SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCES SELF-STUDY REPORT FOR ACADEMIC PROGRAM REVIEW

December 11, 2019

Table of Contents

List of Tables 2
A. REQUIRED BACKGROUND INFORMATION FOR REVIEW COMMITTEE 3
Section I: Overview of Organization 3
Mission & Organizational Structure 3
Budget & Resources 6
Academic Unit Diversity 8
Section II: Teaching & Learning 11
Student Learning Goals and Outcomes 11
Instructional Effectiveness 14
Teaching and Mentoring Outside the Classroom 16
Section III: Scholarly Impact 17
Section IV: Future Directions 24
B. UNIT-DEFINED QUESTIONS 26
C. APPENDICES 29
Appendix A: Organizational Charts 29
Appendix B: Budget Summary 31
Appendix C: Information about Faculty 33
Appendix D: Diversity Plan 34
Appendix E: SEFS Bylaws 36
Appendix F: SEFS promotion and tenure guidelines 45
Appendix G: SEFS committees (Current as of Autumn 2019) 51
Appendix H. UW Seattle Assessment Chart (program educational objectives and student outcomes) 52

List of Tables

Table 1. Number of Enrolled Students and Degrees granted by Program and Academic Year 4
Table 2. Number of Enrolled Students by Race/Ethnicity and Academic Year 8
Table 3. SEFS Exit Survey Summary 13
Table 4. OEA Alumni Survey Response Ratings on Satisfaction 13
Table 5. Placement data from last five years of SEFS Exit Survey 21
Table 6. Placement data from OEA Exit Survey, last three years 21

A. REQUIRED BACKGROUND INFORMATION FOR REVIEW COMMITTEE

Section I: Overview of Organization

Mission & Organizational Structure

- **Describe the overall mission of the unit**

The programs at Environmental and Forest Sciences address the increasingly integrative and interdisciplinary challenges in environmental and natural resources management throughout the world and the need to educate professionals and scientists to meet these challenges. Our focus is on understanding the dynamics of terrestrial ecosystems and the multiple services that they provide across diverse communities of people, the role of human actions at multiple scales in altering those ecosystems, and the implementation of interventions that meet multiple and often conflicting societal goals.

The following mission statement was adopted in 2012:

> *The School of Environmental and Forest Sciences (SEFS) is dedicated to generating and disseminating knowledge for the stewardship of natural and managed environments and the sustainable use of their products and services through teaching, research and outreach. Our vision is to provide world-class, internationally-recognized knowledge and leadership for environmental and natural resource issues.*

In our most recent discussion of this statement, the faculty judged it a reasonable but uninspiring reflection of our mission. The faculty expressed a desire for a more forward-looking statement that recognizes the significant social and environmental challenges confronting terrestrial ecosystems and the human communities that rely on them, and the need for potentially transformative changes to address these challenges.

In addition to our undergraduate and graduate degree offerings, and service courses that take environmental literacy to a broader audience of UW students, we pursue this mission through both basic and applied research that often engages with multiple communities of practice, including through interactions with city, state, federal, and tribal governments, non-governmental organizations, and foreign and international entities. SEFS operates several research centers and cooperatives, including the Center for Sustainable Forestry at Pack Forest, the Olympic Natural Resources Center, the UW Botanic Gardens, the Center for International Trade in Forest Products, the Pacific NW Cooperative Ecosystem Studies Unit, and the Stand Management and Precision Forestry Cooperatives.

- **List of degrees offered, certificates, and enrollment/graduation trends**

Bachelor of Science with a major in Environmental Science and Terrestrial Resource Management
Transcripted Options in: Sustainable Forest Management; Restoration Ecology and Environmental Horticulture; Natural Resource and Environmental Management; and Wildlife Conservation

Minor in Environmental Science and Terrestrial Resource Management

Minor in Ecological Restoration

*Students can also minor in Quantitative Sciences, offered jointly by SEFS and the School of Aquatic and Fisheries Sciences

Bachelor of Science with a major in Bioresource Science and Engineering
Transcripted Option in: Business

Master of Environmental Horticulture
Master of Forest Resources in Forest Management
Master of Science
Doctor of Philosophy

Detailed information on enrollment and graduation patterns for each degree program is provided in **Table 1**.

Table 1. Number of Enrolled Students and Degrees granted by Program and Academic Year

Academic Year	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20
BSE Enroll	64	58	61	77	80	61	60	50	68	63	51
BSE BS Granted	6	13	18	10	27	21	15	14	17	14	
ESRM Enroll	198	218	266	265	282	324	351	351	349	335	343
ESRM BS Granted	55	46	71	73	72	81	82	97	106	114	
MEH Enroll	8	10	14	16	22	27	21	16	23	15	7
MEH Granted	1	4	4	4	8	13	10	4	9	8	
MFR Enroll	2	2	2	6	11	3	5	5	3	4	2
MFR Granted	1	1	0	0	3	4	8	8	1	4	
MS Enrolled	74	90	81	71	58	53	51	52	48	35	33
MS Granted	27	32	37	32	24	22	20	16	22	17	
PhD Enrolled	71	81	70	69	62	62	56	55	61	60	62
PhD Granted	9	12	14	17	9	9	8	6	8	11	
Total Enrolled	**417**	**459**	**494**	**504**	**515**	**530**	**544**	**529**	**552**	**512**	**498**
Total Granted	**99**	**108**	**144**	**136**	**143**	**150**	**143**	**143**	**163**	**168**	

- **Describe how the unit supports academic services.** Please refer to the organizational charts provided in **Appendix A.**

SEFS employs three full-time professional staff members in its Office of Student and Academic Services (SAS): a Director, a graduate adviser, and an undergraduate adviser. These staff members assist prospective students with admissions and transfer processes, and current students in planning their program of study, orientation, registration, degree progress, and graduation. They also manage graduate appointments in compliance with the UAW union contract, manage the SEFS scholarship and fellowship process (including distribution), issue student travel and student club awards, and coordinate curriculum management activities (time schedule, field trip support, classroom scheduling, course and curricular program approval). To support these processes and various events, including the SEFS Graduation Celebration, a budget of approximately $40,000 is allocated to the office for food, room rentals, student travel, student clubs, undergraduate capstone

research awards, and other expenses throughout the year. A faculty member who is appointed as the Associate Director for Academic Programs supervises the office.

In addition to the undergraduate advising staff, each undergraduate major (ESRM and BSE) has a faculty coordinator who approves course substitution petitions and provides limited advising. Undergraduate students who choose one of four transcripted options also have a faculty lead who provides supplementary advising.

In our graduate programs, each student is assigned a faculty adviser when they are admitted, who often becomes their Supervisory Committee chair once the student has formed their committee. Administration of SEFS policies and procedures for graduate students is overseen by the faculty member serving as Graduate Program Coordinator, with the assistance of the graduate adviser. The SAS office works closely with the College of the Environment's Student and Academic Services Office and the Associate Dean, especially on approval processes for degree extensions and reinstatements. The College directly handles student conduct cases.

- **IT support staff and budget**

SEFS employs three full-time staff members to support IT needs, including one Sr. Computer Specialist (professional staff), one Computer Services Consultant, and one Computer Support Technician (two classified staff). The IT staff have an annual budget of $68, 648.

- **Finance, HR/Payroll, Grants, and Communications staff and budgets**

SEFS has a group of teams that work together to provide administrative support for our faculty, staff, students, and volunteers. On campus, our Director's office has several administrative staff to support our academic programs, centers, and employees. The SEFS finance team employs three full-time Fiscal Specialists to support the financial needs in SEFS such as purchasing, reimbursements, and travel. The SEFS HR/Payroll team employs two full-time staff (a HR Manager [professional staff], a Fiscal Specialist 2 [classified staff]) and two part-time employees (an Admin Assistant 3 [classified staff] and a Fiscal Specialist 2 [classified staff]) to support the human resources and payroll needs for approximately 500 employees in SEFS. The SEFS Research Grants and Contracts team employs three full-time staff (a Manager of Program Operations [professional staff], a Grants and Contracts Manager [professional staff], and a Budget/Fiscal Analyst Lead [classified staff]) to support the proposals for and post-award management of grants and contracts in SEFS. In addition to the administrative staff in the Director's office, each site location has one to two administrative staff to support the immediate fiscal needs of the employees stationed at these centers. All of these staff at the site locations work closely with the Administrator and the administrative staff in the Director's Office to create a smooth and seamless experience for our employees, vendors, and central offices. The SEFS Communications staff consists of one full-time employee and one part-time employee (a Public Information Specialist [professional staff] and a Program Coordinator [classified staff]).

- **Describe the manner in which shared governance works** in the unit, along with how the unit solicits the advice of stakeholders such as students, advisory boards and faculty from other academic units.

SEFS is structured as a single-faculty unit within the College of the Environment, led by a faculty Director and two faculty Associate Directors, operating under a set of bylaws (**Appendix E**). The faculty functions as a department under the policies and rules of the UW as set forth in the Faculty Code. The faculty recommends standards of academic programs and administers curricula; governs student recruitment, advising, grading, and graduation; conducts faculty searches and votes on recommendations for recruitment of faculty; recommends on promotion, merit, and tenure; recommends policies for faculty teaching and workload assignments; participates in program development; and recommends on policies related to development and allocation of facilities. The Elected Faculty Advisory Committee (EFAC) deliberates and recommends policies and actions to the faculty and director.

Standing committees (some elected and some appointed) report to either the Director or the faculty. Ad hoc committees and advisory councils are also established when appropriate. Where appropriate, committee representation includes faculty, students, and staff. Committees include: Elected Faculty Advisory Council; Curriculum; Diversity, Equity and Inclusion; Research; and Scholarship and Financial Aid. Faculty members share responsibility for representing the School at the College's Elected Faculty Council, Diversity Committee, and Curriculum Committee, among others. Faculty also serve on the Faculty Senate and Graduate School Council.

Several avenues exist for public, non-profit, and private stakeholders to provide input on SEFS programs. Advisory committees exist for the UW Botanic Gardens, Olympic Natural Resources Center, Precision Forestry Cooperative, Washington Pulp and Paper Foundation, and Stand Management Cooperative. Additionally, we have formal partnerships with stakeholder agencies through the Cooperative Ecosystems Studies Unit (CESU), Washington Cooperative Fish and Wildlife Research Unit (WACFWRU), USGS and USFS staff cooperative agreements, Washington Park Arboretum with the City of Seattle Parks and Recreation Department, and formal relationships with The Nature Conservancy and the Natural Capital Project.

Students provide input to SEFS through several channels, including a recently formed elected Graduate Student Council, open office hours with the Director, service on committees, faculty and staff advising channels, and a student graduation exit survey.

Budget & Resources

- **Provide an outline of the unit's budget including all sources of funding.** Please refer to the budget summary provided in Appendix B.

- **Indicate how the unit evaluates whether it is making the best use of its current funding, human capital and other resources**

The Director consults with the Dean's office, the School Administrator, faculty, and staff to assess human and fiscal resource use and ensure that use meets the unit's intent with respect to strategic goals and mission. Annual budget meetings between College and School leadership addresses budget allocations and issues.

With the on-boarding of a new director and administrator in 2018, a number of budget and administrative process issues have been reviewed and changed. We have reviewed and changed the allocation of funds distributed from SEFS endowed faculty fellowships, professorships, and chairs to standardize the discretionary funds available for faculty at each level and allocate the remainder to faculty salary. We have refined the policies and processes involving approval of research proposals with less than the federally negotiated indirect cost rates, such that proposals either need to cover estimated overall rates of administrative cost to the unit (10%), through direct administrative expenditures or faculty salary offsets, or advance a key strategic goal of providing more funding to graduate students. We have revised our TA allocation process to specify criteria under which courses receive TA support, and have allocated hourly student support in cases where full TA support is not merited by the pedagogical needs of the course.

Our buildings are aging and we have experienced a number of challenges related to deferred maintenance and other costs that present significant challenges. While the college and university pursue state funding for renovation of Anderson Hall, Bloedel Hall has also experienced significant challenges with the HVAC and plumbing systems that have required unit funds to address. We are fortunate to have endowment funds to support programmatic needs that we have recently invested in improving the overall appearance and functionality of the facilities (e.g. conference rooms with telecommunications functionality), and will be able to take on some of the issues related to deferred maintenance. Higher cost items remain a challenge.

- **Describe any advancement plans as well as strategies to pursue additional funds through grants or contracts.**

The director works with the College of the Environment advancement staff to develop advancement priorities and cultivate and steward donors in advance of these priorities. One member from the private donors team and the corporate and foundation lead of the College are assigned to work with our unit to cultivate prospects and steward gifts.

We are in the early phases of scoping two large capital projects: a building to support the education programs at the Washington Park Arboretum, for which a pre-design phase is complete, and a renovation of Anderson Hall, for which a pre-design had been completed in 2012 but funds were never secured. We have identified a number of other priorities for support, including specific ideas for student funding, faculty support, research initiatives, and public outreach. These projects all involve donor cultivation, asks, and stewardship, with key support coming from the College of the Environment staff.

We are fortunate to have a source of funds to support research through the McIntire-Stennis Cooperative Forestry Research Program, a federal program administered by the USDA National Institute for Food and Agriculture (NIFA) and allocated to state agricultural experiment stations and forestry schools based on a formula related to forest land and industry. We have revised the process of allocating those funds to a competitive program that among other criteria, aims at supporting seed projects that can lead to bigger funding for collaborative efforts. Additionally, we are considering an alternative project structure that aims at using those funds for development of multi-investigator initiatives, which can be proposed as part of the competition. We implemented one such initiative on land-based carbon management in 2018. We are using the ideas generated in those discussions, and similar interdisciplinary discussions, both as an opportunity to stimulate ideas for future research proposals, and for pursuing donor-based funds.

Academic Unit Diversity

- **Describe the academic unit's diversity plan**

In Spring 2019, the SEFS faculty adopted a statement on our commitment to diversity, equity, and inclusion, and to taking specific steps to improve on each of these (**Appendix D**). SEFS is actively developing processes that promote diversity, equity, and inclusion with regard to student and faculty recruitment and retention, mentoring, and awards. We seek to encompass inclusiveness and diversity in our review of curricula as well. In doing so, SEFS interacts with Diversity Planning efforts in the College of the Environment and SEFS representatives participate in the Diversity Committees of the College and the Graduate School, both of which meet regularly throughout the year. Through these efforts, we have attracted and retained a diverse group of students, represented in **Table 2**.

Table 2. Number of Enrolled Students by Race/Ethnicity and Academic Year

Academic Year	**09/10**	**10/11**	**11/12**	**12/13**	**13/14**	**14/15**	**15/16**	**16/17**	**17/18**	**18/19**	**19/20**
African Amer	9	6	6	5	6	7	6	8	8	10	6
Asian Amer	46	54	72	74	80	73	70	74	75	72	60
Caucasian	310	315	338	333	333	343	349	334	350	299	302
Hawiian/Pac Isl	3	4	6	6	6	3	2				
Hispanic	16	16	25	36	29	27	39	44	33	36	39
Native Amer	11	16	14	15	20	18	13	5	6	6	5
Unknown	29	23	19	18	13	10	8	9	8	5	4
Two or More			4	20	29	38	40	38	38	43	45
International	30	36	48	57	62	74	83	63	57	54	50
Total	**446**	**470**	**532**	**564**	**578**	**582**	**602**	**575**	**574**	**525**	**511**
% Minority*	**19.1%**	**20.4%**	**23.9%**	**27.7%**	**29.4%**	**28.5%**	**28.2%**	**29.4%**	**27.9%**	**31.8%**	**30.3%**

**Includes African American, Asian American, Pacific Islander, Hispanic American, Native American and Two or More*

Note: Asian Americans are included in these data since they are considered underrepresented in Forestry and Natural Resources

In past years, SEFS developed a diversity plan as a part of the request for the Graduate Opportunity Program (GOP) RA proposal process from GO-MAP. In the 2018-2019 cycle, we partnered with the College on this process, so a plan that was specific to the GOP RA program was not developed. We anticipate developing and implementing an independent plan for the 2019-2020 cycle.

We promote and support attendance at diversity trainings offered at UW, most recently the UndocuAlly training, Green Dot trainings, SafeCampus training, and Race and Equity initiative seminars and trainings. To further promote diversity, equity, and inclusion efforts, selected examples of available events and trainings are listed below:

- January 2018: SEFS led a College-wide Conversation on Diversity on Food Insecurity
- March 2018: Conversation on Diversity on Mental Health
- May and June 2018: SEFS Diversity Committee held 'listening labs' for confidential input from any faculty, staff or student which was used to help develop further programming around harassment and microaggressions.

- November 2018: SEFS hosted a Diversity Seminar with Sarah Gergel, Associate Dean, Diversity, and Inclusion, Faculty of Forestry, University of British Columbia.
- December 2018: Professor Sharona Gordon presented during a regular faculty meeting about Gender and Sexual Harassment in the sciences from the NASEM report findings, and resources for faculty to change the culture using her "Below the Waterline" resource.
- March 2019: SEFS hosted a mandatory faculty training on Identifying and Addressing Microaggressions.
- April 2019: Dorceta Taylor, the James E. Crowfoot Collegiate Chair and the Director of Diversity, Equality and Inclusion from the University of Michigan's School for the Environment and Sustainability lectured on "Diversity in Environmental Organizations: Lack of Transparency and Inequities in Compensation." She also met with the SEFS Diversity Committee to discuss recruitment and retention of more diverse students, and other student, staff and faculty groups in SEFS and the College.
- September 2019: Mandatory training for graduate students and Postdocs, titled Empowering Prevention and Inclusive Communities (EPIC). The same training is scheduled for faculty and staff during the current academic year.
- November 2019: Required 90-minute session on implicit bias for faculty.

- **Provide an overview of representation on the unit's diversity committee.**

The SEFS Diversity Committee has two faculty co-chairs, with members from the faculty and staff that are appointed by the Director, along with undergraduate and graduate student representatives (Appendix G). The graduate student representative is selected through a process administered by the SEFS Graduate Student Council, an elected leadership group for graduate students. The undergraduate representative is voted upon by the undergraduates. All members are voting members, and meetings are often held as 'open' meetings to facilitate interest and facilitate transparency. For 2019-2020 Professor Stanley Asah is appointed by Director Brown as a Special Advisor for Diversity and Inclusion, and is tasked with developing and/or providing input to specific plans and policies related to diversity and inclusion.

- **Describe the diversity of the unit's faculty and staff.**

Neither the UW nor SEFS tracks these data, so we are not able to describe numerically. Our faculty includes several representatives from URM groups and has increased its representation of females over the past decade. Our staff also includes a number of URMs. We are unable to compare our composition on these dimensions with other units within or outside UW.

- **Describe how the unit utilizes institutional resources or partners with organizations such as the Office of Minority Affairs and Diversity (OMA&D) or the Graduate Opportunities and Minority Achievement Program (GO-MAP) to recruit and retain traditionally underrepresented minority undergraduate and graduate students.**

SEFS partners closely with OMA&D and GO-MAP for recruitment and retention of traditionally underrepresented students. In addition, the advising staff regularly attends diversity recruitment events and meetings, utilizes the lists and reports of prospective students, and works closely with the OMA&D and GO-MAP advisers if retention issues arise. We recently recruited a tribal member student with support from GO-MAP's Presidential Fellowship program and a Ronald McNair Fellowship student. We also work closely with the UW Veterans Center to support our students who are returning from service and using the GI Bill.

- **Describe outreach strategies the unit employs with underrepresented students of color, women, students with disabilities, and LGBTQ students to diversify its student body.**

Examples of specific outreach efforts in which SEFS engages that reach diverse populations include:

- Mount Rainier Institute – a summer program run by our Pack Forest facility, brings students from middle and high schools in underserved communities each year to experience outdoor education.
- Yakama Nation Collaboration – Each fall we run a course that includes a weekend trip to the Yakama Nation, east of the Cascades, to interact with tribal natural resource professionals and learn about their practices. A fellowship is available specifically for members of the Yakama Nation.
- The Olympic Natural Resources Center (ONRC) engages actively with all residents of the Olympic Peninsula on issues of collaboration, research, and education on natural resources management. ONRC leadership has developed a strategy for engaging with the 11 tribes.

- **Describe initiatives the unit has employed to create an environment that supports the academic success of underrepresented students of color, women, students with disabilities, and LGBTQ students.**

Our initiatives have focused on events and trainings (see previous section) targeted to create an inclusive and equitable environment, as well as preventing microaggressions and harassment in the workplace. Also, our new Diversity Statement (**Appendix D**) reinforces and sets goals for SEFS as an inclusive and welcoming community for all students. As we develop policies and procedures (e.g., allocation of endowed faculty appointments, faculty hiring procedures, faculty promotion, merit, and tenure guidelines) we are explicitly attentive to both mentorship more broadly and to issues of fairness and equity specifically.

- **Describe how the unit utilizes institutional resources such as the Office of the Associate Vice Provost for Faculty Advancement to recruit and retain faculty from underrepresented identities.**

Some of our most recent efforts include**:**

- Associate Vice Provost Chad Allan worked with the SEFS faculty (primarily EFAC and Diversity committee) to discuss developing hiring procedures that make use of best practices in hiring for diversity.
- While we have had two years in a row with no faculty hiring, we are actively working on both priorities for future hiring and regularizing our hiring practices.
- Charge to Special Adviser for Diversity and Inclusion and EFAC this year includes developing unit hiring guidelines that incorporate best practices as compiled by the Assistant Vice Provost.

- Attendance at ADVANCE seminars is encouraged for unit leadership and emerging leaders. Director Brown sits on the leadership team for the UW ADVANCE program.

- **Describe strategies the unit employs to support the career success of faculty members from underrepresented identities, and where applicable, female faculty, and the extent to which the unit has been successful in diversifying its faculty ranks.**

  - We have been more successful in diversifying faculty on gender lines than in other dimensions. Faculty composition is an important element of the support faculty members feel they have for their career success.
  - During the 2018-19 academic year, the Promotion, Merit, and Tenure Committee developed new written guidelines for promotion and tenure, including references to resources that can support faculty success. (**Appendix F**)
  - In summer 2019, Associate Director Moskal developed a comprehensive mentorship model for incoming faculty and presented it to the faculty at our Autumn retreat. This model maps out available resources to support faculty growth and development.

Section II: Teaching & Learning

Student Learning Goals and Outcomes

- **Describe student learning goals and outcomes**

Our two undergraduate majors, ESRM and BSE have well-defined learning goals (Appendix H).
Students studying Environmental Science and Resource Management learn about the social, economic and ecological elements of sustainability in natural and human-dominated landscapes and how to apply this knowledge to real-world problems. Bioresource Science and Engineering students apply chemical sciences and engineering to manufacturing fiber product, fuels and chemicals from biomass resources. Four transcripted options are available in ESRM, two of which [Sustainable Forest Management (SFM) and Natural Resources and Environmental Management (NREM)] are provisionally accredited by the Society of American Foresters (SAF) and are currently under review for full accreditation. The other two options are Wildlife Conservation and Restoration Ecology and Environmental Horticulture (REEH). The BSE major is accredited by ABET, has a transcriptable option in Business, and has defined outcomes for engineering excellence, becoming industry leaders, and intellectual maturity.

The Master of Forest Resources (MFR) in Forest Management degree is accredited by SAF. This coursework-based degree is designed to integrate knowledge and skills in forest ecology and silviculture with policy and management in ways suitable for professional leadership in the public, non-governmental, and private forestry sectors.

The Master of Environmental Horticulture (MEH) degree is a coursework-based degree, focused on restoration, horticulture, and environmental management. Given recent retirements, we have paused admissions to the MEH program for the 2020 entering class, while we discuss hiring priorities.

The Master of Science (MS) and Doctor of Philosophy (PhD) programs are research-based degrees that vary in specific outcomes due to the diversity of our faculty research foci and student goals. All MS and PhD students are expected to design and implement high-quality research through completion of a thesis or dissertation that is approved by an appropriately constituted committee of faculty. All PhD students are expected to demonstrate knowledge in their chosen field of study by passing a written and oral qualifying exam, and an ability to plan and contextualize research by passing written and oral general and final exams. The coursework requirements are flexible in each program, with two required courses: SEFS 500: Graduate Orientation Seminar, and SEFS 509: Analysis of Research Problems. Other required coursework is customizable within the following categories: Disciplinary Knowledge, Research Design and Quantitative Analysis, Current Topics, and either Master's Thesis or Doctoral Dissertation Credits.

- **Provide an overview of the ways in which the unit evaluates student learning (e.g., classroom- and/or performance-based assessment, capstone experiences, portfolios, etc.)**

In SEFS, instructors develop evaluative tools appropriate to the knowledge, skills, and attitudes specified in the learning objectives of each course. These tools are used for in-class, in-lab, and homework assignments, in-class presentations, group project work, quizzes and exams, and in-class real-time evaluations (e.g., with clickers), senior capstones or projects, theses and dissertations. Our undergraduate students (optionally for the ESRM degree and required for Honors students, in the REEH and Wildlife options, and in BSE) complete a capstone in which they carry out independent research and/or applications of the knowledge gained in their programs.

- **Describe methods used to assess student satisfaction.**

Evaluations of the course content and delivery are carried out through online course evaluations, as well as a summative program evaluation solicited as an exit survey with multiple qualitative and quantitative questions on teaching, mentoring, advising and curricula (**Table 3**). Comprehensive exit survey data analyzed by staff advisers annually. Also, during advising sessions with professional staff, students are asked open-ended questions about their program and their progress in it. Issues that need to be addressed are brought to the attention of the faculty leadership. The SEFS Diversity, Equity and Inclusion Committee also reaches out to students for input, with the goal of targeting underrepresented students to gauge climate and satisfaction issues.

Table 3. SEFS Exit Survey Summary

Degree	5 Year Average N	Rating # on: the quality of the SEFS faculty teaching	Rating # on: quality of SEFS academic advising	Rating # of: the quality of SEFS Administration (i.e. Director, Financial Services, etc.).	Rating # of: do you think your SEFS program has kept pace with recent trends and developments in the field?	Rating # of: the quality of faculty supervision or guidance you received (examples are capstone and thesis/dissertation)
ESRM	68	4.4	4.3	4.2	4.1	4.2
BSE	15	4.0	4.2	4.0	4.0	3.9
MEH	5	4.1	4.1	4.4	4.0	3.5
MFR	3	4.3	4.6	4.5	4.0	3.8
MS	11	4.3	4.5	4.2	4.0	4.2
PhD	6	4.3	4.4	4.1	3.9	4.3

*Ratings listed are the average of all available surveys submitted and based on a 1-5 scale for responses where 5 represents the highest score

We have access to the teaching evaluations and alumni surveys from the UW Office of Educational Assessment. The response rate for PhDs was too low to generate results from OEA data, but a summary of the Masters and Undergraduate results are shown in **Table 4**.

Table 4. OEA Alumni Survey Response Ratings on Satisfaction

Degree (N, Response Rate)	Year	Amount UW Academic Program Advanced Learning: Acquiring Deep Knowledge (1-4 scale)	Importance to work and life: Acquiring Deep Knowledge (1-4 scale)	Overall learning experience at UW	Faculty and TA treated students respectfully- regardless of race, gender, ethnicity, sexuality or country of origin
Undergraduate (36, 30%)	2017-18	3.3	3.1	3.2	3.5
Undergraduate (29, 26%)	2016-17	3.3	3.3	3.0	3.3
Undergraduate (24, 25%)	2015-16	3.5	3.2	3.3	3.5
Masters (11, 34%)	2017-18	3.5	3.5	3.5	3.2
Masters (11, 39%)	2016-17	3.4	3.4	2.7	4.0
Masters (16, 42%)	2015-16	3.9	3.5	3.4	3.7

*Degree column shows the number of surveys submitted and the corresponding percentage of total degrees earned for that group. Scores were based on a 1-4 scale where 4 indicated the highest score.

- **Describe how the unit has used these findings to bring about improvements in the programs, effect curricular changes, and/or make decisions about resource allocation. If applicable, in what ways and were the intended improvements realized?**

Responses occur at both the level of individual courses and overall program structure and requirements. For concerns about individual courses that come to the attention of unit leadership through any of these avenues, instructors are engaged to discuss possible modifications, clarifications, resource needs, and other support that may be needed. Our annual merit review process includes a specific criterion on instructional quality (based on student evaluations) that can initiate a more formal process for improvement planning. When program-level issues are raised, the SEFS curriculum committee responds accordingly, usually conducting further discussions and/or research and then recommending changes to faculty as appropriate. A recent example is the ESRM capstone requirement, which given our growing undergraduate numbers with relatively fixed faculty resources, was increasingly difficult to deliver. Based on discussions among faculty and a recommendation from the Curriculum Committee, the faculty voted to make the capstone optional for most students (capstone is required for Honors students and students in the REEH and Wildlife options).

- **Note the courses typically taken by undergraduates who will not be majors in any of the unit's programs, if applicable. Are there specific learning goals in those courses designed to accommodate "non-major" students? If so, how is student achievement in reaching these goals assessed?**

We have several courses targeted to non-majors, ESRM 100: Introduction to Environmental Science (currently offered only in summer quarter); ESRM 101: Forests and Society; and ESRM 150: Wildlife in the Modern World. ESRM 362/ENVIR 362: Introduction to Restoration Ecology, attracts non-majors as well. These courses are broad survey courses, so they easily accommodate non-majors, and the assessment methods include regular assignments, midterm and final exams, along with course evaluations. In addition, SEFS faculty teach five quantitative courses (calculus, statistics, etc.) as part of our contribution to the Quantitative Sciences (QSCI) program; many non-majors enroll in these courses. We are considering developing additional broadly attractive courses such as "Digital Earth," "Reducing Your Carbon Footprint," and "Wildfires and Society." Development of the first two of these was supported with a small grant through our internal curriculum innovation program, described below.

Instructional Effectiveness

- **Describe and discuss the method(s) used within the unit to evaluate quality of instruction, including the use of standardized teaching evaluation forms.**

We use two methods to evaluate instructional quality: the standardized teaching evaluation forms from the Office of Educational Assessment and SEFS faculty peer evaluation of teaching. We use the forms for all instructors, including temporary hires (such as those covering sabbatical leaves) and graduate student TAs and pre-doctoral instructors. The summaries are sent to the Director and the Advising office for review, and scores that raise concerns (especially those that vary greatly from unit and campus norms) are addressed with the instructor by the Director. The faculty peer evaluation of teaching requires in class visits and review of the course materials. Feedback and advice are then provided to the instructor and a report is filed with the

Director and included in the faculty promotion, merit and tenure evaluation process. In addition, questions about teaching quality are asked in the exit survey and regularly reviewed for outstanding issues.

- **Note all opportunities for training in instructional methods that are made available to any individuals teaching within the unit (including graduate students). For example, these may be opportunities that support teaching improvement, innovation, and/or best practices.**

All graduate students, even if they are not a current TA, are encouraged to attend the annual TA Conference, as well as use the UW's Center for Teaching and Learning (CTL) resources. Faculty are also encouraged to use CTL for instructional improvement. Instructors in our BSE program have access to the Office for the Advancement of Engineering Teaching and Learning. Several SEFS faculty have participated in the Teaching Technology Fellows program, which provides resources and community for incorporating technology into teaching.

An earlier institutional arrangement around online teaching led to course fee revenues from the online offerings of ESRM 100 being returned to SEFS. This arrangement has ceased, and the class is no longer offered during the academic year. We have allocated funds remaining in the account from that effort to support a curriculum innovation fund and proposal process, and have run one competition and made three awards. The competition prioritized support for courses in the core curriculum, deployment of new teaching technologies, and large-enrollment environmental literacy courses.

- **Describe specific instructional changes that have been made by instructors in response to evaluation of teaching within the unit.**

Three examples are described below:

ESRM 210: Introductory Soils. This course was historically taught in the traditional lecture format and student evaluations pointed out that the density of the material required allowed for limited flexibility in exploring the real-world application of information learned. In response, the faculty member implemented a "flipped" classroom approach. In this teaching method, lecture materials are watched in video form prior to class meetings so that time may be spent discussing how the concepts relate to current local and global issues, performing hands-on demonstrations, participating in field trips, and experiencing guest lecturers from academia and federal agencies. In only two quarters, student evaluations rose from a Combined Median of 4.1 with 43% of students participating to 4.7 with an 88% response rate and course enrollment increased from 30 to over 70 students. This transformation was made possible through the support of the Technology Teaching Fellowship (UW CTL) and the SEFS Curricular Innovation Fund.

ESRM 201: Sustaining Pacific Northwest Ecosystems. In response to student evaluations, faculty have revised the course to make it more focused on experiential learning by including field trips to the Street Edge Alternatives Program neighborhood and Carkeek Park, to the Snoqualmie River, the Teanaway River, Arboretum, the Union Bay Natural Area, and Blewett Pass. Since implementing these changes the course evaluations have been consistently high (average of 4.6/5.0 in the last 5 years).

In 2010 the BioResource Science and Engineering curriculum was modified, motivated by the 2007 ABET review as well as assessment results and recommendations from numerous constituents. The emerging bioresource industry presented a demand for well-trained bioresource engineering graduates. Comments

from alumni surveys indicated that a broader background that prepared students for work throughout the bioresource industry would be valuable. Updating the undergraduate curriculum created a closer tie between undergraduate work and faculty research.

Teaching and Mentoring Outside the Classroom

- **Describe how faculty members are involved in undergraduate and graduate student learning and development other than through classroom teaching (e.g., informal learning, independent studies, research involvement, specialized seminars or workshops, etc.).**

Our faculty provide rich learning and development outside the classroom, particularly in the lab and the field, including internships at our remote sites, Olympic Natural Resources Center, the University of Washington Botanic Gardens, and the Center for Sustainable Forestry at Pack Forest. Field trips are an important learning experience in many of our courses, including BSE, where practices and systems are seen up close and in person. There are also regular field research opportunities (paid and unpaid), independent studies, and research opportunities available to our students. We sponsor a weekly SEFS seminar during the academic year where we invite a variety of speakers and encourage students to attend (and provide snacks as an additional encouragement). Capstone experiences are often completed in partnership with external clients. The undergraduate capstone is available to all students, and required for Honors students and those in the Wildlife and Restoration Ecology and Environmental Horticulture options. The three-quarter capstone course organized by the Restoration Ecology Network (REN), a three-campus collaboration, allows students to design and implement team projects for a broad range of clients. Internships are available in the SER-UW Native Plant Nursery. Many student projects are supported in collaboration with agency and company partners through the Cooperative Ecosystems Studies Unit (CESU), Washington Cooperative Fish and Wildlife Research Unit (WACFRWU), USFS Northwest Research Station and the Washington Pulp and Paper Foundation (WPPF) in the School, and the Northwest Climate Adaptation Science Center (CASC) in the College of the Environment, in addition to many other project-specific partnerships.

- **Describe how the unit works with undergraduate and graduate students to ensure steady academic progress and overall success in the program.**

Undergraduate students have regular benchmarks for progress, including declaring a major in a timely fashion and completing a set number of quarters and credits, which, if unmet, may lead to holds on registration. Our advising staff works with students to create a graduation plan to remove the hold and proceed to completion. When academic success issues arise we often advise students on alternative paths of coursework, time off, or classes at local community colleges, if appropriate.

Graduate student progress is monitored with newly revised policies that reinforce the UW Graduate School policies regarding time to degree and completion of important milestones (qualifying exam, general exam and final exam). Additionally, we have revised and clarified SEFS' guidelines for satisfactory progress and are working to provide additional clarity on expectations and norms for completion of required written and oral exams. The advising office, in partnership with the Graduate Program Coordinator, tracks all graduate student progress toward degree as well as GPA. We also seek regular progress input from the faculty and take action if warranted, which may have to do with research progress that cannot be obtained from the student transcript. We take a proactive approach by providing reminder or warning letters, based on specific benchmarks for progress and feedback from faculty, early, before more serious progress issues arise.

- **Describe how the unit works with undergraduate and graduate students to prepare them for the next phases of their academic or professional lives.**

For students at all levels, SEFS partners with the College of the Environment and the UW Career Center to assist students with placement following graduation. The College hosts an annual career fair in Winter quarter, in which SEFS also assists with finding potential employers, and maintains an excellent career opportunities blog (https://environment.uw.edu/students/career-opportunities/) to which we regularly post positions. The UW Career Center employs professional career counselors that provide one-on-one counseling and various career workshops for both students and recent alumni. Also, during their program, students are strongly encouraged to participate in volunteer and internships to gain valuable work experience and connections. The member firms in Washington Pulp and Paper Foundation (WPPF) participate actively in recruiting students from the BSE program, and the director of the foundation meets individually with all students in the program to provide career advice and network connections with member firms. Because of the diversity of pathways for our graduate students, we rely on a combination of faculty mentorship and staff advising to help students navigate career alternatives after graduate school. We are beginning to implement a quarterly alumni panel as part of our weekly seminar series, in order to introduce our students to alumni and provide them with models for career trajectories following graduation.

Section III: Scholarly Impact

- **Describe the broad impact of faculty members' research and/or creative work. Feel free to note specific individuals and how their work embodies the unit's mission or distinguishes the unit from those at peer institutions.**

SEFS research involves both disciplinary and interdisciplinary contributions to some of the most pressing environmental issues we face. These contributions center on understanding how to manage the terrestrial land surface to provide an appropriate balance of ecosystem services to diverse human communities in the context of a changing climate, rapid urbanization, and globalized commodity systems. Our faculty includes expertise in disciplines ranging from plant science, forest and wildlife ecology, fire and disturbance ecology, ecological restoration, soil science and hydrology, materials, chemical, and systems engineering, psychology, economics and policy, geography, and remote sensing. We have made significant contributions to understanding of climate change impacts, opportunities to mitigate carbon emissions through forest and land management, wildland fire impacts and management, habitat and biodiversity loss, health impacts of nature, water quantity and quality, and resource consumption.

Our work is at its best when it both advances fundamental scientific understanding and address problems of practical importance in resource monitoring, management, or production. Much of our research is field-based and engaged with multiple communities of practice. Our field facilities (Pack Forest, UWBG, and ONRC) and our various community partnerships (e.g., City of Seattle, USFS, USGS, CESU, WACFWRU, WPPF, TNC, Native Tribes, etc.) provide vehicles for research impact in Washington State and the region. These relationships provide a significant avenue for implementation of research findings within the affiliated communities of practice. This engaged and applied work provides ample opportunities for immersive learning by our students and is a key hallmark of our impact.

Space prohibits a complete listing of projects, but we highlight a few broad themes here. Work in our wildlife group (Gardner, Marzluff, Prugh, Wirsing), with funding from NSF, NASA, and other federal and state

agencies, uses GPS tracking, camera trapping, and sound recording to better understand wildlife behavior in inter-specific and human interactions, and in response to a variety of environmental and human-induced changes. Faculty in the Precision Forestry Cooperative (Kane and Moskal), with new funding from NASA and CalFire, are using advanced Lidar technology to map forest structure in support of better understanding spatial distributions of carbon storage and fire risk. Our engineers (Bura, Dichiara, and Gustafson) are working collaboratively with industry to develop and demonstrate uses and production approaches for new bio-based materials (including for biofuels and smart paper) and evaluating their potential for rural community development. Our forest ecologists (Bakker, Butman, and Ettl) are tracking carbon storage in various pools within the forest ecosystem, evaluating the response to management for timber production and fire risk reduction, and working with an economist (Ganguly) to understand the role of forest products in the total forest carbon flux.

The following list of select awards, fellowships, and media coverage highlights a few specific recognitions.

Recent Awards and Fellowships:

- 2019 Department of Interior Distinguished Service Award (Converse)
- 2019 Presidential Early Career Award for Scientists and Engineers (PECASE) (Prugh)
- 2019 Wildlife Society Wildlife Publication Award (Prugh)
- 2019 Faculty of 1000 F1000 prime in population ecology (Tobin)
- 2018 JPB Environmental Health Fellowship, Harvard University (Bratman)
- 2018 Fulbright Scholar (Toth)
- 2015 Wilburforce Fellowship in Conservation Science (Harvey, Bakker)
- 2013 Output Outstanding Book award, "The River of Life: Sustainable Practices of Native Americans and Indigenous Peoples" from International Cooperation Committee of the Publishers Association of China (Vogt)
- Collaboration award for research on the hydrothermal treatment of wood with CNTRAFOR (Anthony Dichiara)
- 2006 Washington State Book Award (Marzluff) for "In the Company of Ravens and Crows"

Recent Media Coverage:

- Numerous articles highlight the role of endophytes in plant function: https://www.discovermagazine.com/environment/the-world-has-a-fertilizer-problem-bioengineered-corn-could-save-us; https://www.smithsonianmag.com/science-nature/corn-future-hundreds-years-old-and-makes-its-own-mucus-180969972; https://www.npr.org/sections/thesalt/2018/06/29/621536297/microbial-magic-could-help-slash-your-dinners-carbon-footprint; https://www.scientificamerican.com/article/treating-toxins-with-tree-microbes/; https://science.sciencemag.org/content/348/6237/844 (Doty)
- Fires in Western WA research highlighted on front page of the *Seattle Times*: https://www.seattletimes.com/seattle-news/environment/in-a-changing-climate-will-fire-make-a-bigger-run-in-washingtons-west-side-forests/ (Harvey and Franklin)
- Fire ecology and climate change work in Yellowstone highlighted in the *New York Times*: https://www.nytimes.com/2017/09/13/climate/yellowstone-western-fires-in-two-forests.html (Harvey)
- "Smart" papers for alternative water sensing technology highlighted in various media: https://www.upi.com/Science_News/2017/11/07/Scientists-design-smart-paper-capable-of-

detecting-water-conducting-electricity/3871510069545/, https://www.knkx.org/post/smart-paper-could-be-low-cost-way-detect-water-leaks (Dichiara)

- Restoring prairies in Puget Sound Area on KING5 TV story: https://www.king5.com/article/news/local/uw-scientists-studying-how-to-save-washingtons-disappearing-prairies/281-9fc720fe-59a1-46d3-b812-85079f59b4d8 (Bakker)
- Blue carbon work highlighted in *High Country News*: https://www.hcn.org/articles/the-colorado-rivers-unexpected-carbon-footprint (Butman)
- Positive health benefits of hiking in *Newsday*: https://www.newsday.com/news/health/hiking-trails-exercise-1.32726185 (Bratman)
- On possible re-domestication of wolves in *International Business Times*: https://www.ibtimes.co.uk/company-wolves-making-new-doc-will-we-redomesticate-canis-lupus-1615581 (Wirsing)
- Coverage on environmental generational amnesia in the *New York Times Magazine*: https://www.nytimes.com/2017/04/19/magazine/our-climate-future-is-actually-our-climate-present.html (Kahn)
- Crow behaviors profiled in the *New York Times Magazine*: https://www.nytimes.com/2019/06/18/magazine/how-to-scare-a-crow-tip.html (Marzluff)
- Evolutionary history holds clue to destruction by insect invaders profiled in *Cosmos*: https://cosmosmagazine.com/earth-sciences/new-model-can-predict-destructive-impacts-of-non-native-insects (Tobin)

- **Describe undergraduate and graduate students' significant awards, noteworthy presentations, or activities that have had an impact on the field while enrolled in the program.**

Space limitations prevent a complete listing of all awards, however both undergraduate and graduate students have consistently received Husky 100 honors. The Husky 100 recognizes students who are making the most of their time at UW, actively connect what happens inside and outside of the classroom, and apply what they learn to make a difference on campus, in their communities and for the future. SEFS winners include Laurel James, Sierra Kross, Jessica Hernandez; Loma Pendergraft, Korena Mafune, Samantha DeAbreu, Carol Bogezi, and Catherine Kuhn. Robert Sternberg (undergraduate) was awarded a Bonderman Travel fellowship in 2019. Marisa Deluccia was named one of two UW President's Medalists in 2019, and graduate student Maria Blancas was awarded the 2019 Bullitt Environmental Prize.

SEFS graduate students have been awarded NSF GFRP, NASA ESSF (now FINESST), and other competitive research fellowships. Our graduate students regularly present at national conferences, including the Society for Ecological Restoration, Ecological Society of America, IUFRO World Congress, Society of American Foresters, American Ornithological Society, and many others.

In 2017, BSE undergraduate students were awarded funding by the UW Sustainability Fund ($70,000) to develop "Biopots", a form of biodegradable planting pots from the reutilization of spent grain byproducts of the beer industry, and perform a techno-economic analysis of their proposed product. Their product design and analysis won first prize at the 2018 Alaska Airlines Environmental Innovation Challenge (AAEIC) and

awarded them an additional $15,000, and placed fourth at the Dempsey Startup Competition. In 2018, another group of BSE undergraduate students developed and analyzed the feasibility of a strong composite material from recycled waste products, deemed "NanoPrint", and won the Judges Also Really Liked (JARL) award of $1,000 at the AAEIC. That same year, "NanoPrint" was awarded the "Most Sustainable Team" prize at the Dempsey Startup Competition. The ideas for both student developed technologies were born from BSE capstone projects in an aim to lead to business developments utilizing waste biomass resources. Half of both student teams were comprised of women engineers!

Additional select examples of the prestigious awards and presentations of both our undergraduate and graduate students are listed below.

- Marissa R. De Luccia (Undergraduate ESRM, graduated 2019)
    - President's Medalist
- Alisha Orloff (Undergraduate ESRM, graduated 2019)
    - 2018 Udall Undergraduate Scholarship
- Mira Sytsma (MS student)
    - Pacific Science Center Science Communication Program Fellow
- Lauren Satterfield (PhD Student) & Catherine Breen (MS/PhD Student)
    - 2019-2021 NASA Graduate Fellowship
- Ian Davies (MS student), Jessica Hernandez (PhD Student), Jazna Hodzic (PhD Student), Alex Pane (PhD Student), Olivia Sanderfoot (PhD Student)
    - NSF Graduate Research Fellowships
- Taylor Ganz (PhD student)
    - 2018 Gilbert B. Pauley Award for Outstanding Graduate Student Presentation (WACFWRU)
    - Karin Divens' Conservation Through Collaboration Award, Washington Department of Fish and Wildlife
    - 2019 John Pierce Outstanding Graduate Student Award (Washington Cooperative Fish and Wildlife Research Unit, WACFWRU)
- Catherine Kuhn (PhD student)
    - 2015-2017 Achievement Rewards for College Students
    - 2017 Integral Environmental Big Data Award
    - 2018 and 2019 NASA Earth and Space Science Fellowship

- **Describe post-doctoral fellows' participation in the research and teaching activities of the unit, if applicable.**

Post-doctoral scholars are ordinarily hired by faculty with extramural research funds to support specific research projects. On average, we hire ten postdocs per year. Postdoctoral Scholars (postdocs) in SEFS perform scientific research that demonstrate research relevance to faculty interests in the unit, and are guided by a faculty mentor who oversees their work. A PhD or equivalent degree is required at the time of appointment. Postdocs generally serve appointments of at least one-year, with options for renewal based on performance and funding. Work can be completed with a single supervisor on interdisciplinary teams through a grant or other project on any topic addressed by SEFS faculty, including anything from data to policy analysis, participation in research group activities, and delivering seminar talks to their peers and community members. Postdocs must have a demonstrated ability to work independently while still being an effective member of scientific teams. They are expected to collaborate with project investigators and other researchers

and stakeholders and play a leading role in important components of a project. The position offers the opportunity to lead scientific studies and prepare scientific papers either from the outset or with experience gained on the job.

SEFS seeks to attract postdocs whose research interests align with relevant scientific research themes in the unit, which can range from environmental economics to fire ecology. They are given the opportunity to conduct their own research, think broadly, and to work with distinguished scientists at the UW, and at important local and national research institutions, in the surrounding area as well as the whole country, depending on the topic. The postdoctoral scholar position can be an ideal start for a scientific career (including gaining valuable job-related experience and opportunities) or the chance for an established researcher to take on new challenges.

- **Describe how program graduates have had an impact on the field either academically or professionally.**

SEFS graduates work in a variety of professional positions in government, business, industry, and education, to name just a few. **Table 5** presents data from the SEFS Exit Survey, which is administered as students graduate. **Table 6** displays data from the Office of Educational Assessment (OEA) surveys, which are administered several years after graduation.

Table 5. Placement data from last five years of SEFS Exit Survey, conducted Spring each Graduating Year

Degree	% Indicating placement	Non-government organization	Government (local, state, federal)	Education or academic	Private business, industry, consulting
ESRM	40%	9%	27%	51%	13%
BSE	51%	11%	0%	8%	81%
MEH	42%	30%	30%	0%	40%
MFR	54%	0%	43%	0%	57%
MS	59%	9%	22%	56%	13%
PhD	41%	0%	8%	92%	0%

Table 6. Placement data from OEA Exit Survey, last three years

Degree	% Indicating placement	Non-government organization	Government (local, state, federal)	Other	Private business, industry, consulting
Undergraduate	56%	14%	28%	4%	54%
Masters	71%	11%	44%	4%	41%

- **Describe the ways in which advances in the field or discipline, changing paradigms, changing funding patterns, new technologies and trends, or other changes influenced research, scholarship or creative activity in the unit.**

On-going changes over the past decade, through increasing urban development pressure, financialization in land and natural resources, regulation, and alternative conservation strategies, have resulted in changing knowledge and training needs, including greater disciplinary integration and rigorous assessment of social, economic, and environmental goals. Simultaneous developments in interdisciplinary environmental and sustainability sciences within the academy have created opportunities and needs for more basic and applied research on the frameworks, empirical observations, approaches to co-production, and analytical tools needed to understand interacting social and ecological systems. These developments are most recently couched at NSF as Convergence Research. Transdisciplinary approaches advanced within SEFS have included urban ecology, ecological restoration, landscape ecology, ecosystem science, fire science, environmental health, and others. Since our last review, the School became part of the College of the Environment. This has connected us administratively to other disciplinary and interdisciplinary units, including the Program on Climate Change and Climate Impacts Group, School of Aquatic and Fisheries Sciences, Earth Lab, Program on the Environment, the Program on Climate Change, and others. Together, these changing contexts provide a strong motivation and opportunity for the SEFS faculty to evolve our collective vision, academic programs, administrative processes, and our resource allocations to seize these opportunities.

New technologies for field (e.g., camera traps) and remote (e.g., LIDAR) observation have affected the spatial and temporal detail of forest, wildlife, and other environmental information available for science and application. Technology in the field of Bioresource Science and Engineering has evolved to include both biorefining for alternative (e.g., biofuels and biochemicals) and innovation for enhanced (e.g., sensor paper) products. Our faculty are actively involved in research at the forefront of developing and deploying these technologies. While much of the funding for the technologies comes from research grants, we are challenged to provide start-up funds for new faculty in support of their work with these technologies. Teaching Technologies has also evolved to create opportunities for on-line and hybrid instruction that a number of SEFS faculty members have been exploring in the Teaching Technology Fellows program and elsewhere.

- **List any collaborative and/or interdisciplinary efforts between the unit and other units at the University or at other institutions and the positive impacts of these efforts.**

Length limitations prevent a complete listing, but numerous SEFS investigators collaborate at the project level with investigators in other units in the college, in the University, and at other universities and partners. Specific examples of such collaborations are listed below:

- Lawler leads, and Bratman and Kahn participate in, a large interdisciplinary group of researchers and practitioners in conversations and research on the theme of Nature and Health, examining the effects of access to nature on human health. A significant partner in these collaborations are the faculty of the School of Public Health. This program began in SEFS and is now housed within EarthLab.
- Butman, as a member of the UW Freshwater Initiative, is a co-PI with colleagues in SAFS and Civil and Environmental Engineering on a recently funded NSF NRT grant on Future Rivers.

- Dichiara is the lead PI on a collaborative NSF project about auxetic materials with a faculty from UW Mechanical Engineering (Prof. Jaehyun Chung), and on an international research project about paper nanocomposites funded by the French-US Thomas Jefferson Fund.
- With Gustafson as lead, the Advanced Hardwood Biofuels was a consortium of five Universities, two companies, and a Community College who worked together to begin bringing a renewable fuels and chemicals industry to the PNW. We now have companies and other stakeholders assessing the potential for a biorefinery in Lewis Co.
- Bura's group has been recognized by several international and national research teams to be the first to successfully use Raman spectroscopy for the online monitoring of lignocellulosic system. This work was done in collaboration with the Applied Physics Lab (Professor Marquardt's Group, UW). This breakthrough analytical Raman spectroscopy method is cheap, rapid, robust, continuous, and simple to use. With the use of patented ballprobe immersion optics, Kaiser Optical Systems, and chemometric analysis of the reactants and products, we pioneered the online analysis of sugar and fermentation products during bioconversion using Raman Spectroscopy. This approach has never before been used in research/industry.
- Prugh is working with UW Tacoma faculty Chris Schell supervising undergraduate research on urban coyote boldness behavior as part of a nationwide study led by Roland Kays at NC State (http://rolandkays.com/coyote-boldness-testing-protocol/). She is supervising three SEFS capstone student projects as part of this study.
- Prugh initiated a new collaboration with researchers in Norway this year. A Norwegian PhD student funded this collaboration with a ERASMUS grant from Norway that covered travel to Norway this September to participate as a keynote speaker in a workshop on community ecology, and it will fund 2 Norwegian PhD students to visit her lab for 3 months this spring, and for one of her students to spend 3 months in Norway this winter.
- Bratman is developing a nature-based therapy intervention in conjunction with the VA to service veterans with PTSD through a randomized controlled experimental design to determine the effects of nature vs. urban experience on alleviating PTSD symptoms. Bratman is currently working with Girl Scouts to develop another green intervention to encourage outdoor experience, and to measure the affective impacts of this intervention. Bratman sits on the advisory board of the Nature and Health group at UW – an interdisciplinary effort to incorporate the science of nature and health into policy and decision-making in partnership with communities throughout the Puget Sound region.
- Harvey is the lead PI on a collaborative NSF project on biotic disturbance agents, biological legacies, and their consequences for forest health with the Universities of Wisconsin (Prof. Sarah Hart) and Colorado (Prof. Tom Veblen), and the Washington DNR.
- Dan Brown retains collaborative research with University of Michigan investigators on ecological and social impacts of large-scale land transactions in sub-Saharan Africa, with funding from NASA and NSF.

- **Describe the academic unit's established promotion and tenure policies and practices that provide mentoring and support the success of junior faculty.**

SEFS' promotion and tenure timelines and policies are governed by the UW Faculty Code and the College of the Environment, with timelines, policies, and procedures posted on the College of the Environment website. In addition, the College supports a Junior Faculty Development Program, where each tenure track Assistant Professor is eligible for one faculty development quarter (with no assigned teaching responsibilities)

and one month of summer salary or the equivalent in research support. SEFS provides guidance through its promotion, merit and tenure policy, available in **Appendix F**, which clarifies expectations in teaching, research and service activities. In addition, the director asks a more senior faculty member to serve as a mentor to a junior faculty member, to ensure that the junior faculty has a point of contact for information, resources, and guidance. Each year, SEFS faculty submit information to the Promotion, Merit and Tenure Committee for annual review, and feedback from the Committee is communicated to the faculty member as well as the director. Finally, each faculty meets yearly with the Director to conduct annual work planning, where teaching plans, research progress, and student mentoring are discussed, as well as any needed support or resources.

Section IV: Future Directions

- **Where is the unit headed?**

Discussions at our Faculty Retreat in September 2019, as well as subsequent discussions about hiring priorities, which are on-going at the time of this review, confirm a collective commitment to building on our current strengths for addressing transdisciplinary problem-based scholarship, our engaged and field-based approach to learning and research, and to building diverse, equitable, and inclusive programs. Our obvious strengths in the context of the college and the university are in advancing practical understanding through research and teaching on the social, ecological, and technological dimensions (including mitigation of impacts, adaptation, management, restoration, and valuation) of land-based natural resources. Our programs and our students are distinguished by their ability to work with scientific rigor, collaboratively across disciplinary lines, and in ways that address systemic problems and solutions in response to diverse societal objectives. Our commitment to diversity includes building a more diverse faculty, staff, and student body, recognizing that a diverse set of perspectives and backgrounds contributes to a robust research and learning environment, and working toward setting specific goals and evaluating progress based on these goals.

- **What opportunities does the unit wish to pursue and what goals does it wish to reach?**

We aim to continue to enhance our excellence in pursuit of inter- and trans-disciplinary teaching, learning, and research in our areas of strength to address complex environmental problems and issues. A theme that has developed over the last few years, and is now animating some of the programming within Earth Lab (a new boundary organization within the College), is the relationships between **nature and health**. Our most recent faculty hire (Bratman) works in this area, and a network of faculty and external stakeholders meets regularly, with support from the Bullitt Foundation, REI, and others, to identify new research and teaching opportunities. Over the last year we have explored a potential new area for focus and collaboration around management of tracking and **management of terrestrial carbon** in the context of climate-related policies and goals. Two workshops, one exclusively internal to SEFS and a second that included potential partners elsewhere both within and outside the university, explored opportunities for collaborative research that can produce knowledge of use in crafting carbon policy, which is an active topic of discussion both in Washington and globally. A third area of obvious interest to stakeholders in the region, nationally, and global is centered on **wildfire management** and how it intersects with forest condition, restoration, climate, settlement patterns, and human health. Harvey, Bakker and Alvarado all lead research in this area in collaboration with the USFS Pacific Northwest Research Station and WA DNR. **Climate change adaptation** is likely to be a significant element of any work that we do, and builds on a large and impactful record of work on climate change impacts

on forest ecosystems, wildlife, and water systems. For all of these initiatives, we are seeking to align faculty expertise, interests, and collaborations with real societal needs and external engagement and funding partners to support the fundamental and applied research and teaching that goes into addressing these challenges.

- **How does the unit intend to seize these opportunities and reach these goals?**

New faculty hires. We have the opportunity over the next few years to invest in new faculty hires that engage in emerging areas of study, maintain interdisciplinary strengths, and facilitate our ability to respond to changes and new developments in the field. We are in active discussion about the themes that we should pursue collectively and how new faculty expertise can complement existing faculty expertise to enhance our overall impact. Because we will have fewer new positions than what have been lost to retirements or departures, we are pursuing the conversation about hires in ways that are conscious of, but not tied to, concerns about existing curricula. We recognize that curricular design needs to be an on-going process (see below) and don't want to tie faculty hires too tightly to current curricula. Our process is underway in 2019-2020 for faculty to generate ideas and descriptions for new faculty hires. Potential areas of interest that have been identified include: Indigenous socio-ecological systems; Sustainable rural-urban systems; Climate Adaptation; and Quantifying Ecosystem Services.

Refine undergraduate and graduate programs. We are actively working to evaluate the current ESRM curriculum and working on implementing time-to-degree policies for graduate students, along with pursuing strategies to increase funding available for graduate students. In addition to redefining curriculum structures and requirements, we may consider revising and relabeling some of our degree programs at both the undergraduate and graduate levels. In any academic unit like ours balancing 'breadth and depth' is a constant consideration and discussion. We have left our core requirements at both the undergraduate and graduate levels relatively thinly defined so as to facilitate a diversity of interests among our students. Whether or not, and if so how, to modify these core requirements is an active discussion.

Curricular Innovation. As we consider changes to the curriculum, we are fortunate to have funding available to provide incentives for faculty to develop new innovative courses or other curricular revisions that can strengthen our programs and/or broaden our exposure to all students. This year will be the second opportunity for faculty members to apply for this funding. Previous projects were described above.

- **Describe the unit's current benefit and impact regionally, statewide, nationally, and internationally. Given the unit's envisioned future, describe how reaching this future will augment that benefit and impact.**

SEFS faculty and students contribute to 'real-world' solutions to environmental issues, and are highly respected by government, industry, and conservation organizations. Our faculty are in demand to provide external peer review and serve as members of regional and national review panels. For example, Dan Vogt manages the peer review process for the WA DNR Cooperative Monitoring, Evaluation, and Research (CMER) committee. Bakker serves on the WA DNR Expert Council on Climate and Environmental Change. Dan Brown is a member of the Mapping Sciences Advisory Committee of the National Academy of Sciences, Mathematics, and Engineering (NASEM). Asah served as a review editor for the recent International Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) assessment report. Current PhD student David Diaz was recently invited to join the newly formed WA DNR Carbon Sequestration Advisory Group.

The BSE program is developing technologies and educating the next generation of leaders that support important regional industries. Most of our BSE graduates work for companies in Washington or in neighboring states and contribute to the transformation of the bio-based industry into sustainable enterprises needed to address global challenges such as climate change and freshwater availability. Our students are also working for bioresource start-up companies to establish new industries in the region.

Our Bioresource Laboratory supports local companies such as Kapstone Paper and Packaging and Georgia Pacific through contract work and running experimental trials. We are also supporting emerging companies such as Membrion by producing novel materials for their commercialization efforts. BSE research is on the cutting edge of developing new processes and products to enable a bioeconomy that is both economically viable but also environmentally beneficial. While this research has been widely published in leading journals it is also having an impact "on the ground" in our work to create an industry in SW Washington.

B. UNIT-DEFINED QUESTIONS

1) Are the structures and contents of our graduate and undergraduate programs appropriate? a. In particular, are we striking an appropriate balance with regard to service courses, capstone experiences, and partnerships within the College and across UW, as well as with regard to core required courses for our undergraduate and graduate students?

For the undergraduate programs, recent conversations at planning retreats highlight suggestions for increasing the rigor of our entire ESRM major, revising the four core courses, and structuring core courses so they are taken earlier in a student's program. We want to ensure that we are training undergraduates with skills and tools that they will need as professionals, and there is always discussion of capacity concerns in terms of the number of majors we can accommodate. Recent interest and suggestions have been expressed for a core course that addresses systems more explicitly, as well as coursework on environmental challenges and solutions. There is continued and strong agreement that field, applied, and engaged learning is of high value. Some interest was voiced regarding whether BSE and ESRM could be more integrated and connected.

For our graduate programs, SEFS has a very open and flexible program, which allows creation of a course of study tailored directly for student. We are exploring questions around whether SEFS should require a few more core/required courses for MS and PhD, in addition to SEFS 509 (which focuses on research design). There is fairly strong agreement that we should continue to offer structured professional Master's degrees, possibly with revision/rebranding. Funding for graduate students is important, and we are actively discussing the appropriate balance of MS and PhD students.

The elimination of ESRM 100 from the academic year schedule has made a significant dent in both the number of students reached in our broader environmental literacy courses and in the student credit hour generation that is at the heart of the formula for activity-based budgeting for revenue to the College. When it was offered, that course was offered during all three academic quarters and the summer, led by a single faculty member. We seek to strike a more balanced and diversified approach to environmental literacy courses. In this approach, we will generate credit hours and contact points with students across a wider range of courses and topics. We currently offer ESRM 101 (Forests and Society) and ESRM 150 (Wildlife in the Modern World), the latter of which we have expanded to reach more students. Additional topics are under consideration. The goal is to balance the teaching offerings across the faculty, so that each faculty member

contributes some service course (e.g., a large enrollment course in or outside the majors, or one of our five course contributions to the QSCI program), a moderately sized topical course within the major, and a smaller specialized course at the upper division and/or graduate level. The specifications of the BSE major make this kind of a balanced portfolio difficult to achieve, and program structure and teaching capacity in BSE are an aspect of current faculty hiring discussions.

2) Are there new or emerging trends and programs we should consider pursuing within existing constraints that will not compromise our excellence in research and undergraduate and graduate education?

- ***How do our accredited programs (i.e., by SAF and ABET) play a role in moving us towards these future opportunities?***
- ***How might new partnerships help us realize new opportunities?***

In a time of shrinking faculty numbers, any discussion about new directions is necessarily affected by choices that involve complementing, redirecting, or discontinuing existing programs. Our discussions about professional masters programs have led us to general agreement that they are important and valuable contributions that a school of our constitution can be making. We have discussed how we might leverage our existing strengths in offering the Masters of Environmental Horticulture and Masters of Forest Resources programs. We have discussed the possibility of developing a new professional master's program, by perhaps bringing our existing programs under a common umbrella framework, recognizing the common needs of professional programs for structures that support student professional development and managing external clients for applied project work and internships. Enhanced professional degrees would require staff support and involvement of a greater number of our faculty (currently both programs are supported by only 3-4 faculty members each). Challenges include redefining the programs to engage the broader range of topics covered by our faculty, the existing curricular needs in the undergraduate, MS, and PhD programs and decline in faculty lines, and the unclear path toward revenue generation for such a program.

The programs we have that are accredited by the Society of American Foresters (SAF; ESRM-SFM, ESRM-NREM, and MFR) and ABET (BSE) provide a link for a subset of our students to specifically identified and accredited career paths. While enrollment in BSE has been stable and employment outcomes strong, enrollment numbers in the SAF programs have been small. The size has been driven partly by student interest, but possibly also by their relative recency (the undergraduate accreditations were preliminarily reinstated in 2014) and lack of promotion. Graduates from these programs have had employment success in their chosen fields, and we have heard from external stakeholders about the need for more of these graduates. At the same time, new forestry programs have launched at local community colleges (Green River College) and are beginning to produce graduates for entry level positions.

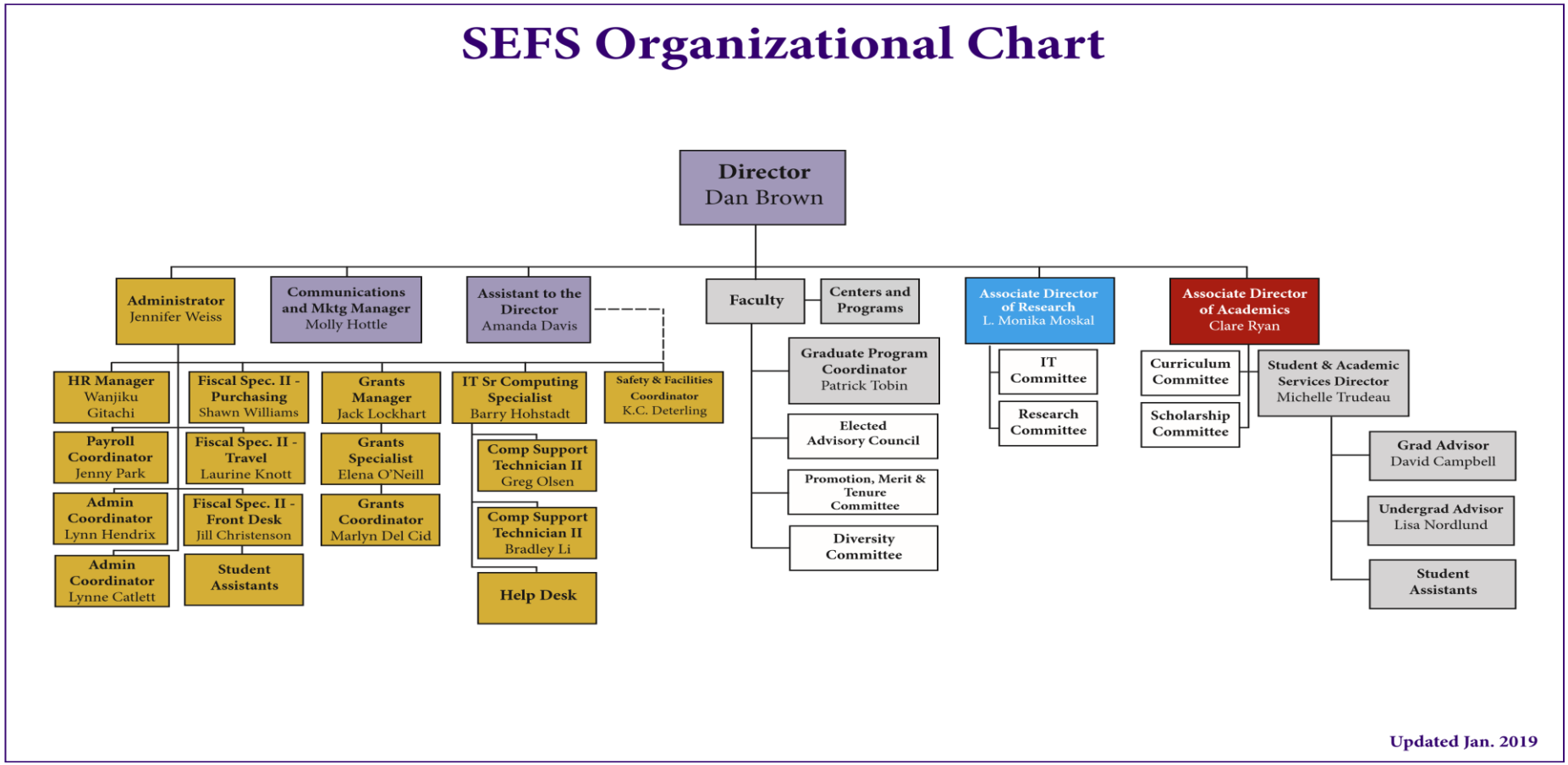
Given the maturation of the College of the Environment and the impending transition in the deanship, opportunities abound for new partnerships within the college and the rest of the university. Some of these opportunities are already coming to fruition, for example as the EarthLab becomes a more robust boundary organization supporting internal university collaborations that link to external stakeholders and partners. Others are more nascent, as we have not even begun discussions about the possibility of expanding the scope of professional masters programs to other units in the college (there are two others, one in the School of Marine and Environmental Affairs and one in Earth and Space Sciences), or whether we might want to have a college-level structure for offering and supporting environmental literacy or on-line courses.

The University of Washington Botanic Garden (UWBG) presents another opportunity for partnership. As a significant interface for the university to the local community, opportunities exist to evaluate whether current strengths in ecological conservation and restoration might be expanded to include university strengths in food systems (built around the UW Farm), natural-health interactions, and possibly others. The goal is to realize the full potential of that facility to serve as a convening and collaboration platform for university-community engagement. This discussion is on-going, as are organizational discussions with our partnerships about the nature and structure of the leadership of UWBG.

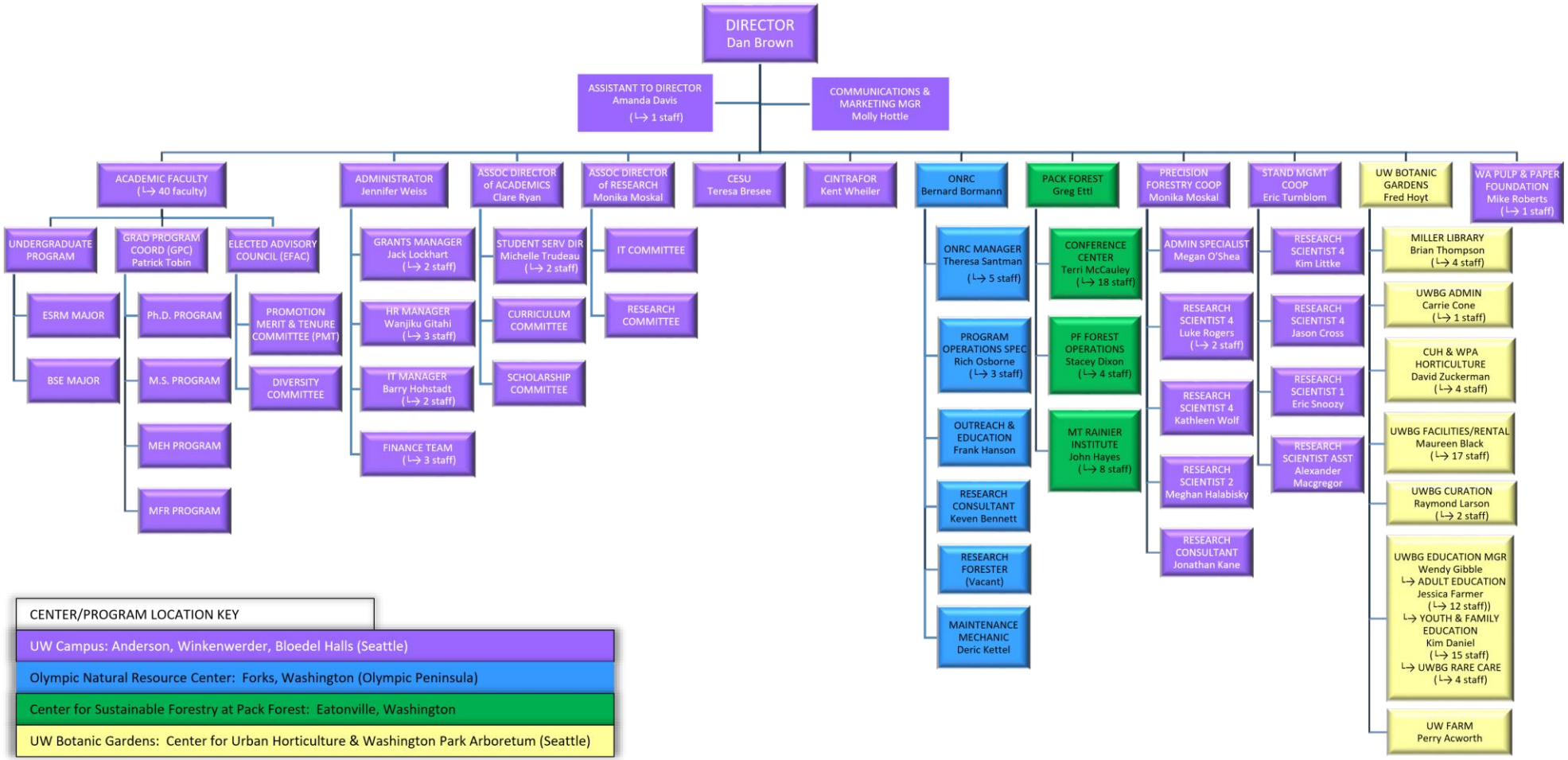
As we look to the future, we are ever mindful of the opportunities that shifts in direction bring to expand the diversity of communities in which we engage, the questions that we ask, and the faculty, staff, and students engaged in asking them. Our efforts at faculty, staff, and student training on diversity, equity, and inclusion topics have highlighted and raised awareness of these issues and choices.

C. APPENDICES

Appendix A: Organizational Chart for Director's Office



SEFS Organizational Chart



Appendix B: Budget Summary

2017-19

	Allocations & Revenue	Faculty Sal & Ben	Staff Sal Sal & Ben	Grads Sal & Ben	Hourlies Sal Sal & Ben	Operations	Benefits	Indirect Costs	Total Expenses	Ending Balance
TOTALS FOR SEFS BUDGETS	**$63,347,644**	**$11,346,432**	**$12,196,684**	**$4,327,006**	**$2,837,933**	**$13,237,145**	**$8,355,034**	**$2,121,235**	**$48,374,569**	**$14,973,075**
GOF/DOF BUDGETS	**$20,101,484**	**$8,128,367**	**$3,881,196**	**$1,219,830**	**$323,485**	**$2,241,013**	**$3,681,549**	**$0**	**$19,475,440**	**$626,044**
SEFS Teaching and Director's Office	$16,148,242	$7,855,962	$2,254,807	$1,061,190	$298,239	$1,507,182	$2,986,421	--	$15,963,801	$184,441
Centers and Sites: UWBG, Pack, ONRC	$3,953,242	$272,405	$1,626,389	$158,640	$25,246	$733,831	$695,128	--	$3,511,639	$441,603
REVENUE/SERVICE CENTERS	**$11,814,058**	**$208,822**	**$2,590,935**	**$197,146**	**$1,184,670**	**$2,693,235**	**$1,279,500**	**$0**	**$6,874,808**	**$4,939,250**
Revenue Budgets	$4,535,931	$6,860	$1,555,622	$84,432	$505,339	$719,125	$691,365	--	$3,562,743	$973,188
Cost Center Budgets	$7,278,127	$201,962	$1,035,313	$112,714	$679,331	$1,974,110	$588,135	--	$4,591,565	$2,686,562
GRANTS & CONTRACTS	**$22,029,686**	**$2,605,591**	**$4,399,059**	**$1,703,021**	**$1,110,856**	**$6,862,811**	**$2,679,435**	**$2,087,965**	**$16,681,338**	**$5,348,348**
Federal Sponsored Research (61- 62-)	$15,345,733	$1,858,135	$2,918,071	$957,894	$662,256	$5,129,615	$1,761,765	$1,329,987	$14,617,723	$728,010
Non-Federal Sponsored Research (16- 63- 66- 67- 68	$6,683,953	$747,456	$1,480,988	$745,127	$448,600	$1,733,196	$917,670	$757,978	$6,831,015	($147,062)
GIFTS & ENDOWMENTS	**$9,402,416**	**$403,652**	**$1,325,494**	**$1,207,009**	**$218,922**	**$1,440,086**	**$714,550**	**$33,270**	**$5,342,983**	**$4,059,433**
Fellowships/Scholarships (80- 82-)	$2,242,056	$76,837	--	$835,574	--	$111,182	$42,809	$33,270	$1,099,672	$1,142,384
Discretionary/Gift Budgets (64- 65-)	$7,160,360	$326,815	$1,325,494	$371,435	$218,922	$1,328,904	$671,741	--	$4,243,311	$2,917,049

2015-17

	Allocations & Revenue	Faculty Sal & Ben	Staff Sal Sal & Ben	Grads Sal & Ben	Hourlies Sal Sal & Ben	Operations	Benefits	Indirect Costs	Total Expenses	Ending Balance
TOTALS FOR SEFS BUDGETS	$86,756,764	$10,042,259	$11,291,057	$3,498,365	$3,014,554	$25,388,024	$7,354,594	$2,529,270	$53,830,566	$32,926,198
GOF/DOF BUDGETS	$18,673,332	$6,757,496	$3,580,968	$818,857	$381,056	$2,445,485	$3,078,116	$0	$13,983,862	$4,689,470
SEFS Teaching and Director's Office	$15,051,286	$6,480,809	$2,134,471	$693,263	$338,889	$1,710,435	$2,503,030	--	$13,860,897	$1,190,389
Centers and Sites: UWBG, Pack, ONRC	$3,622,046	$276,687	$1,446,497	$125,594	$42,167	$735,050	$575,086	--	$3,201,081	$420,965
REVENUE/SERVICE CENTERS	$10,393,887	$85,841	$2,432,512	$382,407	$777,257	$2,480,881	$1,061,244	$4,493	$6,158,898	$4,234,989
Revenue Budgets	$4,585,824	$50	$1,401,144	$225,000	$448,102	$815,064	$605,977	--	$3,495,337	$1,090,487
Cost Center Budgets	$5,808,063	$85,791	$1,031,368	$157,407	$329,155	$1,665,817	$455,267	$4,493	$3,729,298	$2,078,765
GRANTS & CONTRACTS	$48,993,100	$2,863,960	$4,154,866	$1,750,067	$1,643,139	$18,119,138	$2,636,839	$2,506,865	$28,531,170	$20,461,930
Federal Sponsored Research (61- 62-)	$39,315,361	$1,733,866	$2,972,284	$1,247,015	$1,280,188	$16,822,324	$1,825,379	$1,568,790	$27,449,846	$11,865,515
Non-Federal Sponsored Research (16- 63- 66- 67- 68	$9,677,739	$1,130,094	$1,182,582	$503,052	$362,951	$1,296,814	$811,460	$938,075	$6,225,028	$3,452,711
GIFTS & ENDOWMENTS	$8,696,445	$334,962	$1,122,711	$547,034	$213,102	$2,342,520	$578,395	$17,912	$5,156,636	$3,539,809

Fellowships/Scholarships (80- 82-)	$1,844,806	--	--	$148,184	--	$936,620	$35,901	--	$1,120,705	$724,101
Discretionary/Gift Budgets (64- 65-)	$6,851,639	$334,962	$1,122,711	$398,850	$213,102	$1,405,900	$542,494	$17,912	$4,035,931	$2,815,708

2013-15

	Allocations & Revenue	Faculty Sal & Ben	Staff Sal Sal & Ben	Grads Sal & Ben	Hourlies Sal Sal & Ben	Operations	Benefits	Indirect Costs	Total Expenses	Ending Balance
TOTALS FOR SEFS BUDGETS	$77,971,159	$9,030,378	$9,119,879	$2,618,142	$2,249,967	$17,437,422	$6,209,265	$2,671,259	$40,932,080	$37,039,079
GOF/DOF BUDGETS	$16,289,973	$6,269,574	$3,378,781	$711,924	$328,906	$2,144,359	$2,720,612	$0	$12,833,544	$3,456,429
SEFS Academic and Director's Office	$13,348,576	$5,943,328	$1,936,511	$594,787	$278,369	$1,592,950	$2,156,742	--	$12,502,687	$845,889
Centers and Sites: UWBG, Pack, ONRC	$2,941,397	$326,246	$1,442,270	$117,137	$50,537	$551,409	$563,870	--	$3,051,469	($110,072)
REVENUE/SERVICE CENTERS	$8,097,710	$38,034	$1,857,033	$165,784	$524,247	$1,734,267	$708,379	$7,732	$4,319,365	$3,778,345
Revenue Budgets	$3,690,223	--	$926,279	--	$307,772	$693,021	$346,439	$7,732	$2,281,243	$1,408,980
Cost Center Budgets	$4,407,487	$38,034	$930,754	$165,784	$216,475	$1,041,246	$361,940	--	$2,754,233	$1,653,254
GRANTS & CONTRACTS	$48,293,622	$2,712,272	$3,884,065	$1,475,546	$1,386,323	$12,844,400	$2,308,811	$2,658,698	$22,302,606	$25,991,016
Federal Sponsored Research (61- 62-)	$40,582,736	$1,653,619	$2,960,377	$1,160,809	$989,056	$11,908,991	$1,663,614	$1,604,413	$21,940,879	$18,641,857
Non-Federal Sponsored Research (16- 63- 66- 67- 68	$7,710,886	$1,058,653	$923,688	$314,737	$397,267	$935,409	$645,197	$1,054,285	$5,329,236	$2,381,650
GIFTS & ENDOWMENTS	$5,289,854	$10,498	$0	$264,888	$10,491	$714,396	$471,463	$4,829	$1,476,565	$3,813,289
Fellowships/Scholarships (80- 82-)	$1,454,006	$10,498	--	$232,613	$10,491	$702,506	$37,986	$1,268	$995,362	$458,644
Discretionary/Gift Budgets (64- 65-)	$3,835,848	--	--	$32,275	--	$11,890	$433,477	$3,561	$481,203	$3,354,645

Appendix C: Information about Faculty

List of faculty members and their corresponding ranks, appointment type, additional affiliations and CVs are provided in the Shared Google Drive available to the Academic Program Review Committee.

Appendix D: Diversity Plan

Diversity Profile and Trends

Fall

Select Unit

Campus:
Seattle Campus

College:
College of the Environment

Department:
Environmental and Forest S..

Major:
All

Select Breakdown

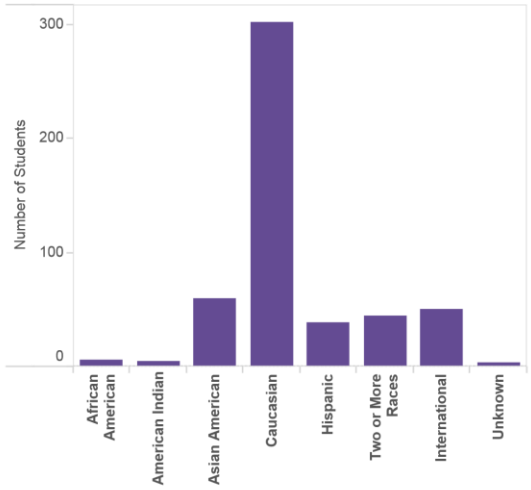
Race/Ethnicity

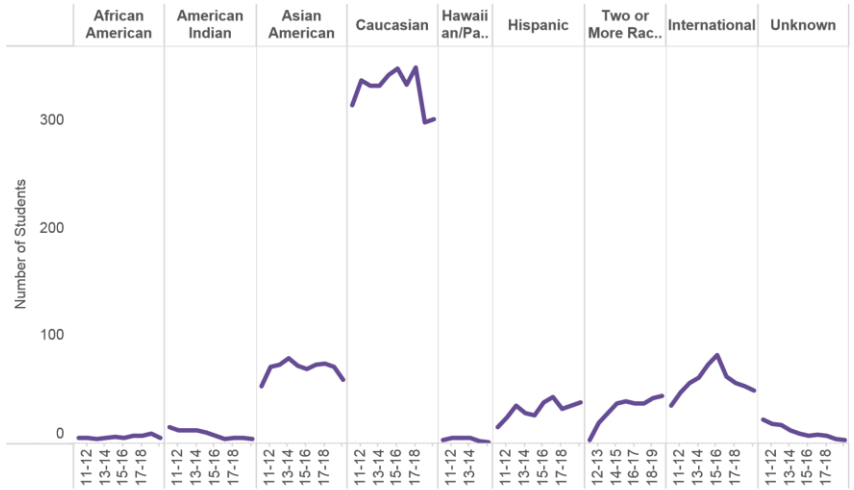
Select Measure

Number of Students

Legend

% Change in # Students
-20% 20%





Fall Quarter Race/Ethnicity Trend - Table Format

Academic Year	African American		American Indian		Asian American		Caucasian		Hawaiian/Pacific Islander		Hispanic		Two or More Races		International		Unknown	
	% of Total	Students	% of Total	Students	% of Total	Students	% of Total	Students	% of Total	Students	% of Total	Students	% of Total	Students	% of Total	Students	% of Total	Students
10-11	1.3%	6	3.4%	16	11.5%	54	67.0%	315	0.9%	4	3.4%	16			7.7%	36	4.9%	23
11-12	1.1%	6	2.4%	13	13.6%	72	63.7%	338	1.1%	6	4.7%	25	0.8%	4	9.0%	48	3.6%	19
12-13	0.9%	5	2.3%	13	13.2%	74	59.3%	333	1.1%	6	6.4%	36	3.6%	20	10.1%	57	3.2%	18
13-14	1.1%	6	2.3%	13	14.0%	80	58.3%	333	1.1%	6	5.1%	29	5.1%	29	10.9%	62	2.3%	13
14-15	1.2%	7	1.9%	11	12.5%	73	58.5%	343	0.5%	3	4.6%	27	6.5%	38	12.6%	74	1.7%	10
15-16	1.0%	6	1.3%	8	11.6%	70	57.7%	349	0.3%	2	6.4%	39	6.6%	40	13.7%	83	1.3%	8
16-17	1.4%	8	0.9%	5	12.9%	74	58.1%	334			7.7%	44	6.6%	38	11.0%	63	1.6%	9
17-18	1.4%	8	1.0%	6	13.0%	75	60.9%	350			5.7%	33	6.6%	38	9.9%	57	1.4%	8
18-19	1.9%	10	1.1%	6	13.7%	72	57.0%	299			6.9%	36	8.2%	43	10.3%	54	1.0%	5
19-20	1.2%	6	1.0%	5	11.7%	60	59.1%	302			7.6%	39	8.8%	45	9.8%	50	0.8%	4

Restrict Cohort

Tuition/Fee-Based:
All

Student Class:
All

Academic Origin:
All

Student Residency:
All

Student Race/Ethnicity:
All

Full/Part-Time:
All

Sex:
All

New to Level:
All

STEM Student:
All

Equity and Inclusion in the School of Environmental and Forest Sciences

Respect for difference and equity is a core value in the School of Environmental and Forest Sciences. We acknowledge and embrace difference (including race, gender, class, sexuality, religion, age, citizenship status, and ability) as we strive to create learning environments, scholarship, mentoring relationships, and working environments that foster inclusivity and belonging in our community. To do so, we strive to promote equity and inclusion by eliminating individual and institutional discrimination.

The School of Environmental and Forest Sciences will:

- Actively recruit a diverse student body, including through nontraditional pathways like transfers, tribal schools and veterans
- Sustain a diverse student body through mentorship, staff support, and student groups at the graduate and undergraduate levels, with a focus on retention
- Recruit, hire and retain a diverse faculty and staff who reflect the populations we serve, by:
    - Following best practices for recruiting, hiring and retaining a diverse workforce (incorporating practices into such activities as job advertisements, interviewing, requiring DEI statements in applications, hiring, onboarding, support, etc.).
    - Providing regular training and workshops on equity and working with diverse populations
    - Valuing difference and equity work in our hiring, evaluation, and promotion of faculty and staff
- Support and engage an active Diversity Committee composed of faculty, staff, and students that plans and promotes diversity, equity and inclusion related events
- Foster an inclusive research and teaching environment in our physical buildings, offices, laboratories, and field sites by:
    - Partnering with groups on and off campus that provide support and resources for creating and maintaining inclusive workplaces
    - Creating physical spaces (labs, offices, classrooms, hallways) that simultaneously honor the history of our field and celebrate the contemporary diversity of our students, staff, and faculty
    - Building a culture of transparency for all our operations, including having open Diversity Committee meetings
- Forge productive relationships with difference and equity-focused groups on campus, including GOMAP, OMA/D, DDCSP, LSAMP, Q Center, Student Veteran Life and RSOs that engage with underrepresented populations of students
- Integrating difference and equity-related knowledge and skills into learning experiences inside and outside the classroom. These areas include:
    - Building partnerships with community organizations focused on difference- and equity-related initiatives
    - Public scholarship that foregrounds difference and equity
- Conduct reciprocal, community-engaged research in areas that have a positive impact for diverse population.

We thank the UW iSchool and the UW Department of Communication for inspiration for the format of this statement.

Adopted by SEFS Faculty: June 13, 2019.

Appendix E: SEFS Bylaws

\\cfr.washington.edu\main\Groups\Dept\Chairs\BY-LAWS\SFR Bylaws approved April 2011.doc

SCHOOL OF FOREST RESOURCES BY-LAWS

In order to exercise the powers granted under Faculty Code, Section 23-43, and to advise the Director as required in Section 23-43B, in an orderly and expeditious manner, the faculty of the School of Forest Resources (School) establishes herewith, under Faculty Code, Section 2345A, its organization and rules of procedures

ARTICLE I PURPOSE AND FUNCTION

Section 1. The purpose of the School shall be to provide programs within the larger context of the College of the Environment and the University of Washington, whose mission is defined in RCW, 28 B-20.020 Vol. 1-1.

Section 2. The faculty of the School of Forest Resources, University of Washington, is the School's governing body, under The Faculty Code, Section 23-41.

Under Section 13-23 of the Faculty Code, the School faculty share with its Director and the Dean of the College of the Environment the responsibility for such matters as:

1. Educational policy and general welfare
2. Policy for the regulation of student conduct and activities
3. Scholastic policy, including requirements for admission, graduation, and honors
4. Approval of candidates for degrees
5. Criteria for faculty tenure, appointment, and promotion
6. Recommendations concerning campus and University budgets
7. Formulation of procedures to carry out the policies and regulation thus established

Upon request, the Director of the School shall provide a member of his or her faculty with information concerning salaries, teaching schedules, salary and operations budget requests, appropriations, allotments, disbursements, and similar data pertaining to the School, or request such information as needed from the Dean of the College of the Environment. Section 23-46H

Section 3. Pursuant to Section 23-43 of the Faculty Code, the faculty of the School:

A. shall, with respect to academic matters,
   1. determine its requirements for admission and graduation;
   2. determine its curriculum and academic programs;
   3. determine the scholastic standards required of its students;

4. recommend to the Board of Regents those of its students who qualify for University degrees;
5. exercise the additional powers necessary to provide adequate instruction and supervision of its students;

B. Shall, with respect to personnel matters, make recommendations to its Director and the Dean of the College of the Environment in accordance with the provisions of Chapter 24 and of Section 25-41.

ARTICLE II VOTING MEMBERSHIP

Members of the School faculty who are voting members of the University faculty shall be voting

\\cfr.washington.edu\main\Groups\Dept\Chairs\BY-LAWS\SFR Bylaws approved April 2011.doc

members of the School faculty, in accordance with the Faculty Code, Section 21-32:

A. Except as provided in paragraph B of this Section the voting members of the University faculty are those faculty members holding the rank of (tenure, research track, and WOT): professor, associate professor, assistant professor, full-time instructor, or full-time lecturer.

B. Notwithstanding the rank held, the following are not voting members of the faculty: persons serving under acting or visiting appointments; persons serving under research appointments, holding less than 50% appointments; persons on leave of absence;
persons serving under clinical or affiliate appointments; persons of
emeritus status unless serving on a part-time basis;
persons serving under adjunct appointments insofar as their adjunct appointments are concerned.

C. Research faculty may vote on all personnel matters as described in the Faculty Code except those relating to the promotion to and/or tenure of faculty to the following ranks:
Senior Lecturer
Assistant Professor
Associate Professor
Professor
Assistant Professor WOT
Associate Professor WOT
Professor WOT

Section 13-31, April 16, 1956; S-A 32 May 8, 1967; S-A 37, February 8, 1971; Section 21-32A, 21-32C, March 6, 2001; all with Presidential approval.

D. Voting Membership in Relation to Joint Appointment

A faculty member who has the privilege of participation in governance and voting in the primary department may arrange with the secondary department(s) either to participate or not to participate in governance and voting in the secondary department(s). This agreement must be in writing and will be used for determining the quorum for faculty votes (Sec. 24-34 Part B7).

ARTICLE III COUNCILS AND STANDING COMMITTEES

The School has an Elected Faculty Advisory Council, an elected Promotion, Merit, and Tenure Committee, an elected Curriculum Committee, and various standing committees and *ad hoc* committees that are formed and appointed by the Director of the School.

School Elected Committees

Section 1. Elected Faculty Advisory Council

In order to exercise the powers granted under the Faculty Code, Section 23-45, the School Elected Faculty Advisory Council establishes herewith its structure, function, and rules of procedures.

The Elected Faculty Advisory Council (EFAC) of the School of Forest Resources is elected by the faculty as a whole and assumes the following structure, functions, and procedures as authorized by vote of the School faculty.

Structure of the EFAC

A. The EFAC shall consist of five regular members with one alternate member. There will be no more than one member, regular or alternate, with the same primary faculty interest area (see Article IV).
B. Regular members shall be EFAC voting members. The alternate member is encouraged to attend meetings but shall vote only when a regular member is absent.
C. A quorum shall be defined as three members of the EFAC and may include the alternate member. A motion shall require a quorum majority to pass.
D. The term of office of EFAC members shall be 3 years.
E. EFAC members will elect a Chair and Vice-Chair to serve for the following academic year by the tenth (10th) week of Spring Quarter. The term of office for the Chair will be one year with no reappointment during any 3-year term. The Chair shall be a voting member of the faculty from the associate or full professor ranks.
F. The EFAC shall meet at least once each quarter of the regular academic year.

Election of EFAC Members

A. Members of the EFAC shall be elected during a regularly scheduled meeting of the general faculty or by electronic ballot as authorized by the faculty.
B. The Chair of the serving EFAC shall bring at least two nominees before the faculty for each vacant position. Additional nominations may be made from the floor. No current member of the EFAC may be nominated.
C. EFAC members, including the alternate, shall be elected to serve staggered terms of office. An uncompleted term of office may be filled for the duration of the original term by special election.

Function of the EFAC

A. The EFAC shall:

1. Advise the Director on, or as requested by members of the faculty discuss with the Director, matters involving academic policy and practices, including priorities, resource and salary allocations, and budgets.
2. Draft and periodically review bylaws of the School for discussion and consideration by the School faculty.
3. Provide other advice involving academic policy and practices to the Director as requested by members of the School faculty.

4. Provide other advice to the Director as requested.

B. The Chair of the EFAC shall:
1. Lead the regular meetings of the EFAC and set the agenda for the Council.
2. Serve as a member of the School Director's Council.

3. Serve as a member of the School Planning Committee.

C. The Vice-Chair shall serve in the role of Chair whenever necessary.

D. Meetings of the EFAC may be called by the Director, EFAC Chair, or, in their absence, their designated replacements.

Changes to the Structure and Function of the School EFAC

Amendments to the structure and function of the EFAC may be made when such changes are submitted to all faculty and are discussed at a regularly scheduled faculty meeting. Amendments must be approved by a quorum majority of voting faculty.

Section 2. Promotion, Merit, and Tenure Committee

The Promotion, Merit, and Tenure (PMT) Committee consists of six members at the rank of Professor or Associate Professor, that represent the breadth of the School faculty interest areas as well as research or WOT faculty. Vacancies on the committee are filled from a list of nominees proposed and voted on by the faculty. Each member serves a 3-year term. The committee selects its own Chair. The Chair of the PMT Committee shall be elected from among the members of the Committee for a term not to exceed 3 years.

The functions of the PMT are to:

A. Formulate and periodically review criteria for implementation of University Policy for faculty appointment, promotion, and tenure (University Handbook, Vol. II, Section 1323{5} and 13-31{45}). Proposed changes in criteria shall be referred to faculty for approval.
B. Evaluate procedures for appointment, promotion, and tenure decisions and to change these as necessary while maintaining congruence with relevant University Handbook directives.

C. Serve as an advisory panel to the Director regarding recommendations for PMT Committee review and decisions concerning School faculty (University Handbook, Vol. II, Section 23-43[b]).

All criteria and procedures pursuant to recommendations for PMT Committee decisions
shall be consistent with University Handbook, Section 23-46 and Chapters 24 and 25.

Election of PMT Committee Members

A. Members of the PMT Committee shall be elected during a regularly scheduled meeting of the general faculty or by electronic ballot as authorized by the faculty.

B. A subcommittee of the serving PMT Committee shall bring at least two nominees before the faculty for each vacant position. Additional nominations may be made from the floor. No current member of the PMT Committee may be nominated.

C. PMT Committee members shall be elected to serve staggered terms of office. An uncompleted term of office may be filled for the duration of the original term by special election.

Section 3. Curriculum Committee (undergraduate and graduate)

The School Curriculum Committee is responsible for overseeing the undergraduate and graduate programs of the School and reviews and approves all planned changes to courses and programs before those requiring a faculty vote are brought before the faculty for final action. Periodically, the Committee reviews the academic programs of the School in order to ensure that they are current and appropriate to the needs of the students served.

Membership

Membership of the Curriculum Committee consists of the Environmental Science and Resource Management and Bioresource Science and Engineering Curriculum Coordinators, the Graduate Program Coordinator, four other elected faculty representing the breadth of the School's undergraduate and graduate programs, one undergraduate student representative (*with vote),* and one graduate student representative (*with vote*). The Associate Director and the Director of Student and Academic Services are *ex-officio* members without vote. The Committee elects its own Chair. Faculty representing undergraduate and graduate programs will serve 2-year terms and student representatives will serve 1 year. The Curriculum Committee shall provide the Director with nominations of faculty members for the Curriculum Coordinator and the Graduate Program Coordinator positions. The selected faculty members for the Curriculum and Graduate Program Coordinators are appointed by the Director and serve terms at the discretion of the Director.

Election of Curriculum Committee Members

A. The four elected faculty members of the Curriculum Committee shall be elected during a regularly scheduled meeting of the general faculty or by electronic ballot as authorized by the faculty.

B. A subcommittee of the serving Curriculum Committee shall bring at least two nominees before the faculty for each vacant position. Additional nominations may be made from the floor. No current member of the Curriculum Committee may be nominated.

C. Curriculum Committee members shall be elected to serve staggered terms of office. An uncompleted term of office may be filled for the duration of the original term by special election.

D. Student representatives are sought and elected by the Committee.

School Standing Committees

To serve the best interests of the School by ensuring committee membership that reflects the disciplinary and organizational breadth and the experience and expertise of the School's faculty, staff, and students, the Director will review effectiveness of current committee structure each biennium, and will consult the Elected Faculty Advisory Council, the Director's Advisory Council, and committee chairs when appointing committee members.

Section 4. School Lands and Educational Outreach Committee

Responsibilities: The School Lands and Educational Outreach Steering Committee 1) Recommends policies to guide the management of all lands and their associated facilities under School jurisdiction, 2) Facilitates all educational outreach events organized and sponsored by the School, such as the Denman Forestry Issues Series, and the Environmental Forum, 3) Reviews and updates the existing strategic plan for outreach, with the goal of enhancing efficiencies and encouraging collaboration, and 4) Meets at least once per quarter. Annual activity reports are submitted to the School Director.

Membership: Membership of the School Lands and Educational Outreach Steering Committee consists of the Directors of the Stand Management Cooperative, the Precision Forestry Cooperative, the Olympic Natural Resource Center, and the Center for International Trade in Forest Products, the Center for Sustainable Forestry at Pack Forest, the Wind River Canopy Crane Research Facility, the UW Botanic Gardens, the Northwest Environmental Forum, the Pacific Northwest Cooperative Ecosystems Study Unit, a representative of the Advancement staff assigned to the School, the School Communications Director, one student from the School (*with vote*), and a Committee Chair that is appointed by the School's Director. Membership is determined by reason of administrative assignment. The student representative is elected by the committee.

Section 5. School Planning Committee

Responsibilities: The School Planning Committee (SPC) serves to solicit the views of the entire School community and is responsible for facilitating the formation and continual updating of the School's strategic vision and plans. Recommendations from the SPC are referred to the Director for action. Annual activity reports are submitted to the School Director.

Membership: Members include the School Associate Director, the School Administrator, the Assistant to the School Director, the School Research Administrator, Chair of the EFAC, two School Center Directors, the School Director of Student and Academic Services, the School Communications Director, a representative of the Advancement staff assigned to the School, four School faculty members, and one student from the School (*with vote*). Members who are not determined by reason of administrative assignment and the Committee Chair are appointed by the Director and serve terms at the discretion of the Director. The Chair is selected by a vote of the committee. The student representative is elected by the Committee and serves for 1-2 years.

Section 6. School Scholarship and Financial Aid Committee (undergraduate and graduate)

Responsibilities: The School Scholarship and Financial Aid Committee is responsible for distributing the available scholarship/fellowship funds in accordance with School Scholarship Policy and fund stipulations and for recommending adjustments to policy as necessary. Annual activity reports are submitted to the School Director.

Membership: Members include the Associate Director (Chair), the Director of Student and Academic Services (*ex-officio*), Graduate Program Coordinator of Student and Academic Services (*ex-officio*), School Administrator (*ex-officio*), a representative of the Advancement staff assigned to the School (*ex-officio*), and

three faculty members. Faculty members who are not determined by reason of administrative assignment are appointed by the Director and serve terms at the discretion of the Director.

Section 7. New Research Group

Responsibilities: The New Research Group facilitates the development of entrepreneurial interdisciplinary teams to advance the School's areas of strength and the College of the Environment's opportunities, with the goals of funding, public image, and leadership in the College of the Environment. Annual activity reports are submitted to the School Director.

Membership: Membership of the New Research Group consists of six faculty members, and the School Research Administrator. Committee faculty members and the Committee Chair are appointed by the Director and serve terms at the discretion of the Director

Advisory and *ex-officio* Committees and Councils

Section 8. School Visiting Committee

Responsibilities: The School Visiting Committee reviews academic, research, and educational aspects of the School as viewed from outside the university environment.

Membership: Members represent governmental agencies, non-governmental organizations, and the business community. Members are sought and appointed by the Director and serve terms at the discretion of the Director. The Director will consult with Committee members to appoint a Chair to serve a 2-year term.

Section 9. Director's Council

Responsibilities: The Director's Council 1) discusses major issues (challenges, opportunities) impacting the School as they arise, 2) discusses School administrative, operational, and funding issues, 3) reviews minutes of and decisions made at School faculty meetings and the College of the Environment Executive Committee meetings.
Membership: Membership is determined by reason of administrative assignment, appointment, and election, and consists of the Director (Chair), Associate Director, the School Administrator, the Assistant to the School Director, the Chair of the EFAC, the currently assigned Center Director (or his/her designee) from the rotation of all Center Directors, the School Communications Director, and the Director of Student and Academic Services. As topics warrant additional School members may be invited to attend Committee meetings.

Section 10. External Relations and Communications Committee

Responsibilities: The External Relations and Communications Committee is responsible for School's internal and external relations and communications strategies, including web presence, media placement, high-profile meetings and seminars.

Membership: Membership is determined by reason of administrative assignment or appointment and consists of the School Graduate Program Coordinator, Director of Student and Academic Services, the School Director of

Communications, the Director of the UW Botanic Gardens (or designee), two faculty members, a representative of the Advancement staff assigned to the School, and a graduate student representative (*with vote).* Faculty members and the Committee Chair are appointed by the Director and serve terms at the discretion of the Director. The student representative is elected by the Committee and serves for 1-2 years.

Section 11. Computing and IT Committee

Responsibilities: The Computing and IT Committee discusses and resolves computing and IT issues across the School and augments information flow between faculty, staff, and students and School IT personnel.

Membership: Membership is determined by reason of administrative assignment or appointment and consists of the Associate Director (Chair), the School Administrator, the Director of School
IT, the School Database and Web Programmer, three faculty members, the School Undergraduate Advisor, and a student representative (*with vote*). Faculty members are appointed by the Director and serve terms at the discretion of the Director. The student representative is elected by the Committee and serves for 1-2 years.

ARTICLE IV FACULTY INTEREST AREAS

The School faculty is organized into discipline-based faculty Interest Areas for the purposes of review and admission of graduate students, nomination of graduate students for recruitment fellowships, and collective decisions regarding resources accruing to interest areas. Faculty members self-select membership in one or more areas. Although faculty may participate in more than one interest area, faculty members have voting privilege in only one. An Interest Area leader is selected by the Interest Area membership. Faculty Interest Areas, consisting of at least three faculty members and one alternate member, are formed or dissolved by an affirmative majority vote of the eligible School faculty. The Interest Area leader will notify the Director's office if there is a motion to dissolve a faculty interest area originating from within a group.

ARTICLE V VACANCY IN OFFICE

A vacancy in either elected office or appointed committee membership can occur through such processes as resignation, termination of employment, or failure to attend at least half of the meetings of any committee without advanced notification.

ARTICLE VI QUORUM

A quorum for any meeting of the School faculty shall consist of at least half the voting members of the faculty.

ARTICLE VII VOTING

A proposed action of the School faculty under the authority of the Faculty Code, Sections 2343 and 23-44, is effective if passed by a quorum majority of its voting members present at a faculty meeting. For voting in a meeting, voting may occur orally, by show of hands, or by paper ballot. Voting may also occur by electronic ballot as authorized by the faculty.

ARTICLE VIII FACULTY MEETINGS, ORDER OF BUSINESS, AND AGENDA

Meetings: At least three meeting(s) of the faculty shall be held during each academic quarter.
An annual calendar of meeting dates shall be established prior to the beginning of the Autumn Quarter by the Director. Meeting dates will not be changed unless there is an emergency, with information to the faculty regarding cause for change. Special meetings shall be held when called by the Director or when requested in writing by 50 percent of the voting membership of the School faculty.

Order of Business: The Director shall, with input from individual faculty members, councils, committees, determine the order of business.

Agenda: The agenda shall be developed by the Director with input from individual faculty members, councils, and committees. Agenda items shall be distributed to faculty prior to each meeting.

ARTICLE IX APPOINTMENT OF ASSOCIATE DIRECTOR

The Director appoints the Associate Director, a faculty member who serves at the discretion of the Director.

Appointment process:

A. Director calls for nominations and self-nominations. Director may add candidates to ensure representation of the School's disciplinary breadth.
B. Director interviews each candidate.
C. Director must discuss finalists with the EFAC with the goal of selecting an Associate Director who has faculty support, who complements the Director, and who has unique strengths that enable the Director's office to serve the School and interact positively with College of the Environment, the University, and the School's external stakeholders.

ARTICLE X PARLIAMENTARY AUTHORITY

Roberts' Rules of Order Newly Revised shall be the parliamentary authority. The rules contained in School Faculty Bylaws shall govern the faculty in all cases to which they are applicable and in which they are not inconsistent with the bylaws or special rules of order of this University.

ARTICLE XI AMENDMENTS

These bylaws may be amended at any regularly scheduled faculty meeting by two-thirds vote of those present provided notice of intent is given at the previous regular meeting or when submitted in writing to all faculty at least 2 weeks prior to the meeting at which action is taken. The bylaws may be amended by mail ballot or by electronic ballot by two-thirds of those voting providing that the requirements for a quorum established in Article VI have been met in the ballots returned and that the proposed changes and rationale have been circulated to all voting faculty at least 2 weeks prior to the date on which the ballots will be tallied.

Appendix F: SEFS promotion and tenure guidelines

Developed by SEFS PMT Committee and presented to SEFS Faculty May 26, 2019

Introduction

The following provides advice and strategies to help junior faculty with promotion and tenure. This should be viewed as a living document, and should be updated annually, as expectations for tenure and promotions will change over time. The faculty of the School of Environmental and Forest Sciences (SEFS) work across diverse disciplines with different scholarly norms that recognize varying standards of distinction. Therefore, no single set of metrics is adequate to assess a faculty for promotion. Rather, the standards of performance for the purposes of promotion and tenure in SEFS need to be flexible, permitting all faculty members to meet the norms for achievement in their own discipline while demonstrating excellence in scholarship and professional distinction, and a commitment to meeting the educational, research, and service goals of our school. To this end, it is critical that junior faculty develop pre-tenure plans (see below) that prepare them to be assessed in terms of their own disciplinary standards for excellence.

Promotion to Associate Professor

Promotion to Associate Professor is normally coupled with the award of tenure. Faculty can choose to go up for promotion at any time but will be mandatorily reviewed in their 6th year for the work they fulfilled up to their 5th year at the University. The domains that are evaluated for promotion and tenure are research, teaching, and service. Within each domain there will be several metrics that are indicators of success. These metrics will measure the quality, productivity, and impact of the faculty's research, teaching, and service. In developing their pretenure plans, faculty should map their intended contributions in each domain and be cognizant that they will be evaluated in terms of quality, productivity, and impact. Following are some performance guidelines in each domain. It is critical that junior faculty, working with their mentor(s), determine the performance norms in their field and then strive to meet or exceed those norms when their application for promotion comes up for review.

Research

Candidates for Associate Professor should show evidence of emerging national recognition of their research. It is expected that the faculty will have established themselves as a credible research scholar with a national profile through the following:

- The development of a coherent and sustained research trajectory. External reviewers and UW internal faculty committees will be looking for a research program with clearly defined themes and a positive trajectory in research productivity and impact.
- Publication in peer-reviewed journals relevant to the candidate's areas of expertise. Peer reviewed books, edited or co-edited volumes, and chapters in peer-reviewed books may also be considered scholarly publications if that is the norm for your discipline. Number of publications is an important consideration but SEFS has no definitive publication target. Publications on which the candidate or their advisee is the lead/senior author will strengthen the promotion case. As noted above, exhibiting an increase in scholarly output as your career progresses will strengthen your promotion portfolio. The Web of Science H-index is also commonly used to assess faculty publication records, but neither SEFS nor

the College has recommended guidelines for an acceptable H-index. These benchmarks may vary considerably depending on one's field. It is critical that the candidate, working with their mentor(s) and examining the record of aspirational peers, understand the norms and expectations for their discipline and incorporate them into their pre-tenure plan. Some scholarly publications may have very broad impacts, as indicated by being highly cited or by internal and external peer evaluations and reviews. Both the quantity and quality of the research publications will be evaluated in the promotion process, with recognition of potential tradeoff between these two measures. Time required to set up a fully functioning laboratory or research group will be taken into account as this timing varies by discipline.

- Submission of grant applications for external funding to establish and pursue a research program. Junior faculty should actively seek funding for their research program. Outside funding may be challenging to obtain, especially given the current climate; therefore, it is critical that the faculty demonstrate a consistent track record of proposal submissions. Note, however, that having success in funding at least one nationally competitive proposal will significantly strengthen the case for promotion.

Teaching and mentoring

It is expected that faculty seeking promotion to Associate Professor be competent instructors and effective student mentors. The following items provide evidence for success in teaching and mentoring:

- Respectable scores on teaching evaluations. An average evaluation of above 3 (out of 5) is generally considered as a good evaluation, with greater than 4 being very good.
- A strong evaluation of teaching by peer faculty members.
- Successful mentoring of MS and PhD students through completion of their degrees.
    - Whereas SEFS has no definitive graduation targets, it is generally expected that faculty will have graduated at least one or two graduate students before their mandatory promotion year and that have at least one PhD student working toward completion of their degree.

On the basis of student evaluations, peer reviews, awards, and participation in school and/or college or university activities related to teaching, the candidate must show clear effectiveness as a teacher in the classroom, in student advising, in mentoring of graduate students' work and supervision of independent studies or internships, and in other forms of instruction involving students. Candidates whose record reflects difficulty in teaching must also be able to document steps taken to correct these deficiencies, and their record should reflect, in the form of student evaluations, peer evaluations, and other means, that significant improvement has occurred.

Service

Junior faculty are not encouraged to devote substantial time and energy to academic service activities, but are expected to provide limited service on school committees, and, if asked to serve, limited service on campus committees or governing bodies. Junior faculty are encouraged to engage in professional service (e.g., peer review of scientific papers and grant proposals) that will facilitate building a professional network. Engaging in professional service will also help to identify external faculty that may be good candidates for reviewing promotion packages.

Promotion to Professor

Candidates for promotion to Professor should have achieved national and international prominence as scholars. The criteria for promotion consider the realms of research, teaching and mentoring, and service and are similar to those for promotion to Associate Professor, but the faculty record needs to demonstrate substantial achievement in each of these areas and collectively make a good case for mature scholarship.

Research

Faculty who qualify for promotion to Professor must have an established research program with national and international impact. The research requirements for promotion for Professor are similar to those for promotion to Associate Professor, but the expectation is that the faculty will have a well-established research program. It is critical that the candidate - working with their mentor and the director, and examining the record of aspirational peers - understands the norms and expectations for their discipline for promotion to Professor. The following are guidelines for faculty seeking promotion to Professor:

- A publication rate that demonstrates good research productivity.
- An H-index and citation rate that demonstrates the impact and quality of their publications.
- Adequate external funding to support their research program while an Associate Professor. Faculty seeking promotion should demonstrate continued effort to submit proposals to maintain adequate funding. Success in being awarded competitive funding significantly strengthens the case for promotion.
- Evidence of national and international recognition for research in the form of reviews, citations, awards, external letters of assessment, invited talks/lectures, invitations to serve as high-level grant reviewers or panel members (e.g., from NSF, USDA, NIH, NASA), service on international scientific organizations (e.g., IUCN), and other distinctions can help demonstrate the candidate's level of recognition.

Instruction and Mentoring

Candidates for the rank of Professor should be able to demonstrate that they are effective classroom teachers as well as successful graduate student mentors. Evidence of success in teaching and service includes:

- Good scores on teaching evaluations.
  - An average evaluation of above 3 (out of 5) is generally considered as a good evaluation, with greater than 4 being very good.
- Positive evaluation of teaching by a peer faculty member.
- Successful mentoring of MS and PhD students through completion of their degrees. Faculty seeking promotion to Professor are expected to have graduated both MS and PhD students and should have a cohort of students at various stages toward their degrees.

Service

Successful candidates for promotion to Professor will demonstrate active participation in the life of the school, the College, and the University by service on student, school, and/or college committees. They will show a record in school activities that goes beyond participation by documentation of their activities to improve life of the school, college, or university. Candidates for promotion to Professor are also advised to have maintained a strong professional service record, including service to journals in an editorial capacity, and should take leadership roles in professional organizations.

Service can play a larger role in the scholarship portfolio of faculty seeking promotion to the rank of Professor, provided the service can be demonstrated to have a scholarly component. Applying the results of one's research in the field or co-producing it with stakeholders, the community, or with industry are examples of scholarly service activities. Similarly, faculty engaging in K-12 education can be a scholarly service contribution provided the engagement is substantial. Some effort should be made to document the impact of this work, e.g., through testimonials, data on numbers of constituents reached and how, press accounts, awards or other recognitions. Faculty seeking promotion need to be careful, however, that service does not compromise their research and teaching productivity and quality.

Mentoring Candidates toward Promotion and Tenure

All tenure-track professors should have at least one, and preferably more than one, mentor. Working with the SEFS Director, junior faculty should identify and enlist faculty colleagues who can serve as a mentor. The purpose of the mentor is to give the candidate advice in the areas of research, teaching and graduate student mentoring, and service that is germane to achieving promotion and tenure according to school and University guidelines. It is important that the mentor be in the same field as the junior faculty such that they can advise on the general requirements for promotion in their discipline and outline what elements should be in successful promotion package.

Early in their first year, the tenure-track candidate should work with a mentor and the Director to develop a pre-tenure plan for achieving tenure according to their anticipated tenure review schedule. This schedule will take into account the procedures outlined by the College of the Environment and the guidelines discussed above. The plan, which is aspirational and thereby developed entirely for the benefit of the candidate, should provide both a sense of the level and forms of expected productivity, and the ways in which excellence (impact and quality) in performance will be assessed. The plan is to be understood as a "living document" in that it can be revised and reconsidered as necessary as the faculty member's program of scholarship develops. Faculty should meet with their mentor(s) regularly, no less than once a year, to update the pre-tenure plan and to assess progress against the plan. It is up to the junior faculty to make full use of their mentor(s) in developing their career portfolio.

Some Advice for Candidates Applying for Promotion and/or Tenure

Understand the criteria for P&T

- Review the College of Environment and University of Washington procedures, policies and requirements for promotion and tenure. Also recognize that the P&T guidelines and processes at the School, College, and the Provost Office may not perfectly align. For example, the College review may focus on the achievements since the last promotion but the Provost Office requires full CV for promotion to Full Professor.
- Obtain promotion packages and CVs of recently promoted faculty in SEFS and of those who work in areas or modes of enquiry similar to your own as a means of identifying benchmarks.
- If you have a joint appointment, make sure a memorandum of understanding is crafted and signed at the beginning of your appointment. You may seek advice from colleagues who are or have been in a similar

position. The MOU should clearly delineate the unit specific expectations, division of responsibilities, and procedures in the following areas: teaching duties, research, service, merit reviews, promotions and tenure, professional leave, research cost return, lab and office space, and the start-up package.

Establish a strong record of achievement

Promotion requires that you demonstrate that you are doing high-quality work in comparison to your peers, as judged by more senior professionals in your field. Combined, these elements demonstrate that you are making an impact. It is important that you show you are contributing to your field in important ways that are clearly visible and that you have established yourself as an effective instructor and mentor. The following are some suggestions to help you have a successful career in SEFS.

- Publish in outlets where your work influences others and becomes known to the field.
  - One way of strategizing article placement is to investigate the rankings of journals in your field. Most journals publish their impact factors but there may be other criteria in your field of study (e.g. the flagship journal of a particular society or professional field).
  - Consider the types of conferences typical for your field as well as the visibility and networking potential of these conferences.
  - Consider the more prestigious funding agencies/foundations in your field. Are certain grants expected in your discipline? What funding level is expected?
  - Consider scholarly awards for which you can apply or ask colleagues to nominate you for them. Many associations and their sub-sections have such awards.
  - Consider applying for career development awards, such as NSF CAREER awards.
  - Think carefully about the community of scholars to which you see your scholarship contributing as a means to determine how to accomplish the above steps. This community will also be a natural place to look for letter writers for your tenure application. Get help from your mentor(s) in identifying these individuals.

- Protect the time devoted to your scholarship/creative activities
  - Learn to say no and not feel guilty about it.
  - Seek advice/support from the Director and senior faculty for protecting your time, using time wisely, and learning what activities you should pursue and those you should avoid at this point in your career.
  - Make unbreakable appointments with yourself to write, research, do field work, etc.

- Network

Networking outside the university is especially important when you come up for tenure as you will be asked to suggest senior scholars in your field to act as referees of your scholarship.

These should be people with whom you do not have any close relationship, but it is advantageous if they are at least aware of you and your work. Networking helps them to know you, but also helps you know better who might be the most effective evaluators of your work.

  - Attend conferences, get to know senior scholars. Participate in professional organizations, but think carefully about how to do this most productively. For example, by organizing conference panels you can both expand your CV and invite select people whom you'd like to meet.
  - Offer to give seminars on your colleague's campuses; return the favor.

Networking within the university helps you develop relationships with faculty in other schools and units who can act as sounding boards, and sources of advice (work/life balance, dealing with administration, etc.). Your mentors should be able to help with intra-university networking ideas.

- Develop a plan for ongoing improvement in and documentation of your instructional effectiveness
  - The Center for Teaching and Learning (CTL) on the UW campus has tools and workshops that can help you develop your teaching effectiveness. Consider attending CTL teaching workshops.
  - You can ask senior colleagues for tips, and consider co-teaching courses with those who have outstanding instructional records. Co-teaching can then serve as peer evaluation of your teaching.
  - Recognize that time spent developing instructional *content* may not be as influential on standard measures of teaching effectiveness, as pedagogically valuable, or as interesting as spending time in developing instructional *strategies.* For example, concentrate energy on meeting learning goals in every lecture and course, rather than on being bound to cover specific material.

- Make use of all university policies and resources available to you that will help you succeed. Ask if you need resources, time, or help. The Director and your senior colleagues want to help you succeed. Make sure you communicate with your Director if you have any issues – at work or otherwise – that are affecting your progress toward promotion. Ask your mentor or senior colleagues for support to make sure policies are applied to your full advantage.

- Keep track of it all

Keep anything and everything that provides documentary evidence of your effectiveness in any area of your work (research, service, teaching) – even notes from students or external collaborators, or requests for reprints from colleagues. This portfolio is sometimes known as a 'tenure diary' and can include copies of your contract and records of conversations with the
Director, the PMT committee, and your mentors regarding promotion and tenure expectations.

Appendix G: SEFS committees (Current as of Autumn 2019)

Elected Faculty Advisory Council	Josh Lawler (Chair), Jon Bakker, Renata Bura, David Butman, Anthony Dichiara (Alternate), Beth Gardner
Curriculum	Clare Ryan (Chair), Sarah Bassing (student), Greg Ettl, Heidi Gough, Ande Niedzwieski (student), Patrick Tobin, Michelle Trudeau, Dan Vogt
Diversity	Brian Harvey and Sarah Converse (Co-Chairs), Ernesto Alvarado, Courtney Bobsin (student), Esaac Mazengia (student), Michelle Trudeau
Scholarship	Clare Ryan (Chair), Jim Fridley, Brittany Johnson, , Michael Roberts (Ex-Officio), Patrick Tobin, Michele Trudeau, Jenn Weiss
IT	Monika Moskal (Chair), Martin Bandaram, Greg Bratman, Van Kane
Research	Monika Moskal (Chair), Michele Buonanduci, Mary Fisher, Phil Levin, Eric Turnblom, Aaron Wirsing
External Relations	Molly Hottle (Chair), Robbie Emmet, Indroneil Ganguly, Fred Hoyt, , Michelle Trudeau, Kent Wheiler
Promotion, Merit, and Tenure	Rick Gustafson (Chair), Ernesto Alvarado, Soo Hyung Kim, Laura Prugh, Monika Moskal, Aaron Wirsing
Special Adviser on Diversity and Inclusion	Stanley Asah
Undergraduate NREM/MFR Graduate Adviser	Sandor Toth
Graduate Program Coordinator	Patrick Tobin
Undergraduate BSE Coordinator	Rick Gustafson
Undergraduate ESRM Coordinator	Sergey Rabotyagov

Appendix H. UW Seattle Assessment Chart (program educational objectives and student outcomes)

COLLEGE OF THE ENVIRONMENT				
MAJOR	**CONTACT**	**GOALS FOR STUDENT LEARNING**	**ASSESSMENT AND RESULTS**	**NEXT STEPS**
Environmental and Forest Sciences (EFS) *Environmental Science and Terrestrial Resource Management* *Bioresource Science and Engineering*	Michelle Trudeau michtru@uw.	**Environmental Science and Terrestrial Resource Management** ***Knowledge Sets*** • Understand social, ecological, and economic theory, concepts, and processes at a variety of spatial, temporal, and institutional levels • Understand biological, physical, and chemical processes • Understand professional and environmental ethics • Understand application of ecosystem and social concepts along the urban to wildland gradient • Understand the processes of science, design, and management; the process models used to describe and communicate them; and their role in contemporary environmental issues ***Skill Sets*** • Effectively work in interdisciplinary teams • Effectively communicate to a diversity of audiences using written, oral, and graphic methods • Effectively access, evaluate, and use information and information tools • Recognize research methods used by the social, natural, and design sciences • Effectively apply analytical skills, including basic measurement and monitoring skills, and use of appropriate technology	**Assessment of Student Learning** ***All*** • Classroom assessment, various methods • Course evaluations • Peer review of teaching • Senior capstone thesis or project • Exit survey ***Environmental Science and Resource Management*** • Public poster presentation of research for capstone courses • Review of senior thesis proposals and senior theses, which allow students to design, analyze, and report on their own research, and are retained in the school for future assessment • Active involvement of students (committee appointment, interviews) in the College's curricular revision process • Regular student surveys to get ideas an input for curricular revisions to improve learning. Changes made according to this input are described below • Student self-assessment and evaluation of peer performance in small group activities that characterize activities in the courses of the major ***Bioresource Science and Engineering***	**Environmental Science and Terrestrial Resource Management** The department is seeking accreditation for two options (Sustainable Forest Management and Landscape Ecology and Conservation) in ESRM by the Society of American Foresters. The accreditation process will likely result in further curricular assessment.

		• Effectively complete at least one of the following: devise and conduct a scientifically sound inquiry; design an environmental system or a component of an environmental system; or devise a management plan, including plans for its implementation ***Developing Comprehension, Integration and Meaning*** • Understand interactions among plant, animal, and abiotic features of ecosystems • Understand business, ecological, and social tradeoffs inherent in natural resource management and use • Understand and evaluate policy in context with cultural and historical heritage • Understand the expected consequences of implementing a research, design, or management plan and be able to explain them **Bioresource Science and Engineering** The following are the Bioresource Science and Engineering Program educational objectives and student outcomes that support them: • Engineering excellence: Our graduates will engage in successful careers demonstrating engineering excellence. o Students will have the ability to apply knowledge of mathematics, science, and engineering. o Students will have the ability to apply knowledge of fiber and paper physics, chemistry, and chemical engineering as it pertains to the bioresource, paper, and allied industries.	• Surveys completed by students and faculty for targeted outcomes • Summer internships that include a survey of the industry representatives to assess how well students are educated relative to the department's objectives and their needs • Use of an assessment rubric to evaluate writing and design work (which the department defines as open-ended problems solving) periodically throughout a student's course of study. The rubric allows faculty to track each course that relate to the class meeting a student's progress and identify where the department needs to improve training in writing and problem solving. • Capstone project, which is a two-quarter sequence and which involves industry professionals who then assess student performance with respect to program outcomes • Alumni survey to assess outcomes and get curricular feedback **Curricular Assessment/Change** ***Environmental Science and Resource Management*** No major changes. ***Bioresource Science and Engineering*** Following the ABET site visit and assessment of the BSE curriculum, adjusted the program requirements in the following ways: • Dropped the Chemical Engineering course requirements and replacing them with two new core BSE courses • Added Applied Math 351 and 352 as alternatives to Math 307 and 308 • Added AA 260 as a lower-division requirement	

		○ Students will have the ability to design and conduct experiments, as well as to statistically analyze and interpret data. ○ Students will have the ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. ○ Students will have the ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. ○ Students will have the ability to communicate effectively, orally and written • Industry leaders: Our graduates will be leaders in identifying and creatively resolving-using sound professional judgment-significant bioresource issues. ○ Students will be able to pose well defined, solvable problems from complicated and loosely defined scenarios similar to those found in the bioresource and paper industries. ○ Students will be able to apply scientific and engineering principles in open ended projects, such as designing processes or solving product and production problems. ○ Students will be able to generate alternative solutions and designs, and then use sound judgment to choose between alternatives in open ended projects. Intellectual maturity: Our graduates will develop the intellectual maturity to serve their profession and community.	• Increased the engineering topics requirement from 8 credits to 15. These changes allow for greater incoming transfer student flexibility and should reduce time to degree, as well as refining the curricular focus to align with the current research in the BSE program. The increase in engineering electives will also ensure that BSE students are well rounded engineers when they graduate.	

		• Students will have an ability to function on and lead multidisciplinary teams. • Students will have an understanding of professional and ethical responsibilities. • Students will have the broad education necessary to understand the impact of engineering solutions in global, economic, environmental, and social contexts. • Students will have knowledge of contemporary issues relevant to the bioresource, paper, and allied industries. • Students will have the knowledge that life-long learning is a necessity for maintenance of professional competency, and will have the capabilities to engage in life-long learning.		