filtering abilities. Subsequently we’ve been growing lettuce, basil and some other herbs to sell to local restaurants and we now have a hatchery in operation to produce our own fingerlings. It has been great to be involved in Victus Farms and I feel I’ve learned a lot from the experience. Our fish stocks are growing more and more every day and hence our nutrients will be increasing, equaling more lettuce and herbs, which should make for a bountiful summer.
The Geospatial Analysis Center has been operating for 10 years under the name Geographic Information Sciences Laboratory. Our new name will better reflect our numerous activities campus-wide and in the community - including a growing number of GIS project contracts. The center, its staff and its services contribute to the UMD campus as an educational resource, and as a research facility for cartographic and geographic information system (GIS) needs.

The center hires several students each year to participate in a wide variety of campus research and community projects. It has a strong 7-year history of obtaining sponsored research and contract work of up to $175,000/yr (average $82,000) in the form of external contracts, internal services, and sponsored research. Technical services provided by staff include: spatial and statistical analyses, data editing, and database management in GIS research. The center’s role in the research process also includes project design, identification of system and data needs, data acquisition, budget estimates, and oversight of projects.

“Working in the lab gave me additional hands-on experience with the software, and started to show me some real world applications for GIS. In interviews, and starting in those first jobs, it was much easier for me to give examples of how my GIS experience related to the position. I was really able to just start working independently.”

- Andy King-Scribbins, Academic and Library Account Manager, East View Cartographic, ‘08

“I liked the fact that it is a small department, the faculty are very personable, and opportunities are numerous and available.”

- Paul Hood, GIS Specialist, Beringia South, ‘08

My internship at GISL introduced me “to a diverse array of GIS projects where I was able to expand my knowledge outside of the classroom. Ultimately, it was with these projects that I really got to explore the breadth of GIS principles and methods and build a base of knowledge that I carried into my career.”

- Matt McLees, GeoData Specialist, East View Geospatial, ‘08

A GIS Student Support Fund has been established to support GIS projects and related student experiences (e.g. conference attendance). The GIS projects may include requests by not-for-profit regional organizations and other intra-campus projects otherwise unfunded. Preference will be given to projects that benefit the student experience and sustainability in the community. If you are interested in contributing to this fund, please contact Jennifer Meyer, 218-726-6708 or meyerj@d.umn.edu.

For more information, see: www.d.umn.edu/development/CLAGivingAreas.html

GIS MAJOR

As of Fall Semester 2012, UMD now offers a GIS major - the only one in the state of Minnesota.

The major in GISciences provides students the education and experience needed to acquire, manage, critically analyze and represent geospatial information. Basic and advanced courses are offered in map design and geovisualization, geographic information systems, remote sensing and geospatial technologies. Students will complete a GIS internship as part of their academic program, which will allow additional practice with skills such as data collection, research processes, presentation and writing.

“The GIS major is a perfect match with my Geology major! GIS has so many real world applications and is in growing demand in the work force.”

- Allen R. Best, ‘13 GIS major candidate

The UMD GIS program’s target is to prepare students for careers in the Analysis and Modeling sector of the very large Geospatial Industry. Practitioners in this sector know when and how to employ analytical functions of geospatial software tools to render valid and reliable information from geospatial data.
Hazard mitigation is defined as any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). FEMA requires the development of a local government plan in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs.

The University of Minnesota Duluth Geospatial Analysis Center has expertise and extensive experience with county level Hazard Mitigation Plan updates: working with Lake, Brown and Le Sueur Counties in Minnesota, and pending contracts with several other counties. These efforts include conducting appropriate research to develop text and maps which will clearly describe and update the counties’ community profile, land use, disaster history, hazard analysis and risk assessment. Together with Adam Pine, GUESS Urban Studies Associate Professor, we solicit input by county departments, other partners and the public on risk assessment and mitigation strategies. We facilitate public meetings to develop and gather input on hazard mitigation strategies and priorities.

The center is assisting counties with performing the hazard risk assessment for 100-year floods using the Hazus-MH GIS tool. This tool enables communities of all sizes to estimate potential losses from floods, hurricanes, earthquakes, and other related phenomena and to measure the impact of various mitigation practices that might help reduce those losses. The Minnesota Homeland Security and Emergency Management office has determined that Hazus-MH should play a critical role in Minnesota’s risk assessments, and therefore the 100-year flood event hazard analysis was introduced in the 2010 plans. The center has utilized the HAZUS-MH tool for the MN Statewide Flood Hazard Mitigation Plan and also a Level 2 Flood Analysis Mitigation Plan for Dakota County, MN and Brown County.
My name is Stephanie Gibeau and I am a senior in the UMD Department of Geography, Urban, Environment and Sustainability Studies. I am majoring in Geographic Information Sciences and minoring in Geography, as well as Photography. I began my education career at UMD as a Digital Art and Photography major, but soon found out that I wanted something more. However, I wasn’t quite sure what that was. I took a look at my personal interests and decided to take a few geography classes. I instantly felt like I was in the right place and pursued my education as a Geography major. Soon after, I was told by one of my professors about Geographic Information Sciences (GIS) and the wide array of career opportunities that comes with it. It was at that point that I decided to pursue a GIS major.

Once I began my GIS courses, I was instantly hooked. I did not realize all of the possibilities with GIS and how fascinating it really was. It can apply to several different applications within multiple work fields, from determining suitable areas for cropland, to mapping pipeline routes for an oil industry, to mapping wildfires for the Department of Natural Resources. The opportunities are endless. Because of this, individuals who study GIS can go into the work field of their interest but still have the ability to incorporate their GIS skills. This is why I like GIS. I also like that it is challenging, but very rewarding at the same time. Even if you aren’t computer savvy, it is very easy to learn and the professors within the department are very knowledgeable and helpful.

GIS at UMD has opened many doors for me to finding a career through networking events and internships. The networking opportunities that have been offered at UMD have allowed me to make great connections with multiple companies that I hope to contact when employment opportunities become available. I currently have an internship with the City of Duluth as an Invasive Species Management Intern, primarily focusing on the GIS component of their current Invasive Species Management Project. This internship has allowed me to strengthen not only my GIS skills, but my communication and networking skills as well. Some of my basic duties include identifying and mapping invasive species populations through the use of a GPS and GIS software, educating and training community members on identification and eradication techniques, as well as assisting in developing an invasive species management plan for the City of Duluth. Through the experience I have gained with this internship, I hope to find a GIS Analyst job within the Twin Ports area or possibly attend graduate school to receive my Master’s in GIS.

GIS is a growing and developing field, which means that both students and faculty are learning together. In a sense, we are all “learning to learn” to keep up with innovations within the field, which I find to be very beneficial as a student because we are not only learning but we are assisting with the teaching methods as well. One of my most favorable components of the GIS department is the class size. At UMD, the GIS courses have a small student-to-faculty ratio, which allows for in-depth one-on-one assistance. These courses also allow for more hands-on activities, which allows for students to experience and analyze real-world situations. Also, because GIS is a growing field, everybody has a chance to learn it. This newer form of technology has allowed individuals from all sorts of education backgrounds to become certified in GIS, especially at UMD. There are very few prerequisite courses required in order to enroll in GIS courses, other than being comfortable with computers and being able to “think spatially.” GIS is becoming widely used in a variety of business environments, which makes it a growing career field full of employment opportunities all over the world.

Students from all majors at UMD are able to enroll in GIS courses and are eligible to receive a Certificate in GIS, or even major or minor in GIS. The different opportunities allow students who are interested in GIS to determine how much GIS education they want based on their interests or career goals. Many employers today are interested in those with experience in GIS, but not necessarily one with a Master’s degree.
Below is an excerpt from “Extension, UMD research sparks community action on Duluth food desert” in University of Minnesota Extension’s Vital Connections newsletter, Fall 2012, by Mary Vitcenda.

For years, residents of Duluth’s Lincoln Park have talked about the lack of easy access to full-service grocery stores in the neighborhood. Then, in 2011, research conducted by John Bennett of University of Minnesota Extension and Adam Pine of University of Minnesota-Duluth (UMD) captured the conversation and put solid numbers behind the community’s understanding of the situation. Now, their research is driving community action to find solutions to Lincoln Park’s food access problem.

‘Leakage Factor’
One number that stands out in the Pine-Bennett study is $5.3 million. That’s the amount of money the study authors estimate Lincoln Park residents spend annually at grocery stores outside the neighborhood. In economists’ language, that’s a “leakage factor.”

“That’s money going out of the community,” says Pine, professor of Geography and director of the Urban and Regional Studies Program at UMD. “I think that was an ‘ah ha’ moment for a lot of people,” he adds.

“People knew that food access was an issue, but they didn’t know the extent,” says Bennett, a Community Economics educator with Extension’s Center for Community Vitality. “We documented the extent, and presented a picture of what the actual problems were. That kick-started a lot of activity.”

Foundation for funding
Since a report on the Pine-Bennett study was published and presented, Duluth community groups have used findings to obtain funding for neighborhood planning and to organize efforts for bringing fresh, healthy, and affordable food to Lincoln Park (also called West End).

Defining the problem
The U.S. Department of Agriculture defines a food desert as “a low-income census tract where a substantial number or share of residents has low access to a supermarket or large grocery store.” Lincoln Park, located a few miles west of downtown Duluth, fits the profile for several reasons. One factor is a relatively low median household income (MHI) of $34,847. That’s $10,000 lower than Duluth’s overall MHI and more than $25,000 lower than Minnesota’s MHI.

More significantly, there is no full-service grocery store in Lincoln Park. In fact, the last major grocery store closed more than 30 years ago. No part of the Lincoln Park neighborhood is even a one-mile walk from a grocery store.

Proposed solutions
Study authors proposed several solutions to Lincoln Park’s food access problem, including the following. The community’s hope is any or all of these options could be implemented:

• Improving the convenience store
• Attracting a full-service grocery store
• Establishing a food hub
• Increasing transit access

HDAC has enlisted Pine and Bennett to help the group look into the feasibility of these and other solutions with the aid of a grant from Blue Cross/Blue Shield of Minnesota. They will start that work soon.

Connecting community needs and University resources
It took years for the food situation in Lincoln Park to deteriorate, so things won’t happen overnight. But steps are being taken.

Both he and Pine are gratified by the community activity their study sparked in Lincoln Park. “Solutions are difficult to implement without the research to back them up,” Pine says. “Knowledge is power, and it’s important to get solid data so people can decide what to do.”