

CENTER FOR LAND USE AND SUSTAINABILITY SHIPPENSBURG UNIVERSITY 2015-2016 ANNUAL REPORT



**Center for Land Use
and Sustainability**

SHIPPENSBURG UNIVERSITY

Highlights from 2016

- The Center for Land Use and Sustainability (CLUS) currently funds 2 full time staff and 5 student workers, including one fully funded graduate assistantship
- Our 18 affiliated scientists (representing all colleges and 8 departments on campus) were **awarded over \$670,000** in grants and service contracts in 2016
- The Pennsylvania Environmental Resource Consortium awarded Shippensburg University (SU) the title of **Campus Sustainability Champion for 2016**, thanks to the InTeGrate team
- In conjunction with InTeGrate funds and activities, the CLUS sponsored what we hope will be the **first annual Sustainability Field Conference**
- Through a new partnership with Soil Hub, the CLUS offered two in-person soil science training workshops to practicing environmental professionals in Pennsylvania, West Virginia, Maryland, and beyond

Future Challenge

- The CLUS is **fully funded through June of 2019** by a combination of grants, contracts, indirect cost sharing, and other revenue streams; direct support from grants makes up 96% of the CLUS budget. While these figures are an indication of our early success, **the reliance on grants and contracts will be difficult to sustain over the long term**



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Mission, Vision, and Goals

The mission of the Center for Land Use and Sustainability (CLUS) is to support science-based solutions to interdisciplinary sustainability challenges. Our vision is to become a nationally recognized interdisciplinary center that leverages the expertise of SU faculty, staff, and students to promote sustainable land use, economic development, cultural and natural resource management, and communities at local, regional, and global scales. The goals of the CLUS are:

- To promote applied interdisciplinary research on issues related to land use and sustainability.
- To support affordable, sustainable solutions in our local, regional, and global communities.
- To create professional development opportunities for faculty and staff, and high-impact learning experiences for students.

What We Do

We leverage the expertise of our affiliated scientists to conduct research and complete projects in the community in the form of grants & service contracts, continuing & professional education, and outreach & student engagement.

Relaunch and Focus on Sustainability

In January 2016, the Center for Land Use was officially relaunched as the Center for Land Use and Sustainability to encourage sustainability related projects and provide the opportunity for increased interdisciplinary collaboration across campus. This relaunch also included updated leadership roles:

Director - Dr. Claire Jantz
Professor, Geography-Earth Science

Associate Director - Dr. George Pomeroy
Professor, Geography-Earth Science

GIScience Director - Dr. Scott Drzyzga
Professor, Geography-Earth Science



Then Shippensburg University president, Dr. Harpster (bottom right), signs the updated CLUS charter in March 2016

History of the CLUS

Dr. Jack Benhart established the Center for Land Use (CLU) in 2003, with support from a grant from the Department of Education. The CLU was started as a partnership effort between SU and the Governor's Center for Local Government Services, the Pennsylvania State Association of Township Supervisors, the Pennsylvania State Association of Boroughs, and the County Commissioners Association of Pennsylvania. This founding mission of the CLU was to *"provide conferences, workshops, technical assistance, research, and community education programs to promote sound land planning and to enhance the quality of life in the five county service region of Adams, Cumberland, Franklin, and Perry Counties."*



Original logo for the CLU

In June 2004, Dr. George Pomeroy was appointed director of the CLU. As Director, Dr. Pomeroy worked to integrate center activities with his coursework, while continuing to support the mission.

At the request of the Interim Provost, the Geography-Earth Science Department submitted a proposal for an enhanced Center for Land Use in April 2008. While this proposal was approved, it was unfortunately not implemented due to funding limitations.

With support from the Federal Highway Administration, the CLU began work studying the I-81 corridor in 2010. Through this work, and the efforts of Dr. Pomeroy, the CLU continued to support some student research and community involvement.

In 2014, Drs. Jantz and Drzyzga were awarded a \$1M grant by the William Penn Foundation to study land use change in the Delaware River Basin (DRB). This grant provided additional support to the CLU, largely through hiring two full time staff: a Research Analyst and Project Coordinator.



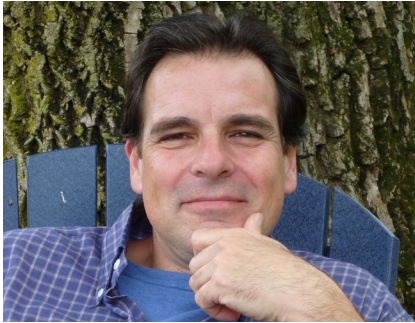
In January 2016, the CLU was officially relaunched as the Center for Land Use and Sustainability to better incorporate other disciplines and projects across campus. Dr. Claire Jantz was named director, with Dr. George Pomeroy serving as Associate Director and Dr. Scott Drzyzga as the GIScience Director. The mission of the CLUS was expanded to include interdisciplinary research and solutions and a broader geographic focus.

Visit www.centerforlanduse.org/about/history for a more detailed timeline.

CLUS Faculty and Staff

The CLUS is currently supported by 2 full time staff members, 1 graduate student fellow, and 3 undergraduate student fellows.

CLUS Staff and Students



Alfonso Yáñez Morillo
Research Assistant



Antonia Price
Project Coordinator



Joshua Barth
Graduate Student Fellow

Undergraduate Student Fellows: Jonathon Chester, Carla Johns (graduated 2016), Caitlin Lucas, Dan McCormack (graduated 2016), Jackie Rosenberger

Current Areas of Expertise

Geographic Information Systems - including general consultation, spatial modeling, data processing, cartography

Global Navigation Satellite Systems - including feature mapping and surveying, and Global Positioning System

Physical and environmental sciences - including ecosystem restoration, geophysical studies (e.g. ground-penetrating radar), landscape ecology, coastal and watershed processes, hydroclimatology

Land use planning, economics, and transportation - including planning primers and audits, economic development and impact analysis, trucking and warehousing, airports and airlines

Applied history and archaeology - including environmental history, historic preservation, national registry listing, archaeological surveys

Sustainable business practices - including supply chain management, and environmental impacts of logistics systems

Community sustainability - including community certification, environmental justice, qualitative research design and data analysis

Grant writing and project management

Affiliated Scientists

The CLUS builds on an emerging campus-wide focus on sustainability issues. Our 18 affiliated scientists represent all SU colleges and 8 different departments on campus.

College of Education and Human Services

- Dr. Dorlisa Minnick, Assistant Professor, Social Work & Gerontology

College of Business

- Dr. Ian Langella, Professor and Chair, Finance and Supply Chain
- Dr. Jerry Carbo, Associate Professor, Management

Technology and Library Services

- Ryan Kudasik, Instructional Design Specialist, Instructional Design

College of Arts and Sciences

- Dr. Nathan Thomas, Associate Professor, Biology
- Dr. Bill Blewett, Professor & Department Chair, Geography-Earth Science
- Dr. Sean Cornell, Associate Professor, Geography-Earth Science
- Dr. Scott Drzyzga, Professor, Geography-Earth Science
- Dr. Alison Feeney, Associate Professor, Geography-Earth Science
- Dr. Kurt Fuellhart, Professor, Geography-Earth Science
- Dr. Tim Hawkins, Professor, Geography-Earth Science
- Dr. Claire Jantz, Professor, Geography-Earth Science
- Dr. Paul Marr, Professor, Geography-Earth Science
- Dr. George Pomeroy, Professor, Geography-Earth Science
- Dr. Christopher Woltemade, Professor, Geography-Earth Science
- Dr. Steven Burg, Professor & Department Chair, History and Philosophy
- Dr. Allen Dieterich-Ward, Associate Professor, History and Philosophy
- Dr. Steven Haase, Associate Professor, Psychology

We are always seeking new collaborators and project leads!

Our Funding Streams

Since 2015, effectively 100% of the CLUS budget has been funded by and allocated to current grants and contracts. To date, our work to win grants and contracts has funded:

- Two full-time staff, housed within the CLUS
- Course release time and summer salary support for participating faculty
- One fully funded graduate assistantship, including tuition remission and an hourly research stipend
- Five hourly undergraduate research assistants
- Multiple workshops, travel to conferences and project areas, computing resources, a website, and other expenses.

Total Funding Awarded since January 2015

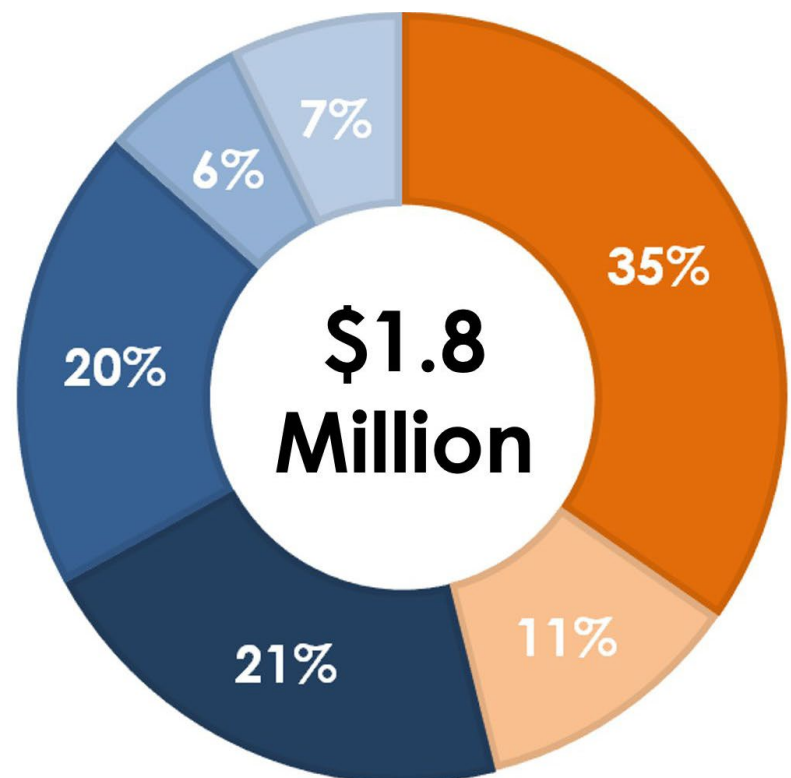
To date, CLUS scientists have been awarded over \$1.8 million in grants and contracts. Of that amount, 54% is available to directly support CLUS staff, students, and all research activities. The remainder is diverted to collaborators at other institutions as subcontracts (35%) and to indirect costs charged by the university to service eligible grants (11%).

Grant funds that are redirected to other sources

- Subcontracts
- Indirect Costs

Grant funds that directly support CLUS activities

- William Penn Foundation
- Delaware Watershed Research Fund
- National Park Service
- All other grants



Looking Ahead

The CLUS is fully funded through June of 2019 by a combination of grants, contracts, indirect cost sharing, and other revenue streams. The CLUS then has minimal funding secured through December 2021. The table below summarizes our funding sources from January 2015 - June 2019.

Funding Sources (Jan 2015 – June 2019) - \$978,291	
Direct support - \$938,209 From grants and contracts to fund salaries and benefits, travel, conference fees, catering, web fees, student wages, etc. from all projects. This amount does not reflect the total awards made to CLUS, which in many cases is larger due to subcontracts that go to collaborators. It also does not include indirect fees collected by the university.	96%
Indirect cost share - \$39,286 Twenty percent of indirects charged to CLUS grants returns to the CLUS. Note that some of our grants are subject to lower indirect rates and not all grants generate indirect fees.	4.0%
Workshop/course revenue - \$396	<0.01%
SU Foundation account for the CLUS - \$400	<0.01%

While these figures are an indication of our early success, the reliance on grants and contracts will be difficult to sustain over the long term. Because nearly all faculty and staff time is committed to tasks associated with grants and contracts, there are few resources available for pursuing opportunities, doing background reading and research, and competing for new grant awards and service contracts.

Furthermore, the majority of our research awards are directly or indirectly funded by the William Penn Foundation to support our work in the Delaware River Basin. This indicates a critical need to diversify our funding support.



Research Grants and Service Contracts

From January 2015 to December 2016, the CLUS secured over \$1.8M in grants and contracts for Shippensburg University. This includes over \$670,000 awarded to CLUS affiliated scientists and staff since January 2016. *We note that undergraduate and/or graduate students are involved in every project.*

A Land Cover Mapping, Modeling and Monitoring System for the Delaware River Basin- In Support of Maintaining and Restoring Water Resources

William Penn Foundation:

\$1,015,000.00 (1/1/15-6/30/17)

Dr. Claire Jantz, Dr. Scott Drzyzga, Jarlath O'Neil-Dunne (University of Vermont Spatial Analysis Lab), Peter Claggett (USGS)

Cultivating Sustainability through General Education Coursework, Professional Development, and High-Impact Co-Curricular Programming and Career Development at SU

National Science Foundation

(via SERC at Carleton College):

\$49,826.80 (1/1/16-11/30/16)

Dr. Sean Cornell, Dr. Nathan Thomas

Poconos-Kittatinny Cluster Land Protection Focus Area Selection

Pinchot Institute for Conservation:

\$55,602.79 (9/14/16-8/31/17)

Dr. Claire Jantz

On-line GIS Tool for Upper Delaware Scenic & Recreational River

National Park Service (via CESU):

\$130,101.88 (9/14/16-12/31/21)

Dr. Claire Jantz



Study area map created by A. Yáñez for the DRB project

GIS Project for the Kittatinny Ridge Coalition

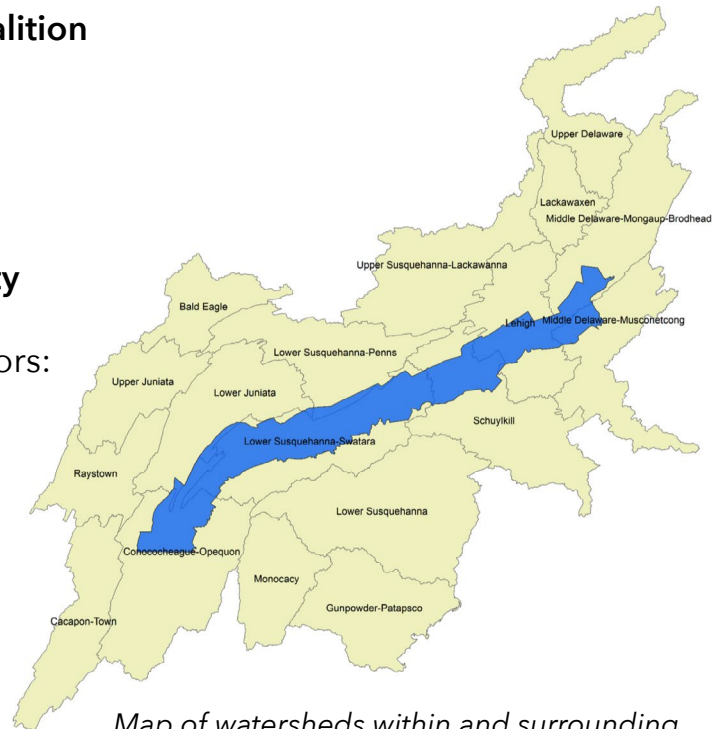
National Audubon Society:
\$4,920.00 (11/8/16-6/30/17)
Dr. Claire Jantz

Community Survey Development and Implementation for Cumberland County Planning Commission

Greater Harrisburg Association of Realtors:
\$4,984.00 (11/18/16-9/1/17)
Dr. Dorlisa Minnick, Antonia Price,
Dr. Claire Jantz

Story Map of South Mountain Partnership Mini-Grants

South Mountain Partnership:
\$2,000.00 (1/1/17-1/1/18)
Dr. Claire Jantz



Map of watersheds within and surrounding the Kittatinny Ridge, by Jackie Rosenberg

Mapping Historic and Prehistoric Cultural Features in the Carbaugh Run Natural Area

South Mountain Partnership:
\$13,500.00 (1/1/17-1/1/18)
Dr. Paul Marr, Dr. John Wah (Matapeake Soil)

Inventory and Analysis of Historic Preservation Ordinances in Pennsylvania Municipalities

Center for Rural Pennsylvania:
\$49,694.00 (1/20/17-1/20/18)
Dr. Steven Burg, Dr. George Pomeroy,
Dr. Angela Cuthbert (Millersville University)



How will forest ecosystems and hydrologic processes in the Delaware River Basin be affected by climate change and land cover change?

Academy of Natural Sciences of Drexel University:
\$485,924.00 (1/20/17-1/19/20)
Dr. Claire Jantz, Dr. Scott Drzyzga, Dr. Tim Hawkins, Dr. Christopher Woltemade,
Dr. Patrick Jantz (Northern Arizona University)



Kick-off meeting between CLUS faculty and staff and Millersville University in 2017

Partnerships and Collaborations

South Mountain Partnership

After years of collaboration, the CLUS officially joined the South Mountain Partnership in Fall 2015. The partnership is a collaborative effort of stakeholders in the region, including county planning commissions, conservation districts, state parks, state forests, and non-governmental organizations to protect, preserve, and enhance the South Mountain Landscape. The CLUS supports this collaboration by attending meetings, advertising events, supporting student research, and by participating on the leadership committee for the Regional Capacity Building Initiative, supported by the Chesapeake Bay Trust. Dr. Claire Jantz serves on the South Mountain Partnership leadership committee and is a lead partner in the Capacity Building Initiative.

Soil Hub Partnership

Soil Hub and the CLUS are collaborating to bring in-person soil science training to practicing professionals in Pennsylvania, West Virginia, Maryland, and beyond. The first course was held on November 15, 2016, with a total of 15 participants. The expected revenue for this partnership is 10% of the registration cost, or \$315 for the first workshop. Four additional workshops are scheduled for Spring 2017.



SU hosted a workshop session of the SMP Regional Capacity Building Initiative in July 2016



The CLUS received two minigrant awards from the South Mountain Partnership in 2017



The first Soil Hub Fundamental Soil Science Course was offered at SU in November 2016

Chambersburg Borough

The CLUS has partnered with the Borough of Chambersburg on two projects. First, we are assisting with the preparation of an application to the Pennsylvania Municipalities League's Sustainable Community Certification. This partnership has been implemented through the participation of two undergraduate researchers, who have researched and documented Chambersburg's sustainability initiatives under the direction of Dr. Claire Jantz.



SUSTAINABLE PENNSYLVANIA
COMMUNITY CERTIFICATION



Students Carl Seils and Carla Johns brainstorm PA sustainable community certification

Second, graduate student Molly Eck completed a field and computer modeling study assessing the hydrologic function of a proposed bioretention facility on Rhodes Drive in Chambersburg, PA. This work was completed as Molly's independent graduate research project under the supervision of Dr. Christopher Woltemade and as a collaborative effort with Andy Stottlemeyer, the Storm Sewer System Manager for the Borough of Chambersburg. Molly will present this work this spring as part of the SU Minds at Work Conference.

Cumberland Valley Rail Trail Coordinating Committee

Once the route of the Cumberland Valley Railroad (chartered in 1831), the Cumberland Valley Rail Trail (CVRT) was completed between Shippensburg and Newville in 2006. In 2017, the trail will be extended across a new bridge at Fogelsanger Road and through campus to a new trailhead at the corner of Fort and Earl Streets. The extension of the trail into the heart of Shippensburg presents a wonderful opportunity for the university in terms of attracting and retaining students, enhancing potential classroom, internship, research, and service learning activities, and better forging stronger connections to the surrounding community. With this in mind, Dr. Leslie Folmer Clinton (VP for External and Community Relations) and Dr. Allen Dieterich-Ward are chairing a campus-wide CVRT Coordinating Committee. In addition to thinking "big thoughts" about future uses for the trail, the group will form action-oriented working groups to handle pragmatic issues that are bound to arise with a jointly-managed amenity as well as the practical matters associated with integrating the trail into academic and student service activities.

Partnerships and Collaborations (continued)

National Park Service -

Underrepresented Communities and the National Historic Registry

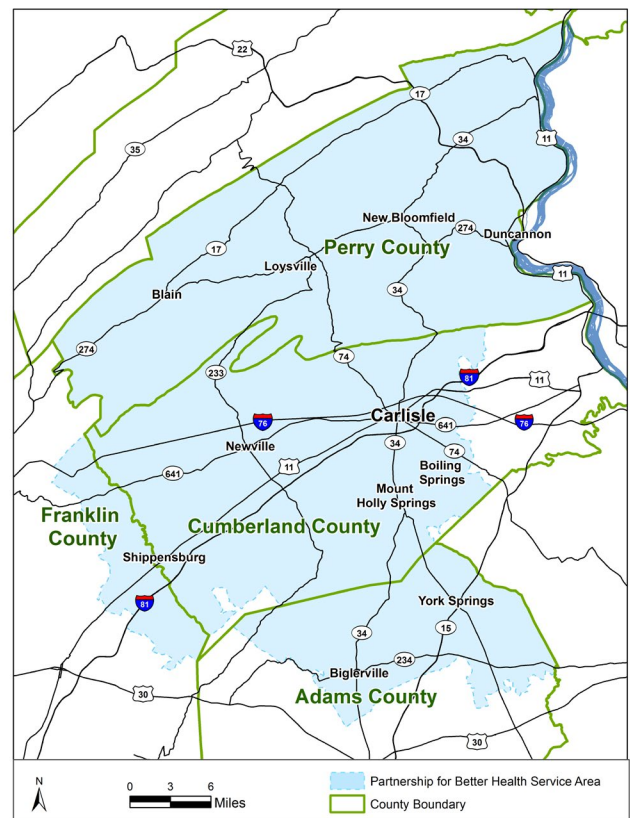
Pennsylvania Historical & Museum Commission's (PHMC) Bureau for Historic Preservation (now the PA SHPO) and the African American Museum in Philadelphia (AAMP) developed a broad, multi-year initiative to document and highlight the history of African Americans in Pennsylvania. With the help of Dr. Steve Burg, the project will prepare a historic context for African American history in rural and suburban Pennsylvania as a Multiple Property Documentation Form (MPDF), nominate a property associated to this historic context to the National Register of Historic Places, and, provide education and outreach opportunities about African American history in Pennsylvania to broad and diverse audiences.

Pennsylvania History Series

Dr. Allen Dieterich-Ward has become the new co-editor of the Pennsylvania History Series, a book series co-published by the Pennsylvania Historical Association and Temple University Press. The CLUS is providing cartographic support for this book series through the involvement of Dr. Scott Drzyzga. The first book in the series, a revised and updated edition of Roger Simon's Philadelphia: A Brief History will be published in June 2017.

Partnership for Better Health

Dr. George Pomeroy and Geography-Earth Science MS student Courtney Papinchak provided cartographic services to the Partnership for Better Health, a community foundation based in Carlisle, PA that works collaboratively throughout parts of Cumberland, Perry, Adams and Franklin Counties to foster sustainable solutions to health challenges.



Partnership for Better Health Service Area map created by Courtney Papinchak

Presentations and Publications

Presentations

**Indicate student presenters/participants*

Society of Women Environmental Professionals (April 2016)

(Tabling event) C. Jantz, A. Price, *C. Lucas, *C. Johns, *J. Barth about CLUS

Pennsylvania Association of Environmental Professionals Meeting (April 2016)

C. Jantz, *J. Barth, *M. Eck, *C. Littlefield, *C. Papinchak about the CLUS and related student research

US International Association for Landscape Ecology (April 2016)

C. Jantz, A. Yáñez Morillo, S. Drzyzga, A. Price, *J. Barth about the DRB Project

Pennsylvania GIS Conference (May 2016)

S. Drzyzga about the DRB Project and data products

Cumberland Franklin County Boroughs Association Meeting (September 2016)

C. Jantz about the CLUS

Pennsylvania Environmental Research Consortium (October 2016)

S. Cornell about SU-CLUS sustainability efforts

Department of Geography-Earth Science Seminar Series (November 2016)

C. Jantz about the CLUS and various projects

Central Pennsylvania GIS Day (November 2016)

S. Drzyzga about the CLUS and the new High Resolution Land Cover dataset

For a full list of presentations related to the Delaware River Basin Project, please visit:
www.drbproject.org/presentations/.

Publications

Fuellhart K, Pomeroy G, Benham M, and Kooti J. 2016. The Economic Impact of Letterkenny Army Depot in Franklin County, Pennsylvania. Shippensburg University Center for Land Use and Sustainability and Franklin County Area Development Corporation. URL: <http://www.fcadc.com/letterkenny-army-depot/related-information/>

Since 2015, we have published seven issues of "Updates from Shippensburg," the quarterly newsletter of the Delaware River Basin project. Learn more online:
www.drbproject.org/newsletters/.

Community Outreach and Events

Outreach Mechanisms

Websites

- CLUS website (www.centerforlanduse.org/) from 7/1/15 to 1/31/17: 6,672 sessions with 5,282 users (34,247 pageviews).
- DRB Project website (www.drbproject.org) from 7/30/15 to 1/31/17: 6,040 sessions with 4,536 users (17,371 pageviews).
- Sustainability website (www.ship.edu/sustainability)

Facebook

- CLUS account (@ShipCLUS) as of 1/31/17: 150 likes; over 3,000 people reached in January 2017
- Sustainability at SU account (@StewardshipSU) as of 1/31/17: 46 likes; 48 people reached in January 2017

Twitter

- CLUS account (@ShipCLUS) as of 1/31/17: 301 tweets, 143 followers
- Sustainability at SU account (@SHIP Sustainable) as of 1/31/17: 82 tweets, 36 followers

Sustainability Events

In addition to providing presentations and hosting meetings, the CLUS supported many events in 2016 through the InTeGrate grant, with a focus on sustainability. These events included: StewardSHIP Week, Campus Community Sustainability Forum, Sustainability Field Conference (over 40 participants), Sustainability Outdoor Film Festival (8-40 participants per night), and Outdoor Nation Campus Challenge (464 participants). Learn more: www.ship.edu/sustainability/.



Dr. Jantz helps a group in Narrowsburg, NY perform a SWOT analysis of the DRB

DRB2070 Workshops

As part of the Delaware River Basin project funded by the William Penn Foundation, we held a series of six workshops to define future land use trajectories in the DRB. We met with a total of 76 planners, environmental scientists, conservation practitioners and other stakeholders in Delaware (Dover), New Jersey (Washington), New York (Narrowsburg), Pennsylvania (Media, Philadelphia, and Reading), to discuss current strengths and weaknesses in the basin, along with future opportunities and threats.

Awards and Recognition

2016 Campus Sustainability Champion

Pennsylvania Environmental Resource Consortium awarded the InTeGrate team (Dr. Sean Cornell, Dr. Nathan Thomas, and Antonia Price) the title of Campus Sustainability Champion for 2016 in recognition of our meaningful contributions benefiting social, economic and/or environmental sustainability on campus, in the community, and for society at large.



Outdoor Nation Campus Challenge

As part of our sustainability program, Shippensburg University was one of the 90 schools that participated in the 2016 Outdoor Nation Campus Challenge. We finished in 8th place, among Universities such as Humboldt State, Prescott College, and Texas Woman's University. This event brought attention to sustainability and outdoor activities across the nation.

Pending Grants and Future Opportunities

South Mountain Research Corps

(\$20,000 start up funds available through SMP)

The CLUS is working on a proposal to establish the South Mountain Research Corps (SMRC, or Corps) housed at the Center for Land Use and Sustainability (CLUS) in collaboration with the South Mountain Partnership. The Corps is envisioned as a program that will:

- Develop, build, and sustain a responsive and applied research program that supports the natural and cultural resource conservation efforts of the South Mountain Partnership (SMP);
- Build collaborative relationships among institutes of higher education within the South Mountain region; and
- Provide experiential opportunities to college students within the region.

South Mountain Capacity Building Initiative

As a lead participant in the South Mountain Capacity Building Initiative, the CLUS is eligible to apply to the Chesapeake Conservancy for funds to support collaborative projects. The CBI is funded from 2016 - 2019, and the CLUS will be actively participating in these efforts, which may result in funded project work.



In the News

Borough seeks sustainable community designation

Public Opinion Online. March 14, 2016
<http://www.witf.org/news/2016/03/borough-seeks-sustainable-community-designation.php>

Shippensburg University partners with Franklin County to boost economic development

Fox43. October 3, 2016
<http://fox43.com/2016/10/03/shippensburg-university-partners-with-franklin-county-to-boost-economic-development/>

Shuster, Alloway Working to keep Letterkenny Strong

Public Opinion Online. October 26, 2016
<http://www.publicopiniononline.com/story/opinion/2016/10/26/shuster-alloway-working-keep-letterkenny-strong/92762966/>

SU, CAEDC partnership will help boost economic development

Cumberland Area Economic Development Corporation. November 30, 2016
<http://cumberlandbusiness.com/news/su-caedc-partnership-will-help-boost-economic-development/>

Saving the World: A Sustainable Ship Plans for Future Generations

SU Magazine. July 19, 2016
<http://www.sumag.org/features/2016/7/11/saving-the-world-a-sustainable-ship-plans-for-future-generations>

What new river maps will & won't do

River Reporter. January 11, 2017
<http://www.riverreporter.com/news-news-stories/what-new-river-maps-will-won%E2%80%99t-do>

Digital overlay maps planned for Upper Delaware

The News Eagle. January 12, 2017
<http://www.neagle.com/news/20170112/digital-overlay-maps-planned-for-upper-delaware>

County puts out public survey for comp plan update

The Sentinel. January 13, 2017
http://cumberlink.com/news/local/county-puts-out-public-survey-for-comp-plan-update/article_f243c2f7-535b-561a-851c-41ed6ab1520a.html

Cumberland County wants your input for updated comprehensive plan

ABC27. January 16, 2017
<http://abc27.com/2017/01/16/cumberland-county-wants-your-input-for-updated-comprehensive-plan/>

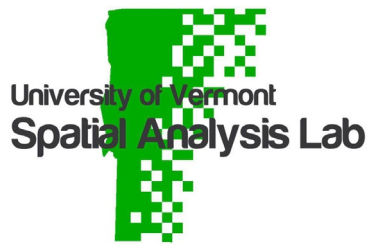
Cumberland County offers survey, seeking public input on county's future

Penn Live. January 17, 2017
http://www.pennlive.com/news/2017/01/cumberland_county_offers_surve.html

Project to Watch

PA Historic Preservation Blog. January 25, 2017
<https://pahistoricpreservation.com/januarys-shpo-shout-out/#more-2774>

Collaborators and Supporters



SOUTH MOUNTAIN
PARTNERSHIP



SoilHub





**Center for Land Use
and Sustainability**

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www.centerforlanduse.org



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Center for Land Use and Sustainability

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