

### ***Environmental Health Research: Playing to the Strengths of ESF***

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***A Unique Opportunity.*** Protecting nature through education and research is at the core of ESF's identity. The growth, student excitement, and recent national accreditation of our Environmental Health (EH) major adds a new, critical, piece to this mission, namely, the explicit recognition that the environment and human health are inexorably linked. We have the opportunity to expand our research and educational portfolio in the EH field to not only look at society's impact on the natural environment, but also to look at how the environment influences human health. The development of a graduate program in EH is a critical component in building a robust research portfolio in EH. However, since there are other EH graduate programs in the northeast, including at other SUNY campuses, it is important for ESF to distinguish itself and develop a research focus that highlights ESF's core competencies. Here we are developing this focus area; bringing together the natural system and its impact on human health. There are many disciplines and study areas germane to the EH field; Horticultural Therapy, incorporating gardening activities into Physical Therapy; Therapeutic Horticulture, or the use of gardening activities to improve emotional well-being; Forest Bathing, reconnecting humans with their natural environment, and Nature Deficit Disorder, which tends to focus on the study of children who lack contact with nature. These areas include physical, psychological, and sociological issues, as well as more traditional medical issues. These ideas, while prominent outside the US, are only starting to be recognized here. This is an opportunity to play a foundational leadership role in this complex developing field of study. It is also a prime opportunity for ESF to develop stronger collaborations with local partners such as Upstate Medical University and the Veterans Administration Hospital.

***Expanding Education Programs at ESF in Environmental Health*** The Environmental Health major is a fast growing major at ESF. Building a graduate degree program (MS, PhD, and MPS) in Environmental Health would help advance ESF's prominence in this budding field. A graduate program would also advance research at ESF centered at the intersection of human and environmental health as well as further solidify collaborations between ESF, Syracuse University, Upstate Medical University, and the Syracuse VA Medical Center. Internally, investment into a graduate program will foster more interdisciplinary research, and expose more undergraduate students to EH research.

In addition to the development of the graduate program, we will also develop both an undergraduate minor and a certificate program in the area of Horticulture Therapy. Today's healthcare facilities seek to improve patient outcomes and satisfaction through the integration of green space into their facilities. These spaces promote a connection to the natural world in order to facilitate healing. For example, the incorporation of gardening activities into a physical therapy plan is an option for patients with mobility issues. Since 2013, one of our group Newman

has been overseeing the development of therapeutic horticulture programs at healthcare facilities and her research, experience, and leadership on how these programs benefit patients and hospitals will provide the foundation for developing this program. The American Horticultural Therapy Association currently lists only 7 Accredited Certificate Programs, including the New York Botanical Garden, Rutgers University, and Temple University. Thus, ESF could take an early lead in this field, attracting New York students into this certificate program. The minor will also be an appealing option for students in EFB, ES, LA, and can also be a draw to attract student into the existing 3+3 program for the Doctor of Physical Therapy that ESF already has with UMU. Building on expertise of new faculty in Environmental Health, we see many opportunities to develop research and offerings in Nature Therapy fields ranging from benefits of decreased air pollution exposure (Collins, Mirowsky), fresh food accessibility and effects on social lives and public spaces (Potteiger), wilderness and ecotourism on communities (Vidon), and understanding the public's perceived risk for outdoor experiences (Leydet, Thangamani, Razavi). Expanded areas of research are also discussed under proposed new hires.

***Nature Therapy: a highly marketable initiative*** We anticipate funding and fundraising of this initiative to be highly marketable, given public resonance and interest in a field that is already getting media attention because of the low cost public health solutions it offers. People have shared experiences of feeling better when they are outdoors, and can see the use of research to quantify the ways this leads to improved health outcomes. We anticipate that the integration of human health perspectives would also make stronger applications for funding from agencies like the DOD and the VA, NIH, and NYSDOH. Finally, we anticipate opportunities through private donors and foundations such as the Gifford Foundation (current funding source), The John Templeton Foundation, The George Family Foundation, and The Kalliopeia Foundation.

***Expanding Partnerships*** ESF currently partners with the Syracuse VA Hospital, but creation of the graduate program in EH, the hiring of new faculty and expanded research will strengthen the collaboration, as well as position the program for closer ties with UMU. Outside of academia, ESF is already partnering with one nursing facility, and two others recently reached out to ESF for guidance in implementing new programs. Within the medical communities, hospitals throughout the VA system have also reached out to gain information about implementing nature therapy programs. Research developed as part of this initiative will enable ESF to expand ties with other horticulture therapy certificate programs to recruit students into advanced degree programs.

***Maximizing use of ESF assets*** The remote campuses of ESF are tailor made for many research topics in Nature Therapy. Research project examples include studying the health effects of individual exposure to natural environments, such as testing the cognitive and restorative benefits of walking through a forest vs. a city, or determining the benefits of "green exercise" (i.e., exercising in natural environments) versus similar activities in a gym, and finally exploring outreach opportunities for individuals to participate in environmental conservation activities as part of a horticultural therapy or therapeutic horticulture program. The Lafayette Field Station is already home to the Green Campus Initiative Garden maintained primarily by ESF students. This

type of community gardening could be expanded both at Lafayette and to other sites, with a potential focus on adding green public space and improving access to fresh produce in “food deserts”. Transformation of strictly urban environments can also be an important aspect of Nature Therapy. This has been demonstrated by students in the LA department, who participated in Park-ing Day. By setting up a small park in an urban parking space they showed how public perception might change when spaces are more appealing or altered.

***Positioning ESF faculty and students to have a global impact.*** Through this program, ESF has the opportunity to be a national leader, and enter the global research arena that connects the experience of nature to positive impacts on human health. By expanding educational opportunities, we will graduate students who have a strong understanding of how nature can impact human health, and they will be leaders in both research and applied initiatives that improve individual and community health. Students can enter fields as diverse as public health, governmental policy and planning, health services administration, health services practice, or basic and applied research—changing traditional paradigms within urban planning or patient treatment to be inclusive of nature and natural settings. Through the expansion of our educational offerings and research programs, we can attract students with medical or public health aspirations, and provide a unique perspective. Additionally, expanding research in human health dimensions would strengthen ESF’s mission, serving to expand our environmental leadership role in matters related to human and public health research, policy, and practice.

***Investments into Nature Therapy with long-term payoff.*** There are three priorities for this program to succeed. The first is the implementation of advanced degree programs so that current and future researchers in the program will have a pool of graduate students to work with in this area. Second, will be the submission of an EIP grant to hire new faculty members whose primary area of research will be in health impacts from nature exposure. The first would be an expert in the psychological and sociological impacts of bringing adults and children into natural settings. A second proposed hire would be an expert in the area of immunological responses and impacts of exposure to nature, and a third would be an expert in the area of physical therapy that incorporates natural elements. These positions would be in partnership with UMU and would also help to develop stronger collaborations with the Syracuse VA hospital. The third priority would be to use the funding from this program as seed funding to develop expanded research programs in this area with current EH faculty members. This could include existing therapeutic horticulture programs, development of programs to bring Syracuse city students to the Adirondacks or programs to determine the psychological and physiochemical components of urban vs forested systems that impact human health. Funding will also be set aside for competitive graduate student stipends to attract the best students to the program from across the nation. This recruitment of top students and seed funding will provide preliminary data to support larger proposals and philanthropic fundraising. Investment into strategic hires and targeted seed funding will help to make the program self supporting within the three year time frame.

**Nature Therapy in the News:** Gardening Becomes Healing with Horticultural Therapy, CNN, 2018; Forest Bathing' Is Great for Your Health. Here's How to Do It, Time Magazine, 2018; Take a Walk in the Woods. Doctor's Orders, New York Times, 2018

The development of a strong Environmental Health (EH) graduate program at ESF must be coupled with a research program that provides advanced training for students and students for EH faculty research. With other EH graduate programs already in the SUNY system (Albany with a focus in Public Health; Buffalo focused on Epidemiology), therefore, it is critical to highlight our unique perspectives and expertise. One of these can be how nature and exposure to natural settings, a mountain retreat or a city park, a community garden or a hospital green space, improve health. While there is significant research in this area throughout Europe and Asia, this field is relatively new in North America. By developing a research program that combines Therapeutic Horticulture and Nature Exposure studies, ESF's EH program would be unique within the SUNY system. This effort would also allow us to assume a national leadership along with universities like Harvard School of Public Health & Brown University who are already doing research in this area.

The following activities will be initiated during the first and second years of the seed period:

- Fund mini-grants, allowing researchers to generate preliminary data to improve extramural funding proposals to agencies and foundations including, but not limited to: the National Institute of Health's National Center for Complementary and Integrated Health, NIH's National Heart, Lung, and Blood Institute, and the US Forest Service, all of which have funding initiatives in this area.
- Cover summer stipends for students who are doing research in this area
- Host a symposium by the end of the first year, inviting major researchers from around the world to attend and present their work, and to help attract national, state and local interest.
- Host a local workshop within 6 months of the symposium focusing on developing collaborations between ESF, the US Forest Service, the VA Hospital and UMU, where researchers have already published how exposure to greenspace can improve health outcomes.
- Present current research at the MD/PhD seminars at Upstate, with the goal of attracting students via the existing MOU to complete their PhD at ESF.
- Work with the ESF Development office to attract foundation funding by highlighting innovative research being done at ESF in these areas.
- Work with colleagues at UMU to develop an EIP proposal for submission in 2020 to strategically hire mid-career faculty members doing research in therapeutic horticulture, nature exposure clinical studies or the health benefits of urban design with a focus on greenspace inclusion.
- Develop a certificate program in Horticultural Therapy. This would focus on attracting Recreational, Physical and Occupational Therapists and allow them to bring these activities into their current programs, as well as Master Gardeners looking to expand their work. The American Horticultural Therapy Association processes 20-25 professional certification applications per year, and has seen an increase in registered members from 193 to 252 in the past two years. Portland Community College awards approximately 12 certificates per year and has recently seen an increased interest in the program with minimal recruitment effort.
- Continue working with current partners; Syracuse VA Hospital, Brookdale Memory Care, Clear Path for Veterans; and develop partnerships with other facilities to give students hands-on experience in the clinical application of therapeutic horticulture