

15TH BIENNIAL CONFERENCE ON UNIVERSITY EDUCATION IN NATURAL RESOURCES

*Building Connections: Pathways to community engagement
and accessibility in natural resource education*

Virtual Format

Abstracts

**April 23rd and 24th
2024**

Hosted by: Oregon State University, College of Forestry
BCUENR@OSU



Oregon State University
College of Forestry



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Conference Schedule



Keynote Speakers



Natalie Bursztyn
University of
Montana-Missoula



Nathaniel Kirk,
Oregon State
University



Barbara Spiecker,
University of New
Hampshire



Cristina Eisenberg,
Oregon State
University

Tuesday, April 23rd:

Can we push the boundaries of science communication? 1:00 pm, Pacific Time, Main Room

Barbara Spiecker
University of New Hampshire
Atomic Hands

A CURE to limited research opportunities for all: Partnering with students in your classroom to have authentic course-based undergraduate research experiences (CUREs), 3:00 pm, Pacific Time, Main Room

Nathaniel Kirk
Integrative Biology
Oregon State University

Wednesday, April 24th:

Using virtual reality to improve accessibility in field-based education, 10:00 am, Pacific Time, Main Room

Natalie Bursztyn
Geosciences
University of Montana-Missoula

Place-Based Pedagogy that Takes Us Beyond the Land Acknowledgement, 1:00 pm, Pacific Time, Main Room

Cristina Eisenberg
College of Forestry
Oregon State University

Tuesday, April 23rd

Session 1: Accessible Pedagogy I

*8:30 am Pacific Time, Tuesday April 23rd
Main Room*

Facilitating connections and navigating challenges in a large online introductory natural resource course

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College of Natural Resources

University of Wisconsin- Stevens Point

Students majoring in a natural resource field in the College of Natural Resources (CNR) at University of Wisconsin - Stevens Point complete four required introductory courses. These “core” courses include a large lecture (200+ students) component, with smaller lab and discussion sections. Historically, courses were only offered in-person, including a section of “NRES 150: People, Resources and the Biosphere” targeted to non-majors as a General Education course. In 2018, NRES 150 was developed as a 100% online, asynchronous course as a way to increase access and flexibility to students outside and within the College. The NRES 150 team – including online and in-person instructors – takes a collaborative, adaptive approach to the course. In this presentation, we will share our experiences teaching both versions of NRES 150, benefits of the online offering to students and faculty members, challenges presented by the large, asynchronous format, lessons learned, and best practices.

Improving sense of belonging in ecology

Rory Carroll* and David Outomuro

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Department of Biological Sciences

University of Pittsburgh

We aimed to empower students with knowledge, validation, and sense of belonging by implementing inclusive active learning modules in an undergraduate Ecology course. These modules intentionally present the diversity of the scientific community often underrepresented in textbooks and media, reflect on the current ecological crisis as a problem that disproportionately impacts marginalized communities, and challenge the traditional perception of gender, sex, and gender roles. The results of surveys indicate that our modules achieved a significant shift towards student recognition of how historical biases shaped the current scientific landscape, the benefits of diverse identities in scientific communities, and the fluidity of sex and gender in nature. Our sample population was majority white (65%) and heterosexual (78%), but we found some evidence of a stronger shift among non-white students. Intentional and inclusive teaching

practices in foundational natural science courses could have a positive impact on retention and achievement of underrepresented students.

Supporting Blind and Visually Impaired Students in Life Sciences and Natural Resources

Lori Kayes* and Carmen Harjoe

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Department of Integrative Biology

Oregon State University

Coursework that is dependent on experiential learning, such as often found in natural resources education, can present barriers for a variety of students. These barriers can be magnified for students who experience disabilities that impact their access to the full depth of the course content and materials, in particular blind or visually impaired (VI) students. We will share a student-centered model for modifying laboratory and field activities to be accessible to blind/VI students while providing equivalent learning opportunities. Specifically, we provide general recommendations for working with blind/VI students from planning and daily interactions to a case study on how to use learning outcomes to modify course activities to be accessible.



Charting the Emotional Climate: Eco-Anxiety's Presence on a College Campus

Megan Lupek*

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Department of Forestry and Environmental Resources

College of Natural Resources

North Carolina State University

Eco-anxiety, the mental distress caused by climate change and environmental degradation, has gained significant attention in recent years. It has emerged as a particularly prevalent issue among youth and young adults, who face an uncertain future due to environmental challenges. However, little research has been conducted on how eco-anxiety impacts university students. In this study, we conducted qualitative focus group interviews to determine the prevalence and mental health implications of eco-anxiety among students pursuing environmentally-related majors as well as explore potential intervention strategies to support individuals experiencing

such distress. Participants indicated a high prevalence of eco-anxiety and noted strategies for coping. We discuss these results in the context of teaching environmentally-related materials and how class content can trigger eco-anxiety and eco-hope.

Getting the big picture: assessing student learning using repeat image selection

Gwendŵr Meredith*

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School of Natural Resources

University of Nebraska- Lincoln

With time constraints at a course's start, traditional pre-course evaluations pose challenges. This talk explores a creative way to check how well students understand a subject at both the beginning and end of a semester. Students share a picture representing a field of study, environmental sociology in this case, with a short explanation at the semesters' start and revisit the task at its' end. This visual approach not only tracks students' changing understanding but also suits different learning styles. Initial results, shared with students' consent through the University of Nebraska-Lincoln's Faculty-led Inquiry into Reflective and Scholarly Teaching (FIRST) project, suggest the assignment effectively offers a quick way to see how well students are learning and applying course theories. In many cases, students applied concepts and theories used in class to how they think about their communities, showing a level of application to novel contexts and internalization of learning objectives.

Session 2: Community Connections I

8:30 am Pacific Time, Tuesday April 23rd

Sitka room

The Role of Extension Agents in Urban Forestry Public Education

Maxine Hunter*

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University of Florida

IFAS Extension- Marion County

Trees are a vital part of healthy ecosystems, and tree health is a big concern to many homeowners in urban areas. In Central Florida, human populations and residential development is growing rapidly and growth has continued to expand whilst impacting many native tree species. As Extension agents, we can provide multiple services to improve urban tree canopies and green space, make management recommendations, and assist with tree risk evaluations to both residential clients as well as to municipalities. Tree programs educating public audiences are well received and can assist with a multitude of tree issues including dissemination of information on current disease and pest problems in specific tree species and recommendations

for replacement tree species when needed. Recommendations backed by research-based University of Florida resources, other land grant universities resources, and the International Society of Arboriculture Standards improve the health of trees on a local level and promote sustainability.

Connecting with a Small-Town Public Library for Natural Resource Engagement & Outreach

Paul Skrade*

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Upper Iowa University

Upper Iowa University's Fayette Campus is located in a town of fewer than 1200 residents in rural northeast Iowa. The city claims the distinction of being the only one in the United States with a university, but no public K-12 school. The Fayette Community Library is a lifeline for the community – the city council holds their monthly meetings there, the library hosts after school programs for the area children, it provides internet access for residents who lack computers or high-speed internet, and much more. Faculty and students in UIU's Conservation Management program have been involved in community programming for residents of all ages for several years. This has taken many forms, from connecting residents with citizen science opportunities like the Great Backyard Bird Count, to presenting about gardening for wildlife, to leading after school programs showing students area birds. The students have improved their oral communication skills, provided a resource in the community, and connected with residents in non-traditional ways.

Environmental Education and Sustainable Behavior

Kacy Kai*

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Clemson University

Some people and organizations, like universities in the United States, strive to be environmentally friendly. One strategy to be environmentally friendly is to encourage the participation in sustainable behaviors. Implementation of environmentally friendly practices can be a response to the environmental degradation that many, such as the attendees of universities, learn about and experience. Though as the literature has found, knowledge of the issues is not enough to prompt enactment of resolving environmental issues such as participation in sustainable behaviors. This study focuses on some of the components of behavior change that may inspire long term participation in sustainable behavior by university students who were enrolled in the Environmental Education course at Clemson University and took part in a behavior change activity.

Community Greening Co-Design, Outreach, and Undergraduate Applied Learning

Mayra Ivelisse Rodriguez Gonzalez*

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University Extension plays a pivotal role in cultivating an applied learning environment. At the University of Connecticut, community sensemaking sessions and outreach events organized by the Urban and Community Forestry Extension team not only facilitate meaningful engagement with community members, but also establishes concrete opportunities for applied learning among university students. The initiative has successfully created several undergraduate student internship positions that encompass various Environmental Justice domains (e.g., heat and stormwater mitigation, nature and food access, etc.). These positions strategically involve students in needs assessments, community sensemaking, participatory mapping processes, and more. These internships offer valuable hands-on experiences, exposing students to both adult and youth engagement within the community. Active participation in these initiatives allow students to gain practical insights into the intricacies of community forestry and environmental stewardship. Simultaneously, community participants from diverse backgrounds find a safe space to share their own narratives and engaged in interactive learning through culturally relevant programs. This integrated approach enhances the educational impact of the program, fostering a dynamic learning environment that seamlessly blends academic knowledge with real-world community engagement.

Undergraduate Student Engagement in Near-Peer Mentoring for a Culturally-Relevant, Community-Based Environmental Program

Danielle Kloster* and Laura Cisneros

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SUNY College of Environmental Science and Forestry

Representation of historically marginalized groups in STEM fields is well below that of the general population, and to an even greater degree in natural resources and environmental fields. UConn's Conservation Ambassador Program aims to reduce barriers to recruitment and retention of marginalized students into these fields by engaging high school students in a week-long summer field experience and a 10-month community environmental action project. Under a new program model, CAP is also integrating marginalized undergraduate students as program leaders (i.e., Difference Maker Mentors, DMMs) to bring culturally-relevant approaches to program activities and serve as near-peer mentors to teen participants. In this presentation, we will share research results exploring how near-peer mentoring and community engagement affects science self-efficacy, interest, and career goals of high school participants, as well as how participating in the program has affected the career goals, skills and abilities, and interest in natural resources for undergraduate DMMs.

Session 3: Community Connections II

10:00 am Pacific Time, Tuesday April 23rd

Main room

Utilizing charismatic microfauna to foster connection between University of Nebraska students and at-risk elementary students

Isabella Villanueva*, Lindsey Chizinski, Doug Golick, John Carroll

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University of Nebraska-Lincoln School of Natural Resources

Southern flying squirrels were recently discovered on the University of Nebraska–Lincoln’s East Campus unveiling an intriguing extension of the species' range and showcasing their adaptability to urban landscapes. We are creating a community-based project to connect UNL’s East Campus, the Clinton neighborhood, and Clinton Elementary School. This project is centered around outdoor education and Southern flying squirrels. The goal is to actively engage students of diverse backgrounds in conservation activities to foster enthusiasm for urban ecosystems and outdoor science. Using place-based and experimental learning, a comprehensive program is being designed for implementation in schools across Lincoln. As part of this initiative, nesting boxes and feeders will be strategically placed to raise awareness about flying squirrels and their significance in the local ecosystem. The use of these charismatic creatures as educational tools aims to captivate children's interest in science, ultimately strengthening their passion for scientific exploration and connection to conservation issues.



Utilization of Higher Education State Trust Lands for Forestry Education and Research

Jill Beckmann*

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Northern Arizona University

This talk will provide a brief history of NAU Centennial Forest and explore challenges and opportunities associated with utilization, without direct ownership, of state trust lands for university education and research. The mission of NAU Centennial Forest to deliver educational use benefits to university beneficiaries hinges on strong partnership with the Arizona State Land Department and the Arizona Department of Forestry and Fire Management. This unique set-up leverages institutional and agency capacity to provide co-benefits for higher education and agency development via opportunities for shared learning, collaborative forest management, community engagement, student professional development, and applied field experiences.

How a "Wild Wheel" can Enhance Student Engagement

Joshua Hill*

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Lethbridge College

Creating meaningful and engaging activities for students can be challenging and often fraught with uncertainties of how it will be received. This challenge especially true for students studying the human dimensions of wildlife and psychology. Additionally, persuading community members to participate in surveys and provide feedback on wildlife interactions presents similar difficulties. To enhance the student-community experience, I collaborated with psychology students and members of the Lethbridge College Chapter of The Wildlife Society. I developed an initiative to gather opinion data across Lethbridge, Alberta, employing an innovative tool: the "Wild Wheel of Fortune," which we stationed in various city parks. The interdisciplinary approach not only facilitated enriched exchange between the psychology, ecology, forestry, and natural resource conservation students but also advanced students' interpersonal communication skills through "Community-Based Learning." This initiative demonstrates the value of combining educational disciplines and community engagement to foster a comprehensive learning environment.

Recruiting the Next Generation of Natural Resource Managers Through High School Teacher Range Camps

Ashley Longmore and Cheyenne Reid

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Utah State University Extension-Box Elder

Agriculture teachers have a wide variety of responsibilities. They find themselves teaching students about topics outside of their expertise. Extension is trying to help bridge that gap and grow more interest in natural resource careers. Ag Teacher Range Camp is a three-day hands-on camp designed to empower teachers with insights into the management areas of natural resources, range, grazing, and soils. They also learn about ecological site descriptions, plant identification and associated careers. The curriculum is crafted to enable teachers to integrate their camp learnings into classroom instruction effectively.

Community-Engaged Wildlife Courses: Providing Career Competencies through Collaborations across Campuses and Agencies

Sunshine Brosi* and Mark Chynoweth

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S.J. & Jessie E. Quinney College of Natural Resources

Utah State University

Our Community-Engaged designated courses taught at USU Statewide Campuses' Uintah Basin and Eastern involve students' completing community-driven research projects. Federal and state agencies provide specific projects based on resource-driven questions, students develop pilot studies that provide the baseline for future resource management decisions and additional studies. At the end of the course, students present their projects to the agencies providing opportunities for feedback. For example, students in a wildlife techniques course used game cameras to determine the presence of kit foxes on Bureau of Land Management property in collaboration with the Utah Division of Wildlife Resources. Students develop skills working in groups, career-focused competencies, agency collaborations, and connections to their local community and resource needs. Students reflect on these experiences through articles written in the student newspaper incorporating AAC&U Value Rubric in Civic Engagement. In our presentation, we propose preliminary summative evaluation metrics to document the transformative nature of these experiences.



Session 4: Career Connections I

2:00 pm Pacific Time, Tuesday April 23rd

Sitka room

Effectiveness of Undergraduate Field Practicum in Forestry and Natural Resources at Purdue University

Erin Christian and Liz Flaherty

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Given recent calls for more skill and professional development in undergraduate programs to support graduates in the field of natural resources, students need more opportunities to gain hands-on training. For this reason, many universities with undergraduate natural resource programs historically incorporated a summer field practicum. However, due to costs and liability concerns, many universities eliminated these programs. Purdue University's Department of Natural Resources has maintained a required undergraduate practicum. To assess benefits from participating in this program, we collected voluntary pre- and post student survey data each year since 2019. Initial results indicate a significant positive change in students' desire to attend graduate school and to conduct future research post-practicum. Our results suggest that practicum is a unique opportunity for students to evaluate their identity as a professional as well as their career choice while also improving field skills.

Project-Based Assessment for Career Readiness

Althea H Hagan*

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Clemson University

Changing higher education demography is giving rise to an increasing number of non-traditional students and students seeking professional degrees. These working professionals look for flexible online/in person coursework that can develop their career competencies. With the rise in human - and machine interaction through Artificial Intelligence apps, it has now become important that higher education offers students employability or transferable skills in addition to content knowledge. Instructors in higher education need to work to prepare students for career progression and jobs once they graduate. Project-based learning (PBL) for assessment is one way to equip students with the much-needed transferable skills. In this paper we examine PBL based assessments in two natural resources courses to determine how the assessment tools achieve career competencies defined by NACE (National Association of Colleges and Employers). In each course of the two courses, 6 of 8 NACE employability skills were developed through the implementation of PBL assessment. Simultaneously, course learning objectives of knowledge gain were also met.

Student enrollment trends in natural resources-related degree programs through Fall 2022

Tara L. Bal*, Terry L. Sharik, Peter Ziegler, Deelan Jalil, Andrew Meeks

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Michigan Technological University

Directly after the pandemic began in 2020, there were reports of significant college enrollment declines nationwide generally across all disciplines, more so in some states and for some demographic groups. In this presentation, we update enrollment trends in Natural Resources (NR) from 2005-2022, focusing on National Association of University Forest Resources Programs (NAUFRP) member-institutions. We include all institutions reported (n=66) through Fall 2022 to the USDA-sponsored, Food and Agriculture Education Information System (FAEIS). Differences are apparent in undergraduate and graduate student trends. Total NR enrollments have increased every year since 2014 with a strong increase since 2005. Interestingly, for the first time in NR enrollment assessments, the number of total female students has been higher than for males since 2020. Overall, continuing to have well-documented enrollment data that shows NR fields are not experiencing declining enrollments to the same degree as other academic fields may indicate increased student preference for these fields, and advocate for increased or continual administrative support for these programs.

Integrating Communication and Conflict Resolution Skills into Group

Vernita Ediger*

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College of Forestry

Oregon State University

Group projects are often unpopular, due to the challenges that working with others present. However, they mirror professional contexts, such as subcommittees and advisory committees, and present an opportunity for students to develop skills in leadership, project coordination, and communication. Integrating intentional student application of communication and conflict resolution skills into group project work creates an opportunity for developing often overlooked professional competencies—while also increasing students' enjoyment of group projects. In this presentation I share one approach to building group projects that increase students' awareness of and proficiency with a range of communication and conflict resolution tools.



Tuesday April 23rd, Workshop 1: Assessment vs. evaluation in community engaged learning.

10:00 am, Pacific Time, Madrone room

Led by: Marina Denney, Associate Vice Provost for Engagement, Oregon State University Extension & Engagement

Registration required

Tuesday April 23rd, Workshop 2: Diversifying Enrollment in Forestry & related Natural Resources degree programs: A Relationship-Rich Approach.

12:00 am, Pacific Time, Madrone room

Led by: T.J. Walker, Director of Student Recruitment and Inclusive Excellence and Steve Bullard, Associate Dean, College of Forest Resources Mississippi State University

Registration required

Tuesday April 23rd, Virtual Field Tour: A journey through two of Oregon's most spectacular old growth groves

12:00 am, Pacific Time, Fir room

Led by: Ed Jensen, Emeritus Professor, College of Forestry, Oregon State University

**No registration required*

Tuesday April 23rd, Panel: Supporting and rewarding community engaged and accessible education through the promotion and tenure processes: perspectives from university leaders.

2:00 pm, Pacific Time, Fir room

Led by: Ed Jensen, Emeritus Professor, College of Forestry, Oregon State University

**No registration required*

Wednesday, April 24th

Session 1: Technology, communication and innovation

8:30 am Pacific Time, Wednesday April 24th

Sitka room

FOR 123: Introducing Analytical Skills to Forestry Students Early in Their Academic Programs

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College of Natural Resources

University of Wisconsin-Stevens Point

The forestry program at the University of Wisconsin-Stevens Point has noticed that through the years students were either putting off required math courses and/or just taking longer to get through needed pre-requisites toward completing a traditional mathematics department course sequence. That created a dilemma for the program when students entered their third year – either have students put off Forest Measurements thus substantially delaying their time to graduation or do something else – and that something else was create and teach a 2-credit course: FOR 123 Analytical Skills in Forestry. This hybrid course, intended to be taken during one’s first two years, does not have math pre-requisites, features asynchronous online lectures and F2F discussion meetings and covers topics including spreadsheet skills, geometry, trigonometry and unit conversions to name a few. During this talk you will hear more about the why’s and what’s of this course and the subsequent opportunities it has created.

Identifying Your Audiences and Communicating for Impact

Danny Chin* and Megan O'Connell

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Unity Environmental University

Beyond their scientific training, environmental sciences students need to learn how to engage with Interested and Affected Parties (IAPs) and their different, often competing, priorities. However, much of the training environmental professionals receive reinforces top-down communication (from “expert” to “non-expert”) and does not highlight that “how” environmental information is communicated can be as important as “what” is being communicated. In this session, we provide a model for project-based course design that promotes authentic community engagement and collaboration through skill development in empathy and equity-driven science communication. Strategies such as audience mapping, intellectual empathy, emotional appeal, and use of various forms of media empower students to recognize their role as “senders” and “receivers” of environmental knowledge. The “wicked problems”

pervasive in the environmental sciences require better communication approaches that can foster not only knowledge sharing, but connections with diverse IAP groups so that environmental interventions are more inclusive and effective.

Branching Out: Enhancing Student Communication and Dendrology Skills Through Case Studies and Fact Sheets

Ashley Schulz*

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Mississippi State University, Department of Forestry

Dendrology classes typically focus on the study of woody plant species, covering various aspects of their biology, taxonomy, ecology, and management. Students are tasked with learning the common and scientific names of the species in addition to the identifying features of the species. Some students fail to see the value of learning tree species in this manner, so incorporating activities that allow students to apply their skills beyond basic field quizzes and exams can be important for demonstrating the importance of the skills they are learning. This presentation delves into the utilization of case studies and fact sheets as powerful tools for enhancing communication and identification skills in the field of dendrology. By examining real-world scenarios and consolidating information into concise fact sheets, young dendrologists can effectively learn to convey complex concepts to diverse audiences and facilitate a deeper understanding of tree species, their ecosystems, and conservation challenges within themselves.

"In-tents" Teaching: Exploring the use of outdoor classrooms post-COVID

Michael Brunson*

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Auburn University

The COVID-19 pandemic brought about a flurry of changes within higher education concerning how best to continue facilitating learning. And while online platforms certainly dominated classrooms for months, there was also a push to incorporate the outdoor learning experience more through the use of outdoor classrooms. Even when students finally returned to campuses, many faculty and instructors made efforts to move their classes outdoors due to campus COVID protocols and restrictions on class size. Not only relegated to outdoor oriented fields, the benefits of teaching and learning in the out-of-doors continues to be well documented. But just how much are we utilizing those outdoor spaces for day to day teaching and instruction? This talk shares some thoughts and insight on the use of these spaces as regular occurrences and invites conversation on barriers and opportunities to utilizing outdoor spaces more regularly in our teaching.

Engaging Students Using "Field" and "Travel" Based Assignments

Michael Crosby*

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Louisiana Tech University

Engaging students in methods-heavy coursework can often be quite an undertaking. Coursework in spatial technologies (GIS, GPS, and remote sensing) are typically required electives (and are required in SAF-accredited programs) and student perceptions of these courses vary early in their academic careers. As many have shifted to incorporate smart devices into the company workflows (e.g., using tablets or phones for data collection) the devices and various applications have found their way into university course work. This presentation will focus on assignments in GPS, GIS, and remote sensing courses at Louisiana Tech where students assess device accuracy using a portion of a surveyed route on campus, use LiDAR data collected with a drone, and "travel" to Iceland using previously collected data and imagery to assess an urban/rural temperature differences. These exercises serve to engage students in practical exercises using real-world scenarios and data to obtain information about the natural world.



The challenges and opportunities that Artificial Intelligence presents to natural resource education

Andrew J. Storer*

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Michigan Technological University

When new technologies or tools emerge and become available, there is a tendency to resist incorporating them into our educational programs. Examples include denying the use of the internet in class or in assignments, and avoiding the use of internet enabled devices in the classroom. Over time, we start to incorporate these into our classes as we recognize that our students will move into a workforce where these technologies and tools are all around them and are embraced.

The rapid emergence of Artificial Intelligence (AI) tools presents multiple challenges and

opportunities in higher education. This presentation introduces some of these in the hopes of stimulating conversations about how to optimize the opportunities and address the challenges. Topics include policies relating to the use of AI tools, training students to utilize AI tools, using AI tools in the development of course materials, coaching faculty in the use of AI tools, and issues of academic honesty. As a community it is important to embrace the opportunities as we prepare students for a workforce in which AI will be omnipresent. It is also exciting to contemplate and prepare for what the next generation of AI tools will enable us to do to help ensure the success of faculty and our students.

Session 2: Accessible Pedagogy II

11:00 am Pacific Time, Wednesday April 24th

Main room

A framework and tools to assess natural resource curricula through an inclusive excellence lens

Ashley D'Antonio*, Troy Hall, Kira Minehart
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College of Forestry
Oregon State University

Implementing inclusive pedagogical practices and incorporating principles of diversity, equity, and inclusion (DEI) creates a more welcoming learning environment for students and contributes to student success. Natural resource fields have an obligation to ensure undergraduate programs are welcoming to increasingly diverse student populations in higher education. There is limited literature on how to evaluate undergraduate programs on their alignment with inclusive excellent (IE) principles. We will present a framework and associated tools to evaluate undergraduate programs on IE principles. We piloted our framework in a College of Forestry at a large, undergraduate-serving institution. Using a collaborative approach and support from college leadership, we successfully identified strengths and opportunities for growth in systematically incorporating IE principles across all programs. Our IE curriculum review framework could be easily adapted by other undergraduate programs in natural resource fields as an efficient means of self-assessment.



Leonardo's Children: Integrating Fine Art into University-level Conservation Courses

David Roon*, Kenneth E. Wallen, Sam Chadwick, Grace Peven

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University of Idaho

University Teaching in Conservation Biology is an intersectional process, enriched by the inclusion of supporting disciplines outside traditional STEM fields. However, university-level instruction of Conservation Biology often fails to embrace these disciplines as teaching tools, leading to reduced student engagement. Fine Art, specifically, is seldom utilized. Deep affinities exist between Artists and Conservation Biology, from Leonardo DaVinci's sketches to illustrators in scientific journals and remediation artists like John Sabraw. Fine Art can render scientific themes broadly accessible, stimulate problem solving in research, and connect researchers emotionally to their topic. We present preliminary findings from art-sustainability teaching across three classes at the University of Idaho: an introductory Environmental Science class, an upper-division course in Conservation Biology, and a special topics course in Art and Ecology. We present examples of pedagogies from these courses, as well as student responses and broader impacts. We discuss implications for intersectional teaching, particularly in STEM.

Effort-based assessments in natural resource education: approaches and benefits

Ella Gray*

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Oregon State University

Assessments and grading are core components of the traditional educational experience. However, research has shown that focusing on grades as an outcome does not support learning and that de-emphasizing grades can increase student learning. Developing assessments that focus on student effort can be a way of de-emphasizing grades, encouraging deeper engagement with

the material, and helping students to develop intrinsic motivation for learning. In this session, we will share approaches for effort-based grading, ranging from single assessments to entire courses and across different disciplines. We will also discuss some of the benefits of effort-based grading for students, including increased accessibility of courses, and provide resources for further exploration of alternative grading approaches.

Turning higher education legislation restrictions into opportunities in wildlife and natural resource management education; A case study via fire ecology lesson from Türkiye

Okan Urker*, Tarkan Yorulmaz

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College of Forestry, Dept. of Forest Ecosystems & Society
Oregon State University,

While only associate and master's degrees are currently allowed in the field of wildlife in Türkiye, at the undergraduate and doctoral levels, these educations are transferred under the forestry or biology departments. Unfortunately, there is not yet a main discipline or department throughout the country that will provide specialization in wildlife and natural resource management.

In order to establish wildlife management as the main discipline at every stage of university education in Türkiye, we have made some arrangements at Çankırı Karatekin University, to the extent permitted by higher education legislation; We established an associate degree (technician), a master's degree (we designed it as an integrated education with the bachelor's degree, we offer some basic biology, ecology and forestry courses to outsiders) and a wildlife research center (comparable to the PhD program). We complete the synthesis by bringing together students from all these branches in some hierarchical courses. At this point, the theoretical and practical flow of the fire ecology course will be presented as a case study in order to show more concretely how the synthesis in question is met. The results of this study have a high potential for wildlife to become a major educational discipline by triggering legislative change in Türkiye.

Using learner-generated poetry to help students understand technical scientific literature

Adam Ahlers*, Traci Brimhall

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Kansas State University

Undergraduate students enrolled in ecology courses read peer-reviewed, scientific literature to learn how hypotheses are tested and to understand conclusions from research. This technical material can be difficult to understand for many students, thus inhibiting learning processes and reducing interest in courses or associated content. Using creative methods to teach science-based material can improve student-learning outcomes though students' perceptions on learning have not been fully evaluated. We qualitatively compared changes in students' perceived understanding of peer-reviewed literature before and after poetry writing assignments. Students were asked to read a randomly assigned peer-reviewed paper focused on waterfowl and/or wetland management and rate their understanding of the 1) results and conclusions and 2)

management implications from research described in the paper. We then asked students to read another randomly assigned paper, complete two poems (one haiku and one villanelle) about the paper, then again rate their understanding of both metrics. With our small sample, we found students rated their perceived understanding of peer-reviewed literature higher after creating student-generated poetry and they generally appreciated the assignment. Our qualitative results underscore potential merits of incorporating poetry into science learning and we provide testable hypotheses to further our understanding of how integrating poetry into science-based courses may enhance student learning.

Online Education-based Active Learning for Graduate Students: Designing Research Framework for Restoring Land Degradation-based Using Vetiver Grass

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Studying online becomes necessary for educators to provide a lifetime learning that they access easy and convenient to interact with lecturers all time and everywhere. Therefore, this study aimed to teach online-based active learning for designing research framework in a case of restoring land degradation-based using vetiver grass. There were 8 Asian graduate students (6 Thai, 1 of Khmer and 1 Nepali people) were taught with research processes: identifying the problem, evaluating the literature, creating hypotheses, and designing research framework. The results were found that 8-Asian graduate student could generate research framework. They all had different designs including choosing a study area. Moreover, they could answer online for assignments all the time, they feel so easy and convenient. Consequently, this online education is extremely useful for the learning of graduate students because they can interact studying by themselves anytime and everywhere especially during the pandemic situation.

Session 3: Career Connections II

2:00 pm Pacific Time, Wednesday April 24th

Main room

How does a job in natural resources appeal to students? The Workforce Analysis with a Focus on Diversity, Equity, and Inclusion

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Within the forest and related natural resources sector, there are notable disparities in diversity and representation, especially in terms of gender and race. These discrepancies exist across several categories like industry, jobs, and firm ownership structures. As an effort to address the

obstacles regarding diversity, equity, and inclusion (DEI) in the sector, the U.S. Forest and Wood Products Inclusion Council was formed. This study is conducted to support the Council's strategic work for outlining a National Action Plan. As a part of the first author's Master Thesis, a survey targeting natural resource students has been launched. Two objectives of the survey are: (1) to understand patterns of entry to the workforce, and (2) to understand what people are looking for in natural resource career. In this presentation, we would like to use the opportunity to invite and integrate diverse perspectives including the latest scientific knowledge woven with Traditional Ecological Knowledge.

Perceptions of Scientist Spotlight Assignments: Perspectives of Students at a Rural State University

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Recent work has demonstrated that after completing a series of "Scientist Spotlights" assignments highlighting diverse scientists, student-held stereotypes of scientists shifted, their science-identity increased, and course grades increased. We are investigating whether Scientist Spotlight assignments have a similar impact on students from a small state school in a rural setting. To investigate this, Scientist Spotlight assignments were assigned in two courses over six semesters. Students were asked to complete surveys about their scientist stereotypes, science identity, and science process skills. Throughout each semester, students in these courses were asked to read Scientist Spotlight profiles and watch any associated videos, then submit a reflection about what they read/watched. Preliminary results suggest that the scientist stereotypes of lower-level students do indeed shift; however, upper-level students reflect that the Scientist Spotlight assignments don't change their perceptions of scientists but instead demonstrated potential career paths to them.

Equity-centered experiential learning: lessons from the Vanguarding an Inclusive Ecological Workforce (VIEW) Fellowship

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Oregon State University

How can an institution create experiential learning opportunities that help diversify our profession, support students new to research, and benefit faculty research aims? Come learn about the model of the Vanguarding an Inclusive Ecological Workforce (VIEW) Fellowship, created and hosted by the Department of Fisheries, Wildlife, and Conservation Sciences at Oregon State University. VIEW is an award-winning program that involves matching faculty research mentors with undergraduate applicants from underrepresented or historically excluded communities, to engage in ten weeks of paid research and cohort-building professional development activities. By creating programs with equity-centered hiring practices, a peer social network, and structured long-term mentorship, institutions can promote academic retention, enhance interest in graduate school, and encourage the post-graduation career success of students just starting their academic and professional journeys.



Connecting Students and Natural Resource Managers through the Submission of an online Silviculture Case Study

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Students and employers increasingly note the importance of future forestry and natural resource students being able to communicate effectively and efficiently. However, assignments focusing on communication within the classroom can be critique as not being applicable to the “real world.” To address this, silviculture students at the University of Minnesota work with foresters and natural resource professional to publish an online silviculture case study to the Great Lakes Silviculture Library. The Great Lakes Silviculture Library is an online, open-source platform that shares real-world examples of silvicultural treatments across ownerships and Nations. Since 2016, over 50 online case studies have been published that are co-written by students and natural resource professionals. At the beginning of the semester, student and natural resource professional are paired and work through the online submission form. This can include additional field data collection or analysis, providing an opportunity for student and natural resource professionals to work together. During my presentation, I will share an online of the assignment, example of case studies produced, and lessons learned.

(See next page for Wednesday’s Workshops, Panels and Virtual Field Trip)

Wednesday April 24th, Workshop 1: Increasing Accessibility in the Field Sciences: Create Your Own Virtual Field Trip Using Google Earth!

12:00 pm, Pacific Time, Madrone room

Led by: Natalie Bursztyn, University of Montana- Missoula

[Registration required](#)

Wednesday April 24th, Workshop 2: Squirreling around for science: Implement ecological, field-based CUREs in your classroom today

2:00 pm, Pacific Time, Madrone room

Led by: Patrice Conners, Colorado Mesa University, Jennifer Duggan, California State University, Monterey Bay, Christopher Yahnke, University of Wisconsin-Stevens Point
Johanna Varner, Colorado State University

[Registration required](#)

Wednesday April 24th, Virtual Field Tour: Historic and significant trees of OSU's campus!

12:00 pm, Pacific Time, Maple room, **No registration required*

Led by: Ed Jensen, Dan Blanchard, Joe Majeski,

Wednesday April 24th, Panel: Increasing Field Experiences on University Campuses

9:00 am, Pacific Time, Maple room

Led by: Ed Jensen, Emeritus Professor, College of Forestry, Oregon State University

**No registration required*