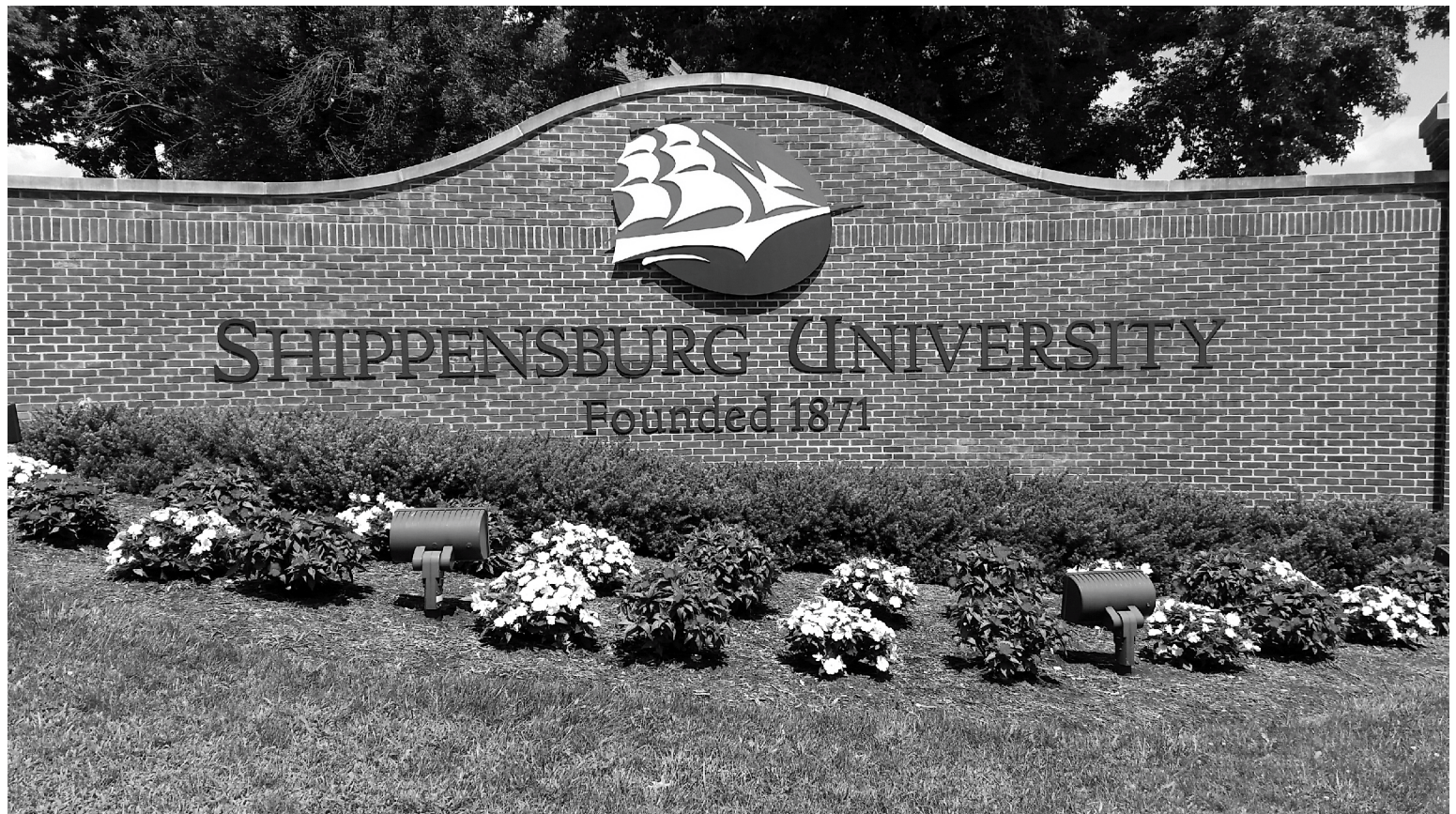
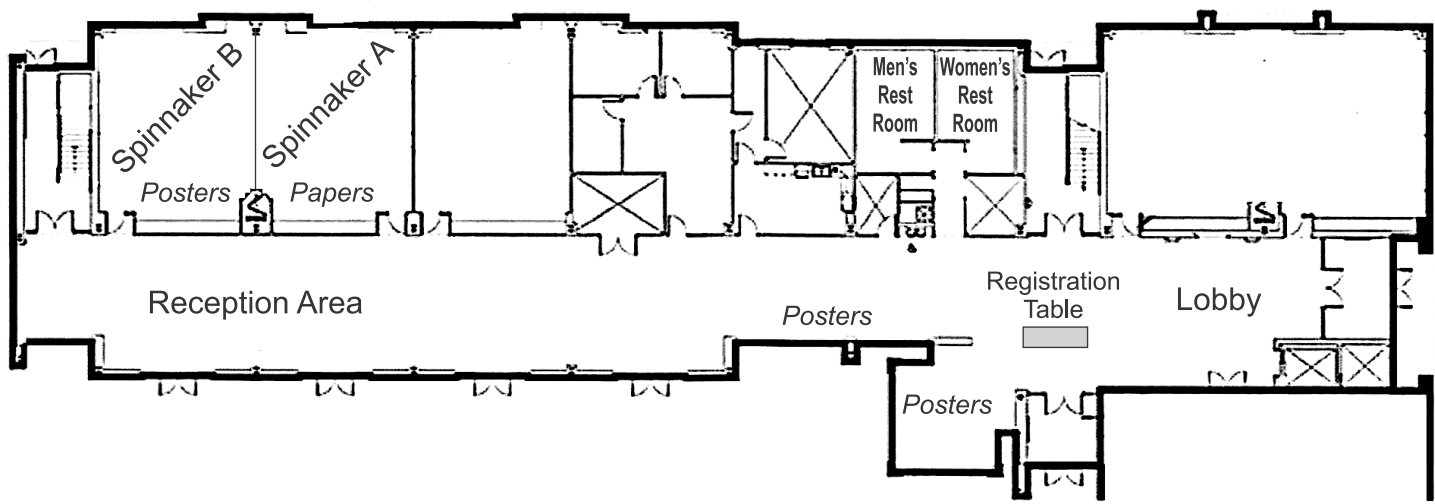


Program Guide for the
2017 ANNUAL MEETING
of the
PENNSYLVANIA GEOGRAPHICAL SOCIETY
November 10th
Shippensburg University
Shippensburg, Pennsylvania



Shippensburg University's
"Old Main"

Conference Center Floor Plan



2017 Annual Meeting of the Pennsylvania Geographical Society

The Conference Center at Shippensburg University, Shippensburg, Pennsylvania
Hosted by the Department of Geography and Earth Science, Shippensburg University

2017 Meeting Arrangements Committee

Kay Williams, Shippensburg University

Brent Zaprowski, Salisbury University

Joseph Zume, Shippensburg University

Ola Johansson, University of Pittsburgh at Johnstown

SCHEDULE OF EVENTS

Friday, November 10th		
Time	Event	Location
8:00 am-3:00 pm	Registration table	Lobby
9:00 am-3:00 pm	Posters on Display	Lobby/Spinnaker B
9:00-10:15 am	Paper Session 1 - Environmental Geography	Spinnaker A
10:30 am-12:00 pm	Paper Session 2 - Physical Geography	Spinnaker A
12:00-1:15 pm	PGS Luncheon	Reception Area
1:00-1:15 pm	PGS Business Meeting	Reception Area
1:30-3:00 pm	Paper Session 3 - Human Geography	Spinnaker A
1:30-3:00 pm	Map/poster presenters available for questions	Lobby/Spinnaker B
3:00-4:15 pm	Panel Discussion - Jobs in Geography	Spinnaker B
3:10-5:00 pm	Paper Session 4 - Urban Geography	Spinnaker A
4:15-4:30 pm	Student Awards Presentation	Spinnaker B
5:30-9:00 pm	2017 PGS Annual Banquet and Awards Ceremony - Guest Speaker: 2017 Distinguished Geographer Award Winner Marci Mowery, President of the Pennsylvania Parks and Forests Foundation	Reception Area



Thank you for attending!

2017 ANNUAL MEETING OF THE PGS
SUMMARY OF PAPERS AND PRESENTATIONS

9:00-10:15 am * student paper contest entrant	<p style="text-align: center;">Session 1 - Environmental Geography - Spinnaker A</p> <p><u>Chair:</u> Gina Bloodworth</p> <p>9:00 - Jennifer Pomeroy: Is Agroforestry Intensification in Coffee Estate Sustainable? Case Study in Northern Highlands of Nicaragua</p> <p>9:20 - Shannon Johns*: The Spatial Relationship Between Planting Locations and Reforested Native Tree Species Survival in Appalachian Forests</p> <p>9:40 - Rachel Pierson* and Gina Bloodworth: Digging into Ditches: A Historical and Geographic Analysis of Delmarva's Agricultural Drainage Ditches</p> <p>10:00-10:10 am - Follow-up questions</p>
Coffee Break - Lobby	
10:30 am-12:00 pm * student paper contest entrant	<p style="text-align: center;">Session 2 - Physical Geography - Spinnaker A</p> <p><u>Chair:</u> Darren B. Parnell</p> <p>10:30 - Darren B. Parnell: Using Content Analysis to Quantify Frost Damage</p> <p>10:50 - Jonathon Chester* and William Blewett: How Flat is Big Flat: A High-Resolution, Digital Approach for Understanding the Genesis of Low-Relief Summit Landscapes in Pennsylvania's Appalachian Highlands</p> <p>11:10 - John Benhart, Jr.: Spatial Procedures to Analyze Flood Hazard Vulnerability of Phase I Historically Significant Structures: Pennsylvania Case Studies</p> <p>11:30 - Chad Kauffman, Abigail Stimach, Katie O'Neill and Wendy Abshore: Modernizing the AMS' DataStreme Program</p> <p>11:50 am -12:00 pm - Follow-up questions</p>
12:00-1:15 pm	PGS Annual Luncheon - Reception Area
1:30-3:00 pm	<p style="text-align: center;">Session 3 - Human Geography - Spinnaker A</p> <p><u>Chair:</u> Alison Feeney</p> <p>1:30 - Ola Johansson: The Role of Geography in the Analysis and Understanding of the Beautiful Game</p> <p>1:50 - James Saku: Modern Land Claim Agreement in the Eastern Arctic of Canada</p> <p>2:10 - Paul Zbiek: The Cultural Geography and the Susquehanna Country</p> <p>2:30 - Alison Feeney: Ale Trail Maps: Growth of experiential tourism and Pennsylvania's craft beer industry</p> <p>2:50-3:00 pm - Follow-up questions</p>

2017 ANNUAL MEETING OF THE PGS
SUMMARY OF PAPERS AND PRESENTATIONS

3:00-4:15 pm	<p style="text-align: center;">Panel Discussion - Spinnaker B "Careers and Opportunities for Geographers"</p> <p style="text-align: center;">William B. Kory, Ola Johansson, and Matthew Sernell, moderators</p> <p>The panel will address the topic of job opportunities for geography graduates and focus on the current status of the field of geography in the country. The panel will briefly discuss their experiences in school and on the job and welcomes the members of the audience to share their school and work experiences as well. Everybody attending the session is encouraged to participate.</p>
3:10-5:00 pm	<p style="text-align: center;">Session 4 - Urban Geography - Spinnaker A</p> <p><u>Chair:</u> Donald W. Buckwalter</p> <p>3:10 - Moira Conway: Changing Land Use in Williamsburg, Brooklyn: Examining the interaction between Trucks and Sustainable Transportation</p> <p>3:30 - Lisa Stanich: Measuring the Impact of Depopulation and the Foreclosure Crisis: Land Cover Change in East Cleveland, OH (2006-2016)</p> <p>3:50 - Ian Todd: An Evaluation of the Seattle Transit Master Plan: A Comparison Between Recommended Best Practices and Planning as Practiced</p> <p>4:10 - Donald W. Buckwalter: The Highway Network of Pittsburgh: Measures of Nodal Accessibility</p> <p>4:30 - Charles Geiger: Suburban Neighborhood-Level GIS in Lancaster County</p> <p>4:50-5:00 pm - Follow-up questions</p>
4:30-4:45 pm	<p style="text-align: center;">Student Awards Presentation - Spinnaker B</p>
5:30-8:30 pm	<p style="text-align: center;">PGS Annual Banquet and Awards Ceremony - Reception Area</p>
	<p>Guest Speaker: 2017 Distinguished Geographer Award Winner Marci Mowery, President of the Pennsylvania Parks and Forests Foundation.</p> <p style="text-align: center;">"A Sense of Place: Ruminations of a Reticent Geographer"</p> <p style="text-align: center;">A landscape, a map, a flood and a mentor and the thread that binds them all together.</p>

PAPER ABSTRACTS

Benhart Jr., John (Indiana University of Pennsylvania), *Spatial Procedures to Analyze Flood Hazard Vulnerability of Phase I Historically Significant Structures: Pennsylvania Case Studies*

This paper focuses on GIS-based procedures developed to identify historically-significant structures vulnerable to flooding under a 100-year flood scenario in subject Pennsylvania counties. Because counties in Pennsylvania have differing circumstances and capacity to develop spatial data in support of municipal activities, the process of identifying historically-significant structures vulnerable to flooding differed across the state. After Hurricane Sandy in 2012, Congress allocated funds for disaster cleanup and relief to several states in the Mid Atlantic. Pennsylvania was able to distribute some of its funds for future disaster planning, including the identification of hazard-vulnerable structures of historical significance. Case studies, analyses and examples from Bedford, Cameron, Monroe and Philadelphia counties in Pennsylvania will be cited to illustrate the integration of GIS-based analyses and cultural resource review in the determination of high priority structures and flood mitigation regimes for this project.

Buckwalter, Donald W. (Indiana University of Pennsylvania), *The Highway Network of Pittsburgh: Measures of Nodal Accessibility*

Highway building is a component of the political and economic processes of American metropolitan areas, and this paper reports an attempt to score the results. Aggregate accessibility indexes are measures of the efficiency of a highway network, and their progress is traced over a 30-year time frame. Pittsburgh Pennsylvania represents large free-standing MSAs that experienced slow or no population growth during the 1976-2016 time period. Findings indicate that major investments such as the Mon-Fayette expressway and the Parkway North changed the relative accessibility of particular nodes but did not improve overall network efficiency. This kind of after-action analysis can provide important reflection on assumptions and axioms that will guide future decisions. It implies three recommendations for establishing project priorities: 1) completion of circuits should have priority over new alignments, 2) public resistance and financing difficulties should be acknowledged early in the process, 3) land use impacts should be considered of importance equal to flow effects.

Chester, Jonathon and William Blewett (Shippensburg University), *How Flat is Big Flat: A High-Resolution, Digital Approach for Understanding the Genesis of Low-Relief Summit Landscapes in Pennsylvania's Appalachian Highlands*

For more than a century, geomorphologists have been challenged by the nature of broad, low-relief and low-slope accordant summit surfaces throughout Pennsylvania's Appalachian Highlands. Three leading hypotheses have emerged in the literature to explain these relatively "flat" upland landscapes. Early researchers attributed their formation to erosion surfaces, elevated to their present position following periods of cyclic uplift. Others proposed that the broad, low-relief and low-slope upland summits are equilibrium landscapes formed by similar lithologies weathering at similar rates; an argument that topography is controlled by structure. Still others, citing the influence of periglacial climates on landscape development, proposed that these tracts are cryoplanation surfaces formed during the Pleistocene. This study investigates

these various hypotheses using high-resolution LiDAR-derived Digital Elevation Models. “Big Flat,” a broad, low-relief and low-slope summit surface along the crest of South Mountain in south-central Pennsylvania, serves as the study area for this investigation. Relationships among lithology, structure, and topography are analyzed in a geographic information system, and trend surface analysis is applied to quantify the principal summits. Results indicate that the pattern and form of Big Flat is associated with breached folds of the southwestward-plunging series of anticlines and intervening synclines that form this part of South Mountain. These results support the notion that accordant summits here are structurally controlled. Given these conspicuous relationships, cyclic erosion surfaces and periglacial processes are not necessary to explain large, regional upland flats on this part of South Mountain.

Conway, Moira (Kutztown University), *Changing Land Use in Williamsburg, Brooklyn: Examining the Interaction between Trucks and Sustainable Transportation*

Many large North American cities are simultaneously experiencing gentrification and efforts to promote sustainable transportation development. However, at the same time cities remain centers of industrial activity. This project seeks to examine the interaction between these urban issues using the case study of Williamsburg, Brooklyn. Gentrification in Williamsburg has brought a changing residential population to the neighborhood. Despite this and despite the cities overall movement to a post-industrial economy, Williamsburg remains one of New York’s industrial centers, with manufacturing, warehousing and distribution. These new mixed use areas present a challenge for transportation planning. Through mapping and spatial analysis of socioeconomic characteristics and transportation activity, this project aims to characterize the changing conditions for multi-modal transportation in a mixed residential-industrial area, to identify specific conflict areas in terms of both land use and infrastructure, and to provide recommendations for improving street design and regulation to balance these incompatible uses.

Feeney, Alison (Shippensburg University), *Ale Trail Maps: Growth of Experiential Tourism and Pennsylvania’s Craft Beer Industry*

A well-designed map can influence tourists’ activities. Increasingly, people are using the internet to plan trips, because the graphical interface is ideally suited for presenting colorful maps to millions of users, yet tourist maps and their designs remain under-examined in the cartographic literature. Today, many Americans are traveling to indulge in new food and drink experiences, which can potentially increase revenues in other related tourist amenities. Specifically, travel to craft breweries is increasing, and tourism agencies throughout North America promote beer trails. This study identified 100 beer trails promoted by official tourism agencies, inventoried how many of those trails’ marketing materials included a map, and evaluated those maps using Quantitative Content Analysis (QCA) for common design elements. The overall goal of the project was to determine if the maps featured only the breweries or if they promoted visiting additional experiential activities that contributed to the creation of a sense of place, and that in turn, may provide potential benefits to the travel destination. This study has numerous implications to the marketing and economy of Pennsylvania which has a thriving craft brewery industry and its mid-Atlantic location makes it ideally suited for agritourism.

Geiger, Charles (Millersville University), *Suburban Neighborhood-Level GIS in Lancaster County*

Last year I reported on early stages and issues in the development of a strategy to map suburban neighborhoods in Lancaster County. The process has since been refined and is based on the online availability of records from the county Recorder of Deeds. A combination of original subdivision plans and current tax parcels inform the editing process in ArcGIS Pro. The procedure and early results will be demonstrated. One early hypothesis, that a clear historical sequence of neighborhood addition moving from Lancaster city outward would be visible, has already been refuted. Future applications for this work, resulting from conversations with county planners and GIS staff, will be outlined.

Johansson, Ola (University at Pittsburgh at Johnstown), *The Role of Geography in the Analysis and Understanding of the Beautiful Game*

Soccer is not only the most popular sport in the world, but also a cultural phenomenon and a lens through which we can observe social and economic relations. To what extent has the academic discipline of geography, and other scholars applying a spatial perspective, engaged with soccer? As no comprehensive study of soccer geography exists, I collected 185 articles via a database search using the keywords “soccer geography” and “football geography.” With those articles as my body of data, I explore the following questions: How many articles have been published annually and what are the patterns of change over time? Which thematic and theoretical perspectives have been used and has that changed over time? Which countries are authors from? Are the authors geographers or from other academic disciplines? Which places, countries, and world regions make up the case studies of the articles? In conclusion, I offer a synthesis of an emerging geography of soccer.

Johns, Shannon (Indiana University of Pennsylvania), *The Spatial Relationship Between Planting Locations and Reforested Native Tree Species Survival in Appalachian Forests*

Exotic invasive species have decimated the natural flora of American forests, leaving in their path a ravished native ecosystem. The destruction of these trees has caused numerous inconceivable ramifications for the United States, both economically and environmentally. This research will focus on if efforts to reforest native Appalachian forests with native trees, some of which are exotic invasive species-resistant, provided a successful species survival rate (50%<). This research will also determine if certain geographic locations have provided evidence that they improve or inhibit the survival rates of all or some of the reforested species examined. Specifically, the research questions I pose are: How have reforestation efforts, in Appalachian forests, provided a successful species survival rate for the declining native species? To what extent do certain geographic locations improve or inhibit the survival rates of the reforested species? To answer these questions, this research will analyze the spatial relationship between successful survival rates of planted trees and the geographic location in which they were planted, and identify areas in which planted trees have had successful survival rates. This will help policy makers to identify future planting locations with the highest expectations for survival.

Kauffman, Chad (California University of Pennsylvania), **Abigail Stimach** (American Meteorological Society), **Katie O'Neill** (American Meteorological Society), and **Wendy Abshire** (American Meteorological Society), *Modernizing the AMS' DataStreme Program*

For more than 20 years, the American Meteorological Society (AMS) Education Program has been enhancing K-12 teacher preparation and practice, and ultimately student learning through the DataStreme Project. DataStreme Atmosphere, Ocean, and Earth's Climate System empower teachers to implement STEM concepts in their classrooms using real-world data and real-life events to deepen understanding of core science concepts. Approximately 21,000 teachers have completed one of these content-rich, pedagogically-sound professional development courses. In 2017, the AMS Education Program entered into a new agreement with California University of Pennsylvania (Cal U) to serve as their institutional partner for the DataStreme Project to offer tuition-free graduate credits to participants. Some changes have already occurred and there are many opportunities for further enhancement. Prior to this new agreement, the program never utilized a course management system (CMS). The partnership allows AMS to leverage Cal U's CMS, called Desire2Learn (D2L) where participants can more easily connect and network with each one another, improving their overall DataStreme experience. The Fall 2017 semester served as the first term the D2L platform was integrated for course implementation. This paper will highlight a few of the enhancements to DataStreme made possible by using a CMS and share feedback from AMS staff and mentors who took advantage of new, digital pedagogical tools that have heretofore not been available. It will also highlight many of the challenges that were encountered in taking a 20th century distance education course and converting it to 21st century online course management. Finally, the paper will also summarize the tasks involved in porting many of the legacy curricular products into a digital delivery system.

Parnell, Darren B. (Salisbury University), *Using Content Analysis to Quantify Frost Damage*

This study focuses on agricultural impacts produced by last spring frost extremes across the Southeast United States from 1950-2009. A content analysis of agricultural impacts from the extreme frosts was completed using newspaper reports from seven major sources. Qualitative information directly related to crop damage was extracted to summarize the frost damage. A frost severity index (FSI) was created using keywords or phrases that quantify the severity of agricultural damage into five categories. Half of the 18 frost events produced light to moderate damage with the remaining frost events producing either considerable damage or no damage. A reliability test gauged how the results of the FSI rankings compare with those of other individuals using identical methods based on the same newspaper reports. Reliability test results indicate the overall agreement of frost severity ranking between the author and testing subjects is 81 percent. The agreement was greatest for frost events with either considerable damage or no damage. These results indicate it is more difficult to quantify agricultural damage from frost events that produce light or moderate damage. Preventive measures and decreasing acreage of farmland have reduced the agricultural losses of frost events in recent times.

Pierson, Rachel and Gina Bloodworth (Salisbury University), *Digging into Ditches: A Historical and Geographic Analysis of Delmarva's Agricultural Drainage Ditches*

To this day, agricultural drainage ditches form a fundamental characteristic of Maryland's Eastern Shore; however, the environmental impacts of the ditch network are relatively unknown. This ditch network has evolved in recent decades and now includes newer, larger, mechanically-dug 'tax ditches', introduced in Delmarva as methods of flood control due to the flat, swamp-like geography of the land. A mixed-methods geographic analysis looked at this small-scale local water management infrastructure from several angles: (a) historical, utilizing Nabb Center archive research, documents obtained from various county offices, and oral history to establish the extent of the ditch network (b) comparative land use, using applications of GIS mapping to display current ditch systems in relation to land use categories and (c) spatial implications, assessing hydrologic proximity and drainage trajectory to the Bay. Information on ditches, both current and historical, is scattered and not easily found. This realization supports the need to compile this information for future reference and research. The hydrologic network shows tax ditches flow toward the Chesapeake Bay as an extension of natural streams, and land use maps display the great extent to which tax ditches are located in agricultural areas, yet still close in proximity to development. The question that remains is how much, volumetrically, of this ditch network drains into the Bay, and what water quality implications does this pose? This preliminary study has opened avenues for future research looking into this unique drainage network of Maryland's Eastern Shore.

Pomeroy, Jennifer (York College of Pennsylvania), *Is Agroforestry Intensification in Coffee Estate Sustainable? Case Study in Northern Highlands of Nicaragua*

Selva Negra Coffee Estate, located in the northern highlands of Nicaragua, has favorable climatic conditions for growing several coffee varieties, including Arabica and Robusta. Both of these varieties of coffee are characteristic of sustainable operations and both are primarily consumed in the United States. In addition to coffee growing in the northern highlands of Nicaragua, many estates, including the Selva Negra Coffee Estate, engage in agroforestry activities that are intermixed with coffee. What environmental impacts these have in situ agroforestry practices exerted remains largely unclear. This research project took a field-based approach investigating what particular agroforestry practices were implemented, why they were chosen selected, and how they were implemented to evaluate the subsequent impacts. From collected tree species composition, canopy strata, and share of shaded coverage, a modified agrobiodiversity index was constructed. Interviews with the stakeholders of Selva Negra Coffee Estate reveal that agroeconomic systems are gendered and contested. How these gendered and contested spaces work together building resilience minimizing climate change impact was also explored.

Saku, James (Frostburg State University), *Modern Land Claim Agreement in the Eastern Arctic of Canada*

As the newest and largest territory in Canada, the creation of Nunavut in 1999 through the Nunavut Land Claim Agreement (NLCA) between the Inuit of Eastern Arctic and the Canadian government has changed the relationship between the territorial government and the federal

government in Ottawa. This agreement has restored land rights to Aboriginal people, provided monetary compensation to Inuit who live in the region, change the approach to resource exploitation, and established a greater level of participatory government to the people in Nunavut. Even though recently created, Nunavut shows a great potential for the future advancement of the Inuit because of the creation of development corporations and financial compensation awarded to them. Similarly, the agreement recognizes and protects the traditional lifestyle of Inuit people. In addition, the agreement established institutions to ensure that modernization through resource exploitation does not negatively affect Aboriginal lifestyle and culture. This paper explores the historic context of Nunavut's creation, the institutional structures that were established and selected socio-economic indicators. Notwithstanding the positive outlook of creating Nunavut, the territory faces numerous problems. These include lack of infrastructure to support economic development and isolation of numerous Inuit communities.

Stanich, Lisa (Lakeland Community College), *Measuring the Impact of Depopulation and the Foreclosure Crisis: Land Cover Change in East Cleveland, OH (2006-2016)*

The Foreclosure Crisis that hit the United States beginning with the mortgage scandal in 2008 not only devastated big cities, it also crushed Inner-Ring suburbs. This research looks into whether land cover change can be used to show depopulation and the impact of the foreclosure crisis in the Cleveland suburb of East Cleveland. Imagery from 2006 and 2016 was used to classify land cover using the NLCD classification structure. The change in categories was then analyzed. Combined with the use of population and foreclosure data, the imagery and classifications of land cover clearly display an increase in vacant land. This presentation will also include discussion of the tearing down of abandoned homes and the Cuyahoga County Land Back.

Todd, Ian (Indiana University of Pennsylvania), *An Evaluation of the Seattle Transit Master Plan: A Comparison Between Recommended Best Practices and Planning as Practiced*

The Seattle Transit Master Plan (STMP) is a 20-year plan published in 2012 proposing solutions to Seattle, WA's increasing congestion. This paper compares the transportation plan with best practices suggested by scholarly research. The focus is on where divergences from best practices are justified given limitations from Seattle's unique characteristics and conflicts with other planning agencies' agendas. I address matters regarding sustainable growth, funding, infrastructure capitalization, and social justice.

Zbiek, Paul (King's College), *The Cultural Geography and the Susquehanna Country*

The 27,510 square miles of the Susquehanna Watershed has been intensely studied from the perspective of physical geography and environmental geography. However, little has been done on linking its 3,126,750 inhabitants as a cultural entity. This absence ranges from connecting the region in venues such as academic scholarship, urban and community planning and recreational opportunities. Part of the challenge is that the region encompasses three states and includes at least ten distinct cultural regions. This paper, first, discusses these cultural localities. Then it explains the benefits of viewing the cultural geography of the Susquehanna Country as a unified force.

POSTER ABSTRACTS

Ashcraft, Claire (York College of Pennsylvania), *Zika and Microcephaly in Brazil*

Zika virus is a mosquito-borne flavivirus related to yellow fever, dengue, and West Nile virus. Since 2015, Zika virus has spread rapidly throughout Brazil (Bogoch et al., 2016). It is suspected that an association exists between Zika and microcephaly, a birth defect known for causing a small head and other neurological conditions (Tetro, 2015; WHO, 2016). Brazil was chosen as a case study area exploring two questions: (i) do the locations of reported Zika cases and microcephaly cases coincide; (ii) what is the distribution of hospitals and healthcare coverage within the affected areas. We used the Geographic Information Systems (GIS) to map out the spatial distributions of Zika and microcephaly cases and hospitals. Through visualization analysis, the Zika and microcephaly cases had no spatial match. The mapping results displayed that the northeastern region had the most cases of microcephaly in 2015 whereas the southeastern region had the most confirmed Zika cases in 2016. There are more hospitals in the southeastern region than the northeastern region. In the northeastern region, most people have only the government healthcare which offered minimal coverage. However, in the southeastern region, more people purchased private healthcare which offered better coverage and more services.

Barclay, Amanda (University of Pittsburgh at Johnstown), *Parking Analysis Using Drone Technology*

Parking analysis of the University of Pittsburgh at Johnstown's Blackington/Biddle parking lot is conducted using drone technology. Aerial imagery of the parking lot was collected through manual and autopilot use of a drone every hour at the top of the hour from 8am-5pm for one week, Monday-Friday. The parking lot was georeferenced and used as a base map to analyze the results. Using the imagery and GIS, a database is created for each day and hour, marking each spot as occupied or non-occupied, taking into consideration different types of parking spots including faculty, handicapped, reserved, and visitor parking spots. This database is analyzed to show when the parking lot is most full, if it ever reaches max capacity, and other variables useful in analyzing the optimality of this parking lot. This analysis is useful to University personnel and campus police in making administrative decisions regarding the maintenance of these parking lots.

Barth, Joshua (Shippensburg University), *Time Series Analysis of Landsat-derived Plant Productivity in Bofedales of Northern Chile: 1986-2016*

Bofedales, high-altitude peatlands located in the central Andes, provide a variety of ecosystem functions. The peatlands are critical to sustaining the Aymara pastoral way of life and have been shaped by Aymara irrigation and pasture practices. These wetlands are currently threatened by water management policies, population movement, climate change, and infrastructure development. Baseline data are required to understand the drivers of bofedal dynamics: topography, human impacts and population change, and hydrologic input. An investigation of primary productivity in bofedales of northern Chile using Landsat-derived EVI images for the time period 1986-2016 was conducted using a maximum likelihood supervised classification to

identify bofedal extent and location and a time series analysis to establish trends of primary productivity.

Bencloski, Joseph W. (Indiana University of Pennsylvania), *An Eyewall Replacement Cycle in Hurricane Irma North of Puerto Rico, September 6-7, 2017*

Physically, hurricanes are comprised of bands of thunderstorms that spiral outward from a calm central “eye.” The “rainband” that forms a complete ring around the eye is known as the “eyewall.” Each rainband outward from the eyewall has progressively weaker winds than the last band out. An “eyewall replacement cycle” often occurs in category 3 or higher hurricanes; that is, those with sustained wind speeds of 111 mph or higher. When a hurricane or other tropical cyclone (e.g., a typhoon) reaches this intensity, and the eyewall contracts, some of the outer rainbands may strengthen and organize into a new eyewall. The new eyewall slowly moves inward and robs the original inner eyewall of its needed water vapor and angular momentum. Since a hurricane’s strongest winds are in the eyewall, the tropical cyclone temporarily weakens as the inner eyewall is choked off by the new outer eyewall. Eventually, the outer eyewall completely replaces the old inner eyewall, and the hurricane may re-intensify. This study uses WSR88D radar images from the San Juan Weather Service Office to examine the eyewall replacement cycle in Hurricane Irma as it passed north of Puerto Rico between September 6-7, 2017.

Chitiyo, Plaxedes, Kelsey Coates, and Linnea Manley (Duquesne University), *Assessment of Open Spaces in Selected Pittsburgh Low-income Neighborhoods for Community Garden Expansion*

Community gardens play a vital role alleviating food insecurity in inner city low-income neighborhoods which are characterized by lack of full service grocery stores with most classified as food deserts. Community gardens have the potential to supply fresh vegetables and fruits for the communities as well as provide economic, social, and environmental benefits. A study was carried out in the Hazelwood, Homewood, and the Hill District neighborhoods of Pittsburgh to assess open spaces that could be potentially used for community garden expansion using Geographic Information Systems (GIS). Grocery store location, active community gardens, household income, and topography were mapped using GIS. Results from the study indicated that extensive open spaces in the form of vacant lots, commercial areas, residential areas, and parks existed in these neighborhoods that could be expanded to community gardens thus providing fresh healthy food for these communities.

Danel, Austin (University of Pittsburgh of Johnstown), *Graduate Schools Attended by University of Pittsburgh at Johnstown Geography and Environmental Study Majors*

University of Pittsburgh at Johnstown (UPJ) geography and environmental studies majors who continue their education at the graduate level have been accepted to various programs across the United States. Over the past 20 years the list of graduate schools attended by our majors has grown to almost 60 programs. The majority of these graduates attend colleges located in the northeastern part of the United States. This is due to the proximity of where they live and the location of UPJ. Some, however, attend colleges further away and all have done very well at the

graduate level. The map shows the spatial distribution of our students attending the various United States colleges.

Egan, Liam (York College of Pennsylvania), *Using GIS Exploring the Rising Influence of China*

It is alleged said that China has been expanding its influence in Africa continent in recent years with attempt of raising the country's profile and to weaken the United States dominant role on the world stage. Many scholars have used export dependence theory (Chak et al., 2016) and trade theory (Pigato and Tang, 2015) to examine Sino-Africa economic ties. However, where the Chinese investments are and who the Chinese investors are in the African countries have been not been adequately studied. This research project employed Geographic Information Systems as a tool to discern the pattern of the Chinese investment from 2000 to the present, along with the York Intelligence Red Team Model (the YIRTM) developed by John Weaver (2015), to uncover the answers to these basic questions. It was found that China's military has been one of primary investors who placed investments. The Chinese military investors carefully chose the African countries with militarily important natural sources and well-connected domestic transportation network enabling the shipments out of the African countries, for example, Nigeria and South Africa. In the coming decades, China will most likely to continue such behavior pattern further influencing the African nations.

Fenk, Hunter and Christopher Woltemade (Shippensburg University), *Surveying Seasonal Discharge as Affected by Local Hydrogeology*

This research addresses the interaction between surface water and subsurface water in the Burd Run Watershed, south-central Pennsylvania, with respect to local topography, surface and subsurface geology, and seasonal variation. Discharge was measured at 10 sites in Burd Run and its tributaries during summer and fall 2017. Reaches of gaining and losing streams were identified weekly. GIS was used to analyze topographic, hydrologic, and geologic relationships. Results indicate that the complex karst hydrogeological system's reaches of gaining and losing streams are greatly influenced by geology, topography, antecedent precipitation and seasonal variation. Some reaches that were gaining in the spring were losing or at no flow in the summer and fall. Quantities of streamflow that were lost varied over time and were shown to respond to antecedent precipitation and seasonal variation.

Finkenbiner, Scott (York College of Pennsylvania), *Temporal Land Use Change Analysis along Route 30 in York City of Pennsylvania, 1938-Present*

Understanding where and what specific land use changes occurred is essential in understanding present development pattern so that we can plan for better future. York City, the county seat of York County, has a population of 43,859 (Census, 2016). Route 30, located in the north of York City, is a bustling principle arterial US state highway running east-west. How has Route 30 developed into today's major transportation corridor? This study took an approach of historical geography investigating where the temporal land use changes took place along Route 30 between the Interstate 83 and Route 74 interchanges from the year 1938 to 2004 in conjunction with York County parcel data by using Geographic Information Systems. We found that four years: 1957, 1971, 1982, and 1993 were the most significant years for land use change along Route 30

corridor. Based upon the land use change index derived, from 1938 to 2004, of all major land use types (agricultural, commercial, industrial, institutional, and residential) the predominant land use type changed from agricultural to industrial by 2,612.96 acres. With predicted continuing growth in York city, more careful industrial and infrastructure planning along the corridor needs to be considered.

Kalp, Mackenzie (Pennsylvania Department of Conservation and Natural Resources), *Pennsylvania's Natural Heritage Areas Provide Opportunities to Explore Your County and Beyond*

My work with the Pennsylvania Natural Heritage Program (NHA) has led me to the creation of static maps and online story maps that depict Natural Heritage Areas in Pennsylvania. There are eight static maps that break up Pennsylvania into different regions and display Natural Heritage Areas along trails across the state. The online story maps have been created for each county in the state and they display information on each NHA within 300 feet of a Pennsylvania recreational trail. The purpose of the maps is for people to get exposed to the Natural Heritage Program and for people to get outside to explore the natural beauty of their county and beyond.

Liu, Jingyi and Ruiwen Fu (Gettysburg College), *Bermuda Map Comparator*

This is a historical map comparator web application done by two Gettysburg College students – Jingyi Liu and Ruiwen Fu – with assistance of Professor Charles Kann from the Computer Science department. Our client is Professor Allison Feeney from the Geography Department at Shippensburg University, who is interested in how coastlines in Bermuda have changed through time. This web application allows user to 1) compare a historical map to a GIS map, or two historical maps; 2) change the opacity of each map layer, since maps overlay on each other; 3) draw line on the map to compare the difference between the historical map and the current GIS map; 4) delete any unintended lines; 5) show data (distance, angle, longitude and latitude) of each line on the map in the form of an integrated table; and 6) export data to a csv (comma-separated value) file that can be open with Excel for any further calculations. If you find it interesting, please visit chuckkann.com/bermuda for more information.

Papinchak, Courtney (Shippensburg University), *A Landscape Scale Assessment of Predicted Wetland Biodiversity for Two Sub-Watersheds of the Conodoguinet Creek in Central Pennsylvania*

US federal mandates require wetland monitoring and assessment (M&A). Some M&A strategies use broad-scale evaluations of wetland function based on landscape factors, and wetland biodiversity plays an important role in wetland productivity and function. The goals of this study were to develop a landscape scale approach to predict wetland biodiversity for two sub-watersheds of the Conodoguinet Creek in central Pennsylvania and to determine if buffer or catchment scale was more accurate. The landscape assessment used GIS to consider factors that impact wetland biodiversity including presence of agricultural land, impervious surfaces, impaired streams, high road densities, roadway crossings, and wetland size. Wetlands were ranked based on size and presence of stressors in both their catchments and buffers and were then overlaid to create a biodiversity predictability index, as well as a final predictive map of

wetland biodiversity. Fifteen of the wetlands were field-visited and Floristic Quality Indices (FQI) were then calculated for the wetlands to verify the results of the landscape assessment. Although the predictability indices showed no association with FQI, wetland size and percent of crops within buffers were significantly associated with FQI ($r^2=0.55$, $p=0.003$). Therefore, the buffer approach was found to be more accurate, and larger wetlands with lower percentages of crops within buffers were found to likely support higher biodiversity. Such wetlands could be targeted for further study, monitoring, or conservation, and the methods used in this study could be tweaked for use in other regions, possibly helping to develop statewide M&A strategies.

Radziewicz, Zachery, Lindsey Pinder, Daniel Harris, and Christopher Briand (Salisbury University), *A 2D and 3D Visualization of Salisbury University's Arboretum*

In 1998, Salisbury University, on Maryland's Eastern Shore, was granted "Arboretum Status" by the American Public Gardens Association (APGA). The campus boasts a wide variety of tree and plant species, and has earned national recognition with several beautiful campus awards. This poster presents the results of a three year collaboration between the Departments of Geography and Biology, in consultation the University's horticulture department, to construct 2D and 3D GIS visualizations of the University arboretum. Campus vegetation spatial data were collected and integrated with a comprehensive database of tree characteristics and management activity. These data were visualized to facilitate University arboretum visitation through an interactive web map and to enable horticulture decision-makers to more intelligently allocate resources.

Schreiber, Kathleen (Millersville University), *Design and Educational Features of Millersville University's First Net-Zero Energy Building*

Millersville University of Pennsylvania is constructing a \$7.5 million, 15,000 square-foot campus building that is both net-zero energy and net-zero water runoff. The structure will generate as much power as it consumes over the course of a year, facilitating the campus goal of reaching carbon neutrality by 2040. The completed building will house the Admissions, Marketing and Residence staff, the University's Welcome Center, and an atrium educational center. This poster highlights the building envelope, electrical, thermal, lighting, and plumbing design features that will contribute to the building's net-zero status, as well as the educational features of the building designed to introduce and excite the campus community on sustainability concepts.

Sesock, Halee and Ahmad Massasati (University of Pittsburgh of Johnstown), *Utilizing Orthorectification to Analyze the Completion of Roadwork on Route 56*

I designed this poster to examine the geographic impacts of a recent construction project conducted by the Pennsylvania Department of Transportation. Drone technology was used to carry out two missions of data collection for the area. In both instances, the captured images were mosaicked and georeferenced in order to display the current conditions of the highway. Aerial imagery from federal sources was used to show the status of the road before construction. Considerable transformation of the surrounding landscape occurred during the "State Route 56 United High School Curve" project. These changes are easily visible at the oblique angles of sight achieved through orthorectification of the collected data. Analysis of the project zone

shows that the old road has already begun to be reclaimed by nature – as well as by residents living close to the construction site. The new section of the highway seems to be operating exactly as planned.

Stiffler, Brennen (University of Pittsburgh at Johnstown), *Greater Johnstown High School*

Two flight missions were flown over the Greater Johnstown High School (GJHS) in the Moxham section of Johnstown utilizing drone technology. The missions were flown at 120 meters and at 500 meters to collect a vast range of images surrounding the school. For a 2016 graduate of GJHS, using vertical aerial photography provides a different perspective from that on the ground. Neighborhoods and the surrounding river are elements of the school setting not directly visible to the students. The school district has given a plethora of ways to improve education and to enjoy extra-curricular activities. The result of this project will provide the school district aerial images and maps to be used for further planning and assisting in the improvement of the school environment.

Underwood, Dallas (University of Pittsburgh at Johnstown), *Church Restoration in Johnstown*

Due to population decrease in the Johnstown area, the churches located along Broad Street in the West End of the city have seen a drastic decline to its membership. As a result, some churches have closed and others are rapidly deteriorating. This has lead “The Steeples Project” organization to attempt a revitalization and reuse these buildings for cultural and entertainment purposes. Camera-drone technology was used to gather aerial photography over specific areas on two of the churches. Oblique photos were used to pinpoint areas of immediate concern where ground observation wasn’t practical. In order to ensure complete coverage, manual and automated flight missions were conducted. The automated missions were used to create orthophotographic maps of the areas. The manual missions helped identify key sections of importance where maintenance should be conducted. The findings showed plant growth along the upper most portion of the steeple on Saint Columba’s Roman Catholic Church and decay of copper paneling on the roof of the Immaculate Conception Church. With the help of these images, “The Steeples Project” group should be able to determine the needed repairs and maintenance of these historic structures.

Wagner, Eric (Villanova University), *Tree Canopy Cover Change, 1937 to 2016: West Chester University’s Academic Quadrangle*

Aerial imagery and Geographic Information Systems (GIS) have long been utilized to evaluate tree canopy cover change over long time periods. Typically, such research takes place across geographically large areas, but with the advent of commercial drones and open data, this research can be conducted on smaller project areas. At West Chester University of Pennsylvania, their Academic Quadrangle has experienced a series of significant landscape alterations since the school’s founding in 1871. This study examined how tree canopy cover has changed over the last 80 years using historical aerial photography from various sources and ESRI’s ArcGIS Desktop software suite. The hypothesis, that tree canopy cover has decreased, was supported due to significant changes on the university’s landscape since the 1930s. Due to construction phases in the university’s past, tree canopy has dropped 16 percent since the earliest recorded aerial image

in 1937. Using GIS, canopy coverage was digitized and compared over the project's time frame. Additionally, a Global Positioning System (GPS) ground-truthing methodology was coordinated with a drone photo mission in 2016 to quantify the error in the GIS canopy model for that year. This error was then applied to the historical canopy calculations. Knowing this, similar analyses can be performed over alternative areas to determine how anthropogenic change has impacted the smallest geographies of local communities.

Weaver, Lauren (Shippensburg University), *Analyzing Bikeability and Cycling Inclusiveness in Lancaster City, Pennsylvania using GIS Technology*

This study is designed to examine the effect urban design has on bikeability and cyclists' perceptions of biking in Lancaster City, Pennsylvania in order decrease the reliance on individual vehicular transportation. Urban design elements such as connectivity, diversity of land uses, and topography influence humans and the mode of transportation that is taken. This study will be based on previous walkability and bikeability studies using portions of the Walkability Index methodology as a quantitative measurement. It will use Geographical Information Systems to map the urban design elements of street connectivity, land use diversity, and topography. A qualitative assessment of cyclists' perceptions of biking will be compared to the created maps in order to examine what physical elements in the city influence bikeability. The results showed both similarities and differences between the physical infrastructure elements and the perceptions of cyclists. In accordance with the generated slope map, cyclists stated that the slope was a large influence on their choice to cycle. Land use and street connectivity had a lower effect; however they still had an influence on the choice to cycle. Continued research is recommended in order to measure additional factors that influence cycling in an urban environment.

Wolff, Olivia (University of Pittsburgh at Johnstown), *Applying Drone Technology to Acid Mine Drainage Site in Portage, Pennsylvania*

Hughes Borehole in Portage, Pennsylvania is an active acid mine drainage (AMD) site currently dumping an estimated 800 gallons per minute onto the surrounding barren land. There is a projected 8,000 pounds of dissolved heavy metals being deposited onto the surrounding six acres daily. Drone technology allowed for the collection of area photographs which were mosaicked and georeferenced using the program Drone2Map. Data from Pennsylvania Spatial Data Access (PASDA) was overlaid and geologic layers, streams, and watersheds were examined. Hughes Borehole was active from 1923 to 1953, however, there is not one person or company currently responsible for the treatment of the discharge. The borehole directly affects the water quality in the Little Conemaugh River, as there are heavy metals such as iron sulfide, dissolved in the discharge. These metals can precipitate out of the discharge resulting in the yellow orange color seen in affected areas. AMD can dramatically lower the pH of a stream. The mine is currently draining 7,300 acres of the flooded underground Lower Kittanning mine. Amfire Mining and the state Department of Environmental Protection are in the process of arranging an agreement that would result in site remediation in return for access to a local coal seam. This map combines applied drone technology and remote sensing to create a high-resolution map of Hughes Borehole and the surrounding area.

Evaluation form for the
2017 ANNUAL MEETING
PENNSYLVANIA GEOGRAPHICAL SOCIETY
November 10, Shippensburg, PA

Your input is most important for future annual meetings and other PGS programs.

Please complete this form and mail it to:

Brent Zaprowski, Department of Geography and Geosciences,
1101 Camden Ave, Salisbury University, Salisbury, MD 21801

1. How would you rate this meeting?	Poor		Neutral		Excellent
	1	2	3	4	5
a. Overall	()	()	()	()	()
b. Site/Location of Meeting	()	()	()	()	()
c. Meeting Program	()	()	()	()	()
d. Hotel Accommodations	()	()	()	()	()
e. Meeting Rooms	()	()	()	()	()
 2. Presentations:	Poor		Neutral		Excellent
	1	2	3	4	5
a. Friday AM	()	()	()	()	()
b. Friday PM	()	()	()	()	()
c. Maps and Posters	()	()	()	()	()
 3. PGS Luncheon	()	()	()	()	()
 4. PGS Annual Banquet	()	()	()	()	()
Banquet Speaker	()	()	()	()	()
 5. My expectations of the meeting were:	Unmet		Neutral		Met
	1	2	3	4	5
	()	()	()	()	()

Why?

6. What would make the Annual Meeting more valuable to you?

