

**University of Nebraska - School of Natural Resources
Year in Review - 2018**

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Introduction

Trying to capture the depth and breadth of annual activities of the University of Nebraska School of Natural Resources is a challenge. The following 30 or so pages simply peels back the top layer of paint. We have a greater diversity of programs and disciplines in SNR than many colleges, yet the old adage, “A mile wide and an inch deep,” does not apply. Our team has done a great job in this document touching the highlights of many, but not all, of our programs.

I am very proud to be associated with the many members of the SNR team and lucky enough to be charged with being a cheerleader for them.

John P. Carroll, SNR Director

Applied Ecology Program Area

Submitted by Larkin Powell, Program Area Leader

2018 Accomplishments:

- **Strong and Transforming:** The Applied Ecology Mission Area consists of over 30 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. 2018 marked the end of a series of faculty hires that will benefit SNR, CASNR, ARD, IANR, and UNL for which Applied Ecology faculty served as search committee chairs and visionary leaders in the proposal for positions. More than seven of our Applied Ecology faculty in Applied Ecology might be referred to as “new faculty,” which makes for an exciting time for research team formation, curriculum development, and community engagement programming.
- **Productivity, 2017:** Statistics for 2017 were released in 2018 for Applied Ecology. Our faculty, staff, and students were awarded \$6.57 Million in new grants, published 121 refereed journal articles, and provided 117 presentations.
- **Engaging students with new courses and minor:** The Community and Regional Forestry program made an impact with four new courses that were designed, approved and taught for the first time: Tree Biology, Dendrology, Arboriculture, and Urban Forestry Management. The Urban Forestry minor has also been approved pending faculty comments by the CASNR UCC. Significant upgrades were made to the web page for this program, trees.unl.edu, working with SNR communications staff.
- **Engaging students beyond UNL with textbook:** Larkin Powell and John Carroll were selected as editors of the next edition of the Wildlife Techniques Manual to be released by The Wildlife Society.
- **Engaging students with a new course:** A new course was taught by Jenny Dauer and Joe Dauer in Spring 2018, SCIL 488/888 Teaching College Science. The course covers the dynamics of undergraduate student learning, and students develop the reflective practice of progressive instructional improvement.
- **Engaging students in research:** The new NRT graduate training program, led by Craig Allen, accepted its first cohort of student (Allen, CR, N Shank, D Twidwell, SG Elbaum, F Munoz-Arriola. F. NRT-INFEWS: Training in Theory and Application of Cross-scale Resilience in Agriculturally Dominated Social Ecological Systems.)
- **Leadership training:** Kevin Pope was nominated and selected as a National Conservation Leadership Institute Fellow.
- **SNR collaborations—resilience grants:** Craig Allen, Martha Shulski, and Hannah Birge led three Arctic Resilience Workshops, including one in NE that focused on mid-latitude connections (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).

2019 Objectives: The Applied Ecology Mission Area is beginning the third 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 leverage the strategic hires that we have made to support innovative research, Extension, and teaching.

Applied Climate and Spatial Sciences Program Area

Submitted by Brian Wardlow, ACSS Program Area Coordinator

2018 Accomplishments

General

- Two new ACSS faculty, Rezaul Mahmood (climate) and Yi Qi (spatial science), were hired and started July 2018.
- ACSS participated in public outreach events throughout the year such as WeatherFest, Omaha Public Schools Teachers Night Out and CASNR Tailgate.
- ACSS webpages were updated on the SNR website.

Teaching

- Customized Applied Climate Studies option and pre-law option were proposed and approved by the CASNR Curriculum Committee.
- Increased enrollment in Applied Climate Science major to 7 students.
- Spatial Science curriculum review was completed and revised sequence of classes developed. Work began on expanding credentialing to a Spatial Sciences minor in SNR and merging the current graduate-level GIS and Remote Sensing Specializations into a single, Spatial Science specialization.
- ACSS faculty worked with Agronomy, Biological Systems Engineering and CASNR to develop a Precision Agriculture minor that currently pending approval by CASNR.
- Mike Hayes engaged the UNL Global Studies Program to raise awareness among their students in applied climate and spatial sciences related to global studies, national security and environmental studies interests.
- ACSS faculty worked with EAS Meteorology/Climatology coordinator to establish complementary curriculum in basic and applied climatology.

Research

Spatial science faculty position was identified as a priority among the IANR Communities Healthy Systems for Agricultural Production and Natural Resources group.

- Completing the 18th year of eddy covariance measurements of mass and energy fluxes at the Carbon Sequestration sites at the ENREC near Mead, NE.
- Development of an airborne program to complement ground-based measurements of fluorescence, reflectance, and eddy covariance measurements across growing seasons. The goal is to develop quantitative fluorescence measurements and to partition the drivers of the fluorescence signals into effects of structure and physiology.

2019 Objectives

- Continue work on Associate to Bachelor's degree programs for Applied Climate Science for Southeast Community College and Central Community College.
- Rename and revise NRES 208 from Introduction to Applied Climate Science to Climate Applications in the Natural Resources.
- Finalize the Spatial Science minor and graduate-level Spatial Science specialization in SNR.
- Develop NRES 832 Advanced Topics in GIS course and revise NRES 312 Overview of Spatial Science as a gateway course for undergraduate students into the spatial science courses.

Environmental Science Program Area

Submitted by Steve Thomas, ES Program Area Coordinator

SNR Bylaws section 4.5.1:

Program Areas and Program Area Leaders

Each program area shall select a leader and co-leader who shall be responsible for improved communication between the faculty and director, shall enhance interaction and discussion within and among program areas, shall call regular meetings of the program area (minimum of two per semester), and shall work with the director and program area faculty to establish and complete goals each year.

Steve Thomas has been serving as the leader of the Environmental Science Mission Area in 2018. We have had semi-regular meetings during the Spring and Fall Semester and accomplished the following activities.

1. *Website Material for Environmental Sciences*: The ES faculty have continued to work with Mark Mesarch to improve and update material associated with environmental science websites.
2. *Environmental Science Undergraduate Program*: Steve Comfort, Steve Thomas and Paul Hanson have continued to lead an effort to change the name of our Environmental Restoration Science major to Environmental Science. A formal application for the name change was been submitted (with several supporting documents) but failed to pass the University Academic Planning Committee (APC). We have since worked with the Dean's office of CASNR and CAS to chart a path forward. Both colleges have agreed to form a committee in January 2019 that will be tasked to develop a framework for an intercollegiate program in environmental science that would be housed in SNR but have active collaboration with other departments in CASNR and CAS (via minors and tracks). The committee will work on developing an MOU between CASNR and CAS regarding the administration of the new ES undergraduate major and a timeline for implementation. In our most recent ES program area meeting, Dr. John Osterman, Assoc. Dean of CAS, supported this strategy and encouraged a resubmission of our proposed name change once that committee was assembled and active.
3. *Undergraduate Enrollment*: Both the Environmental Restoration Science and Water Science major grew in 2018. Several faculty participated in student recruitment activities this year and continue to work with our undergraduate advising and recruiting staff to grow these majors.
4. *Graduate Programs*: Develop an Environmental Science Specialization that we hoped to establish in 2018 was delayed due to our continued focus on the undergraduate major. We hope to pick this up again in 2019.

Community Engagement Committee

Submitted by Dennis Ferraro

2018 Accomplishments

The Committee Engagement Committee in their participation in public community events supported SNR faculty, staff and students. This support was in the way of organizational assistances and funds for travel, flyers, educational or promotional materials. They included:

- ✓ Nebraska Teachers Night Out in Omaha
- ✓ WeatherFest 2018 – supported 5 SNR booths
- ✓ Family Nights at local elementary schools (4)
- ✓ After school programs at area community centers (5)

SNR Movie Night events for the public and UNL community occurred three times in 2018 to over 100 people. 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 learn in their classrooms. We arranged so teacher may receive continuing education credits for attending. Natural Resource professionals from both governmental agencies and NGOs attended.

In April 2018, SNR Community Engagement hosted the CASNR WEEK community night. We have excellent attendance with over 200 members of the public attending to view CASNR student club activities, Pork Board Food truck and a show featuring Wildlife Encounters

In Oct 2018, the committee organized a teacher's resource web page that links to all the SNR centers, teams and members that have resources regarding K-12 teachings. Now Nebraska teachers can easily locate and utilize SNR resources in their classrooms.

In Dec 2018 – We expanded ours “Coats for Clinton” drive to include a monetary addition where all funds collected would be match by a donor. We raised over \$ 2,700.00 for the children and families associated with Clinton School in our neighborhood. We also delivered over 150 lbs. of coats and winter clothing.

2019 Objectives

- 2019 Movie Nights are planned and schedule for two per semester. The event schedules for Jan 31st 2019 will include a local movie with the two stars available for discussion that evening. The committee will continue to support all the events as in the past year give support to the graduate student committee for their community involvement.
- In March of 2019 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.

Diversity and Inclusion

Submitted by Jenny Dauer*, Coordinator

SNR formalized a standing committee for Diversity and Inclusion in 2018. Our committee members during 2017 include Mary Bomberger Brown*, Jess Corman*, Kelly Smith, Amanda Sorensen, Dan Uden, Henry Hansen, Citlally Jimenez, Sarah Spier, Erika Stuber and Jessica Burnett.

*indicates faculty members

2018 Accomplishments

- **Formalized NRDI as a standing committee**
 - a. Created a mission statement and vision
 - b. Created a website to communicate about NRDI goals and events.
- **SNR-wide events**
 - a. **Celebration** for UN's International Day of Women & Girls in Science, Feb 9th
 - b. **Formal Discussions**
 - i. Negotiation skills with Drs. Jess Corman & Sherri Jones, March 1st
 - ii. Diversity and sustainability with Dr. Prabhakar Shrestha, June 15th
 - iii. Depression and academia with Dr. Drew Tyre, Nov 2nd
 - c. **Formal Presentations**
 - i. Research on "Do #MeToo experiences decrease #GirlsInSTEM?" By Drs. Abbey Riemer and Sarah Gervais, April 6th.
 - ii. OUCH! Training with Dr. Karen Kasenbaum, Dec 13th
 - d. **Informal Discussions** to host an approachable and safe setting for important conversations led by members for the NRDI committee
 - i. Sexual harassment on April 20th
 - ii. Sexism and professionalism, May 18th
 - iii. What is means for focus on diversity and inclusion (DATE??)
- **University Representation**
 - a. **Eric North** was nominated by NRDI and accepted as one of three Faculty Development Fellows for Diversity and Inclusion at UNL via the executive vice chancellor's office
 - b. **Citlally Jimenez** served as the graduate student representative for the hire of a vice chancellor for diversity and inclusion at UNL, allowing SNR to communicate and participate on the search.
 - c. **Jasmin Castillo**, SNR grad student, was nominated and accepted on the Chancellor's Commission for the Status of Women.
- **Continued communication** with groups across campus and the community such as the Chancellor's Commission for the Status of Women, 500 Women Scientists, and UNL's AWIS.
- **Supported UNL's Women's History Banquet**
- Nominated Dean Tiffany Heng-Moss for an Outstanding Contribution to the Status of Women Award (awarded).

2019 Objectives

- Hold SNR-wide events to promote diversity and inclusion, networking, resource sharing and dialogue

- Initiate a discussion about an SNR diversity statement through the Faculty Advisory Committee
- Support the development of assessment tools for tracking diversity and inclusion within SNR

Faculty Advisory Committee

Submitted by Steve Thomas, FAC Chair

2018 Activities & Accomplishments

- Agenda items were solicited & compiled, and 9 meetings were held during January, February, April, May, June, September, October, November and December.
- Meeting highlights summarizing discussion topics were circulated via email within a week of each meeting and before faculty meetings.
- Discussion topics included: Management of Nine-mile Prairie, simplification of managerial procedures, opportunity faculty hire and graduate student handbook.
- Provided input/advice for additional revision/update of expertise listing for website.
- Provided nominations for filling of open standing and ad hoc committee positions
- Provided input on office and classroom space issues in Hardin Hall.
- Provided input into how laboratory space in the school should be assigned and turned over.
- Began working with Shawna Richter-Ryerson to develop new mission and vision statements for the school and began to think about developing strategic plan for the school.
- Initiated discussions with director on the schools administrative structure and how it can be used to improve the flow of information within the school.

From SNR By-Laws: *“The advisory committee shall advise the director on budget development and general operation of the School. The committee shall have the responsibility of working with the director on matters of concern to students, including grade appeals. The director shall meet with the advisory committee at least once every three months. The committee is charged with advising the SNR Director on budget, facilities, and general operation issues—as well as other matters of concern to faculty, staff, and students.”*

SNR Graduate Committee

Submitted by Mary Bomberger Brown and Daniel Snow, Graduate Committee Co-Chairs

2018 Accomplishments

- Processed 74 applications (34 admissions), in collaboration with Patty Swanson, SNR Graduate Admissions Coordinator. See SNR student services graduate student report for details
- Changed composition of the graduate committee via department wide election—Fontaine, Forbes, and Pegg replaced by Dauer, Franz, and Snow. Bomberger Brown and Van Wormer remain on committee; Bomberger Brown and Snow serve as co-chairs
- Updated SNR graduate active, emeritus, adjunct, and courtesy faculty lists
- Established Master of Applied Science (MAS) in Natural Resources program. Final establishment of processes for admission being developed.
- Assisting in development of Master of Applied Science with Environmental Education specialization program
- Updated SNR graduate student webpage
- Presented at SNR Fall Assembly Graduate Student orientation
- Met with visiting prospective SNR graduate students
- Joined ASUN (Association of Students of the University of Nebraska) Graduate Student Association listserv and forwarded appropriate messages to SNR graduate student listserv
- Attended UNL Graduate School and IANR Graduate Chairs' meetings
- Discussing removing SNR-Statistics joint PhD program (upon recommendation of UNL Graduate School)
- Selected recipients of SNR travel funds, Othmer and Chancellor's Fellowships, meritorious student awards, and Mohr Award, in collaboration with Patty Swanson, SNR Graduate Admissions Coordinator

2019 Objectives

- Create a travel grant program for MS students similar to the program in place for PhD students. Simplify the application process for the PhD student travel grant program
- Continue collaboration with SNR Graduate Admissions Coordinator
- Increase funding for SNR graduate students
- Better align SNR graduate program policies with UNL Graduate School policies
- Increase the stature of the SNR graduate program and become recognized nationally and internationally as a well-respected program in natural resource science

Promotion & Tenure Committee

Submitted by David Wedin, Chair

2018 Accomplishments

Several principles guide our committee's work. First, it would more appropriately be called the Promotion, Tenure and Retention Committee. The likelihood of losing a young SNR faculty member because they take a position at another institution or agency is much higher than the probability that we reject them for promotion and/or tenure. Thus, our role in mentoring and affirming faculty is as important as our role in assessing and critiquing faculty. If young faculty are to "fit in" to SNR professionally, they need clear expectations, a role in SNR that is understood and appreciated, and acknowledgment of their accomplishments.

Second, SNR is an incredibly diverse, large academic unit. We represent a broad range of life and earth sciences, and our faculty have diverse roles. Of the 35 faculty not fully promoted and evaluated by the P&T Committee in for 2018, 19 (54%) were in non-tenure track positions. These non-tenure track faculty positions include Professor-of-Practice, Geoscientist, Research Professor, and Extension Educator. With respect to the mission areas of Teaching, Research, Extension, Service, and Survey, our faculty's FTEs are equally diverse.

Given this diversity, the P&T Committee evaluates each faculty member relative to their position description and role. Many IANR position descriptions are poorly written and most contain vague statements, a source of frustration for junior faculty wanting clear expectations. Therefore, we encourage faculty to clearly state in their words their scientific niche, and why their role as a faculty member is important to SNR, UNL and society in general. This can be done in their Activity Insight, their CV, and the self-reflective statements that become part of their promotion package. In some cases, especially when faculty report to several units or programs (e.g. Water for Food, Science Literacy), a MOU clarifying expectations is appropriate.

What does the P&T committee do? It has four roles:

1) In late December and early January, we review the Activity Insight (including CV & Position Description) for all faculty that are not fully promoted. The CV is useful in clarifying publications, grants and other accomplishments, which may be unclear in their AI. Our assessment is summarized and receives one of three ratings (Unsatisfactory, Satisfactory, Exceptional) on the IANR Annual Progress Form. The P&T committee has 9 members, and the review process insures that each faculty is reviewed by at least 5 committee members.

2) Six faculty either received tenure or were promoted in SNR on July 1, 2018. The six fully promoted faculty members of the P&T committee assessed these promotion files in Dec 2017-Jan 2018. The committee unanimously supported all six files. A couple comments on the process: First, the self-reflective statements by each faculty on their accomplishments and impact are generally well written and the most important part of the promotion file. Second, obtaining three external reviews for each file requires considerable effort for the committee chair and Maria Hansen, but those reviews are incredibly useful (and affirming for our faculty). These points need to be emphasized in the informal three-year review of junior faculty. Attempts by the senior Vice Chancellors to "clarify" and "standardize" the promotion review process across IANR and the other colleges continued in 2018. This is important. Confusion

in the promotion & tenure process unnecessarily stresses our junior faculty. Committee chair D. Wedin is a member of an IANR committee led by Associate Vice Chancellor Rich Bischoff, which is addressing these issues within IANR>

3) The P&T Committee reviews the CVs and letters of support for nominations of Courtesy (within NU), Adjunct (outside NU), and Emeritus faculty. We had about 9 such files in 2018. This is generally done by email, and is usually not controversial.

4) Finally, the committee reviews the files of job candidates being considered for faculty hire with tenure or associate/full faculty status.

Safety & Facilities Committee

Submitted by Steven Thomas, Chair

The committee oversees SNR's facilities: Hardin Hall; labs and CSD space in Kiesselbach Crops Research Lab; labs and storage in Nebraska Hall, Natural Resources Research Annex, Conservation and Survey Annex, Poultry Building H&I; Space at ENREC (CSD, CALMIT, Ag Met, Forestry).

2018 Accomplishments

- Changed Guest and Visitor parking to all Guest parking and require a hang tag
- Added security cameras to all bike rack areas
- Added NCard readers to approx. 25 doors; installed magnetic holders to approx. 5
- Added heat-reducing film to 227 (computer room)
- Created additional offices
 - Changed 53 to the CSD Storage reference room which opened 1 office on 6th floor
 - Moved mail room to the back of 121 and added a copier, which opened HarH 123 as a shared office
 - Eliminated low-use copiers/work rooms and consolidated conference rooms which created 5 offices
- Created teaching storage - removed copier in 150 and added cabinets; added locks to the cabinets in 162
- HarH 234 – repurposed as NRT collaboration space
- HarH 231 – assigned as graduate student cubicles (we now have 74 cubicles)
- HarH 58 – reduced tripping hazard from pipe that was protruding from the floor
- Installed 107 coat racks to finish out offices in HarH
- Poultry H&I - requested funding to install overhead door – not approved
- Requested assistance from AgH to find replacement boat storage
- Implemented required training for faculty and TAs who use HarH 23, 24 (teaching labs) and 22 (teaching lab prep room).
- Added spill kits to labs in HarH
- Changed the layout of HarH 162 classroom to make use of the entire room and offer an alternative from the traditional presentation style of instruction

2019 Objectives

- Develop a plan for using the Poultry Building H&I
- Replace windows in 162 to reduce heat in the room
- Push for 100% completion rate for EHS Core training for all SNR faculty and staff
- Make first aid kits available in all labs and field vehicles
- Change distribution of office-based first aid kits in HarH, so there are fewer of them and they are replenished regularly
- Promote Run, Hide, Fight training and Field Safety

Teaching & Undergraduate Committee

Submitted by Drew Tyre, SNR Teaching Coordinator

The Undergraduate Committee meets monthly to address issues related to our diverse undergraduate program. Minor approvals are dealt with via email. We had relatively few course changes and program approvals, in part due to the transition from CREQ to CIM (pronounced “kim”). The new system is much more transparent with respect to approval processes.

2018 Accomplishments

- Completed rescheduling classes through Courseleaf and ensuring class times match University guidelines
- Submitted two new 3+3 programs with the Law College
- Approved proposals for new Community and Regional Forestry major and minor
- Approved multiple minor revisions of pre-requisites and cross listings.
- Approved three new course proposals.
- Coordinated monthly Teaching and Learning Discussion Groups as part of the SNR Teaching Improvement Plan.
- Initiated the monthly “Catfish of cAring about Teaching” award to bring awareness to individual efforts to improve teaching and learning in SNR. Nominations are accepted at any time from anyone (student, staff or faculty). The decision of who to award the catfish to is done by the current carrier of the catfish in collaboration with the teaching coordinator. The catfish is delivered to the recipient in their classroom.

2019 Objectives

- Hold the first annual SNR teaching retreat
- Discuss overall curriculum objectives for “wet courses” and refine pre-requisites and descriptions as needed
- Facilitate the development and delivery of a comprehensive spatial sciences curriculum.
- Continue refining classroom scheduling to maximize flexibility for students and enable faculty to improve learning outcomes.
- Revise SNR Teaching Improvement plan

SNR Extension Year in Review Summary

Submitted by Katie Pekarek, Dennis Ferraro, Andy Little

SNR Extension represents the diversity of the unit with a wide range of target audiences, stakeholders and programming. As a result of SNR Extension programming:

2018 Accomplishments

- Nebraska Master Naturalists have contributed 3,918 volunteer hours valued at \$110,305 in conservation service, connected with 23,619 Nebraskans and influenced 968 acres statewide.
- Wildlife conflict resolution guidance reduced human health trepidation, economic loss and improper pesticide usage associated with wildlife encounters. (8 workshops, Backyard Farmer, website, YouTube, 21 onsite visits)
- Long term trend climatic changes were evaluated in a *Trend Analysis* program with the Climate Issues Team, Beef Systems, and Climate Variation group, resulting in visual interpretations for public programming, tabular information for Extension Educators, and data plots highlighting trend changes by climate division. Additional programming is being developed.
- 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
- More than 3200 people attended the 18th annual Weatherfest with 735 attending the *Severe Weather Symposium*.
- Groundwater hydrology programming was developed and delivered for NRDs, state agencies and private consultants resulting in 414 CEUs in support of Nebraska Well Drillers. Geotechnical support was provided across Nebraska. 6410 ft of test holes were drilled and geotechnical analysis of 4300 feet of sediments was provided for the Dakota Drilling Project and Papio-Missouri River NRD Cooperative Agreement. Technical support was provided for Northeast Nebraska NRDs with data and interpretation supplied for 98 requests. Additional water and geological extension provided via Conservation Survey Division--see CSD report.
- National Water Quality Initiative Projects were awarded through partnership with NDEQ 319, NRCS, & NRDs resulting in a \$400,000 award for landowner practice implementation to improve water quality and \$193,921 for National Water Quality Pilot Project.
- NRD watershed science curriculum was piloted and Nebraska Environmental Trust funding was awarded to support future development; collaborative team includes six NRDs, NeDNR, and NDEQ (\$225k)
- Pond and Lake Management programming was delivered through statewide workshops, clientele questions, site visits, partnerships on lake rehabilitation projects, & participation in regional efforts. Leveraged funds by partners \$806,000.
- The Nebraska Nitrate Group was formed (co-led by SNR Extension and the Nebraska Water Center) to support Nebraskans in dealing with water quality issues, specifically Nitrate, across the state. Participants: 10 units in the University of Nebraska system and

statewide stakeholder groups with focus on NRDs in western, south-central, and northeastern NE (Bazile GWMA).

- Undergraduate education was integrated with nonformal STEM education for Lincoln's K-12 students: 20,000 contact hours, Lincoln Children's Zoo programming and 45 science themed backpacks for the LPS Community Learning Centers for at-risk youth and their families.
- SNR Extension led internal and external partners in development and delivery of groundbreaking *unmanned aircraft aerial application systems* programming through workshops, video development highlighting the NU-AIRE unmanned aircraft safety beacon and a national workshop incorporating international participation.
- Online education addressing Nebraska's natural resources (Groundwater, Surface Water, Residential Water Use, Stormwater, Climate, People Environment, Human Dimensions, One Health, Geology, Remote Sensing, and Wildlife Damage) was addressed through snr.unl.edu/extension, water.unl.edu, the Water Column newsletter and a regional *Online Stormwater Course*. Year one newsletter readership: 675. Open rate: double industry average. 2018 page views: up 63% in last year. Content contributions made from 48 groups or entities.

2019 Objectives

- Initiate SNR Extension Signature Program (Climate, Water, Wildlife).
- Create a focus group on each of the Signature Programs.
- Develop youth programming in Signature Programs.
- Develop strategies for more effectively linking CSD and NSCO with SNR Extension and NE Extension.
- Organize two SNR Extension events for the year.

Center for Advanced Land Information Technologies (CALMIT)

Submitted by Brian Wardlow, CALMIT Director

2018 Accomplishments

- **Establishment of CALMIT Integrated Remote Sensing Lab (CIRSL)** – Collaborative research and work space was established in 223 Hardin Hall to support the research and development of airborne (manned and unmanned) and field-based remote sensing systems.
- **CALMIT Website** – Completed the update of the CALMIT website (calmit.unl.edu) to highlight the Center’s current expertise, projects and infrastructure.
- **Airborne Remote Sensing Program** – Hyperspectral and fluorescence imaging research campaigns over ENREC CSP, LTAR, CITB, and Agroforestry sites, Gudmensen Ranch and the Nature Conservancy restoration plots near Wood River, NE. Research themes include plant stress, productivity and biodiversity. Imagery from CALMIT airborne program featured in new exhibit at the Bell Museum at the University of Minnesota.
- **Solar-Induced Fluorescence (SIF)** – Examination of plant photosynthesis and stress with solar-induced fluorescence, using newly developed field and airborne sensors in coordination with new, spaceborne sensors. Supported by the European Space Agency (ESA, funding pending).
- **Drought Monitoring and Early Warning** – Ongoing US AID-funded research to develop a remote sensing-based, composite drought indicator (CDI) for the Middle East/North Africa region and NASA-funded project to develop terrestrial water storage forecast tools. Collaborative work DWFII and the Indian Agricultural Research Institute to develop an agricultural CDI.
- **Other Research and Support Projects-** Ongoing U.S. Forest Service project to assess forest windbreak maps developed for the state of Nebraska. NebraskaView funded awarded from USGS AmericaView program to continue outreach, education and application of Earth observations for the state. Additional technical spatial support provided to USDA Natural Resources and Conservation Service and UNL Geography.
- **New Faculty in Spatial Science-** Dr. Yi Xi joined CALMIT on July 1, 2018 and will lead the GIS program within the Center and contributed to the ground, airborne and satellite remote sensing activities.
- **Hydrogeophysics-** Hydrogeophysical maps created for private industry and state agencies leading to new publications. New collaborations with the Agronomy are exploring plant breeding and geophysical layers.
- **Field Research** – Extensive fieldwork conducted at ENREC/Mead and Wood River on themes of plant productivity, stress, and biodiversity. Five new SIF sensor designs are being tested at Mead in collaboration with investigators from U. Illinois and Carnegie Institution, Stanford, CA.

2019 Objectives

- **Development of CALMIT Spatial Commons Area** – Identify and design a research and training space for faculty, students and staff working in remote sensing and GIS to interact and advance the spatial science research across IANR and UNL. Functions may include collaboration work and meeting space, training sessions and technical consultation and support.
- **Airborne and field research** – Pursue the acquisition of thermal sensor for aircraft and test and apply UAV-based hyperspectral sensor for studies of plant productivity, stress, and biodiversity.
- **SIF** – Continue testing ground-based SIF instruments as indicators of plant stress and productivity (in collaboration with U. Illinois and Carnegie Institution and in coordination with airborne and spaceborne SIF - ESA project).
- **International Remote Sensing Research for Drought and Food Security Applications** – Continue work of composite drought indicator projects in the MENA region and India with potential US AID-supported activity to expand work to Central Asia.
- **Spatial Science Curriculum Development** - Revisions of spatial science courses and credentialing options.

Great Plains Cooperative Ecosystem Studies Unit

Submitted by Larkin Powell, GP-CESU Director



2018 accomplishments:

- **Stable partner numbers:** We have 12 federal agency partners and 23 university/non-federal partners. When Dr. Powell became Director in 2011, the Great Plains CESU had 9 federal and 16 non-federal partners, and we believe the growth in partnerships during the last 7 years demonstrates the value of the CESU system to its members. We did not add any new partners to the Great Plains CESU in FY2018, although we did work with several potential members. Colorado State University: Pueblo submitted an application for membership, which will be acted upon during FY2019.
- **Engaging partners:** The Great Plains-CESU participated in the 2018 Biennial CESU National Network Meeting in early June, 2018 at the U. S. Fish and Wildlife Service's National Conservation Training Center in Shepherdstown, WV. Kat Bickert, our office coordinator, facilitated organization of CESU network reports for the meeting. Kat received a National CESU Network award for her work at the meeting, which was well deserved. Dr. Ryan Sharp, Kansas State University, received a National CESU Network award for an outstanding collaborative research project at the meeting. The project, "Visitor Survey at Brown v. Board of Education National Historic Site" was completed under a Great Plains CESU agreement in collaboration with the National Park Service (NPS).
- **Awards:** Our office awarded the second Great Plains CESU Graduate Student Award to Dr. Andrew Taylor for work as a PhD student on a collaborative project between Oklahoma State University and the National Park Service: "Assess genetic integrity, population status, and long-term viability of isolated populations of shoal bass in Chattahoochee River National Recreation Area." Andrew was nominated by his former advisor, Dr. James Long with a supporting statement from William Cox of the NPS.
- **Staffing and office support:** Our office maintained its full complement of personnel this year, although we transitioned to a new office coordinator. Kat Bickert resigned in late June 2018, to take a full-time position with the University of Nebraska's Department of Anthropology, a frequent user of the CESU funding agreement. Kat was responsible for the creation of our on-line database and project library, and well as many other improvements to the web site and our relations with our partners. We hired Brittany Grove as the new office coordinator in September, and look forward to her contributions in this critical role. Dr. Tanya Shenk returned from a leave to contribute to work in Rwanda through the Peace Corps Response Program in August, and she resumed her role as the Great Plains CESU's NPS Research Coordinator (RC). We are appreciative of Nicole Athearn, the NPS RC for the Great Rivers CESU, who filled Tanya's shoes during her absence.

2019 objectives:

- **Engaging partners:** Our office will continue to work with our partners to find cost-effective ways to engage and build collaborations in the future. We will be asking academic partners for nominations for the Graduate Student Award for 2019. We will also continue to spotlight projects through videos and materials on our web page.

- **Engaging UNL partners:** Our goals for 2019 include a focus on UNL faculty to help increase impact for UNL research efforts in return for support that we continue to receive from the IANR Office and the Vice Chancellor.
- **Tribal college partners:** Our office will continue to work with current partners to identify and support applications from tribal colleges during 2019.

Conservation and Survey Division (CSD)

Submitted by R. M. Joeckel, Associate Director for CSD in SNR and State Geologist

2018 Accomplishments

- Published at least **15 peer-reviewed journal articles**, **4 survey publications**, **5 geologic maps**, and numerous abstracts as of December 1, 2018.
- Attainment of **5 regional, national, or international awards** in 2018:
 - ASABE Blue Ribbon Award in Educational Aids Competition (2018 ASABE Annual International Meeting) to T. Gilmore and others.
 - Editors' Choice on EOS website (eos.org); "Evapotranspiration trends (1979–2015) in the Central Valley of California, USA" *Water Resources Research*, 54 (doi.org/10.1029/2018WR022704) to J. Szilagyi
 - Editors' Pick in journal *Sedimentology* showcasing "good practice, innovative approaches, and noteworthy advances in our science" for article "3-D architecture and hydrostratigraphy of cross-cutting buried valleys using airborne electromagnetics, glaciated Central Lowlands, Nebraska, U.S.A." to J. Korus, R.M. Joeckel, and D. Divine
 - UNL Soil Judging Team 1st place overall, 3rd place group, 1st, 3rd, and 5th place individuals. Region 5 Soil Judging Contest, Manhattan, KS. 17-21 Sept. 2018 to J. Turk.
 - Margaret Hawn Mirabile Memorial Best Student Paper Award at the 2019 Eastern Section AAPG meeting was awarded to a paper on which R. M. Joeckel and D. Divine were coauthors.
- Faculty taught 10 courses with a combined enrollment of 103 students.
- Provided **2,977 continuing education units** to professionals, made in excess of **3,900 extension contacts**, and fulfilled more **500 requests for data and analysis** in 2018.
- Made **hundreds of thousands of automated groundwater-data entries, individual measurements of groundwater levels, and processed groundwater-quality results**.
- Made **several dozen presentations at local to international venues** and provided **at least 22 media interviews on science- and resource-related issues**.

2019 Objectives (selected)

- Develop the "Nebraska GeoModeling Workshop," educating groundwater professionals on the use of geological models in water management.
- Complete multiple geologic maps (STATEMAP, Missouri National Recreational River).
- Completion of Nebraska CarbonSafe Phase II and contributions to Omaha CSO subsurface geology assessment.
- Continue research on geology of Nebraska Panhandle, Niobrara River Valley, Sand Hills, and statewide hydrogeology.
- Continue extensive test-hole drilling and data analysis for Eastern Nebraska Water Resources Assessment (ENWRA).
- Expand educational module topics on www.NebraskaWatershedScience.org, in collaboration with state agencies and Natural Resources Districts
- Improve and maintain CSD facilities at Mead.

High Plains Regional Climate Center (HPRCC)

Submitted by Rezaul Mahmood, Director

2018 was another productive year for the High Plains Regional Climate Center. Below we provide selected highlights. For further details please see our quarterly newsletter, *The Prairie Post*: <https://hprcc.unl.edu/hprccnewsletter.php>.

2018 Accomplishments

- HPRCC faculty and staff were PIs or Co-PIs on 9 projects totaling over \$1 million. These projects are funded by NSF, NOAA (NCEI, NIDIS, SARP), BIA, and UCAR/Unidata, among others.
- Released several new climate products, increasing access to climate data and information across the US: ACIS GIS Portal, Rosebud Decision Dashboard, Nebraska-based potential evapotranspiration maps for CropWatch, THIRA toolkit, and expansion of ACIS Climate Maps to include all 50 states, Puerto Rico, the Virgin Islands, and the US Affiliated Pacific Islands.
- Developed and distributed 26 technical reports: 17 climate summaries for the High Plains region, 1 report on El Niño conditions, and 8 seasonal climate summaries developed specifically for tribes in the Plains.
- Hired a new Director for the HPRCC and recruited a Ph.D. student for the ACSS program.
- Presented and/or authored over 20 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.
- Helped organize and/or lead 5 climate-related workshops for weather and climate professionals, tribal environmental professionals, and fisheries and wildlife professionals.
- Responded to 200+ client requests, serving 31 states and 7 countries; Participated in 4 outreach events.
- Published 6 peer-reviewed journal articles; 30+ peer-reviewed journal articles utilized and formally acknowledged HPRCC data and information; and 50+ news articles featured the HPRCC.

2019 Objectives

- Continue to maintain and enhance HPRCC's position as a trusted and reliable source of climate data and information. This activity includes, for example, delivering climate data and information that meet stakeholder needs in the High Plains Region (including Nebraska) and beyond via our website, climate summaries, data feeds, workshops, hands-on training, etc.
- Continue to work with the partners, such as the National Drought Mitigation Center, the National Integrated Drought Information System, USDA Climate Hubs, and the USGS Climate Adaptation Science Centers to develop decision support tools and data products.
- Develop web content for integration into a new HPRCC webpage on the SNR site. Continue to work with SNR communications team to highlight HPRCC's work within SNR.
- Continue to work on currently funded projects, while seeking new opportunities, particularly in the areas of stakeholder engagement and computational sciences.

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.



2018 Accomplishments

- Taught multiple graduate courses
- Supported ~ 12 Ph.D. scientists (in addition to federal scientists), post-docs or coordinators
- Graduated 6 M.S. and 4 Ph.D. students
- Supported and advised 9 M.S. and 16 Ph.D. students
- Employed ~120 individuals
- Published ~50 peer-reviewed manuscripts
- M.S. & Ph.D. students received the SNR Meritorious Graduate Student Award
- Received the 2017 Cooperative Research Unit Safety Award
- Co-hosted the 14th North American Arctic Goose Conference, Lincoln, NE
- Co-hosted the Nebraska Sportsperson Summit, Nebraska City, NE
- Supported NSF Workshop on Convergence and Resilience in the New Arctic, Alaska
- Supported creation of the Pheasant Habitat Simulator
- Students and faculty presented at state and national organization:
 - American Geophysical Union
 - American Fisheries Society
 - Ecological Society of America Annual Meeting
 - Great Plains Grassland Summit
 - International Society for Behavioral Ecology
 - Midwest Fish and Wildlife Conference
 - North American Symposium on Bat Research
 - Pheasants Forever National Board
 - Rainwater Basin Joint Venture Information Seminar
 - The Wildlife Society
- Students and faculty presented at international conferences:
 - ISBA World Meeting, Edinburgh, United Kingdom
 - Canadian Conference for Fisheries Research, Edmonton, Canada
 - Pathways 2018 Conference, Goslar, Germany.
- Invasive Species Program facilitated outreach sessions, presented at various locations in NE.



National Drought Mitigation Center (NDMC)

Submitted by Mark Svoboda

2018 Accomplishments

Key stats

- U.S. Drought Monitor website, hosted and maintained, Jan. 1-Oct. 31: 5.1 million pageviews; 2.2 million sessions; 927,477 users
- NDMC website, Jan. 1 -Oct. 31: 614,528 pageviews; 368,012 sessions; 291,601 users
- Social media: Twitter followers: 6,244; Facebook followers: 1,821
- People: Employees, 21; graduate students, 6; visiting scientists, 2
- Peer-reviewed journal articles: 35

Key accomplishments

- Completed and launched the Drought Threat Hazard Identification and Risk Assessment (THIRA) Toolkit, providing scenario data and more for this Public Policy Center-led, NOAA-funded project. THIRAs are a FEMA-recommended planning process.
<http://droughtthira.unl.edu>
- Increased understanding of U.S. Drought Monitor process through revamped webpages, fact sheets, videos, tutorials, social media, and in-person outreach (for state agency field office personnel) such as workshops in collaboration with USDA Climate Hubs, funded by USDA's Office of the Chief Economist, with the Great Plains Tribal Water Alliance, and with the Regional Climate Centers.
- Revamped user report submission for the Drought Impact Reporter
<https://droughtreporter.unl.edu/submitreport/>, supported by NOAA, implementing a new form using ESRI's Survey123 application.
- Developed method for monitoring Twitter for hotspots of interest in drought.
- Prototyped drought severity classification tables for each state based on observed impacts.
- Prototyped new state drought planning analysis tool.
- Made U.S. Drought Monitor maps and statistics available for Weather Forecast Offices and River Forecast Centers nation-wide.
- Worked with the American Planning Association to convene an expert workshop on drought and hazard planning, a FEMA-supported effort.
- Helped Jordan, Lebanon, Morocco and Tunisia develop drought risk management plans, with the International Center for Biosaline Agriculture in Dubai, a USAID-funded project.
- Guided six Native American tribes in South Dakota, North Dakota, and Wyoming in completing drought vulnerability assessments, supported by BIA and DOI/USGS NCCSC
- Co-hosted a major National Soil Moisture Network workshop in Hardin Hall.
- Hosted 27 visitors from Brazil, Korea, Australia, the United Arab Emirates, and of course, the U.S.
- Updated the look and function of the NDMC's website to be more mobile-friendly and more contemporary.
- Development of Ready for drought? The Drought Game, a drought version of Extreme Event, a game originally developed by the National Academy of Sciences for coastal and river flooding

- Assisted the states of Utah, New Mexico, Oklahoma, and Minnesota in revising their state drought plans, supported by NOAA NIDIS
- Development of a drought scenario-based exercises reference guide

2019 Objectives

- Collaborate with the American Planning Association to produce a guidebook for planning practitioners on how to incorporate drought planning into hazard mitigation, supported by FEMA.
- Update the Drought Risk Atlas with data through 2017, incorporating more climate/hydrology stations and including drought indices computed at state and county level.
- Launch new drought impacts portal, expanding on the Drought Impact Reporter.
- Work with USDA Climate Hubs on 10-12 workshops across the country, including Alaska, sponsored by USDA OCE.
- Web-based U.S. Drought Monitor tutorial

Nebraska State Climate Office

Submitted by Martha Shulski, Director NSCO

2018 Accomplishments

Mesonet

- A user survey was developed and published to assess current data and product utility and help provide future directions for the program.
- A total of 8 new stations were installed during the season (representing 5 new sponsors), bringing the total number of stations statewide up to 69.
- An undergraduate intern was recruited and hired to support Mesonet operations.
- Performed quality control checks on historical soil moisture data in preparation for posting information online.
- Received an increase in funding from the National Mesonet Program for operations and maintenance costs.

Services

- 56 climate presentations given to a total audience of 4,026 people. Topics include: seasonal outlook and associated impacts, historical climate trends and future projections, and the Nebraska Mesonet.
- 574 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. Developed articles for Cropwatch.
- Delivery of 50 weather forecast presentations to Market Journal television and KRVN radio station. Hosted the national-scale Annual Meeting of the American Association of State Climatologists.
- Produced historical climate trends product series to support Nebraska Extension issue team needs. Co-hosted a Nebraska Extension professional development workshop.

Research

- NSF climate resilience project on Arctic – Mid-latitude climate change workshop series took place with 2 in Alaska and 1 in Lincoln. Researchers, practitioners and indigenous leaders from around the world participated.
- Continued work on a NOAA-funded municipal climate adaptation project with 1 paper published and 1 video produced.
- Co-author on the Northern Great Plains chapter of the U.S. National Climate Assessment, which launched in November 2018.
- Published a peer-reviewed journal article on operations of the Nebraska Mesonet.

2019 Objectives

- Maintain our high level of service to our range of customers and reach out to them in innovative ways.
- Increase the frequency of on-site Nebraska Mesonet station maintenance visits to four per year. Hire a second field technician for the program.
- Seek expanded funding for the Nebraska Mesonet and Nebraska State Climate Office.

- Implement a website refresh for greater access to Mesonet data and climate information.
- Develop content and stories for NEBRASKAland magazine.

Branding & Marketing

Submitted by Shawna Richter-Ryerson, Communications Associate

The communications position in June was reduced to a two-way split, at which point a marketing component was added. Outcomes from attending a higher-ed recruitment and marketing conference in July included the re-examination of SNR's public-facing messaging and storytelling as well as determining its intended audience. It was discovered the school needs clearer language illustrating its uniqueness, targeted toward potential and current students, their parents, alumni and the public. An informal "communication team" was developed to better align communications, web development and recruitment and their approaches to promoting the school, its occupants and current research.

2018 Accomplishments

- The following press releases* garnered national media attention:
 - a. Research shows large-scale irrigation reduces local precipitation (Joe Szilagyi)
 - b. Wicked Cool: New bat species named after Freeman (Trish Freeman)
 - c. Land cover changes likely intensified historic Dust Bowl drought (Steve Hu)
 - d. NSF grant to examine irrigation's role in precipitation (Rezaul Mahmood)
 - e. Researchers net crucial estimate of white shark survival (John Benson)
 - f. Study reveals deathbed detail of 17th-century duchess (Karl Reinhard)
 - g. Shulski, Hayes part of collaborative effort to produce Fourth National Climate Assessment (Martha Shulski, Michael Hayes)
 - h. UNL's role in dating 4,000-year-old termite mounds in Brazil (Paul Hanson)
- The following story-telling opportunities* drew widespread attention and social media interactions:
 - a. New laboratory key to fish research at Nebraska (Jamilyn Poletto)
 - b. Soil Judging Team brings home gold (Judy Turk, Rebecca Young)
 - c. Celebrating Bat Week (Undergraduate and graduate student spotlights)
 - d. Caring for Clinton donations surge with help of anonymous donor
- The following positive stories* were by external media without SNR prompting:
 - a. The Association for Women in Science magazine highlighted SNR for its role in establishing the University of Nebraska-Lincoln as an AWIS partner.
 - b. NET featured SNR in a story highlighting that more women are seeking degrees in natural resources.

*Lists not comprehensive.

2019 Objectives

- **Mission & vision:** Revise the school's mission and vision statements using clear, accessible language and achievable goals to inspire those operating in divergent fields under the same roof. Also clearly convey what we do to the public and potential clients.
- **Marketing plan:** Draft a marketing plan for 2019-'20, based off of strategic goals (to be written by John Carroll and faculty with input from the communications team).
- **Students first:** Increase student-focused stories, both in print and through social media platforms, such as Instagram stories.

Computer Services

Submitted by Tri Tran, SNR Computing Services Lead

SNR Computer Support provides IT support for SNR academics including postgraduates, natural resources education, research, and outreach. We also provide specialized support to other centers within SNR including CSD, NDMC, HPRCC, NSCO, NFS, NSA, and the COOP units. SNR IT also makes audio/video presentations, including filming and streaming talks, conferences, educational seminars, public forums, and faculty position interviews. We are lean on staff comparing to previous years, but we are striving to provide the same level of support while making necessary changes to increase our efficiency.

2018 Accomplishments

- Upgraded the AV system in Hardin Hall 107
- Consolidated and upgraded SNR Computing Facility (Hardin Hall 227) to meet all the IT Best Practices of the UNL Internal IT Audit
- Worked with SNR Computer Ad-Hoc committee and developed the new SNR IT Policy and the SNR Computing Facility Policy
- Worked with CSD and implemented a plan for their static data
- Developed better backup strategies to optimize network performance through consolidation
- Upgraded and moved SNR satellite backup server to WSE with 1 year data retention
- Consolidated printers to reduce wastes while increasing efficiency

2019 Objectives

- Work with CALMIT and implement a plan for their increasing storage needs
- Convert Hardin Hall 162 into a classroom and collaboration hybrid workspace
- Upgrade the AV system in Hardin Hall 901
- Upgrade Zoom equipment in all SNR classrooms and collaboration spaces
- Upgrade computers in SNR Computer labs (Hardin Hall 141 and 142)
- Work with SNR Faculty to eliminate older software license portals that are no longer being used.

Digital First Team

Submitted by Mark Mesarch, co-chair

2018 Accomplishments

- **New SNR Website:** Rolled out new website
- **Database Conversion:** Converted Feature Story, Student Employment, Seminar and SNR Today to SQL database. Convert webpages displaying information to use new database. Build webpages to update and add new data.
- **Graduate Student > Master of Applied Science:** Modified Graduate Student section of website to include Master of Applied Science program
- **Tracking Hero Stories:** Begin to track what stories are displayed in the Hero banner of the website. Routinely change order and content of the area.
- **SNR Wellness > Flights Ascending:** Build recording system of number of flights climb as part of monthly wellness program. Modify site to continue to run after the event.
- **Conservation and Survey Division sub web:** Begin the overhaul of CSD website. Developed draft reorganization and initial request for new information. Completed drafts of History and People sections. Developed News and Publications sections drafts.
- **Developed Diversity Initiative sub web:** Developed sub web for Natural Resources Diversity Initiative and set up applications like events calendar.
- **Initiate Communications Update:** Beginning weekly meeting with communications/recruitment staff to better strategize messages across platforms.
- **Revise Committee section:** Based on SNR Bylaws change reorganize section for Standing, Organizational and Ad Hoc committees and add new Ad Hoc committees.
- **Update Google Maps features:** Google Maps now charges for the use of this feature for dynamically displayed data. Updated pages with these features and develop a plan with CSD for payment strategies.
- **Regional and Community Forestry programs:** Updated educational components and added research and outreach/extension components.

2019 Objectives

- **Database conversion:** Complete database conversion of personnel, course, handbook, and publication database. Develop data display and administrative web pages.
- **Convert SNR website and sub webs to UNL 5.0 Template:** Review new template and see how can apply.
- **CSD sub web:** Complete website redesign and roll out
- **Review site navigation** to move from audience based navigation (types of students and so on) to task based navigation to align with UNL navigation plans.
- **Review Employee Information landing page and section:** Evaluate section organization, navigation and content and revise.

Nebraska Maps & More Store

Submitted by Jacki Loomis

The Nebraska Maps & More Store is the map, publication and gift store at the School of Natural Resources (SNR), University of Nebraska - Lincoln. 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 open 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.

2018 Publications

- [The Groundwater Atlas of Red Willow County, Nebraska](#), Dana Divine, Duane Eversoll, and Leslie M. Howard
- [Results of Test-Hole Drilling for Observation Well Planning in the Lower Loup Natural Resources District, Spring 2017](#), Douglas R. Hallum P.G., Sue Olafsen Lackey, and Steven S. Sibray
- [New Insights into Carboniferous Cyclothems. The Fourth Biennial Field Conference of the American Association of Petroleum Geologists \(AAPG\) Midcontinent Section Fourth Biennial Field Conference Abstracts and Guidebook](#), Robert Matthew Joeckel and Christopher R. Fielding
- [County-wide Assessment of Irrigation Expansion on Air Temperature, Humidity and Evapotranspiration Rates in Nebraska, 1979-2015](#), Jozsef Szilagyi
- **Nebraska Statewide Groundwater-Level Monitoring Report 2017.** Young, A., Burbach, M., Howard, L., Waszgis, M., Joeckel, R., Lackey, S.
- [2016 Nebraska Water Leaders Academy - Final Report](#), Mark E. Burbach and Connie Reimers-Hild
- **Guidelines for Ecotourism Operations in the Great Plains.** Powell, Larkin, Powell, Kelly, Nieland, Katie., 2018.
- **Hydrogeologic Framework Studies of Portions of the Niobrara River.** Douglas R. Hallum, Steven S. Sibray and Leslie M. Howard

Faculty Mentoring Coordinator

Submitted by Robert M. Zink

In 2018, Dr. Carroll asked me to take over this position from Pat Shea. The position duties are evolving, but I understand the overall goal to be an independent source that probationary faculty can turn to if they are unclear they are on a successful trajectory towards promotion and/or tenure.

2018 Accomplishments

- Took over from Dr. Shea
- Wrote draft letter to probationary faculty outlining my role and what I can provide to them
- Obtained a list of all probationary faculty.
- Communicated/coordinated with Dr. Wedin, chair of P&T.

2019 Objectives

- Make contact with all probationary faculty and learn whether they understand and are satisfied with the promotion and tenure process, and whether they require additional direction or discussion.
- Report and coordinate with P&T.

Student Services - Graduate

Submitted by Patty Swanson, Graduate Admissions Coordinator

2018 Accomplishments

- Met with visiting prospective SNR graduate students
- Monitor student matriculation, retention, and progression
- Attended by monthly professional development meetings offered by Graduate Studies
- Attended Spring Training for Graduate Admission Coordinators
- 74 applications received and processed in 2018
- Presented at SNR Fall Assembly Graduate Student orientation
- Attend UNL Graduate School and IANR Graduate Chairs' meetings
- Submitted classroom scheduling for spring, summer, and fall
- Submitted Census Class schedules for spring, summer and fall
- Updated SNR active and emeritus graduate faculty list
- Recorder for graduate committee meetings
- 2018 Enrollment
Total Female Male
121 50 51

Admissions

- 74 applications received and processed in 2018
- 34 students admitted in 2018 (14-PhD, 20-MS)
- 11- Students completed degree programs (9 MS, 2 PhD)
- *Awards and honors presented to SNR graduate students*
- The Shikar-Safari Club scholarship from the Shikar-Safari Club International
- Foundation Fulbright Scholarship from Summer 2018-Spring 2019
- The Milton E. Mohr Award
- SNR PhD travel grant
- Othmer Fellowship
- Chancellors Fellowship
- SNR Meritorious doctoral student
- Invitation to participate in Young Scientists Summer Program at International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria (June-September)

Invitation to participate in Research Collaboration Workshop for Women in Mathematical Biology, National Institute for Mathematical and Biological Synthesis (NIMBioS)

National Academy of Sciences travel award

National Science Foundation & NIMBioS travel award

Center for Great Plains Studies, University of Nebraska-Lincoln travel award (non-competitive)

Competitive: Nelson Memorial Fellowship, IANR, University of Nebraska-Lincoln travel award

One Health fellowship-2018" funded by University of Tufts University -CUMMINGS

SCHOOL OF VETERINARY MEDICINE

Travel grant, Tufts University

SNR Undergraduate Student Services Program Area

Submitted by Sara Winn, Advising Coordinator

2018 Accomplishments

- Undergraduate student numbers (as of 1/9/2019)
 - a. Total students in SNR = 318*
 - i. Applied Climate Science = 4
 - ii. Environmental Restoration Science = 31
 - iii. Fisheries & Wildlife = 269
 - iv. Water Science = 18
- Undergraduate student graduation numbers
 - a. Spring 2018 – 31 graduates* (Five in ENRS, two in GECEM, 24 in FWL, and five in WATS)* Double majors included
 - b. Summer 2018 – 6 graduates (Five FWL and one WATS)
 - c. Fall 2018 – 24 graduates (Two in ENRS, 18 in FWL, and four in WATS)
- Created internship program with Nebraska Game and Parks Conservation Officer, working directly with Officer Dudley Sorenson. In the fall of 2018, our first undergraduate student was selected and completed the internship program. In December we interviewed and selected the second student to participate in the program, who will start in January 2019.
- Elyse Watson and Sara Winn (student services staff members) were both awarded the Parents' Recognition Award in the spring 2018.
- Sara Winn and Dr. Larkin Powell presented to the CASNR Annual Meeting on "Student Success Mentoring Model in SNR" – August 2018
- Successful creation (and approval) of Regional and Community Forestry Minor – one student is already planning to declare as soon as it is available (fall 2019)
- Hosted SNR Career Information Day in January 2018 – 23 employers and over 150 students attended

2019 Objectives

- Formalize internship agreement with Spring Creek Prairie.
- Work with UNL Education Abroad office and Lincoln Children's Zoo to explore study abroad options for UNL undergraduates with LCZ international programs.

Recruitment (including Ad-Hoc Committee)

Submitted by Elyse Watson, Recruitment Coordinator

2018 Accomplishments

Created the SNR Recruitment Ad Hoc Committee to assess current recruitment efforts and to look at ways to better use our time and personnel to recruit students into natural resource majors. Included representatives from all current and forming majors, with both faculty and staff members.

- 88 new students declared a SNR major since January 2018 through August 2018 (not include APCS as I do not have access to those numbers currently. Sara and I have a request in)
 - 8 dual matriculation
 - 46 freshman (1 is international)
 - 7 re-admits
 - 27 transfers
- 6 new students are from out of the state (not including international)
 - 1 Illinois, 2 Kansas, 2 South Dakota, 1 Texas
- I had 75 one-on-one visits for 2017-2018

2019 Objectives

- Ambassador outreach
 - Select and train new Science Ambassadors in conjunction with CES Engineering Ambassadors to get into local schools to teach about natural resources (soft recruiting)
- Updating marketing materials
 - Handouts – create Spanish translated SNR Majors brochure, create Community College Equivalencies for all SNR majors with NE community colleges
 - Website – More stories about what students are doing/current research
- Targeted groups
 - Create focus group with current students that come from backgrounds such as Non-traditional (military, second career, etc), minorities and underrepresented groups, and community colleges transfers to find out how they learned about our programs so that we can find new avenues to recruit similar individuals

Wellness Committee

Submitted by Crystal Stiles, SNR Wellness Ambassador

The SNR Wellness Committee had another successful year promoting wellness activities within the School. While the committee applied to win its 3rd consecutive wellness award for SNR, the wellness program at UNL is currently in flux and award announcements have been put on hold for now. Crystal has stepped down as SNR wellness ambassador and Tingting Liu has taken on this role. We have also added Brendon Orr to the Committee.

2018 Accomplishments

- **Nine-Mile Prairie Nature Walk & Picnic:** In October, we co-organized a nature walk/lunch picnic at Nine-Mile Prairie. Dave Wedin led the walk, and approximately 10 people participated. The goal of this activity was to increase physical activity, increase social interaction among employees, and interact with and learn more about our environment.
- **Flights Ascending:** In February, we held a competition for employees to log their flights ascending in Hardin Hall and gave prizes to those who got in the most number of flights, the most number of days, and completing at least 60 flights during the month. By the end of the spring semester, a total of 29,273 flights had been logged in the system and 49 employees had participated. The goal of this activity was to increase physical activity among SNR employees while at work.

2019 Objectives

- **Continuing Flights Ascending:** We plan to continue the Flights Ascending activity in the winter when it is too cold to walk outside.
- **Furthering the University diversity initiative:** We are looking into the possibility of hosting a cultural dinner or other event to celebrate diversity in SNR.
- **Increasing participation in Frosty Ride and Nacho Ride:** We would like to formalize these cycling activities to increase participation within SNR.
- **Promoting campus-wide wellness events:** UNL Wellness holds campus-wide events such as “Walk at Lunch” and “Check Up from the Neck Up.” We would like to increase SNR’s participation in these activities.

Community and Regional Forestry

Submitted by Eric North, Assistant Professor of Practice

2018 Accomplishments

- **Regional and Community Forestry Degree:** The proposal for the four-year degree was completed and successfully passed through the SNR and CASNR undergraduate curriculum committees
- **Urban Forestry Minor:** New minor in urban forestry has been developed and approved
- **Courses:** Four courses have been approved by all required curriculum committee. Dendrology (NRES 201) and Tree Biology (NRES 302) were both taught in the fall semester with enrollment at 34 and 12 respectively
- **Web resources:** New trees.unl.edu website has been created with information on the minor and developing major as well as community resources.

2019 Objectives

- Offer new courses in Arboriculture and Urban Forestry Management
- Continue to improve enrollment and instruction in course supporting the developing degree and minor
- Work with SNR recruitment and marketing to create a strategy attracting students to the Regional and Community Forestry degree and minor
- Collaborate with newly hired Great Plains Forestry Faculty to expand forestry offerings at UNL.

SNR Teaching Initiatives

Submitted by Betty Walter-Shea and Mike Hayes

2018 Accomplishments

- **Applied Climate Science Degree:** Developed two proposals to create options which were submitted and approved by SNR Undergraduate Committee and the CASNR Curriculum Committee:
 - a. Customized Applied Science Studies
 - b. Pre-law
- **Fisheries and Wildlife Degree:** Developed a proposal to create a pre-law option which was submitted and approved by SNR Undergraduate Committee and the CASNR Curriculum Committee.
- **Masters of Applied Science:** Developed a cross-discipline proposal (SNR, Agronomy & Horticulture, and BSE) for a specialization in Conservation Agriculture that was submitted to the CASNR Curriculum Committee
- **New minors:**
 - a. A cross-discipline proposal for a Precision Agriculture Minor (Agronomy, BSE and SNR) was proposed and approved by the CASNR Curriculum Committee;
 - b. A minor in Spatial Sciences has been discussed; proposal is being revised to address issues raised by the Department of Agronomy & Horticulture
- **NRES 370 Course:** Title and prerequisite change for NRES 370. The course title for NRES 370 (Basic and Applied Climatology) was changed to Applied Climatology

2019 Objectives

- **NRES 208 course:** Course title of NRES 208 (Introduction to Applied Climate Science) will be changed to Climate Applications in the Natural Resources; course objectives will be revised
- **Recruitment:**
 - Revising outreach materials and developing an ambassador program
 - ACS recruitment committee will be formed to work with SNR recruitment and marketing to create a strategy attracting students
- **A to B Programs:** review and update current A to B programs and propose new programs in the Applied Climate Science area
- **Undergraduate Options:** develop proposal for a pre-law option for the Water Science and Environmental Restoration Science programs
- **Spatial Sciences Curriculum:** Continue discussion of a comprehensive spatial sciences curriculum
- **Masters of Applied Science:** cross-discipline proposal (SNR, Agronomy & Horticulture, and BSE) specialization in Conservation Agriculture approved

Teaching Initiatives – Engineering & ES Programs

Submitted by Steve Thomas

In 2018, several teaching initiatives were begun in the School of Natural Resources and our pursuit of changing the name of Environmental Restoration Science to Environmental Science continued. As chair of the Water Science major, Dr. Steve Thomas met with the Associate Dean in CASNR, Dr. Betty Walter-Shea, regarding a (3+2 (or 4+1) or 3+3) program that would our undergraduate major in Water Science with a graduate degree from the Law School. Follow-up conversations are scheduled for Spring 2019 and we hope to complete that program design and establish this program in 2019. SNR also initiated discussion with Civil Engineering about forging a new 3+2 program in which CE undergraduates would transition to SNR in the 4th and 5th year to complete a non-thesis MS degree in Environmental Science or Hydrological Science.

The School of Natural Resources has been trying to change the name of Environmental Restoration Science to Environmental Science. In 2018, the Academic Planning Committee (APC) denied our request. The Environmental Science Program Area continued to pursue options and met with Dr. John Osterman, Associate Dean in CAS, in December, 2018. In that meeting, we explored how CAS faculty can be engaged in environmental science education at UNL. Dr Osterman agreed that SNR was a logical home for such a program, recommended the formation of a committee to explore how CAS faculty can participate in ES education, and suggested that once that process was underway, CAS would withdraw its opposition to our requested name change. We are hopeful that our name change will pass in the spring 2019.

Online Teaching in SNR

Submitted by Steve Comfort, SNR Professor, Soil and Water Chemistry

2018 Accomplishments

- **School of Natural Resources Distant Education Action Plan:** The School of Natural Resources (SNR) has a diverse group of faculty and staff dedicated to education, research, and outreach activities in the natural resource and environmental science fields. Although SNR is the primary provider of natural resources education to university students, it has yet to establish a coordinated program that consistently delivers distant education to the citizens and stakeholders of Nebraska. To address this issue, an action plan was drafted in 2018 that provides discussion items on how SNR can move toward in serving student learners seeking academic or non-credit learning opportunities in the natural resource and environmental science fields.

Various sections of this action plan included:

- i) Highlights from UNL's Agronomy and Horticulture (A&H) department's distant education program, along with a question and answer section with Dr. Don Lee and Leah Sandall, the coordinators of the A&H's distance education program.
- ii) Key discussion items faculty need to consider in moving forward with a distant educational program, such as: the need for market research and faculty training, equipment needs, the potential for partnerships with other majors, short and long-term goals for SNR's distance educational program, and the establishment of a policy for the use and distribution of tuition funds.
- iii) An inventory of current SNR distant educational courses with past enrollments.
- iv) A sample position description of a distant education coordinator. Establishing a distant educational coordinator was considered a key recommendation.
- v) A listing of graduate distant education programs offered by UNL

2019 Objectives

- The SNR faculty advisory committee (FAC) will take the 2018 action plan under consideration and determine if SNR should move forward with establishing a distant educational program.
- If SNR decides to move forward with a distance education program, a strategic guide and timeline of action items will be established.

Teaching Initiatives – Spatial Science & Remote Sensing

Submitted by Yi Qi, Assistant Professor, CALMIT

I lead the effort of revamping and developing curriculum in the spatial science program with a group of faculties in SNR. These activities include extensive communication with faculties, students, administrations to examine the current curriculum, identify the demands and gaps, and plan for the future.

2018 Accomplishments

- Propose the spatial science credentialing including undergraduate minor in spatial science, graduate specialization in spatial science, and accelerated program in spatial science (3+2 or 4+1)
- Develop and teach NRES 415/815 – “GIS for Agriculture and Natural Resources” (NRES 498/898 in Spring, 2019)
- Revise and teach NRES 312 “Introduction to Geospatial Information Science”
- A report to Dean of CASNR - “Innovating Spatial Science Program to Strengthen Teaching and Research in CASNR and IANR”
- in-progress proposal for undergraduate minor in spatial science
- in-progress proposal for graduate specialization in spatial science
- in-progress proposal for accelerated program in spatial science (3+2 or 4+1)
- a re-envisioned spatial science curriculum
- a newly-developed course NRES 415/815 – “GIS for Agriculture and Natural Resources” (NRES 498/898 in Spring, 2019)
- a revised NRES 312 (joint-effort with Dr. Gengxin Ou and Dr. Rong Yu)
- a revised remote sensing course "NRES 4xx/8xx: Satellite-based Remote Sensing in Water Science"
- a newly-proposed spatial programming course "NRES 4xx/8xx: Python Programming in Remote Sensing of Natural and Water Resources" (communication and providing comments to Dr. Ayse Kilic).

2019 Objectives

- Propose the spatial science credentialing including undergraduate minor in spatial science, graduate specialization in spatial science, and accelerated program in spatial science (3+2 or 4+1)
- Develop and teach NRES 415/815 – “GIS for Agriculture and Natural Resources” (NRES 498/898 in Spring, 2019)
- Revise and teach NRES 312 “Introduction to Geospatial Information Science”

Teaching Initiative – Programs with Landscape Architecture

Submitted by Eric North, Assistant Professor of Practice

2018 Accomplishments

- **Objective:** Work with Department of Landscape Architecture to offer courses to undergraduate students enrolled in the LARC program to expand and enhance the educational offerings in ecology, natural resources, and plant identification.
- **Faculty Engagement:** Collaborated with LARC Faculty to select appropriate course offered in the School of Natural Resources for undergraduates enrolled in the LARC program.
- **Undergraduate Courses:** Established Dendrology (NRES 201) and Tree Biology (NRES 302) as appropriate courses for undergraduates pursuing degrees in Landscape Architecture.
- **Symposium:** Planned a symposium with Drew Tyre and the Faculty of LARC around the topic of sustainable natural resource management of designed landscapes to be offered in April, 2019. SNR is helping to sponsor.

2019 Objectives

- Continue to improve enrollment and instruction in course supporting LARC undergraduate program
- Continued and expanded collaboration with additional SNR emphasis areas