

## The Year in Review and A Look Forward



# 2017 SNR



**SCHOOL OF NATURAL RESOURCES**

Institute of Agriculture and  
Natural Resources  
University of Nebraska–Lincoln

**University of Nebraska - School of Natural Resources  
Year in Review - 2017**

<b>Program/Center</b>	<b>Page</b>
Introduction .....	1
SNR Program Areas	
Applied Ecology, Larkin Powell .....	2
Applied Climate and Spatial Science, Martha Shulski and Brian Wardlow .....	3
Environmental Sciences, Steven Thomas.....	4
Selected SNR Committee Reports	
Faculty Advisory Committee –Dan Snow, Chair .....	5
Graduate – Mark Pegg, Chair .....	5
Undergraduate – Drew Tyre, Chair .....	6
Community Engagement - Dennis Ferraro, Chair.....	6
Promotion and Tenure - Dave Wedin, Chair .....	7
Safety and Facilities – Steve Thomas, Chair .....	8
SNR Centers	
CALMIT – Brian Wardlow and John Gamon, Directors .....	8
CESU – Larkin Powell, Director .....	10
CSD – Matt Joeckel, Associate Director .....	11
HPRCC – Natalie Umphlett, Interim Director .....	12
NCFWRU – Craig Allen, Leader .....	13
NDMC – Mark Svoboda, Director .....	14
NSCO – Martha Shulski, Director .....	15
SNR <i>Ad Hoc</i> Committees and Other Programs	
Communications – Shawna Richter-Ryerson.....	16
Computer Services – Tri Tran .....	18
Digital First Team - Mark Mesarch, Chair .....	19
Extension – Dennis Ferraro and Katie Pekarek, Co-Chairs .....	19
Maps and More – Jacki Loomis .....	20
Mentoring Coordinator – Pat Shea .....	21
Natural Resources Diversity Initiative – Jenny Dauer .....	22
Spatial Teaching - John Gamon, Chair .....	24
Student Services – Patricia Swanson, Elyse Watson, Sara Winn .....	25
Wellness – Crystal Stiles .....	26

## **Introduction**

The University of Nebraska School of Natural Resources is a large and complicated unit within the Institute of Agriculture and Natural Resources. We are such a diverse program that it is difficult to capture the amazing variety of our ongoing activities. Therefore, I asked the heads of our programs and committees to provide a one page review showing highlights of their year and some objectives for next year. We hope this will provide a way for us to show that amazing diversity of activities by our faculty and staff.

We do not view this document as an annual report, we see it more as a summary of important activities and vision for the future. This document will be posted on our website along with our 2015 Academic Program Review and Vision document.

Dr. John P Carroll, Director, January 2018

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# SNR Program Areas

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## Applied Ecology Mission Area

Submitted by Larkin Powell, Mission Area Leader

### 2017 Accomplishments:

- **Growing in Nebraska:** The Applied Ecology Mission Area now consists of over 40 PhD scientists working in faculty positions (including postdocs). The associated staff, graduate students, and undergraduate students create a large, dynamic group of professionals in SNR.
- **Engaging students—new graduate course NRES 801:** Applied Ecology faculty added a required graduate course for any students in MS or PhD specialization of Applied Ecology in Fall 2017. The goal is to bring students together in a cohort and introduce the faculty through weekly discussions and presentations.
- **Engaging students—education abroad courses:** faculty led trips to Puerto Rico, Botswana, and Namibia during 2017. In addition, a blizzard of local and regional field experiences gave practical, hands-on opportunities to over 300 students.
- **Engaging students—new ecophysiology course NRES 482/882:** Our newest fisheries faculty member, Jamillynn Poletto, developed and taught a new course entitled Ecophysiology of Wildlife (NRES 482/882). It has been incorporated into the curriculum for Fisheries and Wildlife majors. This class discusses the physiological mechanisms that allow animals to live in their specific niches, and links environmental variables with physiology and behavior.
- **Engaging students—new zoo management course NRES 441:** Lisa Pennisi worked with Fisheries and Wildlife curriculum committee members to develop a Zoo Keeping and Management course that will serve as an ACE 10 capstone course for students in the Zoo Animal Care option.
- **Engaging students—new forestry program underway:** Eric North and David Wedin worked with SNR administration to provide new forestry courses related to a developing undergraduate major, Regional and Community Forestry.
- **Engaging stakeholders—Human Dimensions web site:** Applied Ecology faculty and staff created a ‘People and Environment’ web site to highlight information and services available in human dimensions for natural resources.  
<http://snr15.unl.edu/extension/human/>
- **New collaborations—resilience grants:** Craig Allen led efforts to secure two new National Science Foundation grants with teams in SNR and beyond. National Science Foundation. 1: Allen, CR, M Shulski, H Birge. Convergence NNA: Adaptive Capacity and Resilience in the New Arctic: Identifying Pathways to Equitable, desirable Outcomes for People and Nature Through Convergence. 2: Allen, CR, N Shank, D Twidwell, SG Elbaum, F Munoz-Arriola. F. NRT-INFWS: Training in Theory and Application of Cross-scale Resilience in Agriculturally Dominated Social Ecological Systems.
- **New collaborations—watershed health grant:** Liz VanWormer led a team-building Following a Food grant, which led to a new multistate ARD Hatch project led by Chris



Chizinski under the broad multistate heading “Understanding the Ecological and Social Constraints to Achieving Sustainable Fisheries Resource Policy and Management.” The UNL project is “Assessing the social-ecological dynamics that contribute to ecosystem health and watershed resource management in Nebraska” and includes co-PIs Jamilynn Poletto, Liz VanWormer, Mark Pegg, and Larkin Powell.

### **2018 Objectives:**

- The Applied Ecology Mission Area is beginning the second year under our 5-year goal to increase the impact of our research program.
- Following a decade of strong advancements in our teaching program, our current strategy specifically emphasizes high-level research through collaborative grants designed to increase funding for postdocs and PhD students to leverage research output.
- We plan for collaborations within and outside our group to increase.
- We plan to propose strategic hires to support innovative research and increase research FTE, while maintaining our current FTE in Extension and teaching.

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## **Applied Climate and Spatial Science Mission Area**

**Submitted by Martha Shulski and Brian Wardlow**

### **2017 Accomplishments**

#### **General**

- The ACSS mission area was created.
- ACSS participated in public outreach events throughout the year such as WeatherFest, SNR Movie Night, SNR Seminar Series, CASNR tailgate, Growing Nebraska IANR Summit.
- A spatial scientist faculty, Yi Qi, was hired in December and starts July 2018.

#### **Teaching**

- The ACS undergraduate major was reviewed and changes are proposed to increase enrollment and increase employment success for our graduates
- Prerequisites for all undergraduate courses are being reviewed.
- The Agricultural Meteorology Specialization in the Agronomy Major will continue with Betty Walter-Shea serving as the SNR representative in 2018.
- A spatial science curriculum review was initiated including a survey of faculty from various IANR units and other UNL departments on spatial course needs for their students. A revised set of core and elective spatial science courses is currently under development.

#### **Research**

- Two core positions from ACSS were developed and forwarded on to IANR leadership.
  - Climate Risk Modeler
  - Land-atmosphere Interaction Scientist
- A Spatial Informatics/Analytics faculty position was developed and submitted to IANR leadership.

### **2018 Objectives**

- Active involvement in IANR Communities

- Continue work on undergraduate courses and curriculum
- Review graduate courses and listed requirements
- Complete spatial science curriculum review and finalize core and elective courses to support both undergraduate and graduate education.

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## Environmental Science Mission Area

Submitted by Steve Thomas ES Mission Area Leader

### 2017 Accomplishments

- **Hydrological Sciences Graduate Specialization:** Jesse Korus and others led an effort to revise and re-establish our Hydrological sciences graduate specialization.
- **Website Material for Environmental Sciences:** Troy Gilmore has led an effort to revise existing webpage text and develop new text to accompany the Environmental Sciences linked portions of the SNR webpage. We have also been recruiting research features from all ES faculty.
- **Environmental Science Undergraduate Program:** Steve Comfort and Paul Hanson led an effort to change the name of our Environmental Restoration Science major to Environmental Science. This effort included developing and conducting a survey of current and past students and potential employers about their opinions regarding this topic. We are currently waiting on the decision of the University Academic planning Committee.
- **Undergraduate Enrollment:** Both Environmental Restoration Science and Water Science had significant growth in 2017 with both having 30 or more majors. Several faculty worked with our undergraduate advising and recruiting staff to grow these majors.
- **Graduate Programs:** In addition to the Hydrological Science graduate specialization, Pat Shea and Dan Snow are working to develop an Environmental Science Specialization that we hope to establish in 2018.
- **Faculty Positions:** The ES faculty co-developed a Water Health Scientist faculty position that was submitted to both Core and Programmatic hiring calls. This position would further develop our One Health program and facilitate interaction across several IANR departments and other UN entities.
- **Instructing NRES 468/868, WATS 468 (Wetlands):** Dr Tiffany Messer will teach our Wetlands course in the Spring of 2018
- **New Limnology Hire:** We hired Dr Jessica Corman who started her position December 2017.

### 2018 Objectives

- **BS Engineering/MAS ES 3+2 Program:** We will begin working with Civil Engineering and BSE to investigate value in a joint BS/MAS program with emphasis in water science and restoration.
- **ES/Law 3+3 Program:** Betty Walter Shea in her role as an associate dean is leading discussion on development of joint programs with the Law College.
- **ES Specializations:** Development of graduate specialization in ES and revisions of hydrology specialization will continue.

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## **Selected SNR Committee Reports**

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### **SNR Faculty Advisory Committee**

**Submitted by Dan Snow, Chair**

#### **2017 Accomplishments**

Guided discussions on long-term vision for the School, including directing planning of its faculty, staff and students.

- The FAC facilitated discussions of:
  - relationships between SNR and other campus and external units
  - guiding the development of faculty position requests, including our recent hires (Limnologist, Spatial Science, HPRCC director)
  - assisted with directing Hardin Hall building space safety issues & solutions
  - discussed responses to SNR's 2017 gender survey
  - offered guidance on the future of the Environmental Studies and Environmental Science undergraduate majors
  - assisted in implementing graduate student stipend increases and planning for changes in professional development support for SNR personnel
  - assisted in planning for potential budget reduction scenarios
  - provided input/advice for complete revision/update of expertise listing for website
  - facilitated nominations for filling of open SNR committee positions
  - promoted nominations of SNR staff, faculty and students for campus-wide awards
  - summarized and distributed potential impacts of NU budget reduction plans to the School

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### **SNR Graduate Committee**

**Submitted by Mark Pegg, Grad Committee Chair and Robert Kuzelka, SNR Graduate Student Ombudsperson**

#### **Activities 2017**

- The SNR Graduate Committee processed 87 applications in 2017. Admittance was offered to 40 (46%) applicants. Incomplete application materials and lack of funding played a large role in the denial of the remainder of applicants.
- Graduate Studies awarded SNR funds for 2 Chancellor's fellow in 2017. These fellowships were awarded to:
  - M.S. student Danielle Berger
  - M.S. student Katherine Graham
- Reviewed applications for and awarded Meritorious Graduate Student Awards for 2017:
  - MS – Lyndsie Wszola
  - PhD – Hannah Birge

- SNR faculty voted to strengthen the structure of non-thesis program development through the MAS program in fall 2017. As such, preliminary steps to developing a formalized structure for MAS in Natural Resources are under way.
- Assigning and allocating graduate teaching assistants has been a chronic concern among both faculty and graduate students. The SNR Graduate Committee is and will continue to work with SNR Administration to revise, formalize, and provide a more transparent TA allocation process.

The SNR Graduate Committee has provided summary information to IANR/CASNR for their assessment of graduate education within the Institute. See summary (attached) for an assessment of the SNR graduate program. In 2017 the SNR Ombudsperson met with multiple graduate students and effectively resolved several advisor-advisee disputes.

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## **SNR Undergraduate Curriculum Committee**

**Submitted by Drew Tyre, Undergraduate Teaching Coordinator**

### **2017 Activities**

- As part of the committee's regular business, we approved 9 proposals for new courses, 9 changes to existing courses, and 8 special topics courses.
- In addition, we carried out several other initiatives:
  - Reviewed alignment between curricula and major level learning objectives, in preparation for major coordinators to develop major level assessment reports.
  - Conducted a review of pre-requisites across all SNR courses and submitted change proposals as appropriate.
  - Organized a Canvas training workshop for SNR educators.
  - Discussed best practices for communicating information about assistance available to students.
  - Re-evaluated and refined course scheduling and classroom utilization in Hardin Hall for Spring 2018 Semester.
  - Initiated monthly Teaching and Learning Discussion Groups as part of SNR's 2009 Instructional Improvement Plan.
- In addition to serving on the CASNR curriculum committee, the teaching coordinator (SNRUCC chair) met with several faculty during the year to provide consultation and assistance with course and curriculum development.

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## **SNR Community Engagement Committee**

**Submitted by Dennis Ferraro, Chair**

### **2017 Activities**

- The committee arranged and sponsored five SNR Movie Night events for the public and UNL community. These events were very successful, giving the audience a private viewing of recent Natural Resource related documentaries coupled with a small panel of experts and discussion. Most of the discussions continued for at least one hour. At all the



showings we had a number of LPS teachers whom will be utilizing what they learned in their classrooms. Teachers may receive continuing education credits for attending. Natural Resource professionals from both governmental agencies and NGOs were in attendance.

- The Committee Engagement Committee in their participation in public community events supported SNR faculty, staff and students. This support was through organizational assistances and funds for travel, flyers, and educational or promotional materials. They included but were not limited to:
  - ✓ Nebraska Teachers Night Out in Omaha
  - ✓ WeatherFest 2017
  - ✓ Family Nights at local elementary schools (4)
  - ✓ After school programs at area community centers (5)
  - ✓ Nebraska Game & Parks Expos (3)
  - ✓ “Sunday with the Scientists” at Morrill Hall (3)

### **2018 Objectives**

- Movie Nights are planned and will include three per semester with a possible summer event.
- The committee will continue to support all the events as in the past year plus give support to the graduate student committee for their community involvement.
- In April of 2018 the Community Engagement Committee is developing a plan for a large manifestation regarding SNR’s mission during CASNR week including activities by student clubs & organizations and SNR centers for all.

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## **SNR Promotion and Tenure Committee**

**Submitted by Dave Wedin, Chair**

### **2017 Accomplishments**

- In late January and early February, we review the Activity Insight (including CV & Position Description) for all faculty that are not fully promoted. The P&T committee has 9 members, and the review process insures that each faculty is reviewed by at least 5 committee members.
  - Four faculty either received tenure or were promoted in SNR on July 1, 2017. The six fully promoted faculty members of the P&T committee assessed these promotion files in Dec 2016-Jan 2017. We assessed 6 files in Dec 2017 for promotion in 2018. The committee unanimously supported all ten of these files (2017, 2018).
  - The P&T Committee reviews the CVs and letters of support for nominations of Courtesy (within UNL), Adjunct (outside UNL), and Emeritus faculty. We had about 10 such files in 2017.
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## SNR Safety and Facilities Committee

Submitted by Steve Thomas, Chair

### 2017 Accomplishments

- Added security cameras in the basement.
- Replacing regular outlets with GFI in labs where outlets are within 6 feet of water source.
- Added outlet strips along the north wall of 2<sup>nd</sup> floor lobby in HarH to reduce potential hazard to students.
- Added timers to hallways in HarH tower for floors 2-9 to ensure lights are on during normal office hours.
- Initiated change for Visitor and Guest parking stalls around Hardin Hall.
  - The number of employees/students who use the visitor/guest parking stalls while they work or attend classes continues to be high.
  - We have initiated the process to require guest parking permits; John has offered to have Maps and More the main access point for the parking permits, so the signs could be modified to be more specific (see attached).
- Safety programs
  - The SFC has continued to monitor training of SNR faculty, staff and students through 2017.
  - Steve Thomas took over SNR representation on the Chancellor's University Safety Committee (CUSC) from Andy Suyker.

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## SNR Centers

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### Center for Advanced Land Information Technologies (CALMIT)

Submitted by Brian Wardlow, Director

### 2017 Accomplishments

- **Design of a Remote Sensing Maker Space and Spatial Science Analysis Lab** – The planning and design of 223 Hardin Hall to divide the space into: 1) the CALMIT Remote Sensing Maker Space supporting the design, development and deployment of ground-based, unmanned aerial vehicle (UAV) and manned aircraft remote sensing systems and 2) the CALMIT Spatial Science Analysis Lab promoting interdisciplinary interactions and formal/informal training opportunities among faculty, staff, post-doctoral researchers and student working in the spatial sciences.

- **CALMIT Website** – The website ([calmit.unl.edu](http://calmit.unl.edu)) was updated to reflect current research and expertise and highlight the Center's remote sensing infrastructure and spatial science projects.
- **Airborne Chlorophyll Fluorescence Meeting & Workshop** (Sept 26-29, 2017). Approximately 40 participants from Europe, NASA, and several universities met to discuss progress and challenges in airborne fluorescence (an indicator of plant photosynthesis and stress).
- **National and International Drought Monitoring Research and Tool Development** – Completed the development of a NASA-funded Quick Drought Response Index (QuickDRI; <http://quickdri.unl.edu/>) tool for the continental U.S. in collaboration with the National Drought Mitigation Center (NDMC). Continued US AID-supported project to develop a remote sensing-based Composite Drought Indicator (CDI) for the Middle East/North Africa region in collaboration with the NDMC, Daugherty Water for Food Institute (DWFI) and other international partners. Work began on a customized CDI for India in collaboration with the Indian Agricultural Research Institute, NDMC and WFI.
- **Expanded Campus Research Collaborations of CALMIT Airborne and Field Programs** – Worked with Wayne Woldt of NU AIRE program on plan to integrate his UAV-based remote sensing program into CALMIT and the Remote Sensing Maker Space being developed. Conducted collaborative field measurements at ENREC/Mead with Christopher Neale's team, combining airborne with UAV measurements, and received a new hyperspectral UAV sensor.
- **Hiring of Spatial Science Faculty Member** Dr. Yi Qi was hired in December 2017 and will lead the GIS component of CALMIT. Expected start date is July 2018.
- **Field Research** – In 2017, the CALMIT airborne and field programs had a major focus on the themes of remote detection of photosynthesis, plant stress, and biodiversity. Major activities included flights at ENREC (Mead) to test the new imaging spectrometer and imaging fluorometer and flights over a Nature Conservancy biodiversity study site near Wood River, NE.

## 2018 Objectives

- **Completion of the CALMIT Remote Sensing Maker Space and Spatial Analysis Lab** – Reconfiguration of 223 Hardin Hall space that will include work benches, secured storage, computers and collaboration areas in the Maker Space and work desks, collaboration area and computational capabilities in the Spatial Analysis Lab. The CALMIT Maker space will be an innovation hub for faculty, staff and students working on ground-, UAV- and manned aircraft-based remote sensing that includes equipment to develop and deploy systems and characterize sensors, plan both applied and research projects involving one or more scales of remote sensing and offer campus support services related to sensors, platforms, data calibration, collection and analysis and remote sensing project design. Planned activities involve coordination between the current airborne program and new UAV capabilities around the themes of stress and biodiversity.
- **Airborne deployments** – Continuing the research themes of 2017 (photosynthesis, stress, and biodiversity), we plan to further develop our airborne capabilities, adding a thermal sensor to the imaging fluorometer and spectrometer. Flight plans include Minnesota and

Wood River (Biodiversity project) as well as ENREC/Mead (shelterbelt and carbon sequestration projects). Currently in discussion with representatives of the FLEX program (European Space Agency) to provide field calibration/validation to test the new Sentinel 3B satellite sensor using ENREC/Mead as a possible test site in 2018.

- **International Remote Sensing Drought and Food Security Research and Applications** – Satellite-based remote sensing work will continue in the MENA region and India to develop drought monitoring and early warning systems for food security and water scarcity. Host visiting scientists from India, China and Uzbekistan to investigate that use of satellite observations for monitoring various components of agricultural and hydrologic drought.

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## Great Plains Cooperative Ecosystem Studies Unit



Submitted by Larkin Powell and Kat Bickert

The Great Plains CESU is housed in the School of Natural Resources and serves as a facilitator for federal funding from natural resource agencies to non-federal partners in the Great Plains region.

### FY2017 accomplishments:

- **Two new partners:** The Great Plains CESU added two new non-federal partners during FY2017: University of Wisconsin-Extension and the Western Association of Fish and Wildlife Agencies (WAFWA). Our current partners voted to accept these new partners in May 2017, and we look forward to working with them in the future. We now have 12 federal agencies and 23 university/non-federal partners.
- **Engaging partners—Annual Meeting:** The Great Plains-CESU hosted its Annual Meeting on February 7, 2017 in Lincoln, NE in conjunction with the 77th Midwest Fish & Wildlife Conference in Lincoln, Nebraska.
- **Engaging partners—Graduate Student Award:** Our office awarded the first Great Plains CESU Graduate Student Award to Jeremy Brunette, a MS student at the University of Nebraska-Lincoln. Jeremy's adviser, Matthew Douglas, received the award on Jeremy's behalf at our Annual Meeting in February 2017. Jeremy conducted cultural work for his MS degree at UNL at the Chickasaw National Recreation Area, and Jeremy now works in a post-Master's position at Los Alamos National Laboratory in New Mexico.
- **Engaging partners—Promoting Successes:** Kat Bickert, our office coordinator, spent several days this summer traveling to visit the sites of CESU-facilitate research projects to increase the visibility of the role of the CESU in collaborative research. Two projects were chosen to exemplify the range of work being done through CESU-facilitated projects, and Kat has created spotlights for these projects that can be found on-line at: <http://gpcesu.unl.edu/projects/spotlightproject.asp>

- **Staffing and office support:** Staffing remained constant during FY 2017. Kat Bickert continues her very effective role as the office associate. Dr. Tanya Shenk served as the Great Plains CESU's National Park Service (NPS) Research Coordinator (RC). In August 2017, Tanya began a year's leave to contribute to work in Rwanda through the Peace Corps. Nicole Athearn, the RC for the Great Rivers CESU, will fill in for Tanya during her absence, through July 2018.
- **Financial Report:** The Great Plains CESU funding agreement supported \$958,194.48 in new projects during FY2017. In addition, existing projects were modified to add \$659,164.00 in funding.

### 2018 Objectives:

- **Staffing:** Tanya Shenk and Larkin Powell will be off-campus during the first half of the calendar year in 2018, and Kat Bickert will work with Larkin to 'keep the doors open' and accomplish needed tasks during this time.
- **Engaging partners:** Our office will continue to work with our partners to find cost-effective ways to engage and build collaborations in the future. There will be a CESU-based Symposium at the 2018 Midwest Fish and Wildlife Conference, but no Annual Meeting. We will be asking academic partners for nominations for the Graduate Student Award for 2018. We will also continue to spotlight projects through videos and materials on our web page.
- **Tribal college partners:** Our office will work with current partners to identify and support applications from tribal colleges during 2018.

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## Conservation and Survey Division

Submitted by Matt Joeckel, Associate Director of the Conservation and Survey Division and SNR

### 2017 Accomplishments

- Written works and maps: 35, including 19 peer-reviewed publications and 4 geologic maps
- Grant dollars: \$2,763,632
- UN-L students served: 186, including 118 students enrolled in classes for a total of 313 credit hours
- Stakeholders served by extension & outreach activities: 847
- Local, national, and international presentations: 58
- Continuing education units (CEUs) generated for professionals: 1529
- Interviews and media releases, including social media: 110
- Test-hole footage drilled and/or logged: 11,297 ft (3434 m)

### 2018 Objectives

- Complete the development of Nebraska GeoCloud in cooperation with NRD's, and continue to publicize, instruct in the use of the hydrogeology data web service.
- Complete Phase I Geologic Mapping of Missouri National Recreational River (National Park Service) in Nebraska. Initiate and complete mapping of Phase II.

- Proceed with Phase I analysis, and continue to participate as a partner during Phase II proposal/funding for the Nebraska Carbon SAFE project.
- Continue collecting data to further characterize and determine potential connections among aquifer units through the Papio-Missouri River Test-Hole Drilling Project.
- Continue to update and maintain the Agrochemical Contaminant Database.
- Continue to provide advanced geologic techniques to analyze and recommend observation well locations for the Middle Republican Hydrogeologic Framework.
- Synthesize and publish research results of the interaction of groundwater and surface water in the Loup and Elkhorn Basins for the Streambed Water Flux Dynamics Project.
- Support the development of Watershed Science Curriculum.
- Securing Water for and from Agriculture through Effective Community and Stakeholder Engagement.
- Continue field analysis and produce Nebraska geologic maps through the STATEMAP Cooperative Geologic Mapping Program.
- Continue to develop and conduct leadership programs, curriculum development and present leadership presentations for the Nebraska Water Leaders Academy.
- Participate in organizing, planning, and present at Nebraska 2018 Water Industries Convention where CEU's are offered to participants.
- Participate in organizing, planning, and present at 2018 Shallow Exploration Drillers Clinic where CEU's are offered to participants.

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## High Plains Regional Climate Center

Submitted by Natalie Umphlett, Interim Director

### 2017 Accomplishments

- HPRCC faculty and staff were PIs or Co-PIs on 7 projects totaling ~\$1.2 million
- Released 8 new climate products: 5 agro-climate tools (AgClimate View, Climate Patterns Viewer, Corn GDD, Corn Split N, and Irrigation Investment), the Wind River Decision Dashboard, and a suite of maximum and minimum temperature maps
- Developed and distributed 41 technical reports: 17 climate summaries for the High Plains region, 2 reports on the 2017 Northern Plains drought, 1 report on La Niña conditions, 10 seasonal climate summaries developed specifically for tribes in the Plains, and 11 city-specific reports detailing historical and projected climate conditions for locations in the Midwest and Great Plains
- Presented and/or authored 43 presentations on a variety of applied climate topics
- Delivered daily/weekly data feeds to 13 organizations throughout the country, including UNL Extension's CropWatch, USDA Office of the Chief Economist, U.S. Drought Monitor authors, etc.
- Conducted 6 workshops on the availability and use of climate data for tribal environmental professionals, water resource managers, city officials, and fisheries and wildlife professionals
- Responded to 400+ client requests, serving 35 states, Washington D.C., and 6 countries
- Published 2 peer-reviewed journal articles; 1 additional article under review
- Participated in 7 outreach events



- 42 news articles featured the HPRCC
- The HPRCC was a part of the Wind River Reservation Drought Preparedness Team, which earned an Honorable Mention Climate Adaptation Leadership Award at the National Adaptation Forum in May.
- HPRCC staff were formally recognized by NOAA for significant contributions to advancing the mission of NOAA Regional Collaboration.

### **2018 Objectives**

- Maintain and enhance HPRCC's position as a trusted and reliable source of climate data and information.
  - Continue to develop and deliver climate data and information that meet stakeholder needs in the High Plains Region and beyond via our website, climate summaries, data feeds, workshops, hands-on training sessions, etc.
- Maintain and establish effective partnerships among the applied climate community in order to strengthen HPRCC program areas.
  - Continue to work with partners, such as the National Drought Mitigation Center and the National Integrated Drought Information System, to develop and deliver data and information in support of drought monitoring.
  - Continue to work with regional and national partners to plan and organize the 2018 Climate Prediction Applications Science Workshop (CPASW).
  - Continue to work with federal, state, local, and tribal partners to monitor and assess developing climate events and impacts.

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## **NE Cooperative Fish and Wildlife Research Unit**

**Submitted by Craig Allen, Unit Leader**

The mission of the NE Cooperative Fish and Wildlife Research Unit:

- Conduct research on renewable natural resource questions; mentor graduate students destined to become natural resource managers and scientists.
- Provide technical assistance and consultation to parties who have legitimate interests in natural resource issues.
- Provide continuing education for natural resource professionals.

### **2017 Accomplishments**

- Taught multiple graduate courses
- Supported ~ 12 Ph.D scientists (in addition to federal scientists), post-docs or coordinators
- Graduated 5 MS and 2 Ph.D. students
- Supported and advised 11 MS and 13 Ph.D. students
- Employed ~125 individuals
- Published ~65 peer-reviewed manuscripts
- Received NSF-NRT funding to support 23 new graduate students
- Co-hosted the Midwest Fish and Wildlife Meeting

## **2018 Objectives**

- Expects similar levels of productivity in terms of students, grants and publications
- Will cohost a national adaptive management meeting
- Will host workshops on Arctic resilience and adaptation and Novelty
- Will initiate the NSF-NRT program

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# **National Drought Mitigation Center**

**Submitted by Mark Svoboda, Director**

## **2017 Accomplishments**

- NDMC's website had 582,336 sessions, 463,403 users and 985,421 pageviews, and the U.S. Drought Monitor website had 3,742,193 sessions, 1,706,751 users and 8,148,310 pageviews.
- We have 5,285 followers on Twitter, the social media platform we emphasize most, and 1,582 followers on Facebook.
- In 2017 our main areas of emphasis were the Drought Risk Management Research Center, a competitive grant enabling us to work closely with the National Integrated Drought Information System, which is a federal coordinating group based in the National Oceanic and Atmospheric Administration; a cooperative agreement with the U.S. Department of Agriculture's Office of the Chief Economist, supporting operations and enhancements to the U.S. Drought Monitor; and various capacity building activities in many countries.
- Updating the look of the U.S. Drought Monitor website, and adding maps, narrative and accompanying data in Spanish. We are also developing a revised U.S. Drought Monitor classification scheme based on observed rather than hypothetical impacts. We added [agindrought.unl.edu](http://agindrought.unl.edu), highlighting crops that are affected by drought.
- Enhancing U.S. drought preparedness by facilitating closer cooperation between federal agencies that support drought planning, and by introducing drought scenarios to FEMA's Threat Hazard Identification and Risk Assessment project, in collaboration with UNL's Public Policy Center.
- Collaborated with the Center for Advanced Land Management Information Technologies, also based at SNR, and with the U.S. Geological Survey, to finish development and launched an operational QuickDRI tool to detect fast-emerging droughts. NASA supported QuickDRI (<http://quickdri.unl.edu>).
- Working through USAID and the International Center for Biosaline Agriculture, collaborating with the Daugherty Water for Food Global Institute, we helped Tunisia, Jordan, Lebanon and Morocco tailor remote-sensing data to operationally stand-up drought-monitoring/early warning systems tailored to each of their specific needs, and we are helping Morocco move toward an open-source drought monitoring and early warning system.
- We wrapped up a NASA-sponsored project, Seasonal Prediction of Hydro-Climatic Extremes for the Greater Horn of Africa. We worked with decision-makers and stakeholders to understand what timing is needed for drought and flood forecasts. The concluding workshop in October in Addis Ababa, Ethiopia, focused on

predicting drought and floods in the region, using participatory system design and evaluation, and scholarly publications.

- We worked with the Caribbean Institute for Meteorology and Hydrology, the Caribbean Disaster Emergency Management Agency, and the Organization of Eastern Caribbean States to help the island nations of St. Kitts and Nevis, Antigua and Barbuda, Grenada and St. Lucia advance drought planning through writeshops. Funded through the United States Agency for International Development's Programme for Building Regional Climate Capacity in the Caribbean, each writeshop helped national representatives focus on producing documents to help shape policies and practices to reduce vulnerability to drought.
- We hosted visiting scholars from India, through the Water for Food Global Institute and the Indian Agricultural Research Institute, working with two Indian post-doctoral researchers on pan-Indian drought monitoring through the development of a prototype combined drought indicator based on remotely sensed parameters.
- We also hosted delegations from South Korea, South Africa and Kenya.
- NDMC currently funds five graduate students at SNR, and employs several undergraduate interns.

### **2018 Objectives**

- We expect to see several more efforts come to fruition, including updating our Drought Risk Atlas through 2017.
- Expanding the number of stations from 3,100 to more than 4,000.
- Making drought indicators available by convenient geospatial areas such as states and counties.
- Revamping the Drought Impact Reporter.
- Continue ongoing work in the Middle East and North Africa, South Korea and India.

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## **Nebraska State Climate Office**

**Submitted by Martha Shulski, Director**

### **2017 Accomplishments**

#### **Mesonet**

- Nebraska joined the National Mesonet Program, a formal mechanism for NOAA to purchase real-time access to automated weather data. Data can now be used to improve NWS weather forecasts and research.
- Support letters obtained from key Mesonet users and constituents outlining data utility and impact.
- All wind speed and direction sensors were upgraded to reduce the impact of icing events and limit associated data loss.
- All stations upgraded to transmit communications every 20 minutes.

#### **Services**

- 73 climate presentations given to 4,296 people. Topics included: seasonal outlook and associated impacts, historical climate trends and future projections, and the Nebraska Mesonet.

- 694 customer contacts to service climate information needs to a variety of stakeholders with agriculture, education and media the top three categories.
- Production of a monthly climate summary and a quarterly office newsletter.
- Delivery of 50 weather forecast presentations to Market Journal television and KRVN radio station.

### **Research**

- NSF grant proposal funded for Arctic – Mid-latitude climate change and resilience workshop series.
- Awarded a second year of funding from the Nebraska Center for Energy Sciences Research for the development of an improved wind forecasting tool.
- Continued work on a NOAA-funded municipal climate adaptation project.
- Co-authored the Northern Great Plains chapter of the upcoming U.S. National Climate Assessment, set to launch in late 2018.

### **2018 Objectives**

- Maintain our high level of service to our customers.
- Increase the frequency of on-site Nebraska Mesonet station maintenance visits to two per year.
- Seek expanded funding for the Nebraska Mesonet.
- Implement a website refresh for greater access to Mesonet data and climate information.
- Launch a Nebraska historical climate trends product.
- Host the national American Association of State Climatologists annual meeting.

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## **SNR *Ad Hoc* Committees and Other Programs**

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### **SNR Communications**

#### **Submitted by Shawna Richter-Ryerson**

The following stories out of SNR were featured in major daily newspapers, such as the Omaha World Herald and the Lincoln Journal Star; on science wire services, such as Pys.Org; by NET Nebraska, Lincoln's public radio station; and on local TV stations' Nebraska-centric shows. All but two (Keystone XL pipeline; passenger pigeon) were prompted by press releases or news tips sent by SNR or the university on SNR's behalf. This list is not inclusive, it simply highlights those that earned the most interaction or press.

- "Study: Climate change affecting whooping cranes' migration patterns," Mary Bomberger Brown. Released September 2017. Also featured by the National Audubon Society.
- "One tough bird: Greater prairie-chickens pay turbine fields no mind," two research studies by Jocelyn Harrison and E.J. Raynor. Released in August 2017.
- "State groundwater levels still recovering from 2012 drought," Aaron Young. Released March 2017. Also featured on Pure Nebraska.

- “Professor hopes to interest UNL students in being ‘Treehuskers’.” Eric North. Released September 2017; picked up by news wire service and run in newspapers outside of the state.
- “UNL teams up with Lincoln, Omaha zoos to develop new hands-on course,” via OWH. Lisa Pennisi. Released November 2017.
- “UNL professor argues there are twice as many bird species as believed,” via OWH. Robert Zink. Released January 2017.
- “Why Did The Passenger Pigeon Go Extinct? The Answer Might Lie In Their Toes,” via NPR.org. Robert Zink. Released November 2017.
- “‘Time for a gut-check’: What geology can tell us about the Keystone XL decision,” via the Pacific Standard, Matt Joeckel. Released November 2017. [Also featured in NET.](#)
- “Soil study lends clues to ancient climate,” research by Matt Joeckel. Released November 2017.
- “Big-game jitters: Coyotes no match for wolves’ hunting prowess,” via University Communications, study by John Benson. Released March 2017.

### **Social Media**

Between Jan. 1 and Dec. 4, Facebook followers grew from 738 to 833, on average of 30 per month. Twitter grew from 883 followers to 1,289. We started an Instagram account in 2017 and gained 166 followers. Big hits on social media:

- School of Natural Resources collects winter gear, \$1,150 for Clinton Elementary
- Soil Judging Club sweep regional competition
- Endangered Whooping Cranes affected by climate change
- Husker scientists aim to boost Arctic's resilience
- Researchers help communities plan for climate variability, risk
- SNR sees green (video)
- Cat Berrick and Curt Vandenberg present research posters to state legislature
- Workshop to draw global experts in emerging plant-sensing tech
- Ecological drought definition released

### **2018 Objectives**

- Increase news tips to local media outlets to help elevate our message by better utilizing media resources
- Continue to report on research, but tailor message better to social media outlets.
- Boost student coverage, with the aim of increasing student enrollment.

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# SNR Computer Services Annual Report – 2017

Submitted by Tri Tran, IT Coordinator

## 2017 Accomplishments

- SNR Computer Support provides IT support for academics including postgraduates, natural resources education, research, and outreach.
- Maintain the same level of support with 33% reduction in IT staff.
- Converted SNR Server Room into high performance workstation room for remote sensing and spatial analysis.
  - High performance workstations on holding racks
  - Created bench space for experimental computing and setting up new workstations
  - Resources for research project websites development
- Build, setup, and manage high performance workstations to empower researchers to run complex programs, simulations, and algorithms.
- Provide and manage specialized research software for SNR faculty, post-doc, and graduate students.
- Specialized support for spatial and remote sensing scientists and faculty within the Center for Advanced Land Management Information Technologies (CALMIT)
- Provide IT research support for other centers within SNR including CSD, NDMC, HPRCC, NSCO, NFS, NSA, and the COOP units.
- Build, setup, and manage workstations to organize, share, preserve, and backup research data.
- Provide full support for two remote sensing and GIS teaching facilities along with other classrooms and collaboration workspaces within SNR.
- Support SNR Webmaster to design and build websites for research projects.
- Make audio/video presentations, including filming and streaming talks, conferences, educational seminars, public forums, and faculty position interviews.
- Provide link between SNR faculty, staff and students and UNL Holland High Speed Computing Center, Institutional Technology Services, and UNL Library Services.

## 2018 Objectives

- Work with ITS networking team to upgrade the network infrastructure for Hardin Hall to handle the increased traffic loads.
- Develop a better backup strategy to optimize network performance.
- Move SNR backup system to WSE and look into appropriate upgrades to increase data retention duration, which is presently 1 month.
- Work with CSD and CALMIT and propose better plans for their data backup schemes.
- Create a plan to utilize the extra computing resources to help researchers with their computing needs, i.e. putting spared computers into a cluster for researchers to checkout to run their simulations instead of using their desktop PCs.
- Consolidate printers and create a better plan for SNR printing needs.
- Request Tech Fee funds to upgrade the AV system in Hardin Hall 107.
- Upgrade the AV system in Hardin Hall 901, eliminate the Polycom system and make the room Skype/Zoom friendly.



- Convert Hardin Hall 162 into a classroom/collaboration hybrid workspace.

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## Digital First Team for SNR

Submitted by Mark Mesarch, Chair

### 2017 Accomplishments

- Redesigned Graduate and Undergraduate Student section of the website
- Developed plan for new Homepage and produced mock up.
- Reworked remainder of the website to follow design plans from site organization exercise.
- Completed new SNR Expertise Listing
- Completed Mission Area sub webs for Applied Climate and Spatial Science and Environmental Science
- Developed Publications database and web delivery to show unique publications and association with SNR faculty/staff/graduate students. Merged with Nebraska Maps and More publication listing.
- Developed new Extension section for website.
  - Developed detailed sub section for Climate subgroup that can be quick reference for climate data and current maps
  - Developed detailed sub section for People and Environment section that highlight some current projects
- Developed Trees.unl.edu for Regional and Community Forestry program including a tree and shrub identification tool.
- Developed the NSF Research Traineeship Program to publicize the new program.

### 2018 Objectives

- Roll out the new SNR website
- Continue to revamp the undergrad major programs and NRES graduation specializations
- Add information on the Master of Applied Science program
- Review site navigation to move from audience based navigation to task based navigation to align with UNL navigation plans.

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## SNR Extension

Submitted by Dennis Ferraro, Co-Chair

### 2017 Accomplishments

- Formation and launching of a new SNR Extension website <http://snr.unl.edu/extension/index.asp> and information portal has equipped Nebraskans to be more efficient and capable stewards of our state's Natural Resources. The site includes Groundwater, Surface water, Climate, People Environment, Human Dimensions, One Health, Geology, Remote Sensing, and Wildlife Damage links.
  - Human dimensions "people and environment" website for SNR. <http://snr15.unl.edu/extension/human/>

- “Wildlife Damage Management website” has received 2,359 inquiries with 392 one on one interaction via the “Ask The Expert” link and the “Backyard Farmer” NET program.
- Needs assessment (focus groups, survey) conducted for Nebraska NRD board members and staff about water knowledge and education.
- Outreach to elementary students (~1,000) at four Lincoln Public School Community Learning Centers (Title 1 schools).
- Nebraska producers have increased productivity and risk management via weather and climate forecasting furnished by way of Weather Ready Farms Initiative and Nebraska State Climate Office – see NCSO report
- Water and geological extension provided via Conservation Survey Division--ee CSD report.
- Wildlife damage prevention programs and educational events demonstrate an incredible productivity and impact in human health trepidations, reducing economic loss and improper pesticide usage associated with wildlife encounters
- Nebraska Master Naturalists have contributed 3,918 hours of volunteer time valued at \$110,305 in conservation service. In their efforts, Nebraska Master Naturalists have connected with 23,619 Nebraskans and influenced 968 acres across the state in direct conservation work. Since tracking began in fall 2010, Master Naturalists have contributed 44,235 volunteer service hours valued at \$1,042,176.
- Presentations across the state engaging and inspiring the public to become stewards of resource conservation and biodiversity. Nebraskans now have an understanding of such important issues as integrating human and ecological factors, wildlife damage management, wildlife related diseases and maintenance of biodiversity greater economic viability.
- Surface water quality and Storm water management presentations across the state have increased implantation of protective practices to reduce or eliminate overland runoff & associated pollutants. Programs regarding Sandpit lakes, Toxic algae, Pond management and Watershed protection provided Nebraskans with an educational array of opportunities to make a difference in their livelihoods.
- The Nebraska Agricultural Water Management Network (NAWMN) project is a system for testing cutting-edge technologies and creating a network with growers, UNL Extension, NRDs, NRCS, and crop consultants, and other interested partners, enables the adoption of water and energy conservation practices.

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## Nebraska Maps & More Store

**Submitted by Jacki Loomis**

### **2017 Accomplishments**

The Nebraska Maps & More Store is the map, publication and gift store at the School of Natural Resources (SNR). As the Nebraska Earth Science Information Center (ESIC), so designated by the U.S. Geological Survey (USGS), and their designated business partner, we offer the largest selection of maps and natural resource materials in the state and utilize a variety of on-line information retrieval systems to answer inquiries from citizens. We are also home to a Historical Aerial Photo Archive of Nebraska which is available to the general public.

The store publishes, archives and distributes materials produced by SNR faculty, staff and students. We utilize a variety of platforms including our physical presence on campus, the UNL MarketPlace, commercial distribution platforms and internal and external digital platforms. In addition to our map and publication items, we aspire to offer merchandise that emphasizes an appreciation for the natural world and encourages our customers to learn more about natural resources.

### **2017 Publications**

- Miller, M.R. and Burbach, M.E. 2017. Understanding Cigarette Butt Littering Behavior on a public Beach: A Case Study of Jekyll Island Georgia (OFR-176)
- Szilagyi, Jozsef. 2017. Basic Meteorological Data Derived 30-year Normals (1981 - 2010) of Actual Evapotranspiration Rates in Nebraska, USA (CB-8(NS))
- Divine, D., Joeckel, R.M., Olafsen Lackey, Susan. 2017. Aquifers of Nebraska II: The Niobrara Aquifer. (CB-9(NS))
- Sibray, S.S. and Hallum, D.R. 2017. Petroleum Pipelines - Facts and Safety. Nebr. Extension. (EC3003)
- Joeckel, R.M., Tucker, S.T., Howard, L.M. 2017. Geology and Paleontology Along Part of the Niobrara River in Northern Nebraska (GB-19)
- Young, A., Burbach, M., Howard, L., Waszgis, M., Joeckel, R., Lackey, S. 2017. Nebraska Statewide Groundwater-Level Monitoring Report 2016. (WSP-84)
- Divine, Dana P. and Leslie M. Howard. 2017. The Groundwater Atlas of Richardson County, Nebraska (RA-10)
- Sliwinski, Maggi; Burbach, Mark; Powell, Larkin; and Schacht, Walter (2017) Managing for Wildlife Habitat on Rangelands in the Great Plains (OFR-162)
- Hallum, Douglas and Susan Lackey. 2017. Results of Test-Hole Drilling for Observation Well Planning in the Upper Loup Natural Resources District, Fall 2016 (OFR-152)
- Dillon, J.S., Hanson, P.R., Larsen, A., Bruhler, J., Raymond, C. 2017. Geology of the Platte River Valley near Kearney, Nebraska (GB-20)
- Study Abroad Poster and Postcard Series
- Divine, Dana P., Sibray, Steven. 2017 An Overview of Secondary Aquifers in Nebraska (EC-26)

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## **SNR Mentoring Coordinator**

**Submitted by Patrick J. Shea, Coordinator**

### **2017 Accomplishments**

**Junior Faculty in SNR.** By my count we currently have 33 junior faculty, including 12 tenure-track Assistant Professors, 2 Assistant Professors of Practice, 2 Assistant Geoscientists, 5 Research Assistant Professors, and 12 Postdoctoral Associates. This includes new and incoming faculty Jessica Corman and Yi Qi. I regularly welcome all junior faculty to meet with me and my personal meetings with all who requested meetings have been positive.

**Mentors.** To my knowledge all junior faculty are being well-mentored. Only those listed below responded to my October request for an update.

Name	Title	Mentor(s)
John Benson	Assistant Professor	D. Tyre; TJ Fontaine
Troy Gilmore	Assistant Professor	T. Franz; M. Joeckel; Derrel Martin (BSE)
Tiffany Messer	Assistant Professor	Shannon Bartelt-Hunt (CE/BSE)
Eric North	Asst Prof of Practice	D. Tyre
Judith Turk	Assistant Professor	D. Wedin

**Special Meeting.** In February a special meeting of all junior faculty was held to discuss how to keep moving forward and remain positive in challenging times. Floyd Sylvester, Director of the UNL Employee Assistance Program (EAP) spoke with us and shared resources available to us through the EAP. John Carroll and I also spoke and shared our experiences on related topics, and we had a very good discussion!

**Departmental Survey and Follow-up.** A departmental survey, conducted as a follow-up to our APR, suggested most faculty generally have positive perceptions about mentoring in SNR, although tend to feel neutral about the effectiveness of faculty mentoring, and some felt that SNR faculty mentoring is ineffective. The results suggested room for improvement, so in May we invited all SNR faculty to make suggestions.

Only 7 faculty responded, which was disappointing but suggests most are generally satisfied with mentoring in SNR, or at least do not have major concerns. There was no consensus or consistency in the comments provided by those who responded. Some of the topics suggested by respondents for attention and/or discussion:

- Guidance in short- and long-term planning
- Funding, including nontraditional sources of support
- Building teams within SNR
- Building collaborator networks
- How to be a better mentor
- How to grow professionally
- Identifying strengths and weaknesses and how to improve
- How to set limits and say no
- How to put promotion packets together
- Expectations for teaching, research and extension

**Comments.** It seems most junior faculty are generally satisfied with their situation and not especially interested in group sessions or meetings. My impression and experience is that the junior faculty appreciate our personal responsiveness to issues and concerns as they arise. What is most important is to provide resources, periodically check in with them, and otherwise be available to listen, assist, and guide.

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# Natural Resources Diversity Initiative – NRDI

Submitted by Jenny Dauer, Chair

## 2017 Accomplishments

- Affiliate mentoring program: As an outgrowth of the AWIS mentoring workshops held August 25<sup>th</sup> and 26<sup>th</sup>, 2016, members of our group are working with SNR's mentoring program to improve the quality and style of mentoring across the unit. All members of our group serve as formal or informal mentors to students, post-docs, staff, and faculty.
- STEM luncheon: On 11 January 2017, we facilitated a campus-wide luncheon to discuss issues of concern for women in STEM; the luncheon was attended by department administrators, University administrators, and others. The most important issues identified by the group were: unequal mentoring support, work-life balance (including maternity-paternity leave and implementation of the Family Medical Leave Act), inconsistency in dual-career hiring practices, and communication. One intention of the luncheon was to evaluate the level of interest and support for entering into a University-AWIS institutional partnership.
- Additional affiliate activities: Our group encouraged the University administration to invest in an institutional partnership arrangement with AWIS, this was achieved in June 2017. One of our leadership team members (Mary Bomberger Brown) was appointed chair of the 11-member University-wide AWIS institutional partnership steering committee.
- Two of our members were appointed to the University of Nebraska's Chancellor's Commission on the Status of Women for 3-year terms (Mary Bomberger Brown, Jenny Dauer).
- Our group, with the support of John Carroll hosted a table at the annual University of Nebraska Women's Month dinner and award ceremony.
- Our group supports an undergraduate student organization (NRDI; Natural Resources Diversity Initiative).
- Monthly meetings: Activities at our monthly meeting are participant driven and take place in different locations across campus, in effort to be more inclusive and recruit additional members. Topics have included: Family and Medical Leave Act, book discussions (Lab Girl, Lean In), March for Science, Women's March (including post-march huddles), 500 Women Scientists, work-life balance, funding opportunities, promotion and tenure, annual performance reviews, and mentoring.
- Participation in AWIS webinar: Jessica Burnett and Mary Bomberger Brown participated in on-line chapter/affiliate check-in with Sherry Potter to discuss our concerns and to become better acquainted with AWIS.

## 2018 Objectives

- Establish an SNR ad-hoc committee: Formalize the group as being associated with SNR, establish clear leadership roles, develop a webpage, re-brand the group as "Natural Resources Diversity Initiative," roll out the new group in February in conjunction with

the UN International Day for Women in Science, establish clear and consistent ways of inviting all of SNR to participate.

- Monthly meetings and discussion: Meet regularly on topics important to advancing diversity generally in science and specifically in SNR (for example, topics include “understanding negotiations for faculty positions,” and “sexual harassment and objectification in the workplace.”)
  - Connect and collaborate with the diversity initiative group at the Nebraska Forest Service
  - Mentorship: Continue to be a resource for mentoring within SNR.
  - Positive Change: Develop a plan for instigating change on the campus via advocacy, new initiatives and communication across campus channels (AWIS institutional membership, Chancellors Commission for the Status of Women).
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## Spatial Science Teaching Ad Hoc Committee

**Submitted by John Gamon**

Our goal is to provide a spatial sciences curriculum that meets the needs of students in natural resources and other campus disciplines. The curriculum is intended to provide an introduction to GIS and remote sensing, as a foundation for advanced topics. Students completing the foundational courses would also gain understanding of how spatial sciences are applied in many disciplines, including ecology, agronomy, hydrology, and other natural resources and earth system science areas. Those interested in pursuing spatial sciences in further depth or as a possible career choice could continue to advanced courses, including the possibility of graduate courses.

The curriculum is presented in 3 levels: A) Introduction and Service courses, B) Advanced courses, and C) Upper-level graduate courses. An eventual goal will be to offer certificates, minors, and specializations as needed. ]

### **A) Intro & Service courses\* (foundational courses):**

- 1) **NRES 312** – Intro to RS/GIS & Spatial Thinking/Applications – Yi Qi
- 2) **NRES 418/818** - Intro to Remote Sensing – Brian Wardlow
- 3) **GEOG 412/812** - Intro to GIS – Yi Qi
- 4) **NRES 419/819** - Applications of Remote Sensing in Agriculture and Natural Resources – Wardlow, Gamon or Qi
- 5) **GEOG 427/827** - Global Positioning Systems (GPS)

### **B) Advanced courses\* (upper-level undergraduates or grad students)**

- 1) **GEOG 420/820** - Digital Image
- 2) **NRES 421/821** - Field Remote Sensing – Gamon/Walter-Shea
- 3) **GEOG 432/832** - Programming for Spatial Data Applications – Yi Qi
- 4) **Spatial Statistics** (new course?) - ?

### **C) Upper-level (elective) courses\* (graduate students)**

- 1) **Spatial Modeling for Environmental Applications** (new course) - ?
- 2) **Geovisualization of Spatial Data** (new course) - ?



### 3) Special Topics in Spatial Science - ?

\*Notes - Courses in **bold** indicate courses currently taught in 2017-2018

New course titles are provisional, and many course names (esp. those separated from Geography) would have to be revised

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## SNR Student Services

Submitted by Sara Winn, Elyse Watson, and Patricia Swanson

### 2017 Accomplishments

#### SNR Graduate Student Services

- Assisted with moving GEOG program and graduate students to City Campus
- Approximately 17 students graduated from the MS and PhD program and 23 new students were admitted to the Graduate Program; including a Fulbright student.
- Several students received awards and recognition throughout the year.

#### SNR Undergraduate Student Services

- Held Big Red Summer Camp in Summer 2017 with nine high school students attending from Nebraska and beyond
- Participated in the "Agriculture, Food, and Natural Resources Career Pathways Experience" at state FFA convention
- Attended National FFA Convention in Indianapolis, IN, reaching over 1,500 students
- Held spring and fall graduation celebrations in Hardin Hall with over 50 in attendance
- Ran nature quest event at the State Science Olympiad and attended Envirothon in Scottsbluff
- Assisted with running the annual earth wellness festival in March 2017 – reaching 3,500 5<sup>th</sup> graders in Lancaster County
- Put out SNR Alumni Newsletter- opened by 191 individuals
- Held multiple large group student visits
- Assisted with two CASNR fall courses- NRES/AGRI 388 and NRES 233 and had 19 students enrolled in NRES 497 or AGRI 042 (noncredit option) for career experience fall 2017
- Perspective student (transfer and freshman) visits (58 since April)
- Continued to create equivalency handouts for SNR majors and NE community colleges
- Summer New Student Enrollment with over 60 new students (freshman and transfer) attending
- Members are serving on CASNR Student Advising Improvement committee, Late Withdraw/Grade Option Appeal Committee for CASNR, and UNL Environmental Science committee
- Academic Probation – finish probation recovery programs for students on probation and continue to help those through the probation/dismissal process
- Developed a program guide for SNR students

## SNR Undergraduate Enrollment

	2016	2017	% Change
<b>APCS</b>	1	2	100%
<b>ENRS</b>	23	30	30%
<b>FWL</b>	221	237	7%
<b>GECEM</b>	6	7	17%
<b>WATS</b>	21	24	14%
<b>Total</b>	272	300	10%

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## SNR Wellness Committee

Submitted by Crystal Stiles, Mark Mesarch, Sarah Spier

### 2017 Accomplishments

- Coordinated an SNR wellness reception to welcome staff and students back from winter break, share wellness information, and provide tours of walking routes in Hardin Hall designed by the SNR Wellness Team (reception held January 6<sup>th</sup>)
- Arranged a cooking demo for interested SNR staff and students that was put on by the UNL Recreation & Wellness Kitchen to reward SNR for bringing the most staff to the “All About You” wellness event in 2016 (cooking demo held January 27<sup>th</sup>)
- Assisted with organizing an SNR team to participate in the Havelock Charity Run 10K and raised money for Community Crops (race held June 3<sup>rd</sup>)
- Won the Chancellor’s Award for Employee Wellness for SNR wellness activities in AY2017
- Developed a wellness plan for SNR for AY2018
- Promoted UNL wellness activities through the SNR wellness listserv and web page, such as the University-wide “Wellness 101” event (<http://snr.unl.edu/employeeinfo/wellness/index.asp>)

### 2018 Objectives

- Encourage the Social Committee to purchase compostable plates, cups, and utensils for SNR get togethers to promote environmental wellness
  - Continue to encourage colleagues to provide healthy food options for SNR get togethers
  - Increase participation of SNR graduate students in the wellness program
  - Continue to promote walking breaks during the workday
  - Continue to provide a space in Hardin Hall to encourage meditation/quiet time
-