

# NDSU



# 2015

School of Natural  
Resource Sciences  
Annual Highlights



Francis X.M. Casey, Ph.D.  
Director of SNRS

## Greetings from the School of Natural Resource Sciences at NDSU

The School of Natural Resource Sciences continued its success in 2015 by capitalizing on the opportunities presented by the state's rich energy, agricultural, and natural resources. With the strong support of the ND Agricultural Experiment Station (ND AES) and Extension, the School has also grown and we now stand at 24 faculty, which is the first time we have been at full capacity since I started as director in 2011. Since 2011, we have conducted eight faculty searches, which occupied a tremendous amount of time and energy. Nonetheless, our efforts paid off with the strengthening of our programs. An example of growth is our Range Science and Natural Resource Management (NRM) programs. Between 2012 and 2015, NRM and Range Science were brought together physically from various buildings on campus and are now on the second floor of Morrill Hall (just across the skywalk from Entomology). This move placed faculty with similar disciplines in close proximity, allowing natural synergies to develop, and providing them administrative support. During this same

time, three faculty (Ryan Limb, Devan McGranahan, and Torre Hovick) were hired in Range Science. Also, in the NRM program, Dr. Shawn DeKeyser was transitioned from Range Science to Director of NRM, and Dr. Christina Hargiss (see page 3) was transitioned to a tenure-track assistant professor. Our Range and NRM programs are now among the strongest in the nation. Between 2012 and 2015, Soils also experienced growth. With the state's soil health legislative initiative, funded in 2011, and the recent hire of Leah Brueggemann (see page 3), our soils program now has ten faculty, elevating NDSU soils nationally and internationally. Entomology remains strong; in the past two years our two newest hires received tenure and promotions to associate professor, and the other four Entomology faculty are now all full professors.

In 2015, our faculty have achieved successes in all aspects of our land grant mission of "serving North Dakota's agricultural and natural resource communities through exploration, interaction, and education."

- NDSU was named the #7 best valued agriculture schools in the U.S. by "College Values Online." The School's Range Science and Soil Science programs were singled out as contributing to this high national ranking.
- With the growth of soil salinity, increased oil and gas activities, and declines in pollinator habitats, ND AES faculty of the School have made significant contributions to the State in the areas of soil health, land reclamation, and insect pollinators (see SNRS Hot Topic on page 7).
- The School's extension faculty work tirelessly to help producers make improvements. A significant change in extension programming has been the focus on small venues, and meeting with influential, but invested producers. This approach, dubbed *Café Talks*, has been very successful in imparting practices that improve soil health in the region.

### Teaching

In three years, Introduction to Soil Science's annual enrollment went from 160 to 240 without compromising quality.

In Spring 2015, the first School-wide capstone course was required by all School disciplines. This course was especially designed to meet our new "critical thinking and problem solving" learning outcomes.

Our graduate programs also continue to be strong, with sustained enrollments of over 90 for the last three years.

### Research

The number of funded proposals has steadily increased over the past four years. In 2015, there was \$2.6 million awarded, with almost \$7 million in active grants.

Our publications and disseminations of all types have also increased over the past four years.

In 2015, there were 74 peer-reviewed articles published. That is an average of 3.5 published peer-reviewed papers per faculty, which is outstanding.

### Extension

Among the countless personal interactions extension faculty have with individual producers, they also planned 37 programs with 3,227 people attending. Additionally, they provided 85 presentations to 8,301 attendees. In total, there were over 11,000 face-to-face interactions.

Considering ND has approximately 30,000 family farms and ranches, our extension faculty would have personally reached almost 1/3 in 2015.

## Faculty and Staff Updates | Personnel Changes in 2015

### Dr. Deirdre Prischmann-Voldseth

was awarded tenure and promoted to Associate Professor in 2015. She has been a faculty member in Entomology since 2008.



### Leah Brueggemann

started in her position of Lecturer on August 15, 2015. She coordinates multiple labs for SOILS 210 and assists with lectures.



### Brian Johnson,

Research Specialist in Soil Science, retired on August 1, 2015 after 38 years of service to NDSU.



### Dr. Christina Hargiss

transitioned to a tenure-track Assistant Professor position in the NRM Program on July 1, 2015.



### Dr. Shiny Mathews

was hired as the Soil and Water Testing Lab Manager. She started the position on September 1, 2015.



**Jacob Rikhus** was hired as a Research Specialist in Entomology on September 1, 2015. Previously he worked as a Research Assistant.



## Awards & Honors | Recognition of SNRS personnel in 2015

**Dr. Ryan Limb** (Assistant Professor of Range Science) was awarded the Outstanding Young Range Professional Award from the Society of Range Management. This award requires SRM membership and recognizes superior performance and leadership potential in any range-related area. Nominees must be less than 40 years of age on January 1st of the year the award is conferred.



**Dr. Jason Harmon**, Associate Professor of Entomology, received the Larson/Yaggie Excellence in Research Award from NDSU College of Agriculture, Food Systems, and Natural Resources.



The Soil and Water Conservation Society selected the Soil Health and Land Management Team (including **Dr. Abbey Wick** and **Chandra Langseth**, Soil Science) of NDSU as a 2015 recipient of the Society's Merit Award. The award was presented at the 70th Annual Conference in July in Greensboro, NC.



**Dr. Abbey Wick**, Assistant Professor of Soil Science, received the Myron and Muriel Johnsrud Excellence in Extension/Outreach award in December from NDSU College of Agriculture, Food Systems, and Natural Resources.



**Dr. Tom DeSutter**, Associate Professor of Soil Science, was awarded a Teaching Award of Merit by the North American Colleges and Teachers of Agriculture (NACTA) in April.



**Dr. Kevin Sedivec**, Professor of Range Science, is the coach of the Traill County 4-H Range Judging Team that took 3rd place at their National competition.



## Awards & Honors | Recognition of SNRS personnel in 2015 (continued)

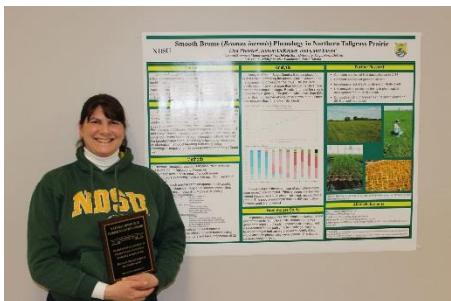
The Soil Science Society of America sponsored **Heather Dose** (Soil Science PhD candidate) and **Dr. Tom DeSutter** (Associate Professor of Soil Science) for the Society's Congressional Visits Day in March. The program is designed to enable graduate students to experience science policy and to promote their profession to elected leaders. The NDSU team was given opportunities to visit with ND senators and representative about the importance of management methods that promote soil health.



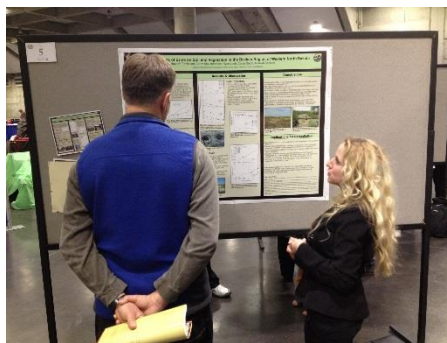
The NDSU Soil Health team (including **Dr. Abbey Wick** and **Chandra Langseth**, Soil Science) received a certificate of excellence at the American Society of Agronomy Annual Meeting for their Soil Health video library.



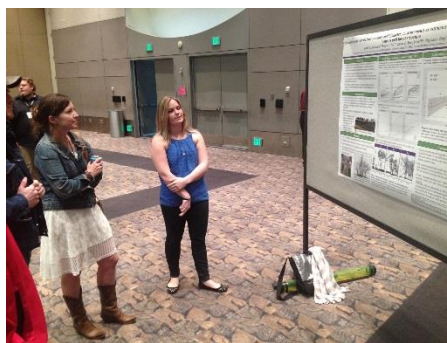
NRM graduate student **Lisa Preister** took 1st place in the graduate poster competition at the ND Wildlife Society meeting in Mandan in February. Lisa is advised by **Dr. Shawn DeKeyser**, Associate Professor of NRM.



Two Range graduate students took home awards from the Society for Range Management annual meeting in Sacramento, CA in February. **Hannah Tomlinson**, MS student advised by **Dr. Ryan Limb** won first place for her poster on "Impacts of Brine on Soil and Vegetation in the Bakken Region of Western North Dakota."



**Sarah Anderson**, MS student advised by **Dr. Devan McGranahan**, was awarded second place for her poster on "Comparing Terrestrial Laser Scanning, Allometric Measurements as Non-destructive Estimates of Woody Understory Biomass and Structure."



The International Plant Nutrition Institute (IPNI) selected **Resham Thapa**, MS Student in Soil Science, as one of the winners of the annual Scholar Award Program. Resham is advised by **Dr. Amitava Chatterjee**, Assistant Professor of Soil Science.



**John Breker**, a senior majoring in Soil Science, was named the College of Agriculture, Food Science, and Natural Resources Outstanding Senior at the Ag Week Banquet at NDSU in April. John graduated with his BS degree in May under the advisement of **Dr. David Hopkins**, Associate Professor of Soil Science, and has continued on into an MS program in Soil Science under the advisement of **Dr. David Franzen**, Professor of Soil Science.



Undergraduate student **Mariom Carvajal** won first place in the afternoon session of oral presentations at the NDSU EXPLORE event for her talk titled, "Bebaeus: A Species or a Species Complex? Studying the Implications of Biodiversity in True Bugs." Mariom's research took place under the advisement of **Dr. David Rider**, Professor of Entomology.

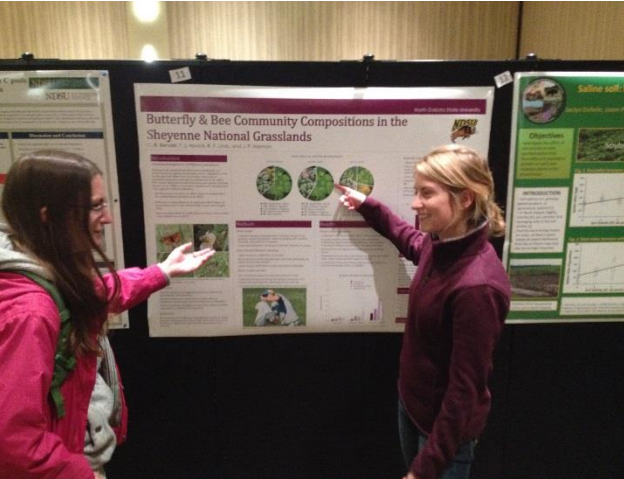


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## School of Natural Resource Sciences Student Symposium



The Annual SNRS Student Symposium was held on December 1st in the Memorial Union at NDSU. Students of the Graduate Seminar course for Range, Entomology and Soil Science presented talks on their research. There was also a poster session that was open to all students. Cayla Bendel (pictured left), Range MS student, won the award for best poster as voted by her peers and other attendees. SNRS Alumnus Lee Briesse was the invited keynote speaker.



## SNRS Graduates | Degrees Awarded in 2015

### Undergraduates

Matthew Anderson, NRM  
Derek Bendickson, NRM  
Corey Bjoralt, NRM  
John Breker, Soil Science  
Elizabeth Burdolski, Soil Science  
Patrick Champa, Range Science  
Collin Goldsmith, NRM  
Benjamin Hageman, NRM  
Jona Hamson, NRM  
Jaden Hunter, NRM  
Mark Johannes, Range Science  
Katherine Mahoney, NRM  
Elizabeth Mars, NRM  
Patrick Martin, NRM  
Gabriela Mendieta, NRM  
Jade Monroe, NRM  
Jeffrey Moss, NRM  
Eric Murray, NRM  
Macalester Oglesby, NRM  
Jonathan Oltman, NRM  
Kasey Oster, NRM  
Tyler Sanders, NRM  
Shawn Sanford, NRM  
Alexus Schemioneck, Soil Science  
Isaac Schnabel, NRM  
Bryan Sprenger, NRM  
Alexis Steinman, NRM  
Evan Tollefson, NRM  
Taylor Tomperi, NRM  
Sarah Walker, NRM  
Kyle Wolf, Range Science

### MS Degrees

Joseph Alfonso, Entomology  
Erin Gaugler, Range Science  
Lauren Klempel, NRM  
Hans Klopp, Soil Science  
Katherine Kral, Range Science  
Amanda Lipinski, Range Science  
Melissa McCann, Range Science  
Erin McLean, Entomology  
Brandon Montgomery, Soil Science  
Manbir Rakkar, Soil Science  
Jesse Riley, NRM  
Abilio Soares, NRM  
Travis Strehlow, NRM

### MNRM Degrees

Kristine Askerooth, MNRM  
Pragya Devkota, MNRM  
Matthew Mittag, MNRM  
Mohamed Mohamed, MNRM  
Erik Wermel, MNRM  
Andrew Willyard, MNRM

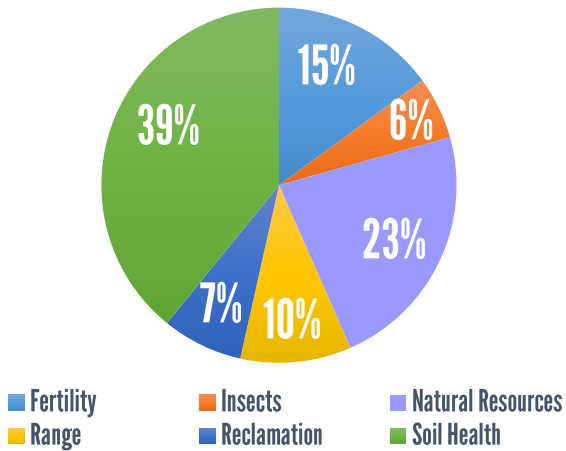
### PhD Degrees

Rakesh Awale, Soil Science  
Margarit Daniel, NRM  
Breanna Paradeis Kobiela, NRM

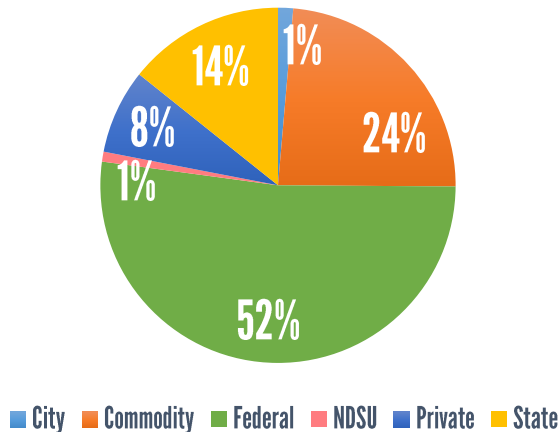


# Highlights of 2015 | A Year in Infographics\*

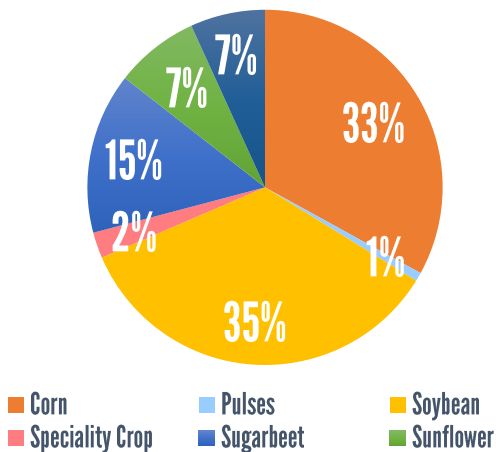
## FUNDING AREAS FOR ACTIVE GRANTS



## SOURCE OF FUNDS FOR ACTIVE GRANTS



## COMMODITY FUNDING IN 2015



Total Active Grants in 2015: **\$6,925,326**

## EXTENSION ACTIVITIES IN 2015

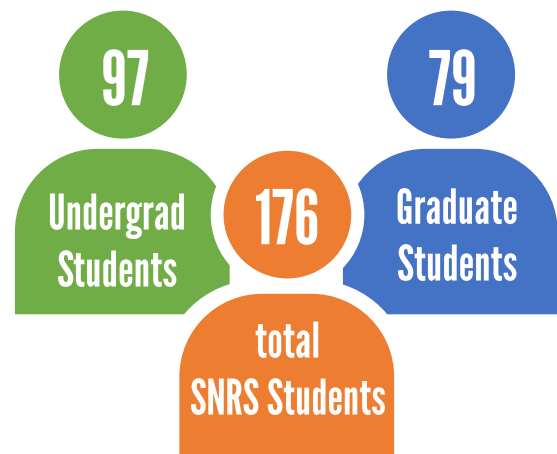
■ Presentations ■ Workshops, Tours Led & Field Demonstrations

**85**

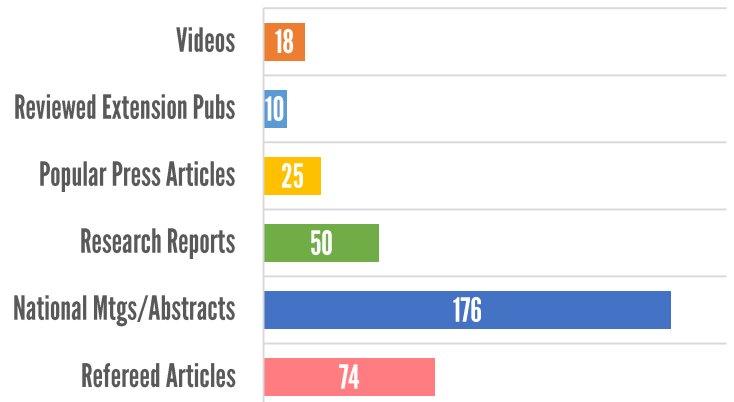
Reached an audience of 8,301+

**37**

Reached an audience of 3227+



## DISSEMINATIONS OF RESEARCH

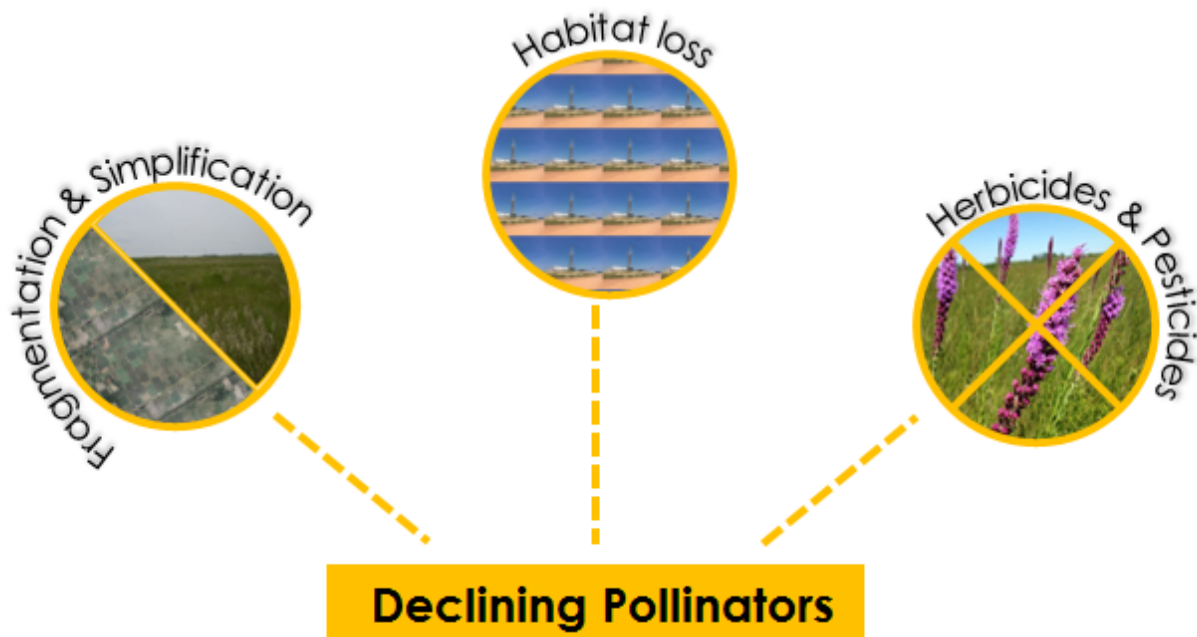


\*More details about our highlights are available in our 2015 Annual Report appendix located at <https://www.ndsu.edu/snrs/reports/>

## SNRS Hot Topic | Pollinators: Declining Bees and Butterflies

*By Cayla Bendel and Katherine Kral, Range Science Graduate Students*

Bees and butterflies provide several of the ecosystem services that humans depend upon for continued well-being, including overall biodiversity, cultural aesthetics, and most notably pollination. Pollination is valued at over \$3 billion in the United States and over \$4 trillion worldwide. Pollination is worth so much because bees and butterflies increase plant persistence in wild landscapes and increase the stability of food production in agroecosystems. With diverse pollinator communities, the amount and efficiency of pollination improves. However, the ability of bee and butterfly populations to continue providing these services is threatened as pollinator communities are declining worldwide. The largest threats to abundant, diverse bee and butterfly populations are 1) landscape loss reducing species specific habitat, 2) landscape fragmentation and simplification that reduces connectivity between patches and available food resources, and 3) increases in pesticides and herbicides which directly and indirectly decrease survival rates for individuals and entire populations.



### NDSU Research

Personnel in the School of Natural Resource Sciences are conducting research on the distribution and occurrence of North Dakota butterflies and bees including the federally threatened Dakota Skipper, as well as the petitioned to be listed Rusty-Patched Bumble Bee. Their work will help to inform grassland management practices that can help conserve these crucial providers of ecosystem services.



## SNRS Alumni Updates | News from SNRS Graduates

**Stefanie Bohrer** was recently hired as the Environmental Specialist at Minnkota Power Cooperative- Milton Young Station (MYS), near Center, ND. Stef completed her MS Degree in Range Science focusing on surface mine reclamation and was advised by **Dr. Ryan Limb**, Assistant Professor in Range Science. As the Environmental Specialist at the MYS, she is in charge of the air program where she is responsible for keeping 100 percent regulatory compliance by continually monitoring air emissions at the power plant. Striving to achieve and maintain compliance with all local, state, and federal environmental regulations is top priority, while keeping electricity affordable for all end users.



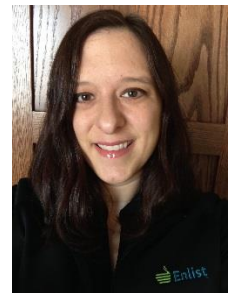
**Jeff Moss** is working for KLJ, a company that provides multi-disciplinary engineering and planning services for regional and national clients. Jeff graduated with a BS degree in NRM in 2015 and was advised by **Dr. Jack Norland**, Associate Professor of NRM. In his work for KLJ, Jeff provides clients with comprehensive environmental services ranging from field data collection to documentation and permitting. As part of his job, Jeff conducts botany and wildlife surveys as well as wetland delineations for multiple clients. Surveys included botanical and biological resource impact assessments and threatened and endangered species determination of effects. Upon survey completion he prepares the appropriate documentation for agency approval.



**Skye Fasching** is working for the North Dakota Department of Health (NDDOH) Division of Waste Management's Solid Waste Program in Bismarck, ND. Skye completed her MS degree in 2014 under the advisement of Dr. Thomas DeSutter, Associate Professor of Soil Science, and Dr. Jack Norland, Associate Professor of NRM. In her position at NDDOH, Skye is tasked with a variety of duties across the state including regulating and inspecting of solid waste facilities, permitting and compliance, enforcement actions, special studies and the beneficial reuse of waste materials. She also provides outreach through educational workshops for solid waste operators, haulers and the public to encourage strategies to reduce, reuse, and recycle solid wastes such as wood, compost, and concrete.



**Patti Prasifka** (nee' Anderson) is working as a Field Scientist for Dow AgroSciences stationed in West Fargo, ND. She graduated with an MS degree in Entomology in 1996 and was advised by Michael Weiss, Professor of Entomology. She continued on for her Ph.D. in Entomology at Iowa State University and worked as a Post-Doctoral Research Associate prior to starting with Dow AgroSciences. In her role as a Field Scientist, Patti conducts and coordinates agricultural research trials to develop new products and serves as a technical expert for the sales force so together they can provide innovative solutions for growers. With Dow AgroSciences, Patti has had exciting opportunities like working in Brazil for 3 months on a research sabbatical.



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