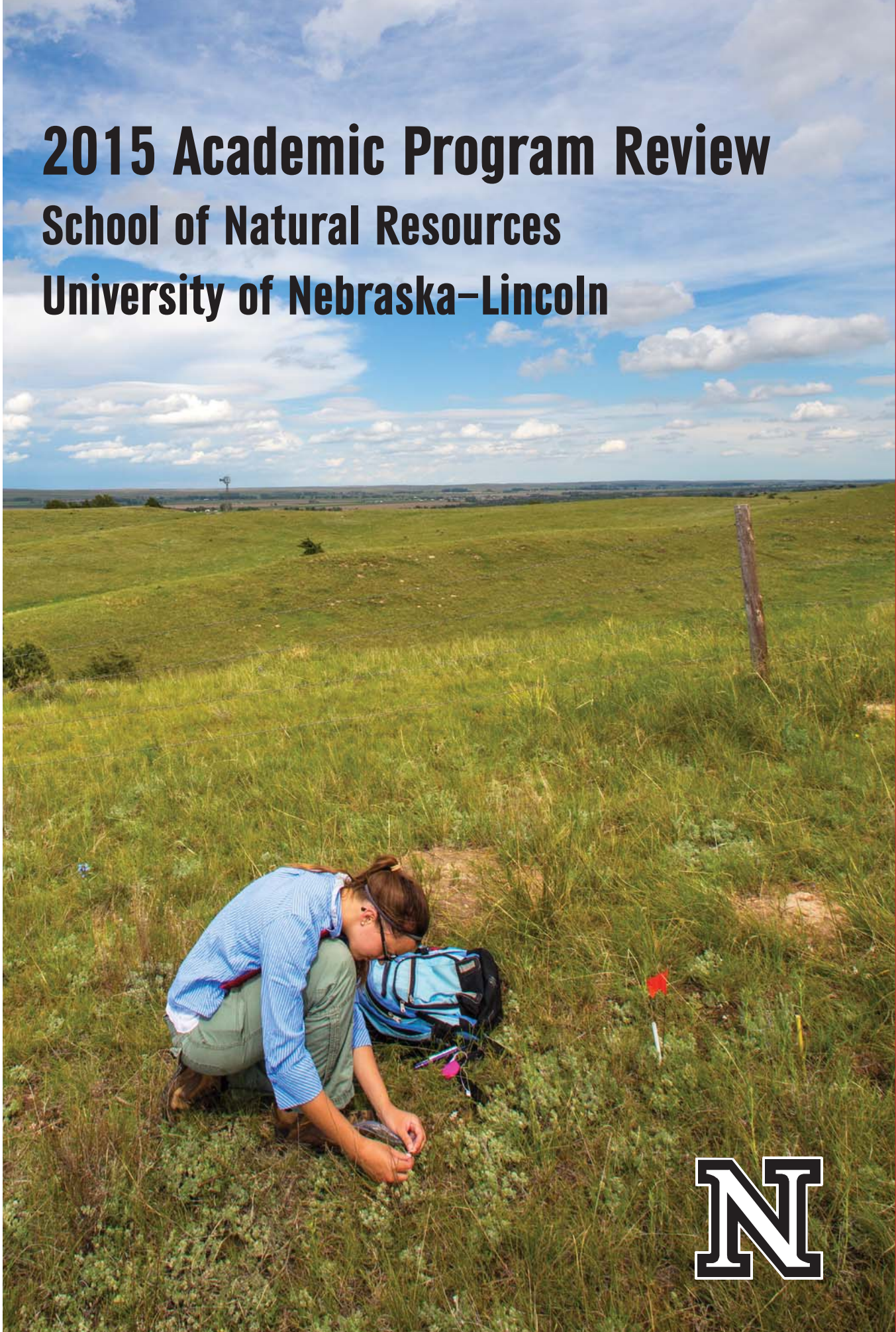


2015 Academic Program Review

School of Natural Resources

University of Nebraska–Lincoln



Executive Summary

Natural resources include everything used or valued by humans and not created by humans. As a result, people, the choices they make, their values and beliefs, are at the core of what the School of Natural Resources does at the University of Nebraska-Lincoln. Because SNR is located at a land-grant university in one of the most agricultural states in the country, we are uniquely positioned to tackle all three of the land-grant functions relative to agriculture from a perspective different from all of the other units in IANR. SNR provides the expertise that society needs to balance the desire for increased food production with other societal priorities.

Today, we are achieving our educational goals at a higher level now than at any time since our founding in 2003. We have more undergraduate students than in 2003, although the number of students in our classes fluctuates a great deal between even and odd years. Our graduate program has quadrupled in size since 2003. Sponsored support for our research averaged \$9.1 million annually since FY 2010-2011.

Despite this ongoing success, SNR faces significant challenges. Sharing faculty members across IANR, the College of Arts and Science and the College of Engineering creates administrative challenges with annual evaluations, salary increases, and promotion and tenure. High faculty turnover and inflexibility in adjusting FTE distributions among Teaching, Research and Extension areas make it difficult to maintain programs over time. A final challenge facing SNR is the significant reliance on either soft (grant-funded) or non-UNL faculty as significant contributors to Mission Areas within the school. It is sometimes difficult for these faculty members to contribute to the overall mission of SNR, since grant or government agency requirements dictate much of their work effort.

IANR is presently making significant investments in SNR, with five faculty positions either interviewing or accepting applications, and a further six positions approved but not yet released. Notably, one of these positions is partially funded through a partnership with Nebraska Game and Parks Commission.

This document focuses on the decisions made by SNR faculty as a whole, and in various sub-units including four mission areas, centers and affiliated educational programs. These decisions involve allocation of resources (operating budget, classrooms, equipment), prioritizing new faculty hires, undergraduate and graduate curricula, and outreach events. In a series of open meetings of staff, students and faculty, we developed a range of objectives to guide our decisions. We developed a series of alternative packages of actions ranging from “status quo” (i.e. no changes) to a “Balanced Mix” of proposed actions for the next five years. At a half-day retreat, participants selected the Balanced Mix alternative that includes:

- Faculty Advisory Committee (FAC) revisits the learning objectives of all curricula, developing a core Natural Resource Curriculum that transcends different majors, and making sure the appropriate coursework is available. FAC also evaluates SNR involvement in online and distance education in light of the CASNR 2025 Online and Distance Education Plan.
- Natural Resources Undergraduate committee develops annual surveys of student engagement and post-graduation success/satisfaction. Establish a teaching improvement roundtable discussion group to help faculty with peer review of teaching.
- SNR Administration focuses on the Applied Climate Science major, particularly student recruitment, and developing a new Community and Urban Forestry major in collaboration with the Department of Agronomy and Horticulture and the Nebraska Forest Service using grant funding obtained from USFS.

- Graduate Committee to review opportunities and challenges for expanding graduate student numbers in SNR.
- Establish an advisory committee at the SNR level comprised of external stakeholders (DNR, NRDs, Game and Parks, EPA, NRCS, USDA-ARS, and others from the public and private sectors) who meet with the faculty and administration to provide advice on curricula and capability needs of graduates as well as identifying research needs. Some members should be from outside Nebraska in order to represent national interests. Engaging with our community of stakeholders will ensure our teaching, research, outreach and extension activities focus on things the community cares about.
- Develop an SNR research committee comprised of senior faculty to develop school-level interdisciplinary teams to pursue large grant opportunities. Establish an external fundraising and development committee to enhance SNR endowment.
- Refocus our outreach efforts on two large events, discontinuing our fall evening public talks. Naturepalooza continues to focus on biotic natural resources in the fall, while we reinvent the spring Severe Weather Symposium to include soil- and water-related activities. SNR Administration to evaluate the role of SNR Extension within IANR Extension Program starting in October 2015.
- Starting in 2016, SNR administration works with an administrative consulting firm to enhance training opportunities for SNR administrative team. Starting in 2017, SNR administration and center directors review sustainability plans for all SNR centers. Starting in 2018, SNR administration reviews operations of Nebraska Maps & More.
- Annually identify core and priority faculty hire proposals with equal weight on teaching, research, service and extension missions.

Development of a core NR curriculum increases the sense of integration among faculty across SNR, improving morale and possibly increasing collaborative research and extension efforts. Surveys of student satisfaction identify problem areas quickly, leading to increased student retention and faster graduation rates. Feedback from employers and alumni increases relevance of coursework and provides evidence of job success for graduates, further increasing enrollment. Interactions with stakeholders lead to increased research funding for relevant research. Expanding the range of outreach activities increases the number of faculty contributing to outreach. In addition to increasing both numbers of students and research dollars, this alternative will improve the quality of our undergraduate programs and the relevance of our research and extension activities.

These SNR-level decisions are combined with decisions from each of the mission areas, centers and affiliated educational programs to form a portfolio of actions that we will pursue over the next five years.

SNR Administration Level Priorities

For the next 5 years a number of key SNR level challenges and priorities will be advanced by SNR administration for development of more effective use and management of resources and human capital, as well as modernization of program in the face of a changing higher education landscape.

- 1) SNR Management Development
 - a) Work with administrative consulting firm to enhance training opportunities for SNR team with administrative appointments. Initiate during 2015-2016 academic year.
 - b) Enhance support of staff professional development opportunities.

- c) Review future of Nebraska Maps and More. To be started in 2018.
- 2) SNR Teaching
 - a) Complete evaluation of undergraduate teaching and management of majors within SNR (Common core, capstone, integration of majors). Program to be lead by FAC starting in September 2015. Outline of questions and issues to be addressed will be delivered to FAC by Director at September 2015 FAC meeting.
 - b) Complete evaluation of SNR involvement in online and distance education. Outline of issues will be delivered to FAC by Director at September 2015 FAC meeting. FAC may choose to undertake this in conjunction with number one above.
 - c) Focus on Applied Climate Science major, especially student recruitment.
 - d) Continue development of Community and Urban Forestry Major. In development with Dept of AgHort and Nebraska Forest Service (grant funding obtained from USFS).
 - e) Review graduate student expansion in SNR including opportunities and challenges. To be undertaken by SNR graduate committee starting in September 2015.
- 3) SNR Extension
 - a) Establishment of a Nebraska State Climatology Office within SNR. Lead taken by SNR administration with key ACS faculty. Process has begun.
 - b) Evaluation of the role of SNR Extension within IANR Extension Program. Informally already begun, but formally starting in October 2015 by SNR administration.
- 4) SNR Research
 - a) Develop SNR research committee comprised of senior faculty to develop School level interdisciplinary teams.
- 5) SNR Centers
 - a) Review/establish sustainability plans for all SNR Centers with Center Directors. Starting in 2017.
- 6) SNR College of Arts and Sciences
 - a) Rebuild Geography Program and continue integration within SNR.
 - b) Meet with other unit administrators within CAS to establish framework for leveraging faculty positions and role of geography in CAS. To begin after new geography faculty hires in 2016.
 - c) Initial Spatial Science Center concept in 2017.
- 7) SNR External
 - a) Develop plan for establishment of External Advisory Boards for SNR and possibly Mission Areas within SNR. Lead taken by SNR administration starting summer 2016.
 - b) Establish Nebraska Stakeholders Board (DNR, NGPC, DEQ, NET, NRDs, Highways, and others) Lead taken by SNR administration starting September 2016.
 - c) Establish an external fundraising and development committee to enhance SNR endowment. Lead taken by SNR administration starting January 2017.

SNR Mission Area Priorities

- 1) Applied Climate Science
 - a) Add two faculty hires (Climate Risk, and Climate Monitoring and Decision Support) to enhance the research capacity of ACS in the areas of climate variability and change and build a stronger undergraduate program to complement the ACS graduate program, increasing the teaching FTE

School of Natural Resources

- to 1.90. These hires will assist with teaching key ACS courses on an annual basis, currently a serious deficiency in the program. (2015-2019)
- b) Increase the number of undergraduates and graduate students and, thus, the number of student credit hours. (2015-2019)
 - c) Enhance the Nebraska State Climate Office and assimilate climate resources geared toward state services (weather monitoring, extension, outreach, research). (2015-2016)
 - d) Coordinate and integrate the extension, research and teaching objectives of the Applied Climate Science faculty to enhance the contributions of climate science to UNL programs and better serve stakeholders needs (2015-2017)
- 2) Applied Ecology Mission Area
- a) Review and adjust undergraduate curriculum to incorporate new capacity and interests of new faculty positions, 2016-2017
 - b) Develop an NSF Research Experience for Undergraduate proposal 2016-2017
 - c) Develop an Applied Ecology stakeholder research symposium to showcase research and deepen collaborations off-campus, 2017-2018
 - d) Develop a strategy for professional development activities to support productivity of faculty and postdocs, 2017-2018
- 3) Environmental Sciences
- a) Review learning objectives for both Water Science and Environmental Restoration undergraduate majors and identify curriculum gaps. Consider advantages and disadvantages of consolidating the two majors.
 - b) Develop a minor for hydrology/water science to promote a departmental wide “water literacy” among all SNR graduates.
 - c) Strategize on the development of a nationally recognized and unique ‘theme’ for our SNR programs, for example, a ‘water’ theme that will attract students and set national standards for water education. The intention is to elevate our international exposure and visibility through a nationally unique theme that recognizes Nebraska’s uniqueness.
 - d) Identify research and teaching areas where ES (SNR) and UNL lack sufficient expertise and leadership, networking and vision to assemble strong and successfully competitive research teams.
 - e) Develop graduate/undergraduate courses in (a) An applied groundwater modeling course, and (b) “GIS in Natural Resources and the Environment” (GIS-NR-E). Offer a Hydrology course every semester to support a department-wide water theme and to promote ‘water literacy’.
- 4) Geography and Spatial Science
- a) Add new faculty hires in the areas of GIS, remote sensing, land use/land cover, and human-environment interactions to re-establish a viable undergraduate and graduate degree programs in Geography. (2015 – 2019)
 - b) Raise the number of Geography majors and students pursuing Masters and Ph.D. degrees. (2015 – 2019)
 - c) Strive for national research and teaching prominence in the areas of remote sensing and GIS, Geography of the Great Plains, and environmental change and raise the visibility and communicating the value of Geography across UNL. (2015 – 2019)
 - d) Integrate Geography research and training in spatial analysis with key initiatives and Centers within SNR and UNL.

CALMIT rebuilds recently lost capacity with some positions already advanced and seeks further faculty positions to capitalize on the facilities already available for research.

Conservation and Survey Division continues to transition in structure while maintaining the legislatively mandated functions to record and disseminate information about Nebraska's geological resources.

Great Plains Cooperative Ecosystem Studies Unit has just been renewed for another five years. The director and National Park Service staff in the unit intend to develop a research theme to bring together land managers and researchers on a larger more collaborative scale than heretofore.

High Plains Regional Climate Center is also embarking on a new five-year cycle of funding from NOAA. In addition to meeting NOAA objectives, faculty and staff will work on identifying funding to develop decision support tools for delivering climate information.

National Drought Mitigation Center has recently received significant funding through NOAA providing a stable basis for continued operations over the next five years.

Nebraska Cooperative Fisheries and Wildlife Unit is still fully staffed with three federal scientists, and will continue to be a powerhouse for graduate education and research in the school for the next five years.

Environmental Studies Program continues to diversify the faculty contributing to the core teaching program, and develop new outreach opportunities.

Human Dimensions Program capitalizes on new faculty hires to continue delivering social sciences education for our undergraduate and graduate programs while expanding participation in interdisciplinary research projects.

IANR Science Literacy Initiative builds a brand new program of disciplinary-based educational research and contributes to core teaching requirements in CASNR.





UNIVERSITY OF
Nebraska
Lincoln®

The University of Nebraska–Lincoln is an equal
opportunity educator and employer.