Oregon TECH
Oregon Institute of Technology

Meeting of the
Oregon Tech Board of Trustees
Academic Quality and Student Success Committee
Virtually via Microsoft Teams
Tuesday, May 30, 2023
10:30 am – 12:30 pm

Academic Quality and Student Success Committee Agenda

1. **Call to Order/Roll/Declaration of a Quorum** (10:30 am) (5 min) *Chair Jeremy Brown*
2. **Consent Agenda** (10:35 am) (5 min) *Chair Brown*
   - 2.1 **Approve minutes of the January 25, 2023, meeting**
   - 2.2 **Approve minutes of the April 12, 2023, meeting**
3. **Reports**
   - 3.1 **Provost's Report** (10:40 am) (20 min) *Provost and VP for Academic Affairs and Strategic Enrollment Management Dr. Joanna Mott*
   - 3.2 **Student Affairs** (11:00 am) (20 min) *Vice President of Student Affairs and Dean of Students Dr. Erin Foley*
4. **Action Items**
   - 4.1 **New Program Approval: Masters in Natural Resources** (11:20 am) (20 min) *Dean Dan Peterson and Department Chair Nate Bickford*
   - 4.1 **New Program Approval: Masters in Biomedical Sciences** (11:40 am) (20 min) *Dean Dan Peterson and Department Chair Nate Bickford*
5. **Discussion Items** *Chair Brown*
   - 5.1 **Accreditation Visits – Outcomes** (12:00 pm) (20 min) *Provost Mott*
6. **Other Business/New Business** (12:20 pm) (10 min) *Chair Brown*
7. **Adjournment (12:30 pm)**

Oregon TECH
Oregon Institute of Technology

Meeting of the
Oregon Tech Board of Trustees
Finance and Facilities Committee
Room 402, Portland-Metro Campus
And virtually via Microsoft Teams
January 23, 2023
2:30 pm – 5:00pm

Academic Quality and Student Success Committee
DRAFT Minutes

Trustees Present:
Jeremy Brown, Chair | Phong Nguyen | Jill Mason
Kathleen Hill | Celia Núñez | Nagi Naganathan (*ex officio*)

Trustees Unable to Attend:
Kelley Minty

Other Trustees in Attendance:
John Davis

University Staff and Faculty Present in person:
Abdy Afjeh, Vice Provost-Research & Academic Affairs
Ken Fincher, Vice President University Advancement
Erin Foley, Vice President of Student Affairs & Dean of Students
David Groff, General Counsel & Interim Board Secretary
John Harman, Vice President Finance & Administration
Tom Keyser, Dean College of Engineering, Technology & Management
Michelle Meyer, Director of Audit & Compliance-Business Affairs
Joanna Mott, Provost & VP of Academic Affairs
Adria Paschal, Senior Executive Assistant to the President
Dan Peterson, Dean College of Health, Arts & Sciences
Lori Garrard, Executive Assistant to VP of University Advancement
Bryan Wada, Information Technology Consultant 2
Riley Ambrose, Oregon Tech
Caroline Doty, Associate Professor/MLS
MariaLynn Kessler, Professor/Department Chair of Humanities and Social Sciences
Desire Wooten, Assistant Director of Career Services
Anna Fowler, Employer Relations & Career Advisor, Career Services
Thomas Arce, Director of Student Involvement and Belonging/Interim Director of Career Services

1. **Call to Order/Roll/Declaration of a Quorum,** *Chair Jeremy Brown*
   Chair Brown called the meeting to order at 2:35 pm. The Board Secretary called roll and a quorum was declared.

2. **Consent Agenda** *Chair Jeremy Brown*

2.1 Approve Minutes of the October 17, 2022 Meeting

John Davis attended the meeting and would like it reflected that he was there. Minutes approved as submitted with the change noted.

3. **Reports**

3.1 Provost's Report *Provost and VP for Academic Affairs and Strategic Enrollment Joanna Mott*

Dr. Mott reviewed her PowerPoint presentation which addressed a correction needed in the date to 2023.

- The top priority for academic affairs is the upcoming seven-year report which is due March 1st and campus site visit from Northwest Commission on Colleges and Universities (NWCCU) for the reaccreditation review and site visit in the spring.
- Updated key performance indicator dashboards. It is not complete because the employee information and student to faculty ratio will not be available until April.
- Data comparisons were completed with other peer universities that is needed for the northwest report.
- Human resources data was also provided in the attachments regarding employee and applicant diversity.

Staffing

- **Dr. Mott** advised that Oregon Tech has a number of leadership positions open. Dean Keyser has accepted a new position and will be leaving Oregon Tech mid-March and there are searches for two department chairs in ETM that are pending. Dr. Mott states that 30 new faculty started in the fall of 2022. This fall there are approximately 30 faculty searches underway, at various stages. There have been some failed searches also.
- **Chair Davis** asked if there were any root causes for the failed searches. Dr. Mott said several pools did not have qualified applicants. Salary has been discussed to see if we can attract more qualified applicants. **Trustee Nguyen** advised that the pools are small, and they consist of not qualified applicants, international (visa) issues in some cases, competition from other universities and employers, and salary. **Trustee Núñez** asked if there was a plan to bring in candidates through targeted outreach and recruitment. **Dr. Mott** also added that staff positions are harder to fill. Internal movement creates shortness in other divisions.
- **Trustee Mason** asked how the positions are distributed among the different campuses. The majority is on the Klamath Falls campus. **Trustee Brown** asked about the faculty hiring and the data shared. 45% of the applicants identified as white in the applicant pool, but when we hire, we hire 88% white. He asked if there was something we could be doing to improve the yield with more diversity. **Dr. Mott** said that there are several candidates from underrepresented groups who also have many applications to other employers. Our location and demographics might not be perceived as friendly to some groups.
- **Chair Davis** noted that that it has been hard to fill position in the Portland Metro area. . It is hard to find skilled workers. **Dr Nagi** added that there is an RFP for a

national search firm to help us attract candidates for leadership positions. **Trustee Brown** advised that diversity in hiring is a good discussion for the future.

- **Dr. Mott** talked about tenure track versus non tenure track positions. In comparison, Oregon Tech has a higher precent of tenure/tenure track faculty to the other public universities. **Trustee Brown** advised that tenured faculty salaries are also higher, and it is a double-edged sword. **Chair Davis** pointed out that Oregon Tech is not just hiring visiting faculty or non-tenured and the data reflects that. **Trustee Brown** requested that the tenured track hiring be a future discussion as well.

New and Developing Academic Programs

- **Dr. Mott** stated that the ETM programs were evaluated for their accreditation in calendar year 2022. HAS programs are also going through the process. The $5.5M special funding pool allocated by the legislature has been used for the expansion of rural health initiative, camera for MIT, DPT program development, ABA, and cybersecurity.
- **Dr. Mott** stated the Boeing collaboration lab is ready for launch and the first project is scheduled for March and it is real world experiences for our students on actual Boeing projects. Boivin is being renovated and is on track. DPT requires space for the faculty to do research and they have identified the Dow basement for research. The Big ABA clinic is also in dire need of a new location. **Chair Davis** noted the important contribution of Oregon Tech to the workforce. He noted that the Boeing partnership is amazing and encouraged the university to find more collaborations.
- **Dr. Mott** advised that OREC was recognized and named as a semifinalist in American Made Solar Prize. Faculty also had several publications. HAS also had several faculty publishing and presenting at conferences. We also had students and programs who were also recognized. **Trustee Brown** asked if we can also track citations for faculty.
- The Honors Program and National scholarships Director Christopher Syrnyk was appointed to Board of Directors for the National Collegiate Honors Council. Honors programs enrollment is 8% higher this year.
- Dr. Mott added that our Office of the Registrar deserves recognition. Our Registrar has done a lot of work on the HECC transfer council common course numbering initiative. The faculty senate made requests to start an automatic wait list system and the Registrar is getting that ready to implement this in fall 2023. Faculty senate also requested that we modify summer schedule which is being done.
- **Chair Davis** asked about the impact about renumbering courses and the significance. **Dr. Mott** explained the courses need to have common course outcomes. Courses will be required to be accepted with the certain numbering (Z) as credits.
- **Trustee Brown** asked about the automatic wait list and if there is a way to have a shadow section. Dr. Mott stated that HAS has been doing that and agreed that we need to do more of it to accommodate students. It is for when a course selection is full and if a student drops, the next student on the list will be automatically

contacted. Dr. Mott advised that effort is underway to rebuild schedules based on student needs instead of just rolling over the previous year schedules automatically. Chair Brown said that it is very important to alleviate the issue of students not being able to take required courses.

- **Dr. Mott** advised, as part of a pilot program, the financial aid office is getting financial aid information out to students earlier. Education partnerships and outreach (EPO) is reaching out to the schools in the Klamath County with more success.
- **Dr. Mott** stated the expansion of MESA to the Klamath County area is progressing well. Dual credit enrollment has increased both for the fall and winter quarters. Unfortunately, the Assistant Director at Klamath Falls resigned and the first search to fill the position failed. However, our efforts are continuing with the remaining staff.
- **Dr. Mott** shared that advising and retention is working closely with departments and faculty. **Trustee Brown** stated that he had spoken to friends in New York that they have a program in high schools that does not teach general education classes and their retention is about 85%. Dr. Mott talked about Klamath County school officials came to Oregon Tech for a visit and that Klamath County school district is on board for getting more students to Oregon Tech.

3.2 Student Affairs *VP Erin Foley*

Dr. Foley recognized efforts of her team.

- Dr. Foley reported that our student athletes are excelling in sports and in the classroom.
- She advised that campus safety has had some extra challenges to deal with because of the death of two students on campus.
- Dr. Foley advised that the college union has some aging issues for facilities.
- The Winter Wings is being diligently planned which brings in visitors from all over the state.
- Disability services is serving 278 students and being innovative with electronic versions of their materials.
- Housing and Residence Life has good retention with a 3.3% attrition, which is the best in a decade. Housing actively supports students with more than just a roof over their heads and actively supports student success. **Trustee Brown** asked if we know what keeps the students in housing other than just the need for housing. **Dr. Foley** advised that there has been a survey, but they do not have the results yet. The timing of the new housing project is very important.
- Student Health has been working with the mental health and welfare of our students. Anxiety and depression are on the rise especially since the pandemic. Counseling staff is instrumental in helping campus managing grief.
- International student numbers are down slightly.
- Portland Metro is working hard on bringing life to campus with events and increase in participation.
- Resilience, Emergency Management and Safety have been working on creating strategies.

- Student Involvement and Belonging (SIB) has several new clubs that want to participate on campus and there was a week of service last week creating food and/or hygiene kits for community organizations with need.
- Veterans Affairs opened a larger space on the Portland Metro campus.
- Dr. Foley advised they are struggling to fill positions within their department including a few director positions.
- **Trustee Hill** inquired about the student deaths on campus. Dr. Foley advised they were chronic medical issues and there is not a safety issue on campus. **Chair Davis** commended the administration for letting him know right away and he is organizing flowers and cards to be sent to the families of the students and the staff member who passed away.

4. Action Items

4.1 Academic Master Plan *Dr. Mott*

- **Dr. Mott** advised that the academic master plan is moving forward and was started in January 2022. It will align with the institutional strategic plan. **Trustee Brown** stated that this is a significant undertaking by the academic side of the house because it really sets out the intention for the academic side of Oregon Tech for the next five years. It is important for the board to be behind this and to be able to articulate this. The reason it is an action item today is for a vote to approve the academic master plan. If it goes forward, it will go before the full board tomorrow.
- **Dr. Mott** stated the mission and vision was presented to the board in April 2022 and shared across campus in spring of 2022. It was submitted to the board at the July retreat and comments were addressed. It was presented at convocation and final comments were incorporated and the plan was posted on the website in the fall of 2022. **Dean Peterson** advised that there was good representation across the academic community for input and collaboration.
- The charges were to develop academic vision and mission statements for Oregon Tech, form a plan for fiscally sustainable growth, outline initiative to increase enrollment, retention, graduation rates, and to develop a path for progress in entrepreneurial and collaborative initiatives. Dr. Mott advised that each charge has a preamble and goals and subgoals. Dr. Mott provided an example charge from the master plan.
- **Trustee Brown** addressed his concern that we will need a "gate keeper" to be able to review what is relevant to our university, either adding or getting rid of programs. Trustee Brown asked that we develop a process to review the relevance of new programs for review after a few years after implication. Trustee Brown would like the academic plan to reflect the interests of industries and required skills. Dr. Mott said she would include those in the resources.
- Dr. Mott provided an example of enrollment and student success focus. Trustee Brown talked about creating an innovative first year experience for all students and how it increases retention by creating student interest and excitement. Trustee Nguyen supported Trustee Brown's statement.
- **Chair Davis** requested Dean Peterson to talk about the process and next steps. Dean Peterson stated we need to look at the metrics to be able to execute the plan. He advised that it would help create a stronger plan for all departments. He said logistically they will get there and encouraged the board to adopt the master plan.

- **Trustee Hill** asked about areas of resistance or if people are ready for the change and Dean Peterson said that there might be some challenges, but this is an opportunity to move the university forward. He worries that there might be some faculty who are not ready to do more research but knows others will be excited. An academic master plan will give direction and promote excitement. Dean Peterson feels there will not be too much friction and for the plan to get implemented and followed through.
- **Trustee Brown** asked what two or three programs do we have now that have national recognition or have the potential for national recognition and how to get people to buy into it. Dr. Mott advised that there are several programs they have discussed and she is not envisioning a slew of new programs.
- **Trustee Brown noted the importance of a 20 second elevator pitch for the Academic Master Plan.**

  Action Item: Motion to approve the academic master plan for Oregon Tech to be brought to the consent agenda of the full board.
  Moved Trustee Mason
  Second Trustee Núñez
  With all trustees present voting aye, the motion passed unanimously.

5. Discussion Items

5.1 Update in New Programs Dr. *Joanna Mott*

- Dr. Mott shared her presentation with the board and advised their early notice disseminations were submitted to statewide Provost Council in fall 2022. The programs are MS Dental Therapy, MS Natural Resources, MS Biomedical Sciences and BS Respiratory Care (new location – PM).
- The Doctor of Physical Therapy program is preparing for an oral hearing in April, and they are interviewing student applications for the cohort.
- MLS program is planning start an online completion program.
- Dr. Mott stated they are putting in early notice for new locations for three MMET degrees and a CSET degree for a new location approval in Medford.
- There is an internal review in progress for MS mechanical engineering program, MS Natural Resources and MS Bio-health science degrees and graduate certification in Population Health Innovation.
- Dr. Mott advised that dental therapy is still under discussion and respiratory care at Portland Metro is under discussion with OHSU.
- **Trustee Brown** asked about a transitional doctorate of physical therapy and said he had heard it a program that is becoming popular and only requires a certificate. He requested Dr. Mott to look into the possibility for details on that kind of program.
- **Trustee Brown** commented about online students versus face-to-face students and if we are starting an online degree with a program we already have as face to face. Dean Keyser gave an example of Geomatics students who are able to practice the profession while also taking classes online to get a degree.

- **Caroline Doty** stated that the online degree program is to help with the rural clinical sites as it is geared towards people who already have an associate's degree and are currently working in the field.
- **Trustee Brown** stated that sometimes when you have a degree completion program, the general education requirements are more expansive than a two-year degree program. Caroline Doty advised that the general education requirements must be completed prior to applying to the program.

5.2 Oregon Tech Career Services Update *Interim Director Thomas Arce, Assistant Director Desire Wooten, Employer Relations, and Career Advisor Anna Fowler*

- Thomas Arce shared about the restructure of Career Services and how they are marketing it in alignment with the strategic plan.
- **Trustee Brown** pointed out how amazing the salary comparisons for Oregon Tech students in comparison to other Oregon universities and this should be our biggest marketing point for people to invest in Oregon Tech.
- **Trustee Nguyen** asked if Thomas Arce had the data on which employer provides the highest salary for our graduating seniors. **Dr. Foley** advised that there is data on the web site regarding hiring agencies and salary averages.
- **Desire Wooten** talked about Handshake which is a platform for posting student jobs and other registrations for events. **Dr. Naganathan** asked if there were other competing platforms. Desire Wooten said Handshake is the dominant platform.
- **Desire Wooten** said that they make student appointments and walk them through resume, applications, interviewing, career exploration and development and internship/job search processes. **Trustee Brown** asked if this was student initiating contact with the Career Services team and if Oregon Tech requires students to contact them. Desire Wooten said that it is not built into the curriculum, but they have expanded outreach to students.
- **Desire Wooten** talked about career events that are offered on campus. The events include student events, academic events, and employer events.
- **Thomas Arce** talked about career development and advised they are partnering with deans and department heads.
- **Anna Fowler** talked about employer relationships. When students use Handshake, each job posting has been approved by Career Services and are only applicable to Oregon Tech students.
- **Trustee Brown** asked about career services to Oregon Tech alumni and if they have access to Handshake job postings. Anna Fowler advised that alumni have access to all the resources. She also stated that the career fairs are not just focused on graduating seniors. They encourage all students to participate for experience.
- **Thomas Arce** shared that they are specializing some career fair events to focus on certain majors and departments. They obtained feedback from students and are catering to more of their needs and requests to include locations of the career fair events and which employers are being invited.
- **Trustee Núñez** asked about students who have not found a good job match and are job hopping and if Career services addresses that issue. **Desire Wooten** said she asks students on a one-on-one basis what they are looking for and what work culture they seek. Wooten said they attempt to prep students on what to expect.

- **Trustee Brown** asked if there is a career faculty advisor for the students. **Dean Keyser** said each advisor should be discussing that with their students. Trustee Brown feels that Career Services should have a specific person in their department for students to reach out.
- **Thomas Arce** talked about sustaining partnerships with employers in Southern Oregon.
- Department and staffing and future visions for Career Services were discussed.
- **Dr. Naganathan** asked about students interviewing virtually and how Career Services are assisting them at being successful in that process. **Desire Wooten** explained about the platform they use and how they coach students to be successful.
- **Trustee Brown** recommended that Career Services offer a tool for students to get into graduate schools. Desire Wooten said they do not track that information and it is a service that they could offer, and it would be a good recruiting tool.
- **Trustee Wichmann** talked about the MECOP experience that allows interaction for students as they are treated like a fulltime employee.

6. **Other Business/New Business** – *Chair Jeremy Brown*
   None
7. **Adjournment**

Adjournment: 5:17 pm

Oregon TECH
Oregon Institute of Technology

Meeting of the
Oregon Tech Board of Trustees
Academic Quality and Student Success Committee
And virtually via Microsoft Teams
April 12, 2023
11:00 am – 2:00 pm

Academic Quality and Student Success Committee
DRAFT Minutes

Trustees Present:
Jeremy Brown, Chair
Phong Nguyen
Kelley Minty
Nagi Naganathan (*ex officio*)

Trustees Unable to Attend:
Kathleen Hill
Jill Mason
Celia Nunez

Other Trustees in Attendance:
John Davis

University Staff and Faculty Present in person:
Abdy Afjeh, Vice Provost-Research & Academic Affairs
Ken Fincher, Vice President University Advancement & Interim Board Secretary
Erin Foley, Vice President of Student Affairs & Dean of Students
David Groff, General Counsel
John Harman, Vice President Finance & Administration
Joanna Mott, Provost & VP of Academic Affairs
Adria Paschal, Senior Executive Assistant to the President
Dan Peterson, Dean College of Health, Arts & Sciences
Lori Garrard, Executive Assistant to VP of University Advancement
Bryan Wada, Information Technology Consultant 2
Thomas Arce, Director of Student Involvement and Belonging/Interim Director of Career Services
Zoé Smiley, New Student Programs Coordinator
Correne Cleland, Administrative Program Assistant
Shawni Cayetano Ramos, Assistant Director of Diversity & Belonging

1. **Call to Order/Roll/Declaration of a Quorum,** *Chair Jeremy Brown*
   Chair Brown called the meeting to order at 11:04 am. The Board Secretary called roll, and there was not a quorum.

2. **Consent Agenda** *Chair Jeremy Brown*
   2.1 Approve Minutes of the January 25, 2023 Meeting

Minutes approval is postponed

3. Reports

3.1 Provost's Report *Provost and VP for Academic Affairs and Strategic Enrollment Management Dr. Joanna Mott*

- **Dr. Mott** reviewed her PowerPoint presentation and advised that the NWCCU 7-year accreditation site visit will occur on April 24-27.
- **Dr. Mott** reviewed staffing in leadership positions and faculty.
- **Dr. Mott** reviewed current initiatives, including Academic Master Plan, Academic Programs, and Accreditations. She talked about equipment funds and student and faculty innovation grants.
- **Dr. Mott** shared college updates, including their focus, collaborative efforts, and teaching accomplishments, updates from the Registrar's Office and Online Education.
- **Dr. Mott** stated that Financial Aid received all the "early" aid packets sooner than usual. Tribal grants as well as considerable other scholarship monies have been awarded.
- **Dr. Mott** provided an update on educational partnerships and outreach (EPO), advising and retention, and admissions.
- **Trustee Nguyen** asked if there was a firm date to complete faculty searches. Dr. Mott advised that the hiring process must move forward quickly while there is no search deadline. Hiring people late in the cycle is not successful in retention, and it is better to hire someone as a visiting professor at that time.
- **Chair Brown** asked about the DPT program, and Dr. Mott advised that we plan on starting the program this summer and have interviewed applicants. The classes are set up, and the goal is to start on time.
- **Chair Brown** asked about the status of the new academic programs. **Dr. Mott** advised that there is an agenda item. The two Natural Sciences programs are moving through; at least one will be brought forward in June.
- **Chair Brown** asked about under-enrolled programs and if action should be taken for them to be reconsidered. **Dr. Mott** advised this is part of the academic master plan, and program reviews will be conducted. They are also revisiting the names of programs to make them more identifiable to potential students.
- **Chair Brown** asked about dual enrollment and what Oregon Tech is doing to get students to commit to Oregon Tech. Dr. Mott advised there is more outreach to the high schools with dual-enrolled students and other processes in place.
- **Trustee Nguyen** commented that the Portland Metro campus has a task force regarding dual credit students, and there is an initiative to bring in the students.

3.2 Student Affairs *Vice President of Student Affairs and Dean of Students Dr. Erin Foley*

- **Dr. Foley** recognized her student affairs staff and their accomplishments.
- **Dr. Foley** advised that ASOIT held elections for next year's officers. The Klamath Falls ASOIT had a successful Black Out for Hunger drive.
- Our athletic teams have been successful. There is a search underway for a new women's basketball coach. The track team's season is off to a good start. Baseball is having an unprecedented successful season, and softball is number one in the country.

- **Dr. Foley** commended campus safety for continuing to meet campus needs.
- Career Services have held multiple career fairs as well as an etiquette dinner for students.
- College Union staff have been hosting large events with success.
- Disability services have staffing needs.
- Housing and Residence Life is selecting new staff for next year.
- Student Health has a significant increase in new student cases and crises.
- Portland Metro has gained new staff filling many needs on that campus.
- Student Involvement and Belonging is providing more clubs and events.
- Graduation and end-of-year celebrations are being planned.
- Veterans Services met with Kingsley Field to better serve veteran students.
- **Chair Brown** asked about the food bank situation in the Portland Metro campus. **Dr. Foley** stated it is a food pantry, and food is available for students. There is a pantry on both campuses. It is funded through a Foundation account and student funds.
- **Chair Brown** asked about staffing on the Klamath Falls and Portland Metro campuses. **Dr. Foley** stated she feels that Oregon Tech's vacancies are comparable to other universities but feels that Oregon Tech takes too long in its hiring process. We are possibly losing good candidates due to the location of the Klamath Falls campus, the hiring timeline, salary offers, and people wanting to work remotely. **Dr. Mott** added that there had been several positions filled recently by people who wanted to be in a rural setting in Oregon because they knew someone or have family in the area.

(Lunch Break at 11:57 am)
(Meeting reconvened at 12:30 pm)

4. Action Items
None

5. Discussion Items

5.1 Student Involvement and Belonging (SIB) *Thomas Arce, Shawni Cayetano-Ramos, and Zoé Smiley*

- **Thomas Arce** presented and shared about SIB's areas of engagement and their connection to the Oregon Tech Strategic Plan.
- **Zoé Smiley** reviewed new student programs that include new student orientation. SIB conducted an assessment with first-year students to gather data. Based on the assessment SIB changed its programming this year, and orientation was more successful.
- **Shawni Cayetano-Ramos** presented about the Leadership and Diversity Scholarship. She shared about requirements and how they built the curriculum to make scholarship recipients more successful.
- **President Naganathan** stated he was part of the new student orientation and commented on the new energy and programs that have been created.
- **Chair Brown** stated that sometimes we see a disconnect between a student being admitted and their arrival on campus and encouraged the SIB staff to continue their efforts and progress.
- **Trustee Nguyen** asked about the two campuses and what differences are being addressed to make both locations successful. **Cayetano-Ramos** stated how they work with

personnel on the Portland Metro campus. SIB staff travel to both campuses to conduct workshops. They attempt to mirror activities performed on the Klamath Falls campus on the Portland Metro campus.

- **Trustee Nguyen** asked which campus is more diverse and if that information is tracked. **Cayetano-Ramos** advised that there are many different diversities other than race, and being a non-traditional student is typically the focus on the Portland Metro campus. **Thomas Arce** stated that Dr. Jennifer Wilson from DICE has been doing institutional-level work related to data equity. A piece that she is working with committees on is looking at how we engage with demographic data.
- **Trustee Brown** asked about the online student population and about making them feel more involved as an Oregon Tech student and part of the community. **Arce** stated there is a "week of welcome" program that happens each term for online students.

5.2 Overview of Oregon Tech Programmatic Accreditations *Provost Mott, Dean Peterson, and Interim Dean Afjeh*

- **Dr. Mott** provided background on the accreditation of programs at Oregon Tech.
- **Dr. Afjeh** stated all the programs in the ETM college have met accreditation requirements.
- **Dr. Mott** advised that it is unusual for a university to have this many agencies for accreditation. This presentation is about giving an overview of the extent of accreditation that Oregon Tech is involved with.
- **Chair Brown** asked if there were conversations about the necessity of accreditation. **Dr. Mott** stated that many of Oregon Tech's programs, if not accredited, would affect students' ability to obtain jobs because they are not coming out of an accredited program. She advised they have not had conversations about not continuing accreditation because they are almost all very specialized areas. Accreditation has been deemed appropriate for our institution. **Dr. Afjeh** stated that in some programs (such as Geomatics and Civil Engineering), the graduates need to be licensed to practice in their field, which only comes from an accredited program.
- **Trustee Nguyen** stated that from a faculty perspective, accreditation keeps them honest and has helped them do the right thing even when someone is not looking.
- **President Naganathan** stated that accreditation helps Oregon Tech continue to meet programmatic requirements.

5.3 Course Modality Survey *ASOIT PM President Billy Kimmel*

- **Billy Kimmel** shared that ASOIT surveyed students about course modality, scheduling, and resources students seek. There was a 22% response rate from Portland Metro students.
- **Kimmel** reviewed survey results and recommendations. They included in-person lecture options, availability of open-source materials, recorded and shared lectures, and scheduling courses earlier in the day with increased consistency to make it easier for students to make long-term plans.
- **President Naganathan** asked Kimmel if there have been any reactions to the survey results. **Kimmel** advised no one has tried to refute the results.
- **Trustee Nguyen** stated that his experience as a faculty member on the Portland Metro campus backs up the survey results.
- **Professor Bickford** suggested getting data points on which classes are most often canceled due to lack of attendance. It would help to answer more questions about modality.

- **Trustee Brown** commented on the concept of why a student goes to class. He asked if attending the lecture in person is an added value and if practical demonstrations of the material exist. He discussed the concept of the inverted learning model and stated that reengineering the learning process might force a student to attend the class.

5.4 Update on New Programs *Provost Mott*

- **Dr. Mott** introduced Professor Nate Bickford to talk about the new programs.
- **Professor Bickford** stated that the Masters in Natural Resources had requested edits which were done and resubmitted. All of the steps have been completed, and they hope they will be presented at the next board meeting. Local agencies are overly eager to have graduate students in this area.
- The second new program is Masters in Bio Health. It has been to the grad council with revisions requested and resubmitted with edits. There are thesis and non-thesis options.
- **Dr. Mott** advised that they also develop a Master's in Dental Therapy. She referred to some programmatic challenges, and they do not have a timeline yet.
- **Dr. Mott** provided updates on other outstanding new programs development.
- **Trustee Brown** encouraged her to reach out to the local community to identify what needs can be met and be strategic on what new programs Oregon Tech can do that will have a local resonance or an opportunity to develop a strategic advantage that other universities are not doing.

6. **Other Business/New Business** – *Chair Jeremy Brown*
   None
7. **Adjournment**

Adjournment: 2:02 pm

Oregon TECH
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OFFICE OF THE PROVOST

AQ&SS Committee May 30, 2023

Academic Affairs and Strategic Enrollment Management Update

The following report outlines updates in both Academic Affairs and Strategic Enrollment Management.

ACADEMIC AFFAIRS

Staffing

Three positions are being recruited through a search firm – Dean for Engineering, Technology and Management, Associate Vice Provost for Strategic Enrollment Management and Retention and Executive Director for the new Center for Excellence in Applied Computing.

The new Dean of Online Education and Global Engagement starts August 1. The Associate Vice Provost for Academic Excellence search has failed and the position description is being reviewed. We are searching for three chairs in Engineering Technology and Management – Management, Computer Software Engineering Technology and Electrical Engineering and Renewable Energy. Multiple faculty searches are at interview, offer or filled stages including the required faculty for accreditation of the Doctor in Physical Therapy program. HAS has filled 12 of 18 positions with several still ongoing or at offer stage including visiting instructor positions in progress.

Academic Master Plan

Department chairs have identified goals for initial implementation. These are being added to our tracking sheet from which an annual report of progress will be developed and disseminated to campus and the board. A session at convocation will be focused on identifying goals for implementation during the 23-24 terms.

Summer Creativity Grants

We have received 19 proposals which are currently being reviewed by a committee of Deans and faculty.

University Research Committee

The committee has continued to work on increasing the profile of research and researchers and providing them several areas of support including a workload reassignment request path.

IDEAfest will again highlight faculty research and include a reception and poster session of faculty and student research.

Office of Faculty Relations

Our AVP for Faculty Relations is continuing to lead implementation of the Collective Bargaining Agreement, including completing an equity study as agreed to in the CBA. She is also our lead on faculty policy revisions. This year working collaboratively with faculty senate policy OIT-20-040 Academic Rank and Promotion for Instructional Faculty has been revised and has been recommended by Faculty Senate for President Council review.

Library

Oregon Tech Textbook Adoption Report was completed for HECC/Legislature: **90% of courses** had materials cost information available.

- The library received a commendation from the NWCCU site reviewers for outreach and partnership with Student Involvement and Belonging. The library has made a priority to being more inviting, as seen in a quote from our just completed student survey when asked what we do right: "Being welcoming and inclusive, and a great place to study."
- A faculty survey resulted in new database pilot programs. Notably, shifting to demand driven article acquisitions to broaden resources at reduced costs.
- Results from new student spaces and collection rebuilding:
    - library visit increased 60% over pre-covid years
    - circulation of library materials increased 11%
    - study room space usage increased 35%

Registrar's Office

- Implementation and training of new student reporting software, Edify
- Worked with the Advising Office to implement new advising and retention software, Civitas
- Successful implementation of the initial year of common course numbering
- Streamlined processes for students, faculty
    - Complete Withdraw – developed an electronic form to collect information when students completely withdraw from the university
    - Automated Waitlists – based on faculty senate recommendation implemented Banners automatic waitlist
    - Degree Works Upgrade – provides a more stable environment for students and faculty
    - College Scheduler Upgrade – allows students a more streamlined registration process and integrates with Banner
    - NameCoach pronunciation Implementation – will be used for commencement at all campus and an Canvas integration will follow
    - Preloading first year freshman schedules – streamlined the advising process for new students

- Co-hosted and organized the first Department Chair Trainings

Online Education

- **Panopto** has been acquired for the next three years to enhance lecture capture and support student learning. There are many benefits to Panopto including multi-camera recording, multi-screen recording, comprehensive search function and compliance for accessibility. Panopto will be implemented by the end of May for all faculty.
- Representatives from Instructure our Learning Management System, Canvas was on campus to meet with faculty to demonstrate a product called *Catalog*. Faculty have expressed interest to reengage with alumni by offering continuing education credits and professional development opportunities. Discussions will continue when the new Dean of Online and Global Engagement is onboard.
- Accomplishments this year:
  - *Simple Syllabus* will be implemented to aid in consistency and compliance.
  - *Name Coach***,** a tool that allows students and faculty to record how their name should be pronounced and to hear pronunciations of others' names.

Selected accomplishments from the College of Health, Arts and Sciences (individual faculty accomplishments were detailed in the April board meeting)

Accreditation

- DPT received candidate status for accreditation. Big thanks to the faculty for their efforts.
- Dental Hygiene is preparing their self-study in preparation for a site visit by CODA next year.

Program Development

- In the process of developing a degree in Natural Resources, NSC continues to develop relationships with community members including the Klamath Tribes, government agencies, and educational partners.
- A handful of projects, still in the development and relationship stage, present some interesting opportunities for departments.

Searches

- Eleven of 18 searches are successfully concluded. Of the seven remaining, two are in negotiation stage, two have failed but are being renewed with a hope for visiting next year, one is under discussion, and two searches continue to develop.
- Searches in allied health continue to prove difficult, but much effort is being made by the department and HR to find the best places to search in order to find people.

Research

- Published Paper—Jamie Kennel, et. al. (May 2023). Racial, Ethnic, and Socioeconomic Disparities in Out-of-Hospital Pain Management for Patients With Long Bone Fractures.
- Faculty continue to actively look for opportunities for collaboration internally and externally on research projects and grant opportunities.

Service

- *Rachelle Barrett led as chair of the assessment commission leading up to and during the recently NWCCU.*
- *College of HAS carries a large service load in many areas on campus including faculty senate, assessment commission, general education advisory committee, Commission on College Teaching, etc.*

Instruction

- Faculty continue to make this a prime focus of their efforts while learning to balance other commitments of service and scholarship.

Selected accomplishments from the College of Engineering, Technology and Management

Management

- Dr. Sharon Beaudry has been elected Chair of the International Accreditation Council for Business Education
- An Accounting student has won the President's Senior Cup Award for the College of ETM 3 out of waitlists
- Piloted Ready, Set, Innovate, fall 2022. This event:
  - Brought together a diverse group of university and community stakeholders
  - A day-long design thinking workshop which provided participants with an opportunity to apply human-centered design to ideate innovative solutions to a community challenge
  - 100 area high school, KCC, and Oregon Tech students attended the workshop. Approximately 50 faculty, staff, and students, alongside 40 community members volunteered in some capacity at the event
- Hosted the 8th Annual Catalyze Klamath Competition (a year-long competition)
  - 7 teams competed for $17,000 in cash prizes (including 1 team from KCC's Badger Venture Competition)
  - 2 teams have been invited to compete in the InventOR finals in Portland on June 22
- A team of 4 students applied and were accepted into Stanford University's University Innovation Fellows Program. This program included a 6-week intensive (virtual) training over the summer. This training prepared these students to facilitate the high school workshops at Ready, Set, Innovate! Since then, this group of students has formed the Business & Innovation Club - a club that provides business consulting services to other student groups/projects on campus.

- A faculty applied and was accepted into Stanford University's Faculty Innovation Fellows Program. This two-year program supports faculty looking to affect change on their college campuses. My project looks to create student experiences that will shape how students engage with the Klamath Falls community while formalizing university-based infrastructure, systems, and processes to support this work and ensure university-community relationships are long standing.
- A group won the best paper award for our Entrepreneurial Lab space study at the International Accreditation Council for Business Education Annual Conference

EERE

- Our student team "Project Wildflower" formed by graduate students Tony Augustine and William Stobaugh won Mountain West reginal prize of Energy Tech University Prize competition held by DOE.
- MSREE student, Pamela Jackson presented a paper in IEEE Power and Energy conference in Texas.
- EERE faculty had 11 peer-reviewed journal papers published. In addition, Slobodan Petrovic had a couple of Renewable Energy books published.
- Several faculty presented at national or international conferences.

Geomatics

- Resubmitted a $420,000 federal grant request to establish an OIT Geospatial Research and Applications Center and MS Geospatial Science degree in conjunction with OT lobbyist Keith Morison.
- Received HECC approval to offer the BS GIS and BS Surveying degrees fully online starting fall 2023
- Provide leadership in UAS capability for the university
    - Interdisciplinary projects with Civil Engineering faculty and students
    - Obtained LiDAR data to assist Advancement develop a hiking trail on the “O” hill and create an updated campus orthomosaic
    - $30,000 Equipment Fund Award, $30,000 geomatics department funding, and $5,000 Civil Engineering funding to purchase of a $65,000 UAS with dual LiDAR and RGB sensors. Interdisciplinary request from GME, CE, and ENV to support faculty and student projects and applied research
    - Acquiring a UAS with a thermal sensor to conduct near-surface water mapping research
- Completing an ODOT grant to determine feasibility of using terrestrial and UAS LiDAR point clouds to determine streambed erosion
- Completing a project with Klamath County to determine feasibility of using UAS to determine gravel stockpile volumes
- Hired Dr. SuJin Lee as the new GIS lead faculty, bringing added capability and expertise to the university

- Expanding the photogrammetry and remote sensing capability of the university by introducing a second remote sensing course, GIS 432, Remote Sensing II. This course is focused on study and use of satellite imagery.
- Awarded a $10,000 NCEES Surveying Program Excellence award. OT Geomatics is one of two programs which have received an award each of the six years this program has been offered.
- Developed an ongoing project with the Running Y Resort which will fund student internships, and provided funding to obtain two resource-grade GNSS receivers which can update GIS database layers in real time.
- Attended the GIS In Action conference, faculty presentation
- Attended the Professional Land Surveyors of Oregon (PLSO) conference, with about 10 students
- Working with Oregon STEM to create interactive web maps
- Co-lead with Dr. Kyle Chapman with a Wood Stove Smoke grant.

Civil Engineering

- Three faculty members are attending the American Society of Engineering Education (ASEE) National Meeting in Baltimore, MD in June 2023. Each faculty member is the first author of a collaborative paper that will be published in the conference proceedings and presented at the annual meeting. The papers are as follows:

1. *Assessing Faculty Implementation of Laboratory Report Writing Instructional Modules*, Sean St. Clair, Dave Kim, and C.J. Riley
2. *Refining Instructional Modules for Engineering Lab Writing Using a Community of Practice Approach*, C.J. Riley, Dave Kim, Ken Lulay, John Lynch, and Sean St. Clair
3. *Investigating the Inclusion of Traffic Operations Concepts in Undergraduate Civil Engineering Curricula*, Rebeka Yocum and Vikash Gayah

- Sean St. Clair will receive the *George K. Wadlin Distinguished Service Award*. This award is presented to individuals in recognition of their sustained and distinguished service to the Civil Engineering Division of ASEE in support of its activities and notable contributions to civil engineering education.

- Dr. Jintai Wang wrote a paper with a grad student that will be presented at the prestigious ASCE GeoCongress :*Engineering Characterization and Cyclic Performance of a Diatomaceous Earth* Carter Willson1 and Jintai Wang, Ph.D., P.E., M. ASCE2

- Dr. Ashton Greer and Dr. CJ Riley just completed a research study that included nearly 30 undergraduate research assistants (from first-years to grad students). funded by US Department of Transportation through the National Institute for Transportation and Communities. *Applying a Mt. Mazama Volcanic Ash Treatment as a Trail Accessibility Improvement* Charles Riley, Ashton Greer, Matthew D. Sleep University of Cincinnati

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STRATEGIC ENROLLMENT MANAGEMENT (Admissions, Financial Aid, Advising and Retention, Educational Partnerships and Outreach - EPO)

Staffing

The Director for Academic Advising and Retention position remains unfilled with finalists withdrawing in the last round. Admissions is recruiting regional coordinators situated in strategic areas eg Hawaii, rather than admissions counselors located at each campus.

Financial aid

- The Financial Aid Department held FAFSA Filing sessions in collaboration with Student Involvement and Belonging (SIB) at both the Klamath and Portland Metro campuses.
- Successfully administered and reported State Tribal Grant Funding (this was our first year of the grant). We had 18 students receive these funds.
- Financia Aid awards went out at the end of January, the earliest in our history.
- Administered State GEER completion funds.

Academic Advising and Retention

- Onboarded faculty and staff on the implementation of a university-wide advising platform which utilizes notes to coordinator student retention initiatives among departments, tracks unregistered students, suggests engagement opportunities for at risk students, and streamlines group communications with students.
- Developed and continuously support a robust academic alert system that allows instructors to update faculty and secondary advisors on students at risk of failing courses and who need additional academic support or changes in curriculum planning.
- Created a new marketing campaign emphasizing student support and registration which consist of a university wide text messaging system, posts on the Oregon Tech App, as well as the creation of new posters and banners which have been distributed across campus.
- Reviewed the catalogue of courses to find potential course conflicts which will delay a student's completion.
- Supported students on academic warning and probation by meeting individually with students to address their specific needs through academic coaching; and the development of a self-guided pathway, with assessments, to familiarize students with the warning and probation process, as well as, to build time management, study, and classroom skills using a growth mindset approach.
- Expanded our coordination with academic departments through their retention initiatives by advising students who are missing faculty advisors, supporting faculty with high advisee ratios, and through the engagement of our embedded advisors with the Deans in the colleges or HAS & ETM.

- Inclusion and expansion of Peer Tutoring and Supplemental Instruction; supporting both student and faculty.

Admissions

- Enrollment and new initiatives will be discussed in the main board meeting
- Increased applications in total, increased yield from Oregon students
- Launched Mainstay text bot
- Expanded communications flow, including increasing number of channels and personalization of communications plan

Education Partnerships and Outreach (EPO)

- *Dual Credit* – significant increase in numbers of students served this year.
  Fall 2022 – 1,550 (16% increase from fall 2021)
  Winter 2023 – 2,325 (52.7% increase from winter 2022)
  Spring 2023 – 2,097 (64.7% increase from spring 2022)
- Two *grant projects* EPO is collaborating on for dual credit:
  - Oregon CS grant funds to support curriculum development of a dual credit cybersecurity course. We are working with high school CS teachers in the South Metro Salem-STEM Hub region and hope to pilot the first course offerings in 2023-2024 academic year.
  - DOE – Earmark grant submission to develop more culturally responsive ELL BIO 103 (Introduction to Anatomy and Physiology) dual credit materials.
- *Transfer* – reengaging our CC partners and developing on-site advising weekly hours. We are currently hosting advising at Clackamas CC, and Chemeketa CC.
- *Staffing*- Excited to be fully staffed to support programming in the 2023-2024 academic year. We will bring on a new Associate Director in July and will be hiring a Klamath Falls regional coordinator for MESA and to work on serving dual credit students and teacher in an advisory role. The position will be more actively engaged on site at high schools to help advise and support dual credit students.

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Student Affairs Update
AQSS Committee, May 2023

The following report provides information about the Student Affairs division and highlights from individual offices for the KF and PM locations (as of May 19, 2023).

ASOIT

- KF Officers for 2023-24:
  - President, Devon Stokes
  - Vice President, Riley Ambrose
  - Finance Officer, Diana Escamilla
  - Academic Affairs Officer, MJ Jurca
  - Student Engagement Officer, Thomas Long
  - Administrative Affairs Officer, Ryleigh Garcia
- KF Academic Forum held on May 10.
- KF & PM ASOIT participated in TRU Day on May 4 and Polytechnic Pride Day on May 23.
- ASOIT PM is hosting an open focus group event regarding academic barriers. See flyer at the end of this report.
- ASOIT PM Parliament Meetings (3) with 15-30 students participating.

Athletics

- **Softball** won the Cascade Conference regular-season and tournament championship and head into the NAIA National Tournament as the No. 1-ranked team (first time OIT has been ranked No. 1 headed into Nationals in program history). Seven players earned All-CCC honors, including Kacie Schmidt (Pitcher of the Year) and Greg Stewart named CCC Coach of the Year for the ninth time.
- **Baseball** won their first-ever Cascade Conference title (first championship since 1982) and advanced to the championship game of the CCC Tournament and Jacob Garsez was named CCC Coach of the Year.
- **Women's Golf** placed third at CCC Championships, with Men's Golf placing sixth
- **Track & Field** has eight student-athletes that have qualified for the NAIA National Championships – including three women's javelin throwers.
- Hired two **new head coaches** – Alexis Garrison (volleyball) and Joy Lease (women's basketball).
- Hosted both the **CCC Softball and CCC Baseball championships** simultaneously, with the softball tournament successfully pulled off without a hitch, but the baseball tournament dealt with field issues due to weather – eventually forcing the tournament semifinals and championship game to be played in Eugene.
- **Softball** hosted the NAIA National Championship Opening Round on May 15-17 and won so the team is off to Columbus, Georgia for the World Series as the #1 team.
- Department finished the 2022-23 academic year with 1**13 Academic All-Cascade Conference honors** (3.2+ GPA, sophomore standing or above).

Campus Safety

- Working with REMS Associate Director Doug Tripp along with Facilities Director Thom Darrah, Trades & Maintenance Supervisor Jim Lake and ITS Chief Technology Officer Tony Richey on surveillance hardware/software project for Oregon Tech properties.
- Working with another committee on Wayfinding signage for the Klamath Falls campus. The project, processes and meetings are ongoing.
- Clery Act compliance with accompanying information for the Annual Security Report(s) ASR is ongoing. Due dates are September 30th and October 15th for dissemination of the ASRs to the campus communities and crime stats input into a federal database respectively.
- Continuing to make strides to enhance the campus parking database for temporary parking permits with Campus Safety's Parking Representative, Christine Sawyers and Alan Wallace.
- Provided parking assistance for the softball conference tournament at Stilwell Stadium May 5-7, 2023. There were 6 teams involved in this tournament with heavy traffic on the perimeter roadways and parking lots near the stadium.
- Provided parking for softball hosting the opening round od the national tournament held at Stilwell Stadium May 15-17, 2023. Same setup with 4 teams playing.
- Organized and provided a parking detail for Respiratory Care department and an Airlink transport scenario in Oregon Tech's overflow parking lot. The scenario transport went off without a hitch.
- The Traffic Commission held three meetings -one for each academic term. Many topics were discussed with an agreement and recommendation for increased parking fees. The agree-upon amount for each permit type is 2%.
- Assisting with upcoming events: Music Garden security detail and logistics and Commencement exercise and logistics.

Career Services

- Hosted the **Klamath Falls Business Management Student & Employer Mixer** (April) – 6 employers and 11 students attended as well as several faculty partners. Employers reported that they had meaningful connections with the students that they interacted with.
- Assisted Portland-Metro Emergency Medical Services (EMS) department with the **EMS Education & Industry Fair**. Met with 13 employers in the EMS industry.
- **2023-2024 Career Services Event Schedule** has been shared with campus partners and employers. 14 In-person events will be held on both the Klamath Falls (10 events) and Portland-Metro (4 events) campuses. See the flyer at the end of this report.
- Career Services presented in 4 classes so far this Spring. Desiré Wooten is also co-teaching in the TOP ACAD class this spring.
- **43 students** have received **1:1 service** in Spring Term. 261 students have been served this academic year.

College Union

- Waiting on JCI for estimate on repair of two control boards for HVAC units above Cascades
- HVAC bid accepted waiting on completion of contract - current dates July 1st to Sept 1st, which will only displace one New Wings event Admissions has been notified
- Technology contractors working on meeting rooms the week of June 26th to address known issues with the new equipment.

Disability Services

- Director of Disability Services & Testing starts June 1.
- PM Disability Services continues to be supported by Coordinator, Jamie Irish, as she has had to transition to part-time role to complete her master's degree program.

Housing & Residence Life (HRL)

- Looking at another record-breaking year as we prepare for the 2023-24 year. Housing contracts are on par with last year and trending upward.
- Looking at creative ways to offer on-campus housing to all who want to join us!
- Residence Hall had a power outage this term, due to aging circuit box. Facilities and local electricians were responsive quickly and we were only without power for an hour or so overnight and a few hours during a morning to get the temporary fix in place. Will have planned outage when parts are assembled and ready for installation.
- Offered Assistant Director of Residence Life position and if accepted, new employee will start with us May 30.
- Still searching for an Assistant Director of Facilities. Pool is sparse for this search.
- As current Director moves into a new role, working to post the Director of Housing and Residence Life position.
- Spring Fling was a week filled with activities and the weather was beautiful allowing students, faculty, and staff the chance to enjoy the sunshine!
- Beginning our plans for summer with some facilities updates as follows:
    - Residence Hall air handlers and heat exchanger work; electrical updates; installing more new blinds and furniture in student rooms; continue to update sinks/faucets and countertops in more bathrooms; and the elevator will continue to get some new parts installed as part of the updating plan.
    - Getting some creative ideas to address tile that is failing in the Residence Hall Quad.
    - Village will get deep cleaned, including an exterior wash off (to help keep the paint fresh from last year).
- Summer plans include a lot of cleaning, planning, and refreshing for the new year. We will host a few small conferences but are focusing on planning and getting things in place for the next two years and beyond as we welcome a new housing facility.

Integrated Student Health Center

- After searching for close to 3 years, we were able to hire a counselor for the Portland Metro campus in April. Niki Young, a licensed Social Worker, joins us most recently from the Veterans Administration where she supported veterans on an interdisciplinary team. We are excited to have her on board to support our PM students.
- The medical and administrative staff at ISHC are working hard to support the Medical Imaging Technology Juniors as they finalize their health requirements in advance of leaving for externship this summer. This requires quite a bit of coordination in order to facilitate Tuberculosis testing, which spans across a three-week period. Historically, we have coordinated with the Public Health Department to provide the testing for students who have the Oregon Health Plan insurance, as ISHC is not a provider. Public Health was unable to do so this year, so one of our providers (Kellee Murga, the Advanced Practice Nurse) went above and beyond to facilitate an alternative test (a specific blood draw on-site that we have never been able to offer before). Because of her work (which involved a good amount of research and extended phone

calls with our lab and courier), over 35 MIT Juniors were able to complete their Tuberculosis testing on-site at no charge instead of having to do so off-campus for an extensive fee.

- ISHC received a Certification of Appreciation from the Oregon Health Authority which reads as follows: "This certification of recognition for your dedicated service from the leaders at Oregon Health Authority is to thank you for serving the people of Oregon during the COVID-19 global pandemic. You persevered in a challenging environment and performed incredible work that had a significant impact. Your work protected our communities and saved lives. For exceptional services rendered to Oregon communities during the COVID-19 pandemic on the 26th date of April 2023, with heartfelt gratitude we commend you for your call to action during unprecedented times."

International Student Services

- KF – 14 F1 students.
- PM – 11 F1 students.
- OPT – 11 F1 Alumni being supported by Oregon Tech through practical training; 3 seniors have pending OPT applications. See data at the end of this report.

Portland Metro Student Services

- 13 students being supported and monitored through the Early Warning Report process. Major themes continue: basic needs navigation, mental health crisis, academic difficulty/ not turning in assignments, medical withdrawal.
- We are thrilled to have our PM Mental Health professional, Niki Young, on our team. Niki joined Oregon Tech in April 2023.
- Tutoring: 346 check-in occurrences in Tutoring space this academic year, with 91 unique students checked into Tutoring space this academic year, and Tutoring offered in-person on the 4th Floor and online in collaboration with KF Peer Tutoring and Math Lab.

Resilience, Emergency Management and Safety (REMS)

- **Business Continuity, Disaster Recovery and Emergency Management --** Oregon Tech secured consultant services from B Riley Advisory Services to assist in developing an aligned and highly integrated business continuity, disaster recovery and emergency management framework for a multi-campus environment. Currently, the consultants are working closely with university subject matter experts to obtain data and information to support development of an enterprise level business continuity management information system. The estimated project timeline for completion is October 2023.
- **Campus Safety Integration into Resilience, Emergency Management and Safety –** On May 9, Dr. Naganathan announced that effective July 1, 2023 Resilience, Emergency Management and Safety (REMS) will change reporting lines from Student Affairs to Finance and Administration. As part of this re-alignment, Campus Safety will be integrated into REMS reporting to the current *Director – Resilience, Emergency Management and Safety*. Planning to support this initiative has been ongoing since Dr. Naganathan's announcement to the campus community.
- **Enterprise-wide Security Camera Technology –** The REMS director is coordinating planning meetings to support acquisition of enterprise-wide security camera technology. Representatives from Campus Safety, Facilities Services, and Information Technology Services are participating in these planning sessions. The current objective is information gathering on available resources and strategies which will eventually lead to the development of a Request for Proposal (RFP).

Student Involvement & Belonging

Klamath Falls

- Students participated in the **Technical and Regional Universities (TRU) Day** at the State Capitol, ASOIT-KF & PM collaborated with AVP for Government Relations on May 4.
- Campus Activities Board, and KTEC Student Radio Station collaborated to plan the annual **Music Garden Festival** on May 20.
- Diversity & Belonging Staff collaborated with the Registrar's Office, Office of Diversity, Inclusion, and Cultural Engagement (D.I.C.E), Portland-Metro Student Services, and Veteran Student Services to recognize students at the **Identity-Based Graduation Celebrations**.
- **Hawai'i State Representative**, Darius Kila visited campus to meet with students for Asian, Pacific Islander, Native Hawaiian, and Desi American Heritage Month. Speaking about resiliency, identity, and enjoying authentic Hawaiian cuisine on May 22.
- SIB hosted the annual **Leadership and Service Awards**, recognizing student leaders and student organizations for their contributions to the campus community on May 24.

Portland Metro

- April – provided information for Sexual Assault Prevention and education on consent.
- Women in STEM Conference was a great success. See information at the end of this report.
- May - Asian American Pacific Islander Celebration month offered activities and cultural grant for students to attend local community events.
- Supported three lobby experiences with Government Relations.
- Celebrated graduating students from a variety of identities.
- Weekly programming attracting 5-35 students per week, included: Open Group Dialogue (2), Asian American Pacific Islander Education and Celebration, and IdeaFest Presentation Practice Workshop.
- Introduction to campus of our new PM Student Mental Health Counselor.

Veteran Student Services

Klamath Falls

- Community service events in support of a local elderly veteran to refurbish his home.
- Marine Barracks Memorial site cleanup for its dedication on June 16.
- First Vets Town Hall on May 26.

Portland Metro

- 165 check-in occurrences this academic year.
- 40 unique visitors checked.
- New student staff have published newsletters to help inform their fellow students.

SA Staffing Update

Dr. Mandi Clark was promoted to the Associate Vice President and Dean of Students, effective May 1, 2023. Mandi started at Oregon Tech in 2004 in Housing and Residence Life (HRL). The division is in great hands!

The Student Affairs division currently has seven staff vacancies, which is fewer than previously as we have filled six positions (three coaches, HRL assistant director, Disability Services/Testing director, and PM counselor). Vacant positions include: VPSA, Director of HRL, Assistant director of Facilities (HRL), TOP director, KF counselor, PM DS coordinator, DS APA.

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27500 SW Parkway Ave
Wilsonville, OR 97070

Dinner & Dialogue:

Follow Up Conversation Hosted by ASOIT-PM

Course Modality Survey (Feb. 2023)

To read the full summary, go to https://l.ead.me/bcVD4Z

OVERVIEW

In February of 2023, ASOIT-PM conducted a course modality survey in order to get a better understanding of how to supplement the students as a part of the Portland-Metro community. This survey consisted of questions regarding course modality, scheduling, resource preferences and effectiveness. The survey was distributed to students through email, TECHweb alert (based on student's campus), Oregon Tech App, and via QR code available at the PM campus. Students and faculty were encouraged to share the survey widely. Six demographic questions as well as an open ended question and an age question were also added to the survey. There was a 22% response rate at the conclusion of the survey. Results were distributed and discussed at the April Parliament Meeting, Faculty Senate Meeting, and Board of Trustees Meeting (AQSS) and shared with the Portland-Metro Growth Task Force.

GOAL

Provide student voices to staff, faculty and administration regarding course modality, scheduling and resources.

DISCUSSION POINTS

Learning Environment

According to the survey, in-person and hybrid courses were ranked highest for all student demographics in terms of effectiveness and preference. Online and virtual courses ranked lowest in effectiveness and preference.

Accessible Resources

A significant number of students at the Portland-Metro campus expressed that open source materials and recorded lectures were essential for their success in courses. There was also mention of on campus lab equipment, peer-to-peer interactions and instructor office hours as essential resources for students' success in courses.

Scheduling and Hours

Overall, by age and course level, students at the Portland-Metro campus prefer having longer class meeting times less frequently throughout the week. Students ages 18-25 significantly preferred class times from 12-5pm. Students ages 26+ years slightly prefer classes from 6-10pm while there is a strong preference for 6-10pm classes by students who enroll in 8 or less credit hours. This suggests that our scheduling model currently favors the preferences of part-time students.

Oregon TECH

Career Services

2023-24 Event Schedule

Date	Klamath Falls Events*
9/25/2023	Dental Hygiene Career Fair
10/3/2023	Student Employment Fair
10/20/2023	Medical Imaging Technology/Respiratory Care/Nursing Networking & Information Fair
10/24/2023	Civil Engineering/Geomatics Career Fair
10/25/2023	Computer Systems Engineering Technology Career Fair
10/26/2023	Engineering, Technology, & Management Career Fair
2/28/2024	Etiquette Dinner
4/23/2024	Business Management Student & Employer Mixer
4/24/2024	Health ,Arts & Sciences Career Fair
4/25/2024	Engineering, Technology, & Management Career Fair

Date	Portland-Metro Events*
11/2/2023	Engineering, Technology, & Management Career Fair
3/6/2024	Etiquette Dinner
4/17/2024	Social Sciences Career Fair
4/18/2024	Engineering, Technology, & Management Career Fair

*Additional events may be added at a later date.

Questions? Email career@oit.edu

Updated 5/15/2023

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International Student Services

Demographics:

The following tables show a historical sampling of demographics for F-1 students at Oregon Tech.

Academic Year	F-1 students enrolled	F-1 alumni on OPT	Total Served
2017-2018	93	15	108
2018-2019	74	13	87
2019-2020	61	9	70
2020-2021	58	12	70
2021-2022	30	15	45
2022-2023 Fall	24, +1 on medical leave	12 (+8 OPT completions this term)	45
2022-2023 Winter	24, +1 on medical leave	10	35
2022-2023 Spring	24, +1 on medical leave	11	36

Campus	*# of students*	*% of total*
Female	6	24%
Male	19	76%

College	*# of students*	*% of total*
ETM	20	80%
HAS	5	20%

Campus	*# of students*	*% of total*
2021-2022		
Klamath Falls	18	60%
Portland-Metro	12	40%
2022-2023		
Klamath Falls	14	56%
Portland-Metro	11	44%

Average Credits	*Klamath Falls*	*Portland-Metro*
Fall 2022	12.21	15.54
Winter 2023	13.46	13.81
Spring 2023	14.15	12.64

2022-2023 Average Current G.P.A.	
Klamath Falls	3.39
Portland-Metro	3.42
University-wide	**3.41**

Major	*# of students*	*% of total*
Renewable Energy Engineering	14	56%
Business Marketing Option	2	8%
Applied Behavior Analysis	1	4%
Applied Psychology	1	4%
Biology-Health Sciences	1	4%
Business Management Option	1	4%
Communication Studies	1	4%
Electrical Energy Engineering	1	4%
Environmental Sciences	1	4%
Information Technology	1	4%
Medical Laboratory Science	1	4%

Funding Source	*# of students*	*% of total*
Personal	14	56%
Embassy of the Sultanate of Oman	8	32%
Athletics	4 partially	16%
Saudi Arabia Cultural Mission	2	8%
United Arab Emirates Cultural Scholarship	1	4%
Kuwait Cultural Office	1	4%

Inaugural Women in STEM Conference: Friday, April 21st, from 8:00-4:00pm

Conference Coordinated by Student Involvement and Belonging team members on Portland-Metro and Klamath Falls campuses.

1. Goals of Women in STEM Conference - Our goal for this conference was to give upcoming women professionals, resources that will support them into their professional journey. This inaugural event was to champion our emerging woman student leaders. They learned how to build their network, master skills that allow them to learn from the experiences of mentors and gain confidence in their abilities to be successful within their various STEM fields.

2. The conference was a unique opportunity for students attending multiple higher education institutions in the area to learn together and build their network among peers. This collaborative event brought together women from Oregon Tech (both campus'), Oregon State, University of Oregon, Portland State, Portland Community College, and Clackamas Community College.

3. The Conference addressed a continued relevant need among women graduates. Only 19 percent of STEM graduates are women (Cveticani). That percentage decreases when you factor in women of BIPOC Identifies.

4. Our conference speakers and session facilitators were experts from industry. Session topics were timely and addressed relevant professional concerns.

• Keynote: Dr. Ashton Greer, Assistant Professor of Civil Engineering, Oregon Tech

• Wage Gap by Gender, Salary Negotiation: Rebecca Kobzeff Jordan, DW Fritz

• Imposter Syndrome: Savannah Loberger, Incomm

• Speed Networking: Facilitated by more than Industry Professionals

• Diversity and Inclusion: Garima Gautam, Intel

• "What I Wish I Would Have Known": Kristina Landen, Garmin and Carina Hahn, Intel

• Resume/Interview Workshop - Helping Students Create Power Statements: Desire' Wooten, Oregon Tech Career Services

5. Speed Networking was the session participants wanted to be longer. We had 15 industry mentors coupled with OIT faculty and staff.

6. This was the first large-scale public event for the PM Campus post COVID. Strategically aligned with the first PM Campus Family and Alumni weekend.

7. Our goal is for this to become an annual event, switching between campuses each year.

8. Next steps – Creation of an industry advisory board for the conference to ensure session topics continue to be timely and relevant to emerging women professionals. An additional value of this conference and advisory board is to continue to build relationships between Oregon Tech and industry.

HIGHER EDUCATION COORDINATING COMMISSION

Proposal for a New Academic Program

Institution: Oregon Institute of Technology

College/School: College of Health, Arts, and Sciences

Department/Program Name: Natural Science

Degree and Program Title: MS Natural Resources

1. Program Description

a. Proposed Classification of Instructional Programs (CIP) number.

03.0101 Natural Resource/Conservation, General

b. Brief overview (1-2 paragraphs) of the proposed program, including its disciplinary foundations and connections; program objectives; programmatic focus; degree, certificate, minor, and concentrations offered.

Our world, locally and globally, faces unprecedented environmental challenges. In the Klamath basin alone, we are faced with managing millions of acres of private, state, and federal lands to reduce catastrophic wildfire risk, maintain biodiversity, and produce valuable natural resources. Furthermore, many federal and state natural resource agencies such as the US Forest Service have an aging workforce that is retiring and many agencies and offices have significant vacancies (Frost 2001). These agencies and others are now seeking to recruit and retain the next generation of natural resource management and environmental science practitioners while increasing age, gender, ethnic, and cultural diversity (Brown & Harris 1993, Schelhas 2002).

Here in the Klamath Basin, we face many of the biggest environmental and natural resource management challenges people are facing across the country and around the world. For example, issues of catastrophic wildfire in Oregon and California mirror those in Australia and Europe while environmental and sociopolitical issues of issues of drought and water resource use, access, and availability here are akin to those in Israel and South Africa. Environmental health and rural vs urban poverty are problems in nearly every corner of the world. We have a number of threatened and endangered species in the Klamath Basin. The conservation and management of endangered species is a global challenge all countries face, especially biodiverse tropical countries like Mexico, Indonesia, Madagascar, India and Brazil which have some of the greatest number of endangered species. The Klamath River will be the site of the largest dam removal project in the world, averting extinction of at least a dozen endangered species, and adapting to severe drought and up to 80% declines in winter snowpack. In China, dam construction and removal is central to many environmental concerns of water and energy development. Despite substantial management and policy efforts, our region is experiencing severely degraded air and water quality with significant environmental health impacts on our communities, concerns central to many of the 17 United National Sustainable Development Goals.

Our current undergraduate Environmental Science program prepares students to tackle these problems with applied science and communication skills. We work closely with a diversity of industry partners located in Klamath including the US Forest Service, US Fish and Wildlife Service, US Geological Survey, Oregon Department of Forestry, Bureau of Land Management, The Klamath Tribes, and many more. Our faculty and

our partners desperately need to increase our capacity to manage, research, and monitor our efforts to understand and solve the problems we face, from local to global. Our capacity would be greatly expanding through the creation of a Masters in Natural Resources program.

Through the Natural Sciences Department and the Environmental Sciences undergraduate program, this would create both a 3-plus-2 year program for current undergraduates in ENV and a standalone 2-year program for students coming in with a relevant undergraduate from another institution. The MS program would be particularly designed to service specific projects identified and funded by our industry partners. The MS program would:

- Increase recruit exceptional students through national searches,
- expand the research and teaching capacity of our faculty,
- draw academic acclaim to the university,
- recruit advanced personnel for local agency offices, and
- provide our industry partners valuable deliverables and expanding their capacity.

Development of the Natural Resources Masters would be done in close consultation with the Geomatics Department, Population Health Management program, and the Civil Engineering and Renewable Energy Engineering programs.

c. Course of study – proposed curriculum, including course numbers, titles, and credit hours.

CURRICULUM

Within the first 2-4 years following program launch, the graduate curriculum would primarily consist of courses offered as 400/500 level options. In addition to the required 500 level courses, graduate students (standalone MS and BMS 3+2) would be in 400/500 level classes alongside undergraduates and would have additional requirements from their undergraduate peers. While requirements would vary with course and instructor, additional graduate requirements would include:

- Additional or more complex project work
- Additional readings and assignments on more advanced topics
- Additional or more advanced data analysis, mapping, and/or communication
- Mentoring of undergraduates

We expect that the addition of an MS program will also increase enrollment in the BS program. As the entire ENV program grows within the first 2-4 years after implementation, so too will our capacity to offer exclusively graduate courses in a greater diversity of areas.

Completion of the MS-BMS degree consists of **47 credits**. Students must maintain a 3.0 graduate-level GPA with a final grade of "C" or better in all graduate courses.

- The **MS** consists of **23 credits of core classes** (including **10 credits of research/thesis work**) and **24 credits of elective courses**. Master's students will typically be occupied with either Teaching Assistantships or Research Assistantships, so the recommended course load is 6-9 credits per term for 6 terms (2 years).
- Students in the 3+2 BMS option would follow the normal BES curriculum map through their third year. In their fourth year, students will complete their senior year requirements which are comprised mostly of program-

specific upper division required and technical elective courses. The electives would be taken at the 500 level. They would also integrate the required 500 level core classes.

Required Core Classes (23 credit hours):

- BIO 511 Foundation in conservation, **3 credit hours** (Offered every Fall)
- BIO 501 Intro to Graduate Study, **3 credit hours** (Offered Fall term)
- BIO 535 Advanced Data Analysis, **4 credit hours** (Offered Winter term)
- BIO 510* Current Issues, 1 credit hour (Offered each term)
  * students must take Current Issues 3 different terms for a total of **3 credit hours**
- BIO 595 Graduate Research/Thesis (2 credits per term*)
  *students must take BIO 595 in 5 different terms, for a total of **10 credit hours**. Prerequisite: BIO 501.

Elective Coursework (24 credits)

In the 3+2 BMS track, students would take the following elective courses at the 400-level through year three and at the 500-level in year four and five. They would be required to take 24 of the 32 credits of elective coursework at the 500-level. See **Appendix A: Curriculum Map for 3+2 Natural Resources track**

BMS 3+2 CURRICULUM ("Senior" Year 4 of BS, Year 1 of the +2 BMS)															
	Fall					Winter					Spring				
Course	ENV 108	SPE 321	WRI Elec	Tech Elec	ENV 501	ENV 485	BIO 595	SOC/HUM Elective	Tech Elec	BIO 510	ENV 484	BIO 595	Tech Elec	Tech Elec	
Course Title	Mentorship & Team Building	Small Group and Team Com.	WRI 327, 328, 345, 350, or 410	Technical Elective (500)	Intro to Grad Studies	Ecoregional Management	Grad research/ Thesis	Social Sci/Hum elective	Technical Elective (500)	Current Issues	Sustainable Human Ecology	Grad research/ Thesis	Technical Elective (500)	Technical Elective (500)	Total Grad credits
Credits	1	3	3	4	3	3	2	3	4	1	4	2	4	4	24
Year 2 of +2															
Course	BIO 511	BIO 510	BIO 595	Tech Elec	Tech Elec	BIO 510	BIO 595	BIO 535			BIO 595				
Course Title	Foundations in Conservation	Current Issues	Grad research/ Thesis	Technical Elective (500)	Technical Elective (500)	Current Issues	Grad research/ Thesis	Advanced Data Analysis			Grad research/ Thesis				
Credits	3	1	2	4	4	1	2	4			2				23

Appendix B: Schedule of course offerings for ENV program, Fall 2023 through Spring 2025

Fall 2023		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 307	Seminar: Ecology Elective	Klamath Falls
BIO 377	Wildlife Ecology	Klamath Falls
ENV 108	Mentorship & Team Building	Klamath Falls
ENV 111	Intro to Env Sciences	Klamath Falls
ENV 217	Intro to Natural Resource Management	Klamath Falls
ENV 355	Careers and Professions in Environmental Science	Klamath Falls

ENV 465	Ecological Restoration and Monitoring	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 335	Soils	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
Winter 2024		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 354	Environmental Health	Klamath Falls
BIO 446	Conservation Biology	Klamath Falls
CHE 315	Environmental Chemistry	Klamath Falls
ENV 224	Scientific Reasoning & Methodology	Klamath Falls
ENV 226	ENV Data Analysis	Klamath Falls
ENV 314	Environmental Policy and Management	Klamath Falls
ENV 4xx	Environmental Education	Klamath Falls
ENV 434	Advanced Data Analysis	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
PHED 163	Wilderness Navigation	Klamath falls
PHY 201	General Physics	Klamath Falls
Spring 2024		
Course Number	**Course Name**	**Campus**
BIO 2xx	Sophomore Research	Klamath Falls
BIO 3xx	Junior Research	Klamath Falls
BIO 4xx	Senior Research	Klamath Falls
BIO 386	Ornithology	Klamath Falls
BIO 369	Mammalogy	Klamath Falls
CHE 465	Fate/Transport of Pollutants	Klamath Falls
ENV 315	Water Resources	Klamath Falls
ENV 375	Forest Ecology & Mgmt	Klamath Falls
ENV 484	Sustainable Human Ecology	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 105	Physical Geography	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
Summer 2024		
Course Number	**Course Name**	**Campus**
BIO 407	Ecology elective	Klamath Falls

Fall 2024		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
ENV 355	Careers in Environmental Sciences	Klamath Falls
BIO 337	Aquatic Ecology	Klamath Falls
ENV 111	Intro to Env Sciences	Klamath Falls
ENV 214	Watershed Science and Tech	Klamath Falls
ENV 217	Intro to Natural Resource Management	Klamath Falls
ENV 3xx	Fire Ecology	Klamath Falls
ENV 355	Careers and Professions in Environmental Science	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
Winter 2025		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 426	Evolutionary Biology	Klamath Falls
CHE 315	Environmental Chemistry	Klamath Falls
ENV 224	Scientific Reasoning & Methodology	Klamath Falls
ENV 226	Environmental Data Analysis	Klamath Falls
ENV 460	Risk Assessment and Wilderness First Aid	Klamath Falls
ENV 434	Advanced Data Analysis	Klamath Falls
ENV 485	Habitat Management	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 313	Climatology and Atmospheric Science	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
PHY 201	General Physics	Klamath Falls
Spring 2025		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 313	Botany and Plant taxonomy	Klamath Falls
BIO 367	Plant Ecology	Klamath Falls
BIO 428	Fisheries	Klamath Falls
CHE 465	Fate/Transport of Pollutants	Klamath Falls

ENV 226	Environmental Data Analysis	Klamath Falls
ENV 469	Treatment Wetlands	Klamath Falls
ENV 484	Sustainable Human Ecology	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 105	Physical Geography	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
PHED 163	Wilderness Navigation	Klamath Falls

Appendix C: Curriculum Map for 2 year thesis track

NEW CURRICULUM		
1st Year - Fall		
BIO 511	Foundation in conservation	3
BIO 501	Intro to Graduate Study	3
	Elective	3
	Elective	
	TOTAL:	9
1st Year - Winter		
ENV 535	Graduate Data Analysis	4
BIO 512	Current Issues	1
BIO 595	Graduate Research/Thesis	2
	TOTAL:	7
1st Year - Spring		
BIO 512	Current Issues	1
BIO 595	Graduate Research/Thesis	2
	Elective	3
	Elective	3
	TOTAL:	9
2nd Year - Fall		
BIO 512	Current Issues	1
BIO 595	Graduate Research/Thesis	2
	Elective	3
	Elective	3
	TOTAL:	9
2nd Year - Spring		
BIO 595	Graduate Research/Thesis	2
	Elective	3
	Elective	3

	TOTAL:	8
2nd Year - Spring		
BIO 595	Graduate Research/Thesis	2
	Elective	3
	TOTAL:	5
	DEGREE TOTAL:	**47**

, Appendix A: Curriculum Map for 3+2 Natural Resources track

BMS 3+2 CURRICULUM ("Senior" Year 4 of BS, Year 1 of the +2 BMS)															
	Fall					Winter					Spring				
Course	ENV 108	SPE 321	WRI Elec	Tech Elec	ENV 501	ENV 485	BIO 595	SOC/HUM Elective	Tech Elec	BIO 510	ENV 484	BIO 595	Tech Elec	Tech Elec	
Course Title	Mentorship & Team Building	Small Group and Team Com.	WRI 327, 328, 345, 350, or 410	Technical Elective (500)	Intro to Grad Studies	Ecoregional Management	Grad research/ Thesis	Social Sci/Hum elective	Technical Elective (500)	Current Issues	Sustainable Human Ecology	Grad research/ Thesis	Technical Elective (500)	Technical Elective (500)	Total Grad credits
Credits	1	3	3	4	3	3	2	3	4	1	4	2	4	4	24
Year 2 of +2															
Course	BIO 511	BIO 510	BIO 595	Tech Elec	Tech Elec	BIO 510	BIO 595	BIO 535			BIO 595				
Course Title	Foundations in Conservation	Current Issues	Grad research/ Thesis	Technical Elective (500)	Technical Elective (500)	Current Issues	Grad research/ Thesis	Advanced Data Analysis			Grad research/ Thesis				
Credits	3	1	2	4	4	1	2	4			2				23

Appendix B: Schedule of course offerings for ENV program, Fall 2023 through Spring 2025

Fall 2023		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 307	Seminar: Ecology Elective	Klamath Falls
BIO 377	Wildlife Ecology	Klamath Falls
ENV 108	Mentorship & Team Building	Klamath Falls
ENV 111	Intro to Env Sciences	Klamath Falls
ENV 217	Intro to Natural Resource Management	Klamath Falls
ENV 355	Careers and Professions in Environmental Science	Klamath Falls
ENV 465	Ecological Restoration and Monitoring	Klamath Falls

ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 335	Soils	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
Winter 2024		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 354	Environmental Health	Klamath Falls
BIO 446	Conservation Biology	Klamath Falls
CHE 315	Environmental Chemistry	Klamath Falls
ENV 224	Scientific Reasoning & Methodology	Klamath Falls
ENV 226	ENV Data Analysis	Klamath Falls
ENV 314	Environmental Policy and Management	Klamath Falls
ENV 4xx	Environmental Education	Klamath Falls
ENV 434	Advanced Data Analysis	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
PHED 163	Wilderness Navigation	Klamath falls
PHY 201	General Physics	Klamath Falls
Spring 2024		
Course Number	**Course Name**	**Campus**
BIO 2xx	Sophomore Research	Klamath Falls
BIO 3xx	Junior Research	Klamath Falls
BIO 4xx	Senior Research	Klamath Falls
BIO 386	Ornithology	Klamath Falls
BIO 369	Mammalogy	Klamath Falls
CHE 465	Fate/Transport of Pollutants	Klamath Falls
ENV 315	Water Resources	Klamath Falls
ENV 375	Forest Ecology & Mgmt	Klamath Falls
ENV 484	Sustainable Human Ecology	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 105	Physical Geography	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
Summer 2024		
Course Number	**Course Name**	**Campus**
BIO 407	Ecology elective	Klamath Falls
Fall 2024		

Course Number	Course Name	Campus
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
ENV 355	Careers in Environmental Sciences	Klamath Falls
BIO 337	Aquatic Ecology	Klamath Falls
ENV 111	Intro to Env Sciences	Klamath Falls
ENV 214	Watershed Science and Tech	Klamath Falls
ENV 217	Intro to Natural Resource Management	Klamath Falls
ENV 3xx	Fire Ecology	Klamath Falls
ENV 355	Careers and Professions in Environmental Science	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
Winter 2025		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 426	Evolutionary Biology	Klamath Falls
CHE 315	Environmental Chemistry	Klamath Falls
ENV 224	Scientific Reasoning & Methodology	Klamath Falls
ENV 226	Environmental Data Analysis	Klamath Falls
ENV 460	Risk Assessment and Wilderness First Aid	Klamath Falls
ENV 434	Advanced Data Analysis	Klamath Falls
ENV 485	Habitat Management	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 313	Climatology and Atmospheric Science	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
PHY 201	General Physics	Klamath Falls
Spring 2025		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 313	Botany and Plant taxonomy	Klamath Falls
BIO 367	Plant Ecology	Klamath Falls
BIO 428	Fisheries	Klamath Falls
CHE 465	Fate/Transport of Pollutants	Klamath Falls
ENV 226	Environmental Data Analysis	Klamath Falls

ENV 469	Treatment Wetlands	Klamath Falls
ENV 484	Sustainable Human Ecology	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 105	Physical Geography	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
PHED 163	Wilderness Navigation	Klamath Falls

Appendix C: Curriculum Map for 2 year thesis track

NEW CURRICULUM		
1st Year - Fall		
BIO 511	Foundation in conservation	3
BIO 501	Intro to Graduate Study	3
	Elective	3
	Elective	
	TOTAL:	9
1st Year - Winter		
ENV 535	Graduate Data Analysis	4
BIO 512	Current Issues	1
BIO 595	Graduate Research/Thesis	2
	TOTAL:	7
1st Year - Spring		
BIO 512	Current Issues	1
BIO 595	Graduate Research/Thesis	2
	Elective	3
	Elective	3
	TOTAL:	9
2nd Year - Fall		
BIO 512	Current Issues	1
BIO 595	Graduate Research/Thesis	2
	Elective	3
	Elective	3
	TOTAL:	9
2nd Year - Spring		
BIO 595	Graduate Research/Thesis	2
	Elective	3
	Elective	3

	TOTAL:	8
2nd Year - Spring		
BIO 595	Graduate Research/Thesis	2
	Elective	3
	TOTAL:	5
	DEGREE TOTAL:	**47**

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In the stand-alone MS track, students would take the following courses at the 500-level. They would be required to take at least 80% of their elective coursework at the 500-level, allowing students to take courses relevant to their studies not offered at the 500-level (e.g. courses in GIS, GEOL, CE, CHEM).

Elective coursework that is currently in the course catalogue at the 400-level and we could offer immediately with current staff cross-listed as 400/500-level courses include:

- BIO 426/526 - Evolutionary Biology Credit Hours: 3
- BIO 446/546 - Conservation Biology Credit Hours: 3
- CHEM 465/565 – Fate & Transport of Pollutants
- CE 489/589 - Treatment Wetlands Credit Hours: 3
- ENV 465/565 - Ecological Resto. & Monitoring Credit Hours: 4
- ENV 469/569 - Treatment Wetlands Credit Hours: 3
- ENV 495/595 - Research in Env. Sciences Credit Hours: 4
- ENV 485/585 – Ecoregional Management
- ENV 484/584 – Sustainable Human Ecology
- BIO/ENV 407/507 – Seminars in Biology and Environmental Science
- ENV 434/534 – Advanced Data Analysis
- GIS 426/526 - Geospatial Vector Analysis II Credit Hours: 4
- GIS 432/532 - Customizing the GIS Envirn II Credit Hours: 4
- GIS 446/546 - GIS Database Development Credit Hours: 2
- GME 425/525 - Remote Sensing Credit Hours: 4

Core coursework that is currently in the course catalogue at the 300-level that we would change to the 400-level so they could be cross-listed as 400/500-level courses include:

BIO 337 - Aquatic Ecology Credit Hours: 4
BIO 367 - Plant Ecology Credit Hours: 4
BIO 377 - Wildlife Ecology Credit Hours: 4
BIO 386 - Ornithology Credit Hours: 4

A few additional courses could be created in the fields of expertise of our PhD level faculty, for example *mammalogy, fisheries management, ichthyology, and entomology*.

Additionally, students would take units of ENV 597 research and ENV599 thesis – Thesis under their primary adviser while they were writing and defending their thesis.

Students lacking prerequisites for graduate courses will be required to fill those deficiencies. Deficiency credits will not be counted toward the total 47 credit requirements for the program.

We have a planned schedule for when the core and elective courses currently listed in the course catalogue will be offered in Error! Reference source not found..

GRADUATE THESIS

All MS students would be required to complete an original project-based research thesis. Students would develop and submit a proposal in their first term for approval by their adviser and committee approved by their adviser and graduate committee (see section below). The thesis would include at least five terms of thesis credit for project design, execution, and presentation. The completed written thesis would require review and approval by the student's graduate committee and one external reviewer. All MS theses would be made available online through the OIT Library Services. Peer-reviewed publication submission would be highly encouraged and under the discretion and mentorship of the primary graduate adviser.

d. Manner in which the program will be delivered, including program location (if offered outside of the main campus), course scheduling, and the use of technology (for both on-campus and off-campus delivery).

   All classes and courses will be offered on Klamath Falls Campus.

e. Adequacy and quality of faculty delivering the program.

   The faculty at Klamath Falls campus teaching in the Natural Sciences have the required credentials and experience to teach the suggested curriculum. Current faculty include:

   - Dr. Jherime L. Kellermann, PhD
   - Dr. Nate Bickford, Phd
   - Professor Kerry Farris, MS
   - Professor Christy Van Rooyen, MS
   - Dr. Ross Wagstaff, PhD

   Environmental Chemist position, PhD (position currently being filled; as of 01/19/2023, candidate has been selected and recommended to Dean by search committee)

   See **Appendix D. Natural Resources** Faculty CV
   s.

f. Adequacy of faculty resources – full-time, part-time, adjunct.

   The Natural Sciences program has 19 full time faculty. 1 part time faculty and a few adjuncts. Although the full-time faculty will be the primary individuals teaching the curriculum in this degree.

g. Other staff.

   We have office manager and plans to hire lab manager in 2023

h. Adequacy of facilities, library, and other resources.

We have facilities that are already being successfully used for the BS program, which mainly consists of access to the primary peer-reviewed scientific literature. We feel these are adequate facilities and resources through the OIT library and inter-library loan system for the MS program as well.

i. Anticipated start date.
We would like to have soft start of the program in Fall 2023 but a full recruitment year in Fall 2024.

2. Relationship to Mission and Goals

Manner in which the proposed program supports the institution's mission, signature areas of focus, and strategic priorities.

The Environmental Science (BES) program mission closely aligns with the Oregon Tech mission: Oregon Institute of Technology (Oregon Tech), Oregon's public polytechnic university, offers innovative, professionally focused undergraduate and graduate degree programs in the areas of engineering, health, business, technology, and applied arts and sciences. To foster student and graduate success, the university provides a hands-on, project-based learning environment and emphasizes innovation, scholarship, and applied research. With a commitment to diversity and leadership development, Oregon Tech offers statewide educational opportunities and technical expertise to meet current and emerging needs of Oregonians as well as other national and international constituents. The curriculum is a multidisciplinary integration of ecology, biology, chemistry, & natural resources; data analysis & statistics; geographic information systems (GIS); and other physical, natural and social sciences. Emphasis in our program is placed on active experiential learning through engagement in real-world, real-time problems in collaboration with local and regional agency partners. The program offers numerous, diverse opportunities for students to engage is applied research, and resource management projects with the support of faculty and professionals. Further, BES faculty and students engage with professional communities through publications and conference presentations. These research and scholarly activities are in direct alignment with Pillars II & III of Oregon Tech's strategic plan which state:

Pillar II COMMITMENT TO INNOVATION: Oregon Tech strives to be entrepreneurial and on the leading edge of student engagement, innovative teaching, and collaborative research.

Pillar III COMMITMENT TO COMMUNITY: Oregon Tech is an active member of the communities that it serves. Students, faculty, and staff are encouraged to contribute to their physical, professional, scholarly, and social communities via leadership and active participation through their academic and professional expertise.

Our faculty and students currently work with a diversity of community partners. Currently (2023) our faculty have funded research projects that involve undergraduates working with the US Fish and Wildlife Service on bird conservation and management, the EPA and DEQ on air quality and environmental health, the Bureau of Land Management on stream restoration and bird conservation, the US Forest Service on stream and wetland conservation and bird management, US FWS and NGOs on bee conservation, and Oregon Department of Forestry and the City Parks Department on forest and fire management in Moore Park. Past projects and collaborations have involved the Bureau of Reclamation, US Geological Survey, Oregon Department of Fish and Game, and US Fish and Game. We are also working to develop a strong relationship with the Klamath Tribes. We have current Tribal member students doing research with the tribes on fisheries and aquatic restoration and we have several Tribal members that are alumni of the program working at the US Fish and Wildlife, Department of Forestry and the Klamath Tribes Department of Natural Resources. We regularly engage tribal members and staff in our classes. For example, the Klamath Tribal Chairman Don Gentry has met with our students for field courses/labs and Alex Gonyaw, Senior Fisheries Biologist for the Tribes has given guest lectures and lead field labs for a number of courses for the past 5 years. Our students have worked with the Tribal Forest and Fire management staff to study forest and fire ecology on lands managed by the Tribes in the Chiloquin area, including the use of monitoring technology in cooperation with Chiloquin High School students.

Like our BS program, the Masters program will help students cultivate a deep experiential appreciation for the interdisciplinary character of natural resource problems.

Expanding capacity
The Masters program will increase our ability to achieve our mission and meet the goals of our strategic plan. Masters students and their required graduate projects will extend and expand the capacity of both our faculty and our agency partners to address the significant environmental and natural resource challenges we face in the Klamath Basin, the Pacific Northwest, nationally, and globally. We will create and design individual graduate projects and their products to address the needs of our partners and resource stakeholders. Graduate students will be expected to show leadership and initiative on their projects while providing critical support, value, and resources for our partners. Ultimately, our Masters program will provide desperately needed human resources

in the region to address critical and growing environmental and natural resource problems including air and water quality, extreme fire risk, conservation of fisheries and wildlife species, and environmental health, and sustainability.

Collaboration with other programs
CE & REE: Currently, students at Oregon Tech can pursue Dual degrees in Environmental Science and either Civil Engineering or Renewable Energy Engineering. Both CE and REE now offer Masters programs at the Klamath Falls campus. Our Masters program will provide opportunity for students interested in the nexus of these disciplines to acquire a Masters in Natural Resources that integrates elements of these disciplines as well through partnerships and collaborations among our faculty and partners that are already well established through our dual undergraduate programs.

GIS: The Environmental Sciences and GIS programs have always been closely aligned and overlapping in their learning outcomes, curricula, real-world applications, student interest, and industry partners. The ENV curriculum requires at least three terms of GIS coursework and many ENV students complete a minor in GIS. The Geomatics department is also considering developing a graduate program. Development of a Masters in Natural Resources should be in close consultation with the Geomatics Department to ensure synergy and reduce redundancy of future programs.

PPHM: The Population Health Management program also has significant overlap in learning objectives such as environmental health. We will also include the PPHM program in planning and development to increase opportunities for all programs.

State Universities: Faculty at Oregon Tech already have significant collaboration with Oregon State University. Dr. Jhermine Kellerman has collaborated with Dr. Daniel Leavell of OSU Extension. With this program we can build even more significant opportunities for collaboration on research at sites in the Klamath region. Dr. Nate Bickford Also communicated with Dr. Mark Needham (OSU) on potential collaboration results from the graduate program. **See attached letter in Appendix**.

Dr. Nate Bickford has also spoken to Dr. Karen Mager of Southern Oregon University about opportunities to collaborate in the classroom and in research. The graduate program will help facilitate many possible opportunities to work together.

See attached letter of support in Appendix

a. Manner in which the proposed program contributes to institutional and statewide goals for student access and diversity, quality learning, research, knowledge creation and innovation, and economic and cultural support of Oregon and its communities.

The proposed Program located in Klamath Falls will facilitate student experiences in underserved, rural regions of the state.

We are working to develop collaborations with Klamath tribes and with the development of their environmental research and policies, we think we can find some strong common ground to build programs together.

Students attracted to this program are likely from OIT's biology/science programs and will serve to help establish services in rural and underserved areas of the state.

In addition to providing a rigorous curriculum, and conducting regular assessment of learning outcomes, the program will admit students who have the necessary characteristics to succeed in this field. In order to ensure that students will have the necessary preparation for success, applicants must meet the program admissions requirements as determined by OIT. The program will have a rigorous curriculum, standards for admissions, accreditation standards, and ongoing program assessments.

Per Oregon Tech policy, to be considered for admission to this graduate program, an applicant must have a baccalaureate degree from a regionally accredited college or university, as well as a scholastic record that evidences the ability to perform satisfactory graduate work.

Specifically, all MS-BMS students must:

- be in good academic standing currently or at the last college or university attended
- have attained a grade point average of at least 3.0 on a 4.0 scale for the last 90 term (60 term) units attempted
- have attained a grade point average of at least 3.0 on a 4.0 scale for the last 47 term hours in the major

Students pursuing the standalone MS program:

- completed a four-year college course of study and hold an acceptable baccalaureate degree from an institution accredited by a regional accrediting association

b. Manner in which the program meets regional or statewide needs and enhances the state's capacity to:

i. improve educational attainment in the region and state;
ii. respond effectively to social, economic, and environmental challenges and opportunities; and
iii. address civic and cultural demands of citizenship.

- The OIT program will be the only Natural Resource Masters program east of the Cascades with a focus on rural, eastern arid land systems of the Cascade Mountains, Great Basin, Sage-steppe, juniper woodland, and high desert ecoregions.
- We are embedded within and surrounded by small, rural natural resource-based communities that face a wide range of challenges which confront much of the American west including increasing drought & water scarcity, increasing risk of and catastrophic wildfire, endangered species management, development & land use change, climate change.
- Although Klamath Falls is a relatively small town, it is home to the headquarters and offices of many major federal, state, and non-governmental natural resource management agencies and organizations including:
    - US Forest Service
    - Bureau of Land Management
    - US Fish & Wildlife
    - US Geological Survey

- Bureau of Reclamation
- National Park Service
- OR Dept of Forestry
- OR Dept of Fish & Game
- Klamath Tribes
- The Nature Conservancy
- Trout Unlimited

- We will have a graduate program focused on specific applied graduate projects designed to serve specific agency partners and local/regional needs
- Our university and Master program will be well placed to address significant social, economic, and environmental challenges and opportunities in the region including
    - Klamath River Dam Removal – the largest dam removal project in the world – beginning in 2023
    - Water quality and availability issues
    - Wildlife conservation and endangered species management
    - Air quality and environmental health
    - Wildland fire and forest resources management
    - Civic engagement in the management of public resources

3. Accreditation

a. Accrediting body or professional society that has established standards in the area in which the program lies, if applicable.

NA

b. Ability of the program to meet professional accreditation standards. If the program does not or cannot meet those standards, the proposal should identify the area(s) in which it is deficient and indicate steps needed to qualify the program for accreditation and date by which it would be expected to be fully accredited.

The department does not fell like this is a concern based on our accreditation of the BS

c. If the proposed program is a graduate program in which the institution offers an undergraduate program, proposal should identify whether or not the undergraduate program is accredited and, if not, what would be required to qualify it for accreditation.

The BS program is accredited.

d. If accreditation is a goal, the proposal should identify the steps being taken to achieve accreditation. If the program is not seeking accreditation, the proposal should indicate why it is not.
We do not have specialized accreditation.

4. Need

a. Anticipated fall term headcount and FTE enrollment over each of the next five years. The numbers in the table below represent a roughly 2:1 ratio of 3+2 BMS to Standalone MS students. We recognize that this ratio could

vary from year to year depending on the qualifications and interests of the undergraduates in any given year, faculty research and funding.

1st Year (2023)	2nd Year (2024)	3rd Year (2025)	4th Year (2026)	5th Year (2027)	10th Year (2033)
10 enrolled	5 incoming 15 enrolled 10 graduating	13 incoming 18 enrolled 5 graduating	5 incoming 18 enrolled 13 graduating	16 incoming 21 enrolled 5 graduating	8 incoming 24 enrolled 16 graduating

b. Expected degrees/certificates produced over the next five years.

51 thesis MS degree in Natural Resources

c. Characteristics of students to be served (resident/nonresident/international; traditional/ nontraditional; full-time/part-time, etc.).

The program design allows for students to be served from any of the listed characteristics.

d. Evidence of market demand.

Anticipated market & demographics

Our Masters program will attract and target two primary markets and demographics.

- *Young people deeply concerned about critical environmental problems in rural regions:* Environmental issues are a central concern in the Northwest, the U.S. and globally, particularly for contemporary young people, sometimes called Generation Z (or Zed). The Climate Crisis, environmental pollution and health, biodiversity loss, catastrophic wildfires, destruction of the world's rainforests, and environmental justice are all critical concerns of students in and entering universities. This is our market, people, especially young students coming out of high school, who feel compelled to help discover and contribute to solutions to the world's pressing environmental problems at the graduate level. We expect to continue to attract students, for both our graduate and undergraduate programs that are interested in tackling global environmental problems at the local scale in rural communities that have challenges and problems unique to the history and circumstances of rural, in contrast to urban, America.

  Specifically, our marketing will target:

  - Students graduating from our own undergraduate program, or the dual majors with CE and REE, who are eligible to pursue a Masters through the 3+2 option.
    - We believe that the 3+2 Masters option could be very attractive to:
      a. students at 2-year community colleges considering a bachelors degree as well as
      b. students at other 4-year institutions that are considering transfer
  - Students graduating with other undergraduate degrees (not Environmental Science) from Oregon Tech but are interested in a graduate degree that integrates issues of natural resources and environmental science with their undergraduate discipline. These may be students from biology-health science, civil or renewable energy engineering, or social science programs such as population health management or applied psychology.

- Students graduating from regional undergraduate programs seeking to study natural resource and environmental problems in rural regions of Oregon, the Northwest, and beyond through adequately funded partner-driven projects.

- *Career professionals seeking advancement in their sector:* Both within and outside Klamath Falls, there are a large number of people already working in the field of natural resources and environment. Typically, people working in this sector already have an undergraduate degree, although this degree may have been attained some time ago, be in a general field such as biology, or in an unrelated discipline. Attaining a graduate degree represents a way to qualify for more advanced positions and/or higher pay grades within their job series. For individuals with undergraduate degrees more unrelated to environmental fields, they may wish to also take a number of undergraduate courses as well such as wildlife ecology, botany, environmental chemistry, or physics to help meet the qualifications of federal and state job series.

- *Agency research needs:* The professors in the Environmental Science have spoken with US Forest service, US Geologic Service, US Fish and Wildlife Service, Bureau of Land Management, and Oregon Department of Fish and Game about the graduate program and potential projects. There was overwhelming excitement about the opportunities to work and fund local graduate student on project. All of the agencies have district offices in Klamath Falls. The agency partners are very confident in creating opportunities since they have more project than manpower.

- From University of Oregon

  "For the 2018-2019 graduate class, the department received 162 applications for 5 positions. We initially made offers to 7 applicants, or around 4% of those who applied."

  This information indicates that there is a number of possible students that are interested in Graduate Programs but have not successfully found a program. We are lacking more recent data but we do not feel the pattern has changed.

- The Texas A&M Natural Resource Job Board is an industry standard to recruit students. Between November 1st and December 7th there were posting for 6 graduate positions in the Northwest out of 103 total requests during that same time period for the rest of the country. Clearly there is a need for more graduate study opportunities in the Northwest.
  Recruiting graduate students for funded position is as simple as advertising in a graduate student board such Texas A&M job board. At Colorado State University Pueblo – a similar school to Oregon Tech a graduate position would attract 30 – 50 qualified applicants.

- The job outlook for Natural Science manager is a 6% increase which is the average increase for job market in the United States (https://www.bls.gov/ooh/management/natural-sciences-managers.htm).

- We performed a survey of environmental students to identify their interest in the Master's Program. Although we did not have large number of respondents, we do feel the patterns would stay the same for a larger number of students. We also feel the comments below indicate the overall feeling of the students.

  "Klamath Falls is a region with diverse and complex natural resources opportunities and topics. The addition of a masters program will draw in more prospective students and further elevate OIT as a premiere polytechnic university. I know I would pursue a masters in natural science here"

  "As a senior I don't think it will impact me a lot. I do think that the freshman or sophomore's would definitely benefit from a masters program. A Masters program could bring in more students and money for the natural science department."

  "It will add opportunities for enhanced education that will set us up better in the future."

"Oregon tech on it's own has very few graduate programs compared to competition, so the more the merrier. In perspective to natural science, many jobs require some sort of graduate degree so implementing a program here would be very beneficial."

"I think it would be awesome!"

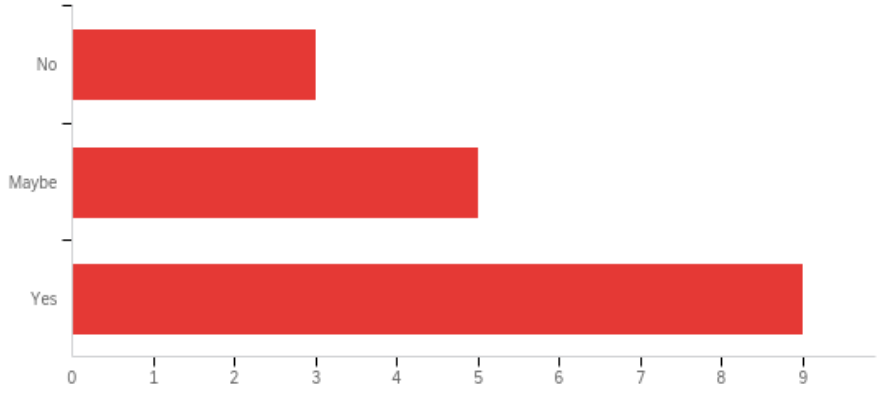
"I would consider adding a Masters if it is implemented."

"A Masters Program would be beneficial for OIT students in the ENV program. This program could provide more educational opportunities for students to learn about more specific topics at a higher level."

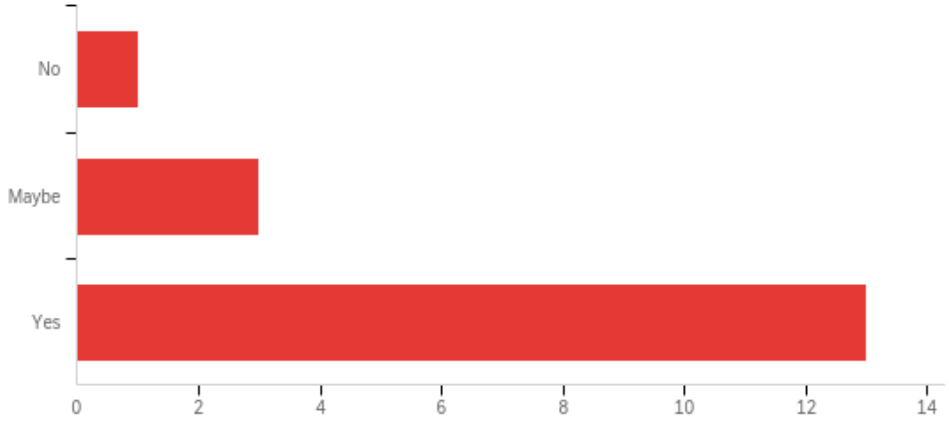
"I think a masters program would help increase the research that we do and encourage more people to join the program since there is more room of individuals to grow"

Some of the questions asked of the students indicate that the majority of the students are both interested and excited about the graduate program and many are interested in applying to the program.

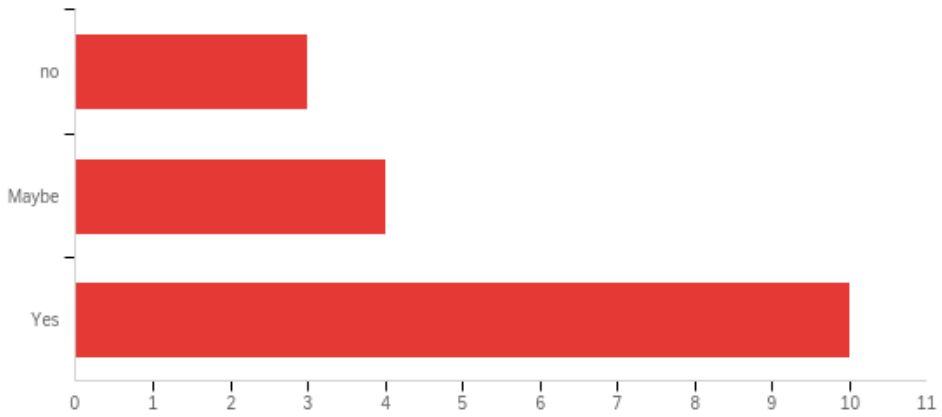
Have you thought about a Masters degree?



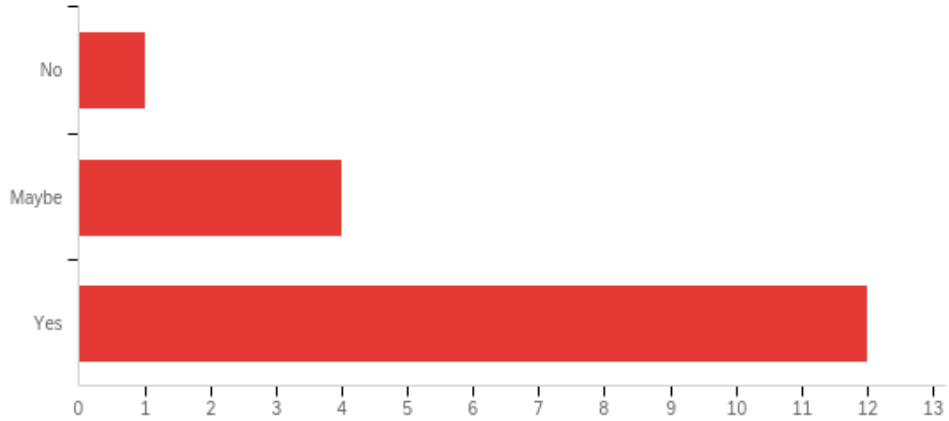
Do you think that adding a Masters program in Natural Resources at Oregon Tech would enhance your educational experience?



Would you be interested in a Masters Program?



Are you interested in research and developing a research project?



e. If the program's location is shared with another similar Oregon public university program, the proposal should provide externally validated evidence of need (e.g., surveys, focus groups, documented requests, occupational/employment statistics and forecasts).

NA

f. Estimate the prospects for success of program graduates (employment or graduate school) and consideration of licensure, if appropriate. What are the expected career paths for students in this program?

There is extremely high demand for students with graduate degrees in natural resources and environmental sciences from a wide range of federal, state, private, and non-governmental organizations. Any organization or company that manages, uses or impacts natural resources or the environment needs personnel with multidisciplinary science background in the environmental fields. In particular, highly trained individuals are in extremely high demand by federal and state agencies that manage natural resources in our rural regions, such as the US Forest Service, Bureau of Land Management, US Fish & Wildlife, and Oregon Departments of Forestry and Fish and Wildlife.

Federal and state natural resource agencies pay strong salaries with good benefits. Students with graduate degrees can qualify for intermediate to upper level pay grades, especially in conjunction with prior experience. For example, many of our undergraduate students work for the federal government (e.g. US Forest Service, US

Fish & Wildlife, National Park Service) during summer break and after graduation our students. These positions are within the federal Office of Personnel Management, 400 Occupational Series – Biological Sciences (Office of Personnel Management), which includes common job series such as Natural Resources Management and Biological Sciences, Biological Science Technician Series, Ecology Series, Forestry Series, and Wildlife Biology Series, most of which have educational requirements.

Individuals with a Masters degree and some prior work experience in natural resources and environmental science can expect to start a federal job in the 400 series at the General Schedule (GS) level of 5, 7, or 9. These positions, as of 2020 have annual salaries in Oregon of $45,000 - $71,000 depending on position, location, and experience (Office of Personnel Management). Depending on experience and location, students with a Masters degree appropriate experience could qualify for positions at least at the GS-11 level, with 2019 salaries ranging from at least $66,000 - $86,000 and possibly the GS12-13 level ranging from $79,000 - $122,750.

It is extremely important to note that most of our current undergraduate students are from rural regions and wish to remain and work in rural regions, often in eastern Oregon, California, and Washington. The salaries stated above for positions in the federal 400 Biological series as well as for similar state agency job series provides a high standard of living in rural areas where the cost of living is relatively low compared to urban areas. For example, the average cost/value of a home in Klamath Falls is $177,000, while in Portland, OR it is $416,000, in Seattle it is $714,000, and in San Francisco, CA is $1.3 million! Furthermore, many individuals with undergraduate and advanced degrees in natural resources and environmental sciences work as, or for independent contractors regularly earning $100-200 per hour.

These economic metrics highlight the fact that students attaining a graduate degree in NR at OIT can 1) achieve very comfortable salaries by any standard, 2) particularly in the rural areas where many jobs are located which have significantly lower costs of living which regions where many tech industry jobs are based.

5. Outcomes and Quality Assessment

a. Expected learning outcomes of the program.

1. Advanced conceptual and applied knowledge of conservation, ecology, and management of natural resources.
2. Management and completion of an original research project including study design, hypothesis testing, data analysis, manuscript writing, and public communication and outreach
3. Active professional engagement in a graduate-level community of peers, faculty, industry partners, and the public.
4. Ability to effectively appraise and constructively critique scientific work and writing.
5. Mentoring of undergraduates in the natural sciences.

b. Methods by which the learning outcomes will be assessed and used to improve curriculum and instruction.

We will use techniques already developed to assess Programmatic Student Learning Objectives (PSLOs) in our BS of Environmental Science. This includes the analysis of academic works such as papers, presentations, exams, and lab exercises specifically developed to assess specific PSLOs. Additionally, we will use peer-review and publication of manuscript submissions to assess Number 2 above. We will also survey industry partners who work closely with our graduates as project mentors and collaborators on the professionalism, effectiveness, and skills of graduate students they engage with.

c. Nature and level of research and/or scholarly work expected of program faculty; indicators of success in those areas.

Faculty will be expected to engage with the MS of Natural Resources program in at least one or more of four main areas:

1. Developing masters-level research projects in collaboration with partnering agencies and organizations to meet identified needs in management, conservation, planning, and research and to be published in peer-reviewed literature;
2. Develop masters projects that fit within ongoing research programs of the faculty member and to be published with peer-reviewed literature;
3. Provide graduate-level instruction in the form of courses, seminars, and trainings;
4. Serve on graduate thesis committees, providing mentorship and review of required graduate products

6. Program Integration and Collaboration

a. Closely related programs in this or other Oregon colleges and universities.

Oregon State University

- MS in Fisheries & Wildlife Administration
- MS in Wildlife Science
- MS in Natural Resources
- MS in Forest Ecosystems & Society
- MS in Environmental Sciences

University of Oregon

- MS in Environmental Studies

Southern Oregon University

- MS in Environmental Education

Portland State University

- MS in Environmental Science and Management

Western Washington University

- MS in Environmental Science

Cal-Poly Humboldt

- MS in Environmental Systems
- MS in Natural Resources

b. Ways in which the program complements other similar programs in other Oregon institutions and other related programs at this institution. Proposal should identify the potential for collaboration.

As we mentioned above, this will be the only Masters in Natural Resources east of the Cascade Mountains. The rural, arid lands ecosystems of our region are unique, with biogeographic and socioeconomic factors quite different from the more populated and mesic systems west of the Cascades. We have significant need and demand for graduate level research in our region that can meet the management and research needs of our faculty and partner agencies and organizations who lack capacity. We already collaborate with other universities in the state. For example, Dr. Jherime Kellermann has collaborated with Oregon State University, both the main and Cascades campuses, over the past ten years on research projects on sensitive species conservation, wildfire ecology, and climate change scenario planning. In the past we have collaborated with OSU-Cascades, Southern Oregon University, College of the Siskiyous, and Western Washington University.

The development of the MS in Natural Resources will facilitate added and advanced collaboration with other programs at Oregon Tech, including the MS in Civil Engineering (we already have a Dual major in CE and Environmental Science), the MS in Renewable Energy Engineering (we have a Dual Major in REE and ENV), the Geomatics program and the developing GIS Service Center, the Population Health Management Program, the proposed MS in Medical Science program, and the Data Science Program. With this program we can build even more significant opportunities for collaboration on research at sites in the Klamath region. Dr. Nate Bickford also communicated with Dr. Mark Needham (OSU) on potential collaboration results from the graduate program. Dr. Nate Bickford has also spoken to Dr. Karen Mager of Southern Oregon University about opportunities to collaborate in the classroom and in research. The graduate program will help facilitate many possible opportunities to work together.

c. If applicable, proposal should state why this program may not be collaborating with existing similar programs.

d. Potential impacts on other programs.
We expect minimal impact on programs at other institutions due to the unique location and programmatic offerings of Oregon Tech and the MS in Natural Resources. Students interested in Oregon Tech are typically seeking out our small school with low teacher to student ratios as well as our rural setting in the upper Klamath Basin and the Great Basin bioregion including the outstanding outdoor opportunities, low cost of living, and high quality of life.

7. External Review

If the proposed program is a graduate level program, follow the guidelines provided in *External Review of New Graduate Level Academic Programs* in addition to completing all of the above information.

See attached Appendix F. External review report and reviewers CV

Appendix A: Curriculum Map for 3+2 Natural Resources track

BMS 3+2 CURRICULUM ("Senior" Year 4 of BS, Year 1 of the +2 BMS)															
	Fall					Winter					Spring				
Course	ENV 108	SPE 321	WRI Elec	Tech Elec	ENV 501	ENV 485	BIO 595	SOC/HUM Elective	Tech Elec	BIO 510	ENV 484	BIO 595	Tech Elec	Tech Elec	
Course Title	Mentorship & Team Building	Small Group and Team Com.	WRI 327, 328, 345, 350, or 410	Technical Elective (500)	Intro to Grad Studies	Ecoregional Management	Grad research/ Thesis	Social Sci/Hum elective	Technical Elective (500)	Current Issues	Sustainable Human Ecology	Grad research/ Thesis	Technical Elective (500)	Technical Elective (500)	Total Grad credits
Credits	1	3	3	4	3	3	2	3	4	1	4	2	4	4	24
Year 2 of +2															
Course	BIO 511	BIO 510	BIO 595	Tech Elec	Tech Elec	BIO 510	BIO 595	BIO 535			BIO 595				
Course Title	Foundations in Conservation	Current Issues	Grad research/ Thesis	Technical Elective (500)	Technical Elective (500)	Current Issues	Grad research/ Thesis	Advanced Data Analysis			Grad research/ Thesis				
Credits	3	1	2	4	4	1	2	4			2				23

Appendix B: Schedule of course offerings for ENV program, Fall 2023 through Spring 2025

Fall 2023		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 307	Seminar: Ecology Elective	Klamath Falls
BIO 377	Wildlife Ecology	Klamath Falls
ENV 108	Mentorship & Team Building	Klamath Falls
ENV 111	Intro to Env Sciences	Klamath Falls
ENV 217	Intro to Natural Resource Management	Klamath Falls
ENV 355	Careers and Professions in Environmental Science	Klamath Falls
ENV 465	Ecological Restoration and Monitoring	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 335	Soils	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
Winter 2024		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 354	Environmental Health	Klamath Falls
BIO 446	Conservation Biology	Klamath Falls
CHE 315	Environmental Chemistry	Klamath Falls
ENV 224	Scientific Reasoning & Methodology	Klamath Falls

ENV 226	ENV Data Analysis	Klamath Falls
ENV 314	Environmental Policy and Management	Klamath Falls
ENV 4xx	Environmental Education	Klamath Falls
ENV 434	Advanced Data Analysis	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
PHED 163	Wilderness Navigation	Klamath falls
PHY 201	General Physics	Klamath Falls
Spring 2024		
Course Number	**Course Name**	**Campus**
BIO 2xx	Sophomore Research	Klamath Falls
BIO 3xx	Junior Research	Klamath Falls
BIO 4xx	Senior Research	Klamath Falls
BIO 386	Ornithology	Klamath Falls
BIO 369	Mammalogy	Klamath Falls
CHE 465	Fate/Transport of Pollutants	Klamath Falls
ENV 315	Water Resources	Klamath Falls
ENV 375	Forest Ecology & Mgmt	Klamath Falls
ENV 484	Sustainable Human Ecology	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 105	Physical Geography	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
Summer 2024		
Course Number	**Course Name**	**Campus**
BIO 407	Ecology elective	Klamath Falls
Fall 2024		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
ENV 355	Careers in Environmental Sciences	Klamath Falls
BIO 337	Aquatic Ecology	Klamath Falls
ENV 111	Intro to Env Sciences	Klamath Falls
ENV 214	Watershed Science and Tech	Klamath Falls
ENV 217	Intro to Natural Resource Management	Klamath Falls
ENV 3xx	Fire Ecology	Klamath Falls
ENV 355	Careers and Professions in Environmental Science	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls

Winter 2025		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 426	Evolutionary Biology	Klamath Falls
CHE 315	Environmental Chemistry	Klamath Falls
ENV 224	Scientific Reasoning & Methodology	Klamath Falls
ENV 226	Environmental Data Analysis	Klamath Falls
ENV 460	Risk Assessment and Wilderness First Aid	Klamath Falls
ENV 434	Advanced Data Analysis	Klamath Falls
ENV 485	Habitat Management	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 313	Climatology and Atmospheric Science	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
PHY 201	General Physics	Klamath Falls
Spring 2025		
Course Number	**Course Name**	**Campus**
BIO 255	Sophomore Research	Klamath Falls
BIO 355	Junior Research	Klamath Falls
BIO 455	Senior Research	Klamath Falls
BIO 313	Botany and Plant taxonomy	Klamath Falls
BIO 367	Plant Ecology	Klamath Falls
BIO 428	Fisheries	Klamath Falls
CHE 465	Fate/Transport of Pollutants	Klamath Falls
ENV 226	Environmental Data Analysis	Klamath Falls
ENV 469	Treatment Wetlands	Klamath Falls
ENV 484	Sustainable Human Ecology	Klamath Falls
ENV 495	Research in Environmental Sciences	Klamath Falls
GEOG 105	Physical Geography	Klamath Falls
HED 240	Emergency Care and CPR	Klamath Falls
PHED 163	Wilderness Navigation	Klamath Falls

Appendix C: Curriculum Map for 2 year thesis track

NEW CURRICULUM		
1st Year - Fall		
BIO 511	Foundation in conservation	3
BIO 501	Intro to Graduate Study	3
	Elective	3

	Elective	
	TOTAL:	9
1st Year - Winter		
ENV 535	Graduate Data Analysis	4
BIO 512	Current Issues	1
BIO 595	Graduate Research/Thesis	2
	TOTAL:	7
1st Year - Spring		
BIO 512	Current Issues	1
BIO 595	Graduate Research/Thesis	2
	Elective	3
	Elective	3
	TOTAL:	9
2nd Year - Fall		
BIO 512	Current Issues	1
BIO 595	Graduate Research/Thesis	2
	Elective	3
	Elective	3
	TOTAL:	9
2nd Year - Spring		
BIO 595	Graduate Research/Thesis	2
	Elective	3
	Elective	3
	TOTAL:	8
2nd Year - Spring		
BIO 595	Graduate Research/Thesis	2
	Elective	3
	TOTAL:	5
	DEGREE TOTAL:	**47**

Appendix D. Natural Resources Faculty CV

Jherime L. Kellermann, PhD

1001 Loma Linda Dr., Klamath Falls, OR 97601

jlkellermann@gmail.com

Cell: 707-599-0777

EDUCATION

PhD 2013. University of Arizona, Tucson, AZ

- **Major:** Wildlife Conservation & Management, **Minor**: Renewable Natural Resources
- **Dissertation**: Spatiotemporal and phenological patterns of bird migration and the influence of climate and disturbance in the Madrean Sky Island Archipelago and American southwest.
- **Adviser**: Dr. Charles van Riper III

MS 2007. Humboldt State University, Arcata, CA

- **Major**: Wildlife
- **Thesis**: Ecological and Economic services provided by birds on Jamaican Blue Mountain coffee farms.
- **Adviser:** Dr. Matthew D. Johnson

BA 1998. Pennsylvania State University, University Park, PA

- **Multiple Major Program**: Anthropology & Psychology

TEACHING POSITIONS

Fall 2022 – To date: ***Professor,* Oregon Tech,** Natural Sciences Dept., Klamath Falls, OR.
Fall 2017 – Spring 2022: ***Associate Professor***, **Oregon Tech**, Natural Sciences Dept., Klamath Falls, OR.
Fall 2013 – Spring 2017: ***Assistant Professor***, **Oregon Tech**, Natural Sciences Dept., Klamath Falls, OR
New courses I have created and taught as **Lead Instructor** since Fall 2013

- Mentorship & Team Building (ENV108)
- Intro to Natural Resource Management (ENV217)
- Fire Ecology (ENV/BIO307)
- Coffee: Ecology & History (BIO307)
- Environmental Health (BIO354)
- Wildlife Ecology (BIO377)
- Ornithology (BIO386)
- Crater Lake Ecology (BIO307)
- Natural Resource Management & Environmental Health (BIO407)
- Conservation Biology (BIO446)

Pre-existing courses I have significantly re-designed/re-created and taught as **Lead Instructor** since Fall 2013

- Principles of Biology I (BIO211)
- Principles of Biology II (BIO212)
- Scientific Reasoning & Methodology (ENV224)
- Careers in Environmental Science (ENV275)
- Developmental Biology (BIO352)
- Methods in Environmental Science (ENV365)
- Evolutionary Biology (BIO426)
- Sustainable Human Ecology (BIO484)

Other academic positions and duties

- **Advising Coordinator** for Environmental Sciences program from 2017-to date

- **Assessment Coordinator** for the Environmental Sciences Program 2017-2019
- Academic advising of program majors (including those in the dual Environmental Science-Civil Engineering and –Renewable Energy Engineering degrees)
- Advising of independent student research projects
- Academic service on a range of academic committees including Sustainability Committee (2016-2021), Health & Wellness Committee (2018-to date), search committees

Fall 2017 – Spring 2021: ***Environmental Sciences Program Director***, **Oregon Tech**, Natural Sciences Dept.

- Organize and lead strategic planning for the program
- Oversee program and curriculum development and changes
- Develop and maintain partnerships with regional, state, and national organizations, agencies, and individuals
- Develop opportunities for student research, internships, and jobs
- Organize and lead program faculty meetings
- Identify and support the teaching and research needs of our faculty
- Management of a program fund held by the Oregon Tech Foundation
- Lead and organize outreach and student recruitment including "influencer" events, high school and community college visits, on-campus events, materials development, and social media development
- Coordinate with upper administration (chair, dean, provost) to manage the program

2009-2011***: Graduate Teaching Associate,*** **University of Arizona**, Ecology & Evolutionary Biology Dept., Tucson, AZ

- ***Fall 2011 - Lead-Teaching Associate*** - Ecology (ECOL302),
  - Supervise a team of six graduate student TAs for the course
  - Coordination of field materials and vans, examinations and grading
  - Teaching of weekly labs
  - Periodic lectures (150+ students)
- Spring 2011 - Intro Ecology & Evolutionary Biology (ECOL182L) – **Lab Instructor**
- Fall 2009 – 2011 Ecology (ECOL302) – **Lab Instructor**

2005-2007: ***Graduate Teaching Assistant***, **Humboldt State University**, Wildlife Dept., Arcata, CA

- Ornithology (WDLF 365)
- Wildlife Management & Research Techniques (WDLF 311)
- Advanced Ornithology (WDLF465)

Fall 2006: ***Tutor*** – Ecology of Wildlife Populations (WDLF 478), **Humboldt State University**, Learning Center
Fall 1999: ***Naturalist***, **Ferry Beach Ecology School,** Saco, ME

RESEARCH POSITIONS

08/19/2013 – 09/16/2017: ***Science Coordinator*** (0.5 FTE), **Crater Lake National Park – Science and Learning Center**, Crater Lake National Park

- Attract and promote research by academic scientists and students within Crater Lake National Park to further the natural resource needs of the park
- Assist natural resource staff in identifying and securing funding for park projects and monitoring
- Development of an annual competitive student research assistantship program
- Supervision of an annual student intern and independent research project
- Presentation of projects at annual conferences
- Lead annual summer course for university students at the park, including a group research project

02/04/2013 – 08/30/2013**:** ***Wildlife Ecologist***, **USA National Phenology Network**, University of Arizona, Tucson

- Provide expertise on the development of monitoring protocols for wildlife species, especially birds

- Data analysis, report writing, conference presentations, organization of workshops for natural resource and research professionals
- Promote and Coordinate with other organizations, agencies, and researchers to implement USA-NPN protocols
- Support graduate students utilizing USA-NPN protocols and data across the country

01/11/2012 – 12/20/2012: ***Graduate Research Associate***, **USA National Phenology Network**, & School of Natural Resources & Environment, **University of Arizona**, Tucson, AZ

- Provide expertise on the development of monitoring protocols for wildlife species, especially birds
- Data analysis, report writing, conference presentations, organization of workshops for natural resource and research professionals
- Coordinate with other organizations, agencies, and researchers to implement USA-NPN protocols

08/2008 – 06/2011: ***Graduate Research Associate***, School of Natural Resources & Environment, **University of Arizona**, Tucson, AZ. Supervisor: Dr. Charles van Riper III

- Survey migratory bird populations during spring migration throughout the Madrean Archipelago of southeast Arizona.
- Supervise a team of 4-5 technicians
- Data management, analysis and report writing
- Management of other avian research project data, field work, technicians, and graduate students

05/2009 – 05/2010: ***STEP Biologist***, **US Forest Service**, Coronado National Forest, Hereford, AZ, 40hrs/wk

- Assess impacts of vegetation thinning projects on bird communities throughout the Huachuca Mountain range of southeast Arizona.

02/2008 - 05/2008: ***Biologist***, **US Fish & Wildlife Service**, Humboldt Bay National Wildlife Refuge, CA, 40hrs/wk, GS-5

- Lead Aleutian Cackling Goose project, conducting band recovery/resight surveys, mapping and report writing
- Monitoring of Black Brandt population on Humboldt Bay
- Refuge mapping

05/2007 - 08/2007: ***Biologist***, **Bureau of Reclamation**, lower Colorado River, AZ and CA, 40hrs/wk, GS-7

- Surveys of the lower Colorado River for 8 species of birds of conservation concern using spot mapping method

05/2004 – 07/2008: ***Biological Contractor***, **Klamath Bird Observatory**, Ashland, OR

- Conduct avian point count surveys throughout southern Oregon and Northern California

08/2003 - 11/2003: ***Biologist*** – Abaco Parrot Project, **North Carolina State University,** Abaco, Bahamas 40hrs/wk

- Tracking movements, dispersal, and habitat use by Abaco parrots using VHF telemetry

05/2002 - 07/2004: ***Crew leader***, **USFS Pacific Southwest Research Station**, Redwood Sciences Laboratory, Arcata, CA, 40hrs/wk, GS-5

- Operation of MAPS stations in NW California following standardized protocols
- Capture and banding of small owls
- Lead American Dipper project on Smith River watershed
- Total capture & processing across projects of more than 1,000 birds across more than 50 species

02/2002 - 04/2002: ***Biological Technician***, **Institute for Wildlife Studies,** San Clemente Island, CA 40hrs/wk.

- Capture, banding, and monitoring (resight) of endangered San Clemente Sage Sparrows

01/2001 - 08/2001: ***Assistant Project Coordinator*** – Puaiohi Recovery Project, **USGS Pacific Islands Ecosystem Research Center** & **University of Hawaii,** HI, 40hrs/wk

- Banding of critically endangered Puaiohi adults and nestlings

- Fitting of VHF transmitters to captured Puaiohi
- Tracking and data analysis of telemetry data
- Analysis of survival, population estimates, and habitat use

02/2000 - 08/2000: ***Biological Technician***, **US Forest Service,** Gila National Forest, Silver City, NM, 40hrs/wk, GS-5
- Survey for Mexican Spotted Owls

05/1999 - 08/1999: ***Biological Technician***, **Institute for Bird Populations,** Fremont National Forest, OR, 40hrs/wk
- Operation of MAPS stations following standardized protocols
- Capture and processing of more than 3,000 birds from more than 75 species

01/1999 - 05/1999: ***Biological Technician*** – Puaiohi Recovery Project, **USGS Pacific Islands Ecosystem Research Center**, HI, 40hrs/wk
- Banding of critically endangered Puaiohi adults and nestlings
- Fitting of UHF transmitters to captured Puaiohi
- Tracking and data analysis of telemetry data
- Lethal control of exotic predators (cats, rats)

07/1998 - 11/1998: ***Aviculture Intern***, **The Peregrine Fund,** Keauhou Bird Conservation Center, HI, 40hrs/wk
- Handling and care of multiple species of critically endangered Hawaiian birds including the ‘Alalā, Puaiohi, and Nene.
- Lethal control of exotic predator on the KBCC property

06/1996 - 08/1996: ***Volunteer Technician***, **Foundación Jatún Satcha,** Bilsa Biosphere Reserve, Ecuador, 40hrs/wk
- Collect and prepare plant specimens for the Missouri Botanical Gardens (see http://www.mobot.org/MOBOT/research/ecuador/pacific/checklist.shtml for list of type specimens)
- Reforestation including maintaining tree seedling beds, transplanting, and outplanting

PUBLICATIONS

*Represents undergraduate co-author, **represents graduate student co-author

PUBLISHED

Kellermann, J. L. *2021*. The knowledge of rails and waterthrush: Observer value and information content in Oregon’s rare bird populations. *Oregon Birds* 47(2), 107-110

Albert, S.K., J.D. Wolfe, **J.L. Kellermann**, T.W. Sherry, B.J.M. Stutchbury, N.J. Bayly, & A. Ruíz-Sánchez. 2020. Habitat ecology of Nearctic-Neotropic migrant landbirds on the wintering grounds. The Condor https://doi.org/10.1093/condor/duaa055

Kellermann, J.L. 2020. Migratory birds need wildfire, but beware too much of a good thing. Vermillion Flycatcher 65: 14-15. https://tucsonaudubon.org/wp-content/uploads/2021/02/VF-Fall2020-WEB.pdf

Kellermann J.L., Rodhouse TJ, Nesmith JC, Chung-MacCoubrey A. 2019. Setting the stage for climate change scenario planning: Whitebark pine and American pika in the Sierra Nevada, Klamath, and Upper Columbia Basin Inventory and Monitoring Networks. Natural Resource Report. NPS/KLMN/NRR—2019/1960. National Park Service. Fort Collins, Colorado PDF

O'Leary**, D., **J.L. Kellermann**, & C. Wayne. 2018. Snowmelt, spring phenology, and extended growing season in Crater Lake National Park. International Journal of Biometeorology. DOI 10.1007/s00484-017-1449-3

Gerst, K.L., **J.L. Kellermann**, C.A.F. Enquist, A.H. Rosemartin, E.G. Denny. 2015. Estimating the onset of spring from a a complex phenology database: Tradeoffs across geographic scales. International Journal of Biometeorology DOI 10.1007/s00484-015-1036-4

Kellermann, J.L. and C. van Riper III. 2015. Detecting mismatches of bird migration stopover and tree phenology in response to changing climate. *Oecologia*. DOI 10.1007/s00442-015-3293-7

Wood E. M. & **J.L. Kellermann.** Eds. 2015. Phenological synchrony of North American bird migration with seasonal resources in a changing climate. *Studies in Avian Biology* CRC Press, London.

Kellermann, J.L., C.A.F. Enquist, A. Rosemartin, D.L. Humple, N.E. Seavy, R. L. Cormier, and L. Barnett. 2015. A bird's eye view of the USA National Phenology Network: An off-the-shelf monitoring program. *Studies in Avian Biology* CRC Press, London p 47-60.

Kellermann, J.L. and C. van Riper III. 2015. Phenological synchrony of bird migration with tree flowering at desert riparian stopover sites. *Studies in Avian Biology* CRC Press, London p 133-144.

Enquist, C.A.F., **J.L. Kellermann**, K.L. Gerst, & A. Miller-Rushing. 2014. Phenology for resource management: connecting science to practice. *International Journal of Biometeorology* DOI: 10.1007/s00484-013-0772-6

Rosemartin, A.H., T.M. Crimmins, C.A.F. Enquist, K.L. Gerst, **J.L. Kellermann**, E.E. Posthumus, J. Weltzin, E.G. Denny, P. Guertin & L. Marsh. 2013. Organizing Phenological Data Resources to Inform Natural Resource Conservation. *Biological Conservation* DOI: 10.1016/j.biocon.2013.07.003

Kellermann, J.L., T.M. Crimmins, E.G. Denny, C.A.F. Enquist, K.L. Gerst, A.H. Rosemartin, and J.F. Weltzin. 2013. Nature's Notebook: 2012 State of the Data. USA-NPN Technical Series 2013-001 USGS IP-046270.

Kellermann, J.L., T.M. Crimmins, E.G. Denny, C.A.F. Enquist, R.L. Marsh, A.H. Rosemartin, J.F. Weltzin. 2012. Nature's Notebook: 2011 Data & Participant Summary. USA-NPN Technical Series 2012-001. USGS IP-038693.

Johnson, M. D., **J. L.**, **Kellermann** & A. M. Stercho. 2010. Pest reduction services by birds in shade and sun coffee in Jamaica. *Animal Conservation* 13: 140-147.

Johnson, M. D., N. J. Levy*, **J. L. Kellermann**, & D. E. Robinson. 2009. Effects of shade and bird exclusion on arthropods and leaf damage on coffee farms in Jamaica's Blue Mountains. *Agroforestry Systems* 76: 139-148.

Kellermann, J. L., M.D. Johnson, A.M. Stercho, & S. Hackett. 2008. Ecological and economic services of birds on Jamaican Blue mountain coffee farms. *Conservation Biology* 22: 177-1185.

Kellermann, J.L. & M.D. Johnson. 2006. Coffee-Friendly Birds: Can birds reduce pests in coffee? *Biocontrol News & Information* 27: 53N.

Tweed, E.J., J.T. Foster, B.L. Woodworth, W.B. Monahan, **J. L**. **Kellermann**, & A. Lieberman. 2006. Breeding biology and success of a reintroduced population of the Critically endangered Puaiohi. *The Auk* 123: 753-763.

Tweed, E.J., J.T. Foster, B.L. Woodworth, P. Oesterle, C. Kuehler, A. Lieberman, T.A. Powers, K. Whitaker, W.B. Monahan, **J.L. Kellermann**, & T. Telfer. 2003. Survival, dispersal, and home-range establishment of reintroduced captive-bred Puaiohi, Myadestes palmeri. *Biological Conservation* 111: 1-9.

CONFERENCE PRESENTATIONS (1st author)

Kellermann, J.L., D. O'Leary**, C. Wayne. 2017. Snowmelt, phenology, and growing season length in Crater Lake National Park. Northwest Scientific Association Annual Meeting, Ashland, OR.

Kellermann, J.L., T.J. Rodhouse, J.C.B. Nesmith, & A. Chung-MacCoubrey. 2016. Initiating climate change scenario planning for whitebark pine and American pika. 7th Mountain Climate Conference, Leavenworth, WA.

Kellermann, J.L., J. Lajoie*, S. Mohren, & A. Robatcek*. 2014. Black-backed woodpecker occupancy and Mountain Pine Beetle disturbance at multiple scales: Crater Lake National Park, Oregon. American Ornithologist's Union, Cooper Ornithological Society, Society of Canadian Ornithologists 2014 Joint Meeting, Estes Park, Colorado.

Kellermann, J.L., K.L. Gerst, & C.A.F. Enquist. 2013. When is the onset of a phenophase? Calculating phenological metrics from status monitoring data in the National Phenology Database. 98th Annual meeting of the Ecological Society of America, Minneapolis, MN.

Kellermann, J. L. and E. M. Wood (Symposium organizers) 2012. Tracking migratory stopover phenology: Climate change and the phenological synchrony of North American bird migration with seasonal resources. 5th North American Ornithological Conference, Vancouver, B.C., Canada. http://www.naoc-v2012.com/files/Kellermann.pdf

Kellermann, J.L. & C. van Riper III. 2012. Phenological synchrony, habitat breadth, and responses to climatic variation of bird migration in the Madrean Archipelago & American southwest. 5th North American Ornithological Conference, Vancouver, B.C., Canada.

Kellermann, J.L., D. Falk, & C. van Riper III. 2011. Migratory stopover habitat and landscape fire mosaics in Arizona's Madrean Archipelago. 36th Annual Conference of Western Field Ornithologists, Sierra Vista, AZ, USA.

Kellermann, J.L. & C. van Riper III. 2010. (Invited) Spring migration phenology and plasticity of habitat use by Neotropical migratory birds across an elevational gradient within the Madrean Archipelago, AZ, USA 25th International Ornithological Congress, Campos do Jordao, Brazil.

Kellermann, J.L. & C. van Riper III. 2010. Temporal and spatial patterns of spring migration and plant phenology across large elevational gradients in the arid southwestern United States. COS/AOU/SCO 2010 Joint Meeting, San Diego, CA.

Kellermann, J.L. & M.D. Johnson. 2009. Avian Diversity across tropical agroecosystems of Jamaica. 79th Meeting of Cooper Ornithological Society. Tucson , AZ.

Kellermann, J. L., M.D. Johnson, A.M. Stercho, S. Hackett, & D. W. Robinson. 2008. (Invited) Pest Control as an incentive for Bird Conservation in coffee Plantations. 4th International Partners in Flight Conference, McAllen, TX.

Kellermann, J. L. 2008. (Invited) Potential effects of late season hunting on Aleutian Cackling Goose distribution around Humboldt Bay. Humboldt Bay Symposium, Eureka, CA.

Kellermann, J.L., M.D. Johnson, & A.M. Stercho. 2007. Ecological services of birds on Jamaican coffee farms: An economic incentive for habitat conservation. The Wildlife Society, Western Section, Annual Conference, Monterrey, CA, USA.

Kellermann, J.L., M.D. Johnson, & A.M. Stercho. 2006. Neotropical insectivorous birds as pest control of the coffee berry-borer Hypothenemus hampeii on Jamaican Blue Mountain coffee farms. IV North American Ornithological Conference, Veracruz, Mexico.

CONFERENCE PRESENTATIONS (co- author)

Gunning, A.* & J.L. Kellermann. 2017. Black-backed Woodpecker and Wood-boring Beetle Associations with post-fire burn severity following the National Creek Fire. Northwest Scientific Association Annual Meeting, Ashland, OR.

Rubenstein, M. & J. L. Kellermann. 2016. Phenological Overlap & Asynchrony in Migratory Birds as a Consequence of Climate Change. 6th North American Ornithological Conference, Washington D.C., USA.

Crimmins, T. M., J. Kellermann, and J. F. Weltzin. 2012. A bird's eye view of the USA National Phenology Network: Expanding the scale of phenological research in avian ecology. 5th North American Ornithological Conference, Vancouver, B.C., Canada.

Crimmins, T. M., J. F. Weltzin, and J. Kellermann. 2012. Anomalous Warm Spring of 2010 Advances Deciduous Forest Leaf-out: Application of the Nature's Notebook Dataset and Visualization Analysis Tool. 97th Annual meeting of the Ecological Society of America, Portland, OR.

Johnson, M.D., B. Campos, J. Kellermann, S. Railsback, & V. Jirinec. 2010. Pest control services in coffee farms as a tool for bird and habitat conservation. 25th International Ornithological Congress, Campos do Jordao, Brazil.

Johnson, M.D., Campos**, B.R., Jirinec*, V., Kellermann, J.L., & Railsback, S.F. 2010. Spatial ecology of ecosystem services provided by birds. COS/AOU/SCO 2010 Joint Meeting, San Diego, CA.

Johnson, M.D., Kellermann, J.L., A.M. Stercho, R. Fowler, & D. Robinson. 2006. Can shade trees and birds help Jamaican coffee farmers with insect pests? 20th Annual meeting Society for Conservation Biology, San Jose, CA, USA.

Monahan W., J. L. Kellermann, E. J. Tweed, & B. L. Woodworth. 2003. Habitat shortage vs. life history feature incompatibility: Quantitative assessment of factors limiting numbers of a critically endangered Hawaiian solitaire. 5th Bay Area Conservation Biology Symposium.

Monahan W.B., J. L. Kellermann, E. J. Tweed, & B. L. Woodworth. 2002. Population consequences of life history features in an endemic and critically endangered Hawaiian Solitaire. 23rd International Ornithological Congress, Beijing, China.

Tweed, E.J., W.B. Monahan, J. Foster, J.L. Kellermann, & B.L. Woodworth. 2001. Behavior of a reintroduced population of captive-bred critically endangered Puaiohi. Society for Conservation Biology Conference, Hilo, HI.

GRANTS, AWARDS & FUNDING

- 2023-2027 Federal Appropriations funding- Research for Northern Waterthrush and impacts of snowpack on the Deschutes National Forest – PI ($200,000)
- 2021-2024 Cooperative Agreement - PI – Cascade-Siskiyou National Monument, *BLM* ($13,295 for 2021-22)

- 2021 Western Yellow Rail migration with solar PTT tags - PI – *OIT* ($13,500)
- 2021 Ground-based remote sensing of vegetation phenology - PI – *OIT* ($2,500)
- 2020 Ore-Cal RC&D Pathways to Workforce Initiative, National Association of Resource Conservation and Development Councils (NARCD&C) Youth Development Grant – Co-PI with George Jennings, ORE-CAL RC&D executive director ($8,000)
- 2018-2019 Beaver Restoration Assessment Tool (BRAT) for identifying stream restoration sites in the upper Klamath Basin, *Klamath Watershed Partnership* – PI ($17,000)
- 2017 Snowmelt timing, phenology, and growing season length in conifer forests of Crater Lake National Park, *George Melendez Wright Foundation* - PI (Graduate student salary & housing for summer season 2017)
- 2015 Climate Change Scenario Planning for American Pika and Whitebark Pine*, National Park Service Inventory & Monitoring* - PI ($17,000) -
- 2013 Bird use and water management, Klamath Important Bird Area, *Klamath Basin Audubon Society* - Co-PI ($12,000)
- 2012-2013 Outstanding Dissertation Award, SNRE, University of Arizona
- 2011 Coordination and analysis of bird data – Saguaro National Park BioBlitz, *National Geographic* - PI ($2,000)
- 2010 Bird Migration in Tumacacori National Historic Park, Desert Southwest Cooperative Ecosystems Study Unit grant – PI ($15,000)
- 2010 University of Arizona, Graduate and Professional Student Council Travel Grant ($500)
- 2010 International Ornithological Congress Travel Grant ($500)
- 2010 Avian migration in the Madrian Archipelago, Grants for Conservation Biology Research, T&E Inc., NM - PI ($2,000)
- 2009 Bird Migration in Tumacacori National Historic Park, Desert Southwest Cooperative Ecosystems Study Unit grant – PI ($15,000)
- 2007 James Koplin Award, Humboldt State University, CA
- 2006 Ecosystem services by birds in Jamaican Coffee farms, Conservation Trust, *National Geographic Society*, Co-investigator. ($22,000)
- 2006 Ecosystem services by migratory birds on Jamaican Coffee Farms, USFWS Neotropical Migratory Bird grant, Investigator - Investigator ($32,000)
- 2005 Ecosystem services by birds in Jamaican Coffee farms, Frank M. Chapman Award, American Museum of Natural History, NY ($2,000)
- 2005 Ecosystem services by birds in Jamaican Coffee farms, Mewaldt-King Award, Cooper Ornithological Society, KS ($1,000)
- 2001 Attendance of the 23rd International Ornithological Conference, Beijing China, Dan Moriarty Award, Kilauea National Wildlife Refuge, HI ($2,000)

Service (recent)

- Board Member – *Lake County Resource Initiative* (www.lcri.org) Fall 2019-today
- Board Member – *Klamath Basin Audubon Society* – 2014-2016

Nate A. Bickford, PhD, Male
2707 Franklin Ave Pueblo, Colorado 81003
Phone: (208) 301-8120
E-mail: nate.bickford@csupueblo.edu

Academic Preparation

2004-2006 NSF Polar Post-Doctoral Work
University of Alaska Fairbanks
Research: Movement patterns of fish in the Bering Sea and Gulf of Alaska

2000-2004 PhD, Environmental Science (emphasis in biology and chemistry)
Arkansas State University
Research: "Linkages between Hydrology and Essential Fish Habitat: Spring River, Arkansas"

1997-2000 M.S., Biology
Appalachian State University
Research: "Survey of Gastrointestinal Helminths in Small Mammals in Watauga County, NC and Changes in Parasite Populations Due to Changes in Host Species and Changes in the Season"

1993-1997 B.S., Biology
Lenoir-Rhyne University
Research: "The Caloric Content of Wild and Captive Bears Diet and the Difference in Calories Used by Captive Bears and Wild Bears"

Leadership
2019 AlumniTies State Department Program March– Develop leadership and Collaboration for Urban Renewal
2018 – Present Chair Conservation Committee North American Falconers Association
2016 – 2019 LEAP Research Group Leader
2016 – 2019 Board of Nebraska Academy of Sciences
2009 – 2015 Board of Montana Academy of Sciences
2008 – 2015 Director of Undergraduate Research Program, University of Great Falls
2005 – 2007 Lab Manager ICP-MS Lab University of Alaska
2000 – 2004 Graduate Student Lab Manager University of Arkansas
2004 – present Served on Multiple Department and University of Comities
2004 – present 9 Graduate students since 2004
2004 – present 48 Undergraduate student researchers

Skills
Ecology:

Bird Trapping
Bird Population estimation
Fish Age and Growth
Fish Community Assessment
Essential Habitat Identification
Aquatic Habitat Assessment
Wildlife Surveys
Management Reports
Habitat Restoration
Bird Population Surveying
Bird Trapping
Waterfowl Population Assessment
Upland Game Surveying
Quality Deer Population Management
Predator Control
Conservation Planning
Chemistry:
EPA Good Laboratory Practices
EPA standard methods 6020 and 200.8
Chain of Custody
APHA sample collection methods
Computer:
Microsoft Office (Word, Excel, PowerPoint, Access, PhotoDraw)
Sigma Plot
R Studio
GIS
Minitab
SPSS

Modeling
Huso Mortality Model
Bird Mortality Analysis
Analytical Expertise
Laser Ablation Inductively Coupled Plasma – Mass Spectrometry (LA-ICP-MS)
Inductively Coupled Plasma – Mass Spectrometry (ICP-MS)
Ion Chromatography
UV-vis spectrophotometry
Atomic Absorption Spectrometer

Language
English – Native Language
Finnish – Beginner
Spanish – Beginner

Academic Professional Experience
2019–present Director of Wildlife Program, College of Science and Mathematics, Department of Biology, Colorado State University Pueblo

2016-present Affiliated Faculty University of Nebraska Medical Center, Center for Global Health and Development

2015-2019 Associate Professor College of Natural and Social Science – Biology Department University of Nebraska Kearney

2012-2015 Online Faculty General Education Department
Henley-Putnam University

2013 Tenure, University of Great Falls
2011-2015 Associate Tenured Faculty and Director of the Science Undergraduate Research Experience (SURE)
Division of Science and Humanities
University of Great Falls

2008-2011 Assistant Faculty and Director of the Science Undergraduate Research Experience (SURE) Division of Science and Humanities – University of Great Falls

2008-present Bird Survey specialist: sub-contractor for environmental consulting firms

2008-2015 Assistant Coach University of Great Falls Women's soccer team

2005 – 2009 Research Faculty: ESTES Department in the College of Natural Sciences and Mathematics – University of Alaska Fairbanks

2005 – 2007 Laboratory Manager: Inductively Coupled Plasma-Mass Spectrometer (ICP-MS) located in the Advanced Instrumentation Laboratory in the College of Natural Sciences and Mathematics – University of Alaska Fairbanks

2004 – 2006 NSF Polar Regions Post Doctoral program Post-Doc: Identifying movement patterns and stock identification in fish from the Bering Sea and Gulf of Alaska.

2004 Water Rock Life Lab (ASU) Post Doc: CRUI: Environmental Life History of Freshwater Fish using Otolith Microchemistry

2003 – 2004 Water Rock Life Lab (ASU) Project Manager: CRUI: Environmental Life History of Freshwater Fish using Otolith Microchemistry

2001 – 2004 Environmental Sciences Program (ASU) Graduate Assistant:

2000 – 2001 Environmental Health, ASU Environmental Health Assistant:

1997 – 2000 Appalachian State University Laboratory Assistant:
Classes taught –

1998 Grandfather Mountain Habitat Zoo Research Assistant:

1996 Lenoir-Rhyne College Laboratory Assistant
Classes taught-
Undergraduate laboratory assistant for general biology

1994 Oak Ridge National Laboratory

1990 – 1992 Rookery Bay Research Laboratory Research Assistant

Professional Experience
2001- present Southern Ecological Services Environmental Consultant:
• Bird Identification and surveys
• Survey for potential wind sites
• Fish Community assessment
• Habitat assessments
• Wildlife surveys and enhancements
• Management reports
• Bird survey and trapping
• Waterfowl assessment and habitat enhancement
• Upland game survey and habitat enhancement
• Quality deer management
• Predator control

Grant and Contract Funding
Solar Faculty Research Fund (2019) Wildlife Movement and use of Solar Facilities. $10,500 PI
United States Department ALLUMNITIES funding (2019) Modern agriculture in our cities: a

workshop to develop the agricultural, leadership, and business skills to be successful. $10,000 PI
United States Department ALLUMNITIES funding (2019) Modernizing management and leadership: Workshops to develop agile capabilities in a modern economy $10,000 CO-PI
Nebraska University System Collaborative Research Initiative (2018) Capturing Archaeal Biochemistry to Build Bigger Botanical Biomass $149,065 CO-PI
Nebraska University System Collaborative Research Initiative (2018) Aquaponics: An innovative approach to teach health. $149,000 CO-PI
NASA-EPSCoR (2017) – Behavioral changes of animals during Solar Eclipse using telemetry. $10,000 CO-PI
Nebraska University System Collaborative Research Initiative (2017) The impacts of habitat loss and fragmentation on human-wildlife conflict in an agriculturally dominated system. CO-PI. $150,000.
Nebraska University System Collaborative Research Initiative (2017) Gathering the expertise needed to understand human-wildlife conflicts in fragmented prairie landscape. CO-PI. $20,000.
Rural Futures Institute (RFI) (2017) – Teaching Health, Exercise, Technology, & Aquaponics (THETA) Day Camps to Grow Future Health Professionals from McCook Middle School Students. $20,000 CO-PI
Nebraska's Coordinating Commission for Postsecondary Education (2017) – Helping Rural Middle School Science Teachers Create Classroom Aquaponic systems enhancing soft skills and career readiness. $59,766. Co-PI
Hollman Intern Program Proposal: Roadkill App. Hollman Intern Program, (2017), $7,000 Co -PI
Nebraska Research Initiatives Equipment (2017) – Ion Chromatograph for Water analysis. $60,949 PI
Nebraska Space Grant Fellowship (2016) – Graduate Student Fellowships $12,000 – PI
NASA-EPSCoR (2016) – Identification of Climate Change Effects in a National Forest and Possible Remediation Using a Top Tier Predator: Goshawk Nesting Habitat Loss and Possible Effects on Goshawk Abundance. $15,000 PI
University of Nebraska RSC grant (2016) – Aquaponics: Human Health and Wellbeing $20,000 CO-PI
Nebraska food for Health Initiative (2016) – Drones and Agriculture, methods for precise agricultural application. – Planning and Proposal Generating grant. $20,000 CO-PI
Nebraska food for Health Initiative (2016) – Solving for Pattern: Promoting Health through Localizing Food Systems Topic Areas to be Explored. – Planning and Proposal Generating grant. $20,000 CO-PI
University of Nebraska RSC grant (2015) – Goshawk management effects on behavior $20,000 PI
National Science Foundation (2015) – S-Stem Success Initiative. $500,000 Co PI
Montana EPSCOR (2014) –Upper class curriculum enhancement. $47.000 PI.
Montana EPSCOR (2014) –Goshawk as a Biological Indicator for Forest Change. $50.000 PI. In Review
Montana Farmers Union (2014) – Aquaponics development. ($10,000) PI
Wisconsin Fisheries (2012) – Goby otolith aging study. $10,000 PI.
Montana Fish Wildlife and Parks (2010) –Sampling Equipment and Boat. $30,000 PI.

Charlotte Martin Foundation (2010) – Goshawk Genetics and Prey Densities in the Lewis and Clark National Forest. $10,000 PI.
Montana EPSCOR (2009 – 2010) –Biology curriculum enhancement. $44.524 PI.
Montana EPSCOR (2009 – 2010) – General Biology lab enhancement. $15.824 PI.
Sitka salmon age study (2008-2010) – Age and Stock delineation of sockeye salmon. $29,000 PI.
Exxon Valdez Oil Spill Trustee Council (2006-2008) – Pacific Herring study – Herring Restoration in PWS: Identifying Natal and Nursery Habitats. $335,000. PI
Exxon Valdez Oil Spill Trustee Council (2006-2009) – Pacific Herring study – Using otolith chemistry to discriminate Pacific herring stocks in AK. $394,000 Co-PI
Exxon Valdez Oil Spill Trustee Council (2006-2008) – Pacific Herring study – Identification of essential habitat of Pacific herring (Clupea pallasii) in Sitka Sound. $154,000 Co-PI
Kenai River Sport fishing Association – (2006-2007) Stock and sub-stock delineation of chinook, coho and sockeye salmon in select Kenai River drainages. $80,533. PI
Sitka salmon age study (2005-2007) – Age and Stock delineation of sockeye salmon. $19,000 PI.
North Pacific Research Board (2005-2008) – Identifying life history characteristics of squid in the Bering Sea. $198,886 PI
Artic Yukon Kuskokwim –Sustainable Salmon Initiative (2005-2007) – Factors Affecting Juvenile AYK Chum Salmon Growth and Condition $1,955,486 C0- PI.
Sea Grant (2005-2007) – Mentoring Undergraduates in Fisheries Techniques $10,000 PI
Exxon Valdez Oil Spill Trustee Council (2005-2007) – Pacific Herring study – Using otolith chemical analysis to determine larval drift of Prince William Sound Pacific herring (Clupea pallasii). $52,000 PI
Oil Spill Recovery Institute (2005-2007) – Pacific Herring in Prince William Sound – Identifying past habitat use and essential habitat of Pacific herring (Clupea pallasii).-$33,000 C0- PI
Sitka herring and salmon study (2005-2007) – Stock delineation and natal homing in herring and sockeye salmon. $30,000 C0- PI.
NSF Polar Programs Post Doctoral Fellowship (2004-2006) – “Identifying movement patterns and stock identification in fish from the Bering Sea and Gulf of Alaska.” $140,000. PI
Arkansas Water Resources (2003-2004) – “Otoliths and Environmental Life History of Freshwater Fish”, $20,000. Co- PI
NSF DBI 0328832 (2003-2007) “CRUI: Assessing Environmental Life Histories of Freshwater Fish: Applications of Otolith Microchemistry”. $698,626. Project Manager (2003-2004).
Arkansas Environmental Federation – 2000 Environmental safety and leadership scholarship. $1,000.
Appalachian State University – 1998 Graduate Student Research Grant, $2,000. PI
Association of Southeastern Biologists – 1998 Student Research Grant, $100. PI
North Carolina Natural Gardens – 1998 Student Research Grant, $1,000. PI
Appalachian State University – 1998 Grants in Aid of Research. $400. PI
Appalachian State University – 1997 Grants in Aid of Research. $500. PI

Awards
2019 People's Choice Award Best Project, Stronger American Cities – Entrepreneurial Ecosystems. Alumni Ties State Department.
2017-2018 Fulbright Specialist Program for Finland, University of Nebraska Kearney
2014 Research and Creativity Award, University of Great Falls
2013 TEDx Presentation, Connecting Fragmented Habitats: A Grass Roots Adventure
2011 Science Mentor of the Year, Montana Academy of Science
2010 Faculty Special Achievement Award, University of Great Falls
2004 National Science Foundation Post Doc Fellow

Teaching Experience – I have taught in person and online classes in the following subjects
Ecology – University of Nebraska Kearney (BIOL 307)
Wildlife Conservation – University of Nebraska Kearney (BIOL 330)
Aquatic Trophic Ecology – University of Nebraska Kearney (BIOL 883)
Conservation Biology – University of Nebraska Kearney (BIOL 834)
Taking Action in Science – University of Nebraska Kearney (BIOL 830p)
Range and Wildlife Management – University of Nebraska Kearney (BIOL 405)
Tour of the Arctic – University of Nebraska Kearney (BIOL 856)
Climate Change – University of Nebraska Kearney (BIOL 830)
Scientific Communication – University of Nebraska Kearney (BIOL 375)
Conservation of Birds and Mammals – University of Nebraska Kearney (BIOL 869)
General Biology – University of Nebraska Kearney (BIOL 105L)
Survival in the wilderness – University of Great Falls (ILC 350)
General Biology – University of Great Falls (BIO 151)
General Biology – University of Great Falls (BIO 152)
Conservation Ecology – University of Greats Falls (BIO 420)
Form and Function – University of Great Falls (ILC 130)
Environmental Ecology – University of Great Falls (BIO 115)
Ecology – University of Greats Falls (BIO 200)
Freshman Science Seminar – University of Great Falls (BIO 190)
Aquatic Ecology – University of Great Falls (BIO 320)
Ornithology – University of Great Falls (BIO 315)
Sophomore Science Seminar – University of Great Falls (BIO 290)
Zoology – University of Great Falls (BIO 211)
Meteorology and Oceanography – University of Great Falls (GSC 230)
Mammalogy – University of Great Falls (BIO 305)
Fisheries Techniques – University of Alaska Fairbanks (FISH 497)
Environmental Geology Lecture – Arkansas state University (GEO 1003)
Ind. Study in Stream ecology (Team Taught) – Arkansas state University (ESCI 7133)
General Chemistry Laboratory – Arkansas state University (CHEM 1011)
Introductory Biology Lecture – Arkansas state University (BIO 1110)

Online Teaching Experience
Aquatic Trophic Ecology – University of Nebraska Kearney (BIOL 883)
Conservation Biology – University of Nebraska Kearney (BIOL 834)
Taking Action in Science – University of Nebraska Kearney (BIOL 830p)
Tour of the Arctic – University of Nebraska Kearney (BIOL 856)
Climate Change – University of Nebraska Kearney (BIOL 830)
Scientific Communication – University of Nebraska Kearney (BIOL 375)
Conservation of Birds and Mammals – University of Nebraska Kearney (BIOL 869)
Environmental Science – Henley Putnam University (Bio 119)

Editor
2011 – Present Journal of Ecosystem & Ecography – Open Access – OMICS Publishing Group

Recent Reviews
2015– Hogan et. al. Reconstructing larval performance and habitat use in a diadromous fish using otolith increments, trace elements and oxygen isotopes. Limnology and Oceanography Methods.
2016 – Cain et. al. Ecology book
2016 – Tzadik et.al. Chemical archives in fishes beyond otoliths: A review on the use of other body parts as chronological recorders of microchemical constituents for expanding interpretations of environmental, ecological, and life-history changes. Limnology and Oceanography Methods.
2018 – Genaro A. G. and Yesica M-M. Food Waste Index and Corporate Social Responsibility Regarding Food Loss and Waste in some Mexican Food Companies. Sustainability
2018 – Qi Chen, Weiteng Shen and Bing Yu Assessing the Vulnerability of Marine Fisheries in China: Towards an Inter-provincial Perspective. Sustainability

Publications
Conference Proceedings
Bickford, S., Krans, J.K., and Bickford, N 2015 Impacts from Large Corporate Development on Indigenous Communities in Arctic: Specific Focus on Social Justice and Sustainability for the Swedish Sami. International Business Information Management Conference (26th IBIMA)
Bickford, N., Hannigan, R., and Bogdevich, O. 2003. Otolith Microchemistry of Freshwater Fish: Stock Discrimination of Brown Trout and Walleye. Proceedings of the Sixth International Symposium and Exhibition on Environmental Contamination in Central and Eastern Europe and the Commonwealth of Independent States. Prague, Czech Republic.
Bickford, N.A., and Hannigan, R.E. 2003. End-Member Mixing Analysis: Application To The Spring River, AR. Proceedings of the Arkansas Water Resources Center Annual Conference, April 2003. 54-61.

Journal Articles Submitted
Ritson R, Bickford N, Wuellner M, Fuda RK, Miller TA, Boulanger JR, Beasley JC, Brzorad JN, Fisher R, Orben RA, Kauffman M, Barber M, Kays R, Stuber MJ, Watson JL, Ranglack DH. Obscured Sun,

Obscure Behavior: Exploring the Effects of a Solar Eclipse on Animal Movement. Prepared for Movement Ecology.
Ringenberg, J, Bice, M., Hollman, A., Meyer, D., Ball, J. Wiedenman, E.*, Bickford, S., & Bickford, N. Aquaponics: An innovative teaching model for Middle School Science Education. Middle School Journal. In Review
Schlater, S., Ringenberg, J., Bickford, N., and Ranglack, D. White-tailed Jackrabbits: a Review and Call for Research. Journal of Wildlife Management. In Review.
Ramos, A., Trinidad, N., Bickford, S., Bickford, N., Torquati, T., Mushi, M. 2018. A manuscript titled Engaging residents in planning a community garden: A strategy for enhancing relevant messaging and participation (PCHP-WIP-0009-2018). Progress in Community Health Partnerships: Research, Education, and Action. IN REVIEW
Bickford, S.H., Bickford, N., Bice, M., Hollman, A., Ramos, A.K., and Torquati, J. (2018) If there is a will there is a way: assessment of success variables for community gardens in rural areas in Arctic and non-Arctic regions. Polar Geography. Under review. Submitted 08 Feb 2018. IN REVIEW
Adams, B, Bickford, N, Albrecht, M, Ranglack, D, and Bickford N. (2018) Cost Benefit Analysis of Medium and Micro Sized Aquaponics System. Aquaculture. IN REVIEW
Wright, M., Ranglack, D, and Bickford, N. (2018) A Comparison of Prey Availability at Active and Inactive Northern Goshawk Nest Areas in a Dry Forest Landscape. Raptor Research. IN REVIEW
Wright, M., Jackson, J., Tornberg, R., Higa, E., Clayton, A., McCartney, S., Ranglack, D.H., and Bickford, N. (2018) Habitat Suitability Modeling and Ecological Forecasting of Northern Goshawk Nesting Habitat. Raptor Research. IN REVIEW

Journal Articles
Hoyer, R., Bomske, C., and Bickford N. Dwarf Populations of Rubber Boas (Charina Bottae) in Southern California. Southwestern Naturalist In Press
Anderson, H., and Bickford, N. Stream Assessment on the Impact of Agricultural Activity in the Dry River, VA. Virginia Journal of Science In press
Ramos, A., Trinidad, N., Bickford, S., Bickford, N., Torquati, T., Mushi, M. 2018. A manuscript titled Engaging residents in planning a community garden: A strategy for enhancing relevant messaging and participation (PCHP-WIP-0009-2018). Progress in Community Health Partnerships: Research, Education, and Action. In Press
Wright, M., Tornberg, R., and Bickford, N. (2019) Comparison of Nest Defense Behaviors of Goshawks (Accipiter gentilis) from Finland and North America. Animals 10(62).
Ritson R, Bickford N, Ranglack DH. (2019). Comparing Social Media Observations of Animals During a Solar Eclipse to Published Research. Animals 9(59):1-12. doi:10.3390/ani9020059
Bomske, C and Bickford, N. (2019) The Effects of Vegetation Variety on Overwintering Anuran Diversity in Permanent Florida Ponds. Southeastern Naturalis 18
Adams, B., Boyer, T., Albrecht, M., Ranglack, D. H., & Bickford, N. (2019). Micro-system aquaponics: testing designs for increased productivity. Journal of Applied Aquaculture, 1-12.
Hollman, A., Bice, M., Ball, J., Bickford, N., Shafer, A. & Bickford, S. (2018). A comparison of scholarly productivity among current professors who obtained terminal degrees. American Journal of

Distance Education, 32(4), In Press August 8, 2018.
Bice, M., Ball, J., Bickford, N., Bickford, S., Hollman, A., Coughlin, A., Dinkel, D., Meyer, R., & Ranglack, D. (2018) Community Gardens: Interactions between communities, schools, and impact on students. The Health Educator 50(1).
Helms, B., Bickford, N., Tubbs, N., and Feminella, J. (2017) Feeding, growth, and trophic position of redbreast sunfish (Lepomis auritus) in watersheds of differing land cover in the lower Piedmont, USA. Urban Ecosystems.
Mailey, S., Shafer, A., and Bickford N. (2017) Pain Tolerance and Pain Threshold According to Indoor versus Outdoor Sport Participation and Sex. Jacobs Journal of Physiotherapy and Exercise, 3(1).
Bickford, N., Smith, L., Bickford, S., Bice, M.R., Ranglack, D.,H., (2017) Evaluating the Role of CSR and SLO in Ecotourism: Collaboration for Economic and Environmental Sustainability of Arctic Resources. Resources, 6(2), 21.
Bice, M.R., Hollman, A., Bickford, S., Bickford, N., Ball, J., Wiedenman, E.M., Brown, G., Dinkel, D., & Adkins, M. (2017). Kinesiology in 360 Degrees. International Journal of Kinesiology in Higher Education, 1(1), 9-17.
Bickford, S., Krans, J.K., and Bickford, N 2016. Social and Environmental Impacts of Development on Rural Traditional Arctic Communities: Focus on Northern Sweden and the Sami. Journal of EU Research and Business Vol 2016 1:11.
Hogan, J., McIntyre, P., Blum, M., Gilliam, J., and Bickford, N. 2014 Consequences of Alternative Dispersal Strategies in a Putatively Amphidromous Fish. Ecology 95(9):2397-2408.
Collins, S., Bickford, N., McIntyre, P., Coulon, A., Ulseth, A., Taphorn, D., and Flecker, A. 2013 Population Structure of a Neotropical Migratory Fish: Contrasting Perspectives from Genetics and Otolith Microchemistry. Transaction of American Fisheries 142.5 (2013): 1192-1201.
Beaulaurier, J. N. Bickford, J.L. Gregg, C.A. Grady, A. Gannam, J.R. Winton, P.K. Hershberger. 2012. Susceptibility of Pacific herring Clupea pallasii to Viral Hemorrhagic Septicemia (VHS) is Influenced by Diet. Journal for Aquatic Animal Health 24.1 (2012): 43-48.
Brown, R., Bickford, N., and Severin, K. 2007. Probing Upstream Migrations of Anadromous Coregonid Fish (Family: Salmonidae; Subfamily: Coregoninae) in the Yukon River Drainage. Transactions of American Fisheries Society. Transaction of American Fisheries 136: 678-690
Bickford, N., and Hannigan, R. 2006. Stock identification of Walleye (Sander vitreum) using otolith chemistry in the Eleven Point River, AR North American Journal of Fisheries Management. 25: 1542-1549.
Bouldin, J., Bickford, N., Stroud, B., and Guha, G. 2004. Tailwater recovery systems for irrigation – benefit/cost analysis and water resource conservation technique in Northeast Arkansas. Journal of the Arkansas Academy of Sciences 58: 23-31
Sako, A., O'Reilly, C.M., Hannigan, R., Bickford, N., and Johnson, R.L. 2004. Stock identification of two clupeid species, Stolothrissa tanganicae and Limnothrissa miodon in Lake Tanganyika using otolith microchemistry. Geochemistry: Exploration, Environment, Analysis. 5: 91-97.
Hannigan, R.E. and Bickford, N.A. 2003. Hydrochemical Variations In A Spring-Fed River, Spring River Arkansas. Environmental Geoscience 10 (4): 167-188.
Bickford, N.A. and Hannigan, R.E. 2003. Trace element chemistry of fish tissues: Uptake routes in

genus Moxostoma. Environmental Geoscience 11(2): 226-236.
Christian, A.D., Bouldin, J., Bickford, N., McCord, S.B., Sako, A., and Ferris, J. 2003. Winter and spring water quality of Big Creek watershed, Craighead County, AR: Nutrients, habitat, and macroinvertebrates. Journal of the Arkansas Academy of Sciences 57: 27 -36

Peer Reviewed Final Report
Woody, H. and Bickford, N. 2009. Identifying Essential Habitat (Source vs. Sink Habitat) for Pacific Herring (Clupea pallasi) in Sitka Sound Using Otolith Microchemistry Restoration Project 080834. Exxon Valdez Oil Spill Restoration Project Final Report.
Bickford, N. 2007. Using otolith chemical analysis to determine larval drift of Prince William Sound Pacific herring (Clupea pallasii) Restoration Project 060782. Exxon Valdez Oil Spill Restoration Project Final Report

Invited Workshops
APECS-U Arctic Science Communication Workshop – The Association of Polar Early Career Scientists (APECS) and UArctic jointly organised a science communication workshop in connection with the U Arctic Congress 2018 in Oulu, Finland. The workshop included both introductory lectures and also hands-on practical parts. In addition to the workshop day, the participants received a task to use the skills gained during the workshop during the UArctic Congress (incl. conducting interviews).

Invited Symposiums
Bickford, N. Elevator Talk: Developing the Ability to Make Connection for Future Collaboration and Funding. The Wildlife Society Annual Meeting, Reno. Symposium: Communication: The Key to Effective Natural Resource Programs. 2019
Bickford, N. Cost Benefit Analysis: A tool to help farmers prioritize wildlife improvements. The Wildlife Society Annual Meeting, Reno. Symposium: Natural Resource Conservation in Agricultural Landscapes: Challenges and opportunities. 2019

Invited Presentations
Bickford, N. and Bickford, S. Transdisciplinary Research and How to Integrate Innovation into University Systems. Lenoir Rhyne University 2019
Menke, Kelsey, Marc Albrecht, and Nate Bickford. 2019. Tilapia feeding preference using commercial fish food, ethanol distiller's grain, and lab-made food. University of Arizona Controlled Environment Agriculture Center.
Willmore, Cody, Marc Albrecht and Nate Bickford. 2019. Aquaponic systems: a comparative assessment of commercial and reclaimed crop production systems. University of Arizona Controlled Environment Agriculture Center.
Bickford, N. Falconry and Upland game. Nebraska Habitat Meeting. February 2018
Schlater, S., Ranglack, D., Bickford N. How are Red-tailed Hawks influenced by highly fragmented, agricultural landscapes? North American Falconry Association Annual Meeting Nov 2017.

Ringenberg, J., Ranglack, D., Bice M., Bickford N. Rabbits in Nebraska and Possible Movement Troubles. North American Falconry Association Annual Meeting Nov 2017.

Presentations at Scientific Meetings

Reinson, M., Bickford, N., Burger, P., and Ranglack, D. Habitat Selection of White-Tailed Deer during Agricultural Growing and Non-Growing Season. The Wildlife Society Annual Meeting, Reno 2019

Riston, R., Bickford, N., Ranglack, D. Variations in American Bison Resource Selection across Their Former Range. The Wildlife Society Annual Meeting, Reno 2019

Barnes, Jackson, Albrecht, Marc, and Bickford, Nate. Aquaponics Comparison Study Using Commercial Feed and Homemade Plant Based Feed. Nebraska Research Days 2019

Laub, Emily, Reichart, Letty, and Bickford, Nate Molecular Identification of Sex of Northern Goshawk (accipiter gentilis) Feathers Collected Across Multiple Goshawk Populations in Finland. Nebraska Research Days 2019

Ritson R, Bickford N, Ranglack DH. Seasonal space use patterns of Plains bison (Bison bison) across multiple ecological gradients and management regimes in the American West. Nebraska Chapter of The Wildlife Society Annual Meeting. York, NE. Feb 2019.

Schlater, S. M., Ranglack, D. H., Shreading, A., Domenech, R., Bickford, N. Differences in breeding and nonbreeding red-tailed hawk home range size throughout the breeding season. Oral Presentation. Nebraska Chapter: The Wildlife Society, York, NE. Feb 2019.

Ringenberg, J., Bickford, N., Ranglack, D. The impact of fragmented landscapes on the spatial distribution and dispersal of eastern cottontail rabbits (Sylvilagus floridanus). 25th Annual Meeting of the Wildlife Society, Cleveland, OH, October 7 – 12, 2018.

Reinson, M.C., Bickford N., and Ranglack D.H. “Evaluating the usage, design, and effectiveness of roadway underpasses as wildlife crossings in Nebraska” presented at the Annual Meeting of the Central Mountains and Great Plains Section of The Wildlife Society (CMPS), 28 February 2018 – 2 March 2018, Kearney, NE.

Reinson, M.C., Bickford N., and Ranglack D.H. “Impacts of habitat fragmentation on white-tailed deer (Odocoileus virginianus) in south central Nebraska”, presented at the International Deer Biology Congress (IDBC), 5-10 August 2018, Estes Park, CO.

Reinson, M.C., Bickford N., and Ranglack D.H. “A comparison of wildlife tracking technologies: where are we going?”, presented at The Wildlife Society 25th Annual Conference (TWS), 7-11 October 2018, Cleveland, OH.

Schlater, S. M., Bickford, N., Ranglack, D. H. Time-of-day effects reassessed with roadside raptor surveys and red-tailed hawk (Buteo jamaicensis) GPS transmitter data. Raptor Research Foundation Conference Kruger National Park, South Africa. Nov 2018

Schlater, S. M., Bickford, N., Ranglack, D. H. Raptor Mortality along an Interstate Highway in the Great Plains, North America. Raptor Research Foundation Conference Kruger National Park, South Africa. Nov 2018.

Schlater, S. M., Bickford, N., Ranglack, D. H., Domenech, R., Shreading, A. Changes in the home range size of breeding and nonbreeding red-tailed hawks (Buteo jamaicensis) throughout the breeding season. Raptor Research Foundation Conference Kruger National Park, South Africa. Nov

2018
Schlater, S.M., Bickford, N., Ranglack D.H. Carcass persistence and searcher efficiency trials reveal the number of raptor mortalities along Interstate 80 in central Nebraska. Poster Presentation: The Wildlife Society, Cleveland, Ohio. Oct 2018.
Bickford, N., Schlater, S., Domenech, R., Shreading, A., Ranglack, D. H. Migration corridors and stop over locations for red-tailed hawks. Raptor Research Foundation Conference Kruger National Park, South Africa. Nov 2018
Bickford, N., Ritson, R., and Ranglack, D. H. Wildlife Behavior Changes During a Solar Eclipse. The Wildlife Society Cleveland, OH. Oct 2018
Bickford, N. North American Falconers Association Commitment to Research and Conservation. Raptor Research Foundation Conference Kruger National Park, South Africa. Nov 2018
Bickford, N, Bice, M., Ringenberg, J., Hollman, A., Meyer, D., Ball, J. Wiedenman, E., & Bickford, S. Aquaponics: An innovative teaching model for science education. U Arctic Congress Helsinki Finland September 2018
Bickford, N., and Wright, M. Goshawk as a bioindicator species for climate change in the boreal forest. U Arctic Congress Helsinki Finland September 2018
Bickford, N., Adams, B., Willmore, C., and Albrecht, M. Compare and Contract Aquaponic Systems: Can reclaimed material be used to create an economically viable food production system. U Arctic Congress Helsinki Finland September 2018
Unvert, K., Ringenberg, J., Ball, J., Dinkel, D., Bickford, N., Hollman, A., Meyer, R., Bice, M. Aquaponics Growing Systems: An Innovative Approach to Health Consciousness and Science in Elementary Education. Early Childhood Conference: Promoting Wellbeing for Children and Families. October 2018.
Ritson, R., Bickford, N., Smith, L., Bickford, S., Bice, M., and Ranglack, D. Evaluating the role of CSR and SLO in Ecotourism Plains Safaris: A conference on tourism and conservation in the Great Plains April 2018
Ritson, R., Bickford, N., and Ranglack, D. Does Wildlife Behavior Change in Response to a Solar Eclipse? The Nebraska Academy of Sciences Annual Meeting April 2018
Bickford, N. and Wright, M. Goshawk as a bioindicator species for climate change in the boreal forest. U Arctic Congress Helsinki Finland September 2018
Bickford, N and Ranglack, D.H, (2018) Life History Plasticity Creates Long-Term Options for Species Survival. The wildlife Society Central Mountains and Plains Section meeting. Kearney, Nebraska, February 28- March 2, 2018.
Ringenberg, J., Bickford, N., and Ranglack, D. (2018) Lagomorph management in a fragmented world: the need to incorporate meta-population dynamics. 51st Annual Meeting of the Nebraska Chapter of The Wildlife Society, Kearney, Nebraska, February 28- March 2, 2018.
Reinson, M. C., N. Bickford, and D. H. Ranglack. (2018) Evaluating the usage, design, and effectiveness of roadway underpasses as wildlife crossings in Nebraska. Poster Presentation. 51st Annual Meeting of the Nebraska Chapter of The Wildlife Society. Kearney, Nebraska. 1 March 2018.
Schlater, S. M., N. Bickford, and D. H. Ranglack. (2018) Cellular GPS transmitter provide insight on fluctuating home range size of breeding and nonbreeding red-tailed hawks (Buteo jamaicensis).

Poster Presentation. 51st Annual Meeting of the Nebraska Chapter of The Wildlife Society. Kearney, Nebraska. 1 March 2018.
Ritson, R, Bickford, N and Ranglack, D.H, (2018) Spatial Requirements of Plains Bison (Bison bison) in the American West March Central Mountains and Plains Section of the Wildlife Society meeting. Kearney, Nebraska, February 28- March 2, 2018.
Adkins, M., Bice, M., Brown, G., Bickford, N., Hollman, (2018) A Farm to Fresh! A multidisciplinary approach to teach Health and Physical Activity. Central District Society of Health and Physical Educators of America Conference. Sioux Falls, South Dakota (January 27-29, 2018).
Unvert, K., Ringenberg, Meyer, D., Bickford, N., Hollman, A., Bickford, S., Bice, M. (2018) Aquaponics: An innovative approach to teaching Health. National Conference for Undergraduate Research.
Rowles, G., Bickford N., and Wuellner, M. Walleye and White bass in Management from a Rivers cape perspective on the North Platte River. Nebraska Chapter AFS Rivers and Streams Technical Committee
Bice, M., Ball, J., Wiedenman, E., Bickford, N., Bickford, S., Hollman, A., & Meyer, D. Aquaponics: An assessment of physical activity, nutrition, and health consciousness. Society of Health and Physical Educators (SHAPE) America 2018 National Conference Nashville, Tennessee, March 20-24, 2018
Bice, M, Bickford, N., Meyer, D., Hollman, A., Bickford, S., & Ringenberg, J. Aquaponics: An innovative model to teach science and technology. University of Nebraska at Kearney – Community Early Childhood Conference. Kearney, Nebraska September 2017
Bickford, S., Waples, C., Hollman, A. K., Bice, M. R., Brachle, B. J., Heikkinen-Moilanen, R.-L., Bickford, N. A. (2017) The Multiple Faces of CSR: an international comparison of a multidisciplinary view of CSR best practices based on stakeholder engagement and collective values. Academy of International Business. (July 2-5, 2017)
Hollman, A., Torquati, J., Bickford, N., Bickford, S. & Bice, M. (June 8 – 12, 2017). Growing food and knowledge in the Arctic: combining biological processes with the Internet of Things. Conference presentation. International Congress of Arctic Social Science (ICASS) IX, Umeå, Sweden.
Bickford, N., Bickford, S., Lanteigne, M., Bice, M., Ranglack, D. & Hollman, A. (June 8 – 12, 2017). The Village: Using high-tech for international multidisciplinary education of Indigenous sustainability. Conference presentation. International Congress of Arctic Social Science (ICASS) IX, Umeå, Sweden.
Bickford, S., Hollman, A., Torquati, J., Ramos, A., Bice, M., Bickford, N. (June 8 – 12, 2017). Assessing local food production and accessibility for community gardens in rural areas: Arctic and beyond. Conference presentation. International Congress of Arctic Social Science (ICASS) IX, Umeå, Sweden.
Bickford, S., Heikkinen-Moilanen, R., Lanteigne, M., Waples, C., Hollman, A., Bice, M., Brachle, B. & Bickford, N. (June 8 – 12, 2017). A multidisciplinary assessment of community level corporate social responsibility in rural communities: Arctic and non-Arctic. Conference presentation. International Congress of Arctic Social Science (ICASS) IX, Umeå, Sweden.
Bickford, S., Hollman, A., Waples, C., Bice, M., Brachle, B., and Bickford, N. (2017) Assessment of rural community level CSR via a Quintuple Helix Model. University of Tampere Finland; Research

Seminar on Responsible Business (March 15-16, 2017)
Boyer, T, Adams, B., Ranglack, D., and Bickford, N. Aquaponics Productivity: Heated VS. Room Temperature Water. Nebraska Academy of Science April 2017.
Sanchez, J, Adams, B., Ranglack, D., and Bickford, N. A Comparative Study between Polyculture of Brussel Sprouts and Sweet Peppers and a Monoculture of Sweet Peppers in an Aquaponics system. Nebraska Academy of Science April 2017.
Wright, M and Bickford, N. Goshawk prey availability in the Lewis and Clark National Forest. Midwest Fish and Wildlife Conference, Lincoln, Nebraska 2017.
Wright, M., Jackson, J., Murphy, V., Higa, E., McCartney, S., Clayton, A., Nelson, R., Bolten, J., and Bickford, N. Quantifying northern goshawk (Accipiter gentilis) habitat in the Lewis and Clark National Forest, Montana. Idaho Chapter of the Wildlife Society and the American Fisheries Society Meeting, Boise, Idaho, 2017.
Boyer, T, Adams, B, and Bickford, N. Aquaponics Productivity: Heated vs. Non-heated Water in an Aquaponics System. Nebraska Academy of the Sciences, Lincoln, Nebraska 2017.
Jazmin, S, Adams, B., and Bickford, N. A Comparative Study between Polyculture of Brussels Sprouts and Sweet Peppers with Monocultures in an Aquaponics System. Nebraska Academy of the Sciences, Lincoln, Nebraska 2017.
Adams, B and Bickford N. Murphy's law and Aquaponics. Midwest fish and wildlife, Lincoln Nebraska 2017.
Adams, B and Bickford N. Aquaponics. Nebraska Academy of the Sciences, Lincoln, Nebraska 2017.
Wright, M, Burger, P, Combs, J., and Bickford N. Using GIS for habitat comparisons: a case study with northern goshawks. Nebraska Academy of the Sciences, Lincoln, Nebraska 2017.
Wright, M., Tornberg, R., Hill, E., and Bickford N. The Loss of Aggression in Northern Goshawk: Comparisons from Finland and North America, Department of Biology, University of Nebraska at Kearney, NE 68849
Wright, M and Bickford N. Quantifying northern goshawk (Accipiter gentilis) habitat in the Lewis and Clark National Forest, Montana. Nebraska Academy of the Sciences, Lincoln, Nebraska 2016.
Bickford et.al. Sustainable Food for Health: a comprehensive study assessing food security and benefits for wellbeing. Rural Initiative 2015
Bickford, N. Connecting Fragmented Habitats a Grassroots Adventure. TEDx Great Falls MT 2014
Leonard, M. and Bickford, N. Walleye Larval Drift and Dams. Montana Academy of Science. April 2014
Kemp, D and Bickford, N. White Tailed Jack Rabbit population dynamics in short grass Prairie. Montana Academy of Science. April 2014
Jones S, and Bickford N. Water effect on decomposition rates. Montana Academy of Science. April 2014
Jackson, J, Bickford, N., and Murphy, V. Analysis of Northern Goshawk Nest Site and Nesting Habitat on the Lewis and Clark National Forest. Montana Academy of Science. April 2012
Ward, R. and Bickford, N. Investigating how native species are affected by road obliteration in the Lewis and Clark National Forest. Montana Academy of Science. April 2012
Hill, J., Bickford, N., and Gibbons, J. Landscape Alterations on a Military Base: The Effects on Bird

Diversity. Montana Academy of Science. April 2012
Pezel, A., Bickford, N., and Lund D. Using feather genetics to determine the relatedness between goshawks in the Lewis and Clark National Forest. Montana Academy of Science. April 2012
Weber, J., Bickford, N., and Lund, D. Identifying walleye populations in the Missouri River in central Montana. Montana Academy of Science. April 2012
Bossert-Lomeli, H., Bickford, N., Vansickle, S. The Effects of Logging Roads in Aquatic Systems, Montana Academy of Science. April 2012
Fenger, E, Bickford, N, and VanSickle. Effects of Road and Culvert Removal on Macroinvertebrates and Total Suspended Solids in Headwater Streams. Montana Academy of Science. April 2011
Beaulaurier J, Bickford, and Hershberger. Can Commercially made Feed have Pathogens? Montana Academy of Science. April 2011
Hill, J., Bickford J., and Gibbons, J. Land Use Effects on Bird Diversity. Montana Academy of Science. April 2011
Fenger, E, Bickford, N, and VanSickle, S. Effects of Road and Culvert Removal on Macroinvertebrates and Total Suspended Solids in Headwater Streams. Murdock Foundation. Oct 2010
Beaulaurier J, Bickford, N., and Hershberger. Can Commercially made Feed have Pathogens? Murdock Foundation. Oct 2010
Fenger, Erin, Bickford, N, and VanSickle. Effects of Road and Culvert Removal on Total Suspended Solids in Headwater Streams. Montana Academy of Science. April 2010
Morris Daniel and Bickford N. Bird Population Densities of Cheatgrass Influenced Prairie Habitat. Montana Academy of Science. April 2010
Beaulaurier Josh, Bickford, and Hershberger. Can Commercially made Feed have Pathogens? Montana Academy of Science. April 2010
Morris Daniel and Bickford N. Bird Population Densities of Cheatgrass Influenced Prairie Habitat. Montana Space Grant. April 2010
Collins, S. M., Bickford, N., McIntyre, .P, Coulon, A., Ulseth, A., and Flecker, A. Genetic and microchemical analysis of population structure in a migratory Neotropical fish. North American Benthological Society National Meeting, May 2008.
Hannigan, R.E, and Bickford, N., Nutrient Chemistry of Chukchi Sea Sediments. Geologic Society of America, 2008.
Bickford, N., Fish habitat and Otolith Chemistry. Alaska Marine Science Symposium. January 2007.
Keyse, M., Bickford, N., and Norcross, B. Patterns in life and environmental histories of Myoxocephalus scorpius in the Chukchi Sea. Alaska Marine Science Symposium. January 2007.
Drobny, P., Bickford, N., and Norcross, B. Squid Overload: Berryteuthis magister in the Bering Sea. Alaska Marine Science Symposium. January 2007.
Helms, B., Bickford, N., and Feminella, J. Does increasing urbanization affect the feeding ecology and growth of redbreast sunfish? American Fisheries Society. September 2006.
Bickford, N., Where do fish go, let's ask them: or at least their otolith. North American Benthological Society National Meeting, May 2006.
Kelly, S., Bickford, N., and Norcross, B. Otolith chemical tags identify past habitat use of larval and

juvenile Prince William Sound Pacific Herring. North American Benthological Society National Meeting, May 2006.
Drobny, S., Bickford, N., and Norcross, B. Identifying life history characteristics of squid in the Bering Sea. North American Benthological Society National Meeting, May 2006.
Schumann, K., Bickford, N., Norcross, B., and Spangler, R. Identifying eulachon populations to spawning locations using otolith chemistry. North American Benthological Society National Meeting, May 2006.
Jones, M., Haas, G., and Bickford, N. Movement of Coho salmon on the Yakutat Foreland revealed from otolith chemistry. North American Benthological Society National Meeting, May 2006.
Hamilton, B., Bickford, N., and Hannigan, R. Elemental chemistry of endolymph and otolith: passive recorder or active writer? Geological Society of America National Meeting, November 2004.
Bouldin, J.L., N.A. Bickford, B. Stroud and G. Guha. Irrigation options for best management practices – benefit/cost analysis, resource conservation, and ecological benefits. MidSouth Regional Society of Environmental Toxicology and Chemistry Society annual meeting. Oxford, MS. 2004.
Bouldin, J.L., N.A. Bickford, B. Stroud and G. Guha. Tailwater recovery systems for irrigation – benefit/cost analysis and water resource conservation technique in Northeast Arkansas. Arkansas Geographical Society spring meeting. Jonesboro, AR. 2004.
Bouldin, J.L., N.A. Bickford, B. Stroud and G. Guha. Tailwater recovery systems for irrigation as water resource conservation technique in Northeast Arkansas. Arkansas Academy of Science 88th Annual meeting. Jonesboro, AR. 2004
McDaniel, B., Bickford, N.A. and Hannigan, R.E. Age and growth patterns of fish from thr Spring River, AR. Arkansas Academy of Sciences. 2004
Hamilton, B., Bickford, N.A. and Hannigan, R.E. Elemental variations of endolymph and otolith composition in Moxostoma erythrurum. Arkansas Academy of Sciences. 2004
Clarke, D., Bickford, N.A. and Hannigan, R.E. Analysis of dissolved organic carbon in an interconnected ditch system in the delta agricultural zone, AR. Arkansas Academy of Sciences. 2004
Walls, J., Bickford, N.A. and Hannigan, R.E. Age and growth analysis of centrachid species in the Spring River, AR. Arkansas Academy of Sciences. 2004
Horton, M. Bickford, N.A. and Hannigan, R.E. Uptake and storage of metals by crayfish Arkansas Academy of Sciences. 2004
Howard, R., Bickford, N.A. and Hannigan, R.E. Age and growth analysis of Cyprinid, Ictalurid, Fundulid, Cottid, and Percid species in the Spring River, AR. Arkansas Academy of Sciences. 2004
Young, S., Bickford, N.A. and Hannigan, R.E. Age and growth patterns of large mouth bass, small mouth bass, and spotted bass from the Spring River, AR. Arkansas Academy of Sciences. 2004
Bickford, N.A. and Hannigan, R.E. A Multi-Disciplinary Approach to Locating Essential Fish Habitat in Freshwater Systems. North American Benthological Society National Meeting, May 2004.
Hannigan, R.E., Bickford, N.A., Bogdevich, O.P. “Assessing Essential Fish Habitat In Freshwater Environments using Otolith Microchemistry”. Sixth International Symposium and Exhibition on Environmental Contamination in Central and Eastern Europe. Prague, Czech Republic. 2003.

Hannigan, R. and Bickford, N. “Assessing Essential Fish Habitat in Freshwater Environments using Otolith Microchemistry” Gordon Research Conference, Catchment Hydrology. Colby-Sawyer College, New Hampshire. 2003.
Hannigan, R., Farris, J.L., and Bickford, N. “Chemical Weathering and The Biotic Ligand Model”. Arkansas Water Resources Conference. Fayetteville AR. 2003
Hannigan, R.E and Bickford, N.A. Linkages between bioavailability and equilibrium kinetics in a freshwater system and the effects on fish. Southcentral-Southeast sectional meeting of the Geological Society of America. Memphis TN. 2003.
Bickford, N.A. and Hannigan, R.E. Can fish hear the chemistry of the water? North American Benthological Society National Meeting, May 2003.
Bickford, N.A., Hamilton, B., and Hannigan, R.E. Assessing essential fish habitat in freshwater environments using chemical fingerprinting, Spring River AR. North American Benthological Society National Meeting, May 2002.
Investigation of nitrate pollution and the effects on fish community in the Spring River, AR. Association of Southeastern Biologist, April 2002.
Bickford, N.A. and Hannigan, R.E. Major and trace element hydrochemistry in a spring-fed river (Spring River, Arkansas). American Geophysical Union Fall Meeting. December 2001.
Bickford, N.A. and Hannigan, R.E. Investigation of nitrate pollution in the Spring River, AR: Preliminary results of a spatial-temporal study. Geological Society National Meeting, November 2001.
Bickford, N. and Hannigan, R. Investigation of nitrate pollution in the Spring River, Arkansas: Preliminary results of a spatial-temporal study. Mid-South Society of Environmental Toxicology and Chemistry, Jonesboro, AR, May, 2001.
Bickford, N.A. and Henson R. Characteristics of small mammals that help or inhibit parasite infection. Association of Southeastern Biologist, Chattanooga, TN, March 2000.
Bickford, N.A. and Henson R. Survey of Gastrointestinal Helminths in Small Mammals In Watauga County, NC and Changes in Parasite Populations Due to Changes in Host Species and Changes in the Season. Association of Southeastern Biologist, Wilmington, NC, March 1999.
Bickford N.A. 1996-1997. Ecological Essays. Monthly article in Lenoir-Rhynean Newspaper.

Service
2015 – present Nebraska Academy of Sciences
2015 – present Graduate Research Committee
2015 – present Wildlife Committee
2010 – 2015 Chair of the Last Lecture Series – University of Great Falls
2010 – 2015 Montana Academy of Science – University of Great Falls
2010 – 2015 Electric City Soccer Board, Montana
2009 – 2012 Curriculum Committee – University of Great Falls
2003 – 2004 Arkansas State University – President of Association of Graduate Scientist and President Graduate Student Advisory Council
2003 Geological Society of America – Convener, Special Session SE/SC Joint meeting of the Geol.

Soc. Am. “Water Rock Life: Interactions Between Hydrology and Biology”
2001 – 2004 Arkansas State University – Member of Graduate Council
1999 – 2000 Appalachian State University – President of Biology Graduate Student Association
1998 – 1999 Appalachian – Vice President of Biology Graduate Student Association

Memberships in Professional Societies
Nebraska Academy of Sciences (member since 2016)
Association of Southeastern Biologist (member since1997)
North American Benthological Society (member since 1998)
Geological Society of America (member since 2000)
American Geophysical Union (member since 2000)
American Chemical Society (member since 2003)
North American Fisheries Society (member since 2003)

Kerry L Farris

Environmental Sciences Program
Department of Natural Sciences
OREGON TECH

541.885.1042
kerry.farris@oit.edu

Skills & Objectives

I am a broadly trained ecologist specializing in wildlife-habitat relationships, silvicultural and fire management techniques, and quantitative analysis. I have experience both teaching and mentoring undergraduate and graduate students in biology and ecology. My objective is to draw from my applied professional experiences to teach courses integrating theory and application.

Education

University of Idaho / M.S. Natural Resources
1997-2000 MOSCOW, IDAHO

Thesis: Micro-habitat selection of *Picoides* woodpeckers in relation to ponderosa pine decomposition

University of Idaho / B.S. Wildlife Resources
1995-1996 MOSCOW, IDAHO

Magna Cum Laude
Outstanding Senior - Department of Fish and Wildlife

Humboldt State University / B.S. Wildlife Management (*transfer*)
1988-1991 ARCATA, CALIFORNIA

Experience

Oregon Tech AIRE Center / Environmental Research Scientist
2020 - Present, KLAMATH FALLS, OREGON

- Worked to establish Oregon Tech's Center for *Advancing Interdisciplinary Research on the Environment and Health* (AIRE) by providing project leadership and management related to the quantitative analysis of air quality and hospitalization data, conducted and published research generated by the team, trained and managed other researchers and staff, and participated in long-range research planning.

Oregon Tech / Faculty Instructor
2017 - Present, KLAMATH FALLS, OREGON

- *Research in Environmental Sciences* (ENV 495) – directed students in the development of research projects designed to assist the City of Klamath Falls Parks Division in the proactive management of vegetation in Moore Park.
- *Advanced Environmental Data Analysis* (ENV 434) – created newly offered course examining the modern statistical approaches used to address the special needs of ecological data sets
- *Forest Ecology and Management* (ENV 375) – created newly offered course focused on western coniferous forests and their management challenges
- *Plant Ecology* (BIO 367) – developed an upper division course examining the fundamentals of terrestrial ecology with an emphasis on vascular plant communities
- *Principles of Biology* (BIO 211 & 212) – instructed both lecture and laboratory sections

Oregon Tech / Adjunct Instructor

2016-17 KLAMATH FALLS, OREGON

- Principles of Biology (BIO 211 & 212) – instructed laboratory sections
- Sustainable Human Ecology (ENV 484) – led weekly discussion sessions

Wildlife Conservation Society / Associate Conservation Scientist

2000 - 2009, NORTH AMERICA PROGRAM, BOZEMAN, MONTANA

- Collaborated with public resource agencies and private organizations to conduct interdisciplinary research focusing on ecological forest management, with a particular emphasis on prescribed fire. Notable projects (see publications) include: wildlife discipline leader for a nation-wide project investigating the effects of prescribed fire and silvicultural treatments for forest restoration; principal investigator for research quantifying the relationship between bark foraging birds, bark beetles, and fungi in the process of tree decay
- Hired, trained and supervised 15 to 20 undergraduate students per year to conduct field work and data analysis for various research projects; assisted multiple graduate students with thesis research related to Wildlife Conservation Society research projects, and served as a core thesis committee member.
- Developed research objectives and experimental design; conducted meta-analyses for large, national level conservation datasets; wrote customized code to implement a variety of statistical analysis techniques including univariate and multivariate statistics, generalized linear modeling, mixed and random effects modeling, logistic regression, and ordination
- Conducted outreach and technology transfer to disseminate research results to the general public and land managers, including lectures at universities. Authored scientific papers and presented at professional society conferences.

University of Idaho / Graduate Teaching and Research Assistant

1997 - 2000, DEPT OF FISH & WILDLIFE RESOURCES and DEPT OF BIOLOGICAL SCIENCES

- Served as lead laboratory instructor for three courses: wildlife ecology, wildlife techniques, and ornithology. Developed and graded lab exercises, quizzes, and exams covering: (1) identification, anatomy, aging and sexing of both avian and mammalian specimens in both laboratory and field settings; (2) habitat ecology, population estimation, and basic field-data collection techniques; organized and led field trips; prepared and presented substitute classroom lectures
- Conducted original research investigating the synergistic ecology of tree decomposition, woodpecker foraging, and bark beetle phenology

Humboldt State University Foundation / Research Crew Leader

1996 & 1997, ARCATA, CALIFORNIA

Served as crew leader on research projects investigating the response bird and mammal communities to experimental silvicultural and prescribed burning treatments

Turnstone Ecological Research / Research Assistant

1995 & 1996, MOSCOW, IDAHO

Conducted point-count and vegetation surveys in support of research on avian-habitat

relationships as part of the Partners in Flight/Northern Region Landbird Monitoring Program

USDA Forest Service Intermountain Research Station / Research Assistant

1994, MISSOULA, MONTANA

Used the Breeding Bird Research Database (BBIRD) protocol to locate and monitor nests, conducted point counts and vegetation surveys in support research investigating the effects of forest fragmentation on breeding bird communities in cedar-hemlock forests of northern Idaho

USDA Forest Service / Biological Technician

1990-1993, TAHOE NF, ELDORADO NF, and LAKE TAHOE BASIN MANAGEMENT UNIT

Conducted surveys for threatened, endangered and sensitive species including: willow flycatcher, peregrine falcon, bald eagle, northern goshawk, California spotted owl, pine martin, fisher, and Sierra Nevada red fox using nocturnal and diurnal surveys techniques such as taped playbacks, mimic calls, track plates, bait stations, and remote cameras

Humboldt State University / Biological Technician

1988-1992, CAMPUS GAME PENS

Cared for a variety of wildlife species kept on campus for research purposes (e.g., mule deer, Pacific fisher, Sierra Nevada red fox, gray fox, kit fox, coyote and Canada goose). Physically and chemically immobilized animals in support of teaching and research.

Peer-Reviewed Publications

(Google Scholar)

Kyle A. Chapman, Adelaide E. Clark, **Kerry L. Farris**, and Sarah Fitzpatrick. 2023. Fires, Respiratory Hospitalizations, and Capacity Issues. Pp. 210-221 *in* Fleishman, E., editor. 2023. Sixth Oregon Climate Assessment. Oregon Climate Change Research Institute, Oregon State University, Corvallis, Oregon. https://blogs.oregonstate.edu/occri/oregon-climate-assessments

McIver, James D., Scott L. Stephens, James K. Agee, Jamie Barbour, Ralph E.J. Boerner, Carl B. Edminster, Karen L. Erickson, **Kerry L. Farris**, Christopher J. Fettig, Carl E. Fiedler, Sally Haase, Stephen C. Hart, Jon E. Keeley, Eric E. Knapp, John F. Lehmkuhl, Jason J. Moghaddas, William Otrosina, Kenneth W. Outcalt, Dylan W. Schwilk, Carl N. Skinner, Thomas A. Waldrop, C. Phillip Weatherspoon, Daniel A. Yaussy, Andrew Youngblood, Steve Zack. 2013. Ecological effects of alternative fuel-reduction treatments: highlights of the National Fire and Fire Surrogate study (FFS). International Journal of Wildland Fire 22(1):63-82.

Farris, Kerry L., Steve Zack, Andy J. Amacher, Jennifer C. Pierson. 2010. Microhabitat selection of bark-foraging birds in response to fire and fire surrogate treatments. Forest Science 56(1):100-111.

Farris, Kerry L., Sarah J. Converse, Steve Zack, Andy J. Amacher, Thomas Contreras, William Gaines, Donald Miles, Douglas Robinson, Ghislain Rompre, Katie Sieving, and Jenny Woolf. 2010. Short-term effects of fire and fire surrogate treatments on avian nest survival: a national-scale analysis. Open Environmental Sciences 4:53-62

Farris, Kerry L. and Steve Zack. 2008. A comparison of post-burn woodpecker foraging use of white fir (Abies concolor) and Jeffrey pine (Pinus jeffreyi). In: Narog, M.G., technical coordinator. Proceedings of the 2002 Fire Conference on Managing fire and fuels in the remaining wildlands and open spaces of the southwestern United States. December 2-5,

2002, San Diego, CA. Gen. Tech. Rep. PSW-189, Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.

Converse, Sarah J., Gary C. White, Kerry L. Farris, and Steve Zack. 2006. Small mammal responses to forest fuel reduction: national scale results from the fire and fire surrogate project. Ecological Applications 16(5):1717-1729.

Farris, Kerry L. and Steve Zack. 2005. Woodpecker-snag interactions: an overview of current knowledge in ponderosa pine systems. Pp.183-195 In: Ritchie, M.W., D.A. Maguire and A. Youngblood, technical coordinators. Proceedings of the Symposium on ponderosa pine: Issues, trends and management. 2004 October 18-21; Klamath Falls, OR. General Technical Report PSW-GTR-198. Albany CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 281 pp.

Farris, Kerry L., Martin J. Huss, and Steve Zack. 2004. The role of foraging woodpeckers in the decomposition of ponderosa pine snags. The Condor 106(1):50-59.

Farris, Kerry L, Edward O. Garton, Patricia J. Heglund, Steve Zack, and Patrick J. Shea. 2002. Woodpecker foraging and the successional decay of ponderosa pine. Pp. 237-246 in W.F. Laudenslayer, P.J. Shea, B.E. Valentine, P.C Weatherspoon, T.E. Lisle (tech coord). Proceedings of the symposium on the ecology and management of dead wood in western forests. Gen. Tech. Rep. PSW-GTR-181. Albany, CA. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture, 949 pp.

Farris, K.L. 2000. The foraging ecology of Picoides woodpeckers in relation to ponderosa pine decay dynamics. MS Thesis. Department of Fish and Wildlife Resources, University of Idaho, Moscow, Idaho. 63pp.

SELECTED EXAMPLES OF RESEARCH IN THE NEWS

Oregon Public Broadcasting (OPB). 2022. "Million-dollar federal grant boosts efforts to monitor air quality and improve health outcomes in wildfire-prone Southern Oregon". Interview on Think Out Loud Radio Program. 4 August 2022. https://www.opb.org/article/2022/08/04/million-dollar-federal-grant-boosts-efforts-to-monitor-air-quality-and-improve-health-outcomes-in-wildfire-prone-southern-oregon/

Herald and News. 2022. "Oregon Tech awarded a $1M federal grant for air quality research; faculty to create a new research center". 29 July 2022. https://www.heraldandnews.com/klamath/oregon-tech-awarded-a-1m-federal-grant-for-air-quality-research-faculty-to-create-a/article_d7d9f9a5-d0a5-5229-8227-082b8fcb1653.html

Canadian Broadcasting Corporation (CBC). 2004. "Woodpeckers and Fungus". Radio Interview on Quirks and Quarks Radio Program. 13 March 2004.

Society of American Foresters. 2004. "Woodpeckers Play a Vital Role in Creating Quality Snags". The Forestry Source. April 2004.

Birder's World Magazine. 2004. "Snag Starters". Birding Briefs. June 2004.

Science Daily. 2004. "Woodpeckers Carry Fungus in Beaks That Promotes Tree Decay". Science Daily Online. 12 Feb. 2004.

Environmental News Service. 2004. "Fungus in Woodpeckers' Beaks Crucial to Forest Processes". ENS Daily Headlines. 11 Feb. 2004. Canadian Broadcasting Corporation (CBC). 2004. "Woodpeckers and Fungus". Radio Interview on Quirks and Quarks Radio Program. 13 March 2004.

Society of American Foresters. 2004. "Woodpeckers Play a Vital Role in Creating Quality Snags". The Forestry Source. April 2004. Birder's World Magazine. 2004. "Snag Starters". Birding Briefs. June 2004.

Science Daily. 2004. "Woodpeckers Carry Fungus in Beaks That Promotes Tree Decay". Science Daily Online. 12 Feb. 2004.

Environmental News Service. 2004. "Fungus in Woodpeckers' Beaks Crucial to Forest Processes". ENS Daily Headlines. 11 Feb. 2004.

Selected Presentations

INVITED PAPERS

Chapman, Kyle, Kerry Farris, and Adelaide Clark. 2022. Drought, wildfires, air quality, and respiratory hospitalizations in Southern Oregon. Pacific Northwest Drought and Public Health Workshop. Portland, OR 19-20 October 2022.

Clark, Adelaide, Kyle Chapman, **Kerry Farris**, and Sarah Fitzpatrick. 2021. Helping hospitals predict capacity issues: using state agency data to examine the relationship between PM2.5 and respiratory hospitalizations in southern Oregon. AGU Fall Meeting 2021, New Orleans, LA, 13-17 December 2021, id. SY13B-05.

Zack, Steve and **Kerry L. Farris**. 2007. Managing for Wildlife with Prescribed Fire in Eastside Pine Habitats. Society of American Foresters and Oregon State University Department of Forestry: The Art and Science of Multiaged Forest Management. 5-6 June 2007. Klamath Falls, Oregon.

Farris, Kerry L., Sarah J. Converse, Steve Zack, Andy J. Amacher, Thomas Contreras, William Gaines, Donald Miles, Douglas Robinson, Ghislain Rompre, Katie Sieving, and Jenny Woolf. 2006. The effects of fire and fire surrogate (FFS) treatments on avian nest survival. The Association for Fire Ecology: 3rd International Fire Ecology and Management Congress. 13-17 November 2006. San Diego, California.

Converse, Sarah J., Gary C. White, **Kerry L. Farris**, and Steve Zack. 2006. Small mammal responses to forest fuel reduction: national scale results from the fire and fire surrogate project. The Association for Fire Ecology: 3rd International Fire Ecology and Management Congress. 13-17 November 2006. San Diego, California.

Farris, Kerry L. and Steve Zack. 2004. Woodpecker snag interactions: an overview of current knowledge in ponderosa pine systems. USDA Forest Service, Pacific Southwest Research Station and Oregon State University Outreach Education: Ponderosa Pine – Management, Issues, Trends. 21-23 October 2004. Klamath Falls, Oregon.

Farris, Kerry L. 2003. An overview of desert cavity nesting species: implications for management plans. California Partners in Flight: Desert Bird Conservation Planning. 6-7 November 2003. Yuma, Arizona.

Farris, Kerry L., Martin J. Huss, and Steve Zack. 2002. Complexities of snag decay in ponderosa pine: how foraging woodpeckers may influence decay patterns and subsequent nest-site quality. American Ornithologist Union (AOU): 3rd North American Ornithological Conference – Special Symposium: The Ecology of Cavity-Nesters: Keystone Processes. 24-28 September 2002. New Orleans, Louisiana.

CONTRIBUTED PAPERS

Zack, Steve, **Kerry L. Farris**, and T. Luke George. 2005. Bird responses to thinning and prescribed fire in ponderosa pine. Partners in Flight – California Chapter, Oregon/Washington Chapter: Tools for Bird Conservation in Conifer Forests. 7-8 April

2005. Ashland, Oregon.

Farris, Kerry L. and Steve Zack. 2002. A comparison of post-burn woodpecker foraging use between white-fir (Abies concolor) and yellow pine (Pinus jeffreyi and P. ponderosa). The Association for Fire Ecology: Managing Fire and Fuels in the Remaining Wildlands and Open Spaces of the Southwestern United States. 2-5 December 2002. San Diego, California.

Zack, Steve and **Kerry L. Farris.** 2002. Wildlife responses to alternative fire management treatments: the national fire and fire surrogate approach. USDA Forest Service: Rocky Mountain Research Station: Fire, Fuel Treatments, and Ecological Restoration. 16-18 April 2002. Fort Collins, Colorado.

Farris, Kerry L., Steve Zack, Edward O. Garton, William F. Laudenslayer, and Patricia J. Heglund. 2001. Woodpeckers and snag decay in North American forests: foraging patterns of three sympatric Picoides woodpeckers in relation to the initial decay of ponderosa pine (Pinus ponderosa). Woodpeckers Working Group of the German Ornithologists Society: International Symposium on Woodpecker Ecology. 23-25 March 2001. Berchtesgaden, Germany.

Hughes, Kerry L., Edward O. Garton, Patricia J. Heglund, and Steve Zack. 2000. The role of foraging woodpeckers in the decay of ponderosa pine. Cooper Ornithological Society: 70th Annual Meeting. 25-29 April 2000. Riverside, California.

Hughes, Kerry L., Edward O. Garton, Patricia J. Heglund, Steve Zack, and Patrick J. Shea. 1999. The dynamic relationship of woodpecker habitat selection and the successional decay of ponderosa pine. The Wildlife Society – Western Section: Symposium on the Ecology and Management of Dead Wood in Western Forests. 2-4 November 1999. Reno, Nevada.

Hughes, Kerry L., Edward O. Garton, Patricia J. Heglund, Steve Zack, and William F. Laudenslayer. 1999. Woodpecker foraging selection in relation to tree decay characteristics. Cooper Ornithological Society: 69th Annual Meeting, 29 March – 3 April 1999. Portland, Oregon.

Specialized Skills & Experience

Project Management, Instruction, and Data Analysis

- Experimental/study design for inventory and monitoring of various taxa
- Proposal writing and manuscript preparation
- Coordination and management of dispersed field crews and senior scientists
- Classroom, laboratory, and field instruction in both academic and field settings
- Data management in EXCEL and ACCESS
- Statistical analysis using: R, SAS, DISTANCE, SPSS, S-PLUS, PC-ORD
- Budget management

Field Techniques

- Avian point counts using distance sampling
- Nest searching and monitoring techniques
- Mist netting and fungal sampling of birds
- Spot-mapping avian territory use
- Surveys for sensitive, threatened, and/or endangered species including: Spotted Owl, Northern Goshawk, Willow Flycatcher, Pine Martin, Sierra Nevada Red Fox
- Live trapping of small mammals
- Use of track plates and remote cameras
- Acoustic bat sampling

Specialized

- **Excellence in Teaching Workshop.** Commission on College Teaching, Oregon

Training

Institute of Technology. September 2018.

- **Statistical Design and Analysis of Biological Monitoring Programs for Conservation Management.** Samantha Strindberg PhD, Fernanda Marques PhD, and Tim O'Brien PhD. Department of Landscape Ecology and Science Exploration, Wildlife Conservation Society, Bronx, New York. 20 June – 1 July 2005.
- **Analysis of Ecological Communities using PC-ORD.** Jeri Peck. Department of Forest Resources, University of Minnesota. 16-17 March 2005.
- **GIS for Wildlife Conservation.** Eric Sanderson PhD and Gosia Bryja. Department of Landscape Ecology and Geographic Analysis, Living Landscapes Program, Wildlife Conservation Society, Bronx, New York. 4-15 October 2004.
- **Advanced Techniques and Recent Developments in Distance Sampling.** Steven Buckland PhD and Len Thomas PhD. Center for Research into Ecological and Environmental Modeling, University of St. Andrews, Scotland. 15-17 September 2003.
- **Introduction to Distance Sampling.** Steven Buckland PhD and Len Thomas PhD. Center for Research into Ecological and Environmental Modeling, University of St. Andrews, Scotland. 10-12 September 2003.
- **Metapopulation Ecology of Animals and Plants: Inventory, Monitoring, and Viability Analysis.** Edward O. Garton PhD, Department of Fish and Wildlife Resources, University of Idaho. 3-7 January 2000.

Grants & Awards

- **Research Grant:** Establishing a Vegetation Monitoring Network for Moore Park: A Partnership Between Oregon Tech and the Klamath Falls Parks Division. Principal Investigator. June 2022. $10,000. Provost Office, Oregon Tech.
- **Research Grant:** Health effects of smoke from wild and human-related fires. Co-Principal Investigator with Kyle Chapman and Adelaide Clark. June 2022. $1,000,000. United States Health Resources and Services Administration.
- **Nomination:** Oregon Tech Foundation Excellence in Teaching Award 2020
- **Research Grant:** Effects of altering stand-structure on wildfire severity and effects in the Blacks Mtn. Experimental Forest, Cascade Range, California. Co-Principal Investigator with M. Ritchie, W. Oliver, C. Skinner, S. Zack, G. Nakamura. Fiscal Years 2003, 2004, 2005. $171,000. Joint Fire Sciences Program.
- **Research Grant:** Woodpeckers and the process of snag decay in the management of wildlife of western coniferous forests. Co-principal investigator with S. Zack. Fiscal Years 2001 & 2002. $20,000. The Walt Disney Wildlife Conservation Fund.
- **Research Grant:** Micro-habitat selection of Picoides woodpeckers in relation to ponderosa pine decomposition on Blacks Mountain Experimental Forest. Principal Investigator. Jan-Dec 1999. $10,000. USDA Forest Service: Pacific Southwest Research Station.
- **Honorary Membership:** Cooper Ornithological Society 1999
- **Student Travel Award:** Cooper Ornithological Society 1999
- **Outstanding Senior Award:** Department of Fish and Wildlife Resources, University of Idaho, Academic Year 1995-1996
- **Marvin Klemme Centennial Scholarship:** College of Natural Resources, University of Idaho, Spring 1995
- **Safari Club International Scholarship:** American Wilderness Leadership School, Jackson, Wyoming, Summer 1986

Professional Service & Membership

- **Klamath Lake Forest Health Partnership (KLFHP)** – member of a science committee engaged in research and management of forest related projects on public lands throughout southern Oregon.
- **Peer Reviewer:** Journal of Wildlife Management, Journal of Fire Ecology, Forest Ecology and Management, Restoration Ecology, Journal of Field Ornithology, and Northwest Science

Christy VanRooyen

christy.vanrooyen@oit.edu
3201 Campus Drive,
Klamath Falls, OR 97601
(541) 885-0959

EDUCATION

Master of Science in Environmental Education

Southern Oregon University – Ashland, OR December 2017
Phi Kappa Phi honorary society

Bachelor of Science in Applied Environmental Sciences

Oregon Institute of Technology – Klamath Falls, OR June 2001
Magna Cum Laude
Alpha Chi honorary society

PROFESSIONAL POSITIONS

Environmental Sciences Program Director. Oregon Institute of Technology. 2021-Current

- Strategic planning and curriculum development to support programmatic, departmental, academic and university wide objectives and outcomes.
- Maintenance and development of the dual CE-ENV and REE-ENV programs through communication with their program directors and department chairs.
- Leading faculty program meetings (scheduled by department chair) including setting of the agenda, meeting management, and follow-up on action items.
- Coordinate programmatic recruitment and retention efforts in close collaboration with departmental efforts.
- Develop and maintain partnerships with local, regional, and national agencies and organizations that can provide educational, professional, and research opportunities for students and faculty.
- Planning and execution of the annual ENV Student Research Symposium.
- Assessment coordinator – Facilitate PSLO and ISLO Data Collection. Write the annual assessment report for the ENV program.

Assistant Professor, Natural Science Department. Oregon Institute of Technology. 2018-Current

- Teach a variety of courses within the Natural Science department including chemistry, biology, nutrition, and environmental sciences. See teaching experience for a comprehensive list.
- Apply innovative pedagogy to promote student success and retention.
- Chemistry Advanced Credit Placement Liaison - Work with high school teachers from around the state to offer CHE 101/104 and CHE 2xx credit to high school students.
- Serve on multiple departmental and institutional committees: Academic Master Plan Committee, Assessment Executive Committee, Online Learning Advisory Committee, Sustainability Committee, and search committees.

- Primary or secondary academic advisor to 14 students.
- Advisor for the student Bee Keeping Club.

Co-Coordinator, Fall in the Field. Southern Oregon University Environmental Education. 2016-2017.

- Worked in close collaboration with 15 other graduate students to create and execute standards aligned curriculum for residential and day program outdoor school.
- Over 1,500 k-12 students participated in Fall in the Field over the course of eight weeks of programming.
- Communicated with a wide range of stakeholders including teachers, administrators, nonprofits, government agencies, and businesses.
- Co-authored an Ashland Food Co-op grant which provided a locally sourced "Food for Thought" meal with a lesson on the environmental costs associated with food purchasing. $1,200 was awarded.
- Risk Management Committee Chair.
- For more info, go to http://fallinthefield.sou.edu/

Intern. Bee Girl Organization. 2016-2017.

- Developed a graduate thesis around a multi-year pollinator monitoring project at an Oregon Department of Transportation wetland remediation site in White City, OR. See research for more details.
- Analyzed data related to ongoing research projects.
- Created maps using ArcGIS for public land and virus monitoring projects.
- Promoted bee conservation at various educational, fundraising, and tabling events.
- Helped with honey extraction and processing from Bee Girl managed hives.
- Co-authored a Coquille Tribal Community Fund grant for Kids and Bees programming. Funding pending.
- For more info, go to https://www.beegirl.org/

Sustainability Coordinator. Oregon Institute of Technology. 2005.

- Sustainability Committee Chair.
- Wrote a report detailing environmental sustainability efforts on campus and focus areas for improvement.
- Offered sustainability seminars for faculty, staff, and students advising ways to reduce individual carbon footprints.

Instructor, Natural Science Department. Oregon Institute of Technology. 2002 – 2007.

- Taught a variety of introductory courses within the Natural Science department including chemistry, biology, and environmental sciences. See teaching experience for comprehensive course list.

Senior Geographic Information Systems (GIS) Analyst. Oregon Institute of Technology. 2001-2002.

- Consulting work doing cartography and data analysis on the following topics: Oregon mortality rates and disease outbreak, websites for economic development groups, stream restoration projects, trail locations, animal habitat, and watershed health

OIT: CHE 101 – Introduction to General Chemistry. VanRooyen, C. Editor. 2021. Open-Source chemistry text available online via Libretext created by remixing other available OERs and writing original content. View here: http://bit.ly/OTCHE101

Comparison of Hymenoptera Abundance at Three Vernal Pool Sites in White City, Oregon in Varying Stages of Disturbance. 2017. VanRooyen, C. Graduate Thesis for Southern Oregon University.

Native Bees at Oregon Tech. Edenhofer, K. * & VanRooyen, C. Poster Presentation at the Annual Meeting of the Oregon Chapter of the Wildlife Society Conference. Abstract submitted December 2022 with presentation scheduled for February 2023.

Apis Mellifera Floral Resource Use in the Oregon Tech Apiary. Steiber, M.*, Trier, F. *, Torres, T., & VanRooyen, C. Poster Presentation at the Annual Meeting of the Oregon Chapter of the Wildlife Society Conference. Abstract submitted December 2022 with presentation scheduled for February 2023.

Improved Teaching: A Symptom of COVID 19. VanRooyen, C. Biennial Conference on Chemical Education – American Chemical Society. In this talk I shared about the variety of tools I use to engage students online in my introductory chemistry course including: a phone friendly open textbook, virtual escape rooms, flexible policies, reading quizzes, games, CHEM 101, and coffee hours. Data on student's interactions with the tools correlated to student success will be included. August 2022.

Faculty Panel on Open Educational Resources in Promotion and Tenure. VanRooyen, C. - panel facilitator. Open Oregon's Open Education Week virtual symposium. March 2022.

Bee School. VanRooyen, C. & Corzatte, L. Klamath Basin Beekeepers Association. Co-taught an introductory beekeeping class. March 2022.

Importance of Pollinators. VanRooyen, C. & Torres, T. Klamath Tree League community educational event. October 2021.

Lessons Learned from Spring of 2020. Panel presentation at the Commission on College Teaching Conference at Oregon Tech on successes and failures of moving to all remote teaching due to COVID. September 2020.

Promoting Engagement with OERs. VanRooyen, C. Oregon Virtual Statewide Open Educational Resources Symposium. Shared tips for getting to students to engage with OERs in STEM courses. May 2021.

6 Tips for Improving Heart Health. VanRooyen, C. Owl about Health Oregon Tech Alumni Event. Virtual Presentation shared via the alumni association on various social media platforms. February 2021.

Native Bee Walk. VanRooyen, C. An interpretive hike starting from the Oregon Tech Apiary and finishing at the native plant garden on campus to discuss bees and to teach pollinator sampling methods. This event was open to the Klamath Falls community. May 2020 & May 2019.

Integrating OERs in the Classroom. VanRooyen, C. & Clark, A. Presentation during open education week discussing how we have used our original OER in introductory chemistry which was shared at Oregon Tech and through the Oregon Open Ed. website. This talk was also accepted to be presented at the Biennial Conference on Chemical Education which was cancelled in 2020 due to COVID. March 2020.

The Honey Bee. VanRooyen, C. & Kenyon, E.* Sustainapalooza presentation given at the Klamath County Library about honeybees and their role in food production in the United States. May 2019.

Plight of Our Pollinators. VanRooyen, C. Public presentation on pollinator decline given to the Klamath Basin Bee Keeping Association. February 2019

Geospatial Analysis of Apis Mellifera Colonies VanRooyen, C. & Bennett, J.* Western Apicultural Society Conference. Poster presentation examining how GIS can be used for pollinator research. July 2019.

PolliNation Podcast OSU Extension Service. I participated in the recording of this episode of the podcast on pollinator science. July 2018.
You can access the episode here: http://blogs.oregonstate.edu/pollinationpodcast/2018/07/30/sam-droege/

The Buzz on Bees. VanRooyen C. Interpretive Talk at U.S. Forest Service Diamond Lake Campground. July 2017.

An Introduction to Process Oriented Guided Inquiry Learning (POGIL). Parrett, L., VanRooyen, C., & Klopf, E. Oregon Institute of Technology Commission on College Teaching Pre-convocation Workshop. September 2016.

Beginning a transition towards active-learning classrooms: Oregon Tech's story. Anthony, S., Lund, T., & VanRooyen, C. 70th Northwest Regional Meeting of the American Chemical Society, Pocatello, ID. June 2015.

Flipping the Classroom in CHE 101. VanRooyen, C. Oregon Institute of Technology Commission on College Teaching Tech Talk. February 2015.

Prescription for Increasing Student Interest in GOB Chemistry I and Prescription for Increasing Student Interest in GOB Chemistry II. VanRooyen, C. & Swisher, R. Biennial Conference on Chemical Education (BCCE). August 2014.

Fractal Analysis Watershed Project. VanRooyen, C., Ritter, J., Hansen, M., & Emmen, B. Klamath Basin Fish and Water Management Symposium. Humbolt State University, Arcata, CA. May 2001.

*Indicates Oregon Tech student name

GRANT AWARDS

Oregon Tech Foundation Innovation Grant 2022-2023. "Phenological Study of Apis mellifera Pollen Collection with Shifting Climate and Fire Regimes". The purpose of this project is to identify important floral resources for bees, particularly during fire season, and to correlate hive data with particulate matter to better understand how air quality during fire season affects bees. We currently have three students involved in this work. $11,000

Oregon Open Education Grant. 2019-2021. Collaborative project with Dr. Addie Clark to produce an OER and ancillary resources for introductory chemistry CHE 101. Dr. Clark is mainly responsible for the ancillary products and I have developed the online textbook for the class using other available OER materials and original content. $6,000

Oregon Tech OER Grant. 2019. Internal grant for switching to an open education resource in human nutrition BIO 205. Award $500

Provost's Summer Creativity Grant. 2018. Funds from this grant were used to establish the Oregon Tech Apiary with two live honey bee colonies. As a result of this grant a student bee keeping club was established at Oregon Tech. The apiary provides educational opportunities to talk about pollinator decline. Award $3,500.

Coquille Tribal Community Fund grant. 2017. Grant written for the Bee Girl Organization's Kids and Bees program. Award $2,000

Ashland Food Co-op grant. 2016. Grant provided funding for Southern Oregon University's Fall in the Field *Food for Thought* lesson. Award $1,20

ONGOING RESEARCH =

Oregon Bee Atlas Project. Sample contributor to this collaborative project, which is being coordinated through Oregon State University and the Oregon Department of Agriculture.

Entomological Collection. I am working with a group of research students to curate an entomological reference collection of bees at Oregon Tech. Students are learning pan trapping, areal netting, specimen pinning, and labeling techniques as part of this work.

Hive Monitoring. I consulted on a project for CSET juniors 2021 who developed a hive monitoring system to track internal temperature and hive weight. These students developed a working prototype which successfully collected hive temperature and humidity data. Data could be downloaded via wifi to a laptop. Students presented their work at the Oregon Tech Student Project Symposium in May of 2021. This project enabled us to secure funding for a more robust hive monitoring system which we installed in February of 2022. Data from these monitors will be used for ongoing projects in the ENV 495 Bee Research class.

Pollen Collection in the Oregon Tech Apiary. Research students working in the Oregon Tech apiary collected pollen last year to contribute to an international study conducted by BeeODiversity. The purpose of this project was to determine which floral resources bees were visiting and to identify environmental contaminates using pollen brought back to the hives. In addition to this study, students conducted their own analysis of the pollen using color as an indicator of floral species. This work will be ongoing in 2023.

Halictidae Phenological Trends. Continued monitoring of phenological trends of floral resources and pollinators with shifting climate and fire regimes in the Klamath Basin. Baseline data was established in 2022 using hive monitors, pan trapping, floral surveys, pollen collection, and time lapse photography.

PROFESSIONAL MEMBERSHIPS & PUBLIC SERVICE

Oregon State Beekeepers Association – South Central Oregon Representative Executive Board Member. OSBA is a group of committed beekeepers who manage colonies, provide educational opportunities, lobby for government support of pollinator protection and research, and contribute to bee research. Through this association, I have been able to connect student beekeepers at Oregon Tech to state and national research initiatives. 2020-current.

Klamath Basin Bee Keeping Association – board secretary. Local chapter of beekeepers, which spans membership across southeast Oregon and northeast California. This organization is dedicated to the well-being of honeybees and to the fields of bee keeping, apiculture, research and education. My involvement with the board allows me to keep up to date with the most current initiatives related to pollinators and to ensure that Oregon Tech plays a role in pollinator conservation. KBBA has kindly adopted the Oregon Tech Beekeeping Club as a sister organization which has allowed OIT students to participate and even present at KBBA meetings. 2019 -current.

Oregon Educational Resources Steering Committee. This committee, which reports to HECC, is advising institutions on how to meet the statewide standards for providing open source materials for students and organizes educational events for both higher ed. and K-12 professionals about using or creating open educational resources. Grant funds to support the creation of Open Educational Resources are channeled through this committee. On this board, I served on the Open Education Week subcommittee who was responsible for the planning and implementation of Open Ed. Week. 2019 – 2022.

Western Apicultural Society – 2019-current. Member

American Chemical Society. 2022-current. Member.

COLLEGIATE SERVICE

Online Learning and Advisory Council - This committee makes recommendations to the Provost regarding online learning policies and guidelines. 2021 – current.

Sustainability Committee. The mission of the Sustainability Committee -Our mission is to "serve as the coordinating body for the University's activities relating to sustainability. The committee will address methods to imbue the theme of sustainability throughout Oregon Tech in meaningful and visible ways." Notable accomplishments of the committee during my time of service include planning and delivering a variety of Earth Week events, proving volunteers for National Bike to Work Day stations, and facilitating the instillation of water bottle refill stations in every building. 2019-present.

Academic Master Plan Steering Committee -We developed an academic master plan for Oregon Tech that aligned with the University's Strategic Plan. As the chair of the Charge 3 Subcommittee, I facilitated the creation of the section focused on increasing enrollment, retention, and four-year graduation rates. 2022.

Executive Assessment Committee - Our team has created a variety of trainings and guides to help departments more effectively use assessment data for evaluating programmatic and institutional success. I have scored program assessment reports and provided individual feedback for the reports I assessed. I have offered training to various departments on campus about reporting data on institutional and programmatic learning outcomes and using equity dashboards. At convocation, I led a session on reporting requirements in preparation for Northwest's accreditation visit. 2022-current.

Oregon Tech Foundation Faculty Employee Giving Ambassador - Help to raise funds from staff and faculty for the Oregon Tech foundation and participate planning and execution of recognition events throughout the year. 2019-2022.

Chemistry Lab Move. In preparation for the renovation of Boivin Hall, chemistry faculty coordinated the movement of chemicals and equipment to temporary locations. I was specifically responsible for sorting, packing, and moving the CHE 104 labs from BH to the DOW building. As part of this process, I had to organize a temporary chemical prep space in what was formally a biology storage room. I hosted an event for local middle and high school teachers, where they could look through our older/outdated chemistry/science equipment and take supplies for their schools. Twelve teachers from seven different schools benefited from our donations. (2021).

Search Committee member for the following faculty and staff positions:

- Environmental Chemistry Assistant Professor, 2022 (ongoing). Committee Chair.
- Chemistry Visiting Instructor, 2022. (filled).
- Chemistry Assistant Professor, 2022. (1 of three positions filled)
- Natural Science Department Chair, 2022 (filled).
- Assistant Professor of Chemistry, 2021 (filled).
- Chemistry Visiting Instructor 2021 (filled).
- Assistant Professor of Chemistry, 2021 (failed).
- Foundation Annual Giving Manager. 2021 (filled)
- Educational Partnerships and Outreach Assistant Director, 2021 (filled).

BES Assessment Coordinator – I work to continually improve the Environmental Science assessment processes. I am responsible for writing our annual report and coordinate the collection of both institutional and programmatic assessment data in our program. 2018-current.

Dual Credit Faculty Liason for CHE 101/104 and CHE 201/204 - Coordinate with high school teachers to offer college level chemistry courses for Oregon Tech credit at their schools. In the last few years, I have partnered with 11 different teachers from across Oregon to offer college credit to hundreds of high school students.

Planning Committee for the Natural Science Department Retreat – I helped the department secure a discounted rate for our venue at Siskiyou Field Institute and did the meal planning and some cooking for the event which allowed us to host the retreat at a minimal cost to the university. 2018.

Admissions Recruitment Events – I have represented the Environmental Science Program at numerous Oregon Tech admissions events, including college preview days, Tech Treks, and New Wings. From leading guided walks in the arboretum to rolling beeswax candles, I always try to incorporate an activity for our visitors to make their experience memorable. 2018-current.

Girls Got STEM - residential summer camp for teenage women. Developed curriculum and was a primary instructor for land navigation and outdoor survival courses. 2018.

ABET Accreditation -Natural Science Department representative for CHE 101/104 as a support course in the accreditation process. This included meeting with ABET evaluators and preparing course materials for inspection. 2015 & 2019.
Scholarship Reader – I have long participated as a an evaluator of student scholarship applications. 2015-current.

TEACHING EXPERIENCE

Primary instructor for the following classes offered at Oregon Institute of Technology:

BIO 205 Nutrition. A study of the relationships of food and nutrition to health. An overview of the basic nutrition principles including the nutrients and how they function in the body, nutrient requirements, diet planning and energy balance. Current topics and controversies are examined.

BIO 211 Laboratory. Principles of modern biology emphasizing form and function of multicellular plants, major invertebrate phyla, and general vertebrate morphology and physiology.

BIO 212 Laboratory. Principles of modern biology emphasizing evolution, ecology, population genetics, and behavior of organisms.

BIO 225 Riparian Assessment. Introduced topics such as Greenline assessment protocol, proper functioning condition, repeat photography, macroinvertebrate collections, stream survey, flow/discharge calculations, and field sketches.

CHE 101 Introduction to General Chemistry. A brief presentation of introductory chemical concepts including atomic structure, the chemical equation, the behavior of gases, the chemistry of solution and acid-base chemistry. First term in GOB chemistry series.

CHE 104 Laboratory. Lab accompanying introductory general chemistry.

CHE 102 Introduction to Organic Chemistry. The role of organic chemistry in life and industrial processes is discussed. Second term in GOB chemistry series.

CHE 105 Laboratory. Lab accompanying introductory organic chemistry.

CHE 201/221 Laboratory. Lab accompanying general chemistry I.

CHE 202/222 Laboratory. Lab accompanying general chemistry II.

ENV 108 Mentorship and Team Building. We develop a strong sense of community, trust, inclusion, and belonging within the Environmental Science program among

all students and faculty. We introduce student mentorship opportunities and engage in team building exercises and environmental exploration during a weekend camping trip. Course is required every Fall. Can be taken multiple times for credit. No prerequisites.

ENV 117 Stream Water Chemistry. Chemical analysis of water quality parameters including temperature, turbidity, pH, dissolved oxygen, nitrates, and phosphates.

ENV 307 Water Resources. This course will provide an overview of the science & policy related to managing freshwater resources in the Western United States. Fundamentals of hydrologic processes, riparian assessment, stream surveying techniques, water sampling methods, watershed delineation, adjudication processes, the environmental impacts of water use, and riverine restoration practices will be included

ENV 407 Ecological restoration and monitoring. Co-taught with Dr. Michael Hughes. One week intensive field study assessing the stream restoration work on North Creek and Elder Creek in Lake County, OR.

ENV 226 Environmental Data Analysis I. Introduction to compilation, manipulation, and analysis of datasets common to environmental analysis. Includes measures of central tendency and spread; characterizing data distribution; linear regression; exceedance probability and cumulative frequency functions; understanding time series; and basic principles of graphical data displays.

ENV 355 Careers and Professionalism in Environmental Sciences. Practical seminar focusing on career opportunities in environmental sciences, professional standards, culture, ethics, and skills to enhance communication and collegiality. Assists students with workforce transition, including job search, preparation of resume packages and portfolios, interviewing tips, and job-offer negotiation.

ENV 420 Extern in Environmental Science. Students work in applied settings related to their career interest under the supervision of a professional mentor.

ENV 495 Bee Research. Supports student-initiated research projects in environmental sciences. Topic and scope must be reviewed and accepted by a faculty advisor. Registration by instructor consent. Counts as technical elective credit. May be repeated for up to nine total credits.

ENV 496 Senior Project. Advisor for a student project, *Waste Stream Audit at Oregon Tech*, examining waste disposal trends at Oregon Tech and ways to reduce, reuse, and recycle.

GEOG 105 Physical Geography. Comprehensive introduction to physical geography, including maps and representation of the earth's surface, the climate system and weather phenomena, plate tectonics, landform evolution and interpretation, and human-landscape interactions.

Appendix E. Letters of Support

HIGHER EDUCATION COORDINATING COMMISSION

Proposal for a New Academic Program

Institution: Oregon Institute of Technology

College/School: College of Health, Arts, and Sciences

Department/Program Name: Natural Sciences

Degree and Program Title: MS in Biomedical Sciences

1. Program Description

a. Proposed Classification of Instructional Programs (CIP) number: **26.0102**

b. Brief overview (1-2 paragraphs) of the proposed program, including its disciplinary foundations and connections; program objectives; programmatic focus; degree, certificate, minor, and concentrations offered.

The Natural Sciences department at Oregon Tech seeks to create a Master's of Science in Biomedical Sciences (MS-BMS) degree program to complement the existing Bachelor of Science in Biology-Health Sciences (BS-BHS) undergraduate program, which is tailored to prepare students for entry into professional graduate programs in the health sciences. We envision two tracks: a course-based, non-thesis track, as well as a thesis-based track integrating laboratory research experience. Each track would consist of 45 graduate-level credits; the non-thesis track could be completed in as few as three 15-credit quarters, while the thesis-based track would typically require two years to complete. With minimal additional investments, we can leverage the department's existing faculty and resources to provide valuable additional opportunities for our existing BS-BHS students, as well as for incoming post-baccalaureate students with degrees from other institutions.

Firstly, a 1-year coursework-based master's degree track would allow our department to offer an intensive set of biomedically-oriented courses to incoming post-baccalaureate students from other institutions, as well as to students from other Oregon Tech programs. These students may be looking to return to school after a period of employment or looking for "gap year" preparation for application to professional schools. As noted below, we are already well situated to offer numerous graduate-level courses with our existing faculty and infrastructure in this model.

Secondly, a 2-year thesis-based master's degree track integrating laboratory research experience would significantly expand the opportunities for our existing BS-BHS students (via a "3+2" model), as well as attracting external post-baccalaureate students (via a standalone 2-year program). Though our existing BS-BHS students have an excellent track record in admission to graduate professional health programs of their choice, our department has less history in offering laboratory research experiences to students to prepare them for application to MS or PhD graduate school programs or post-baccalaureate employment in the biomedical sciences.

These two tracks will both benefit from the existing faculty and facilities that already serve our Biology-Health Sciences program, which is tailored to prepare students for entry into careers in the health sciences disciplines and careers. The master's program focus and objectives include (1) promoting a deep and integrated understanding of the biological sciences and their implication to the advancement of health and biomedical science, (2) strengthening critical analysis and reasoning skills and the application of these skills in a manner relevant to the biomedical sciences, (3) generating and effectively communicating scientific knowledge relevant to the biomedical sciences, (4) developing a commitment to life-long learning and career pursuits within the discipline, (5) fostering a commitment to health equity, and (6) demonstrating the ability to competently conduct ethical reasoning in the discipline.

c. Course of study – proposed curriculum, including course numbers, titles, credit hours.

Curriculum

The MS-BMS degree requires the completion of 45 graduate-level (listed at 500+) credits in both the thesis and non-thesis tracks. (To provide some flexibility, up to 12 credits of the 45 will be accepted at the 400 level.) Students must maintain a 3.0 graduate-level GPA with a final grade of "C" or better in all graduate courses.

- The **thesis-based BMS** degree track consists of **21 credits of core classes** (including **10 credits of research/thesis work**) and **24 credits of elective courses**. Thesis-based master's students will typically be occupied with either Teaching Assistantships or Research Assistantships, so the recommended course load is 6-9 credits per quarter for 6 quarters (2 years).
- The **non-thesis BMS** degree track consists of **8 credits of required core classes**, and **37 credits of elective courses**. This course of study could be completed in as few as 3 quarters by enrolling in 15 credits per quarter.

Thesis Option

For students interested in biological research, private sector jobs, and professional schools where research experience is valued. The thesis option requires successful completion of the core classes, thesis research credits, and an approved thesis, as well as elective coursework. Thesis option students are required to defend their research results before a thesis defense committee.

3+2 graduate program

A unique feature of this program is its 3+2 option for Oregon Tech students. This plan allows a student to simultaneously receive a BS and an MS degree in five years. With this plan, students are moved quickly toward expanding their academic and scientific horizons based on the student's abilities and personal motivation. Students in the 3+2 plan are expected to successfully complete the requirements for both the BS and MS degrees by the end of their fifth year in college.

Non-Thesis Option

This option will be attractive to a broad range of career professionals, including science teachers requiring graduate coursework and individuals with positions in which an MS in Biomedical Sciences will qualify them for promotion. It is also attractive to existing Biology-Health Sciences The Biomedical Sciences MS non-thesis option requires completion of the core classes, a capstone, and elective

coursework, and may be completed in a single academic year. The program of study for each student must be approved by a graduate committee and the Program Director.

Thesis Track Core Classes

BIO 501 – Intro to Graduate Study (3 credits)
BIO 534 – Advanced Data Analysis (3 credits)
BIO 509 – Intro to Biomedical Sciences (2 credits)
BIO 510 – Current Issues in Biomedical Sciences (1 credit per term*)

- *students must take BIO 510 in 3 different quarters, for a total of 3 credit hours

BIO 595 – Graduate Research/Thesis (2 credits per term*)

- *students must take BIO 595 in 5 different quarters, for a total of 10 credit hours. Prerequisite: BIO 501.

Non-Thesis Track Core Classes

BIO 509 – Intro to Biomedical Sciences (2 credits)
BIO 510 – Current Issues in Biomedical Sciences (1 credit per term*)

- students must take BIO 510 in 3 different quarters, for a total of 3 credits

BIO 596 – Capstone (3 credits)

Elective Classes

Existing Oregon Tech graduate courses

STAT 505: Biostatistics I (3 credits)
STAT 510: Epidemiology I (3 credits)
WRI 521: Writing at the Grad Level (3 credits)
WRI 510: Grant Proposal Writing (3 credits)
ALH 510: The Science of Evidence-Based Medicine (3 credits)
ALH 515: Scientific Writing and Healthcare Leadership Literature Review (3 credits)
ALH 545: Pertinent Ethical and Legal Considerations for Healthcare Leaders (3 credits)
ALH 565: Population Health Issues for Healthcare Professionals (3 credits)
ALH 585: Financial Considerations and Political Strategies for Healthcare Leaders (3 credits)

Existing Natural Sciences courses

A number of existing Natural Sciences courses will be crosslisted at the graduate level:
BIO 507 - Drug Development (1 credit)
BIO 522 - Intro to Neuroscience (3 credits)
BIO 526 - Evolutionary Biology (3 credits)
BIO 527 – Special topics in neuroscience (1 credit)
BIO 534 – Advanced Data Analysis (3 credits)
BIO 536 - Immunology (4 credits)
BIO 538 - Exercise Physiology (3 credits)
BIO 541 - Genetic Engineering & Therapy (1 credit)
BIO 542 - Cell Biology (4 credits)
BIO 544 - Biological Physics (3 credits)

BIO 545 - Virology (3 credits)
BIO 546 - Pathophysiology I (3 credits)
BIO 547 - Pathophysiology II (3 credits)
BIO 552 - Developmental Biology (3 credits)
BIO 554 - Environmental Health (3 credits)
BIO 561 - Human Cadaver Dissection I-III (1 credit per term; available multiple terms)
BIO 567 - Biomedical Devices (3 credits)
BIO 597 - Biomedical Internship (1-5 credits)
CHE 505 - Nanoscience & Nanotech (4 credits)
CHE 535 - Bioorganic Chemistry (4 credits)
CHE 550 - Biochemistry I (4 credits)
CHE 551 - Biochemistry II (4 credits)
CHE 552 - Biochemistry III (4 credits)
CHE 565 - Fate and Transport of Pollutants (4 credits)

Future additional electives

As the MS-BMS program grows, so too will our capacity to offer exclusively graduate courses in a greater diversity of areas. We expect that the addition of an MS program will also increase enrollment in the BS program, eventually leading to potential for more departmental faculty. In conjunction with this, the introduction of masters-level Teaching Assistants will free up faculty from teaching lower-level laboratory sections and enable them to offer upper-division electives in their specialty.

Graduate Thesis

MS-BMS students in the thesis track would be required to complete an original research project under the supervision of a faculty advisor. This thesis-based track would include a total of at least 5 terms of enrollment in BIO595: Graduate Research/Thesis. Students would develop and submit a research plan in their first term for approval by their adviser and graduate committee. Research will be performed beginning in their first or second term. The completed written thesis would require review and approval by the student's graduate committee and one external reviewer. All MS theses would be made available online through the OIT Library Services. Peer-reviewed publication submission would be highly encouraged and under the discretion and mentorship of the primary graduate adviser.

A thesis-track student's graduate committee would be comprised of the primary adviser, at least one additional Natural Sciences faculty, and an external member from beyond the department. The graduate committee should be determined in the first term of the MS degree. An MS committee agreement will be signed by all members, the student, and university administration. The committee will be responsible for approving the student's proposal, reviewing and approving the final MS thesis, and attending and approving the Public Defense. The committee will also provide technical and academic support during the student's degree to facilitate their success and that of the project.

d. Manner in which the program will be delivered, including program location (if offered outside of the main campus), course scheduling, and the use of technology (for both on-campus and off-campus delivery).

   All classes and courses will be offered on Klamath Falls Campus.

e. Adequacy and quality of faculty delivering the program.

The faculty at Klamath Falls campus teaching in the Natural Sciences have the required credentials and experience to teach the suggested curriculum and lead students in research projects. Below is a brief overview of the primary faculty members who will teach in the program; their CVs are attached.

- Rachel Edwards, PhD in Biomedical Engineering
- Kamal Gandhi, PhD in Microbiology
- Hui-Yun Li, PhD in Neuroscience
- Travis Lund, PhD in Biochemistry
- Ken Usher, PhD in Chemistry
- Jesse Kinder, PhD in Physics
- Yuehai Yang, PhD in Physics
- Nate Bickford, PhD in Environmental Sciences
- Jherime Kellermann, PhD in Wildlife Conservation & Management

In addition, 4 newly-hired faculty members with PhDs and expertise in biology and biologically-oriented chemistry will be joining the Natural Sciences Department in Fall 2023. In addition to their ability to teach graduate-level electives in the proposed MS program in their areas of expertise, several have been provided both the release time and significant startup funding in order to purchase the necessary equipment and work to establish rigorous research projects; this is in addition to the existing research projects led by current faculty (see also section 5c, below). As a result of these factors, our new and existing faculty members are well equipped to provide significant research and course support to MS students in both the non-thesis and thesis tracks.

f. Adequacy of faculty resources – full-time, part-time, adjunct.

The Natural Sciences program currently has 19 full time faculty, 1 part time faculty and a few adjuncts. The full-time faculty will be the primary individuals teaching the curriculum

g. Other staff.

We have an office manager and plans to hire a lab manager in 2023

h. Adequacy of facilities, library, and other resources.

We have facilities and resources that are already being successfully used for the BS programs, and which are more than adequate for the proposed MS program.

i. Anticipated start date.
We anticipate our program will begin in Fall 2024, with recruitment occurring throughout 2024.

2. Relationship to Mission and Goals

a. Manner in which the proposed program supports the institution's mission, signature areas of focus, and strategic priorities.

The Biomedical Sciences MS Program advances the missions of OIT by providing rigorous, high quality applied degree program in sciences, with a focus on the application of theory to practice, and offer statewide educational opportunities to meet emerging needs.

OIT Mission
Oregon Institute of Technology, an Oregon public university, offers innovative and rigorous applied degree programs in the areas of engineering, engineering technologies, health technologies, management, and the arts and sciences. To foster student and graduate success, the university provides an intimate, hands-on learning environment, focusing on application of theory to practice. OIT offers statewide educational opportunities for the emerging needs of Oregonians and provides information and technical expertise to state, national and international constituents.

b. Manner in which the proposed program contributes to institutional and statewide goals for student access and diversity, quality learning, research, knowledge creation and innovation, and economic and cultural support of Oregon and its communities.

The proposed Program located in Klamath Falls will facilitate student experiences in underserved, rural regions of the state.

Many students attracted to this program will be from the local region and/or from OIT's biology/science programs and will serve to help establish services in rural and underserved areas of the state. Many of the thesis projects will be focused on the region and will inherently add information that will help us understand the region. Also, many of the student in the degree will head to medical school and there will be percentage that will return to the area.

In addition to providing a rigorous curriculum, and conducting regular assessment of learning outcomes, the program will admit students who have the necessary characteristics to succeed in this field. In order to ensure that students will have the necessary preparation for success, applicants must meet the program admissions requirements as determined by OIT. The program will have a rigorous curriculum, standards for admissions, accreditation standards, and ongoing program assessments.

Per Oregon Tech policy, to be considered for admission to this graduate program, an applicant must have a baccalaureate degree from a regionally accredited college or university, as well as a scholastic record that evidences the ability to perform satisfactory graduate work. Specifically, a student must have:

- completed a four-year college course of study and hold an acceptable baccalaureate degree from an institution accredited by a regional accrediting association
- been in good academic standing at the last college or university attended
- attained a grade point average of at least 3.0 on a 4.0 scale for the last 90 term (60 semester) units attempted
- attained a grade point average of at least 3.0 on a 4.0 scale for the last 45 term hours in the major
- met the professional, personal, scholastic, and other standards for graduate study

Specific Admission Requirements for 3+2
In the 3+2 thesis-based option, students are simultaneously awarded both the BS and MS degrees in five years, thus shortening the normal time to receive both degrees from six years to five years. They must apply and be admitted into the MS program by the Spring term of their junior year (preferred) or by the start of the Fall term of the senior year and meet the course requirements

listed below. Students applying to the 3+2 plan must have a minimum 3.0 overall GPA and a minimum 3.25 GPA in their science coursework.

The application file for admission to the 3+2 plan must include:

1. A completed MS application form;
2. An Oregon Tech transcript;
3. Two letters of recommendation from faculty;
4. A statement of research interests; and
5. Satisfactory scores in 300 and 400 level classes

c. Manner in which the program meets regional or statewide needs and enhances the state's capacity to:

   i. improve educational attainment in the region and state;
   ii. respond effectively to social, economic, and environmental challenges and opportunities; and
   iii. address civic and cultural demands of citizenship.

This program will be the among the only MS programs in the Pacific Northwest to focus on the biomedical sciences. Its rural setting provides a unique opportunity for Oregon residents interested in pursuing biomedical careers while living and working in a non-urban environment. It will thus be well positioned to address the current and upcoming need for medical professionals in the workforce, drawing from traditional undergraduates as well as nontraditional students interested in pursuing a career in biomedicine. The small size of the program will enable it to respond to shifting socioeconomic challenges and opportunities as needed, while the curriculum will be tailored to produce well-rounded medical professionals able to address civic and cultural issues.

3. Accreditation

a. Accrediting body or professional society that has established standards in the area in which the program lies, if applicable.

   N/A

b. Ability of the program to meet professional accreditation standards. If the program does not or cannot meet those standards, the proposal should identify the area(s) in which it is deficient and indicate steps needed to qualify the program for accreditation and date by which it would be expected to be fully accredited.

   N/A

c. If the proposed program is a graduate program in which the institution offers an undergraduate program, proposal should identify whether or not the undergraduate program is accredited and, if not, what would be required to qualify it for accreditation.

   The BS program is accredited.

d. If accreditation is a goal, the proposal should identify steps being taken to achieve accreditation. If the program is not seeking accreditation, the proposal should indicate why it is not.
   NA

4. Need

a. Anticipated approximate fall term headcount and enrollment over each of the next five years are included in the table below. Separate estimates are provided for the 1-year non-thesis track ("NTT") and the 2-year thesis track ("TT") MS students, with a final section tallying the overall MS student enrollment and graduate counts.

	1st Year (AY '24-25)	2nd Year (AY '25-26)	3rd Year (AY '26-'27)	4th Year (AY '27-28)	5th Year (AY '28-29)	5-year cumulative total
New incoming NTT students	5 new NTT	5 new NTT	5 new NTT	5 new NTT	5 new NTT	
Total enrolled NTT students	5 NTT enrolled	5 NTT enrolled	5 NTT enrolled	5 NTT enrolled	5 NTT enrolled	
Graduating NTT students	5 NTT graduates	5 NTT graduates	5 NTT graduates	5 NTT graduates	5 NTT graduates	25 total NTT graduates
New incoming TT students	5 new TT	10 new TT	10 new TT	10 new TT	10 new TT	
Total enrolled TT students	5 TT enrolled	15 TT enrolled	20 TT enrolled	20 TT enrolled	20 TT enrolled	
Graduating TT students	0 TT graduates	5 TT graduates	10 TT graduates	10 TT graduates	10 TT graduates	35 total TT graduates
Total enrolled (NTT+TT) MS students	10 MS enrolled	20 MS enrolled	25 MS enrolled	25 MS enrolled	25 MS enrolled	
Total graduating (NTT+TT) MS students	5 MS graduates	10 MS graduates	15 MS graduates	15 MS graduates	15 MS graduates	60 total MS graduates

b. Expected degrees/certificates produced over the next five years.

35 non thesis MS degree in Biomedical Sciences

20 thesis MS degree in Biomedical Sciences

c. Characteristics of students to be served (resident/nonresident/international; traditional/ nontraditional; full-time/part-time, etc.).

The program design allows for students to be served from any of the listed characteristics.

d. Evidence of market demand.

Although master's degrees in biology abound, particularly at PhD-granting institutions, there are very few master's degrees with a biomedical science focus in the Pacific Northwest. In Oregon, OHSU offers a two-year non-master's Graduate Program in Biomedical Sciences (PBMS). In addition, OSU offers thesis and non-thesis options of a master's degree in Comparative Health Services (Biomedical Sciences option) via their College of Veterinary Medicine. Our one-year course-based non-thesis MS track will provide an opportunity not currently available in Oregon, enabling students to enhance their foundational biomedical science knowledge base before beginning professional programs. Programs such as these are proliferating rapidly in recent years, and surveys of our recent graduates demonstrate significant interest in both thesis and non-thesis MS degrees offered at our rural setting. (Survey results attached.) Notably, the average growth in the medical fields supported by this program is 15% (much faster than the average growth of 6%). (BLS.gov). There is an obvious need for individuals in the various fields supported by our proposed program.

e. If the program's location is shared with another similar Oregon public university program, the proposal should provide externally validated evidence of need (e.g., surveys, focus groups, documented requests, occupational/employment statistics and forecasts).

NA

f. Estimate the prospects for success of program graduates (employment or graduate school) and consideration of licensure, if appropriate. What are the expected career paths for students in this program?

A likely career path for many of our graduates is to pursue professional or graduate school. We anticipate many students will use our program to enhance their preparedness for medical, osteopathic, dental, pharmaceutical, and related professional programs. The non-thesis option will be attractive to a broad range of career professionals, including science teachers requiring graduate coursework and individuals with positions in health care or biotechnology in which an MS in Biomedical Sciences will qualify them for promotion. Students on the thesis track will also be prepared to enter the workforce in hands-on roles in the fields of biotechnology, pharmacy, research or clinical laboratories, and related fields. The proposed MS program will build on the success of our undergraduate Biology-Health Sciences program; approximately 100% of our graduates from this program are either employed or seeking an advanced degree within six months of graduation. Our graduates who decide to apply to graduate programs are accepted at very high rates, and our alumni in graduate school often report that they are better prepared than their peers from other universities, and they often become leaders within their graduate programs and are highly successful in their professional careers. We anticipate the BMS-MS numbers to continue this trend. If we continue to do well our student will also do well.

5. Outcomes and Quality Assessment

a. Expected learning outcomes of the program.

1. Promote a deep and integrated understanding of the biological sciences and their implication to the advancement of health and biomedical science.
2. Strengthen critical analysis and reasoning skills and the application of these skills to the design and execution of scientific inquiry relevant to specific biomedical disciplines.

3. Generate and effectively communicate scientific knowledge relevant to specific biomedical disciplines.
4. Develop a commitment to life-long learning and career pursuits within health and biomedical science disciplines.
5. Foster a commitment to health equity.
6. Students will demonstrate ability to evaluate pertinent values to ethical dilemmas using multiple ethical frameworks.

b. Methods by which the learning outcomes will be assessed and used to improve curriculum and instruction.

Typical programmatic assessment will be performed, including tracking of post-graduation student success, surveys of current and former students, assessment by industry experts, analysis of retention patterns, and related efforts.

c. Nature and level of research and/or scholarly work expected of program faculty; indicators of success in those areas.

Beyond the existing high expectation for scholarship that our department has long operated under, we have recently been gradually increasing our expectations for faculty surrounding our scholarly expectations and scientific research efforts. In support of this, new and existing faculty are being provided significant resources in their efforts to engage student in productive research projects. This support is being provided financially, for the purchase of supplies and equipment; significant support has also been provided logistically, in the form of assignment of new research spaces, provision of teaching release time in exchange for mentoring student researchers, and related efforts. In addition, several new tenure-track faculty with expertise in biology and biology-oriented chemistry are joining our department in the Fall of 2023, and they have been provided significant startup funding and release time in order to purchase the necessary equipment and supplies to establish rigorous research projects, in addition to those research projects led by existing faculty. These projects are already published and presented at both regional and national levels in their respective fields, and we only anticipate an increase in this research output and prominence as a result of the efforts described above. In all, the increased expectation for scholarship among our departmental faculty, as well as the availability of new thesis-based graduate students to dedicate significant time over many months/years to ongoing research projects, will lead to a synergistic enhancement of research efforts in our department.

6. Program Integration and Collaboration

a. Closely related programs in this or other Oregon colleges and universities.

Although master's degrees in biology abound, particularly at PhD-granting institutions, there are very few master's degrees with a biomedical science focus in the Pacific Northwest. In Oregon, OHSU offers a two-year non-master's Graduate Program in Biomedical Sciences (PBMS). In addition, OSU offers thesis and non-thesis options of a master's degree in Comparative Health Services (Biomedical Sciences option) via their College of Veterinary Medicine.

b. Ways in which the program complements other similar programs in other Oregon institutions and other related programs at this institution. Proposal should identify the potential for collaboration.

The Biomedical Sciences MS program is designed to build on, while also augmenting and improving, the existing Biology-Health Sciences BS program, including its faculty, upper division electives, and facilities (such as the cadaver and research labs). The proposed program will exist in two forms: a research-based thesis track, and a course-based non-thesis track. Each will provide opportunities for existing Oregon Tech undergraduates as well as for new post-baccalaureate applicants. The addition of MS-level research opportunities will benefit from the participation of talented undergraduate research students. In addition, the one-year course-based non-thesis track will provide an opportunity not currently available in Oregon, enabling students to enhance their foundational biomedical science knowledge base before beginning professional programs, science teachers requiring graduate coursework and individuals with positions in which an MS in Biomedical Sciences will qualify them for promotion.

Our faculty are actively engaged in research with undergraduates and with addition of graduate student who will facilitate this research, it will create system where the whole is greater than the parts. This means more can be achieved together.

c. If applicable, proposal should state why this program may not be collaborating with existing similar programs.
NA

d. Potential impacts on other programs.
There is no on campus competition for this type of student and we do not expect any negative impacts.

7. External Review

If the proposed program is a graduate level program, follow the guidelines provided in *External Review of New Graduate Level Academic Programs* in addition to completing all of the above information.

The provost and Natural Sciences will invite respected panel of colleagues to review the graduate program.

HECC Document
The external review process for a proposed new graduate level degree program may include a site visit by a panel composed of three highly qualified individuals in the specific field/discipline of the proposed program. Although scholars and professionals from Oregon may be included, the majority of the panel members must be selected from peer institutions outside the state.

Institutions may consider virtual or hybrid reviews in place of on-site reviews under the following guidelines:
(1) If the proposed program is an online program;
(2) If the proposed program has minimal special facilities associated with it;
(3) If the proposed program has the need for an expedited timeline for needed approval; or
(**4) If the proposed program is closely related to an existing program (i.e., not a completely new area for the proposing institution).**

1 At the request of an institution and by agreement with the Statewide Provosts Council, the review requirement may be modified or waived if the proposed degree program is closely related to an institution's authorized existing program; for example, adding a Master of Engineering in Civil Engineering where the Master of Science in Civil Engineering is already in place.
2
Site Visit
Invitations to serve on the external review panel and to act as chair are extended by the institution. The institution will provide panel members with (1) the full written program proposal, (2) participating faculty vitae, (3) the projected budget, (4) other supporting or contextual materials, as needed, and (5) a site visit schedule and itinerary (if applicable), including all arrangements.

Report and Institution's Response
On the basis of its visit, review of materials, and panel members' expertise, the panel will make a written report for which guidelines are provided. The external review report and any institutional responses will be included in the program proposal submitted for Statewide

Provosts Council consideration.
External Review Panel Responsibility
The panel is responsible for preparing the final report in a timely manner. The report will be based primarily on the full panel's evaluation of the written program proposal and the information gathered during the site visit, and will address areas set forth in these guidelines. Once completed, the chair will send the report to the institution provost or graduate dean; a copy will be provided to the academic unit that developed the program proposal.

Report Guidelines
The panel is asked to assess the program within the present and projected future contexts, addressing program elements, faculty, need, and resources.
1. Program
a. The program objectives and requirements; the mechanisms for program administration and assessment.

b. The program's alignment with the institution's mission and strategic objectives.

c. The depth and breadth of coverage in terms of faculty availability and expertise, regular course offerings and directed study, and access to and use of support resources within and external to the institution.

d. The relationship of this program to undergraduate and other graduate programs at the institution and other institutions in the state, if appropriate. Consider collaborative arrangements, partnerships, interdisciplinary programs, service functions, joint research projects, support programs, etc.

e. The justification in terms of state needs, demand, access, and cost effectiveness (if this program represents duplication within the state).

f. The probable impact of the program on the department or academic unit, as well as its effect on current programs.

g. The program's major strengths and weaknesses.

2. Faculty

a. The quality of the faculty in terms of training, experience, research, scholarly contributions, ability to generate external support, stature in the field, and qualifications to serve as graduate faculty.

b. The faculty in terms of size, qualifications for area(s) of specialization offered, and the student body served. Include analysis of program sustainability in light of such factors as upcoming retirements, etc.

c. Areas of faculty strength and weakness.

d. Faculty workload, including availability for student advising, research oversight, mentoring, and teaching effectiveness.

e. The credentials, involvement of, and reliance upon support faculty from other departments within the institutions, from other institutions, and/or adjunct faculty.

3. Need

a. The evidence of sufficient demand and/or relevant employment opportunities for graduates of this program.

b. The overall need for the program within the institution, state and/or region, and nation.

4. Resources

a. The adequacy of library, computer, laboratory, and other research facilities and equipment; offices; classrooms; support services for the program; and, if relevant, the program's utilization of resources outside the institution (e.g., field sites, laboratories, museums, libraries, and cooperative arrangements with other institutions).

b. The proposed budget and any need for new resources to operate the program effectively. Where appropriate, review resources available to support graduate students (e.g., fellowships and other scholarships, teaching and research assistantships).

c. In terms of national standards, the institution's commitment to the program as demonstrated by the number of faculty relative to workload and student numbers, support for faculty by nonacademic personnel (e.g., support, staff, technicians), financial support for students, and funds for faculty research and professional activities (e.g., conferences, visiting lectures).

d. Institution leaders' commitment to this program in the long term.

e. The institution's ability to sustain the program in the foreseeable future along with its current and future projected commitments.

Oregon TECH
Oregon Institute of Technology

OFFICE OF THE PROVOST

AQ&SS Committee May 30, 2023

1. Discussion Items *Chair Brown*

5.1 Accreditation Visits – Outcomes *Provost Mott*

A. Doctor of Physical Therapy Program - Commission on Accreditation in Physical Therapy Education (CAPTE)

Oral hearing to subgroup of commissioners April 17, 2023

CAPTE Decision: Grant 'candidate for accreditation'

Candidate for Accreditation is an accreditation status of affiliation with CAPTE that indicates the program may matriculate students in technical/professional courses. The decision was made in light of the following information: limited to one cohort of students per year, maximum number of students for each cohort 24, matriculation date June 2023, until eligible to seek approval of substantive changes.

Next activity: Progress Report due September 1, 2023. First annual report due December 1, 2023.

Next step in accreditation process: Program will apply for 'Initial Accreditation'. Program can seek accreditation for up to five years after first cohort of students completes the program in three years. During that time there will be annual reports updating CAPTE on the progress of the program toward full accreditation status.

Outcome for OT: Students can now be enrolled to start summer 2023

Consultant retained – ongoing work will continue with CAPTE – progress report requires details on issues such as training of faculty and curricular objectives and outcomes.

B. **Institutional Accreditation** – Northwest Commission on Colleges and Universities (NWCCU)

Site visit April 24-26, 2023

Draft report developed by site reviewers. Sent to the President for fact check.

Reviewers submit final report to NWCCU for consideration at June Commission meeting. President and ALO to appear at meeting.

Final report with decision disseminated from Commissioners within 30 days of meeting. University will submit a written response to NWCCU.

Four commendations and four recommendations from the review team.