

FACULTY SENATE

Minutes January 14, 2013

Senators in Attendance: 55

Absent: Anesthesiology (Schapiro), CDAE (Eastman), Chemistry (Liptek), Education (Walls), Family Medicine (Nicholas), History (Stilwell), Libraries (Light), Medicine (Weiss), Neuroscience (Hehir), Nutrition & Food Science (Pritchard), Orthopaedic Rehabilitation (Zweber), Pathology (Ambaye) (Wilcox), Pediatrics (D'Amico), Philosophy (Chan), Radiology (Green), SAC (Prue), Surgery (Adams), Surgery (Trotter), Vice President (Kaza)

- 1. Approval of the Minutes. The minutes of December 10, 2012 were approved as written.
- 2. Senate President's Remarks. President Roberts began her remarks by welcoming Senators back from winter break. She gave brief committee updates regarding the Library Advisory of the committee who had just toured Bailey/Howe Library, and the two new General Education Committees. The two new General Education outcomes that are being explored are sustainability and diversity. Both committees are getting organized and have started planning.
- **3. Presentation of Degrees.** It was moved, seconded, and voted that the following numbers of graduates be recommended by the Senate to the President for the awarding of the appropriate degrees or certificates as authorized by the Board of Trustees. Individual names of the graduates are recorded with the Minutes of this meeting in the permanent Senate records.

Agriculture and Life Sciences	47
Arts and Sciences	161
Business Administration	16
Education and Social Services	26
Engineering and Mathematics	21
Environment and Natural Resources	30
Honors College	9
Graduate College	77
Nursing and Health Sciences	7

4. UVM President's Remarks. President Sullivan took this opportunity to welcome the Senate back and to wish everyone a happy new year. He also commented on the Provost Search status. The search committee is being put together and should be announced

shortly. He hopes their first meeting will occur in early February with the goal of holding the first round of interviews in April and May. Finally President Sullivan formally introduced Interim Provost Bob Low and thanked him for his willingness to serve in his new role.

- 5. UVM Interim Provost's Remarks. Interim Provost Bob Low spoke to the Senate addressing his plans for his time serving as Interim Provost. Low wants to get the University ready for the new Provost who will be selected this spring. This includes crafting the FY14 budget, working to evolve the culture of the university to a distributed decision making process, moving forward with SVFS (both academic and administrative) program review, continuing progress on the international pathways project, advancing general education, and hopefully creating a summer semester. All of this will be communicated in a more detailed email to the UVM community in the near future. It was questioned how involved faculty will be in the budget planning over the next few months. Provost Low answered that with the new distributed decision making model, the Deans should work directly with their faculty to inform the decisions and suggestions they put forward during this process. He also noted that there will be a strategic assessment of needs across campus, the Deans will make decisions within their own units, however, Interim Provost Low will be making cross unit decisions. This two tiered approach will allow for a balance of resources to be reached by looking at where resources currently are, and where they need to be. The ultimate goal is to have administration and faculty come to a common agreement of what the distribution of funds should look like. Another question for Interim Provost Bob Low asked him to comment on the relationship between the Administration and the Faculty Senate, and if he envisioned it changing as people staffing key positions changed. Provost Low agreed that the dynamic does change as the people in the Administration transition. He also noted that it is important to establish ground rules to preserve this relationship.
- 6. Internationalization Update Gayle Nunley. Associate Provost Nunley gave an outlined update on the Internationalization initiative. The first part of her presentation spoke to the success of the Study Abroad program at UVM. UVM ranks 5th in the top Study Abroad programs in the United States with 37% of the undergraduate population participating. This high impact practice directly correlates with retention rates, benefiting the university as a whole. Nunley also noted she would be happy to meet with departments to assess obstacles within their programs to increase the number of undergraduate students who may participate.

The second part of her presentation overviewed UVMs international affiliations. The University currently has a good dossier of relationships. The question now is how to improve and expand on those relationships and associated programs. The University is also investigating how to add more international programs and partnerships to the current study abroad offerings.

Finally, Associate Provost Nunley addressed the emerging Pathways program. This program supports students who have a first language other than English. They are selected on the basis that they meet academic requirements to study at UVM, including their proficiency in the English language. This is also supplemented by two additional

courses (over two semesters) that teach English for academic purposes. This project is hoped to begin in the spring of 2014.

Nunley answered questions from the audience after her presentation. It was asked if this was similar to the Pathways program run across New England. It was answered that this was similar; however, two key differences are that program consists of 7 universities and the courses are all taught in China. There were also questions about how much this program will cost the University, whether or not those figures had been published for public viewing, who would teach the supplemental English courses, and where support for additional international students would come from. Associate Provost Nunley answered these questions by stating the following:

- The International Pathways program is a cost neutral form of tuition.
- Non-tenure track, full-time lecturers will teach the supplemental English courses; some additional faculty will need to be hired (through ESOL)
- The funding for this program has been planned with "cushion" funds as to address issues such as additional support. The funding has been based on peer universities who have successful International Pathway programs.
- 7. Curricular Affairs. Chair of the Curricular Affairs Committee, Cathy Paris presented four proposals to the Faculty Senate. The first proposal was the clarification of what defines a credit hour with respect to online education. The CAC subgroup that worked on this proposed that a third point be added to the existing definition of a credit hour (which was approved by the Faculty Senate last year) stating that the same expectations for faculty-student contact would apply to online education, regardless of delivery mode. The definition was purposefully left vague to allow for new technologies to be used as they become accessible to the University community. There are still built in controls to assure that courses are adhering to the requirements of the definition as all courses (online and on-ground) have to go through the course action process including chair review and will be a part of the APR process. When put to a vote the proposed update to the definition of a credit hour passed unanimously.

The next proposal brought to the Senate was the change in the coversheet for the course action process. The coversheet, which serves as an instructional document, has remained unchanged since 1979, and was overdue for updating. The Provost's office streamlined the document, providing clarity on the process required for specific actions. The Faculty Senate unanimously approved this proposal.

The third item of business brought to the Faculty Senate for consideration concerned a name change of the Women & Gender Studies program. The program is requesting a name change that will allow better definition and visibility to the separate study of sexuality. The new name the program would like to go by is Gender, Women, & Sexuality Studies. The Senate unanimously approved this name change.

The final proposal brought to the committee was a self-termination request brought forward by the Canadian Studies department to eliminate the Canadian Studies major. The programming for this major is under resourced, and has not been attracting many students in the past years. Senate representative Bill Mierse reminded the Faculty Senate that this is an unfortunate event, and could happen to any program. When put to a vote, the proposal to terminate the Canadian Studies major was approved.

8. Envisioning Environment. Just before the Senate meeting the Envisioning Environment Report was released to the UVM community via email and is also available on the Provost's website (www.uvm.edu/provost/envisioningenvironment/). This presentation walked Senators through the document, highlighted its major points and illustrated the committee's process to producing the report. The committee held public forums, met weekly, accepted online submissions of suggestions and presentations for the forums, and conducted interviews at other universities. The report includes recommendations such as developing an institute for environment, sustainability, and health (ESH), creating a position with the title of Associate Provost of ESH, adding a coordinated undergraduate curriculum in ESH, creating an environmental commons, and expanding graduate support for ESH. The committee recognized that these actions will take time and also suggested a list of immediate actions UVM can take. These include but are not limited to enrolling UVM in the STARS program, appoint leadership (faculty) for implementing the above recommendations, create a ESH public relations & marketing piece for University use, and to compile the inventory done by the committee into a list accessible to the public via the UVM website.

The committee looked throughout the state to compile the inventory of existing projects. This helped create a big picture view of the projects that are already in place and highlighted areas where UVM could expand in this field. It was suggested that due to limited time, the Faculty Senate continue this discussion at the next meeting. This will also allow Senators more time to read the report and discuss it with their colleagues.

9. New Business. There was no new business at this time.

The meeting was adjourned at 5:30 pm.

"ENVISIONING ENVIRONMENT"

An Inventory and Campus Conversation with Recommendations for Investment and Future Planning at University of Vermont

Prepared by the Members of the Envisioning Environment Work Group; co-chairs Stephanie Kaza, Beverley Wemple

> for President Tom Sullivan Former Provost Jane Knodell and Interim Provost Bob Low

> > January 14, 2013

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EXECUTIVE SUMMARY

The Envisioning Environment Work Group was charged by President Tom Sullivan and Provost Jane Knodell in October 2012, to develop an inventory and recommendations regarding environmental research, education, and outreach at University of Vermont. This report reflects broad campus input from environmentally-related units; participant summaries are inventoried on the provost's web site. The committee interviewed UVM deans and faculty experts at other institutions. The report is set in the context of the significant "grand challenges" shaping the future at global, national, and state levels as well as in higher education. The committee chose to redefine its task with a broader focus on "environment, sustainability, and health" (ESH) to indicate the importance of a systems approach to addressing long-term planetary and human well-being. Detailed findings are organized according to the charge: research, graduate education, undergraduate education, and outreach.

<u>Areas of prominence</u>. The committee identified a number of areas of strength and potential investment for UVM. Current strengths include: (1) sustaining landscapes and watersheds, (2) environment and society (e.g. economies, cultures, governance), (3) promoting regional food systems, and (4) environmental health (though this needs further integration). Emerging areas of demand include: (5) sustainable entrepreneurship and (6) ecological design. A high priority theme across a number of these areas is global change (including climate) and the pressing need for effective science, policy, management and communication.

Supporting elements. The committee noted a number of unique features that characterize and support all aspects of UVM's ESH programs. These include: (1) Vermont as a small but well connected state, with a vibrant entrepreneurial spirit; (2) our location in an ecologically complex setting, adjacent to a very large freshwater lake and between two mountain ranges with a strong sense of place attractive to faculty and students; (3) a number of well established professional schools, some very highly ranked, with strong existing or potential ESH programs; (4) a small enough campus community to be well connected internally and to participate effectively in productive relationships locally and regionally.

<u>Major Recommendations</u>. The committee identified five "big ideas" to guide long-term strategic planning. These are: (1) Develop an ESH Institute that encourages cross-disciplinary collaboration among ESH researchers, provides fellowships to ESH scholars, and creates an umbrella for interdisciplinary ESH graduate advising. (2) Create an associate provost ESH position to lead, coordinate, and manage ESH activities in research, education, and outreach at UVM. (3) Coordinate ESH graduate and undergraduate programs and identify curriculum synergies and redundancies, orienting UVM education to the global "grand challenges." (4) Greatly expand graduate support for ESH to recruit the most talented graduate students with competitive funding packages in ESH. (5) Create an "Environmental Commons" -- a physical and web hub to serve as a gateway for undergraduate activity in ESH and to coordinate advising, research, and internships.

Immediate Action Steps. To build momentum, the committee recommends five steps that can be implemented promptly. (1) Enroll UVM in STARS to participate in this nationally recognized campus rating system for monitoring our campus sustainability initiatives. (2) Appoint a lead faculty person for implementing recommendations to build on the efforts of the Work Group and generate forward direction. (3) Develop sustainability general education learning outcomes through the Faculty Senate. (4) Create a high profile ESH publicity and marketing piece for prospective students that clearly describes ESH undergraduate choices. (5) Convert the Work Group inventory to an accessible master list for internal reference and public review.

I. INTRODUCTION AND CONTEXT

The Envisioning Environment Work Group was charged by President Tom Sullivan and Provost Jane Knodell in October 2012, to develop an inventory and set of recommendations regarding environmental research, education, and outreach at University of Vermont (see Appendix 1 for the full charge). This report is the result of generous and thoughtful participation and discussion by all members of the Work Group (listed in Appendix 2). We appreciate the extensive time contributions of committee members and also greatly appreciate the participation by so many members of environmentally-related units on campus (see Appendix 4 for Work Group process). Their reports are inventoried on the central provost web site and findings summarized in this report.

The "Envisioning Environment" conversations at UVM have taken place in a time of competing social demands, serious ecological and economic challenges, and new pressures on higher education. An effective long-term vision for environmentally-related research, education, and outreach at UVM will be most coherent in response to the significant driving factors shaping the future. As one forum participant observed, "Clearly the economy and the health of the environment are more closely linked than ever. To shift from an economy that measures our rate of dying to one that measures and promotes life and well-being is the challenge of this century. How can UVM lead to restore and protect the climate and the earth's living systems?" The importance of context cannot be overestimated as we seek appropriate areas of investment for the University of Vermont. Our thoughts are outlined briefly below to provide an appropriate frame for the findings and recommendations of this report.

GLOBAL CONTEXT

Environmental concerns continue to accelerate under the pressures of rising global population, rising material production and consumption, and serious threats to climate stability, water quality and access, and food production. Leading scientists have enumerated these as 21st century "grand challenges," calling for thoughtful reordering of research and education priorities. The National Academy of Sciences (2001) highlights these top concerns: 1) global climate change, 2) air and water pollution, 3) overpopulation, hunger and poverty, 4) extinction of species, 5) exhaustion of natural resources, and 6) destruction of ecosystems. Other similar lists include: 7) energy and transportation needs, 8) urban sprawl and mega-cities, 9) waste and toxics reduction, and 10) infectious disease.

NATIONAL CONTEXT

National research on interdisciplinary environmental education has been conducted under the auspices of the National Council on Science and the Environment. Data from the 2012 comprehensive survey are now being analyzed and released. Over 1400 programs across the full range of institutional types were surveyed for degrees, minors, and certificates offered; curriculum content in knowledge, skills, and values; program structure and administration; and emerging trends in new programs, particularly with sustainability themes. The data indicate an explosion of new offerings with a strong focus on interdisciplinary environmental research and education. There are many case studies and examples for UVM to learn from; at the same time there are many new competitors in the field that should spur us to develop and promote our particular niche.

Plans for future environmental initiatives at UVM should anticipate the changing nature of higher education. The newest wave of innovation delivers intellectual content and learning experiences digitally to markets beyond the campus to regional, national, and even global populations. Four year residential degrees are increasingly unaffordable and are being replaced by packages of required

courses from multiple institutions. To attract and engage future learners, UVM will need to embrace new technologies and learning models and highlight the added value of our distinctive offerings. This will require a substantial investment in technical and human resources.

STATE CONTEXT

Vermont offers a distinctive setting for supporting research, outreach, and education in environmental fields. As a state, Vermont has a strong reputation for political leadership and progressive policies related to environmental protection and social equity. For example, Act 250 provided early recognition and mitigation against the impacts of urban sprawl. Current policy initiatives address groundwater quality, toxics policy, and nuclear power. The state delegation to Washington D.C. ranks among the highest for its supportive environmental record by the League of Conservation Voters. As a state dependent on a tourism economy, Vermont promotes a strong sense of place and is regarded by many as a place of beauty and intelligent citizen engagement.

The recent report to Governor Shumlin on UVM-state relations articulates a clear call for UVM engagement in state priorities and needs. As the state land grant institution, UVM holds a special responsibility to provide research, education, and outreach that will support the health and resilience of Vermont's ecosystems and economies. The "Shumlin Report" indicates needs for strategic coordination with state agencies and priorities. Among other things, it calls for doubling the size of UVM's engineering programs and enhancing health education and outreach in Vermont.

UNIVERSITY OF VERMONT CONTEXT

In a time of increasing budget pressures for UVM as for most institutions of higher education, it is essential to allocate resources strategically and to leverage assets for the greatest return. Given the tremendous strengths in environmental research, education, and outreach at UVM, this is an obvious area to invest in to shape UVM's future. UVM has a well-established reputation for strong and popular undergraduate education programs. The Environmental Program (hosting Environmental Studies) was founded as a university-wide program in 1972 by presidential mandate and has now grown to almost 500 majors, the third largest major at UVM. The School of Natural Resources (now the Rubenstein School) was formed that same year from units in the College of Agriculture and Life Sciences, hosting over 600 students. The Environmental Science major was approved in 1997, providing a range of options for ~350 students in CAS, CALS, and RSENR. Minors in Geospatial Analysis, Food Systems, and Green Building have also been created, and interest is growing in sustainable business and environmental health. Environmentally-related graduate programs are offered in Natural Resources, Biology, Engineering, and Community Development and Applied Economics, with programs under development in Business and Public Health.

In comparison with other regional and east coast research universities, UVM's environmental offerings are broad and rich (see Appendix 5). To complement these academic offerings, we have created a number of research centers that focus on environmental work, including the Gund Institute for Ecological Economics, the James M. Jeffords Center for Policy Research, the Center for Rural Studies, the Transportation Research Center, and the Center for Sustainable Agriculture. In addition, UVM hosts regional and national research and outreach programs, including the Vermont Water Resources and Lake Studies Center, the Lake Champlain Sea Grant program, and the Northeastern States Research Cooperative. These programs provide substantial federal support to UVM faculty for environmental research, student training, and community engagement. UVM's extension offers leadership and assistance to the state in a wide range of forward thinking environmental programs.

The UVM faculty affiliated with the various colleges and schools have considerable strength in the environmental natural sciences, both basic and applied, in environmental engineering, as well as in the environmental social sciences and humanities. We host an unusually high proportion of social scientists working in areas of environment, sustainability, and health. This is a great advantage as academic institutions recognize the critical need to consider the human as well as the technical dimensions of these disciplines. The innovative Sustainability Faculty Fellows professional development program is in its fourth year and has engaged 68 faculty in course development related to sustainability themes. Progress is under way toward articulating learning outcomes for a UVM-wide general education requirement in sustainability.

Environmentally-related education at UVM is supported by well-established infrastructure for service and experiential learning and incentives for undergraduate research. Almost half the service learning courses offered to date have been environmentally-related. Many units support senior capstone research and internship experiences. The small-scale nature of UVM academic departments enhances student-focused learning and access to faculty and peer mentorship. Co-curricular activities in the residential halls (particularly GreenHouse) and Davis Center have built a nationally known green campus culture. The Office of Sustainability, one of the most highly respected such programs in the U.S, supports the Eco-Reps program and many campus greening activities. UVM has received national attention as one of the first campuses to create a substantial revolving loan fund for energy improvements and to replace bottled water with refillable stations. We have signed on to the American College and University Presidents Climate Commitment and developed a plan for attaining carbon neutrality by 2025; UVM is among the first to commit to the national Real Food Challenge. Our leadership in service learning and campus sustainability provides significant value-added learning that makes UVM stand out next to its peer east coast Research One institutions.

Nonetheless, as stated in the Work Group charge, these efforts at UVM remain scattered across many units and are not well-integrated or cohesively publicized. It has been many years since UVM has undertaken any significant initiative to enhance or refine its reputation as an environmental university. New programs in graduate and undergraduate education have been launched to meet student demand but without well coordinated strategic planning. As stated in the Work Group charge, "there is a growing sentiment that we have the potential to achieve far greater excellence, visibility, and impact in the study of the environment through a clear intellectual vision, better coordination, and building on our existing strengths."

II. FINDINGS

OVERVIEW

<u>Redefining our scope</u>. The committee was charged to inventory and assess UVM programs related to "environment." Through campus forums, interviews with deans, and committee discussions, we came to a broader definition of the task that we felt was better described as "environment, sustainability, and health." We heard a range of opinions about which of these three terms was the most inclusive category and which carried the most definitional baggage. As a group we concur that no one term is sufficient to represent our capabilities and that collectively all three terms describe an exciting systems approach that addresses the synergistic relationships necessary for long-term planetary and human well-being. In this report we use the acronym **ESH** to indicate this inclusive systems approach reflected broadly and consistently in UVM's outreach, research, and education initiatives.

<u>Areas of prominence</u>. The committee considered extensive input from a wide range of participants and identified a number of areas of strength and potential investment for UVM (see appendix 7). Current strengths include: (1) sustaining landscapes and watersheds, (2) environment and society (e.g. economies, cultures, and governance), (3) promoting regional food systems, and (4) environmental health (though this needs further integration). Emerging areas of demand include: (5) sustainable entrepreneurship and (6) ecological design. In general, these areas of strength intersect well with the three existing transdisciplinary research initiatives or "spires" and add further possibilities for collaboration and creativity. A high priority theme across a number of these areas is global change (including climate) and the pressing need for effective science, policy, management and communication.

<u>Supporting elements.</u> The committee noted a number of unique features that characterize and support all aspects of UVM's ESH programs, with identifiable and enhancing synergisms. (1) Vermont is a small but well-connected state, with a vibrant entrepreneurial spirit. We are able to put new ideas into action and accelerate these with modest human and capital resources of the university. (2) We are positioned in an ecologically complex setting, adjacent to a very large freshwater lake and between two mountain ranges, with management opportunities through well-established interstate and international policies and relationships. Sense of place is a strong theme for residents, visitors, and students attracted to UVM. (3) We have a number of well established professional schools, some very highly ranked, in medicine, health sciences, business, engineering, and natural resources, as well as strong connections to Vermont Law School -- all of these with strong existing or potential ESH programs. (4) The UVM community is small enough to be well connected internally and to participate effectively in productive relationships locally and regionally. Creative research and problem-solving innovations can be tested and mainstreamed quickly (e.g. food systems, smart grid technology).

The following sections offer a summary of strengths and challenges related to research, graduate and undergraduate education, and outreach as reported in university-wide forums and interviews with UVM Deans and environment-related outside experts.

A. RESEARCH

1. Strengths

<u>Breadth and depth.</u> The breadth and depth of environment-related research is impressive. ESHrelated research is ongoing throughout many departments, colleges and schools across the UVM campus. Our exploration and inventory revealed that ESH research is being conducted by faculty, staff, graduate and undergraduate students in (but not limited to): Anthropology, Biology, Business Administration, Chemistry, Computer Science, Community Development and Applied Economics, Economics, Education, Engineering, Environmental Science, Environmental Studies, Geography, Geology, Health Sciences, History, Mathematics, Medicine Microbiology and Molecular Biology (MMMG), Nutrition & Food Science, Pathology, Plant Biology, Plant & Soil Science, Rubenstein School of Environment & Natural Resources, Sociology, Physics, Political Science, Psychology. In addition to these departments, programs, and schools, a number of other affiliated units on campus contribute significantly to environmental research. These include (but may not be limited to): the Agricultural Experiment Station, EPSCOR, Extension, the Gund Institute for Ecological Economics, the James M. Jeffords Center for Policy Research, UVM Transportation Research Center, Park Studies Laboratory, Office of Sustainability, Center for Research on Vermont, Center for Sustainable Agriculture, the Office of the Vermont State Climatologist, the Vermont Water Resources and Lake Studies Center, Lake Champlain Sea Grant program, and the Northeastern States Research Cooperative. Many constituencies express a willingness to identify synergies and opportunities and to work collaboratively on top priority projects. *It is clear that the study of Environment, Sustainability, and Health is not the sole dominion of any one or even a handful of programs*.

<u>Focus</u>. This breadth provides a solid foundation for future ESH investment and marketing. Emergent areas of focused effort can easily be expanded with additional resources and effort. These include, for example, using the Lake Champlain basin as a natural laboratory and fostering research on the aquatic-terrestrial-human landscape. Likewise the presence of a teaching hospital at UVM offers a tremendous opportunity to use the state as a laboratory for environmental health research. The concept of "Healthy Environment, Healthy People, and Healthy Economy," cited by the deans of College of Medicine, College of Engineering and Mathematical Sciences, and the Rubenstein School, could capitalize on existing areas of research excellence in Vermont and facilitate collaborations with other states and nations, particularly Canada.

<u>Funding.</u> Although federal, state and private budgets are limited, the amount of grant dollars brought in by faculty engaging in environmentally-related research is impressive and significant. Vermont's designation as an EPSCoR state provides an opportunity to compete for and secure EPSCoR funding within the major federal granting agencies, including NSF, NASA, and DoD, all of which have or have had active EPSCoR programs at UVM. Federal formula funds also provide dollars for environmental research through the Vermont Water Resources and Lake Studies Center (USGS-supported), Agriculture Experiment Station and the Northeastern States Research Cooperative (USDA supported), Sea Grant (NOAA supported) and Space Grant (NASA supported). As reported by UVM's Sponsored Projects Administration for FY 2012, approximately *half of the total grant awards at UVM*, (\$66,851,912 out of \$129,466,938) were awarded for projects with an important environmental component to the research and education. These research dollars give individual faculty, consortiums, and programs clout in the eyes of the local, national and international community to call the study of the environment "our own." However, we need a strong messaging program and better cataloging of both funded and unfunded research to develop our reputation and open new doors of funding.

2. Challenges

<u>Approach</u>. Environment means different things to different constituencies, internal and external. In clarifying our focal areas, we need a unifying approach that best expresses what encompasses our research at UVM. Yet the creation of a single "spire"-like mechanism would derail the momentum of the Envisioning Environment process by disenfranchising some groups in favor of one specific area. It would be wiser to think broadly and invest in several existing and developing programs that offer a range of unique strengths that support emerging creativity.

<u>Scale</u>. Some environment-related research units are large both in terms of funding and number of people (e.g., Vermont EPSCOR, RSENR) while others are quite small (e.g., Office of Sustainability, Center for Research on Vermont). Each provides a useful if not critical service but, because of both physical and intellectual fragmentation, smaller units or programs may be overlooked and not fully utilized or appreciated. Some units are particularly small and poorly funded but nonetheless provide excellent value for the dollars invested. Highlighting these successes is a challenge.

<u>Communication gaps.</u> Although some people successfully navigate between the silos at UVM that fragment ESH-related research, overall there is a substantial lack of cohesiveness and communication across the units that host environmentally-focused researchers. This generates inefficiencies and makes for missed opportunities to collaborate and develop shared projects and grant support. For example, beyond Environmental Pathology, there is little formal organization in the area of environmental impact on human health. Yet there is as much research at UVM on the impact of environment on human health as there is on the health of the environment. Without clear and transparent "packaging" (as in web or print media) the environmental research lens at UVM is not well focused to internal and external audiences.

<u>Need for support funds</u>. Compared with other R1 universities, UVM research efforts are greatly underfunded, with extremely limited internal resources available for ESH research. Sharing resources between smaller and larger ESH-related programs can be difficult, especially when smaller units feel it is critical to retain their individual identity. Several forum groups called for the promotion of ESH research across academic boundaries, emphasizing the transdisciplinary nature of this work. Investments are sorely needed to provide seed funds and course release time to enable faculty to develop ESH-related research enterprises in key areas of expertise.

<u>Faculty workload</u>. Heavy undergraduate teaching loads and curricular needs constrain the ability of many faculty to expand their research scope by developing successful broad, integrative research proposals such as IGERT or HHMI training grants. Interdisciplinary proposals (which are typical for ESH) are complex and time-consuming to develop, and resulting research programs are demanding not only intellectually but logistically as well.

B. GRADUATE EDUCATION

1. Strengths

Breadth and depth. There is a tremendous amount of relevant ESH graduate education activity across campus. A number of degree programs housed within single units (departments or schools) include a focus on ESH topics, such as in Animal Nutrition and Food Science, Biology (AMP, MS, PhD), Civil & Environmental Engineering (MS, PhD), Community Development and Applied Economics (MS in CDAE, MPA), Geology (MS), Material Science, Natural Resources (a number of MS concentrations, PhD), Pathology (MS), Plant Biology (Field Naturalist MS, PBIO PhD), and Plant & Soil Science (several MS & PhD concentrations).

Cross-disciplinary programs are hosted and coordinated across multiple units (e.g., Ecology; Cellular, Molecular and Biomedical Sciences; Clinical and Translational Science; and Food Systems). UVM offers graduate certificates in Ecological Economics, Sustainable Transportation Systems and Planning, Ecological Design, Complex Systems, and Public Health. Proposed programs are currently under review, including Environmental Governance (through a PhD in Policy & Governance), and Sustainable Entrepreneurship (MBA). Associated faculty have formed a hub network for Ecology Evolution, and Environmental Biology. There is faculty interest from CAS and RSENR in developing an interdisciplinary Environment an Society graduate program to support research in the social sciences humanities, and fine arts. Forum participants also proposed strengthening graduate opportunities in Ecological Design.

<u>Themes</u>. UVM and the state of Vermont have a national reputation in environment, sustainability, and health (e.g. "healthy places, healthy people, health economies"). Environmental stewardship connected to public health attracts students interested in studying the environment. However, as noted below, Vermont's image as a "clean green" state and UVM's image as an "environmental" university are both in peril. The fact that "the environment" did not become a TRI spire of excellence was disappointing to many across campus. Among other things, this postponed an important conversation about coordinating ESH graduation education. The word "spire" is now a lightning rod to many stakeholders and would be inadequate in representing the wide-range of complementary ESH work being done in many units. Key themes enumerated by forum participants indicate important opportunities for internal synergies in graduate education.

2. Challenges

<u>Communication gaps.</u> A number of forum participants indicated that UVM is weak in communicating the values of its programs and the successes of its ESH endeavors. People internal and external to UVM believe we have not made good on our mission, as we are not yet recognized as a premier "environmental university." It is difficult to create a brand when graduate students are widely dispersed across several small departments. Chairs and program coordinators expressed a strong need for an "Environmental Clearinghouse" to promote research and fellowship opportunities that can include what some refer to as "silent partners" (e.g., chemistry and computer science). These are programs that are currently self-contained and want to focus on what they do best but who want to contribute to ESH research and be part of a bigger effort at UVM.

<u>Faculty Workload.</u> Heavy undergraduate teaching loads and curriculum needs pose significant challenges that constrain faculty ability to develop and offer graduate courses. A number of graduate programs are dependent on 200-level courses shared with senior undergraduates and eager for more challenging 300-level courses. There is overlap in course offerings between programs and unrealized possibilities for synergies in content delivery.

<u>Funding for Graduate Students.</u> To be competitive for top graduate students who could raise the profile of UVM in ESH fields, graduate student support needs to be increased in relevant graduate programs (e.g., Biology, CDAE, RSENR) to match national standards. Some BIOL doctoral students, for example, are currently dependent on Teaching Assistantships for up to five years, making it difficult to meet basic living expenses or complete their research projects. RSENR Graduate Teaching Assistant stipends are often split in half to accommodate more students.

C. UNDERGRADUATE EDUCATION

1. Strengths

<u>Breadth and depth.</u> Undergraduate teaching in ESH areas at UVM today occurs in many degree programs and departments across all colleges. There has been significant growth in the number of ESH courses, certificates, concentrations, programs, and degrees over the past two decades. The Sustainability Faculty Fellows program has generated over 50 new ESH courses or modules in the past

three years alone. Student demand is rising in current areas of concern and application, e.g. climate, energy, transportation, food, ecological design, and sustainability education. Given UVM's strong reputation in this area and high levels of global environmental concern, the growth in student interest in the last decade seems likely to continue. Investing resources in these attractive programs will ensure their central role in maintaining UVM's "green" reputation.

<u>Range of approaches.</u> Environmental offerings at UVM reflect a wide array of educational and environmental philosophies as well as differing academic priorities. Definitions of "environment" reflect different understanding of interdisciplinarity, different attitudes toward applied science and advocacy, different cultural perspectives, and different environmental values and ethics. For some students, ESH offers a gateway to a paradigm shift, for others a global worldview, for yet others a stimulating career path. The Work Group sees this range of options as a strength rather than a weakness, providing great diversity of educational experience for developing citizens and communities.

<u>Market position</u>. With respect to environment and sustainability, UVM is better positioned to take advantage of the changing nature of undergraduate education than it is in many other areas. In contrast to a number of large research universities, many more opportunities already exist for UVM students to engage in ESH research, hands-on training, experiential learning through internships, service learning, and study abroad (see Appendix 5). Strong and vibrant Environmental Studies (ENVS) and Environmental Sciences (ENSC) programs are central to UVM's reputation, mission, and success as an environmental university. Strengthening UVM's undergraduate environmental programs, improving communication and advising about environmental options, and raising UVM's green profile through better marketing would attract more students of higher quality to UVM.

2. Challenges

<u>Need for coordination.</u> The diversity of UVM's undergraduate offerings in ESH also has some downsides. Forum participants reported that it can be confusing to explain the range of options to incoming students and advisors and suggested there may be inefficiencies in program delivery. UVM's undergraduate environmental curriculum can be better coordinated, integrated, and publicized. Many forum participants, particularly Admissions, called for a comprehensive advising "map" for prospective and current students as well as faculty, to navigate UVM's undergraduate offerings in ESH. Curriculum and course offerings need to be assessed for overlap and potential for efficiencies.

<u>Administrative structure</u>. Various proposals reflect opposing approaches with pros and cons: (a) consolidate key environmental offerings within specific assigned units or (b) allow and encourage ESH to be part of many units to foster cross-campus strength for more students. That said, there is little enthusiasm or rationale for combining the ENVS and ENSC programs, either as whole programs or through a shared entry-level course, due to pedagogical, administrative, historical, and cultural differences in the two programs. National research indicates that the most successful ESH programs have greater internal leadership authority (e.g. chairs in departments) and more budget autonomy.

<u>Teaching capacity.</u> Faculty assignments to undergraduate ESH teaching and advising have not kept pace with student enrollments and interest, and needs assessment has been hampered by the university-wide nature and administrative reporting structure of the ENVS and ENSC programs. For example, ENVS, with over 500 majors and minors but only eight equivalent full-time faculty, is heavily dependent on part-time lecturers hired through Continuing Education to meet its enrollment needs, and full-time faculty face an impossible 50:1 advising ratio. There is no clear and broadly accepted mechanism to add faculty affiliates to university-wide programs, either through course buyouts or joint

workload planning. The relatively low historic and current commitment to ESH in the College of Arts and Sciences is a conspicuous gap, reducing potential for increased ESH offerings in a range of CAS disciplines and limiting CAS faculty from sharing their strengths in this area.

D. OUTREACH

UVM outreach efforts exist to (a) connect UVM with the community as partners in addressing real world challenges through engaged scholarship and transformative learning experiences; (b) provide flexible, relevant educational options for life-long learning; (c) listen and connect community and business needs with university resources to inform program development; and (d) cultivate elements and processes that support healthy communities. With the world of higher education changing rapidly, UVM's outreach units are well positioned to address these challenges.

1. Strengths

Broad capacity. UVM has a strong tradition of environmentally focused initiatives and outreach programs. UVM's Extension Program has long supported environmental efforts at the university and beyond. With a staff of ~200 (mostly off-campus) including 9 CALS faculty, 2 RSENR faculty, and 17 field faculty, Extension has been involved with a number of community and youth programs and initiatives including: Community Development Energy Conference, Town Officer Management, Certification for Sustainable Transportation, Master Gardener Program, Sea Grant (institutional match), 4-H/STEM Programs and the Watershed Alliance for High Schools. Extension is known for its sustainable agriculture and natural resource outreach initiatives on water quality and nutrient management, soil health and protection, climate change, solar and biofuel alternatives, and crop mitigation. The Center for Sustainable Agriculture is one of the strong grant-funded focal areas hosted under Extension.

Continuing Education (CE) has partnered with many local and statewide organizations such as Vermont Businesses for Social Responsibility, Vermont Environmental Consortium, Workforce Investment Board, Chamber of Commerce, Vermont Department of Labor, Vermont Department of Economic and Housing and Community Development to provide ESH programming and outreach efforts. In addition, CE has supported many campus-based ESH programs and initiatives including: Food Systems, Sustainable Business, Sustainable Community and Economic Development, Environmental Health, Summer Academy and pre-college courses with ESH themes, and ESH Professional Certificate Programs. The Community-University Partnerships & Service-Learning Program (CUPS) reports that ESH is the focus for 25% of faculty fellows, 40% of faculty planning and implementation grants, and over half the community-based research. During FY12 ~40% of service learning courses with over 90 community partners had an ESH focus.

Outreach is also central for several other ESH-related units on campus. The missions of the Gund Institute, the Jeffords Center, and the Transportation Research Center, among others, emphasize connecting research with real-world problems. As part of their collaborative activities, Gund, Jeffords, and TRC Fellows and students engage with governments, non-profit agencies, and businesses in Vermont, across the United States, and overseas.

Strong state connection. Through extensive community and state partnerships, these units help fulfill state missions using UVM expertise and academic programs. They are able to serve a wide range of populations and are poised to be able to expand this reach with the anticipated growth of online learning. Related academic centers (e.g. Jeffords Center, Gund Institute, Transportation Research Center, Water Resources and Lake Studies Center, Center for Research on Vermont, Center for

Sustainable Agriculture, and the Office of the Vermont State Climatologist) specifically hold service to Vermont as a central mission.

2. Challenges

<u>Weak integration with campus</u>. Several outreach units expressed a sense that they could be better integrated into campus ESH initiatives. While opportunities for research collaboration abound, they are difficult to facilitate due to the physical isolation of some units and some degree of ignorance about unit functions and purpose. There is a felt need for a concerted collaborative facilitation effort to better integrate research from campus faculty with the outreach units

<u>Complex reporting structures.</u> Lines of authority tend to reinforce silo-based activity rather than synergistic efforts. Differences in budget/accounting models makes financial arrangements cumbersome for shared grants and state research projects.

E. EXPERIENCES OF OTHER INSTITUTIONS

Many other efforts are under way to coordinate ESH scholarship on U.S. campuses (e.g., Duke, Yale, Arizona State, Universities of Washington, Minnesota, Michigan, California, and others). Some places have successfully established productive units with clear administrative structures; others have struggled. The comments below represent a sample of four universities and a national research analysis; our interviews were clearly far from exhaustive (see Appendix 4 for interview questions). Nevertheless, the committee found the key insights that emerged to be useful for UVM. These are supported by many informal conversations and stories from other campuses and from UVM itself.

1. What works

Institute, not a School or College. Establishing an ESH-related institute or cross-campus collaborative center has generally been more successful than reorganizing existing academic units into new schools or colleges. Such reorganization efforts tend to exclude people, create new silos and reduce buy-in. They also incur large transaction and political costs that may undercut hoped-for benefits. An institute, in contrast, can be owned by the whole campus, allow engagement and buy-in from anyone according to interest, and avoid the distraction, emotions, and politics of reorganization.

Bottom up is more successful. Efforts to reorganize around ESH are more likely to succeed if the design process is bottom up – e.g., driven by faculty and staff. We heard specific success stories based on this process as well as cautionary tales from failures. In particular, the eventual Director or Dean of any new unit will face an uphill battle if institute formation is viewed by faculty as top-down. Beyond the design phase, bottom-up participation in ongoing governance is also necessary to sustain creativity, equitable participation, and campus-wide support.

<u>Resources are essential to success.</u> This would seem obvious, but initiatives at UVM are often put into motion without adequate financial support. Interviewees were very clear that any new effort must be launched with both significant funding and a clear mandate. Major initiatives at Portland State and Stanford were launched with large private gifts (tens of millions), and University of Minnesota's institute was supported by a large internal investment raised through savings elsewhere. These funds are necessary to support collaborative seed grants, shared faculty lines, student and faculty fellowships, events and conferences, communication support, shared physical space. <u>Get the incentives right.</u> We heard repeatedly that it is critically important to provide clear benefits for units and people to participate in any new effort or unit. This involves understanding which incentives motivate faculty and students as well as developing process and budget mechanisms to support them. Examples range from major drivers (e.g., revising RPT guidelines to reward interdisciplinary collaboration and application of research) to moderate rewards (e.g., offer seed grants for interdisciplinary collaborations and supply grant writing support to those teams) to minor perks (e.g., provide lunch at events to encourage participation).

2. Cautions

<u>Avoid degree-granting authority.</u> While an institute has a clear role in faculty and graduate student research, its role in graduate and undergrad education is less clear, and possibly weak or politically problematic. Institutes may offer minors or graduate certificates, but they would not oversee graduate or undergraduate curriculum. Those generally reside within academic units and are better managed there, particularly in institutions with resource-centered management (RCM) budget models.

<u>Community relations.</u> Several people emphasized the unique role of an ESH-related unit in engaging effectively with the surrounding community, e.g. Burlington. This offers many opportunities for real-world application of research, while creating strong institutional partnerships with local, regional, and state entities. Developing tangible connections with stakeholder organizations and agencies could be one of our greatest assets in providing a strong ESH training and research program reflecting community needs and interests. However, the university may not be able to leverage this to generate new jobs or meet current demand.

<u>Need for physical space</u>. Interviewees were not unanimous on the importance of an inviting physical space to encourage collaboration. Some felt it was very important, while others did not. With space limited on the UVM campus and major capital projects held to strict debt ceilings, it would require a significant gift to accomplish a new physical space for an ESH institute. However, we think this could serve as a valuable catalyst for a campus-wide ESH initiative.

III. RECOMMENDATIONS

Recommendations from the Work Group were developed in several stages, beginning with postforum debriefs and following up with core area assessments prepared by subcommittees. In our final committee session we agreed on our top five Big Ideas as guideposts for future action. These are listed first with brief descriptions of what would be involved in each Big Idea. To get started, we add five immediate next steps that can be launched in 2013. Continued progress will require top-level leadership and support as well as specific assignments for further action. The last section is a compilation of the most prominent suggestions collected through the public forums and inventory process. These need further evaluation to determine strategic priorities for allocation of resources before additional action can be taken.

A. BIG IDEAS

1. Develop an ESH Institute or collaborative

Assess organizational structure and budget needs for an institute-like structure that encourages cross-disciplinary collaboration within the ESH community (e.g. faculty, staff, students) and offers opportunities for scholars to develop ESH proposals and conduct ESH-related research, teaching and outreach. Such an institute will obviate the need for restructuring of administrative units and will provide a space for integration and focus in the key areas of ESH. It will be most successful if there is grassroots faculty buy-in, real financial resources, and a direct reporting line for the director to the provost's office. In addition, it will be important for deans of faculty-affiliate homes to recognize some return on their release of faculty to Institute engagement and for the Institute to manage relationships with other integrating and ESH-focused units.

<u>Faculty affiliation.</u> There are many strong graduate faculty scattered across campus, including in units that do not currently offer graduate degrees (e.g., anthropology, economics, geology, geography, public administration, political science, sociology, statistics, etc.). Creating an umbrella institute would facilitate interaction and collaboration between these dispersed faculty. It would also allow faculty in interdisciplinary programs as well as units without graduate programs to advise graduate students related to their research area, thereby increasing the UVM graduate population and strengthening research across campus.

<u>Assess costs and feasibility of building or converting a physical space</u> to accommodate faculty and graduate students to gain critical intellectual mass. Consider the pros and cons based both on experience at UVM and at other research universities with strength in ESH.

2. Create an associate provost ESH position

This position would lead and coordinate ESH activities in research, education, and outreach at UVM and report directly to the provost. University-wide programs such as ENVS and ENSC as well as interdisciplinary graduate programs (e.g., Food Systems) would report directly to this position. With a central person designated for these programs, publicity, curriculum, and UVM branding messages could be more strategic and coordinated. A provost office level position could negotiate MOUs with existing units for ESH academic offerings similar to the model employed by the UVM Honors College. This person could also work to develop hiring and promotion practices for cross-unit interdisciplinary hires to remove barriers to academic success.

3. Coordinate undergrad curriculum in ESH

Chairs and directors of ENVS, ENSC, CDAE, NR, GEOG, ENV ENG, BSAD (and interested others) should be charged to consider potential for collaboration on shared courses and to identify and reduce overlaps/duplication in curriculum offerings. This could be done in the context of today's "grand challenges" – i.e. what undergraduate students need to be learning to prepare for and be effective in coming decades. A new major or minor in Sustainability Studies or Sciences should be explored as one option to meet the current national trend. This group should recommend ways to facilitate more interaction and collaboration among interested faculty in ESH with regard to undergraduate teaching and advising, particularly to integrate health and environment into UVM undergraduate programs. This process needs to be facilitated in a way that units and students see clear gains rather than losses as a result of this coordination.

4. Significantly expand graduate support for ESH

If ESH scholarship is to flourish at UVM, we must attract the most talented graduate students to participate in cutting-edge research and training. UVM needs to allocate significantly more resources toward competitive funding packages for graduate students. We need to increase the number of doctoral and post-doctoral fellowships in ESH, so that young scholars are fully supported and can focus on their research. We also recommend increasing ESH graduate stipends for GRAs and TAs to match offers from our competitors. In addition, UVM needs to create a specific fund to support graduate student research projects, available on a competitive basis.

5. Create an "Environmental Commons"

Develop a physical "hub", i.e. a space that can serve as a gateway for undergraduate activity in ESH. This might be as small as a desk in a kiosk or as large as new welcome center. This will require assessing costs, feasibility, and donor interest in supporting such a space. As described in the forum presentation, this Environmental Commons would increase the visibility of ESH at UVM, would encourage interaction and relationship-building across ESH-related fields and activities, and would foster a sense of community among the students, faculty, and staff in ESH departments. This space could house peer advisors, research opportunity and study abroad materials, ESH internship listings and staff coordinator, seminar rooms for thesis defenses, gallery space for ESH art displays, the Office of Sustainability, CUPS, and Eco-Reps programs, a student lounge, and of course, a convivial cyber café.

<u>Create an attractive and informative web site</u>. This would draw attention front and center to UVM's considerable strength in environment, sustainability, and health. A strong gateway front page could provide a clear map for incoming first year and prospective graduate students as well as faculty and staff advisors reviewing ESH options at UVM. The web portal could include links to undergraduate and graduate faculty and programs, and could highlight UVM's expertise in ESH research and outreach. It could also include links provided by Sponsored Project Administration to opportunities for research, training, and funding and could celebrate faculty accomplishments such as grant awards, presentations, and publications. The committee felt that this priority was of sufficient importance that an expert or consultant with marketing and design experience should be engaged to accomplish this work.

Environmental internships. These could be streamlined into a single one-stop office that also provides environmental research opportunities for undergraduates. Students need professional development opportunities that can translate into early career experience. Local agencies, businesses, and non-profits can benefit from engaging student energy and support. We recommend expanding investment in CUPS and the UVM Career Center to meet this highlighted need.

B. IMMEDIATE ACTION

1. Enroll UVM in STARS

UVM no longer fills out annual surveys from Sierra Club, Princeton, and Sustainable Endowments Coalition due to their faulty criteria and inconsistent processes. Thus we have fallen off the top college green lists, even though we have tremendous green credibility. The UVM Office of Sustainability is already tracking the necessary data required for national rating status by the Association for the Advancement of Sustainability in Higher Education (AASHE). Over 250 campuses are now participating in this well tested, nationally accepted campus equivalent of LEED building certification. We are overdue to participate in this rating system and take up the close monitoring of our campus sustainability initiatives.

2. Appoint faculty leadership for implementing recommendations

The Envisioning Environment process generated great momentum, interest, and a desire to take action steps immediately. Leadership and authority is needed to build on the efforts of the Work Group and maintain forward direction. The president should appoint a lead faculty person to generate the next step conversations enumerated in this report.

3. Approve and implement general education learning outcomes for Sustainability

The General Education focus in sustainability has been approved in principle by the Faculty Senate and a committee has begun work to develop a framework of learning outcomes. Their efforts should be supported to generate a proposal for Senate approval that can move forward toward implementation as quickly as possible.

4. Prepare a high-profile ESH publicity and marketing piece

This is a high priority for Admissions to ensure that ESH opportunities are communicated clearly to prospective students attracted to UVM's green brand. It should describe ESH undergraduate choices at UVM in a clear and simple way and be easily accessible from multiple entry points. Likewise it should serve faculty and staff advisors assisting students in making the appropriate academic choices.

5. Convert inventory to web portal

As a first step toward a master ESH web portal, the inventory of existing programs at UVM should be converted into an accessible master list, edited and streamlined for public review. This can then be supplemented with additional information from the faculty survey to be released with the public comment period on this report.

C. NEXT STEPS

A number of next steps have been suggested that would increase synergies and/or create efficiencies between programs. Facilitating these would stimulate creativity, entrepreneurship, and generate further ESH research, education, and outreach activity. This broad list requires further evaluation and strategic planning to maximize impact and build momentum.

Communications

1. Provide institutional grant information in a single accessible place to publicize campus-wide competitive research grants more widely (Sea Grant, EPSCoR pilot awards, the new UVM REACH grant program, etc.), encourage wider ESH participation, and set up mechanisms for internal peer review of grant proposals.

2. Clearly define the various UVM "faculty fellow roles" in their diverse arenas (e.g. writing, sustainability, Gund, etc.) and publicize them together as professional development opportunities.

3. Evaluate UVM's AdvoCat training for admissions tours and check for accuracy and appropriate information regarding ESH messaging.

Events

1. Develop campus-wide events that draw large groups of people together to showcase innovative ESH research on campus. Models include: George Aiken lectures, neuroscience workshops, Behavior and Health Research Forum) and the UVM Tedx event.

2. Develop/expand a cross-campus seminar series (perhaps with the guidance of a council with diverse representation as on the Envisioning Environment Work Group) to encourage dialogue among campus ESH researchers. Models include the RSENR seminar series and the Climate Action seminar sponsored by the Clean Energy Fund.

Research Support

1. Provide annual investment in a campus-wide, competitive, peer-review process of seed funding for ideas and research proposals in ESH.

2. Develop mechanisms and policies to provide release time for faculty to develop large coordinated grants. This might include: (a) pilot funding and/or faculty fellowships for ESH collaborations similar to the new UVM REACH Grant Program; (b) release time for professional development in ESH-related niches; (c) ESH scholar in residence options for 1-3 months; (d) competitive funds for sabbatical leaves, conference attendance or summer training; and (e) faculty course buy-outs with research dollars.

3. Align Office of Sustainability campus goals and research needs with UVM researcher expertise and capacities.

4. Invest in an electronic institutional repository to provide data management for Vermont and UVM scholars. While this would require significant resources, it would greatly enhance data sharing with state agencies and other researchers and would support more sophisticated ESH scholarship.

Curriculum

Undergraduate

1. Develop ESH undergraduate gateway courses in BIOL, CHEM that can serve a wide range of students and meet science requirements for many entry-level students. Models would be GEOG 40 Weather and Climate, PHYS 009 Energy and the Environment, and GEOL 007 Earth Hazards. Likewise, consider and coordinate potential gateway courses in the social sciences and humanities such as SOC, ANTH, HST, PHIL, REL. Models would be HST 67 Global Environmental History and PHIL 006 Ethics of Eating.

2. Develop ways to provide campus-wide advising and integration of career development, research options, and internship opportunities into the various undergraduate ESH degrees.

3. Review potential for expanding ESH learning opportunities through hybrid courses, online courses, MOOCs, summer field courses, and summer research programs.

4. Develop Environmental Education as a core concentration for the elementary, middle and secondary teacher licensure programs in the College of Education and Social Services.

5. Provide incentives for faculty to be more involved in GreenHouse and other Residential Learning Communities in relationship to ESH themes.

Graduate

1. Assess graduate curriculum gaps and redundancies, and solicit faculty interest in teaching and advising in desired niche areas. Identify relevant graduate courses with an ESH acronym across all programs.

2. Provide funding to develop and promote ESH-related graduate certificates. Potential certificate areas include: Environmental Management and Policy, Terrestrial Ecosystems, Aquatic Ecosystems, Community Development and Land Use, Environmental Dispute Resolution, and Watershed Management. A core curriculum could be developed that would apply to all certificates. If possible, offer a package discount for a certificate at lower cost than individual courses taken separately.

3. Consider cross-listing all ESH graduate students under a single administrative umbrella. This would help UVM communicate the scope of these efforts and could facilitate more efficient coverage of graduate curriculum and offer students a larger array of graduate course options.

Administration

1. Develop mechanisms for course buyouts or faculty affiliation with cross-campus programs in order to support more widespread contribution and collaboration with ESH units such as ENVS and ENSC.

2. Strengthen and invest in ENVS in future faculty hires, particularly in partnership with CAS, consistent with findings of recent program reviews and student/faculty ratios. Evaluate options for faculty affiliate status for existing UVM faculty. Provide incentives for hiring units to commit some portion of faculty workload effort to ENVS.

3. Invest in and raise the profile of ENSC and promote potential STEM-related support and collaboration. As with ENVS, evaluate options for faculty affiliate status for existing UVM faculty. Provide incentives for hiring units to commit some portion of faculty workload effort to ENSC, particularly in relationship to other STEM disciplines.

4. Commit 3-year base funding for Sustainability Faculty Fellows program to offer professional development to more fellows and develop more ESH courses.

V. CONCLUSION

The findings of the Envisioning Environment Work Group committee and process indicate that UVM has an impressive foundation in environment, sustainability, and health. To distinguish ourselves in this rapidly expanding space, however, we need to streamline our many strengths and invest strongly in key areas. With continued work and strategic investments, UVM has potential to be among the nation's leaders in ESH, with a distinctive niche that will be attractive to students, scholars, partners, and donors. Our recommendations will help to move UVM in this direction.

This report highlights a number of key take-home points. First, there is clear strength in environment, sustainability, and health (ESH) across many units at UVM, with no single unit claiming a central or guiding role. That said, there are several areas of well-developed capacity with others emerging from current interests. It has become clear to us that a single "spire" type initiative would not enjoy cross-campus support and that UVM would be better served through investing in multiple lead areas identified in this report.

Second, there is a significant opportunity for coordination among existing academic units and interdisciplinary degree granting programs to maximize clarity and effectiveness. Some key units need additional faculty investments to meet increased ESH enrollments. We recommend providing strategic oversight of this campus-wide process via a provost-level appointment that can also develop supportive mechanisms to build institutional capacity for interdisciplinary appointments of various types. Coordinating ESH activity from a central and high-level administrative office will greatly increase capacity to energize and communicate the efforts of various centers, offices and teaching/research support services to raise the profile of ESH activity at UVM.

Third, there is well-articulated need for a central ESH informational portal, both virtual (webbased) and physical. A thorough and well-designed ESH web portal would serve multiple audiences and indicate UVM's priority investment in these areas of research, education, and outreach. An innovative and attractive physical "hub" would build community, foster creativity, and be a physical entry point and home base for new, prospective, and current students interested in ESH themes.

Fourth, there is a need for better coordination of existing competitive research funds and new investments in ESH to support faculty and graduate students and to stimulate interdisciplinary, collaborative work. This could be best supported by the creation of a campus-wide ESH research institute that provides additional support for ESH graduate education. We need faculty advisory groups to encourage and select research ideas/proposals from across campus that will succeed with the national and international funding agencies. This should be accompanied by an assessment program that defines and tracks the success of current investments. This can then provide the roadmap for future ESH investments.

Fifth, a number of action steps can be taken immediately to deepen UVM's commitment to ESH research, education, and outreach. We recommend enrolling in the STARS program, generating next conversations with chairs and directors of undergraduate and graduate programs, upgrading web and print vehicles for ESH information, and appointing ongoing faculty leadership to continue the successful process begun by the Envisioning Environment committee.

ENVISIONING ENVIRONMENT AT UVM

APPENDICES

- Appendix 1: Charge to the Work Group on Envisioning Environment
- Appendix 2: Members of the Work Group on Envisioning Environment
- Appendix 3: President Sullivan's Decision Making Criteria
- Appendix 4: Work Group Process
- Appendix 5: UVM Comparator Institutions and their ESH Programs
- Appendix 6: UVM-Wide Challenges that Impact Envisioning Environment
- Appendix 7: Envisioning Environment Public Forum Participants

Appendix 1: Charge to the Work Group on Envisioning Environment

Date: 7 October 2012 To: The Envisioning Environment Faculty Work Group From: Jane Knodell, Provost

I extend my sincere appreciation for your willingness to take on this important work on behalf of the University of Vermont. In this memo I'd like to share the rationale for forming this work group, and to convey your charge.

Rationale:

1. Impressive breadth, but fragmentation. Work in the environment spans the entire University: environmental engineering, environmental science (chemistry, biology, physics, geology), environmental health, environmental economics, environmental education, environmental policy, and sustainability in business to name a few. Yet the study of the environment on campus is fragmented and lacks the visibility it deserves. There is a growing sentiment that we have the potential to achieve far greater excellence, visibility, and impact in the study of the environment through a clear intellectual vision, better coordination, and building on our existing strengths.

2. Unique moment in our history. We have a new President who has significant experience related to the study of the environment as Provost of one of the world's major research universities. In addition, during the 2011-12 Strategic Initiatives Project, a committee of deans and faculty developed a report which concluded that certain alternative organizational structures would create greater academic synergy and more logical intellectual communities than we have in our current structure. There is openness in the Senate leadership to considering alternatives.

Charge to Work Group:

1. Conduct an inventory of environmental education (undergraduate and graduate, including advising and outreach) and research (including applied research through Extension). Develop a list of faculty by college or school whose central research interests relate to the environment. Identify areas of strength and comparative advantage. Interpret "study of the environment" broadly, to include approaches in all disciplines.

2. Evaluate our current way of organizing education and research on the environment at UVM, using President Sullivan's criteria where applicable. Assess "best practices" nationally and internationally: how do the universities with the best environment research and education programs organize this activity?

3. Develop 2-3 feasible proposals for change, including organizational change, that would improve our effectiveness, measured against Pres. Sullivan's criteria. The group is encouraged to solicit big, transformative ideas from the community. Consult, communicate, and engage the faculty and the deans in your work to find the best ideas.

Timeline:

Please report back to Pres. Sullivan, Provost Knodell, and Senate President Roberts by December 20 2012.

Appendix 2: Members of the Work Group on Envisioning Environment

Stephanie Kaza, Co-Chair, Professor, Environmental Studies, Rubenstein School of Environment & Natural Resources; Director, Environmental Program; Faculty Senate Vice-President

Beverley Wemple, Co-Chair, Associate Professor, Department of Geography, College of Arts and Sciences

Bob Bartlett, Gund Professor of Liberal Arts, Department of Political Science, College of Arts and Sciences; Gund Chair of Liberal Arts

Breck Bowden, Professor, Watershed Science and Planning, Rubenstein School of Environment & Natural Resources; Director, Water Resources and Lake Studies Center

Alison Brody, Professor, Department of Biology; Co-Director, Integrated Biological Science Program

David A. Jones, Associate Professor, School of Business Administration

Ernesto Mendez, Associate Professor, Plant and Soil Science and Environmental Studies, College of Agriculture and Life Sciences

Matthew Poynter, Associate Professor, Department of Medicine – Pulmonary Disease & Critical Care Medicine, College of Medicine; Associate Director, Vermont Lung Center

Taylor Ricketts, Professor, Environment and Natural Resources, Rubenstein School of Environment & Natural Resources; Director, Gund Institute for Ecological Economics

Donna Rizzo, Associate Professor, Environmental Engineering, School of Engineering

Don Ross, Research Associate Professor, Department of Plant and Soil Science; Co-Director, Environmental Sciences Program, College of Agriculture and Life Sciences

Regina Toolin, Associate Professor, Department of Education, College of Education and Social Services

Brian Reed, Provost's Office Liaison, Associate Provost for Curricular Affairs

Catherine Symans, Provost's Office, Staff Support

Sharon Haas, Provost's Office, Web Support

Appendix 3: President Sullivan's Decision Making Criteria

- 1. Advances quality and excellence
- 2. Reflects centrality to mission, vision, and focus
- 3. Fosters comparative advantage and multiple strengths
- 4. Affects a positive and transformative "Impact"
- 5. Increases academic synergy and interdisciplinarity

6. Satisfies cost, benefit, risk assessment and "unintended consequence" analysis, including actual and projected supply and demand

- 7. Promotes distinctiveness /uniqueness of the University
- 8. Builds competencies and capacity
- 9. Leverages multiple initiatives and resolves multiple issues
- 10. Builds community and develops talent among faculty, staff, and students

Appendix 4: Process

I. Conduct of internal inventory

To inform our inventory of environmental education, research and outreach endeavors at UVM, the work group conducted a series of weekly forums, beginning on October 17, 2012. Invitees to the forums were provided with a Request for Information and asked to provide a narrative document and slides outlining (1) thematic areas of work, (2) indicators of the scope and scale of contributions in the area of environmental research, education and/or outreach, (3) constraints and opportunities that impact effectiveness, and (4) ideas and "visions" for supporting the work of individuals and units and strengthening "Environment" as a core theme of UVM's academic offerings. Forums were announced through the "UVM News You Should Know" with an open invitation to participate and to contact co-chairs Kaza and Wemple indicating an interest in presenting.

The forums were organized around the key areas of our charge:

Environmentally-engaged outreach programs (October 17)

Environmentally-engaged research centers (October 24)

Environmentally-engaged graduate education (October 31)

Environmentally-engaged undergraduate education (November 7)

Research and academic support for environmentally-engaged programs (November 28)

Materials provided by the presenters at these forums are posted on the Envisioning Environment website (<u>http://www.uvm.edu/provost/envisioningenvironment/?Page=forums.html</u>), hosted by the Provost's office and include a wealth of feedback that informs our findings.

In addition, we held a forum to solicit input from graduate and undergraduate students on November 29, asking students to provide us with their sense of strengths, barriers to success, and ideas for establishing UVM as a premier university for seeking training in ESH-related fields.

Finally, on December 5, we held a forum staged to solicit "big ideas" from the UVM community. Materials from these presentations are also posted on the Envisioning Environment website, under the Public Forums page.

To solicit input from individuals, we implemented an "Input Forum" on the Envisioning Environment website, announcing this tool at the November 12 Faculty Senate meeting and through the UVM Communications email "UVM News You Should Know."

Members of the work group also conducted interviews with each Dean to solicit their input on UVM's strengths in the area of environmental research, education and outreach and their sense of barriers to success. The Deans were asked what initiatives they would implement if charged to dedicate resources to strengthening UVM's efforts on ESH-engaged research, education and outreach. We also asked the Deans what initiatives they would be particularly inclined to support.

Request for information given to presenters at Envisioning Environment Forums

A. *Powerpoint Slides* (a brief set of slides to include the following information)

- 1. Primary environmental thematic areas of the teaching, research, or outreach aspects of your unit; define what "environment" means for your unit
- Quantitative indicators that best show the scope and scale of your contribution (such as # faculty, # of majors, # of courses, # of grants and grant dollars, # of degrees awarded over the past 5-10 years please use the indicators appropriate to your unit)
- 3. Constraints and opportunities that currently impact or could impact your effectiveness
- 4. Your ideas and vision for how the "Envisioning Environment" process could help support your work and strengthen "Environment" as a core theme of UVM's academic offerings
- 5. Anything else you would like to add for the committee and UVM community

B. <u>Written Narrative</u> (1-2 pages single-spaced describing these aspects of your environmental effort)

- 1. Your niche and contribution to environment-related teaching, research, or outreach at UVM; define what "environment" means for your unit
- 2. Nature and list of the cross-unit collaborations at UVM that support your work
- 3. Particular program strengths in the context of UVM offerings
- 4. Your program or unit in comparison to similar offerings elsewhere in the U.S. (generally)
- 5. Your ideas for how the "Envisioning Environment" process could help support your work and strengthen "Environment" as a core theme of UVM's academic offerings

II. Conduct of survey to determine "best practices"

As part of the work group's research, we interviewed five representatives from other institutions about efforts to coordinate and strengthen environment-related work. We chose universities that represented a range of sizes and types, and that had all undergone a concerted effort to organize more strongly around environment.

We interviewed people from four institutions: Stanford University (Pamela Matson, Dean of Earth Sciences), Colorado State University (Mike Manfredo, Chair of Human Dimensions of Natural Resources), Portland State University (Jennifer Allen, Director of Institute for Sustainable Solutions), and University of Minnesota (Jon Foley, Director of Institute on Environment). We also interviewed Shirley Vincent, Director of Educational Research, National Council on Science and Environment, who has recently published survey results on interdisciplinary environmental education programs across the country.

The conversations revealed remarkable consensus around four points, presented in the report's Findings. The report also describes four additional points that enjoyed weaker consensus but are particularly relevant to UVM. Finally, within the report, we interpret our findings briefly and provide some context and caveats.

Questions posed to outside experts interviewed by Envisioning Environment Work

Group

- 1. What was the nature and scale of the initiative at your institution?
- 2. What were the drivers? Who were the key players?
- 3. What were the two smartest things you or your institution did in this process?
- 4. What two things did you or your institution do in this initiative that you would not advise?
- 5. Who else has successfully organized around environment (who has done this intelligently on other campuses) and what do you admire or find inspiring about what they have done?

Appendix 5: UVM Comparator Institutions and their ESH Programs

Selected institutions represent UVM peer and aspirant universities used for other UVM comparison studies regarding costs, enrollment, etc.

Institution	Env Studies	Env Science	Natural Resources	Sustainability	Other related	Graduate programs	Research Institutes, Centers, Programs
Boston College	minor					Earth Env Sciences M.S.	
Boston University	Env Policy B.A., minor	B.A., minor	GIS B.A., minor		Geography B.A., minor	Env Health MPH, M.S., Ph.D.; GIS M.S.; Geog & Env M.A., Ph.D.	Center for Energy and Env Studies; Center for Ecology and Cons Biology
George Washington	B.A.				Geography B.A., minor	Geography M.A., Env Resource Policy M.A., Env Health Science & Policy, MPH	
Syracuse University				Energy & its Impacts major	Geography B.A., minor	Geography M.A., Ph.D.	Center for Env Policy & Admin; Center for Env Systems Engineering; Center for Sustainable Engineering
Tufts University	major	ENVS track		ENVS track		Urban & Env Policy Planning M.A.	Tufts Institute of the Environment; Global Development & Env Institute
U Connecticut	minor	B.S.	B.S. (5 tracks); Wildlife Cons minor		Minors in Env Econ & Policy, Geog, Env Eng, EEB (also major)	Nat Resources M.S., Ph.D.	Center for Energy & Env Law; Center for Env Sciences & Engineering; Center for Clean Energy Engineering
U Mass-Amherst		B.S., minor	B.S. NR Cons	B.S. Bldg & Constr Technol	Org & Evol Biology M.S., Ph.D.	Env Conservation M.S., Ph.D. (5 tracks, incl Building Systems); Sustainability Science M.S.	Center for Energy Efficiency & Renewable Energy; Climate System Research Center; Wind Energy Center; Transportation Center; Center for Agriculture
U Rochester	B.A.	B.S.		minor	Env Geology and Env Eng minors	Alternative Energy M.S.	
William and Mary		B.S., minor				Marine Science M.S., Ph.D.	Commonwealth Center for Energy & Env; Virginia Inst for Marine Science; Center for Conservation Biology
American University	B.A.	B.S., minor				Env Science M.S.	Center for Env Filmmaking
Brown University	A.B.	Sc.B.				Ecol Evol Biology M.S.; [Env Studies M.S. discont'd]	Environmental Change Initiative

Cornell	concen-	B.S.,	B.S.	w/ ENSC,		Natural Resources	Atkinson Center for Sustainable Future;
University	tration	minor		Climate Change		M.S., M.P.S., Ph.D.;	Institute for Food, Agriculture, &
				minor		Earth Energy M.S.	Development; Earth Energy IGERT
						Ph.D., M.Eng.	
Dartmouth	B.A.,		yes	minor	Geography	Earth, Ecosystem, &	IGERT in Polar Env Change
College	minor				major	Ecol Sciences Ph.D.	
Georgetown U.	minor						Georgetown Env Initiative (env justice)
UVM	B.A., B.S.,	B.S.,	B.S. in NR,	ENVS concen-	B.S. Env Eng,	Natural Resources	Gund Institute; Smart Grid IGERT;
	minor	minor	WFB, FOR,	tration; Green	CDAE; B.A.	M.S.; Ph.D.; Biology,	Transportation Research Center ; Jeffords
			PRT; minor	Bldg minor	Geography	M.S., Ph.D.; CDAE	Center, Center for Sust Agriculture, etc.
			in WFB,			M.S.; Food Systems	
			FOR, PRT			M.S.; [Sustainable	
						MBA in process]	

Appendix 6: UVM-Wide Challenges

These observations were collected from Envisioning Environment public forums and committee discussions, pointing out some of the broader limitations to achieving success in ESH at UVM.

I. General

1) Tension exists in faculty workload allocation between undergraduate mission and budget needs vs. research expectations. We need to find more undergrad efficiencies to free up faculty for grad education and research, including expanding the pool of graduate teaching assistantships to provide support for large classes in social sciences and humanities.

2) Inter- and trans-disciplinary work in teaching and research is not well accounted for in promotion and tenure process and incentives are unclear. We need clear, institution-wide guidelines for joint unit faculty hires to ensure success.

3) There is general fear around reorganization, both from being left out of the process and from what may be decided or implemented. There is also general cynicism that much has been proposed and little has been done.

4) Inter-unit issues over "where the dollars go" and "who gets the credit" are disincentives for leaders to create revenue-generating programs that will support new faculty lines and degrees; this is also true for distribution of F&A.

II. Research

1) Declining grant fund availability impacts single investigators, generating unrealistic grant achievement expectations in some fields. Funding agencies are moving toward multi-investigator interdisciplinary awards but UVM is not yet well poised to meet agency criteria.

2) Generally there is inadequate SPA support and grant-writing support; this is a common complaint among faculty. We need better mechanisms for leveraging outreach impacts from Extension, CE, and CUPS where grants require this match. General UVM institutional information needs to be easily accessible for grant writers.

3) There are few mechanisms to support faculty to write large grants (e.g. course releases). If awards are small, the disincentives to invest effort in grant writing outweigh the benefits. UVM can't meet criteria for certain grants without demonstration of critical mass in relevant areas, e.g. such things as a PhD program in Public Policy.

4) Existing formula funds (Hatch, McIntyre Stennis, Sea Grant, Space Grant), center-based funding (Water Resources and Lake Studies Center, Northern States Research Consortium, Transportation Research Center, Jeffords Center), and federal EPSCoR funding (NSF, NASA, DoD) could be more effectively leveraged to bring researchers together to pilot collaborative projects and establish UVM's capacity for large, multi-disciplinary research.

III. Graduate Education

1) Stipend awards are uneven and inequitable as are work opportunities for graduate students. Some programs are very dependent on graduate TAs. Students report high stress from meeting the rising cost of living and increasing student debt.

2) Investment in graduate education at UVM is relatively low; it is difficult to get industry funding to support grad students and grad education in small state.

3) Students report a general lack of career information and professional advising for graduate students.

4) We need more capacity for graduate teacher training through CTL; this is an effective and efficient way to deliver teacher training to students from multiple units.

IV. Undergraduate Education

1) Course catalog approval for cross-campus programs is lengthy and unwieldy and at the mercy of different college opinions of what the programs should be and how well they fit college criteria.

2) Budget incentives and penalties for meeting or not meeting enrollment targets are unclear and vary from year to year and according to changing administrative principles.

V. Outreach

1) Outreach unit efforts are not well coordinated with campus initiatives except in specific units with designated faculty.

2) Campus attitudes toward CE and Extension units sometimes limits the possibilities for creative collaborations.

Appendix 7: Envisioning Environment Public Forum Participants

(All materials submitted by presenters are posted on the Envisioning Environment web site at http://www.uvm.edu/provost/envisioningenvironment/?Page=forums.html.)

October 17 – Environmentally-engaged Outreach Programs

Presenter	On behalf of	Materials posted
Susan Munkres	Community-University Partnerships (CUPS)	Slides, narrative
Matt Sayre	UVM Continuing Education	Slides
Doug Lantange	UVM Extension	Slides

October 24 – Environmentally-engaged Research Centers

Presenter	On behalf of	Materials posted
Tom Vogelmann	Agriculture Experiment Station and CALS	Slides
Judith VanHouten	Vermont NSF EPSCoR	Slides, narrative
Taylor Ricketts	Gund Institute of Ecological Economics	Slides, narrative
Bud Meyers	Jeffords Center for Policy Research	Slides, narrative
Jim Sullivan	Transportation Research Center	Slides, narrative
Breck Bowden	Vermont Water Resources and Lake Studies	Slides, narrative
	Center	

October 31 – Environmentally-engaged Graduate Education

Presenter/Attendee	On behalf of	Materials posted
David Kerr and Stephen	Animal Nutrition and Food Science	
Pintauro		
Jim Vigoreaux	Biology	Slides
David Jones	Business Administration *	Slides, program credit guide
Giuseppe Petrucci	Chemistry	
George Pinder	Civil and Environmental Engineering	
Jane Kolodinsky	Community Development and Applied	Slides
	Economics	
Margaret Eppstein	Computer Science*	Narrative
Anthony McInnis	Ecological Design	Slides, narrative
Don Stratton	Ecology, Evolution and Environmental Biology	Slides, narrative
	faculty	
Adrian Ivakhiv	Environment and Society	Narrative
Amy Trubeck	Food Systems	Narrative
Andrea Lini	Geology	Slides, narrative
Randy Headrick	Material Science	
Dave Barrington	Plant Biology	Narrative
Jossef Gorres	Plant and Soil Science	Slides
Curt Ventriss	Policy and Governance	Slides
Chris Koliba	Public Administration	Slides
Jan Carney	Public Health	Slides
Kimberly Wallin	Rubenstein School	Narrative

* Delivered during make-up session on December 5

Presenter/Attendee	On behalf of	Materials posted
Jim Vigoreaux	Biology	Slides
Sara Helms Cahan	Biological Sciences, Integrated	Narrative
William Cats-Baril	Business Administration*	Slides
Giuseppe Petrucci	Chemistry*	Narrative
Jane Kolodinsky	Community Development and Applied	Slides
	Economics	
Margaret Eppstein	Computer Science*	Narrative
Diane Gayer	Ecological Design	Slides, narrative
Leon Walls, Regina Toolin	Education and Social Services	
Mandar Dewoolker	Engineering, Civil and Environmental	Slides
Steve Titcomb	Engineering, Electrical	Slides
Darren Hitt	Engineering, Mechanical	Slides
Stephanie Kaza	Environmental Studies	Narrative
Charlotte Mehrtens	Environmental Sciences	Slides
Meghan Cope	Geography	Slides, narrative
Andrea Lini	Geology	Narrative
Dave Barrington	Plant Biology	Slides
Yolanda Chen	Plant and Soil Science	
Allan Strong	Rubenstein School (Forestry, Natural	Slides, narrative
	Resources, Parks Recreation Tourism, Wildlife	
	and Fisheries Biology)	

November 7 – Environmentally-engaged Undergraduate Education

* Delivered during make-up session on November 28

November 28 – Research and Academic Support for Environmentally-engaged Programs

Presenter	On behalf of	Materials posted
Cheryl Morse	Center for Research on Vermont	
Linda Berlin	Center for Sustainable Agriculture	
Nick Heintz, Albert	Environmental Pathology	
Vander Vliet		
Gioia Thompson	Office of Sustainability	Slides
Lesley-Ann Dupigny-	Office of Vermont State Climatologist	Narrative
Giroux		
Robert Manning	Park Studies Laboratory	Narrative
Laurie Kutner	UVM Libraries	Narrative
Wendy Verrei-Berrenbeck	Center for Teaching and Learning	
Karen Nordstrom	GreenHouse	Slides

November 29 – Student Forum

Graduate students from BIOL, RSENR, Engineering.

Undergraduate students from NR, ENVS, Ecological Design, Students for Climate Culture. Caitlan Stephens, recent alum, "Environmental Commons" (narrative posted)

December 5 – Campus-wide call for Ideas

Presenter	On behalf of	Materials posted
Patti Prelock	College of Nursing and Health Sciences	Slides
Lini Wollenberg	Climate Change Scholarship and Teaching	Faculty participants database
Jon Erickson	Rubenstein School	
Crea Lintilhac	Rubenstein School Board of Advisors	Narrative
Chris Lucier	Enrollment Management	
Adrian Ivakhiv	University-wide Environmental PhD	Narrative
Richard Watts	Centralized environmental reporting	Narrative
David Raphael	College of Eco-Design	Summary, proposal, poster
Cami Davis	Environmental Art	Narrative
Will Rapp	Intervale Foundation	Narrative
Dan Cmejla	Students for Climate Culture	Proposal
Tom Hudspeth	Sustainability Education	Narrative

Memo To:	The Faculty Senate
From:	The Curricular Affairs Committee of the Faculty Senate, Cathy Paris, Chair
Date:	December 17, 2012
Subject:	Approval of a clarified credit-hour definition

The Curricular Affairs Committee at its meeting of December 13, 2012 approved the clarified credit hour definition presented in the following memo.

The Senate Curricular Affairs Committee charged a subcommittee to review the recently adopted definition of an academic credit hour as it might apply to online courses. After extensive discussion, the subcommittee concurred that the present guidelines are general enough to cover a range of delivery modes. However they proposed <u>adding a third point</u> to the current definition in order to emphasize the University's commitment to providing learning experiences in which faculty engage with students, regardless of delivery mode.

Definition of a Credit Hour

- 1. One hour of classroom or direct faculty instruction and a minimum of two hours of out-ofclass student work each week for approximately fifteen weeks for one semester hour of credit or the equivalent amount of work over a different amount of time, or
- 2. At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.
- 3. "Direct faculty instruction" must include regular and substantive faculty/student contact regardless of delivery mode (for example, face to face, hybrid, distance/online).

"Best practice" guidelines for online courses are available on the CTL webpage: <u>http://www.uvm.edu/ctl/resources-teaching/course-design/</u>

Memo To: The Faculty Senate

- From: The Curricular Affairs Committee of the Faculty Senate, Cathy Paris, Chair
- **Date:** December 17, 2012
- **Subject:** Approval of a proposal to change the name of the Women's and Gender Studies Program to the Program in Gender, Sexuality, and Women's Studies

The Curricular Affairs Committee at its meeting of December 13, 2012 unanimously approved the action recommended in the following memo.

The Women's and Gender Studies Program, housed in the College of Arts and Sciences, has requested approval of a proposal to change its name to the Program in Gender, Sexuality, and Women's Studies. This new name reflects the emphasis on gender and sexuality in the program's current curriculum. The name change proposal has been approved by the College of Arts and Sciences Curriculum Committee (October 3, 2012), the College of Arts and Sciences faculty (November 6, 2012), and the Faculty Senate Curricular Affairs Committee (December 13, 2012). We now submit it to you for your consideration and action by the Faculty Senate and the Board of Trustees.

Memo To: The Faculty Senate

From: The Curricular Affairs Committee of the Faculty Senate, Cathy Paris, Chair

Date: December 17, 2012

Subject: Approval of a proposal to terminate the Canadian Studies major

The Curricular Affairs Committee at its meeting of December 13, 2012 approved the action recommended in the following memo.

In October 2012, Professor David Massell, Director of the Canadian Studies Program, proposed to the College of Arts and Sciences (CAS) Curriculum Committee that the Canadian Studies major be terminated. The rationale for the termination is that the number of students, faculty, and course offerings in the program has dwindled through the years since its heyday in the late 1970s. Further, there is evidence that some of the nominal Canadian Studies student majors through time have in fact had no intention of completing a Canadian Studies degree, but rather have claimed that major in order to secure a tuition discount through the New England Board of Higher Education's Regional Student Program. The RSP provides in-state tuition to out-of-state students pursuing a major not offered at their own home state colleges and universities.

It is appropriate to note that the Canadian Studies Program faculty request the termination with regret. They remind us that, as Canada is our nearest neighbor and most important trade partner and the motherland of many Vermonter's forebears, it is fitting that UVM should offer a vibrant Canadian Studies major. However, with resources insufficient to the offering of a quality program, they have decided to eliminate it. A minor in Canadian Studies will continue to be available.

This proposal was approved by the CAS Curriculum Committee on October 3, 2012, the CAS faculty on November 6, 2012, and the Faculty Senate Curricular Affairs Committee on December 13, 2012. We now submit it for consideration by the Faculty Senate and Board of Trustees.



MEMORANDUM

TO:President Julie Roberts, University Faculty SenateFROM:Sanjay Sharma, Dean, School of Business AdministrationDATE:January 14, 2013RE:January 2013 Graduates

The following students have completed the requirements for the Bachelor of Science degree in Business Administration and should be recommended by the Senate to the Board of Trustees:

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Abigail Catherine Beck Matthew Bryant Betit Matthew Alexander Chitro Zachary Samuel Cohen Christopher D. Coppin Nicholas W. Frazier Jonathan Charles Gross Brittany V. Horowitz Alyssa Morgan Hoyt David Earl-Quinn Lieberman Cameron Moniz Ian Paisner Meaghan Seiple Marshall T. Shepherd Jacob Thomas Smock Matthew S. Weingast

Sanjay Sharma, Dean School of Business Administration



January 14, 2013

On behalf of the faculty of the College of Agriculture and Life Sciences, I am pleased to report that 47 candidates have successfully completed requirements for the Bachelor of Science Degree.

I move that these candidates be recommended by the Faculty Senate to the University of Vermont and State Agricultural College Board of Trustees for the Bachelor of Science Degree.

Thomas C/Vogelmann Dean of the College of Agriculture and Life Sciences



January 14, 2013

Jamie Aloi	Baldwinsville, New York
Britny Morgan Alvarado	Weston, Connecticut
Anthony Paul Bambara	Stowe
Johnathan Edward Barone	Mendon
Paxton Cash Belcher-Timme	Guilford
David Bounsana	Burlington
Sarah Lemay Colliton	Alburgh
Benjamin Lloyd Crosby	Fayston
Liza Worth Dardani	Valatie, New York
Danielle Mavis Desroche	Bedford, New Hampshire
Evan Domenico Doubleday	Woodstock
Christopher Lawrence Duncan	Burlington
Rose Fierman	Kingston, Pennsylvania
Jared Scott Gagnon	Charlton, Massachusetts
Kay Anne Goite	So. Burlington
Joseph Winston Grossman	Wilmot, New Hampshire
Ayano Olivia Honda	New York, New York
Tzu-Min Hsu	Mount Hermon, Massachusetts
Olivia Katherine Johnson	Derry, New Hampshire
Danielle Lee Judson	Reading, Massachusetts
Amanda Marion Kava	Rockport, Maine

Page 2 January 14, 2013 Graduation List Continued College of Agriculture and Life Sciences

Madeline Eaton Kinzly Sarah Michelle Kresock Hannah Marie Lachance Danielle Theresa Leahy Demelza Sarah Levick Amber Liljeholm Amy Elizabeth Lipsitz Christopher Carpenter Marsh Amber Marie Mattison Robin D. Megill Daniel Robert Moeck Sam John Murphy John Louis Neri Christa Ann Pratko Kathleen Florence Reynolds Megan Marie Rheaume Rachel Morgan Rogoff Melissa Lynne Rosen Emily Starr Schwartz Eryn Elizabeth McElhaney Smith Tessera Eleanor Strand Brent Theodore Summers Pia Antonia Tomasello

York, Maine Randolph Center West Point, New York Middlebury Troy, New Hampshire Jeffersonville North Kingstown, Rhode Island Huntington Colchester Lexington, Massachusetts Stowe Newport Voorheesville, New York Newfoundland, New Jersey Voorheesville, New York Middlebury Uncasville, Connecticut Bellmore, New York Southport, Connecticut Middlebury Sherborn, Massachusetts Barrington, Rhode Island Ridgefield, Connecticut

Page 3 January 14, 2013 Graduation List Continued College of Agriculture and Life Sciences

Martha Steingard Waterman

Charlotte

Rutland

Kara Elizabeth Weir

Anna Elizabeth Wiens

Minnetonka, Minnesota



January 14, 2013

Ms. President, the following candidates from the <u>College of Arts & Sciences</u> have completed all requirements for degrees as indicated.

Bachelor of Arts (142) Bachelor of Science (19)

Interio

I move that the Senate recommend these candidates to the Board of Trustees for their awarding of the appropriate degrees.

Bachelor of Arts

Mark Alexander Allison Nicole Ashley Stephanie N. Aubert Andrea Margaret Backus Peter H. Bahrenburg **Nedim Bairovic Brendan Bald** Ryan M. Baril Matthew Allen Barrows Patrick C. Benini Alexander Hoyt Blossom Roger L. Bombardier Jr. Alex Bonson Chelsea Rae Bothen Francesca Boulton **Christopher Bowen** Elisabeth Ann Bradley Mariah Jayne Branon Adan Catovic Vincent Cavallo John Miller Commo Emma Catherine Cook Samuel R. Cook Emily S. Cowan **Clara Louise Cox Daniel Mathews Degan Danielle Dennis** Morgan Elizabeth Dent

South Burlington Wenham, MA Rome, ITALY South Glens Falls, NY Colchester Essex Junction Millersville, MD Winsted, CT Burlington Burlington Berkeley, CA Richmond Burlington Mount Desert, ME North Attleboro, MA South Berwick, ME Killingworth, CT Fairfield Brooklyn, NY New Rochelle, NY Burlington Cedar, MI Andover, MA Bangor, ME Middlebury Weston Sheldon Charlottesville, VA



Laura Anne Dillon **Benjamin Huston Donovan Dwayne Vincent Dove** Kristin S. Engle Madison E. Esler Jeroen Michiel Koolmees Fabricant Andrew Winston Falion **Emily Kathleen Ferguson Colin Michael Flinn** Karen Patricia Flores Mejia Joseph Anthony Garofalo Anna Altieri Glavash Andrea Goodrich Alexandra Currie Gordon Alexander Michael Green **Rachel Mae Grue** Nicole E. Gruet Samuele Dino Guarnaccia Janice Violet Guion Courtney E. Hall Maia Lily Hansen William Moore Hedden Joshua Hegarty Christopher J. Houck Jasmine Aurora Hughes Johanna Catherine Hyyppa Monica Ruth Johnson Sarah Elizabeth Keller Megan Hazel Kelley Laura Paige Kenney Nancy Patricia Koch **Eleanor Krause Dianne LaBerge** Eric Desmond Lacaillade Benjamin Robert Landry Pia LeRoy Tameka J. Linzv John Martin Litterst George Billingsley Loftus Jenna Rose Lorenzini Anna Kathleen Makouiy Emma L. N. Mallon Mitchell Aaron Manacek **Emily Kristine Mangelsdorf** Sarah Mayo

Warren McLean, VA Turnersville, NJ Richmond Slingerlands, NY Norwich Brattleboro Forty Fort, PA Sandown, NH Lima. PERU Tinton Falls, NJ Watertown, MA Pownal, ME Washington, DC Burlington Malone, NY Acton. MA Shelburne Waitsfield Melrose, MA Charleston Shelburne Woburn, MA Maple Shade, NJ Saint Johnsbury Simsbury, CT West Warwick, RI Burlington Fayetteville, NY Benson Killington Bloomington, IN Charlotte Montpelier Burlington Bronx, NY Washington, DC Moultonborough, NH Northeast Harbor. ME Essex Junction **Burlington** Burlington Deerfield, IL Shawnee, KS South Burlington



Lindsay E. McCary Craig Lyle McGaughan Michael McNaughton Svetlana Vasilievna Mikheyeva Andrew G. Minerowicz Samuel T. Mitchell Brendan Mollica **Cameron Moniz** Christopher James Murphy Luke Neumann Xinh Xinh Mina Nguyen William D. Northrop Christine Campbell Ogden Eva Okrent Grant A. Olear Ian Alistair Oliver **Benjamin Hawkins Olsen Emma Paradis** Zachary Michael Paul Ashlee Renee Payne Robert Eliot Peacock Eric C. Peterson II Olivia Barbara Peterson Jens W. H. Pharr **Daphne Earl Politis** Samuel Mulholland Rodd Angelia Marie Rorison **Miriam Christine Rothschild** Julia M. Rowe Christian Thomas Ryan-Pagano Regina M. Saathoff Dana Eve Saladoff Ashley Tibet Sawyer Alexander Travis Saylor Aaron William Schips Emily C. Schmitz Edward Hogan Sennett Wesley Sharer Sydney M. Sharpe Hannah Vivian Shaw Max Shefte-Jacobs Marshall T. Shepherd Jennifer Joyce Signorella **Olivia Paige Smaltz** Frank Joseph Smecker

West Hartford, CT Essex Junction Windsor Saint Albans Dover, NH Providence, RI Burlington Point Pleasant, NJ Kennett Square, PA Lexington, MA Morehead City, NC Veraennes Dartmouth, MA Flanders, NJ West Hartford, CT Red Bank, NJ Bay Head, NJ Middlesex Longmont, CO Medford, NJ Harwich, MA Westwood, MA New Britain, CT Washington, DC Scarborough, ME Bradford, NH New York City, NY Brattleboro Saint Johnsbury Franklin Square, NY Underhill Ashland, OR Cornwall East Windsor, CT Greenwich, NY Huntington Station, NY Bennington Lexington, MA South Burlington Williston Golden. CO Brunswick, ME Dartmouth, MA Leicester, MA Richmond



Alyssa Juliette Sorrentino **Charles Thomas Souchuns** Gillian Grace Stewart Sydney Dawn Stieler Asher Folsom Sullivan **Derek Thompson** Matthew Parker Towle Maria Trapnell Toben Oliver Clark Traver Samuel James Uberti James Underwood-Miller Courtney Alexandra Vuono Adeline Webb **Trevor Burton Weeks** Kyla Whitney Westover Tyler Wilkinson-Ray Conner John Wingerter Michael Samuel Witte Ashley Theresa Wolf Lillian Wu Carol Roseanne Yablonsky Shannon Alexis Megan Yandow Bria Leigh Yazic Sydney Leah Zeff Efthemia Zgonis

Bachelor of Science

Alexa Algios **Roy Adelbert Anderson** Lauren Kelly Bissonnette Cassandra Godzik Elizabeth R. Jackson Evan William Laird Alan S. McCarthy **Benjamin Mendez Brendan Mollica** Frederick Nicholas Naumann Xinh Xinh Mina Nguyen Kasey Lynn Permenter Robert Scott Pettersen Matthew Patrick Ray Paige Alyssa Ruiz Hannah Louise Schoenberg Walter Chandler Stevens IV

River Forest, IL Wallingford, CT Averill Park, NY Lewisburg, PA Swanton Saint Albans Canton. CT Charlottesville, VA Taftsville New Haven, CT Stockbridge, MA Pipersville, PA Needham, MA Wilton, CT Waitsfield Richmond Buffalo, NY Olean, NY Jackson, NJ Brookline, MA North Haledon, NJ Williston Riverhead, NY Stratham, NH Bedford, NH

Glen Head, NY Rockingham Portsmouth, RI Rutland Ipwich, MA Coatesville, PA Jericho Bronx, NY Burlington Medfield MA Morehead City, NC Pennsville, NJ Montpelier Potomac. MD West Dover Montpelier Cincinnati, OH



Tessera Eleanor Sheperd Strand Alyssa Karges Turley Sherborn, MA Montpelier



MEMORANDUM

то:	University Faculty Senate
FROM:	Bernard "Chip" Cole, Interim Dean College of Engineering and Mathematical Sciences
RE:	January 2013 Graduates

DATE: January 14, 2013

The following students have completed the requirements for the Bachelor of Science degree and should be recommended by the Senate to the Board of Trustees.

Bachelor of Science in Civil Engineering

Genevieve Ellen Anthony Daniel Thalner Bernard Philip Charles Cannata Michael P. Gifford Claire Ellen Musser Ryan Etherington Trudel

Bachelor of Science in Electrical Engineering

Mohamed El Bashir Metwally Po Han Chiang

Bachelor of Science in Engineering Management

Alexander Chandler Andrew C. Mayo-Smith

Bachelor of Science in Environmental Engineering

Danielle Frances Sylvia

Bachelor of Science in Mechanical Engineering

Vincent Russell Bassett Gustaf Aaron Erickson Sten Paul Kaeding Curtis Leonard Kellogg Grahame Prentice MacKugler

Bachelor of Science in Computer Science Christoph Griesshammer

Bachelor of Science in Mathematics

Derek Ray Isaacs Troy Bernard Norman Anton Osipov Paul Charles Wright

Bernard "Chip" Cole, Ph.D Interim Dean College of Engineering and Mathematical Sciences



January 10, 2013

Madam President,

On behalf of the College of Education and Social Services faculty, I am pleased to report that 26 candidates have completed all requirements for the Bachelors of Science degree as indicated:

- 1 Art Education
- 1 Music Education
- 17 Education (Elementary, Individually Designed, and Secondary)
 - 11 Elementary Education
 - 5 Secondary Education
 - 1 Individually Designed
- 7 Early Childhood Preschool, Early Childhood Special Education, Human Development and Family Studies, and Social Work
 - 2 Early Childhood Preschool
 - 1 Early Childhood Special Education
 - 3 Human Development and Family Studies
 - 1 Social Work

I move that the Senate recommend these candidates to the Board of Trustees for the awarding of the appropriate degrees.

neces milles

Fayneese Miller, Ph.D. Dean

BACHELOR OF SCIENCE IN ART EDUCATION

Bradley P. Williams

BACHELOR OF SCIENCE IN MUSIC EDUCATION Holly Beth Mugford

BACHELOR OF SCIENCE IN EDUCATION

(Elementary Education) Kelsey Lee Gloyd Patrick Joseph Cafferky Caitlin Laurel Curran Laura Durst Emily Lelia Fuller Johanna Catherine Hyyppa Sarah Marie Lake Katherine Margaret Lucas Sarah Lynn Paquette Amanda Saidnawey Nicole Wood Uslan

(Secondary Education)

R. Tobias Niles Kelsey Lynn Wilkinson Anna Kathryn Neil Laura Kathryn Frangipane Anthony C. Lania

(Individually Designed)

Danielle Emma Folia

BACHELOR OF SCIENCE

(Early Childhood) Ashley Sullivan Naomi Miriam Trautmann

(Early Childhood Special Education) Elizabeth C. Clavelle

(Human Development and Family Studies)

Caitlin Georgia Dennis-DeVries Kelsea Raelynn Kuvaja Sarah Louise Nelson

(Social Work) Abigail Marie Hutchinson



COLLEGE OF NURSING & HEALTH SCIENCES

Memorandum

To: The University Faculty Senate

From: Patricia Prelock, Dean

Date: January 9, 2013

Re: Degree Candidates-January 2013

On behalf of the College of Nursing and Health Sciences, I present 7 candidates for the Bachelor of Science degree. I recommend that The University of Vermont Faculty Senate and Board of Trustees acknowledge and award these candidates their respective degrees/certificates.

Bachelor of Science

Nursing

Kelly Lacaillade

Exercise and Movement Science

Caitlin Whitlock

Athletic Training

Laura-Marie Antonelli

Communication Sciences and Disorders

Rachel Weiland Emily Cooke

Medical Laboratory Science

Dominique Laliberte Monique Cardillo

106 Carrigan Drive, 106 Rowell Building, Burlington VT 05405 Telephone 802-656-3858, Fax 802-656-2191 www.uvm.edu/~cnhs/



January 14, 2013

MEMORANDUM TO THE UNIVERSITY SENATE

President Roberts, on behalf of the Graduate Faculty, it is my pleasure to present 63 candidates for the Master's degree in course, 1 for the Doctor of Education, 13 for the Doctor of Philosophy degrees, and 1 for the Certificate of Graduate Study.

Doctor of Philosophy	13
Doctor of Education	1
Master of Arts	4
Master of Arts in Teaching	2
Master of Business Administration	1
Master of Education	11
Master of Public Administration	1
Master of Science	44
Certificate of Graduate Study	1

78

I move that the Senate recommend these candidates to the Board of Trustees for their awarding of the appropriate degrees.

Domenico Grasso, Ph.D., P.E., DEE

Domenico Grasso, Ph.D., P.E., DEE Vice President for Research and Dean of the Graduate College January 14, 2013

MEMORANDUM TO THE UNIVERSITY SENATE

The following graduate students have to the best of my knowledge met all the requirements for their respective degrees. I move that the Senate recommend these candidates to the Board of Trustees for their awarding of the appropriate degrees.

DOCTOR OF PHILOSOPHY

Cell and Molecular Biology Brian Joseph Roberts Benjamin Charles Stark

Clinical and Translational Science Sarah Gillett

Computer Science Lingbo Yu, Ningbo

Educational Leadership and Policy Studies Laurie Michael Gelles

Microbiology and Molecular Genetics Pamela Jean Lescault

Natural Resources Anjanette L. DeCarlo Peter R. Pettengill

Neuroscience Jane A. Roberts Michael Roland Williams

Plant and Soil Science Katlyn Stillings Morris Tharshani Nishanthan

Psychology Joanne Kalisz

DOCTOR OF EDUCATION

Educational Leadership and Policy Studies Monica McEnerny

MASTER OF ARTS

English Kara Frances McCabe

Psychology Jason R. Fuchs Margaret Kocho-Schellenberg Caitlin Reilly Wagner

MASTER OF ARTS IN TEACHING

Stephen Sheeler Andrew Charles Prowten

MASTER OF BUSINESS ADMINISTRATION

Ashley Lamell

MASTER OF EDUCATION

Curriculum and Instruction Brittany Aubé Melissa Mary Caligiuri Brandi Corbett Megan Elizabeth Maynard Kayla Renee Toher

Interdisciplinary Jaydeen Santos

Special Education Keith D. Bouchard Katherine Fonseca-Foster Kaitlin Elizabeth Langelier Beth Anne Richey Tara J. Tanguay

MASTER OF PUBLIC ADMINISTRATION

Gregory Alan Hanson

MASTER OF SCIENCE

Biomedical Engineering Matthew David Christensen Yijan Zheng

Cell and Molecular Biology Andrew Menke

Chemistry Jessica Mendes Eisenhauer

Civil and Environmental Engineering Yi Ge Christine Alane Gingras Kirk DuBois Shrader Jones Qiong Liu

Community Development and Applied Economics Florence Becot Jacqueline Reeves LeBlanc Minghao Li

Computer Science Poornima R. Shetty

Counseling Rebecca Cassandra Raskin

Electrical Engineering Joseph Zhou

Geology Megan Thackeray Scott

Historic Preservation Kathryn Leigh Briscoe Lisa Claire Crompton Andrew A. Evick Lucy Kathryn Hamer Jenna Marie Lapachinski Rachel Jean Peterson Christine E. Prevolos Robyn Michelle Sedgwick Julie Senk

Mathematics Leona Sparaco

Mechanical Engineering Praneet P. Menon Kyle Paul Sala

Microbiology and Molecular Genetics John Midkiff

Natural Resources Alison Nihart Sara Halley Williams Helen D. Yurchenco

Nursing

Joseph Matthew Boone Loretta Charles Stacey Lynn Dupuis Courtney Ashburn Ellis Ashley K. Gerrish Jessica Lynn Jannette Carla Ann Kolesar Colleen Linari Shara Tarule Christina Tourangeau Dianne Villani

Plant and Soil Science Kristin Williams

Statistics Xirun Chen

CERTIFICATE OF GRADUATE STUDY

Ecological Design Kirk DuBois Shrader Jones



January 14, 2013

President Roberts: I have the pleasure of presenting to you 9 candidates for the designation of Honors College Scholar for January 2013. They have completed all of the requirements of the Honors College and I ask the Faculty Senate to confer upon them that designation.

Laura Dillon Andrew Falion Alyssa Hoyt Megan Kelley Danielle Leahy Samuel Mitchell Hannah Schoenberg Walter Stevens IV Bria Yazic

S. Abu Rizvi Dean, Honors College



January 14, 2013

MEMORANDUM

TO: The University Senate

FROM: Jon Erickson, Interim Dean

SUBJECT: January 2013 Graduates

The following 30 candidates from The Rubenstein School of Environment and Natural Resources have completed all requirements for the Bachelor of Science degree.

fdsz

Ashley Elizabeth Andersen 1006 Talbot Avenue Lake Bluff, IL 60044	Environmental Sciences	
Will Bedford-Sutco 243 Union St. Apt.203 North Adams, MA 01247	Natural Resources	
Edwin Bohman 7 Howland Road West Hartford, CT 06107	Wildlife and Fisheries Biology	
Katelyn Elizabeth Bushueff 20 Ridgewood Rd. Sunapee, NH 03782	Environmental Studies	
Anna Louise Carragee 297 Maiden Lane St. Paul, MN 55102	Natural Resources	
Nathan J. Clark 411 Barrett Rd. Emmaus, PA 18049	Environmental Studies	

Julie Ellen Coffey 10 Forest View Dr. Hollis, NH 03049

William Campbell Cox III 2 Anderson Road West Sherman, CT 06784

Katelyn Rea Deppen 2293 Windy Pines Bend Virginia Beach, VA 23456

Jeffrey Raymond Disbrow 63 Heritage Dr. Seymour, CT 06483

Matthew Paul Durfee PO Box 381 Bethel, VT 05032

Emanuel Louis Eichholz 112 Babylon Turnpike Merrick, NY 11566

Joshua A. Etter 273 Willard Avenue Wakefield, RI 02879

Rebekh Simone Gordon G-3 Stonehedge Dr. South Burlington, VT 05403

Patrick Thomas Gorman 235 B Street Middlesex, NJ 08846

Adrianne Beatrice Hedberg 345 Ridge Road Highland Park, IL 60035

Kathryn E. Helterline PO Box 576 Block Island, RI 02807 **Environmental Sciences**

Natural Resources

Environmental Studies

Parks, Recreation and Tourism

Parks, Recreation and Tourism

Wildlife and Fisheries Biology

Forestry

Environmental Studies

Wildlife and Fisheries Biology

Environmental Studies

Natural Resources'

Jeremy Francois Hulsey 1262 Sunset Hill Rd. Williston, VT 05495

Seanan Robert Keleher 3207 Cloudland Rd. Woodstock, VT 05091

Eleanor Krause 1109 S Longwood Dr. Bloomington, IN 47401

Ryan E. Lavoie 99 Beebe Rd Swanton, VT 05488

Joshua Lloyd Leonard PO Box 30 Center Rutland, VT 05736

Alexander Julian Levy 8 Bashaw Dr. Essex Junction, VT 05452

Ethan Andrew McCoski 250 Snooks Corners Rd. Amsterdam, NY 12010

Adam James Runne 28 Lavigne Rd. Essex Junction, VT 05452

Samuel J. Schlepphorst 1257 Briar Hill Rd. Hopkinton, NH 03229

Andrew W. Shaw 2291 Bronson Road St. Albans, VT 05478

Joseph E. Smith III 2 Birchhill Rd. Apt. 2 Bondville, VT 05340 Parks, Recreation and Tourism

Parks, Recreation and Tourism

Environmental Studies

Forestry

Wildlife and Fisheries Biology

Parks, Recreation and Tourism

Parks, Recreation and Tourism

Natural Resources

Environmental Studies

Environmental Sciences

Parks, Recreation and Tourism

Forestry

John Ethan Tapper PO Box 15 Saxon River, VT 05154

Environmental Studies

Melissa Wheeler 1826 Rutrough Road Roanoke, VA 24014

I move that the Senate recommend these candidates to the Board of Trustees for their awarding of the Bachelor of Science degree.

JE/mc