

## FINAL REPORT

University of Nebraska-Lincoln School of Natural Resources program review  
1-4 November 2022

### Academic Review Team

Dr. Elizabeth Covelli Metcalf, Chair, University of Montana

Dr. Stephan J. Dinsmore, Iowa State University

Dr. Mark Shafer, Oklahoma University

Dr. Samodha Fernando, University of Nebraska

Sophia Becker, University of Nebraska

Abigail Schoup, University of Nebraska

Dr. Jennifer Clarke, University of Nebraska

The School of Natural Resources (SNR) at the University of Nebraska-Lincoln is a thriving unit that has built a high-quality portfolio focused on education, research, and outreach that fulfill the mission of a Land Grant institution. During the course of the program review, the review team met with faculty, staff, students, and administrative leadership, reviewed relevant websites, curriculum, and self-study material. Our team completed the review with a deep respect for SNRs strengths and contributions to natural resource science and management along with a few recommendations for continued growth.

The faculty, staff, and students of SNR were impressive and expressed a high degree of enthusiasm for the unit and passion for their field of expertise. It is clear that the Director, John Carroll, has earned a high level of respect from his faculty and staff and from Institute of Agriculture and Natural Resources (IANR) leadership. This productive relationship has helped position SNR to attract students and develop a thriving research program. We commend Dr. Carroll on his impactful leadership and anticipate that these recommendations below will further assist with the initiatives he has started in SNR.

Another notable component of SNR are the strides made around diversity, equity, and inclusion (DEI). The established DEI committee does incredible work to make DEI a prominent feature of SNR. However, these efforts should not fall solely on the DEI committee and require all units within SNR to be actively engaged. SNR has an opportunity to grow in this area by weaving DEI throughout all aspects of SNR life. They have been able to advance these efforts despite state restrictions on targeted financial support We recognize this is challenging but we believe SNR is on a solid trajectory and are excited to see continued success in this area.

Many of our recommendations below are focused on teaching. We want to emphasize that the elements of successful teaching and learning exist within SNR, but more attention needs to be given on how to best pull those components together to enhance undergraduate and graduate education. We also recognize the success in the broad area of research and scholarship. It is clear that faculty within SNR are deliberate about how they allocate research funds to enhance

graduate education, with notable units like the USGS Coop Unit. Lastly, we acknowledge the excellent Extension programming but offer a few thoughts for improving efficiencies.

In the following sections we will briefly summarize what we have learned. We will describe the strengths and offer areas for growth.

## **Teaching and learning**

It is clear that SNR boasts a roster of dedicated and successful educators. There is a passion and excitement for teaching within the curriculum groups. We commend SNR for dedicating resources for teaching focused faculty. It is clear that these positions have enhanced the undergraduate programs. We also commend research faculty for stepping up to teach when necessary. The recommendations below apply across all programs and levels of education within SNR (graduate and undergraduate).

- Conduct a comprehensive review of undergraduate and graduate programs
  - A curriculum review committee should be used with representation from all programs
  - Review should identify gaps between desired core courses and existing faculty expertise
- Reevaluate teaching commitments, accountability, and multi-year planning given new IANR guidelines
- Develop a clear policy for class cancellations
- Develop a plan to strategically hire within discipline specific core courses and work with research and Extension faculty to fill gaps as needed
- Build future faculty position advertisements around gaps, starting with classes listed as core to the program that do not currently have the expertise or capacity to teach
- Increase teaching FTEs for those who could teach core classes by shifting appointments from Extension/research where possible
- Increase efforts to recruit underrepresented students and leverage SNR and IANR resources effectively to support these students once they join SNR

### *Undergraduate Education*

There were several bright spots in undergraduate education with the most notable being the Student Success team. It was clear from talking to students, staff, faculty, and administration that this team is integral to managing curricula, helping students navigate their way through UNL, and often this team is providing the invisible labor needed to make students feel they belong to SNR. An extension of this is the incredible resources that IANR and SNR provides students for experiential learning including UCARE, Cabela's Apprenticeship, FYRE, and REUs. We see the enthusiasm for the new recruiter who is coming online shortly. Student growth in some majors is a bright spot with Fisheries and Wildlife being large and steady, Environmental Science on the rise, and Regional Community Forestry just beginning to see growth. We also note the shift of undergraduates toward a more diverse student body with gender and ethnicity markers showing signs of growth.

The undergraduate students in SNR are exceptional. It is clear the students deeply value the interdisciplinary education they are receiving. They noted the unique opportunities they have had to use their SNR knowledge outside the classroom including internships, Soil Judging Team, student clubs, and other field-based learning opportunities. Some students felt the area of Environmental Science could be strengthened by including more geology, soil science, and geographic information systems.

Even with all the success in SNR there are still areas for future growth. Retention rates are a concern, which are currently lower than that of UNL and CASNR. The Applied Climate Science and Water Sciences programs have not grown and need to be re-envisioned. Part of this stems from the limited dialog between curricular programs and the lack of a long-term strategy for staffing and stabilizing curricular offerings. The below recommendations will assist in strengthening the undergraduate portfolio in SNR.

- Reestablish the undergraduate curriculum committee
  - Leadership for this committee should include Student Success Office and the Associate Director/Director of SNR and should have representation from all the programs
  - The committee is needed to ensure there is a strategic rationale for planned course offerings, there is appropriate staffing of the courses to teach them, and class offerings are established in advance
  - Committee can assist in advocating for hires to fulfill the teaching mission of SNR
- Consider moving Water Science under Environmental Science
  - Although enrollment is low, water science is critically connected to several SNR-affiliated centers, particularly the National Drought Mitigation Center, CALMIT, CESU, and the Conservation and Survey Division
  - Maintaining a presence of water research is critical for the Centers' abilities to recruit graduate students and conduct research
  - Further link water with the growing area of soil science in the Environmental Science degree
- Reassess the viability of Applied Climate Science as a stand-alone degree:
  - Option 1: retain Applied Climate Science as a separate degree (status quo; would require many new course offerings)
  - Option 2: move Applied Climate Science to an area of concentration within Environmental Sciences (could build off the ES core and would require fewer core classes compared to a stand-alone degree)
  - Option 3: Expand Applied Climate Science with offerings in Human Dimensions and rebrand as Human Dimensions of Climate Change (would capitalize on growing interest among students in climate change-related careers and could draw from the extensive expertise on Human Dimensions in SNR)
- Consider creating a Human Dimension track in Environmental Science
- Conduct a comprehensive review of courses offered for each degree to develop a list of core and elective classes

- Develop an ideal list of core classes without consideration of courses that are already offered or current faculty expertise (i.e., aspirational - what would the “perfect” degree program look like?)
- Identify courses of peer environmental sciences degrees from other comparable universities
- Develop a list of electives/other requirements from courses taught within SNR, that could be offered with current faculty/adjunct expertise
- Evaluate the unique topics/assets of the SNR/UNL Environmental Science program that are missing from peer programs (i.e., how can research from the centers provide education and training that does not exist at other universities? How does it couple to field work opportunities?)
- Prioritize filling gaps based upon enrollment and growth trends - Fisheries and Wildlife (mature), Environmental Science (large and growing), Urban and Community Forestry (new and growing), Applied Climate Science (low), and Water Science (low)
  - Ensure that new hires have at least a 2+2 teaching load
  - Fisheries and Wildlife is a strong and viable program and should continue to see future investment

### *Graduate education*

There is a vibrant and diverse graduate student body. This high caliber group of students feel they are generally supported by SNR. A majority of these students are funded from external grants and are moderately compensated through stipends. The plan for increasing stipends was well received, however there were still a few questions the graduate students needed clarity on. Many of the students noted the graduate student evaluation process as being successful and useful for their own progress. Having the new graduate student coordinator will further solidify the evaluation process and help build more cohesion among students. The graduate students also noted the diversity of disciplines as a strength to the SNR programs.

To further enhance graduate education there needs to be a stronger tie between research faculty and graduate teaching and more graduate student only courses need to be offered. There was a lot of discussion about the lack of teaching assistantships (TA lines) within SNR and confusion about whether there were some or none. Increased transparency and advocacy around TA lines is warranted. There was a clear need for building a stronger community among graduate students especially post COVID. The Graduate Student Association could be a critical partner on helping with this. The below recommendations can facilitate growth in graduate education in SNR.

- Establish core graduate-only courses that support multiple specializations
  - Evaluate with respect to teaching efficiency and assignments
- Improved graduate student experience
  - Improve the graduate/post doc orientation and consider a comprehensive day-long graduate student orientation that includes post docs

- Create a “Hardin Handbook” for graduate students with all the necessary information on the logistics of being a graduate student and where to find resources on campus and within Hardin Hall
- Improve recruitment of quality graduate students with the following: 1) enforce standards in the graduate student application process, 2) increase number of TAs and match recipient backgrounds to curricular needs, and 3) continue to increase graduate student stipends to compete with other Big Ten universities.
- Continue to invest in the graduate student coordinator
- TA lines are needed
  - Create more opportunities for TA lines for graduate students
  - Provide more resources for graduate TA lines, and consider ways to more strategically leverage them to advance teaching and research objectives
  - Consider as part of grad student training to provide TA and Extension opportunities

## **Research and Centers**

There is incredible productivity in the research enterprise of SNR and care should be taken not to disrupt this success. There are impressive levels of funding, publications, and decision-support tools that SNR and IANR should be touting as huge successes of the unit. Research activities support critical needs across local, regional, national, and international contexts and have a strong emphasis on applied work while still answering basic research questions. Research programs and centers are supporting the vast majority of graduate students in SNR. Extra care should be taken when determining how to balance research success with teaching.

Centers are an integral part of the research program in SNR. Centers are successful at securing large grants and having continual flow of funding. They add depth and breadth to SNR and also provide critical service to the state and beyond. The Centers have strength in water, climate, drought, geology and soil science that is symbiotic with the teaching and research in SNR. Lastly, centers help contribute to the diverse workforce within SNR.

Below are a few recommendations to help strengthen research in SNR:

- Strategize ways to offer better data storage and accessibility for both digital and physical data archives (i.e. big data, core samples, etc.)
- Increase collaboration between centers and SNR through student mentoring, interdisciplinary research, and teaching
- Ensure IANR and UNL provides the appropriate IT support needed for a highly productive research unit like SNR
  - There is a need to maintain at least 1 FTE for local, quick response of IT support in SNR

## **Extension**

Extension is present throughout SNR and includes a diversity of programs that reach to all of Nebraska and beyond. Extension faculty in SNR bring a novel natural resource perspective to Extension relevant to today's society. It is clear that many working in Extension have external partners that want to continue to invest in SNR. Of particular note, is the positively engaged SNR Extension leadership that has established better connectivity between extension activities and SNR research and education.

Notable areas of growth include further consolidating small Extension appointments and finding ways to further cultivate relationships between SNR extension and IANR Extension. Here are some recommendations:

- Define extension impacts and expectations for extension activities in each program area and fold them into program evaluations
- Maintain an SNR presence in IANR Extension collaborations through the concept of "working landscapes"
- Continue to consolidate small Extension appointments as appropriate with the goal of having some faculty with a majority Extension appointment

## **Mosaic**

There were several areas within SNR that fall outside the boundaries of teaching, research, and service noted. Staff within SNR were engaged and positive. However, the staff are at a pinch point leading to overwhelming workloads. There is a clear need to invest in a communications specialist and additional SNR IT staff. The business center was seen as a success and should be monitored to ensure they continue to run smoothly.

We commend SNR on recent efforts to explore programs that are novel like the Platte Time Basin and Nebraska One Health. These efforts indicate that SNR is diverse, interdisciplinary, and focused on solving today's grand challenges. These programs should be welcomed and supported by all in SNR. A few additional suggestions are as follows:

- Consider investing in additional hires especially in communication specialist, IT, and the Business Center
- Provide greater opportunities for staff advancement to aid retention and opportunities for pay increases
- Engage with stakeholders to garner funding for endowed professorships
- Continue to facilitate strong working relationships, encourage one another, and recognize and take pride in the strong work being done within SNR
- Be proactive about making SNR's needs known to upper administration in an organized and strategic manner