

Global Resource Systems NEWSLETTER

May 2018

IOWA STATE UNIVERSITY
Global Resource Systems

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Dear Global Resource Systems Alumni and Friends,

Greetings from Iowa State University! We are pleased to share with you our first Global Resource Systems (GRS) alumni newsletter. Our goal is to keep connected with you and share the year's activities and achievements. It has been an exciting academic year of growth for the GRS program. I continue to be humbled by the development of the major and its community as it approaches its 10th academic year.

Whether it's creating engaging learning community activities, planning global internships, leading co-curricular clubs, participating in service learning in the United States Virgin Islands or Uganda, competing for top honors and scholarships, or enrolling in a new semester-long program in Uganda, the GRS students continue to take advantage of a world-class education at Iowa State University.

As of spring semester 2018, GRS has over 135 majors, at least 12 faculty and staff members working directly with GRS students, and 130 alumni. We expect another 22 graduates in spring and summer 2018. Since 2010, over 165 students have completed their global internship on six continents in over 40 countries. The GRS curriculum provides a high-impact undergraduate program with a global internship, senior project, capstone project, and leadership and service learning opportunities.

There have been so many accomplishments this past year, and the following pages showcase many of the students and their activities. We are proud that GRS continues to prepare future professionals with an understanding of global resources to help create sustainable systems.

Thank you for helping pave the way for future GRS students. It has been an incredible journey and "adventure" for everyone involved - from the early students in 2009 through those graduating in 2018. We sincerely appreciate your support, and please keep in touch!

Sincerely,

Dr. Gail Nonnecke
Faculty Coordinator
Global Professor in Global Resource Systems

SOME TAKE COURSES. OTHERS CHART THEM.

Student Programs and Activities

GLOBE Learning Community Activities

The Global Resource Systems (GRS) Learning Community continues to serve students to build community in the major. This past year, four peer mentors led several events, including traditional favorites along with new activities. Over 30 students attended the annual Thanksgiving potluck in November. Students played Jeopardy and began a new tradition - karaoke!

During the spring 2018 semester, students organized and participated in several activities to get to know the GRS faculty and staff: *Coffee with Catherine*, *K9s with Kevin*, *Magnets with Maggie*, *Dining with Dorothy*, and *Gardening with Gail*. Peer mentors have already begun to plan for the fall 2018 semester. Stay tuned for photos from the fall 2018 welcome back event and canoeing adventures during *Discovering with Dick*!

GLOBE Ambassadors

Nine outstanding students were chosen to be the third group of GLOBE Ambassadors for the 2016-17 academic



Amanda De Carvalho
Peer Mentor



Anne Dinges
Peer Mentor



Katelyn Fritz
Peer Mentor



Ellen Osterhaus
Peer Mentor



year. The GLOBE Ambassador program is an initiative to educate the public and recruit new students into the major while fostering student leadership, engagement, and professional development of members. Ambassadors participated in activities including speaking with high school students during campus visits, talking with academic advisors, and traveling to local and statewide recruitment events and conferences. This year, ambassadors embarked on a variety of activities through the program. Activities included:

- Leading campus tours and discussing Global Resource Systems (GRS) issues and major with prospective students at Experience Iowa State visits approximately 9-12 days per semester on an ongoing basis;

- Presenting GloBeads activity at the TRiO college preparation event for first-generation and low-income prospective students;

- Presenting GloBeads activity, sack-garden program, and discussing GRS case studies and issues around the world at the World Food Prize Iowa Youth Institute;

- Assisting with greeting guests at senior project and internship and 321 poster sessions and alumni panel event;



GLOBE Ambassadors educate the public and recruit new students into the major

Assisting with the College of Agriculture and Life Sciences (CALS) informational booth at the FFA Leadership Conference;

Leading scavenger hunt and tour activity at the FFA Leadership Conference;

Leading training and team-building retreat for the new GLOBE Ambassador cohort;

Assisting with the GRS informational booth at World Food Prize Global Youth Institute on Oct. 11-14;

Discussing GRS major with undecided and open-option students at the Iowa State Majors Fair on Oct. 11;

Presenting at Boone High School's Global Hunger Awareness Day on Feb. 14; and

Leading break-out activities at the FFA Leadership Convention on April 9-11 and the World Food Prize Iowa Youth Institute on April 24, 2017.

GLOBE Leadership Fellows Program (GLFP)

The GLOBE Leadership Fellows Program (GLFP) is offered to first- and second-year students who are majoring in

Global Resource Systems (GRS). The program is specifically targeted to students who want to learn about leadership and develop skills that enable them to be agents of change at Iowa State University and beyond. Students have the opportunity to identify personal leadership styles and philosophies, explore leadership roles in their field of study, and interact with GLOBE faculty, College of Agriculture and Life Sciences (CALS) administration, university staff, and industry representatives.

Each semester, 8-12 students participate in GLFP. One of the program outcomes is to inspire and develop leadership in students during their first half of college. This will enhance their experience within the program and their professional careers. Each GLFP cohort is facilitated by student leaders in the upper-division GLOBE program. Animal Ecology Senior Jace Hadish and GRS Senior Caleb Floss co-led the seminar. In 2018, Sierra Becker led the student group with Caleb Floss.

"This program provides a comfortable learning environment for students to interact with peers and share personal insights as well as any questions," Floss said. "Everyone within this program brings a unique background and perspective to the class which provides an enriching environment for all of the participants."

GLFP GRADUATE ELIZABETH GARZON VALUED HER EXPERIENCE IN THE PROGRAM GREATLY, SAYING, "I JOINED GLFP BECAUSE I WANTED TO DEVELOP MY LEADERSHIP SKILLS IN AN ENVIRONMENT THAT DIRECTLY PERTAINED TO MY MAJOR AND MY FUTURE CAREER. MY FAVORITE PART WAS LEARNING MY STRENGTHS AND FINDING OUT HOW I COULD USE THEM ON A DAILY BASIS TO BE MORE SUCCESSFUL. MY FAVORITE MEMORIES WERE GETTING TO KNOW OTHER GLOBE STUDENTS WHO WERE MY AGE ALL WHILE LEARNING MORE ABOUT OURSELVES."

Students who complete GLFP are eligible and encouraged to apply to become GLOBE Ambassadors, a leadership opportunity for students to represent GLOBE at recruitment events like poster sessions, high school tours, and The World Food Prize. In 2018, an upper-level leadership program is planned for students who have completed GLFP. Since its implementation in 2013, the program has graduated 41 leadership fellows.



Jace Hadish and Caleb Floss co-led the Fall 2017 Leadership Fellows Program seminar

Iowa State Peace Corps Prep Program

Iowa State University and the United States Peace Corps formally announced the Iowa State Peace Corps Prep Program in 2016. The program prepares and equips ISU students for service in the Peace Corps or other global organizations upon graduating. With successful completion of the program, ISU graduates find themselves thoroughly equipped for the international workforce, demonstrating exceptional skills and invaluable global competence.

To successfully complete the Peace Corps Prep Program, students build competencies that prepare them for international development field work and Peace Corps service. To do so, students complete academic courses and 50 or more hours of experience in one of the following work sectors in which Peace Corps volunteers serve: agriculture, environment, education, health, community economic development, and youth development. Students are also required to develop foreign language skills, intercultural competence, and leadership and professional experiences. Following completion of the requirements, graduates are strong applicants to the Peace Corps.

Since the program's inception in 2016, nine students have completed the Peace Corps Prep Program and 14 students are currently enrolled and expected to officially complete the

program upon graduation from ISU.

Three students who have completed the Peace Corps Prep Program are currently serving in the Peace Corps. To date, nine total Global Resource Systems graduates have served or are serving in the Peace Corps. With the recent establishment of the Peace Corps Prep Program, we anticipate increase of this number.

Student Marshals

Global Resource Systems (GRS) graduates Rebecca Clay and Catherine Krezowski served as the Student Marshals for the College of Agriculture and Life Sciences (CALS) and the College of Engineering, respectively, for the Iowa State University December 2016 Commencement Ceremony. The class marshal is chosen to exemplify excellence in both academics and service.

Catherine Krezowski, graduating senior in GRS and Civil Engineering, will serve as the College of Engineering's Student Marshal for the December 2016 Iowa State Graduation Ceremony. Catherine is one of 12 students to be recognized "Outstanding Seniors" in the College of Engineering and works for Flint Hills Resources upon



Catherine Swoboda presents McKenzie Thiesen with her Peace Corps Prep certificate



Oxfam-America ISU President Alana Platte facilitates at the World Food Prize Global Youth Institute Hunger Banquet

graduation as an environmental engineer. Her passion for water quality brought a powerful perspective to GRS projects and discussions.

Rebecca Clay, graduating senior in GRS and Agronomy, was named CALS “Outstanding Senior” and served as the Student Marshal for the December 2016 Iowa State Graduation Ceremony. Upon graduation, Rebecca is serving as a Peace Corps volunteer in Nepal.

Catherine Leafstedt, graduate in GRS and Agronomy, was honored as the CALS Student Marshal for the Spring 2018 commencement. Leafstedt will serve as a World Food Prize volunteer over the summer and then depart for the University of Cambridge to obtain a masters degree in development studies.

IAAS Student Club

International Agriculture of Students in Agricultural and Related Sciences (IAAS) is a student organization that desires to create interest in International Agriculture and support international events at opportunities at ISU. Many Global Resource Systems (GRS) students are active in IAAS and hold officer positions including President Shannon Rauter, Vice President Theresa Brehm, and Treasurer Emily Hugen. The club currently has over 70 members and has helped

to sponsor GRS student participation in the World Food Prize events held annually in Des Moines, IA. This year IAAS is proud to have supported various students’ travel to international agriculture conferences and hold the second annual international banquet at Iowa State University to create community for international and domestic students, faculty, and staff in the College of Agriculture and Life Sciences (CALS).

Oxfam America Student Club

The Oxfam America Club at Iowa State University is dedicated to making a change, starting within the local community and stretching to national, and even global, scales. Their focus is to right the wrongs of poverty, hunger, and social injustice through awareness, campaigns, and pulling for policy change. Their actions on campus such as fair trade chocolate sales, the ISU Hunger Banquet, documentary viewings, and more, encourages students and faculty to use their voice to stand up for what they believe in. The overall goal is to create lasting partnerships within the community and build our army in this never-ending fight for a fair and just world.

UNICEF Club

Iowa State University UNICEF remains active on campus and at the national level. Events on campus have focused on several of UNICEF’s key initiatives related to clean water, human trafficking, and vaccinations. Over 15 members of ISU UNICEF, including three Global Resource Systems (GRS) students, traveled to the national UNICEF conference in Washington D.C. in March to advocate on behalf of the organization. Students practiced professionalism and networking by meeting with legislators and learning from one another. During the past year, a member of ISU UNICEF has held a leadership position on the national UNICEF team; this tradition will continue in the coming year as a second student will assume a similar position.

Global Health and AIDS Coalition (GHAC) Club

The Iowa State University Global Health and AIDS Coalition (GHAC) focused on building connections with other health advocacy organizations in 2017 and 2018. Allie Wilson, senior in biology, attended the Student Global AIDS Campaign Fall Uprising Conference in Washington D.C. and learned about other student organizations that focus on HIV/AIDS on university campuses across the United States. The conference facilitated building advocacy skills,

learning about the current status of HIV/AIDS healthcare and funding, and fostering solidarity in the health advocacy community. Allie was able to bring new ideas back to our ISU clubs.

On campus, GHAC partnered with Save the Children Access Network to host petition signings and a training session on the effective ways of contacting elected officials. Additionally, GHAC celebrated World AIDS Day on Dec. 1 by hosting a day With(out) Art in partnership with the ISU Museums. Pieces of artwork in the Parks Library, including iconic artworks by Grant Woods, were covered to visually represent the losses suffered due to the HIV/AIDS epidemic. In the spring semester of 2018, GHAC hosted a Day of Action to fight for increased Medicare coverage and funding. Club members helped students contact members of Congress to let them know that they support increasing access to affordable healthcare.

Global Resource Systems Alumni Seminar

Seven Global Resource Systems (GRS) alumni returned to Iowa State University to speak with current GLOBE students about their experiences in and outside of the university. The opportunity for students to speak with graduates in their early careers is a recent development, with the first alumni seminar in 2016. We were excited to host graduates Brian Castro (2014), Sam Ennett (2016), Danika Schaaf Hannon (2013), Alyssa Meyer (2014), Moriah Morgan (2014), Julie Perreault (2015), and Rachel Pierce (2015) for a panel discussion this year. An opportunity fair featuring GRS student organizations and study abroad programs took place following the panel.

Brian Castro (2014), GRS and Nutrition and Wellness double-major and Emerging Global Diseases minor, recently completed his service as a Community Health Development Agent in the Peace Corps, Burkina Faso. He now works as a program coordinator for the immunization center of John Snow, Inc., a public health consulting firm.

Sam Ennett (2016), GRS and Environmental Science double-major and Spanish minor, spent a year after college working as an environmental scientist, where he was responsible for environmental permits and environmental restoration in Northern Iowa. He currently works as a storm water inspector for the City of Waukee.

After working as a rotational management trainee and



Kara Gardiner, Oxfam America vice president, talks about ways their student organization works toward sustainability

supervisor for the OSI Food Group in Illinois, Danika Schaaf Hannon (2013), GRS, Chinese, and Economics triple-major, now works as a business process analyst with MoneyGram International in Minnesota.

Alyssa Meyer (2014), GRS and Dairy Science double-major, accepted a position with Cargill Sweet Bran in Blair, Nebraska after graduation and has been promoted in the company from a role in sales support and data analytics to sales account manager. In 2018, her career will change as she moves to Vietnam.

While completing her Master of Arts in Anthropology, Moriah Morgan (2014), GRS and Environmental Studies double-major and Anthropology minor, is also working at Ethnic Minorities of Burma Advocacy and Resource Center (EMBARC) in their RefugeeRISE program.

With a passion for water quality, Julie Perreault (2015), GRS and Environmental Science double-major, found internship and full-time employment opportunities with the Ankeny Association of Boards of Certification and Polk Soil and Water Conservation District. She currently works as a watershed coordinator for the Easter Lake Project.

Rachel Pierce (2015), GRS and Environmental Studies



Seven GRS alumni return to Iowa State to speak with current GLOBE students about their experiences in and outside of the university

double-major and Sustainability minor, completed her Master of Science in International Development at the University College Dublin in Ireland before she accepted a full-time position in the Global Programs office at ISU.

GRS Program Support

Cargill Partnership with Iowa State GRS

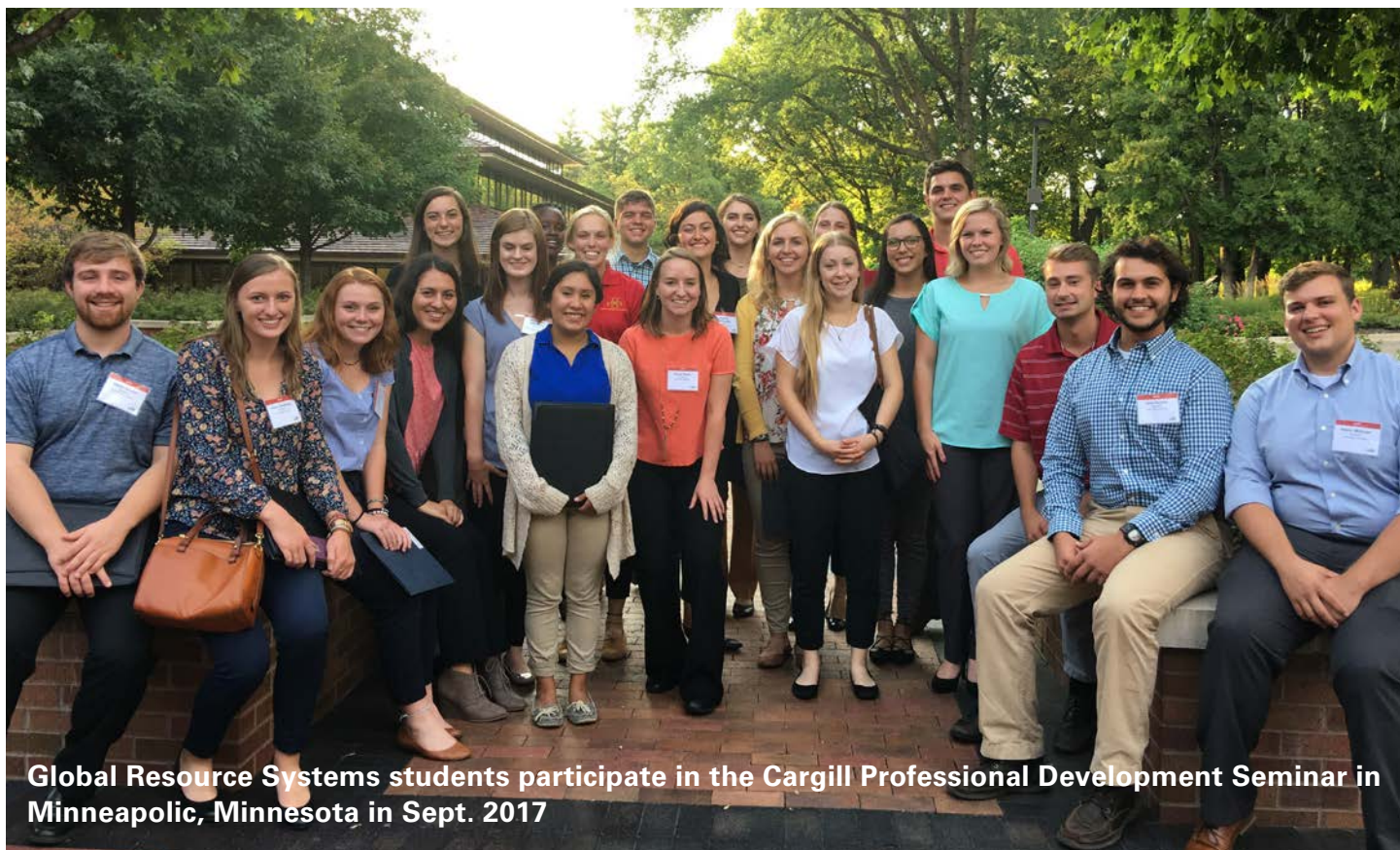
Cargill Inc., a multinational corporation in food, agriculture, and financial and industrial products and services, has taken a keen interest developing future global leaders through the Global Resource Systems (GRS) program. The financial support and program engagement have allowed the GRS program to extend new opportunities for the growing major. To date, Cargill has donated more than \$1 million to the GRS program, investing in the future leaders of global food and agriculture.

In 2017, for the second year, GRS students traveled to Cargill headquarters in Minneapolis, Minnesota to participate in a professional development seminar. The two-day conference provided a unique opportunity for students to explore topics related to professionalism and leadership in global agribusiness. In addition to exploring headquarters, students were given tours of Cargill's processing facilities. This is a wonderful seminar for students to explore corporate

opportunities in global agriculture and leads many students to apply for domestic and international internship openings with Cargill.

GLOBAL RESOURCE SYSTEMS ALUMNI

Year	Number of graduates
2010-2011	2
2011-2012	8
2012-2013	19
2013-2014	21
2014-2015	21
2015-2016	25
2016-2017	25
Fall 2017	9
Spring 2018	20
Total graduates	150



Global Resource Systems students participate in the Cargill Professional Development Seminar in Minneapolis, Minnesota in Sept. 2017

A shared goal between GRS and Cargill is to open up food and agricultural internship opportunities to GRS students. In Summer 2017, 12 GRS students completed internships with Cargill. Eight students were placed across the United States in openings related to their technical fields and sustainability. Four students were selected to complete their GRS international internships in Ghana, China, and Thailand. These incredible opportunities would not be possible without Cargill's generous donation of funds and commitment to the GRS major.

A dinner and reception were held on Oct. 2 to celebrate Cargill's investment in the GRS program. Students who completed their international internships in Summer 2017 and the China study abroad course presented posters to members of the Cargill Iowa State University Engagement Team, the Iowa State Foundation, GRS staff and faculty, and the general public.

Numerous Cargill employees have shared their expertise with GRS and ISU students as guest speakers in classrooms and career advice panels. This engagement presents a unique opportunity for both parties to learn. In the upcoming year, first- and second-year GRS students in the Global Food and Agriculture course will head to Brazil, with support from Cargill, to help launch an upper-level leadership program for junior and senior GRS students.

Global Internships

Uganda: Rachael Barnes Internship Profile

"After learning about the Biological Systems Engineering major, I believed it was a great fit for me because I could use problem-solving skills to create innovative solutions to protect the environment and improve people's livelihoods. What was missing from my major was a global perspective, as I wanted to apply my major in a way that improves lives for people in the United States and within our global community. Global Resource Systems (GRS) has given me this perspective and has challenged me to look at world issues and understand how resources can be used to create sustainable solutions.

I have spent two summers in Kamuli, Uganda with the Iowa State University: Uganda Program (ISU-UP) working on and learning about international development and rural livelihoods. In 2016, I participated in the school-gardening service-learning projects. My experience inspired me to return to Kamuli in 2017 to undertake an 8-week global internship. My internship's work provided an opportunity to employ my engineering learning and skills toward projects focused on post-harvest handling, grain storage techniques, and detecting aflatoxins in maize (corn). My

activities included surveying over 100 community members about grain storage practices and knowledge of aflatoxins; testing maize for aflatoxins; and implementing a maize management plan at primary schools where local farmers supply maize for the school feeding program to promote safe grain storage. Aflatoxins are highly toxic and carcinogenic compounds produced by fungi commonly found on maize in Sub-Saharan Africa. Consumption of aflatoxins in foods is associated with liver cancer in adults and stunted growth and development in children.

The work I completed was important because ISU-UP can now create a post-harvest handling training that specifically teaches about the misconceptions so that a better understanding is achieved about the harmful effects of consuming moldy maize. Through my experiences in rural Uganda, I gained cross-cultural communication skills by working with community members daily and gained a better understanding of development work. I practiced my problem-solving abilities by recommending different grain storage and post-harvest handling practices that meet the needs of the people, the culture, and improves the current situation. One of my favorite aspects of my internship was visiting with over 100 farmers in the community. Learning

their stories and understanding their day-to-day life was eye opening and will remain with me for the rest of my life. The farmers were very welcoming to a stranger and were willing to sit down with me. I am striving to implement sharing of knowledge into my everyday life because the knowledge we can learn from each other and from each other's stories is amazing. Another part of my internship that I greatly appreciated was its ability to confirm my interests for my future. From my experiences working internationally on sustainable, community-based initiatives, I have grown a strong interest in international agricultural initiatives and culturally diverse leadership in science. By completing my internship in the Kamuli district in Uganda, I have had the opportunity to see how my two majors, together and across disciplines, can allow me to accomplish my professional and personal goals."

Community Nutrition Efforts in Entre Rios, Bolivia: Allison Jaeger

"I spent four years at Iowa State University developing a global perspective in the Global Resource Systems (GRS) major, studying Dietetics in the College of Human Sciences, and learning Spanish in the World Languages and Cultures department. This past summer I packed a suitcase and ignited my critical thinking skills to live and work in Bolivia as a nutrition intern for Servicio Departamental de Gestión Social (SEDEGES) Entre Ríos. From May 22 to July 5, I immersed myself in the Bolivian culture, communicated in Spanish, worked with a government organization providing nutrition services to the community, and gained a personal understanding of the nutrition status of the Entre Ríos community. Experiencing the physical, financial, geographical, and knowledge barriers that prevent Bolivians from consuming a well-balanced diet was an educational experience that has inspired and reshaped how I will pursue a career in the dietetics profession.

During my internship, I stayed primarily in Entre Ríos with the community that has access to abundant vegetables, fruits, proteins, and grains via the daily markets, but doesn't receive potable water through their pipes. I spent a considerable amount of time observing and consuming the community's typical diet, working with a team to monitor malnutrition among children in the integral care centers, assembling and distributing food packages for people with disabilities, and leading nutrition education workshops for adolescents.



Rachael Barnes completed her GRS internship in the Kamuli district in Uganda

Class discussions about combatting world hunger and my passion to work as an international dietitian are seemingly easy from the comforts of my Iowa home. While in Bolivia, I realized a lot was required of me beyond the technical skills of nutrition knowledge in order to be a successful intern. Working with the team, visiting the daycare centers, obtaining anthropometric measurements, and giving nutrition supplements to the undernourished children opened my heart to have compassion for the most vulnerable. Providing food packages for the handicapped, though a deceptively mundane task, gave me a real understanding of the complexities of maintaining basic health and livelihoods in Bolivia, especially for the indigenous community. Receiving food packages requires budgeting time and money, bringing two photo copies of required documents, and not missing the only public transport which came early in the morning. I quickly saw that for many individuals, these were tremendous challenges. To a greater extent, I had to honestly assess the nutrition status, knowledge and culture of the middle and high school students while remaining conscious of my own perspective and biases, in order to create a presentation that met the nutritional needs of that age group. I have given nutrition presentations before, but it was a completely new experience in another country, in another language, among an unfamiliar culture with a completely different diet.

These presentations required vulnerability and self-confidence, and they were the best part of my internship. In the midst of these presentations, I realized that the dietetic profession suits me. I can't cook everyone's meals, but I can provide nutritional education that empowers individuals to make appropriate nutritional decisions for the sake of their health and the health of their families."

A Day with Sister Angela: Stephanie McMillan

"Sister Angela welcomed me with open arms to her health center in Nawanyago, Uganda. I was there to visit and spend the day with her and her staff learning about their daily work. The health center was set up around a central courtyard. The health center included: a teaching area, where that morning HIV-positive patients were being counseled about living with their disease; a diagnostics lab, where they could run tests for malaria and other common diseases; inpatient and outpatient wings; antenatal care; a delivery area; a fully stocked pharmacy; and my favorite — an ultrasound machine. Sister Angela was part of the program called "Imaging the World," a non-governmental



Allison Jaeger traveled to Bolivia to complete her GRS internship with SEDEGES

organization dedicated to bringing medical equipment and training to remote areas.

Having ultrasound technology allows Sister Angela to check on the progress of a pregnancy, determine sex, and identify various potential tumors. Patients would wait all day to be seen by the ultrasound technology.

The health center at Nawanyago was different than some of the other health centers I had visited because it was private. A small fee had to be paid for the services at Nawanyago. This small fee helped to ensure that medicine was available for their patients. To put the fees in perspective, a cesarean section costs \$125 USD – a large sum for a Ugandan but a very small sum for a C-section in the United States.

Throughout the day, I shadowed people working in all areas in the health center. The efficiency of the health center and the passion by which each staff person worked was encouraging for the health of the people of their community. Seeing the clinicians interacting with their patients in outpatient care further reinforced my desire to go into primary care medicine.

Visiting health centers was just one facet of my internship in Uganda, but one of the most impactful for me. I also completed research, surveying Nutrition Education

Center (NEC) clients on their adoption of hygiene and sanitation practices and their reported incidents of disease. I spearheaded an eye care camp in a village that serves over 300 community members. Two days a week, I taught science at Naluwoli Primary School.”

“THE SIX WEEKS I SPENT IN UGANDA WITH THE IOWA STATE UGANDA PROGRAM WILL UNDOUBTEDLY BE SIX OF THE MOST IMPACTFUL WEEKS OF MY UNDERGRADUATE CAREER. I AM THANKFUL FOR THE INCREDIBLE OPPORTUNITY AND FURTHER CONVINCED THAT HUMAN MEDICINE IS MY PASSION. I ADMIRE THE PATIENT-CARE RELATIONSHIPS AND THE HOLISTIC ATTITUDE POSSESSED BY KAMULI'S FAMILY PHYSICIANS. THIS EXPERIENCE ULTIMATELY REINFORCED MY DESIRE TO BECOME A PHYSICIAN SERVING RURAL AREAS.”

Peri-Urban Agriculture Farm in Costa Rica: Rachel Sporer

“I am a senior studying Global Resource Systems (GRS) and Horticulture with a minor in Spanish. When I was



Stephanie McMillan spent six weeks in Uganda for her GRS internship

evaluating my goals before choosing an internship, my main goal was to find something that encompassed all three of my areas of study. This meant finding a place where I could explore the various systems of sustainable development, learn about horticultural crops and systems, and practice my Spanish. This was no easy feat, but I found all of these things and more with the peri-urban agriculture farm at the sustainable agricultural EARTH University in Costa Rica.

My main responsibility during my internship was to maintain the innovative, space-saving, and resource-efficient crop production systems on the peri-urban agriculture farm. These systems included vertical agriculture, raised beds, hydroponics, compost, bio-intensive beds, and many more. They were all designed with the same idea in mind: helping urban and peri-urban families increase their food security by producing their own food with their limited space and resources. I was also able to design and implement a research project regarding the effect of LED lights on lettuce growth and development, which will be carried out by a professor and a student at EARTH after I departed.

I also took two classes during my two months in Costa Rica: one regarding natural resource management and the other an intensive Spanish class. In addition to these field and classroom educational experiences, I took a couple of trips to learn more about sustainability in Costa Rica. One was to the largest hydroelectric dam in central America, and the other was to Tárcoles River and Isla Tortuga where we measured pollution and the carbon footprint of tourism. Spending a weekend with a family from the community was perhaps the most hands-on urban farming experience I have ever had. This experience gave me the chance to see the things that I practice in action and allowed me to hone my Spanish skills.

This internship provided me the opportunity to explore the things I'm passionate about in an international setting. The faculty and students at EARTH University are from all corners of the world, and I got the opportunity to work closely with a lot of them. Not only did I learn about horticultural systems and sustainable development, I learned how to communicate and foster relationships with people from many different backgrounds. I made personal friendships that I know will last a lifetime in addition to the professional relationships that I developed.

While I find it hard to narrow down one single favorite part of this internship, I can say that one of the most

impactful experiences was learning to overcome challenges on my own. Attending college 40 minutes from where I grew up, I have always had a very secure support network right in my backyard. At EARTH University, I was completely on my own, which gave me a chance to get to know myself on a deeper level and gave me the confidence to flourish outside of my comfort zone. It also solidified the fact that I am in the right field and on the right path for my future. At EARTH University, I was able to work with community members in an extension-type setting and I felt that I was able to make a big impact on their lives by doing that. My internship has inspired me to strive for an extension career where I can continue this work. Overall, my EARTH experience is one that I will cherish for life.”

Cargill Animal Protein China (CAPC): Adam Willman

“My name is Adam Willman and I am currently a senior at Iowa State University majoring in Global Resource Systems (GRS) and Agronomy. While my technical area is Agronomy and I have studied Arabic and the Middle East and North African (MENA) region, I completed my international internship in Shanghai, China with Cargill Animal Protein China (CAPC) where I was an Innovation and Research and Development intern. My experience living and working in Shanghai provided me with a sense of mental clarity that all undergraduates dream about. It was truly a transformative time in my college career.

CAPC is a business unit of Cargill that operates a fully vertically integrated poultry supply chain in China. They produce millions of pounds of fresh, frozen, and partially cooked chicken products for consumers and customers in both the domestic and export markets. I was tasked with identifying areas of collaboration between other Cargill business units and functions. I was also in charge of creating a billable service for the newly opened Cargill One Innovation Center. One of the goals of Cargill One is to create complete menu solutions for domestic and international customers like McDonald's, Yum!, and local quick-service restaurants. Specifically, I created a pricing model that was based off trust and Cargill's ability to provide a variety of services to its customers.

I had several concerns about my internship at the start of the summer. I didn't know the language and I knew my work might not directly relate to my agronomy background. However, I found that everyone within Cargill and most



Rachel Sporer worked on a peri-urban farm in Costa Rica for her GRS internship

people throughout China were willing to help me along the way. Additionally, I was able to connect many aspects of my internship project to my agronomic knowledge. It was really exciting to see how the agricultural supply chain plays an important role in food security. I had the opportunity to see first-hand how the chickens were raised, processed, marketed, shipped, and consumed all within the context of the global supply chain and in a country with a changing diet. In fact, it is because of this internship with CAPC and my exposure to the agriculture supply chain that I have changed what I want to do after graduation.

I learned a lot about problem solving from my internship and decided to apply for graduate school. I discovered that I'd like to combine my various interests in agriculture and development to help alleviate food insecurity. In the last weeks of my internship, it dawned on me that what I really want to do after graduation is learn more about agricultural economics and trade policy and work with producers in the MENA region.

It is because of my internship experience with CAPC that I am confidently applying for graduate programs, fellowships, and opportunities all related to development monitoring and evaluation. Most importantly, I learned that I have what it takes to live and work in foreign environment and succeed! I am truly grateful for all the support I've received throughout



Adam Willman completed his GRS internship in Shanghai, China with CAPC

my internship experience.”

Global Food Security Symposium

Global Resource Systems (GRS) student Michaela Hoffelmeyer was selected to join the 2017 Next Generation Delegation at the Global Food Security Symposium held March 29-30, 2017. Michaela was one of 20 university students selected to participate. The symposium is a two-day event that features renowned speakers in the fields of business and social and policy innovation relevant to global food security and agricultural development.

Agroecology in Brazil: Allie Wilson

“My name is Allie Wilson and I am a Global Resource Systems (GRS) major with minors in Sustainability and Animal Science. This summer I completed my international internship in Viçosa, Brazil. My internship focused on agroecology in Brazil and the social aspects of the movement. I worked alongside Dr. Irene Cardoso, a professor at the Federal University of Viçosa. Dr. Cardoso is also the president of the Brazilian Agroecology Association and a coordinator for the Center for Alternative Technologies of the Zona da Mata. I was fortunate enough to work with the best of the best in agroecology.

I chose this particular internship because I wanted to

put myself out of my comfort zone. I had studied a lot about agroecology during my time as a GRS major and had practiced sustainable agriculture during my experiences abroad, but I had never immersed myself within the agroecology movement. I wanted to get to know the social aspects of agroecology in a developing nation. I was also interested in learning Portuguese since it is such a beautiful language. An opportunity to study alternative agriculture in Brazil came up and I took advantage of it!

During the two months I spent in Brazil, I had several amazing experiences. I spent four days camping in rural Brazil for a regional agroecology conference where I witnessed participatory development practices in person. This event was a regional meeting of agroecology groups in southeastern Brazil. I got to meet students, indigenous activists, and professors from Rio de Janeiro and other regions of Minas Gerais. We had homestays with farmers in the region and assisted them in agroecology projects. It was an amazing opportunity to put what I learned at Iowa State University into practice! Along with this conference, I volunteered at a youth program with my roommates in an underprivileged neighborhood in Viçosa. At my last visit to the program, I taught a group of children about the basics of



Allie Wilson's GRS internship focused on agroecology in Brazil

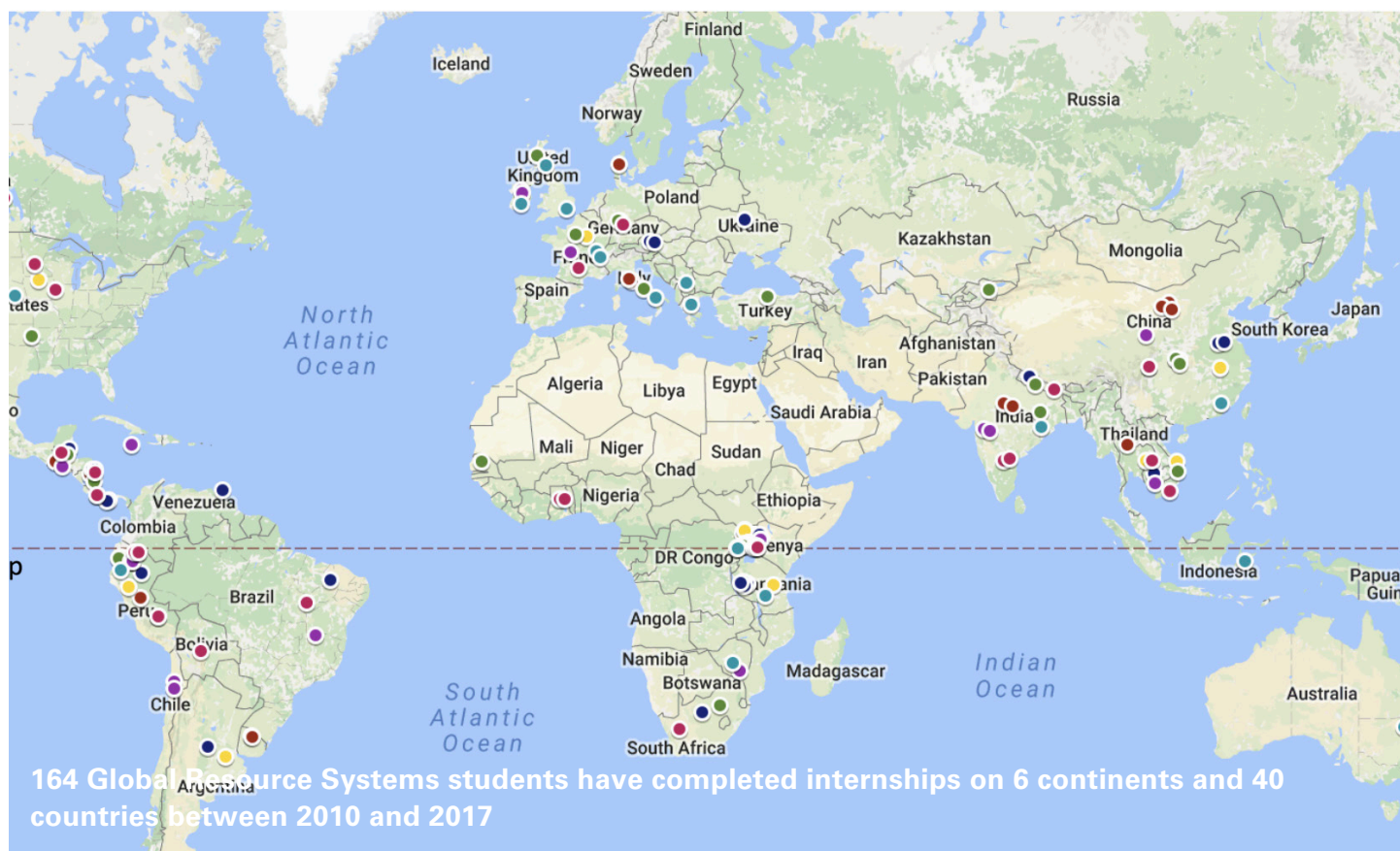
agroecology and planted lettuce with them. They were all so eager to learn about where their food comes from!

The biggest chunk of my internship was working on an event called Troca de Saberes. Troca de Saberes is an annual conference held at the Federal University of Viçosa where farmers from all over southeastern Brazil meet to discuss agroecology practices, exchange seeds, advocate for indigenous rights, educate each other on land rights, and so much more. This event was the reason why I came to study in Viçosa. I met with students, professors, and volunteers once a week before the event to set an agenda. Two weeks before Troca, I spent most of my time working with some amazing people to construct bamboo teepees, yurts, geodomes, and other structures. I learned how to blowtorch bamboo, operated more power tools than I ever thought I would, sustained several splinters, and carried enough giant bamboo to make my arms sore. We would start working at 8 a.m. and wouldn't finish until nine in the evening. It was a demanding two weeks, but they were definitely the best two weeks of my internship.

When Troca officially began, it was the most gratifying thing I have ever experienced. Planning this event from

the beginning of my internship and then watching Troca participants enjoy the fruits of our labor made me proud of our hard work. The structures that we spent days building turned into indigenous community centers, art exhibits, and small group areas. Everything was colorful, music was in the air, and there was an overall atmosphere of joy that I can't put into words. Farmers brought crates of fresh fruits and vegetables with them to contribute to the conference. A seed exchange was held where hundreds of different plants were traded and knowledge was shared. Small group discussions ranged from the impact of agrochemicals on small scale communities, how to use plants for medicinal uses, analyzing the works of Paulo Freire, and political activism. At night, we would dance to performances by farmers and local bands, sing with friends, and reflect on what we gained from the conference. Learning so much about agroecology in Brazil lit a fire in me to continue learning and eventually return to South America to pursue a career that helps others."

"INTERNING IN BRAZIL CHANGED ME IN WAYS THAT I NEVER WOULD HAVE IMAGINED."





Global Resource Systems (GRS) interns in Uganda

Outstanding Marketing Practice Award

The Global Resource Systems (GRS) website was named a winner in the Office of University Marketing's Outstanding Marketing Practice Award Competition. The current GRS website was launched in Fall 2016 and has seen increased website traffic, content engagement, and visitors. We are proud to share student-centric stories to demonstrate our unique program!

Service Learning in Uganda

In 2017, Iowa State University completed the 12th year of the "Creating a School Garden, Service Learning in Uganda" program. The program ended somewhat bittersweet, as it was the last year in our current rented housing facility. A new training center opened in 2018 and create many opportunities for increased student learning and community outreach over the next years. We continue to be very grateful for those who have supported the Creating a School Garden: Service Learning in Uganda program and for the students' valuable work, positive attitudes, passion to help others, and willingness to learn while serving.

The Creating a School Garden: Service Learning in Uganda program had another cohort of excellent students from Iowa State University and Makerere University (MAK) participating in 2017. Thanks to donor support, the number

of ISU students increased from seven to 13 this year. They were accompanied by 16 MAK service learners, five additional MAK service learners from previous years who returned to Kamuli as student leaders, and seven Global Resource Systems (GRS) interns completing their global internship with the ISU-Uganda Program (ISU-UP) in Kamuli. Together they assisted teachers and completed ten bi-national team projects to benefit four primary schools and one junior-senior high school.

Bi-national teams of ISU and MAK students assisted in teaching of 5th and 6th grade primary school students. Students helped with mathematics and integrated science classes, which included subjects of math, agriculture, and health, nutrition, and sanitation. Specific agriculture topics covered included root crops, managing pest and diseases, soil fertility and erosion, and keeping farm animals.

Students created engaging educational materials to teach pupils. Song and dance, handmade posters, and demonstrations in school gardens were just a few strategies used to create an interactive and engaging learning environment. While in classrooms and the gardens, ISU and MAK students served as role models and inspired primary school students to continue their education and view agriculture as a positive livelihood and profession.

SCHOOL GARDENS PROVIDE FRUIT AND VEGETABLE PRODUCE, EGGS, AND INCOME TO SUPPORT SCHOOL FEEDING PROGRAMS. THEY SERVE AS OUTDOOR LEARNING LABORATORIES FOR CLASSES TO PROVIDE HANDS-ON LEARNING EXPERIENCES. SCHOOL GARDENS CREATE LEARNING OPPORTUNITIES FOR PRIMARY SCHOOL AND UNIVERSITY STUDENTS ALIKE. HIGH-VALUE CROPS, GRAIN AND LEAFY AMARANTH, TOMATOES, COLLARDS, EGGPLANTS, PEPPERS, ONIONS, AND SOYBEANS ARE GROWN IN THE GARDENS AND EITHER ADDED TO THE SCHOOL LUNCH PROGRAM OR SOLD TO PURCHASE INGREDIENTS.

Previously, schools served a light maize porridge, which contained only about 50 kilocalories (Kcals) per serving, to some pupils on certain days of the week. The school lunch programs have moved from porridge to “nyoyo,” a mixture resembling a stew of corn, common beans, vegetables, iodized salt, and vegetable oil. Nyoyo provides over 800 Kcals per serving and more vitamins and minerals than maize porridge. Once per week at two schools, eggs from the poultry project at each school were included in the nyoyo stew. Currently, nyoyo is served five days a week to every child at Namasagali Primary School, and school feeding



A child eats nyoyo, which provides over 800 Kcals per serving

programs are growing at the other four schools to add additional weekdays. The school lunch programs improve attendance and children’s ability to focus in the classroom, directly benefitting their education.

ISU and MAK students also tended gardens, which are approximately 7.5 acres in area. Vegetable crops include collard greens, onions, eggplants, leafy amaranths, tomatoes, and sweet potatoes. Fruit crops include bananas, papayas, oranges, avocados, and mangoes. Pupils and university students learned about sustainable production practices in a tropical climate, including using nitrogen-fixing cover crops as a rotation crop. As they constructed nursery beds and sweet potato mounds, cleared plots, and harvested grain and leafy amaranths, ISU students were surprised by the amount of work required to produce a crop – especially without access to the same garden equipment we have in Iowa and the United States. Primary school students worked in the gardens with ISU and MAK students in their free time, and the university students made many new young friends.

ISU and MAK students formed teams to develop and implement projects in agroforestry, beekeeping, composting, grain storage, health and sanitation, irrigation, poultry, school gardening, and school feeding and nutrition. These projects developed infrastructure and programs to benefit the



Sydney Beaurivage carries a jerry can filled with water through a school garden

schools and pupils in Kamuli.

The agroforestry team constructed live fences made of barbed wire planted with spurge (*Euphorbia*) and yellow oleander (*Thevetia peruviana*) to prevent losing garden produce to roaming livestock and/or to prevent residents from encroaching on school property. The agroforestry team also planted woodlots to provide the primary schools with firewood in the future for cooking school meals.

The beekeeping team expanded the bee forage garden surrounding the apiary by planting blooming pollinator plants in the apiary that will provide nectar for the bees. The team also conducted bee safety trainings with the Namasagali College Entrepreneurship Club and hosted a workshop to teach local community members and club members how to make bee hives from clay pots.

Composting expanded to include cover crops and other soil amendments. The soil improvement team established trial beds to compare the use of kitchen ash, compost, and poultry litter as soil amendments for collard green production. They measured plant growth of collard greens grown under each treatment and plan to make

recommendations for future production plots.

Post-harvest losses can account for 20 to 40 percent of grain loss in Uganda, and an even higher percentage of fresh fruit and vegetable loss. The post-harvest handling team cleaned and sorted grain at the primary schools, fixed grain handling equipment, and organized grain storage rooms at Nakanyonyi and Namasagali Primary Schools to help manage grain and reduce post-harvest loss. The post-harvest handling team also constructed and recorded data about using a cooler for greens and fresh produce. The prototype cooler uses charcoal and evaporative cooling to keep produce from wilting.

At Namasagali Primary School, the health and sanitation team painted murals on pit latrines and trained pupils to promote proper sanitation. They also constructed dish racks to dry dishes after the school lunch and repaired tip tap hand washing stations. The team also worked with girls to sew reusable sanitary pads, decreasing stigma and allowing them to stay in school.

Irrigation is vital to maintaining crops year-round, due to Uganda's dry seasons and climate variability. The irrigation



The new Mpigiti Rural Training Centre will create many more opportunities for increased student learning and community outreach. The circled area includes student housing.



Shannon Rauter trims senescent leaves from banana plants



Jace Hadish harvests grain amaranth with Makerere University students

team installed a randomized trial to determine the best mulching practices to conserve soil moisture for eggplants. They also tested a sprinkler system at Namasagali College and watered school gardens at Namasagali and Nakanyonyi Primary Schools.

The poultry team finished a new poultry house at Nakanyonyi Primary School by adding a chicken run and thatched ceiling inside the unit. They also prepared the poultry house for a new batch of chicks and vaccinated the new chicks upon arrival. Eggs from the chickens are incorporated into the school feeding program for animal-source protein.

The school feeding and nutrition team made keyhole and sack gardens near the kitchens, with the aim to increase the convenience of having fresh vegetables nearby and give cooks a place to compost kitchen waste. They compared the amount of food prepared versus the amount of food consumed to make meal planning more efficient, and ordered new benches for pupils to sit on while eating their lunch.

With the additional students this year, school gardening was added as a bi-national team project. The school garden team surveyed gardens and created maps of the various

school garden plots to use in planning crop rotations. They also interviewed head garden/agriculture teachers to record past pest and disease issues for future use.

Students observed and assisted local agricultural producers while visiting small-scale farmers in the Kamuli District. Farm visits have become an integral part of service learning activities, where students visit, work, and learn from farmers while sharing new innovations and technologies they have learned at their respective universities. This summer's farm visits included activities such as planting bananas, threshing beans, mulching tomatoes, and visiting the nutrition education centers.

A new training center is being constructed for the Service Learning in Uganda program. This new facility will house all of the ISU and MAK student service-learners together in one dormitory and location – something that was not possible in the previous guest houses. The training center will have dormitories, meeting rooms, labs, and spaces available for community extension workshops and agricultural demonstrations. Everyone is very excited for the opportunities that the new training center brings to the ISU-UP.

Seven GRS students completed internships with the

ISU-UP in 2017. ISU-UP is a registered nongovernmental organization of Iowa State University.

Three interns studied health and wellness of Nutrition Education Center (NEC) clients. Stephanie McMillan interviewed over 80 NEC clients about health and sanitation practices at home and compared practices to reported instances of diseases in the households. Joi Latson evaluated the retention rates of mothers attending trainings at the NECs and shadowed health professionals at health clinics in the Kamuli District. Hannah Schlueter surveyed NEC clients on food security and post-harvest handling practices. Hannah also made observations at the NEC and assisted with the NEC mothers' craft group. Mothers from the NECs weave traditional baskets that are sold through ISU-UP, creating a source of income for the mothers and empowering them in their families and community. Stephanie, Joi, and Hannah also assisted local health workers during a free eye care clinic.

Two interns worked in the community to study water usage and sustainability of the Center for Sustainable Rural Livelihoods (CSRL) boreholes. Sydney Beaurivage interviewed water use committee members to record

recommendations and suggestions for improving boreholes. She also assisted with borehole maintenance and mapping. Kerri Carleton surveyed the community on the use of alternative water sources such as shallow wells and water tanks.

Rachael Barns completed her global internship working with farmers in Kamuli on post-harvest storage. Rachael surveyed farmers to determine current grain processing and storage techniques, implemented a maize management program at the primary schools, and trained mothers at NECs on proper grain handling and storage. Between 20 and 40 percent of grain on average can be lost in post-harvest storage and addressing post-harvest loss is crucial to increasing nutritional food security.

Maureen Booth worked with primary schools in Kamuli to create an inventory of trees located on their property and their uses. Maureen completed the first half of her global internship at the Budongo Forest in Uganda working with researchers to study chimpanzees.

ISU's CSRL education programs initiated the Youth Entrepreneurship Program (YEP) in 2013 at Namasagali College, a rural secondary school, in Kamuli District as a way of engaging the youth who are currently involved in informal employment activities. In 2017, members from two secondary school YEP clubs in Kamuli gathered to discuss possible entrepreneurship activities in which youth can participate to earn an income. Members discussed the obstacles that prevent youth from participating in entrepreneurship activities and what interventions could be made to encourage more youth to engage in entrepreneurship activities. Throughout the day, YEP club chapters shared how they grow vegetables, raise livestock, cut hair, and polish shoes to earn money for school fees for their members. Pupils also discussed how lack of mentorship, land, and capital for inputs deterred them from starting businesses. Together YEP members created possible solutions how they could overcome these challenges. Pupils returned to their schools energized and ready to lead their chapters in new activities to earn funding for school fees and to become future leaders in the community.

"Creating a School Garden, Service Learning in Uganda" has developed into a world-class, transformational learning experience and development program thanks to the continued efforts of many students, faculty, and staff



Kate Stewart and Liz Hada work in the raised garden mounds for sweet potatoes



Service learning students from ISU and Makerere University clean grain for the school lunch program

from ISU, MAK, and ISU-UP. Although we continue to reflect on this year's program and all that the students have accomplished, we enthusiastically look forward to next year's service-learning program. With the move to the new training facility, we will have the opportunity to increase the number of ISU students who participate and the bi-national ISU and MAK teams will continue to provide service to the Kamuli District.

ISUAA Faculty Inspiration Award

University Professor and Morrill Professor in Global Resource Systems (GRS) Dr. Gail Nonnecke was awarded an Iowa State University Alumni Association (ISUAA) Faculty Inspiration Award for 2017. Nominations for the award are submitted by former ISU students to recognize faculty and staff who positively impacted their ISU student experience.

EARTH Program: Service Learning Abroad

Through the EARTH Program, Iowa State University students spend a semester or summer in St. John, U.S. Virgin Islands as service-learning students. Working with one partner, Gift Hill School (GHS), university students assist with school gardens and help to sustainably grow local fruits and vegetables. The "service-learners" also have the chance to help teach horticulture, environmental science, and culinary

arts to K-12 classes. In addition, EARTH program students assist in the St. John and U.S. Virgin Island communities, working with additional local partners.

Over the past year, the EARTH program hosted 12 service-learners who were actively involved in youth, horticulture, agriculture, and food projects at GHS on St. John and service projects in the greater community.

The EARTH program is an excellent opportunity for students to learn while serving and to complete ISU course credits while off-campus. The implementation of the new cultural and U.S. diversity in the U.S. Virgin Islands course has demonstrated the EARTH program's commitment to honoring local culture, which also enriches the ISU students' experiences. We partnered with the St. John Historical Society and local U.S. Virgin islanders to develop course content and continue to refine the course and related projects. These partnerships allow the local people of St. John to share their story and help our students learn about the cultural diversity of the islands. Some of the course highlights include focused interviews from local U.S. Virgin islanders that reflect the diversity and history of the island, student reports on previously recorded oral history archives of U.S. Virgin islanders, and personal reflections from field trips to ruins, estates, and historic settlements on St. John and other islands.

The EARTH service-learners have been enthusiastic assistants in the "Feed the Hungry" initiative at St. Celia's Church in St. John. Students help with meal preparation, serving, and clean-up at least once a week to provide a warm meal to some of St. John's most vulnerable community members.

A farmers market with produce from the EARTH gardens is held at GHS once a week. Staffed by EARTH service-learners, the farmers market is available to the entire community. Students work to develop produce identification and use cards for community members to best utilize the food purchased and to limit food waste.

Students in 2016 and 2017 facilitated the addition of new gardens to meet the demand for produce for school and community feeding programs. Produce grown in the now 12,160 square foot garden is used for school snack, farmers market, soup kitchen, and senior center hunger-fighting initiatives.

Associate Professor Dr. Julie Blanchong, University



Hurricane Irma destroyed Giffit Hill School's lower campus garden

Professor Dr. Richard Schultz, and Graduate Research Assistant Emily Zimmerman led an ISU service-learning trip to St. John during the 2017 university spring break. Seven ISU students participated in service and educational activities while in the U.S. Virgin Islands. The group helped to clear a 3,600 square foot area for the agroforestry plantings and the GHS Arboretum Grant Project at GHS. The group also assisted the National Park Service in rebuilding trails. The Spring 2017 EARTH Cohort accompanied the group on cultural hikes and hosted a dinner at the EARTH program dormitory and cottage.

Hurricane Irma and Hurricane Maria struck St. John in September 2017, devastating the island and delaying the departure of service-learners in the fall semester. The four students scheduled to serve have been continuing their coursework in Ames and participating in service-learning activities at Food at First, Habitat for Humanity, and Wabi Sabi Farm. In addition, the students have become FEMA certified and enrolled in an emergency preparedness course in preparation for traveling to St. John in mid-November, where they will assist with rebuilding St. John and the EARTH program.

EARTH program service-learners developed and implemented projects at GHS and greater St. John community as a component of their ISU service-learning

course. Students select projects relevant to their field of study that benefit the U.S. Virgin Islands.

Vermicomposting

Two vermiculture compost bins have been constructed and are being used to compost residential kitchen waste. Five additional vermiculture bins were assembled into DIY kits with instructions. Horticulture Professor Dr. David Minner and service-learners presented multiple composting and vermiculture workshops throughout the U.S. Virgin Islands.

School Snack Program

After assessing the school food system of the Virgin Islands, student researchers sought out a program that utilized locally sourced and nutritious food options. In the spring of 2017, students helped to implement a snack program that operated on produce obtained from the schools' garden. A sun-powered dehydrator helped to ensure the preservation of harvested goods.

Irrigation

Rainfall is the primary source of the water supply in the Virgin Islands. Due to the infrequency of rain events, service-



Amanda De Carvalho distributes produce at the local farmers market

learners devised two ecologically-efficient irrigation systems. The systems were designed to be economical, safe to operate, and reproducible for small scale gardeners.

Hydroponics

Service-learners continued to implement and improve upon a hydroponics system at GHS. Soils on St. John are shallow and need to be rebuilt, making hydroponics possibly cost-effective alternatives that would address the lack of soil sufficiency and quality.

Vector Education

Vector-borne illnesses maintain a prominent existence in the Virgin Islands. A website-based curriculum that synthesized relevant health information and facts for middle school students to evaluate was established and will be implemented by teachers.

Composting

After assessing the Virgin Islands' impending landfill closure, service-learners gauged the feasibility of turn-pile composting in partnership with local restaurants. Food waste was collected from local restaurants to imitate the feasibility of maintaining a large scale, city based composting facility.

Farmers Market Nutrition Education

A student researcher aimed to make nutrition facts and recipes available for produce native to the Virgin Islands. The student researcher catalogued local recipes and USDA certified nutrition facts to construct a pamphlet that could be passed out to consumers at the local farmers market.

#PowerUpUSVI

Initiatives on the ISU campus to raise funds and support for the U.S. Virgin Islands have been undertaken by the Horticulture and Global Resource Systems learning communities and EARTH program participants. Baked goods sales and a letter-writing campaign raised money to replace needed supplies for GHS and the St. John community.

EARTH Intern Spotlight: Sierra Becker, Spring

"I always knew I wanted to study animals from growing up raising and showing livestock on my family farm in Indianola, Iowa. I have always been interested in different



cultures, languages, and resources, and I have felt compelled to learn more about the world I live in. Studying Global Resource Systems and Animal Science has allowed me to deepen my knowledge in my areas of interest and I was excited to learn more through the EARTH program.

My service-learning internship consisted of four different components throughout the semester: assisting in teaching Giff Hill School students, working with the school garden, completing an independent project, and exploring the cultural diversity of St. John. I really enjoyed working with students, as I felt that while I was sharing my studies, I was also learning! We helped with two class periods during the week where students prepared for a weekly farmers market and a farm-to-table snack. During these class periods, students received their own garden plots and had the freedom to plant what they wanted. The students took care of their garden plots throughout the semester and learned about different methods they could use to grow their produce.

I cared for a section of the garden that I watered and maintained every day. My garden consisted of different plants such as eggplant, summer squash, carrots, lettuce, cucumbers, and a mango tree! We harvested this produce on Wednesdays to prepare for the farmers market. My independent project was focused on the benefits of



Sierra Becker builds a hydroponics system for use in areas with limited soil access

hydroponics in an area with limited soil access. During my time on the island, I built a hydroponic system with five plants. It was extremely rewarding to be able to create the system, watch the plants grow, and produce fruit without the use of any soil. I had not studied a lot of horticulture prior to my experience in St. John and it was incredible how much I learned!

This study abroad experience has definitely changed my perspective on life. I have grown so much as a student and have changed what I aspire to do in the future! This trip made me realize that I want to help educational institutions incorporate school gardens and farm-to-table classes into their curriculum, both at home and abroad. Today, many students are uninformed on where their food comes from. I want to make sure each child has the opportunity to learn the different facets of agriculture.”

Early Achievement in Teaching Awards

Global Resource Systems (GRS) Senior Lecturer Dr. Dorothy Masinde was presented the College of Agriculture and Life Sciences (CALS) Early Achievement in Teaching Award for 2017. She also received the 2017 university-wide Iowa State University Award for Early Achievement in Teaching. These awards recognize faculty who have demonstrated outstanding teaching performance early in

their career. Dr. Masinde teaches a variety of GRS courses while serving as the associate director for Nutrition Education Programs in the Center for Sustainable Rural Livelihoods.

EARTH Intern Spotlight: Amanda De Carvalho, Spring

“I have lived most of my life in Puerto Rico, so the opportunity to apply my coursework in sustainable food systems on an island in the Caribbean was a main attraction of the EARTH program for me. I was searching for a program that would allow me to work in a new community on issues regarding sustainability and I found that on St. John!

I worked on vermicomposting and garden production projects. My goal was to help the gardens produce worm casting that could improve soil quality and increase crop yields. In order to do this, I built worm bins and kept a detailed history of all produce grown and harvested at Giff Hill School (GHS). These projects helped me to develop my critical thinking and problem solving skills while working on a diverse team.

There are so many memorable moments of my experience



Amanda De Carvalho works with Dana Robes to construct vermicomposting bins

with the EARTH program. I really enjoyed assisting with events at the school. One of my favorite events was the annual school auction, where students prepared meals, entertainment, and activities for attendees. Many people from the community came out to support student education. I was astounded to see how the guests at the auction valued the education of students whom they may not know!

The most rewarding part of my EARTH Program experience was working with students from GHS and Iowa State University. It was wonderful to be involved in a community of people who wanted to learn more about their environment, culture, and the livelihoods of others. I really valued the opportunity to learn and teach others, and serve as a role model to younger students. I hope that my small part in this program has aided at least one student to learn and grow, because undoubtedly the program has allowed me to do so."

EARTH Intern Spotlight: Lia Gomez, Summer

"I remember the day that I stumbled upon the EARTH program brochure and I couldn't help but muse that the EARTH program was the embodiment of my interests and aspirations. I moved from San Antonio, Texas to Ames, Iowa to study Environmental Science and Global Resource Systems. I'm an environmental enthusiast and it has been wonderful to learn about sustainability at Iowa State University and work with professors on sustainability projects in the U.S. Virgin Islands!

My project on St. John was to assess the volume of food scraps that restaurants disposed of. The quantitative value would then be used to determine the waste's efficacy in composting practices. These calculations would then serve as a model for St. John's Island Green Initiative as they continue their projects in creating a feasible composting system for the island.

"THE SATISFACTION I GAINED FROM SPEAKING WITH LOCAL PEOPLE AND RESTAURANT OWNERS INSTILLED A SENSE OF VIGOR IN THE WORK WE WERE ACCOMPLISHING."

The same can be said for the composting seminar held for the Coral Bay Community Council. I assisted Dr. Minner in providing the community with information on composting and vermicomposting. For two hours, our small crowd sat attentively, some leaning forward in approval while others



Lia Gomez harvests produce in the EARTH gardens for farmers markets

scribbled down notes on table napkins.

One of my mentors had stated that promoting sustainability initiatives equates to planting seeds and hoping for something to grow. You spread your seeds and cross your fingers that all the elements align so that something sprouts. By the same token, all one can do is spread information and hope that it takes root and blossoms.

As I continue to progress in my academic and then professional career, I know my experiences in the EARTH program will continue to drive me to remain vigilant in spreading the seeds of sustainability. Whether that be as a sustainability consultant who assist business in adopting green practices or simply saving the world one plastic bottle at a time, the future is bright (green)."

EARTH Intern Spotlight: Rebecca Steckelberg, Fall

"This past semester, I had the privilege to participate in the EARTH service-learning program in St. John, and it has been the best decision I have made during my college career. The EARTH Program not only gave me opportunities to grow within my major and career path, but also as a person. As an aspiring agricultural education teacher, I benefitted greatly from this program and hope to implement hands-on learning

activities that offer service to the community in my future classroom.

My time on St. John was a little different than originally planned due to the two Category 5 hurricanes that hit in September - Hurricane Irma and Hurricane Maria. However, I cannot imagine the experience any differently. Being able to be a part of the St. John community during a time of rebuilding was powerful. The St. John community found the positives under all the destruction and has been working hard to rebuild the island and make it better than ever. I had the privilege to work with community members through this difficult time wherever they needed help. The EARTH students and I cleaned up, rebuilt, and replanted gardens, visited historical monuments, and formed a relationship with Giffit Hill School's students and faculty. It was awesome to see the improvements that were made during my 6 weeks on St. John as the community was constantly working to improve the island.

My favorite part of the EARTH service-learning internship was my time spent at Giffit Hill School. The students and faculty were amazing to work with. I had the opportunity to work with Mr. D's middle school EARTH class. I assisted students with various projects, including planting seeds, weeding and watering the gardens, along with other miscellaneous tasks. It was inspiring to see how they are all working and coming together to make this school year possible after the hurricanes.

Being a part of the EARTH Program in St. John was an unbelievable experience. It is hard to put my time on St. John into words. I have learned to be flexible, that no job is too small or too big, the importance of community support, and that no matter what is happening in your life, there is always something positive to find. This experience has also taught me that service-learning is a creative educational tool that can take place wherever you are. The EARTH Program has helped me grow so much. This trip will be my motivation to work hard to achieve my personal goals and to help others whenever the opportunity arises. I am sad that my time on St. John went by so quickly, but I know that I will always remember the lessons and the wonderful people I met."

Global Food and Agriculture: China

In May, 16 first- and second-year Global Resource Systems (GRS) students participated in a two-week travel



opportunity in China, exploring resource systems related to agriculture, food production, and food processing through the Global Food and Agriculture course. The seminar series included courses for pre-departure orientation, in-country travel experience, and post-travel reflection. Lecturer Kevin Duerfeldt, Academic Advisor Maggie Sprecher, and Associate Professor Shui-zhang Feu led the study abroad program and co-taught the courses. Many students with limited international traveling experience were able to participate.

The group began their adventure in Beijing by discussing agricultural research at the China Agricultural University. They toured the research and demonstration farm and teaching labs and were impressed by robotics programming and 3-D printing demonstrations. While also in Beijing, students climbed the Great Wall of China, attended a tea ceremony, and toured the Forbidden City, Tiananmen Square, and the Olympic Village. The historical and cultural significance of these attractions exposed students to societal factors that impact food and agricultural production and the culture of Eastern China.

The scenery of the trip quickly changed as students boarded a bullet train - with speeds reaching 186 mph! - taking them from the urban hub of Beijing to the countryside of Chuzhou. There, the class toured Cargill Animal Protein, learning about the hatchery, poultry barns, and processing

plants. These plants have the ability to process approximately 65 million chickens per year, which are used by a variety of food chains including Disney Shanghai. Cargill hosted meals with students for extended times to discuss topics like eminent domain, worker welfare, environmental protection, and sustainability.

The group's next destination was Zhejiang University in Hangzhou, where students interacted with faculty and students and toured the beautiful West Lake District and several farms in the area. The class then boarded a bus for a three-day tour of various farmers' cooperatives and farming villages. The cooperatives produce high-value vegetables, table grapes, and tea, which are sold in nearby urban markets. Farmers and students discussed how land tenure, the generational transition of farmland, and online marketing in China compare to American practices.

One highlight of the bus tour for many students was visiting a refurbished traditional village where artisans own small stores. The artisans taught the students a lesson in Kado - "the way of flowers," an ancient art form of floral arranging. Afterward, they arranged for the Iowa State University students to face off against local talent in a



Students explore China's food, agriculture, and some famous landmarks

karaoke contest.

Making their way to Huzhou, the group toured a silk research station, where researchers breed new, improved silkworms for farmers. Farmers have been raising silkworms in a sustainable mulberry and fish pond model for the past 2000 years. In the model, mulberry trees grow on dykes around fish ponds and the leaves are used to feed silkworm larvae. Fish then feed on the silkworm larvae waste, and the silt from the fish ponds is used to fertilize the mulberry trees in a nearly closed-loop system.

As the trip came to a close, the group traveled to Shanghai where they visited the United States Department of Agriculture (USDA) Foreign Agricultural Service and discussed how United States agriculture products are traded on the global market. Students were exposed to "Guanxi," the system of social networks used to conduct business in China. While in Shanghai, the U.S. announced a trade deal with China, exchanging American beef for Chinese chicken. The policy change directly impacts places that students had toured and was an excellent example of the impacts of policy on international trade.

After arriving back to Ames, students in the post-travel reflection course met regularly through the fall semester and developed posters to share with the university community



Silkworms are utilized in the sustainable mulberry fish and pond model



Village and vineyards along the Moselle River

during a poster session on Oct. 2.

The study abroad course to China was an incredible student learning opportunity. Students saw, first-hand, examples of food and agricultural resource systems in China and were able to make comparisons to resource systems in the U.S. They were exposed to various aspects of Chinese culture and for many, this was their first trip outside of the U.S. The trip will prepare students for their global internship that they will complete later in their GRS curriculum.

Study Abroad: Germany

Department of Horticulture Associate Professor Ajay Nair, Global Professor Gail Nonnecke, and Extension Program Specialist Richard Jauron let a two-week study abroad program in Germany for eight College of Agriculture and Life Sciences (CALS) students. Students learned about Germany's fruit and vegetable industries by visiting horticultural regions and enterprises. They also interacted with faculty and students at German universities and research institutions and toured historical sites, some of which were over 2000 years old.

The Iowa State University group arrived in Frankfurt on May 8 and wound its way through the cities of Rudesheim, Trier, Heidelberg, Stuttgart, Konstanz, Garmisch-

Partenkirchen, Munich, and surrounding areas over the next 12 days.

To kick off the trip, Geishenheim University hosted the study abroad students and faculty in Geishenheim, where they toured specialized climate research facilities. Both ISU and Geishenheim University students also toured the university vineyards of the Rheingau wine-growing region during their stay in Rudesheim. The visit culminated with a group dinner at Schloss Johannisberg, a castle and winery that has been making wine for over 900 years.

Trier features historic structures from ancient Roman times. Sites like the Porta Nigra, a large Roman city gate, the Basilika, the largest surviving single-room structure from Roman times that was once a throne room for Emperor Constantine, and the Trier Cathedral, the oldest church in Germany, with some portions of the structure dating back to the 4th century CE, were highlights of this leg of the trip. Students also enjoyed travel along the Moselle River in the Trier region to learn about winemaking and grape production systems on the steep slopes. They especially enjoyed learning about the propagation and grafting of grapevines.



Kucherer vegetable farm in Stuttgart, Germany

Next, the group made their way to the State of Baden-Württemberg's Horticultural School and Research Station near Heidelberg and learned about applied research projects that benefit horticultural industries. In Heidelberg, students also explored Heidelberg Castle and attended a concert of Mendelssohn's music performed by the Heidelberg Philharmonic Orchestra and Bach Choir of Heidelberg.

During the students' visit to Stuttgart, two apple trees were planted to celebrate the partnership and agreement between ISU and the University of Hohenheim. Planned tours with university departments, research farms, and local vegetable growers showed students the importance of vegetable production in the region. Asparagus and strawberries were in season at the time and many farmers markets and restaurant menus offered elusive "white," or etiolated, field-grown asparagus, which is available only for a limited time.

Additional visits to the Monastic Island of Reichenau, the cradle of western culture and the birthplace of modern western horticulture; Mainau Island, the flower island, and its botanical gardens; Lake Constance in Konstanz; and the German Alps at Garmisch-Partenkirchen showcased the natural beauty of the region. Tours of apple orchards

and hops plantings demonstrated production systems and applied research projects which aim to increase mechanization and produce high-quality crops. The final tours of the trip included travel through the dairy and cheese region of Allgäu; Schloss Neuschwanstein, the inspiration for Sleeping Beauty's Castle at Disneyland, in Bavaria; and the BMW Museum in Munich.

On May 20, the group arrived back in Des Moines, exhausted but in high spirits from the packed itinerary, armed with a better understanding of Germany's fruit and vegetable industries, history, and culture.

David Lambert 'Hunger Fighter' Scholarship

Emily Hugen, a sophomore studying Global Resource Systems (GRS) and Agronomy, received the endowed David Lambert 'Hunger Fighter' Scholarship at the World Food Prize in October 2017. The scholarship honoring global food security advocate David Lambert is awarded to one sophomore or junior each year who exhibits a demonstrated interest in seed science, global food security, and/or childhood nutrition. Recipients are selected based on academic excellence, leadership skills, and interpersonal skills. Emily is actively involved in the World Food Prize -



Study abroad students plant trees to celebrate the partnership between Iowa State University and the University of Hohenheim



Students learned about grape growing in the various regions of Germany, including the Mosel River Valley

United States Department of Agriculture (USDA) Wallace Fellowship Program and participated in the 2017 Uganda Service-Learning Program.

CALS Distinguished Service Award

Global Resource Systems (GRS) and Dietetics double-major Allison (Ali) Jaeger received the College of Agriculture and Life Sciences (CALS) Council Distinguished Service Award. As a freshman, Ali joined the Service and Justice Team at St. Thomas Aquinas Church, which serves the local Ames community. As a sophomore, Ali became president and beyond planning all weekly meetings for the team, her activities as president included: serving at soup kitchens and homeless shelters in Ames; organizing a hunger banquet to raise awareness of global and local hunger; organizing a homelessness awareness sleep-out where students slept under the Campanile in the winter; partnering with Worldly Goods to organize a fair-trade sale; involving 25 volunteers to rake leaves for Ames families; and organizing an Extraordinary Day of Kindness which engaged students in five volunteering activities, including gathering donations and cleaning up multiple locations throughout the community.



Emily Hugen received the David Lambert 'Hunger Fighter' scholarship

GRS Implements Advisory Council

The College of Agriculture and Life Sciences (CALS) established an Advisory Council for the Global Resource Systems (GRS) major in 2015. The Advisory Council enables the college to build a collaborative network of global companies and organizations, ensuring access to corporate, government, and nongovernmental organization leaders who can provide input on trends that may influence the success of the major. Among other things, the Advisory Council assists the college in aligning the GRS curriculum with the skills and knowledge that employers value. Input from the representatives of the various food, agriculture, natural resources, and human resources sectors will be invaluable as GRS evolves and responds to a variety of student interests and changes in resources worldwide.

The role of the GRS Advisory Council is to provide counsel and advice on: programmatic content elements including, but not limited to, curricula, disciplinary expertise needed, career opportunities, topics for senior projects, and internship opportunities; increasing student recruitment and retention; enhancing the program's collaborative relationships with companies, governments, and nonprofits worldwide; and funding sources appropriate to the major.

The Advisory Committee is comprised of representatives of the following groups and sectors: Todd Hall, (Co-Chair) Agribusiness; Nora Tobin, Self-Help International; Keegan Kautzky, World Food Prize; Helen Jensen, Professor of Economics; Dylan Clark, GRS Alumnus; and Caleb Floss, Current GRS Senior.

ALUMNI: KEEP IN TOUCH!

We hope that you will stay connected with us. Please send us your updates, permanent email addresses, and ideas for our major. You can send information to GRS at globe@iastate.edu.

SCHOLARSHIPS TO GLOBAL RESOURCE SYSTEMS MAJORS WERE FUNDED FROM THE FOLLOWING GIFTS:

Newell W. and Dorothy E. Boughton Agriculture and Life Sciences Scholarship

Cargill - Global Resource Systems Scholarship

CONGRATULATIONS 2018 GRADUATES!

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Jenna Elizabeth Sandquist
Osceola, Iowa
Hannah Schlueter
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Charlsea Soderstrum
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Emily M. Southard**

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Alexandria Jeanne Wilson
Howell, New Jersey
Mei Ling Wong*
Hong Kong, China

* Cum Laude

** Magna Cum Laude

*** Summa Cum Laude

† Honors Program



Valeria Cano Camacho received the George Washington Carver Spirit of Innovation and Service Award

Global Resource Systems General Scholarship

Dr. Rick Hall Memorial Scholarship

Todd and Lori Hall Global Resource Systems Scholarship

Manatt Global Scholarship

Kolschowsky Global Scholarship

Jerry and Karen Kolschowsky and the Kolschowsky Foundation Global Resource Systems Major Scholarship

We extend our sincerest thanks for the generous support! Gifts for student scholarships may be directed to Ray Klein, ISU Foundation, 310 Curtiss Hall, Iowa State University, Ames, IA 50011 (rklein@foundation.iastate.edu). If you wish to contribute to a Global Resource Systems general scholarship fund, please mention the following account name: Global Resource Systems General Scholarship.

NEWSLETTER DESIGNED AND EDITED BY HANNAH DARR AND SYDNEY UPAH

SOME TAKE COURSES. **OTHERS CHART THEM.**

CONGRATULATIONS 2017 GRADUATES!

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Beloit, Kansas

Christina Gonzalez

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Adam Thomas Hansen

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* Cum Laude

** Magna Cum Laude

*** Summa Cum Laude

† Honors Program



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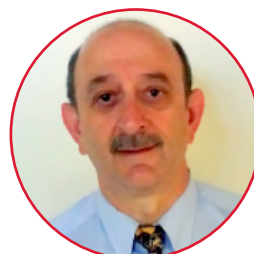
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